IBM Tivoli Monitoring for Databases: Oracle

Reference Guide

Version 5.1.0

SC23-4724-00

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Note
Before using this information and the product it supports, read the information in Appendix F, "Notices" on page 525.

First Edition (September 2002)

This edition applies to version 5.1.0 of IBM Tivoli Monitoring for Databases: Oracle and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

About this guide

The *IBM Tivoli Monitoring for Databases: Oracle Reference Guide* provides detailed information about the tasks, resource models, and commands for IBM Tivoli Monitoring for Databases: Oracle (TM). Use this guide in conjunction with the *IBM Tivoli Monitoring for Databases: Oracle User's Guide*, and the *IBM Tivoli Monitoring for Databases: Oracle User Management Guide*.

Who should read this guide

This guide is intended for system architects (for planning) and system administrators and database administrators (for implementation and operation).

Readers should be familiar with the following:

- Windows NT or 2000® or UNIX® operating systems
- Tivoli software
- Oracle software

What this guide contains

This guide contains the following sections:

- **Chapter 1, "Introduction" on page 1,** describes how the guide is organized. This chapter also describes commands, resource model output, and IBM Tivoli Monitoring logging.
- **Chapter 2, "Resource models" on page 5,** describes how to use the resource models to manage databases.
- **Chapter 3, "Tasks" on page 331,** describes how to run the IBM Tivoli Monitoring for Databases: Oracle tasks in the ITMOracleTasks library.
- **Chapter 4, "Commands" on page 355,** describes the IBM Tivoli Monitoring for Databases: Oracle commands (called **wo** commands to distinguish them from Tivoli **w** commands) and provides a brief description and the authorization required to run the command.
- Appendix A, "Monitor to resource model migration table" on page 405, displays the previous monitors and how they are grouped into the current resource models.
- Appendix B, "Resource model CIM class quick reference" on page 411, displays the resource models and their corresponding CIM classes.
- Appendix C, "Creating custom resource models using CIM classes" on page 415, displays the CIM classes and properties used in resource models.
- Appendix D, "Tivoli Enterprise Console classes" on page 485, displays a listing of the Tivoli Enterprise Console classes for use in writing your own business rules.
- Appendix E, "Using tokens to customize resource model parameters" on page 519, describes how to use tokens as keywords for the "By Tablespace" and "By User" resource models in order to monitor a certain set of tables or users.

Publications

This section lists publications in the IBM Tivoli Monitoring for Databases: Oracle library and any other related documents. It also describes how to access Tivoli publications online, how to order Tivoli publications, and how to submit comments on Tivoli publications.

IBM Tivoli Monitoring for Databases: Oracle library

The following documents are available in the IBM Tivoli Monitoring for Databases: Oracle library:

- *IBM Tivoli Monitoring for Databases: Oracle User's Guide*, SC23-4723

  Describes how to install and use IBM Tivoli Monitoring for Databases: Oracle.
- *IBM Tivoli Monitoring for Databases: Oracle User Management Guide*, GI11-1234

  Describes how to use the IBM Tivoli Monitoring for Databases: Oracle User Management application to manage Oracle users, roles, and resource profiles for Oracle databases.
- *IBM Tivoli Monitoring for Databases: Oracle Release Notes*

  Describes product features and provides information about the latest changes to the installation requirements and procedures. The release notes also describe known limitations related to installation and explain how to work around each limitation.
- *IBM Tivoli Monitoring for Databases: Oracle Limitations and Workarounds*

  Provides the latest information about known product limitations and workarounds. To ensure that the information is the latest available, this document is provided only on the Web, where it is updated on a regular basis. You can access the Limitations and Workarounds document through the IBM Tivoli Monitoring for Databases: Oracle link on the Tivoli Information Center Web site:

  http://www.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html

Related publications

To use the information in this book effectively, you must have some prerequisite knowledge, which you can find in the following books:

- *Tivoli Management Framework User's Guide*

  Provides information about profiles and profile management.
- *Tivoli Management Framework Planning and Installation Guide*

  Provides information about server and hardware requirements.
- *Tivoli Management Framework Reference Guide*

  Provides information about command line commands, such as the **winstall** command.
- *IBM Tivoli Monitoring User's Guide*

  Provides information about distributed monitoring.
- *IBM Tivoli Enterprise Console User's Guide*

  Provides information about using the Tivoli Enterprise Console®.
- *Tivoli Software Installation Service (SIS) User's Guide, Version 4.0*

  Provides information about using SIS to install the IBM Tivoli Monitoring for Databases: Oracle software.

The following documents also provide useful information:

- *Server Administrator's Guide*

  Provides information about administering the Oracle server in the relevant version of Oracle.
- *Server Concepts Manual*

  Provides information about the Oracle server and how it works in the relevant version of Oracle.
- *Server SQL Reference*

  Provides descriptions of Structured Query Language (SQL) used to manage information in Oracle databases, refer to the for the relevant version of Oracle.

The *Tivoli Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Glossary* is available, in English only, at the following Web site:

http://www.tivoli.com/support/documents/glossary/termsm03.htm

Accessing softcopy publications

The publications for this product are available in PDF and HTML formats through the following media:

- *IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0: Documentation CD*, LK3T-8517-00

  The Documentation CD contains all of the English language publications for this product, except for the Web-only Limitations and Workarounds supplements. To access the publications, use a Web browser to open the **start.html** file, which is located in the root directory of the CD.
- *IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0: NLS Documentation CD*, LK3T-8605-00

  The NLS (national language support) Documentation CD contains both English and non-English language publications for this product, except for the Web-only Limitations and Workarounds supplements. To access the publications, use a Web browser to open the **start.html** file, which is located in the root directory of the CD.
- Tivoli Information Center

  IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli Information Center Web site.

  http://www.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html

  Click the Tivoli Monitoring for Oracle link to access the product library.

Using the guide online

This document is available on the *IBM Tivoli Monitoring for Databases, Version 5.1.0: Documentation CD*, LK3T-8516–00 in PDF and HTML formats. Refer to the **readme.txt** file on the CD for instructions on downloading the Acrobat Reader, Version 3.0 or later, to view, save, and print the manual.

Use your HTML browser to open the **start.html** file on the CD to access the .html documentation files. Every navigation page also includes a link at the bottom to download the Acrobat reader for viewing, saving, and printing the files.

Viewing online help

Online help is available in several forms:

- **Desktop** — Access online help by clicking the **Help** buttons in dialog boxes.
- **Commands** — You can desplay command syntax and parameter information for command line interface (CLI) commands by typing the name of the command at a command prompt and pressing the **Enter** key.

Ordering publications

You can order many Tivoli publications online at the following Web site:

http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi

You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968

See the following Web site for a list of telephone numbers in other countries:

http://www.tivoli.com/inside/store/lit_order.html

Providing feedback about publications

If you have comments or suggestions about Tivoli products and documentation, complete the customer feedback survey at the following Web site:

http://www.tivoli.com/support/survey/

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

Contacting Customer Support

If you have a problem with any Tivoli product, you can contact IBM Customer Support for Tivoli products. See the *Tivoli Customer Support Handbook* at the following Web site:

http://www.tivoli.com/support/handbook/

The handbook provides information about how to contact Customer Support, depending on the severity of your problem, and the following information:

- Registration and eligibility
- Telephone numbers and e-mail addresses, depending on the country in which you are located
- What information you should gather before contacting Customer Support

Conventions used in this guide

This book uses several conventions for special terms and actions, operating system-dependent commands and paths, and margin graphics.

Typeface conventions

The following typeface conventions are used in this book:

Bold
Names of files and directories, file and path names, lowercase and mixed-case commands, command options, and flags that appear within text appear like **this,** in **bold** type.

Graphical user interface elements (except for titles of windows and dialogs) and names of keys also appear like **this,** in **bold** type.

Italic
Variables, values you must provide, new terms, and words and phrases that are emphasized appear like *this,* in *italic* type.

`Monospace`
Commands, command options, and flags that appear on a separate line, code examples, output, and message text appear like `this`, in `monospace` type.

Text strings you must type, when they appear within text, names of Java methods and classes, and HTML and XML tags also appear like `this`, in `monospace` type.

Operating System-dependent variables and paths

This book uses the UNIX convention for specifying environment variables and for directory notation.

When using the Windows command line, replace **$***variable* with **%***variable***%** for environment variables and replace each forward slash (*/*) with a backslash (\) in directory paths.

Note: If you are using the bash shell on a Windows system, you can use the UNIX conventions.

Chapter 1. Introduction

This book is a reference manual designed for use with the procedures described in the *IBM Tivoli Monitoring for Databases: Oracle User's Guide*. It provides alphabetical listings and detailed descriptions of the following:

- Resource models
- Tasks
- Commands
- Tivoli Enterprise Console classes

Running Tivoli commands

You can perform system operations from a UNIX or Windows NT or 2000 command line interface (CLI) in addition to using the Tivoli desktop. Operations that you run from the command line are referred to as CLI commands.

Consider using the command line interface rather than the graphical user interface to invoke a Tivoli management application operation in the following circumstances:

- You do not have access to a graphical user interface, such as when you dial in over a modem.
- You want to group a number of operations together inside a shell script.
- You want to use accessibility tools that require text-based input of commands.

All Tivoli CLI commands begin with the letter **w** to identify them as Tivoli commands. Command names use a **w+verb+object** syntax. Example: Use the **wdmrm** command to add or remove a resource model.

Most Tivoli commands run within a **bash** shell on a managed node or on a Tivoli management region server. A *shell* is a command interpreter that enables the operating system to process commands. You can run commands from a shell command line or include them in shell scripts on UNIX or Windows NT operating systems. A Tivoli management region server is a Tivoli server and the set of clients that it serves. A Tivoli management regionaddresses the physical connectivity of resources, whereas a policy region addresses the logical organization of resources.

Before running Tivoli commands, you must set the Tivoli environment variables for the shell. The managed node or Tivoli management region server installation process supplies the scripts to set the Tivoli environment variables. The following sections of this guide contain descriptions of the procedures to run these scripts: "Setting the Tivoli environment on UNIX operating systems" on page 3 and "Setting the Tivoli environment on Windows NT operating systems" on page 3.

You must also have the appropriate Tivoli authorization role for running each command. Refer to the reference information for each command to see the required authorization role.

Note: A few Tivoli commands can run on an endpoint. To set the Tivoli environment variables on an endpoint, see "Establishing the Tivoli environment on an endpoint" on page 3.

Running Tivoli commands on Windows NT or 2000 operating systems

When you install a Windows NT managed node or Windows NT Tivoli management region server, the installation process copies the bash shell executable file to the machine. The bash shell supports many UNIX commands and UNIX command syntax. An example is the forward slash (/) for the directory separator. The bash shell supports the features of the Bourne shell plus it has some extensions applicable only to the bash shell.

Note

You can use the Windows NT MS-DOS shell instead of the bash shell to run most Tivoli commands (after you set the Tivoli environment variables with the **%SystemRoot%\system32\drivers\etc\Tivoli\setup_env** command). However, some commands and Tivoli tasks may require a bash shell to run successfully. All examples of Tivoli commands in Tivoli publications use bash shell syntax.

Running Tivoli commands on UNIX operating systems

The UNIX operating systems contain shells. Tivoli commands can run in the Bourne, Korn, C, and bash shells. The Bourne shell is the standard UNIX shell. Every UNIX system includes the Bourne shell. The Korn shell supports the features of the Bourne shell and has extensions applicable only to the Korn shell. The C shell name comes from the C programming language syntax. The bash shell supports many features of the UNIX shells. Both UNIX and Windows NT systems use the bash shell.

Where to find additional information about shells

The following lists include resources where you can find additional information about the various shells. These resources were available at the time the lists were created. The lists do not show all of the material that is available, and Tivoli does not provide opinions or recommendations about any of these resources.

UNIX shells:

- *UNIX in a Nutshell: A Desktop Quick Reference for System V Release 4 and Solaris 7* (O'Reilly Nutshell handbook) by Arnold Robbins. ISBN: 1-56592-427-4.
- *Portable Shell Programming: An Extensive Collection of Bourne Shell Examples* by Bruce Blinn. ISBN: 0-13-451494-7.
- *Learning the Korn Shell* (O'Reilly Nutshell handbook) by Bill Rosenblatt and Mike Loukides. ISBN: 1-56592-054-6.
- *UNIX C Shell Desk Reference* by Martin Arick. ISBN: 0-47-155680-7.

Bash shell:

- *Learning the bash Shell* (O'Reilly Nutshell handbook) by Cameron Newham and Bill Rosenblatt. ISBN: 1-56592-347-2.
- *A Brief Introduction to the bash Shell* by Jane Anna Langley. http://www.cs.ups.edu/acl/unix_talk/bash.html
- *Bash FAQ* (GNU documentation). http://www.delorie.com/gnu/docs/bash/FAQ
- *Bash Reference Manual* (GNU documentation). http://www.gnu.org/manual/bash/index.html

- *bash* command reference information (GNU documentation). http://www.delorie.com/gnu/docs/bash/bash.1.html

Establishing the Tivoli environment within a shell

When you install a managed node or Tivoli management region server, the installation process supplies shell setup scripts. You use these scripts to set the environment variables required for running Tivoli commands.

Setting the Tivoli environment on UNIX operating systems

The following steps describe how to set the Tivoli environment within a UNIX shell:

1. Log in to a UNIX managed node or Tivoli management region server.
2. Run the appropriate setup script for the shell.
   - For the Bourne, Korn, or bash shell, run the following command:

     ```
     . /etc/Tivoli/setup_env.sh
     ```

     —OR—
   - For the C shell, run the following command:

     ```
     source /etc/Tivoli/setup_env.csh
     ```

Setting the Tivoli environment on Windows NT operating systems

The following steps describe how to set the Tivoli environment and start a bash shell on Windows NT.

1. Log in to a Windows NT managed node or Tivoli management region server.
2. Open a command window.
3. Run the following command in the command window to set Tivoli environment variables:

   ```
   %SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd
   ```
4. Run one of the following commands in the command window to start the bash shell:
   - Type **sh** and press **Enter**.

     —OR—
   - Type **bash** and press **Enter**.

Establishing the Tivoli environment on an endpoint

When you install an endpoint, the installation process supplies setup scripts. Use these scripts to set the environment variables required for running Tivoli commands on an endpoint.

The following steps describe how to set the Tivoli environment on an endpoint:

1. Log in to an endpoint.
2. Open a command window.
3. Run the appropriate setup script in the command window. Table 1 on page 4 contains setup scripts for the different endpoint operating systems.

Table 1. Setup scripts for endpoint operating systems

Operating system	Setup script location	Setup script name
AIX, Solaris	**/etc/Tivoli/lcf/***endpoint_label*	**lcf_env.sh** (for Bourne, Korn, and bash shells) —OR— **lcf_env.csh** (for C shell)
Windows NT	**%SystemRoot%\Tivoli\lcf***endpoint_label*	**lcf_env.cmd** (for MS-DOS) or **lcf_env.sh** (for bash shell)

Common attributes for IBM Tivoli Monitoring for Databases: Oracle

This section describes the common attributes used in IBM Tivoli Monitoring for Databases: Oracle.

Status The returned response level on which the resource model triggered. Response levels are defined when adding a resource model. Depending on the resource model, response levels may be a default value or a user-defined value.

Normal is returned only when no severity levels are exceeded and the resource model is set to always return a value.

Warning, **Severe**, or **Critical** is returned when a severity threshold is broken.

application_label
The registered object's Tivoli Management Environment (TME) label, for example, v901@merfox.

application_oid
The registered object's Tivoli Management Environment (TME) object identifier.

application_class
The registered object's Tivoli Management Environment (TME) class, for example: OracleDatabaseManager or OracleInstanceManager.

application_version
The managed resource's version, for example, 8.1.7 , or 9.0.1.

ORACLE_SID
The Oracle Server ID.

ORACLE_HOME
The location of the Oracle binaries and libraries.

HOST The Tivoli management agent endpoint on which the Oracle database resource resides.

ENDPOINT_OID
The **OracleDatabaseManager** or **OracleInstanceManager** profile endpoint object ID. It is used internally by Tivoli and can be used for tracing activities with this object.

INTERP
The type of operating system on which the monitor executes, such as Solaris or Windows NT.

Chapter 2. Resource models

This chapter contains detailed information about the IBM Tivoli Monitoring for Databases: Oracle resource models for IBM Tivoli Monitoring for Databases: Oracle. Resource models capture and return information, such as database status and server availability, about a resource or software application in the Tivoli management environment. You can change many of the settings for a resource model to customize it for your monitoring needs.

In this reference guide, a section for each resource model describes the configuration of the resource model by covering the following information, including the settings that you can change:

Description
Purpose of the resource model and a table that contains an overview of the resource model. The overview table contains the following information about the resource model:

- Internal name

  Name of the resource model as you use it in the command line.
- Category

  Type of operating system on which the resource model runs.
- Indications

  List of indications for the resource model. A resource model generates an indication if certain conditions implied by the resource model settings are not satisfied in a given cycle. The resource model uses an algorithm to determine the combination of settings that generates an indication.
- Tasks and built-in actions

  List of tasks and built-in actions for the resource model, if any. For any event, recovery actions, such as Tivoli Management Framework tasks or built-in actions, can be run automatically. The actions can take positive steps to remedy the situation, and can ensure that information about the event is distributed to the appropriate authorities or entities.
- Default cycle time

  Specifies the default cycle time for the resource model. Cycle time is the duration of the interval within which a resource model gathers data. Each of the resource models supplied with the software has a default cycle time, which you can modify according to your needs.

Target managed resource
Name of the managed resource (OracleDatabaseManager or OracleInstanceManager) to which this resource model is relevant.

Indications and events
Information about all of the indications for the resource model in table format and a section of more specific information about each indication.

The table contains the following information for each indication:

- Event

  An event verifies the persistence of a given indication by eliminating unrepresentative highs and lows for the indication.
- Default severity

Indicates how serious an event is if it is triggered, for example: fatal, critical, warning, harmless, or minor.

- Clearing events

  Specifies whether the resource model has clearing events: Yes or No. A *clearing event* is a resource model function that, if enabled, allows IBM Tivoli Monitoring to close an error event when the circumstances that caused the event are no longer present. Clearing events can be processed by the Tivoli Enterprise Console server and by Tivoli Business Systems Manager.

- Page

  Page number where the indication is described in this guide.

Each section about a specific indication contains the following information:

- When the resource model sends the indication and why
- List of the attributes for the indication and notation regarding which attributes are keys
- Table that describes the following default settings for the indication:
  - Send indications to Tivoli Enterprise Console

    Specifies whether the resource model sends indications to Tivoli Enterprise Console: YES or NO. If YES and Tivoli Enterprise Console is installed, IBM Tivoli Monitoring sends indications to Tivoli Enterprise Console. If Tivoli Business Systems Manager is installed, Tivoli Enterprise Console sends the indications to Tivoli Business Systems Manager.
  - Send indications to Tivoli Business Systems Manager

    Specifies whether IBM Tivoli Monitoring sends indications to Tivoli Business Systems Manager. The default is NO. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.
  - Occurrences

    The number of occurrences refers to how many consecutive times the problem reported by the indication occurs before sending an indication.
  - Holes

    The number of holes refers to the number of cycles during which an indication does not occur for a given resource model. In other words, holes are the number of cycles during which none of the conditions specified for the generation of any indication are met.
  - Associated tasks and built-in actions

    List of tasks and built-in actions associated with the indication.

Thresholds

List of the thresholds, if any, for the resource model in a table format with a short description and default value for each threshold associated with the resource model. A threshold is a named property of the resource with a default value that you can modify. Typically, the value of a threshold represents a significant reference level of a performance-related entity, which, if exceeded or not reached, a system administrator might want to know about.

Parameters

List of parameters, if any, for the resource model in a table format with a short description and default value for each threshold associated with the

resource model. A parameter can take the form of a list of strings, a list of numeric values, a list of predetermined Boolean values from which you can make any combination of selections, or a choice list of mutually exclusive alternatives. Some resource models provide parameters with the selective logging feature. Use these parameters to choose specific metrics to log.

Tasks and built-in actions
List of tasks and built-in actions including a description of each one.

Logging
A table shows the name of the managed resource, context, and properties that the resource model logs with key properties noted. The resource model does not log data by default. You can enable logging to collect data for any endpoint and write it in a local database. You can store raw or aggregated data and view it through the Web Health Console. Some resource models provide parameters with the selective logging feature. Use these parameters to choose specific metrics to log.

Return codes
Information that the resource model returns such as status or availability.

CLI example
Example of the syntax for a resource model that illustrates the variable options of the **wdmeditprf** command that are specific to the resource model such as the name of the resource model, thresholds, parameters, parameter values, and events.

See the *Working with resource models* chapter of the *IBM Tivoli Monitoring for Databases: Oracle User's Guide* for more information on resource models and resource model customization.

Return codes

Table 2 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

Table 2. Resource model return codes

Return Code	Description	Action
1	The resource model was distributed to an incorrect target managed resource. Possibly, the resource model was distributed to an endpoint or DB2 object instead of the OracleDatabaseManager or OracleInstanceManager.	Distribute the resource model to either the OracleDatabaseManager or the OracleInstance Manager. See the ″Target managed resource″ section for the correct managed resource for each resource model.
2	The resource model was distributed to the wrong object version. This may be seen in resource models that are specific to a particular version of Oracle, such as UndoSpace and PGA, which only run on Oracle 9i.	Distribute the resource model to the proxy object for the supported Oracle version.

Table 2. Resource model return codes (continued)

Return Code	Description	Action
3	The resource model has an invalid parameter configuration. Possibly, the parameter value was out of the supported range, or an invalid type.	Provide valid parameters. The ″Parameters″ section for each resource model in this guide lists valid parameters for each resource model.
4	The resource model has an invalid threshold value. Possibly, the threshold value is one of the following: not within the specified range, not an integer value, or less than 0.	Provide valid thresholds. The ″Thresholds″ section for each resource model in this guide lists valid thresholds for each resource model.
5	The resource is unavailable. Possibly, the Oracle Listener or database is not running.	Consider restarting the unavailable resource if this is desirable. It is possible that the resource may be unavailable by intention.You can start the Oracle Listener by running the Listener task described on 351. For instructions on starting a database, see the IBM Tivoli Monitoring for Databases: Oracle User's Guide.
6	The data that was collected from a resource is determined to be invalid. Possibly, this code could appear if a database column is of a different type than the one that is expected (for example, a string instead of a number).	Check the **trace_dmxengine.log** to see what metric is affected.
7	An error occurred while collecting data. This code appears when an exception is thrown from the Java instrumentation.	Check the **trace_dmxengine.log** and the **$LCF_DATDIR/LCFNEW/AMG/logs** directory for details. In some cases, the error may be recoverable and the Java code that threw the exception may have printed detailed information in these files. Additionally, you can contact Customer Support.
8	An unknown error has occurred.	Contact Customer Support, or check the **trace_dmxengine.log** and the **$LCF_DATDIR/LCFNEW/AMG/logs** directory for details.

Table 3 contains the internal name and a brief description of each IBM Tivoli Monitoring for Databases: Oracle resource model. The sections of information about each resource model follow the table in alphabetical order.

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models

Resource model	Internal Name	Description
"Advanced Queue" on page 15	OracleAdvancedQueue	Monitors for any messages waiting for an unreasonable amount of time and if there are potential performance bottlenecks.

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models (continued)

Resource model	Internal Name	Description
"Archive Destinations" on page 35	OracleArchiveDest	Monitors the Oracle archive logs and the amount of free space (in kilobytes), and the percentage of free space in the Oracle archive log destination.
"Checkpoints" on page 50	OracleCheckpoints	Monitors the number of times a database writer (DBWR) checkpoint is completed, and the number of database writer checkpoints requested by the server.
"Data Warehouse Collector" on page 55	OracleDataWarehouse	Collects attribute data required by the Tivoli Enterprise Data Warehouse. This resource model must be running to allow complete integration of IBM Tivoli Monitoring for Databases: Oracle into the Tivoli Enterprise Data Warehouse.
"Dump Space" on page 61	OracleDumpSpace	Monitors the used space percentage for the dump destination directories.
"Extents" on page 65	OracleExtents	Alerts on those database objects whose number of currently allocated extents exceeds the specified threshold.
"Extents by Tablespace" on page 69	OracleExtentsBy Tablespace	Alerts on those database objects for the specified tablespaces whose number of currently allocated extents exceeds the specified threshold.
"Extents by User" on page 74	OracleExtentsByUser	Alerts on those database objects for the specified user whose number of currently allocated extents exceeds the specified threshold.
"Free Space Deficit" on page 79	OracleFreeSpaceDeficit	Checks whether any segments are unable to allocate their next extent because of insufficient free space in the tablespace, and not because the segments reached MAXEXTENTS.
"Free Space Deficit By Tablespace" on page 84	OracleFreeSpaceDeficit ByTablespace	Checks whether any segments, within specified tablespaces, are unable to allocate their next extent because of insufficient free space in the tablespace, and not because the segments reached MAXEXTENTS.
"Free Space Deficit by User" on page 89	OracleFreeSpaceDeficit ByUser	Checks whether any segments, for a specified user, are unable to allocate their next extent because of insufficient free space in the tablespace, and not because the segments reached MAXEXTENTS.
"Free Space Fragmentation" on page 94	OracleFreeSpace Fragmentation	Monitors the free space fragmentation index over all tablespaces within an Oracle instance.
"Free Space Fragmentation by Tablespace" on page 98	OracleFreeSpace FragmentationBy Tablespace	Monitors the free space fragmentation index for specified tablespaces within an Oracle instance.

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models (continued)

Resource model	Internal Name	Description
"Free Tablespace" on page 102	OracleFreeTablespace	Monitors the percentage of free space for each tablespace in a database.
"Free Tablespace by Tablespace" on page 106	OracleFree TablespaceBy Tablespace	Monitors the percentage of free space for the specified tablespaces.
"Full Table Scan" on page 110	OracleFullTableScan	Monitors the percentage of full table scans from long tables, and reports the percentage of total rows retrieved from full table scans.
"I/O" on page 115	OracleIO	Monitors the number of physical reads and physical writes for the datafiles in the database.
"Job Queue" on page 120	OracleJobQueue	Monitors the number of broken, failed, and past due jobs in the job queue.
"Listener State" on page 126	OracleListenerState	Monitors the state of the Oracle listeners.
"Lock" on page 133	OracleLock	Monitors the following information: • The total number of deadlocks detected since the instance was started • The current number of Data Manipulation Language locks as a percentage of the maximum number of locks defined for the instance • The number of active locks of a user-specified type • The number of times an enqueue lock was requested and was not granted immediately
"Log Event" on page 147	OracleLogEvent	Monitors events in the Oracle background log for Oracle errors.
"Maximum Extents" on page 156	OracleMaximumExtents	Alerts on those segments whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.
"Maximum Extents by Tablespace" on page 160	OracleMaximumExtents ByTablespace	Alerts on segments, in specified tablespaces, whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.
"Maximum Extents by User" on page 165	OracleMaximumExtents byUser	Alerts on segments, for a specified user, whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models (continued)

Resource model	Internal Name	Description
"Multi-Threaded Server" on page 170	OracleMTS	Monitors the following information: • The percentage of time that dispatcher processes for the protocol with the most contention are busy • The time (in hundredths of a second) that a response waits in the response queue for a dispatcher process to route it, for the protocol with the longest average wait time • The current number of shared-server processes as a percentage of the instance limit • Reports the average wait time (in hundredths of a second) that a request waits in the request queue
"Other Performance Monitors" on page 179	OracleOther Performance	Monitors the following performance-related metrics of an Oracle database: • Which session has the greatest number of open cursors, which the resource model reports as a percentage of the limit defined by the **OPEN_CURSORS** initialization parameter for the instance • The block get rate, which is the basic measure of the rate at which the application system references the database • The percentage of blocks accessed that were updated • The ratio of cluster key scan block gets to cluster key scans (If the ratio exceeds one, the rows for a cluster key are stored in multiple data blocks.) • The ratio, as a percentage, of freelist waits to the total number of requests for data • The current number of Oracle processes as a percentage of the instance maximum • The sort overflow percentage, which yields the number of sorts that are using temporary segments • The number of rows in the SYS.DUAL table • The current system-wide value from **V$SYSSTAT** for the specified statistic

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models (continued)

Resource model	Internal Name	Description
"Other Storage" on page 196	OracleOtherStorage	Monitors the following information: • The percentage of rows retrieved that extend over more than one block, which is called chained rows • The number of chained rows calculated for a specified cluster in the endpoint database • The number of chained rows, calculated for a specified table in the endpoint database • The percentage of deleted rows from the user-specified index that have not been repopulated • The number of datafiles that can be added before the database reaches the maximum number of datafiles allowed
"PGA" on page 209	OraclePGA	Monitors the following in the program global area: • Multipass Executions • Optimal Percentage • Work Area Percentage • Component Area
"Process State" on page 218	OracleProcessState	Monitors the state of Oracle specific processes.
"RDBMS State" on page 223	OracleRDBMSState	Monitors the state of an Oracle database instance.
"Recursive Calls" on page 234	OracleRecursiveCalls	Monitors the following information: • Recursive Call Percentage • User Calls • Recursive Calls • Recursive Call Percentage • Recursive Call Rate

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models (continued)

Resource model	Internal Name	Description
"Redo Log" on page 242	OracleRedoLog	Monitors the following: • As a percentage, the ratio of misses to gets for the redo allocation latch, and redo copy latch • The number of times that a user process was unable to allocate space in the redo log buffer • The number of redo log files that have not been archived, which indicates that the archive process is falling behind • As a percentage, the ratio of the total number of redo small copies to the total number of redo entries • The average size of a redo entry, which is calculated as the total redo size in bytes, divided by the number of redo entries
"Rollback Segment" on page 253	OracleRollbackSegment	Monitors the following information: • As a percentage, the ratio of rollback segment header waits to rollback segment header gets • The ratio of user rollbacks to the total number of transactions • The ratio of consistent changes to consistent gets
"SGA" on page 259	OracleSGA	Monitors the following: • The rate at which Oracle finds the data blocks it needs in memory over the lifetime of an instance and for the current monitoring interval • The effectiveness of the dictionary cache over the lifetime of an instance and for the current monitoring interval • The percentage of entries in the library cache that were parsed more than once (reloads) over the lifetime of the instance and for the current monitoring interval
"SQL Number" on page 284	OracleFreeForm SQLNumber	Queries a resource for a numeric value as specified by a user-defined SQL select statement.
"SQL String" on page 294	OracleFreeFormSQL String	Queries a resource for an alphanumeric value that is specified by a user-defined SQL select statement.
"Temporary Extents" on page 300	OracleTemporary Extents	Alerts on those temporary segments whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.

Table 3. IBM Tivoli Monitoring for Databases: Oracle resource models (continued)

Resource model	Internal Name	Description
"Temporary Extents by Tablespace" on page 304	OracleTemporary ExtentsByTablespace	Alerts on those temporary segments within specified tablespaces whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.
"Temporary Extents by User" on page 309	OracleTemporary ExtentsByUser	Alerts on those temporary segments for a specified user whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.
"Transaction" on page 313	OracleTransaction	Monitors the following: • Possible issues and bottlenecks in the SQL or database design • Whether any transactions are locked by another user, and returns the longest time, in seconds, that a transaction has been blocked • The total number of active transactions as a percentage of the TRANSACTIONS initialization parameter for the instance • The number of client requests made per transaction • The amount of DML (Data Manipulation Language) work that each transaction performs • An overview of the work rate being run against the instance • The identity of long-running transactions and how long those transactions have been running
"Undo Space" on page 326	OracleUndoSpace	Monitors the No Space Error and Snapshot Too Old Error undo errors.

Advanced Queue

Description

Monitors the following:

- The number of messages in a user-specified queue that are in one of the following states: WAITING, READY or EXPIRED
- The progress of the propagation of a queue
- Any anomalies caused by the network or the destination to which the queue is attempting to propagate
- Messages that could not be propagated and have been recorded as errors
- The number of messages in the READY state in each queue and the total waiting time of each message in days, hours, minutes, or seconds
- The number of bytes-per-second that have been propagated over all enabled schedules or over a particular queue in a user-specified schedule
- The number of messages in the READY state in each queue, and the average waiting time of each message in days, hours, minutes, or seconds

Use this resource model to find out if messages have been waiting for an unreasonable amount of time and if there are potential performance bottlenecks. A large number of messages in the READY state shows an anomaly with the message processing. A queue with multiple messages in the READY state can indicate problems with the dequeue process or problems with the queue destination. A known outage might also cause multiple messages in the READY state, but if not, you should alert the DBA that a problem exists.

Use the High Error Count metric to monitor queue propagation failure. Possible reasons for propagation failure include the following:

- Database link failure
- Remote database unavailable
- Remote queue does not exist
- Security violation during message enqueue to remote queue

When an error occurs in a propagation schedule, Oracle attempts to propagate the messages periodically for a limited number of times, then disables the schedule. If the problem causing the error is fixed before the schedule is disabled, the error messages continue to show error information. The error information stops displaying only after successful propagation of the messages in that schedule. If you do not resolve the errors, hours or days can elapse between propagation attempts. If this occurs, consider unscheduling the propagation and reset the schedule.

You can use the output from the Low Average Message Propagation Rate metric to tune the various parameters in the schedule and ensure that the schedule is optimized. For example, if a queue propagates data at a certain rate, run the resource model on a regular basis and alert the DBA if the propagation falls below the normal rate. A drop in the propagation rate can indicate network problems with operations between instances.

Resource model overview	
Internal name	OracleAdvancedQueue
Category	Oracle

Resource model overview	
Indications	**High Average Ready Message Waiting Time In Days** occurs when the ready message waiting time in days exceeds the specified threshold.
	High Average Ready Message Waiting Time In Hours occurs when the ready message waiting time in hours exceeds the specified threshold.
	High Average Ready Message Waiting Time In Minutes occurs when the ready message waiting time in minutes exceeds the specified threshold.
	High Average Ready Message Waiting Time In Seconds indication occurs when the average ready message waiting time in seconds exceeds the specified threshold.
	High Error Count occurs when the error count exceeds the specified threshold.
	High Number of Messages occurs when the number of messages exceeds the specified threshold.
	High Total Ready Message Waiting Time In Days occurs when the total ready message waiting time in days exceeds the specified threshold.
	High Total Ready Message Waiting Time In Hours occurs when the total ready message waiting time in hours exceeds the specified threshold.
	High Total Ready Message Waiting Time In Minutes occurs when the total ready message waiting time in minutes exceeds the specified threshold
	High Total Ready Message Waiting Time In Seconds occurs when the total ready message waiting time in seconds exceeds the specified threshold.
	Low Average Message Propagation Rate occurs when the average message propagation rate is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	300 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication.

Indication	Generated event	Default severity	Clearing events	Page
High Average Ready Message Waiting Time In Days	Oracle_High_TotalReadyMessage WaitingTimeInDays	Critical	Yes	18
High Average Ready Message Waiting Time In Hours	Oracle_High_AverageReady MessageWaitingTimeInHours	Critical	Yes	19
High Average Ready Message Waiting Time In Minutes	Oracle_High_AverageReady MessageWaitingTimeInMinutes	Critical	Yes	20
High Average Ready Message Waiting Time In Seconds	Oracle_High_AverageReady MessageWaitingTimeInSeconds	Critical	Yes	21
High Error Count	Oracle_High_MessagePropagation ErrorCount	Critical	Yes	22
High Number of Messages	Oracle_High_NumberOfMessages	Critical	Yes	23
High Total Ready Message Waiting Time In Days	Oracle_High_AverageReady MessageWaitingTimeInDays	Critical	Yes	24
High Total Ready Message Waiting Time In Hours	Oracle_High_TotalReady MessageWaitingTimeInHours	Critical	Yes	25
High Total Ready Message Waiting Time In Minutes	Oracle_High_TotalReadyMessage WaitingTimeInMinutes	Critical	Yes	26

Indication	Generated event	Default severity	Clearing events	Page
High Total Ready Message Waiting Time In Seconds	Oracle_High_TotalReady MessageWaitingTimeInSeconds	Critical	Yes	27
Low Average Message Propagation Rate	Oracle_Low_ AverageMessagePropagationRate	Critical	Yes	28

High Average Ready Message Waiting Time In Days indication

Occurs when the average ready message waiting time in days exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The average waiting time for messages in the READY
state for the Oracle Queue <QueueOwner>.<QueueName>
on database <DatabaseName> has crossed above the predefined threshold
<Threshold> and is currently at <AverageReadyWait> days.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AverageReadyWait
The average wait time of all READY messages in the queue.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Maximum Average Ready Waiting Time

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Average Ready Message Waiting Time In Hours indication

Occurs when the average ready message waiting time in hours exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The average waiting time for messages in the READY state
for the Oracle Queue <QueueOwner>.<QueueName> on
database <DatabaseName> has crossed above the predefined threshold
<Threshold> and is currently at <AverageReadyWait> hours.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AverageReadyWait
The average wait time of all READY messages in the queue.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Maximum Average Ready Waiting Time

For more information about these thresholds, see “Thresholds” on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Average Ready Message Waiting Time In Minutes indication

Occurs when the average ready message waiting time in minutes exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The average waiting time for messages in the READY state
for the Oracle Queue <QueueOwner>.<QueueName> on database
<DatabaseName> has crossed above the predefined threshold <Threshold>
and is currently at <AverageReadyWait> minutes.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AverageReadyWait
The average wait time of all READY messages in the queue.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Maximum Average Ready Waiting Time

For more information about these thresholds, see “Thresholds” on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Average Ready Message Waiting Time In Seconds indication

Occurs when the average ready message waiting time in seconds exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The average waiting time for messages in the READY state
for the Oracle Queue <QueueOwner>.<QueueName> on database
<DatabaseName> has crossed above the predefined threshold <Threshold>
and is currently at <AverageReadyWait> seconds.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AverageReadyWait
The average wait time of all READY messages in the queue.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Maximum Average Ready Waiting Time

For more information about these thresholds, see “Thresholds” on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Error Count indication

Occurs when the error count exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of messages that could not be propagated and have
been recorded as errors for the Oracle Queue <QueueOwner>.<QueueName>
on database <DatabaseName> has crossed above the predefined threshold
<Threshold> and is currently at <Failures>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Destination
The destination name for the queue. This name is currently limited to be a DBLINK name.

Failures
The number of times the execution failed. If this number is 16, the schedule will be disabled.

LastErrorDate
The date of the most recent unsuccessful execution.

LastErrorMsg
The error number and error message text for the most recent unsuccessful execution.

LastErrorTime
The time of the most recent unsuccessful execution.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Maximum Message Propagation Error Count

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Number of Messages indication

Occurs when the number of messages exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of messages in state <MessageStatus>
for the Oracle Queue <QueueOwner>.<QueueName> on database
<DatabaseName> has crossed above the predefined threshold <Threshold>
and is currently at <NumberOfMessages>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

MessageStatus
Displays the current status of the dispatcher. Status includes:

- WAIT – dispatcher is idle
- SEND – dispatcher is sending a message
- RECEIVE – dispatcher is receiving a message
- CONNECT – dispatcher is establishing a connection
- DISCONNECT – dispatcher is handling a disconnect request

- BREAK – dispatcher is handling a break
- TERMINATE – dispatcher is in the process of terminating
- ACCEPT – dispatcher is accepting connections
- REFUSE – dispatcher is rejecting connections

NumberOfMessages
The number of key messages in the <*MessageStatus*> state.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Maximum Number of Messages

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Total Ready Message Waiting Time In Days indication

Occurs when the total ready message waiting time in days exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of messages in the READY state that have been
waiting an inordinate amount of time for the Oracle Queue
<QueueOwner>.<QueueName> on database <DatabaseName>
has crossed above the predefined threshold <Threshold> days and is currently
at <TotalReadyWait>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8

characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

TotalReadyWait
The total wait time for all READY messages in the queue.

This indication has the following thresholds:

- Maximum Total Ready Waiting Time

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Total Ready Message Waiting Time In Hours indication

Occurs when the total ready message waiting time in hours exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of messages in the READY state that have been
waiting an inordinate amount of time for the Oracle Queue
<QueueOwner>.<QueueName> on database <DatabaseName> has
crossed above the predefined threshold <Threshold> hours and is currently
at <TotalReadyWait>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

TotalReadyWait
The total wait time for all READY messages in the queue.

This indication has the following thresholds:

- Maximum Total Ready Waiting Time

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Total Ready Message Waiting Time In Minutes indication

Occurs when the total ready message waiting time in minutes exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of messages in the READY state that have been
waiting an inordinate amount of time for the Oracle Queue
<QueueOwner>.<QueueName> on database <DatabaseName>
has crossed above the predefined threshold <Threshold> minutes and is currently
at <TotalReadyWait>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

TotalReadyWait
The total wait time for all READY messages in the queue.

This indication has the following thresholds:

- Maximum Total Ready Waiting Time

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Total Ready Message Waiting Time In Seconds indication

Occurs when the total ready message waiting time in seconds exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of messages in the READY state that have been
waiting an inordinate amount of time for the Oracle Queue
<QueueOwner>.<QueueName> on database
<DatabaseName> has crossed above the predefined threshold
<Threshold> seconds and is currently at <TotalReadyWait>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

TotalReadyWait
The total wait time for all READY messages in the queue.

This indication has the following thresholds:

- Maximum Total Ready Waiting Time

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Average Message Propagation Rate indication

Occurs when the average message propagation rate is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of bytes-per-second that have been propagated
over the Oracle Queue <QueueOwner>.<QueueName> on
database <DatabaseName> has crossed below the predefined threshold
<Threshold> and is currently at
<AverageMessagePropagationRate> bytes-per-second.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AverageMessagePropagationRate
The average propagation rate for the queue. The propagation rate is the total number of bytes propagated in this schedule divided by the total time, in seconds, spent by the system in executing this schedule.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

QueueName
The name of the specified queue.

QueueOwner
The username of the queue owner.

This indication has the following thresholds:

- Minimum Average Message Propagation Rate Threshold

For more information about these thresholds, see "Thresholds" on page 29.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Advanced Queue resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Message Propagation Error Count	An indication occurs when the number of messages that could not be propagated and were recorded as errors exceeds this value.	1
Maximum Average Ready Waiting Time	An indication occurs when the number of days, hours, minutes, or seconds that the average time READY messages have been waiting in a queue exceeds this value.	1
Maximum Number of Messages	An indication occurs when the number of messages with the specified Message Status exceeds this value.	100
Maximum Total Ready Waiting Time	An indication occurs when the number of days, hours, minutes, or seconds that the total time READY messages have been waiting in a queue exceeds this value.	1
Minimum Average Message Propagation Rate Threshold	An indication occurs when the number of bytes-per-second that have been propagated over a queue is lower than this value.	7000

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Advanced Queue resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Message Status	Specifies the appropriate message status that the resource model monitors.	EXPIRED
Queue Name	Specifies the schema and queue to be monitored, separated by a period (scott.MESSAGE_QUEUE_1). You can also enter a queue name only (MESSAGE_QUEUE_1) or leave the field blank to execute the resource model on all the queues in the database.	None
Time Interval	This interval can be set for days, hours, minutes, or seconds.	Days
Queue Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Average Ready Message Waiting Time In Days Average Ready Message Waiting Time In Hours Average Ready Message Waiting Time In Minutes Average Ready Message Waiting Time In Seconds Expired Ready Total Ready Message Waiting Time In Days Total Ready Message Waiting Time In Hours Total Ready Message Waiting Time In Minutes Total Ready Message Waiting Time In Seconds Waiting

Parameter	Description	Default value
Queue Schedule Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Failures Last Error Date Last Error Message Last Error Time Message Propagation Rate

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleQueue	Message Queue	**AverageReadyMessageWaitingTimeInDays** The average wait time in days of all READY messages in the queue. **AverageReadyMessageWaitingTimeInHours** The average wait time in hours of all READY messages in the queue. **AverageReadyMessageWaitingTimeInMinutes** The average wait time in minutes of all READY messages in the queue. **AverageReadyMessageWaitingTimeInSeconds** The average wait time in seconds of all READY messages in the queue. **Expired** The number of queue messages in the EXPIRED state. **OracleDatabase.DatabaseName*** The name of an Oracle database. **QueueName*** The name of the specified queue. **QueueOwner*** The username of the queue owner. **Ready** The number of queue messages in the READY state. **TotalReadyMessageWaitingTimeInDays** The total wait time in days for all READY messages in the queue. **TotalReadyMessageWaitingTimeInHours** The total wait time in hours for all READY messages in the queue. **TotalReadyMessageWaitingTimeInMinutes** The total wait time in minutes for all READY messages in the queue. **TotalReadyMessageWaitingTimeInSeconds** The total wait time in seconds for all READY messages in the queue. **Waiting** The number of queue messages in the state WAITING state.

Managed resource	Context	Properties
OracleQueue Schedule	Message Queue	**Destination*** The destination name for the queue. This name is currently limited to be a DBLINK name. **Failures** The number of times the execution failed. If this number is 16, the schedule will be disabled. **MessagePropagationRate** The message propagation rate for the queue. The propagation rate is the total number of bytes propagated in this schedule divided by the total time, in seconds, spent by the system in executing this schedule. **LastErrorDate** The date of the most recent unsuccessful execution. **LastErrorMsg** The error number and error message text for the most recent unsuccessful execution. **LastErrorTime** The time of the most recent unsuccessful execution. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleQueue.QueueName*** The name of the specified queue. **OracleQueue.QueueOwner*** The username of the queue owner.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleAdvancedQueue -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_AverageReadyWaitingTime 1.000000 \
-t Oracle_Maximum_MessagePropagationErrorCount 1.000000 \
-t Oracle_Maximum_NumberOfMessages 100.000000 \
-t Oracle_Maximum_TotalReadyWaitingTime 1.000000 \
-t Oracle_Minimum_AverageMessagePropagationRate 7000.000000 \
-AddPar QueueScheduleMetrics "numMessagePropagationRate" \
-AddPar QueueScheduleMetrics "numFailures" \
-AddPar QueueScheduleMetrics "strLastErrorDate" \
-AddPar QueueScheduleMetrics "strLastErrorTime" \
-AddPar QueueScheduleMetrics "strLastErrorMsg" \
-AddPar QueueMetrics "numTotalReadyMessageWaitingTime" \
-AddPar QueueMetrics "numReady" \
-AddPar QueueMetrics "numWaiting" \
```

```
-AddPar QueueMetrics "numExpired" \
-AddPar QueueMetrics "numAverageReadyMessageWaitingTimeInSeconds" \
-AddPar QueueMetrics "numAverageReadyMessageWaitingTimeInMinutes" \
-AddPar QueueMetrics "numAverageReadyMessageWaitingTimeInHours" \
-AddPar QueueMetrics "numAverageReadyMessageWaitingTimeInDays" \
-AddPar Name "schema_name.MESSAGE_QUEUE_1" \
-AddPar TimeInterval "Days" \
-AddPar MessageStatus "READY" \
-e Oracle_High_AverageReadyMessageWaitingTimeInMinutes \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_AverageReadyMessageWaitingTimeInDays \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_TotalReadyMessageWaitingTimeInSeconds \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_TotalReadyMessageWaitingTimeInHours \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_MessagePropagationErrorCount \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_TotalReadyMessageWaitingTimeInMinutes \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_TotalReadyMessageWaitingTimeInDays \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_AverageMessagePropagationRate \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_AverageReadyMessageWaitingTimeInSeconds \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_AverageReadyMessageWaitingTimeInHours \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_NumberOfMessages \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Archive Destinations

Description

Monitors the Oracle archive logs. Monitors the amount of free space (in kilobytes), and the percentage of free space in the Oracle archive log destination. If the archive destination runs out of space, errors result from the inability to archive files. In Oracle 8i, you can specify up to five archive destinations and up to ten in Oracle 9. The **LOG_ARCHIVE_DEST** directory returns the following information about redo logs:

- The amount of free space (in kilobytes) to determine how many additional redo logs Oracle can create before the disk is full
- The amount of space (in kilobytes) used

Use this resource model only when the database is in ARCHIVELOG mode. Use this resource model to discover when to back up redo logs to tape or another disk on the local system or on a remote system as indicated by the **Low Free KB**, **Low Free Space Percentage**, and **Low Number of Redo Logs** indications.

When the archive process cannot archive a redo log because of insufficient space on the destination device, the database hangs until space is available. See the IBM Tivoli Monitoring for Databases: Oracle User's Guide for detailed information on managing redo log groups.

Resource model overview	
Internal name	OracleArchiveDest
Category	Oracle
Indications	**High Used KB** occurs when the used archive log destination space exceeds the specified threshold for Used KB.
	Invalid Archive Destination occurs when an Oracle archive destination is in a state other than VALID or INACTIVE.
	Low Free KB occurs when the free archive log destination space falls below the minimum threshold for Free KB.
	Low Free Space Percentage occurs when the percent of free archive log destination space falls below the minimum threshold for Free KB Percentage.
	Low Number of Redo Logs occurs when the number of Oracle redo logs that can be created for an archive destination falls below the defined threshold.
	No Archive Log Mode generates an event when the database is not in ARCHIVELOG mode.
Tasks and built-in actions	None
Default cycle time	3600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Used KB	Oracle_High_UsedKB	Critical	Yes	36
Invalid Archive Destination	Oracle_Invalid_ArchiveDestination	Critical	Yes	38
Low Free KB	Oracle_Low_FreeKB	Critical	Yes	39
Low Number of Redo Logs	Oracle_Low_NumberRedoLogs	Critical	Yes	43
Low Free Space Percentage	Oracle_Low_FreeSpacePercentage	Critical	Yes	41
No Archive Log Mode	Oracle_NotArchiving_LogMode	Critical	Yes	45

High Used KB indication

Occurs when the used archive log destination space in KB exceeds the threshold for Used KB. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The used space (KB) for the archive destination
<DestID> on Oracle instance <InstanceName> has crossed above the
predefined threshold of <Threshold> KB and is currently at <UsedKBytes> KB.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the percentage of free space on an archive destination is greater than the Maximum Used Space in KB threshold, consider doing one of the following:

- Change the archive destination by modifying either the **LOG_ARCHIVE_DEST** or **LOG_ARCHIVE_DEST_n** initialization parameter
- Move archive logs from that destination to another device
- Add disk space to the alerting destination

The indication has the following attributes:

Binding
: Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST).

DestID
: The archive destination identifier.

Destination
: The actual file or directory where the archive is stored.

Error The text of any last error.

FailBlock
: Any block number at last error.

FailDate
The date and time of any last error.

FailSequence
Any log sequence number at last error.

FreeKBytes
Any unallocated space on the archive destination device.

FreeSpacePercentage
Percentage of unallocated space to the total capacity for the archive destination device.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

MountPoint
The file system directory that contains the data contents of a particular drive. For example, **/data**.

NameSpace
One of the following: SYSTEM is a system definition. SESSION is a session definition.

ArchivingStatus
The current status of the archive destination as one of the following:

- VALID — initialized and available
- INACTIVE — no destination information
- DEFERRED — disabled manually by the user
- ERROR — error during open or copy
- DISABLED — disabled after error
- BAD PARAM — parameter has errors

Target Identifies the target. PRIMARY will copy to primary. STANDBY will copy to standby.

TotalKBytes
The total capacity (in kilobytes) for the archive destination device.

UsedKBytes
Space (in kilobytes) of the archive destination device that is currently in use.

This indication has the following threshold:

- Maximum Used Space in KB

For more information about this threshold, see “Thresholds” on page 46.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1

Setting	Default value
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Invalid Archive Destination indication

Occurs when an Oracle Archive Destination is in a state other than VALID or INACTIVE. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Archive Destination <DestID> for Oracle Instance
<InstanceName> has status of <ArchivingStatus>. Error = <Error>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

You can change the state of the current Oracle archive destination or the archive destination by modifying either the **LOG_ARCHIVE_DEST** or **LOG_ARCHIVE_DEST_n** initialization parameter.

The indication has the following attributes:

Binding
Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST).

DestID
The archive destination identifier.

Destination
The actual file or directory where the archive is stored.

Error The text of any last error.

FailBlock
Any block number at last error.

FailDate
The date and time of any last error.

FailSequence
Any log sequence number at last error.

FreeKBytes
Any unallocated space on the archive destination device.

FreeSpacePercentage
Percentage of unallocated space to the total capacity for the archive destination device.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

MountPoint
The file system directory that contains the data contents of a particular drive. For example, **/data**.

NameSpace
One of the following: SYSTEM is a system definition. SESSION is a session definition.

ArchivingStatus
The current status of the archive destination as one of the following:

- VALID — initialized and available
- INACTIVE — no destination information
- DEFERRED — disabled manually by the user
- ERROR — error during open or copy
- DISABLED — disabled after error
- BAD PARAM — parameter has errors

Target Identifies the target. PRIMARY will copy to primary. STANDBY will copy to standby.

TotalKBytes
The total capacity (in kilobytes) for the archive destination device.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Free KB indication

Occurs when the free archive log destination space in KB falls below the minimum threshold for Free KB. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The free space (KB) for the archive destination
<DestID> on Oracle instance <InstanceName> has crossed below the
predefined threshold of <Threshold> KB and is currently
at <FreeKBytes> KB.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the percentage of free space on an archive destination is less than the Minimum Free Space Percentage threshold, consider doing one of the following:

- Change the archive destination by modifying the **LOG_ARCHIVE_DEST_n** initialization parameter
- Move archive logs from that destination to another device
- Add disk space to the alerting destination

The indication has the following attributes:

Binding
Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST).

DestID
The archive destination identifier.

Destination
The actual file or directory where the archive is stored.

Error The text of any last error.

FailBlock
Any block number at last error.

FailDate
The date and time of any last error.

FailSequence
Any log sequence number at last error.

FreeKBytes
Any unallocated space on the archive destination device.

FreeSpacePercentage
Percentage of unallocated space to the total capacity for the archive destination device.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

MountPoint
The file system directory that contains the data contents of a particular drive. For example, **/data**.

NameSpace
One of the following: SYSTEM is a system definition. SESSION is a session definition.

ArchivingStatus
The current status of the archive destination as one of the following:

- VALID — initialized and available
- INACTIVE — no destination information
- DEFERRED — disabled manually by the user
- ERROR — error during open or copy
- DISABLED — disabled after error
- BAD PARAM — parameter has errors

Target Identifies the target. PRIMARY will copy to primary. STANDBY will copy to standby.

Threshold
The specified minimum value for free space.

TotalKBytes
The total capacity (in kilobytes) for the archive destination device.

UsedKBytes
Space (in kilobytes) of the archive destination device that is currently in use.

This indication has the following threshold:

- Minimum Free Space in KB

For more information about this threshold, see "Thresholds" on page 46.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Free Space Percentage indication

Occurs when the percent of free archive log destination space falls below the minimum threshold for Free KB Percentage. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The free space percentage for the Oracle archive destination
<DestID> on Oracle Instance <InstanceName> has crossed
below the threshold of <Threshold> percent and is currently at
<FreeSpacePercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the percentage of free space on an archive destination is less than the Minimum Free Space Percentage threshold, consider doing one of the following:

- Change the archive destination by modifying the **LOG_ARCHIVE_DEST_n** initialization parameter
- Move archive logs from that destination to another device
- Add disk space to the alerting destination

The indication has the following attributes:

Binding
Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST).

DestID
The archive destination identifier.

Destination
The actual file or directory where the archive is stored.

Error The text of any last error.

FailBlock
Any block number at last error.

FailDate
The date and time of any last error.

FailSequence
Any log sequence number at last error.

FreeSpacePercentage
Percentage of unallocated space to the total capacity for the archive destination device.

FreeKBytes
Any unallocated space on the archive destination device.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

MountPoint
The file system directory that contains the data contents of a particular drive. For example, **/data**.

NameSpace
One of the following: SYSTEM is a system definition. SESSION is a session definition.

ArchivingStatus
The current status of the archive destination as one of the following:

- VALID — initialized and available
- INACTIVE — no destination information
- DEFERRED — disabled manually by the user

- ERROR — error during open or copy
- DISABLED — disabled after error
- BAD PARAM — parameter has errors

Target Identifies the target. PRIMARY will copy to primary. STANDBY will copy to standby.

TotalKBytes
The total capacity (in kilobytes) for the archive destination device.

UsedKBytes
Space (in kilobytes) of the archive destination device that is currently in use.

This indication has the following threshold:

- Minimum Free Space Percentage

For more information about this threshold, see "Thresholds" on page 46.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Number of Redo Logs indication

Occurs when the number of creatable Oracle redo logs for an archive destination falls below the defined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of creatable Oracle redo logs
for Oracle Instance <InstanceName> has crossed below the predefined
threshold of <Threshold> and is currently at <NumberRedoLogs>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the number of redo logs available to create is less than the Minimum Number of Redo Logs threshold, consider doing one of the following:

- Change the archive destination by modifying the **LOG_ARCHIVE_DEST_n** initialization parameter
- Move archive logs from that destination to another device

- Add disk space to the alerting destination

The indication has the following attributes:

Binding
Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST).

DestID
The archive destination identifier.

Destination
The actual file or directory where the archive is stored.

Error The text of any last error.

FailBlock
Any block number at last error.

FailDate
The date and time of any last error.

FailSequence
Any log sequence number at last error.

FreeKBytes
Any unallocated space on the archive destination device.

FreeSpacePercentage
Percentage of unallocated space to the total capacity for the archive destination device.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

MountPoint
The file system directory that contains the data contents of a particular drive. For example, **/data**.

NameSpace
One of the following: SYSTEM is a system definition. SESSION is a session definition.

NumberRedoLogs
Number of redo logs which can be archived in the available archive destination space.

ArchivingStatus
The current status of the archive destination as one of the following:
- VALID — initialized and available
- INACTIVE — no destination information
- DEFERRED — disabled manually by the user
- ERROR — error during open or copy
- DISABLED — disabled after error
- BAD PARAM — parameter has errors

Target Identifies the target. PRIMARY will copy to primary. STANDBY will copy to standby.

TotalKBytes
The total capacity (in kilobytes) for the archive destination device.

UsedKBytes
Space (in kilobytes) of the archive destination device that is currently in use.

This indication has the following threshold:

- Minimum Number of Redo Logs

For more information about this threshold, see "Thresholds" on page 46.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

No Archive Log Mode indication

Occurs when the Oracle archive destination is not archiving. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle Archive Destination is not archiving.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

LogMode
Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Archive Destinations resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Used Space in KB	An indication occurs if the acceptable limit of used space in KB for the Oracle Archive Log destination mount point exceeds this value.	1024000000*
Minimum Free Space in KB	An indication occurs if the acceptable limit of free space in KB for the Oracle Archive Log destination mount point is lower than this value.	5120
Minimum Number of Redo Logs	An indication occurs if the number of redo logs that can still be created on the Oracle Archive Log destination mount point is lower than this value.	5
Minimum Free Space Percentage	An indication occurs if the acceptable limit of free space percentage for the Oracle Archive Log destination mount point is lower than this value.	15
* Note: The default value for the Maximum Used Space in KB threshold is set artificially high. Reset this value for a lower value to use this monitoring metric.		

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameter that can be set for the Archive Destination resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Logging Options +	Select the metrics you want to log. See the following logging table for a description of each metric.	Binding Free KBytes Free Space Percentage Log Mode Number of Redo Logs Status Total KBytes Used KBytes

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleArchiveDest	Storage	**Binding** Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST). **DestID*** The archive destination identifier. **FreeKBytes** Any unallocated space on the archive destination device. **FreeSpacePercentage** Percentage of unallocated space to the total capacity for the archive destination device. **LogMode** Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG. **NumberRedoLogs** Number of redo logs which can be archived in the available archive destination space. **OracleDatabase.DatabaseName*** The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file. **OracleInstance.InstanceName*** The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleArchiveDest	Storage	**Status** The current status of the archive destination as one of the following: • VALID — initialized and available • INACTIVE — no destination information • DEFERRED — disabled manually by the user • ERROR — error during open or copy • DISABLED — disabled after error • BAD PARAM — parameter has errors **TotalKBytes** The total capacity (in kilobytes) for the archive destination device. **UsedKBytes** Space (in kilobytes) of the archive destination device that is currently in use.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleArchiveDest -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_UsedKB 1024000000.000000 \
-t Oracle_Minimum_FreeSpacePercentage 15.000000 \
-t Oracle_Minimum_FreeKB 5120.000000 \
-t Oracle_Minimum_NumberRedoLogs 5.000000 \
-AddPar LoggedMetrics "strLogMode" \
-AddPar LoggedMetrics "strBinding" \
-AddPar LoggedMetrics "strStatus" \
-AddPar LoggedMetrics "numTotalKBytes" \
-AddPar LoggedMetrics "numNumberRedoLogs" \
-AddPar LoggedMetrics "numFreeKBytes" \
-AddPar LoggedMetrics "numUsedKBytes" \
-AddPar LoggedMetrics "numFreeSpacePercentage" \
-e Oracle_High_UsedKB \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_NotArchiving_LogMode \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_FreeSpacePercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_FreeKB \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Invalid_ArchiveDestination \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_NumberRedoLogs \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Checkpoints

Description

Monitors the number of times a database writer (DBWR) checkpoint is completed, and the number of database writer checkpoints requested by the server.

During database activity, data is written to memory buffers. A *checkpoint* is the completion of writing a modified (dirty) block buffer to storage. The database writer (DBWR) process writes dirty buffers in the database buffer cache to the data files for the purpose of making the data files consistent with the changes that have been made. If the instance fails, data in memory must be recovered. A *DBWR checkpoint* occurs when the DBWR is requested to scan the cache and write all blocks marked for a checkpoint or the end of recovery. Frequent checkpoints reduce recovery time in the event of a system failure and establish data consistency.

Use this resource model to monitor the checkpoint activity for an Oracle database instance. You can increase the Oracle database performance by setting checkpoints at reasonable intervals. High checkpoint activity regularly occurs because Oracle services only one checkpoint at a time. Use the High DBWR Checkpoints metric to monitor how many checkpoints Oracle requests.

Checkpoints occur at every log switch by default. Use the Low Completed Background Checkpoints metric to monitor how many checkpoints are actually completed. If this number is lower than the specified threshold, checkpoints might not be completing.

Possible ways to resolve incomplete checkpoints include the following:

- Increase the size of online redo logs to reduce the frequency of checkpoints and to give the checkpoint process more time to cycle through the logs.
- Increase the LOG_CHECKPOINT_INTERVAL initialization parameter.
- Disable the checkpointing based on a time interval by setting the LOG_CHECKPOINT_TIMEOUT initialization parameter for the instance to 0.

Resource model overview	
Internal name	OracleCheckpoints
Category	Oracle
Indications	**High DBWR Checkpoints** occurs when the number of database writer (DBWR) Checkpoints is higher than the specified threshold.
	Low Completed Background Checkpoints occurs when the number of completed background checkpoints is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High DBWR Checkpoints	Oracle_High_DBWRCheckpoints	Critical	Yes	51
Low Completed Background Checkpoints	Oracle_Low_ CompletedBackgroundCheckpoints	Critical	Yes	52

High DBWR Checkpoints indication

Occurs when the number of database writer (DBWR) Checkpoints is higher than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The DBWR checkpoints for Oracle instance <InstanceName>
has crossed below the predefined threshold of <Threshold> checkpoints and
is currently at <DBWRCheckpoints> checkpoints.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

DBWRCheckpoints
The number of database writer (DBWR) checkpoints requested by the server.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum DBWR Checkpoints

For more information about this threshold, see "Thresholds" on page 53.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Completed Background Checkpoints indication

Occurs when the number of completed background checkpoints is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The completed background checkpoints for Oracle
instance <InstanceName> has crossed below the predefined threshold of
<Threshold> checkpoints and is currently
at <CompletedBackgroundCheckpoints> checkpoints.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CompletedBackgroundCheckpoints
The number of times a database writer (DBWR) checkpoint is completed.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Minimum Completed Background Checkpoints

For more information about this threshold, see "Thresholds" on page 53.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Checkpoints resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum DBWR Checkpoints	An indication occurs if the number of DBWR checkpoints exceeds this value.	50
Minimum Completed Background Checkpoints	An indication occurs if the number of Completed Background checkpoints is lower than this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameter that can be set for the Checkpoints resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Completed Background Checkpoints DBWR Checkpoints

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	I/O	**CompletedBackgroundCheckpoints** The number of times a database writer (DBWR) checkpoint is completed. **DBWRCheckpoints** The number of database writer (DBWR) checkpoints requested by the server. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleCheckpoints -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_DBWRCheckpoints 50.000000 \
-t Oracle_Minimum_CompletedBackgroundCheckpoints 5.000000 \
-AddPar InstanceMetrics "numCompletedBackgroundCheckpoints" \
-AddPar InstanceMetrics "numDBWRCheckpoints" \
-e Oracle_High_DBWRCheckpoints \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_CompletedBackgroundCheckpoints \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Data Warehouse Collector

Description

Collects attribute data required by the Tivoli Enterprise Data Warehouse. This resource model must be running to allow complete integration of IBM Tivoli Monitoring for Databases: Oracle into the Tivoli Enterprise Data Warehouse.

Note: The default cycle time runs this resource model once per day. Do not run this resource model too frequently in an environment.

This resource model fully defines the parent-child relationship in Tivoli Enterprise Data Warehouse. Running this resource model enables you to filter the metrics added to the Tivoli Enterprise Data Warehouse.

Resource model overview	
Internal name	OracleDataWarehouse
Category	Oracle
Indications	None
Tasks and built-in actions	None
Default cycle time	86400 seconds (once a day)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

None

Thresholds

None

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

Selecting one of the following logging options results in the collection of all of the attributes within that CIM class.

The following table lists the parameter that can be set for the Data Warehouse Collector resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	**Description**	**Default value**
Logging Options +	Select the metrics you want to log. See the following logging table for a description of each metric.	OracleProcess OracleTablespace

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleDatabase	Resource Configuration	**Created** The date of the database creation. **DatabaseName*** The name of an Oracle database. **LogMode** Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG. **OpenMode** The current mode of the open database. Possible modes include: Mounted, Read Write, and Read Only.

Managed resource	Context	Properties
OracleInstance	Resource Configuration	**DatabaseStatus** Specifies the current database status. **InstanceName*** The name of an Oracle database instance. **InstanceRole** Specifies one of two possible instance roles, primary or secondary. A primary instance role is the first instance to mount the database. A secondary instance role is the second instance to mount the database. The secondary instance role assumes the primary instance role if the primary instance fails or is shut down. After a failed instance returns to active status, it assumes a secondary instance role. The V$INSTANCE dynamic performance view displays all instance roles. **OracleDatabase.Created** The date of the database creation. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleDatabase.LogMode** Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG. **OracleDatabase.OpenMode** The current mode of the open database. Possible modes include: Mounted, Read Write, and Read Only. **Parallel** Specifies whether the Oracle Application Cluster is running in Parallel mode. Displays YES for Parallel mode, and NO if it is not Parallel. **Status** The current status of the instance as either STARTED, MOUNTED, or OPEN. • STARTED after startup, but no mount • MOUNTED after startup, mount or alter database close • OPEN after startup or after database open **Version** The version number for RDBMS.

Managed resource	Context	Properties
OracleProcess	Resource Configuration	**OracleDatabase.Created** The date of the database creation. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **OracleDatabase.LogMode** Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG. **OracleDatabase.OpenMode** The current mode of the open database. Possible modes include: Mounted, Read Write, and Read Only. **OracleInstance.DatabaseStatus** The current status of the instance as either STARTED, MOUNTED, or OPEN. • STARTED after startup, but no mount • MOUNTED after startup, mount or alter database close • OPEN after startup or after database open **OracleInstance.InstanceRole** Specifies one of two possible instance roles, primary or secondary. A primary instance role is the first instance to mount the database. A secondary instance role is the second instance to mount the database. The secondary instance role assumes the primary instance role if the primary instance fails or is shut down. After a failed instance returns to active status, it assumes a secondary instance role. The V$INSTANCE dynamic performance view displays all instance roles. **OracleInstance.Parallel** Specifies whether the Oracle Application Cluster is running in Parallel mode. Displays YES for Parallel mode, and NO if it is not Parallel.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleProcess	Resource Configuration	**OracleInstance.Status** The current status of the instance as either STARTED, MOUNTED, or OPEN. • STARTED after startup, but no mount • MOUNTED after startup, mount or alter database close • OPEN after startup or after database open **OracleInstance.Version** The version number for RDBMS. **ProcessName** The name of a process used to uniquely identify that process.
OracleTablespace	Resource Configuration	**AllocationType** The type of extent allocation used for the tablespace. **Contents** The tablespace contents as PERMANENT or TEMPORARY. **ExtentManagement** One of two ways to enable tablespaces to allocate space in extents, either by the data dictionary for dictionary-managed tablespaces, or by the tablespace for locally managed tablespaces. The method of extent management is selected when the tablespace is created. This method cannot be altered. **Logging** The default logging attribute. **OracleDatabase.Created** The date of the database creation. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleDatabase.LogMode** Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG. **OracleDatabase.OpenMode** The current mode of the open database. Possible modes include: Mounted, Read Write, and Read Only. **Status** Specifies the current tablespace status as either ONLINE, OFFLINE, or READ ONLY. **TablespaceName*** The name of the tablespace. The tablespace name can contain up to 8 characters.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleDataWarehouse -c 86400 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-AddPar Oracle_DataWarehouse_Logging_Options "OracleTablespace" \
-AddPar Oracle_DataWarehouse_Logging_Options "OracleProcess"
```

Dump Space

Description

Monitors the used space percentage for the dump destination directories. This resource model monitors used space on the following dump destinations:

- Background Dump Destination
- Core Dump Destination
- User Dump Destination

The *background dump destination* device is controlled by the BACKGROUND_DUMP_DEST initialization parameter for the instance. The BACKGROUND_DUMP_DEST parameter includes the path name where debugging trace files are written during Oracle operations. Oracle writes to the alert log and creates trace files for the background processes in the BACKGROUND_DUMP_DEST directory. If this directory is full, Oracle cannot create these files, which might result in instance failure and makes debugging more difficult.

The *core dump destination* is controlled by the CORE_DUMP_DEST initialization parameter for the instance. CORE_DUMP_DEST specifies the directory where Oracle dumps core files. Oracle writes core files for background processes in the CORE_DUMP_DEST directory. If this parameter is not set, the core files are stored in **$ORACLE_HOME/dbs** on a UNIX system. If this directory is full, Oracle cannot create these files, which makes debugging more difficult.

Note: CORE_DUMP_DEST is primarily a UNIX parameter and therefore not all systems support it.

The *user dump destination* is controlled by the USER_DUMP_DEST initialization parameter for the instance. USER_DUMP_DEST parameter specifies the path name of a directory where the server can write debugging trace files for a user process. Oracle creates trace files for the user processes in the USER_DUMP_DEST directory. If this parameter is not set, the trace files are stored in **$ORACLE_HOME/rdbms/log** on a UNIX system and **%ORACLE_HOME%\rdbms\trace** on a Windows system. If this directory is full, Oracle cannot create these files, which might result in process failure and makes debugging more difficult.

Resource model overview	
Internal name	OracleDumpSpace
Category	Oracle
Indications	**High Used Dump Space Percentage** occurs when the percentage of used space on the particular dump space destination exceeds its maximum threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Used Dump Space Percentage	Oracle_High_ UsedDumpSpacePercentage	Critical	Yes	62

High Used Dump Space Percentage indication

Occurs when the percentage of used space on the particular dump space destination exceeds its maximum threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The percent of used space for (<Type> dump space)
<Destination> for Oracle Instance <InstanceName> has crossed above its
predefined threshold of <Threshold> percent and is currently at
<UsedPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

Destination
The location of dump space.

FreeKBytes
Unallocated space on the dump space destination.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

TotalKBytes
The total capacity (in kilobytes) for the dump space destination.

Type The type of dump space destination, as either USER, BACKGROUND, or CORE.

UsedPercentage
The percentage of used space for the dump space destination.

This indication has the following thresholds:

- Maximum Used Space Percentage on Background Dump Destination
- Maximum Used Space Percentage on Core Dump Destination
- Maximum Used Space Percentage on User Dump Destination

For more information about these thresholds, see "Thresholds" on page 63.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Dump Space resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Used Space Percentage on Background Dump Destination	An indication occurs if the percentage of used space for the background dump space destination exceeds this value. If the amount of space used in the background dump space destination device exceeds the threshold, move the alert log to a user-specified alternate location.	85
Maximum Used Space Percentage on Core Dump Destination	An indication occurs if the percentage of used space for the core dump space destination exceeds this value.	85
Maximum Used Space Percentage on User Dump Destination	An indication occurs if the percentage of used space for the user dump space destination exceeds this value.	85

Parameters

None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleDumpSpace	Storage	**Destination*** The location of dump space. **FreeKBytes** Unallocated space on the dump space destination. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **TotalKBytes** The total capacity (in kilobytes) for the dump space destination. **Type*** The type of dump space destination, as either USER, BACKGROUND, or CORE. **UsedPercentage** The percentage of used space for the dump space destination.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleDumpSpace -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_BACKGROUND_UsedDumpSpacePercentage 85.000000 \
-t Oracle_Maximum_CORE_UsedDumpSpacePercentage 85.000000 \
-t Oracle_Maximum_USER_UsedDumpSpacePercentage 85.000000 \
-e Oracle_High_UsedDumpSpacePercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Extents

Description

Alerts on those database objects whose number of currently allocated extents exceeds the specified threshold.

Extents are contiguous sets of data blocks for storing data. *Current extents* are extents that are currently allocated within an object.

Use this resource model to do the following:

- See which objects in a database have a large number of extents
- Chart the growth of objects
- Use this data in conjunction with the Maximum Extents to predict when an object is going to run out of extents

When an object runs out of extents, Oracle can extend objects by allocating additional extents. This is known as *dynamic extension*, which can reduce database performance. Dynamic extension causes Oracle to execute SQL statements itself, or recursive calls, in addition to statements issued by user processes. If Oracle continues to make recursive calls and you determine that they are caused by dynamic extension, you can reduce extension by allocating larger extents to the object, or export the object and recreate it with a larger extent size.

Over the last few years, differing views have emerged concerning the effect of object fragmentation on the overall performance of a database. The original prevailing view suggested using as few extents as possible for an object to the point of storing all data for an object, regardless of that object's size, in one extent. Since then, another view states that the number of extents in which an object is stored has a negligible and in some cases, a positive, effect on performance. Consult your DBA before setting the threshold for this resource model.

Resource model overview	
Internal name	OracleExtents
Category	Oracle
Indications	**High Current Extents** occurs when the number of current extents exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	1800 seconds (30 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Current Extents	Oracle_High_CurrentExtents	Critical	Yes	66

High Current Extents indication

Occurs when the number of current extents exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of extents for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed above the predefined threshold
<Threshold> and is currently at <CurrentExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If you find that one or more objects are fragmented to the point of action, that object can be defragmented by recreating the object typically through the export/import utility while compressing extents or by dropping and recreating the object with more applicable storage parameters.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Maximum Current Extents

For more information about this threshold, see “Thresholds” on page 67.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Extents resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Current Extents	An indication occurs when the number of current extents exceeds this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Extents resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Allocated Current Extents Free Extents Percent Extents

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** Percentage of current extents to the maximum number allowed for the specified segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleExtents -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_CurrentExtents 5.000000 \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-e Oracle_High_CurrentExtents \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Extents by Tablespace

Description

Alerts on those database objects for the specified tablespaces whose number of currently allocated extents exceeds the specified threshold.

Extents are contiguous sets of data blocks for storing data. *Current extents* are extents that are currently allocated within an object.

You can use this resource model to do the following:

- See which objects in a database have a large number of extents
- Chart the growth of objects
- Use this data in conjunction with the Maximum Extents to predict when an object is going to run out of extents

This resource model can use tokens to monitor a set of tables specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

When an object runs out of extents, Oracle can extend objects by allocating additional extents. This is known as *dynamic extension*, but it can reduce database performance. Dynamic extension causes Oracle to execute SQL statements itself, or recursive calls, in addition to statements issued by user processes. If Oracle continues to make recursive calls and you determine that they are caused by dynamic extension, you can reduce extension by allocating larger extents to the object, or export the object and recreate it with a larger extent size.

Over the last few years, differing views have emerged concerning the effect of object fragmentation on the overall performance of a database. The original prevailing view suggested using as few extents as possible for an object even to the point of storing all data for an object, regardless of that object's size, in one extent. Since then, another view states that the number of extents in which an object is stored has a negligible and in some cases, a positive, effect on performance. Consult your DBA before setting the threshold for this resource model.

Resource model overview	
Internal name	OracleExtentsByTablespace
Category	Oracle
Indications	**High Current Extents** occurs when the number of current extents exceeds the specified value.
Tasks and built-in actions	None
Default cycle time	1800 seconds (30 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Current Extents	Oracle_High_CurrentExtentsByTablespace	Critical	Yes	70

High Current Extents indication

Occurs when the number of current extents exceeds the specified value. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of extents for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed above the predefined threshold <Threshold>
and is currently at <CurrentExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If you find that one or more objects are fragmented to the point of action, that object can be defragmented by recreating the object typically through the export/import utility while compressing extents or by dropping and recreating the object with more applicable storage parameters.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

PctExtentsAllocated
Percentage of current extents to the maximum number allowed for the specified segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Maximum Current Extents

For more information about this threshold, see "Thresholds" on page 71.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Extents by Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Current Extents	An indication occurs when the number of current extents exceeds this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Extents by Tablespace resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Include/Exclude	Includes or excludes the contents of the tablespaces names field.	Include

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Allocated Current Extents Free Extents Percent Extents
Tablespace Names	Designates the tablespaces names you want to include or exclude. Use spaces to separate names.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** Percentage of current extents to the maximum number allowed for the specified segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleExtentsByTablespace -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_CurrentExtents 5.000000 \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-AddPar IncludeExcludeTablespaces "Include" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-AddPar List "SYSTEM" \
-e Oracle_High_CurrentExtentsByTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Extents by User

Description

Alerts on those database objects for the specified user whose number of currently allocated extents exceeds the specified threshold.

Extents are contiguous sets of data blocks for storing data. *Current extents* are extents that are currently allocated within an object.

You can use this resource model to do the following:

- See which objects in a database have a large number of extents
- Chart the growth of objects
- Use this data in conjunction with the Maximum Extents to predict when an object is going to run out of extents

This resource model can use tokens to monitor a set of users specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

When an object runs out of extents, Oracle can extend objects by allocating additional extents. This is known as *dynamic extension*, but it can reduce database performance. Dynamic extension causes Oracle to execute SQL statements itself, or recursive calls, in addition to statements issued by user processes. If Oracle continues to make recursive calls and you determine that they are caused by dynamic extension, you can reduce extension by allocating larger extents to the object, or export the object and recreate it with a larger extent size.

Over the last few years, differing views have emerged concerning the effect of object fragmentation on the overall performance of a database. The original prevailing view suggested using as few extents as possible for an object even to the point of storing all data for an object, regardless of that object's size, in one extent. Since then, another view states that the number of extents in which an object is stored has a negligible and in some cases, a positive, effect on performance. Consult your DBA before setting the threshold for this resource model.

Resource model overview	
Internal name	OracleExtentsByUser
Category	Oracle
Indications	**High Current Extents** occurs when the number of current extents exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	1800 seconds (30 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Current Extents	Oracle_High_ CurrentExtentsByUser	Critical	Yes	75

High Current Extents indication

Occurs when the number of current extents exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of extents for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed above the predefined threshold <Threshold>
and is currently at <CurrentExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If one or more objects are fragmented to the point of action, the object can be defragmented by recreating the object. Recreate the object using the export/import utility while compressing extents or by dropping and recreating the object with more applicable storage parameters.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of the tablespace that contains this segment.

FreeExtents
Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

PctExtentsAllocated
Percentage of current extents to the maximum number allowed for the specified segment.

SegmentName
Identifies the name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of a tablespace in a database that uniquely identifies the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following threshold:

- Maximum Current Extents

For more information about this threshold, see "Thresholds" on page 76.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Extents by User resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Current Extents	An indication occurs when the number of current extents exceeds this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Extents by User resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50

Parameter	Description	Default value
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Allocated Current Extents Free Extents Percent Extents
User Name	Specifies the Oracle user name.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** Percentage of current extents to the maximum number allowed for the specified segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleExtentsByUser -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_CurrentExtents 5.000000 \
-AddPar IncludeUser "SYS" \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-e Oracle_High_CurrentExtentsByUser \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Space Deficit

Description

Checks whether any segments are unable to allocate their next extent because of insufficient free space in the tablespace, and not because the segments reached MAXEXTENTS.

A *segment* is a set of extents allocated for specific data structures and are stored in the same tablespace. *Extents* are contiguous sets of data blocks allocated for storing data.

Equity is the difference in bytes between a segment's next extent value and the contiguous largest free extent available in the tablespace in which the segment is located. If equity is less than zero, this indicates that there is not a large enough free extent in the tablespace for the segment to allocate its next extent.

If the free space deficit for a segment is less than zero, that segment cannot allocate another extent. If a segment is unable to allocate another extent, you can take corrective action by doing any of the following:

- Add another datafile to the relevant tablespace
- Export the segment and recreate it with different storage parameters (Tivoli recommends that all segments be created with a PCTINCREASE of 0.)
- Enable dynamic extension in Oracle
- Change the size of the next extent to be less than the largest free extent in the tablespace using one of the following:
  - `ALTER TABLE <tablename> STORAGE (next <value>);`

    —OR—
  - `ALTER TABLE <tablename> ALLOCATE EXTENT (size <value>);`

Oracle can extend objects by automatically allocating additional extents, which can reduce database performance. This is called *dynamic extension*. Dynamic extension causes Oracle to execute SQL statements itself, or recursive calls, in addition to statements issued by user processes. If Oracle continues to make recursive calls and you determine that they are caused by dynamic extension, you can reduce extension by allocating larger extents to the object, or export the object and recreate it with a larger extent size.

The resource model checks the difference between the space demand and free space. For example: a table is created with an initial extent of 1 MB, next extent 1 MB, and PCTINCREASE of 25%. If the table grows to six extents, the extent sizes are as follows:

Extent Number	Extent Size (bytes)
1	1,024,000
2	1,024,000
3	1,280,000
4	1,600,000
5	2,000,000
6	2,500,000

The size of the seventh extent is 3,125,000 bytes. If the free space in the tablespace is 3 MB (3,072,000 bytes), the table will not be able to allocate its seventh extent. The equity is -53,000 bytes (3,072,000 - 3,125,000). The resource model output displays this figure. A negative equity figure means that the allocation of next extent for that segment will fail.

This resource model does not check objects of segment_type CACHE. If the **Exclude Rollback Segments** argument is set to **Yes**, the resource model does not check the free space in any rollback segments.

Resource model overview	
Internal name	OracleFreeSpaceDeficit
Category	Oracle
Indications	**Low Equity** occurs when the equity value is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Equity	Oracle_Low_Equity	Critical	Yes	80

Low Equity indication

Occurs when the equity value is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The equity for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined
threshold of <Threshold> and is currently at <Equity>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8

characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Equity
The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the segment is located. If equity is less than zero, this indicates that there is not a large enough contiguous free extent in the tablespace for the segment to allocate its next extent.

NextExtent
The byte size assigned to the next extent allocated to a segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following thresholds:

- Minimum Equity

For more information about these thresholds, see "Thresholds" on page 81.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Space Deficit resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Equity	An indication occurs if the equity in the segment is lower than this value.	0

Parameters

The following table lists the parameters that can be set for the Free Space Deficit resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Exclude Rollback Segments	If the Exclude Rollback Segments argument is set to Yes, the resource model does not check the free space in any rollback segments.	Yes
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**Equity** The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the segment is located. **NextExtent** The byte size assigned to the next extent allocated to a segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFreeSpaceDeficit -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_Equity 0.000000 \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-AddPar ExcludeRollbackSegments "Yes" \
-e Oracle_Low_Equity \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Space Deficit By Tablespace

Description

Checks whether any segments, within specified tablespaces, are unable to allocate their next extent because of insufficient free space in the tablespace, and not because the segments reached MAXEXTENTS.

A *segment* is a set of extents allocated for specific data structures and are stored in the same tablespace. *Extents* are contiguous sets of data blocks allocated for storing data.

If the free space deficit for a segment is less than zero, that segment cannot allocate another extent. If a segment is unable to allocate another extent, you can take corrective action by doing any of the following:

- Add another datafile to the relevant tablespace
- Change the size of the next extent to be less than the largest free extent in the tablespace using ALTER TABLE ALLOCATE EXTENT
- Export the segment and recreate it with different storage parameters (Tivoli recommends that all segments be created with a PCTINCREASE of 0.)
- Enable dynamic extension in Oracle

Oracle can extend objects by automatically allocating additional extents, but it can reduce database performance. This is called *dynamic extension*. Dynamic extension causes Oracle to execute SQL statements itself, or recursive calls, in addition to statements issued by user processes. If Oracle continues to make recursive calls and you determine that they are caused by dynamic extension, you can reduce extension by allocating larger extents to the object, or export the object and recreate it with a larger extent size.

The resource model checks the difference between the space demand and free space. For example: a table is created with an initial extent of 1 MB, next extent 1 MB, and PCTINCREASE of 25%. If the table grows to six extents, the extent sizes are as follows:

Extent Number	Extent Size (bytes)
1	1,024,000
2	1,024,000
3	1,280,000
4	1,600,000
5	2,000,000
6	2,500,000

The size of the seventh extent is 3,125,000 bytes. If the free space in the tablespace is 3 MB (3,072,000 bytes), the table will not be able to allocate its seventh extent. The equity is -53,000 bytes(3,072,000 - 3,125,000). The resource model output displays this figure. A negative equity figure means that the allocation of next extent for that segment will fail.

This resource model does not check objects of segment_type CACHE. If the **Exclude Rollback Segments** argument is set to **Yes**, the resource model does not check the free space in any rollback segments.

This resource model can use tokens to monitor a set of tables specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleFreeSpaceDeficitByTablespace
Category	Oracle
Indications	**Low Equity** occurs when the equity value is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Equity	Oracle_Low_EquityByTablespace	Critical	Yes	85

Low Equity indication

Occurs when the equity value is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The equity for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined
threshold of <Threshold> and is currently at <Equity>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Equity
The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the

segment is located. If equity is less than zero, this indicates that there is not a large enough contiguous free extent in the tablespace for the segment to allocate its next extent.

NextExtent
The byte size assigned to the next extent allocated to a segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following thresholds:

- Minimum Equity

For more information about these thresholds, see "Thresholds" on page 86.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Space Deficit by Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Equity	An indication occurs if the equity in the segment is lower than this value.	0

Parameters

The following table lists the parameters that can be set for the Free Space Deficit by Tablespace resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Include/Exclude	Includes or excludes the contents of the tablespaces names field.	Include
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Tablespace Names	Designates the tablespaces names you want to include or exclude. Use spaces to separate names.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**Equity** The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the segment is located. **NextExtent** The byte size assigned to the next extent allocated to a segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region \
-add OracleFreeSpaceDeficitByTablespace -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_Equity 0.000000 \
-AddPar IncludeExcludeTablespaces "Include" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-AddPar List "SYSTEM" \
-e Oracle_Low_EquityByTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Space Deficit by User

Description

Checks whether any segments, for a specified user, are unable to allocate their next extent because of insufficient free space in the tablespace, and not because the segments reached MAXEXTENTS.

A *segment* is a set of extents allocated for specific data structures and are stored in the same tablespace. *Extents* are contiguous sets of data blocks allocated for storing data.

If the free space deficit for a segment is less than zero, that segment cannot allocate another extent. If a segment is unable to allocate another extent, you can take corrective action by doing any of the following:

- Add another datafile to the relevant tablespace
- Change the size of the next extent to be less than the largest free extent in the tablespace using ALTER TABLE ALLOCATE EXTENT
- Export the segment and recreate it with different storage parameters (Tivoli recommends that all segments be created with a PCTINCREASE of 0.)
- Enable dynamic extension in Oracle

Oracle can extend objects by automatically allocating additional extents, which can reduce database performance. This is called *dynamic extension*. Dynamic extension causes Oracle to execute SQL statements itself, or recursive calls, in addition to statements issued by user processes. If Oracle continues to make recursive calls and you determine that they are caused by dynamic extension, you can reduce extension by allocating larger extents to the object, or export the object and recreate it with a larger extent size.

The resource model checks the difference between the space demand and free space. For example: a table is created with an initial extent of 1 MB, next extent 1 MB, and PCTINCREASE of 25%. If the table grows to six extents, the extent sizes are as follows:

Extent Number	Extent Size (bytes)
1	1,024,000
2	1,024,000
3	1,280,000
4	1,600,000
5	2,000,000
6	2,500,000

The size of the seventh extent is 3,125,000 bytes. If the free space in the tablespace is 3 MB (3,072,000 bytes), the table will not be able to allocate its seventh extent. The equity is -53,000 bytes(3,072,000 - 3,125,000). The resource model output displays this figure. A negative equity figure means that the allocation of next extent for that segment will fail.

This resource model does not check objects of segment_type CACHE. If the **Exclude Rollback Segments** argument is set to **Yes**, the resource model does not check the free space in any rollback segments.

This resource model can use tokens to monitor a set of users specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleFreeSpaceDeficitByUser
Category	Oracle
Indications	**Low Equity** occurs when the free space deficit by user is less than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Equity	OracleFreeSpaceDeficitByUser_ Low_Equity	Critical	Yes	90

Low Equity indication

Occurs when the free space deficit by user is less than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The equity for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined
threshold of <Threshold> and is currently at <Equity>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Equity
The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the

segment is located. If equity is less than zero, this indicates that there is not a large enough contiguous free extent in the tablespace for the segment to allocate its next extent.

NextExtent
The byte size assigned to the next extent allocated to a segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following thresholds:

- Minimum Equity

For more information about these thresholds, see "Thresholds" on page 91.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Space Deficit by User resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Equity	An indication occurs if the equity in the segment is lower than this value.	0

Parameters

The following table lists the parameters that can be set for the Free Space Deficit by User resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
User Name	Specifies the number of objects with the worst-case extents to return.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**Equity** The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the segment is located. **NextExtent** The byte size assigned to the next extent allocated to a segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFreeSpaceDeficitByUser -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_Equity 0.000000 \
```

```
-AddPar User "SYS" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-e Oracle_Low_EquityByUser \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Space Fragmentation

Description

Monitors the free space fragmentation index over all tablespaces within an Oracle instance.

This resource model employs an arbitrary scoring system to establish if a tablespace needs a free space rebuild. The system used is that defined by Loney in *Oracle DBA Handbook* by Oracle Press, ISBN 0-07-881182-1. This ***Free Space Fragmentation Index (FSFI)*** calculates the size of the largest extent as a percentage of the total free space and does not consider the number of extents in a tablespace. This index is not a monitor of the amount of free space available. It indicates the structure of the free space.

Over time, free space within a tablespace can become fragmented. Use this resource model to determine if any tablespace has a high free space fragmentation index. A fragmented tablespace can lack the contiguous free space needed to allocate new extents. Identifying and coalescing tablespaces that have become fragmented can enhance database performance.

Coalescing is the process of combining free, adjacent data blocks to form larger sets of contiguous data blocks. If you find that a tablespace has a high fragmentation of space, you can coalesce the tablespace. See the *IBM Tivoli Monitoring for Databases: Oracle User's Guide* for instructions on coalescing a tablespace.

The best-case response from this resource model is 100%. As the total number of extents increases for a tablespace, the FSFI rating drops accordingly. In general, a tablespace with sufficient free space and an FSFI rating of above 30 should not experience free space availability problems.

Resource model overview	
Internal name	OracleFreeSpaceFragmentation
Category	Oracle
Indications	**Low Free Space Fragmentation Index** occurs when the free space fragmentation index is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	86400 seconds (once a day)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Low Free Space Fragmentation Index	Oracle_Low_ FreeSpaceFragmentationIndex	Critical	Yes	95

Low Free Space Fragmentation Index indication

Occurs when the free space fragmentation index is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The free space fragmentation index for Oracle
tablespace <TablespaceName> has crossed below the predefined threshold
of <Threshold> and is currently at
<FreeSpaceFragmentationIndex> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeSpaceFragmentationIndex
The Free Space Fragmentation Index. This index calculates the size of the largest extent as a percentage of the total free space without considering the number of extents in a tablespace.

TablespaceName
The name of the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following threshold:

- Minimum Free Space Fragmentation Index

For more information about this threshold, see “Thresholds” on page 96.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Space Fragmentation resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Space Fragmentation Index	An indication occurs when the free space fragmentation index is less than this value.	30

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Free Space Deficit resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Tablespace Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Free Space Fragmentation Index

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleFreespace Fragmentation	Free Space Fragmentation	**FSFI** The Free Space Fragmentation Index. This index calculates the size of the largest extent as a percentage of the total free space without considering the number of extents in a tablespace. **OracleDatabase.DatabaseName*** The name of an Oracle database. **TablespaceName*** The name of the tablespace. The tablespace name can contain up to 8 characters.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFreeSpaceFragmentation -c 32700 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeSpaceFragmentationIndex 30.000000 \
-AddPar TablespaceMetrics "numFSFI" \
-e Oracle_Low_FreeSpaceFragmentationIndex \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Space Fragmentation by Tablespace

Description

Monitors the free space fragmentation index for specified tablespaces within an Oracle instance.

This resource model employs an arbitrary scoring system to establish if a tablespace needs a free space rebuild. The system used is that defined by Loney in *Oracle DBA Handbook* by Oracle Press, ISBN 0-07-881182-1. This ***Free Space Fragmentation Index (FSFI)*** calculates the size of the largest extent as a percentage of the total free space and does not consider the number of extents in a tablespace. This index is not a monitor of the amount of free space available. It indicates the structure of the free space.

Over time, free space within a tablespace can become fragmented. Use this resource model to determine if any tablespace has a high free space fragmentation index. A fragmented tablespace can lack the contiguous free space needed to allocate new extents. Identifying and coalescing tablespaces that have become fragmented can enhance database performance.

Coalescing is the process of combining free, adjacent data blocks to form larger sets of contiguous data blocks. If you find that a tablespace has a high fragmentation of space, you can coalesce the tablespace. See the *IBM Tivoli Monitoring for Databases: Oracle User's Guide* for instructions on coalescing a tablespace.

The best-case response from this resource model is 100%. As the total number of extents increases for a tablespace, the FSFI rating drops accordingly. In general, a tablespace with sufficient free space and an FSFI rating of above 30 should not experience free space availability problems.

This resource model can use tokens to monitor a set of tables specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleFreeSpaceFragmentationByTablespace
Category	Oracle
Indications	**Low Free Space Fragmentation Index** occurs when the free space fragmentation index is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	86400 seconds (once a day)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Low Free Space Fragmentation Index	Oracle_Low_ FreeSpaceFragmentationIndexByTablespace	Critical	Yes	99

Low Free Space Fragmentation Index indication

Occurs when the free space fragmentation index is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The free space fragmentation index for Oracle tablespace
<TablespaceName> has crossed below the predefined threshold of
<Threshold> and is currently at
<FreeSpaceFragmentationIndex> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeSpaceFragmentationIndex
The Free Space Fragmentation Index. This index calculates the size of the largest extent as a percentage of the total free space without considering the number of extents in a tablespace.

TablespaceName
The name of the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following threshold:

- Minimum Free Space Fragmentation Index

For more information about this threshold, see “Thresholds” on page 100.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Space Fragmentation by Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Space Fragmentation Index	An indication occurs when the free space fragmentation index is less than this value.	30

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Free Space Fragmentation by Tablespace resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Include/Exclude	Includes or excludes the contents of the tablespaces names field.	Include
Tablespace Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Free Space Fragmentation Index
Tablespace Names	Designates the tablespaces names you want to include or exclude. Use spaces to separate names.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleTablespace	Free Space Fragmentation	**FSFI** The Free Space Fragmentation Index. This index calculates the size of the largest extent as a percentage of the total free space without considering the number of extents in a tablespace. **OracleDatabase.DatabaseName*** The name of an Oracle database. **TablespaceName*** The name of the tablespace. The tablespace name can contain up to 8 characters.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region \
-add OracleFreeSpaceFragmentationByTablespace -c 32700 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeSpaceFragmentationIndexByTablespace 30.000000 \
-AddPar IncludeExcludeTablespaces "Include" \
-AddPar List "SYSTEM" \
-AddPar TablespaceMetrics "numFSFI" \
-e Oracle_Low_FreeSpaceFragmentationIndexByTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Tablespace

Description

Monitors the percentage of free space for each tablespace in a database.

If free space becomes low in a tablespace, either add a new datafile to the offending tablespace or drop unwanted database objects. If you run out of space and a new object needs to be allocated, you receive an Oracle error that the database is unable to allocate an extent.

With Oracle Version 7.2 and higher, datafiles can be created or modified to automatically extend using one of the following SQL commands:

```
ALTER TABLESPACE tsname ADD DATAFILE 'file' AUTOEXTEND ON;
```

—OR—

```
ALTER DATABASE DATAFILE 'file' AUTOEXTEND ON;
```

You can set the **Exclude TS With Rollback Segments** argument to **Yes** to exclude tablespaces containing rollback segments when the resource model checks tablespace free space. A database always contains the SYSTEM rollback segment in the SYSTEM tablespace, so if **Exclude TS With Rollback Segments** is set to **Yes**, the SYSTEM tablespace is not monitored.

Resource model overview	
Internal name	OracleFreeTablespace
Category	Oracle
Indications	**Low Free Space Percentage** occurs when the tablespace's percentage of free space is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	300 seconds (5 min)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Free Space Percentage	Oracle_Low_ PercentFreeTablespace	Critical	Yes	102

Low Free Space Percentage indication

Occurs when the tablespace's percentage of free space is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The percentage of free space in Oracle
tablespace <TablespaceName> on database <DatabaseName>
has crossed below the predefined threshold of <Threshold> percent and is
currently at <PercentFreeBytes> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

MBAllocated
Total space dedicated for use by the tablespace. This value is the summation of sizes of the datafile(s) included in the tablespace.

MBFree
Space (in megabytes) within the tablespace which is currently unallocated.

MBUsed
Space (in megabytes) within the tablespace which has already been allocated for use by objects stored in the tablespace.

PercentFreeBytes
The percentage of unallocated bytes within a tablespace.

TablespaceName
The name of the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following threshold:

- Minimum Percent Free Space

For more information about this threshold, see "Thresholds" on page 104.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Percent Free Space	An indication occurs when the percentage of free bytes is lower than this value.	15

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameter that can be set for the Free Tablespace resource model. The table shows the name, a short description, and the default value for the parameter:

Parameter	Description	Default value
Exclude Tablespaces with Rollback Segments	YES ignores tablespaces that contain rollback segments. NO does not ignore tablespaces that contain rollback segments.	Yes
Tablespace Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	MB Allocated MB Free MB Used Percent Free Bytes

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleTablespace	Storage	**MBAllocated** Total space dedicated for use by the tablespace. This value is the summation of sizes of the datafiles included in the tablespace. **MBFree** Space (in megabytes) within the tablespace which is currently unallocated. **MBUsed** Space (in megabytes) within the tablespace which has already been allocated for use by objects stored in the tablespace. **OracleDatabase.DatabaseName*** The name of an Oracle database. **PercentFreeBytes** The percentage of unallocated bytes within a tablespace. **TablespaceName*** The name of the tablespace. The tablespace name can contain up to 8 characters.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFreeTablespace -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_PercentFreeTablespace 15.000000 \
-AddPar TablespaceMetrics "numPercentFreeBytes" \
-AddPar TablespaceMetrics "numMBFree" \
-AddPar TablespaceMetrics "numMBAllocated" \
-AddPar TablespaceMetrics "numMBUsed" \
-AddPar ExcludeTSWithRollbackSegments "Yes" \
-e Oracle_Low_PercentFreeTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Free Tablespace by Tablespace

Description

Monitors the percentage of free space for the specified tablespaces.

If free space becomes low in a tablespace, either add a new datafile to the offending tablespace or drop unwanted database objects. If you run out of space and a new object needs to be allocated, you receive an Oracle error that the database is unable to allocate an extent.

With Oracle Version 7.2 and higher, datafiles can be created or modified to automatically extend using one of the following SQL commands:

```
ALTER TABLESPACE tsname ADD DATAFILE 'file' AUTOEXTEND ON;
```

—OR—

```
ALTER DATABASE DATAFILE 'file' AUTOEXTEND ON;
```

You can set the **Exclude TS With Rollback Segments** argument to **Yes** to exclude tablespaces containing rollback segments when the resource model checks tablespace free space. A database always contains the SYSTEM rollback segment in the SYSTEM tablespace, so if **Exclude TS With Rollback Segments** is set to **Yes**, the SYSTEM tablespace will not be monitored.

This resource model can use tokens to monitor a set of tables specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleFreeTablespaceByTablespace
Category	Oracle
Indications	**Low Free Space Percentage** occurs when the tablespace's percentage of free space is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	300 seconds (5 min)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Free Space Percentage	OracleFreeTablespaceByTablespace_Low_PercentFreeTablespace	Critical	Yes	107

Low Free Space Percentage indication

Occurs when the tablespace's percentage of free space is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The percentage of free space in Oracle
tablespace <TablespaceName> on database <DatabaseName>
has crossed below the predefined threshold of <Threshold> percent and is
currently at <PercentFreeBytes> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

MBAllocated
Total space dedicated for use by the tablespace. This value is the summation of sizes of the datafiles included in the tablespace.

MBFree
Space (in megabytes) within the tablespace which is currently unallocated.

MBUsed
Space (in megabytes) within the tablespace which has already been allocated for use by objects stored in the tablespace.

PercentFreeBytes
The percentage of unallocated bytes within a tablespace.

TablespaceName
The name of the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following threshold:

- Minimum Percent Free Space

For more information about this threshold, see "Thresholds" on page 108.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Free Tablespace by Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Percent Free Space	An indication occurs when the percentage of free space in the tablespace is lower than this value.	15

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Free Tablespace by Tablespace resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Include/Exclude	Includes or excludes the contents of the tablespaces names field.	Include
Tablespace Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	MB Allocated MB Free MB Used Percent Free Bytes
Tablespace Names	Designates the tablespaces names you want to include or exclude. Use spaces to separate names.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleTablespace	Storage	**MBAllocated** Total space dedicated for use by the tablespace. This value is the summation of sizes of the datafiles included in the tablespace. **MBFree** Space (in megabytes) within the tablespace which is currently unallocated. **MBUsed** Space (in megabytes) within the tablespace which has already been allocated for use by objects stored in the tablespace. **OracleDatabase.DatabaseName*** The name of an Oracle database. **PercentFreeBytes** The percentage of unallocated bytes within a tablespace. **TablespaceName*** The name of the tablespace. The tablespace name can contain up to 8 characters.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region \
-add OracleFreeTablespaceByTablespace -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_PercentFreeTablespaceByTablespace 15.000000 \
-AddPar IncludeExcludeTablespaces "Include" \
-AddPar List "SYSTEM" \
-AddPar TablespaceMetrics "numPercentFreeBytes" \
-AddPar TablespaceMetrics "numMBAllocated" \
-AddPar TablespaceMetrics "numMBFree" \
-AddPar TablespaceMetrics "numMBUsed" \
-e Oracle_Low_PercentFreeTablespaceByTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Full Table Scan

Description

Monitors the percentage of full table scans from long tables, and reports the percentage of total rows retrieved from full table scans. If you have a large number of full table scans, there is room for performance tuning.

If the percentage of full table scans that come from long tables exceeds 20%, investigate which tables are being scanned and consider adding indexes to reduce the number of full table scans from long tables.

If the row source percentage exceeds 15% (or whatever threshold is deemed to be unacceptable), check the percentage of long full table scans to determine the percentage of full table scans that are from short tables. If a table has a small number of rows, a full table scan can be more efficient than an index scan.

Row source percentage is calculated as:

100 * [*S* / *(S* + *R)*]

where:

S = rows obtained by table scans

R = rows obtained by rowid

Full table scans are typically faster than index range scans when accessing a large percentage of data in a table because full table scans use larger I/O calls. Using a few large I/O calls is cheaper than using many small I/O calls. Oracle performs *full table scans* by reading the blocks sequentially. Each row is scanned to determine if it meets the statement's WHERE clause. I/O calls larger than a single block can be used to speed up the process.

Long table scans are unscalable and require I/O expense. A high number of long full table scans for high-volume or interactive online operations could indicate poor transaction design, missing indexes, or poor SQL optimization.

Resource model overview	
Internal name	OracleFullTableScan
Category	Oracle
Indications	**High Long Table Full Table Scans** occurs when the number of long table full table scans exceeds the specified threshold.
	High Row Source Percentage occurs when the number of row source percentage is higher than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Long Table Full Table Scans	Oracle_High_ LongTableFullTableScans	Critical	Yes	111
High Row Source Percentage	Oracle_High_ RowSourcePercentage	Critical	Yes	112

High Long Table Full Table Scans indication

Occurs when the number of long table full table scans exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The percentage of long full table scans for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<IntervalLongTableFullTableScans> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance.

IntervalLongTableFullTableScans
Percentage of full table scans that come from long tables for the current monitoring interval.

This indication has the following threshold:

- Maximum Row Source Percentage

For more information about this threshold, see "Thresholds" on page 112.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Row Source Percentage indication

Occurs when the number of row source percentage is higher than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The row source percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at <RowSourcePercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance.

RowSourcePercentage
The percentage of total rows retrieved from a full-table scan.

This indication has the following threshold:

- Maximum Row Source Percentage

For more information about this threshold, see "Thresholds" on page 112.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Full Table Scan resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Row Source Percentage	An indication occurs when the row source percentage exceeds this value.	15
Maximum Long Table Full Table Scans	An indication occurs when the number of long table full table scans exceeds this value.	20

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Full Table Scan resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Tablespace Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Num Interval Long Table Full Table Scans Row Source Percentage

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	I/O	**InstanceName** The name of an Oracle database instance. **IntervalLongTableFullTableScans** Percentage of full table scans that come from long tables for the current monitoring interval. **OracleDatabase.DatabaseName*** The name of an Oracle database. **RowSourcePercentage** The percentage of total rows retrieved from a full-table scan.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFullTableScan -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_LongTableFullTableScans 20.000000 \
-t Oracle_Maximum_RowSourcePercentage 15.000000 \
-AddPar InstanceMetrics "numRowSourcePercentage" \
-AddPar InstanceMetrics "numIntervalLongTableFullTableScans" \
-e Oracle_High_RowSourcePercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_LongTableFullTableScans \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

I/O

Description

Monitors the number of physical reads and physical writes for the datafiles in the database.

Physical reads are data blocks read from a disk. If physical reads is high relative to the amount of returned data, this might indicate queries are executing against the database which should be reviewed for optimization. *Physical writes* are data blocks written to disk.

Use this resource model to determine if any particular datafile has an abnormally high number of physical reads or writes. This data can be useful in determining whether a datafile should be moved to another disk because one of the disks is an I/O bottleneck, caused by an excessive number of reads or writes from a datafile. The data can also be used for capacity planning by charting the growth in I/O over time.

Resource model overview	
Internal name	OracleIO
Category	Oracle
Indications	**High Physical Reads** occurs when the I/O read exceeds the specified threshold.
	High Physical Writes occurs when the I/O writes exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
High Physical Reads	Oracle_High_ PhysicalReads	Critical	Yes	115
High Physical Writes	Oracle_High_ PhysicalWrites	Critical	Yes	117

High Physical Reads indication

Occurs when the I/O read exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of physical reads for Oracle file <FileName>
has crossed above the predefined threshold of <Threshold> physical
reads and is currently at <PhysicalReads> physical reads.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Based on this output, in conjunction with the Physical I/O Writes output, if one of the disks is found to be an I/O bottleneck caused by an excessive number of reads from (and/or writes to) a datafile, consider redistributing the datafiles to another storage device.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FileName
A physical operating system file on a disk created by Oracle that contains data structures such as tables and indexes. A data file can belong to only one database.

PhysicalReads
The total number of data blocks read from a datafile when a request for a data block could not be done from a local cache.

TablespaceName
The name of a tablespace in a database that uniquely identifies the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following thresholds:

- Maximum Physical Reads

For more information about these thresholds, see "Thresholds" on page 118.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Physical Writes indication

Occurs when the I/O writes exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of physical writes for Oracle file
<FileName> has crossed above the predefined threshold of
<Threshold> physical writes and is currently at
<PhysicalWrites> physical writes.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Based on this output, in conjunction with the Physical I/O Writes output, if one of the disks is found to be an I/O bottleneck caused by an excessive number of reads from (and/or writes to) a datafile, consider redistributing the datafiles to another storage device.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FileName
A physical operating system file on a disk created by Oracle that contains data structures such as tables and indexes. A data file can belong to only one database.

PhysicalWrites
The total number of data blocks written to disk.

TablespaceName
The name of a tablespace in a database that uniquely identifies the tablespace. The tablespace name can contain up to 8 characters.

This indication has the following threshold:

- Maximum Physical Writes

For more information about this threshold, see “Thresholds” on page 118.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the I/O resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Physical Reads	An indication occurs when the number of I/O reads exceeds this value.	500
Maximum Physical Writes	An indication occurs when the number of I/O writes exceeds this value.	1500

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the I/O resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Datafile Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Physical Reads Physical Writes

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleIO	I/O	**FileName*** A physical operating system file on a disk created by Oracle that contains data structures such as tables and indexes. A data file can belong to only one database. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of a tablespace in a database that uniquely identifies the tablespace. The tablespace name can contain up to 8 characters. **PhysicalReads** The total number of data blocks read from a datafile when a request for a data block could not be done from a local cache. **PhysicalWrites** The total number of data blocks written to disk.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleIO -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_PhysicalReads 500.000000 \
-t Oracle_Maximum_PhysicalWrites 1500.000000 \
-AddPar DatafileMetrics "PhysicalReads" \
-AddPar DatafileMetrics "PhysicalWrites" \
-e Oracle_High_PhysicalWrites \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_PhysicalReads \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Job Queue

Description

Monitors the number of broken, failed, and past due jobs in the job queue.

An Oracle *job* is an automated standard and repetitive task, such as executing an operating system command, or backing up a database. The *job queue* is a database table that stores complete information about jobs such as when and where to run a job.

A *failed job* is a job that generates an error when Oracle attempts execution. Oracle tries to execute a failed job again after one minute. If the job continues to fail, Oracle makes continued attempts with the interval time doubling between each attempt. When a job fails sixteen times, Oracle marks the job as *broken* and no longer attempts execution. The alert log and trace files record the information about failed jobs, including message number ORA-12012 and the job number of the failed job. Common causes of failed jobs include network or instance failure, or an exception when executing the job. Between job execution attempts, you can correct the problem that is preventing the job from running. This does not interrupt the job retry cycle, and Oracle eventually attempts to run the job again.

A *broken job* is a job that does not execute successfully. Oracle does not try to run broken jobs. Jobs can break for two reasons: Oracle has failed to successfully execute the job after 16 attempts, or you have marked the job as broken. Oracle does not try to execute a broken job until you either mark the job as not broken, or force the job to be executed with the DBMS_JOB.RUN procedure. Check the alert log and trace files for error information about a broken job.

A *past due job* is a job that did not execute at the scheduled execution time.

Resource model overview	
Internal name	OracleJobQueue
Category	Oracle
Indications	**High Oracle Job Failures** occurs when an Oracle job does not complete.
	Oracle Job is broken occurs when an Oracle job is broken.
	Oracle Job Past Due occurs when an Oracle job becomes past due.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Oracle Job Failures	Oracle_High_JobFailures	Critical	Yes	121
Oracle Job is broken	Oracle_JobBroken	Critical	Yes	122
Oracle Job Past Due	Oracle_JobPastDue	Critical	Yes	123

High Oracle Job Failures indication

Occurs when an Oracle job does not complete. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The failure rate for Oracle Job ID <JobID>
on database <DatabaseName> has crossed above the predefined threshold of
<Threshold> and is currently at <Failures> failures.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Failures
The number of times this job has started and failed since its last successful execution.

Interval
A date function that is evaluated at the start of execution that becomes next NEXT_DATE.

JobID The identifier of a job. Import/export and repeated executions will not change this value.

LastSuccessDate
The most recent date on which this job successfully executed.

LogUser
The login username for a submitted job.

NextDate
The date that this job will be executed next.

SchemaUser
The default schema that is used to parse a job.

This indication has the following thresholds:

- Maximum Number of Job Failures

For more information about these thresholds, see "Thresholds" on page 124.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Oracle Job is broken indication

Occurs when an Oracle job is broken. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle Job <JobID> on database
<DatabaseName> is broken.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

JobID The identifier of a job. Import/export and repeated executions will not change this value.

LastSuccessDate
The most recent date on which this job successfully executed.

LogUser
The login username for a submitted job.

SchemaUser
The default schema that is used to parse a job.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Oracle Job Past Due indication

Occurs when an Oracle job becomes past due. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle Job <JobID> on database
<DatabaseName> has crossed above the predefined threshold of <Threshold>
minutes and is currently <DelayMinutes> minutes past due.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

DelayMinutes
Number of minutes from the current date that this job is next scheduled to be executed. This value is positive when the scheduled time is set in the past, and negative when the scheduled time is set in the future.

Interval
A date function that is evaluated at the start of execution that becomes next NEXT_DATE.

JobID The identifier of a job. Import/export and repeated executions will not change this value.

LastSuccessDate
The most recent date on which this job successfully executed.

NextDate
The date that this job will be executed next.

This indication has the following thresholds:

- Maximum Job Past Due Threshold

For more information about these thresholds, see “Thresholds” on page 124.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Job Queue resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Number of Job Failures	An indication occurs if the number of job failures exceeds this value.	0
Maximum Job Past Due Threshold	An indication occurs if the number of minutes a job is past due exceeds this value.	0

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Job Queue resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Job Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Failures Next Date

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleJob	Job Queue	**Broken** Specifies if an attempt to execute a job is successful. Y displays when no attempt is made to run this job. N displays if an attempt is made to run this job. **Failures** The number of times this job has started and failed since its last successful execution. **JobID*** The identifier of a job. Import/export and repeated executions will not change this value. **NextDate** The date that this job will be executed next. **NextSec** The time when this job will execute next. **OracleDatabase.DatabaseName*** The name of an Oracle database. **PastDueMinutes** The number of minutes a job is past due. **PrivUser** The username for the user whose default privileges apply to this job. **SchemaUser** The default schema that is used to parse a job.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleJobQueue -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_JobPastDue 0.000000 \
-t Oracle_Maximum_JobFailures 0.000000 \
-AddPar JobMetrics "strNextDate" \
-AddPar JobMetrics "numFailures" \
-e Oracle_JobBroken \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_JobPastDue \
-o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_JobFailures \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Listener State

Description

Monitors the state of the Oracle listeners. Distribute this resource model to the instance object only.

The *listener* is a server process that listens for incoming client connection requests and manages the traffic to the server. If the client information matches the listener information, then the listener grants a connection to the server.

This resource model determines whether the Oracle Net (**tnslsnr**) listener process is running. This process accepts Oracle Net connections from clients. The resource model runs a **ps** command on UNIX or a **net start** command on Windows to check if the listener is running. You can start the listener by logging in as the Oracle owner and typing the following:

```
lsnrctl start <listener_name>
```

This resource model fires indications when a listener is in one of five listener states. The possible states and an explanation of each appears in the following table:

Table 4. Listener states and explanations

Listener state	State explanation
Becomes Available Listener State	Occurs when the listener was not available in the previous request, but is available in the current request.
Becomes Unavailable Listener State	Occurs when the listener was not unavailable in the previous request, but is unavailable in the current request.
Becomes Unknown Listener State	Occurs when the listener was available in a previous request, but is not responding to the current request.
Unavailable Listener State	Occurs when the listener is not available for the current request.
Unknown Listener State	Occurs when the implementation cannot determine the state of the listener.

The resource model should only be distributed once on each machine, regardless of the number of the databases on the machine. If the listeners are not available, run the Listener Task to turn on the listeners. See "Listener" on page 351 for more information about the Listener Task. See the *IBM Tivoli Monitoring for Databases: Oracle User's Guide* for instructions on how to run a task.

Because the Listener State resource model determines the current state of a listener, there are no real numeric thresholds to be measured or exceeded.

Resource model overview	
Internal name	OracleListenerState
Category	Oracle

Resource model overview	
Indications	**Becomes Available Listener State** occurs when the Oracle database listener makes the transition from any other state to an available state.
	Becomes Unavailable Listener State occurs when the Oracle database instance makes the transition from any other state to an unavailable state.
	Becomes Unknown Listener State occurs when the Oracle database listener makes the transition from any other state to an unknown state.
	Unavailable Listener State occurs when the Oracle database listener is unavailable.
	Unknown Listener State occurs when the state of the Oracle database listener cannot be determined by the monitor.
Tasks and built-in actions	None
Default cycle time	300 seconds (5 min)

Target managed resource

OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Becomes Available Listener State	Oracle_Becomes_Available_ ListenerState	Harmless	Yes	127
Becomes Unavailable Listener State	Oracle_Becomes_Unavailable_ ListenerState	Critical	Yes	128
Becomes Unknown Listener State	Oracle_Becomes_Unknown_ ListenerState	Critical	Yes	129
Unavailable Listener State	Oracle_Unavailable_ListenerState	Critical	Yes	130
Unknown Listener State	Oracle_Unknown_ ListenerState	Critical	Yes	131

Becomes Available Listener State indication

Occurs when the Oracle database listener makes the transition from any other state to an available state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle database listener
<ListenerName> has become available.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ListenerName
The name of the server process that listens for and accepts incoming client application connection requests. Listener processes start up database processes to handle subsequent communications with the client.

ListenerState
The current state of the listener process: Available, Unavailable, or Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Becomes Unavailable Listener State indication

Occurs when the Oracle database instance makes the transition from any other state to an unavailable state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle database listener
<ListenerName> has become unavailable.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ListenerName
The name of the server process that listens for and accepts incoming client

application connection requests. Listener processes start up database processes to handle subsequent communications with the client.

ListenerState
The current state of the listener process: Available, Unavailable, or Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Becomes Unknown Listener State indication

Occurs when the Oracle database listener makes the transition from any other state to an unknown state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The state of the Oracle database listener
<ListenerName> has become unknown.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ListenerName
The name of the server process that listens for and accepts incoming client application connection requests. Listener processes start up database processes to handle subsequent communications with the client.

ListenerState
The current state of the listener process: Available, Unavailable, or Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Unavailable Listener State indication

Occurs when the Oracle database listener is unavailable. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle database listener
<ListenerName> is Unavailable.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ListenerName
The name of the server process that listens for and accepts incoming client application connection requests. Listener processes start up database processes to handle subsequent communications with the client.

ListenerState
The current state of the listener process: Available, Unavailable, or Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Unknown Listener State indication

Occurs when the state of the Oracle database listener cannot be determined by the monitor. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The state of the Oracle database
listener <ListenerName> cannot be determined.
Exception: <ErrorMsg>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ErrorMsg
The error message text for the most recent unsuccessful execution.

ListenerName
The name of the server process that listens for and accepts incoming client application connection requests. Listener processes start up database processes to handle subsequent communications with the client.

ListenerState
The current state of the listener process: Available, Unavailable, or Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

None

Parameters

None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleListener	State	**ListenerName*** The name of the server process that listens for and accepts incoming client application connection requests. Listener processes start up database processes to handle subsequent communications with the client. **OracleListenerStateAvailablePercentTime** The percentage of time the listener was in an available state. **OracleListenerStateUnavailablePercentTime** The percentage of time the listener was in an unavailable state. **OracleListenerStateUnknownPercentTime** The percentage of time the listener was in an unknown state.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleListenerState -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-e Oracle_Unavailable_ListenerState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Unknown_ListenerState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Unknown_ListenerState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Unavailable_ListenerState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Available_ListenerState \
 -o 1 -h 0 -severity HARMLESS -SendTBSM -SendTec
```

Lock

Description

Monitors the following information:

- The total number of deadlocks detected since the instance was started
- The current number of Data Manipulation Language locks as a percentage of the maximum number of locks defined for the instance
- The number of active locks of a user-specified type
- The number of times an enqueue lock was requested and was not granted immediately

A *lock* is the means by which integrity of data is protected by preventing more than one user from accessing or changing the same data or object at the same time. An *active lock* is a lock that is currently operating.

Oracle automatically assigns appropriate locks when executing SQL statements. Oracle chooses the lowest level of restrictiveness to protect data integrity, but also keep a high degree of data concurrency. Users may also choose to lock data manually.

Oracle uses various locks to control concurrent access to data and to prevent destructive interaction between users. Oracle locks a resource when a transaction requires exclusive access to that resource. This prevents other transactions from manipulating that same resource while the active transaction is working. Oracle releases the lock when the transaction no longer needs the resource.

Depending on the resource and the operation being performed, Oracle picks a lock with an appropriate level of restrictiveness. Types of Oracle locks include the following:

DML locks (data locks)
Data Manipulation Language locks protect data — for example, table locks lock entire tables, row locks lock selected rows.

DDL locks (dictionary locks)
Data Definition Language locks protect the structure of schema objects — for example, the definitions of tables and views.

Internal locks and latches
Internal locks and latches protect internal database structures such as datafiles. Internal locks and latches are entirely automatic.

Distributed locks
Distributed locks ensure that the data and other resources distributed among the various instances of an Oracle Parallel Server remain consistent. Distributed locks are held by instances rather than transactions. They communicate the current status of a resource among the instances of an Oracle Parallel Server.

Parallel cache management (PCM) locks
Parallel cache management locks are distributed locks that cover one or more data blocks (table or index blocks) in the buffer cache. Parallel cache management locks do not lock any rows on behalf of transactions.

Resource model overview	
Internal name	OracleLock

Resource model overview	
Category	Oracle
Indications	**High DML Locks Percentage** occurs when the percentage of DML Locks exceeds the specified threshold.
	High Lock Count occurs when the number of locks exceeds the specified threshold.
	High Number of Deadlocks occurs when the number of deadlocks exceeds the specified threshold.
	High Number of Enqueue Timeouts occurs when the number of enqueue timeouts exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High DML Locks Percentage	Oracle_High_ DMLLocksPercentage	Critical	Yes	134
High Lock Count	Oracle_High_LockCount	Critical	Yes	135
High Number of Deadlocks	Oracle_High_Deadlocks	Critical	Yes	136
High Number of Enqueue Timeouts	Oracle_High_ EnqueueTimeouts	Critical	Yes	137

High DML Locks Percentage indication

Occurs when the percentage of DML Locks exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The DML Locks Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently
at <DMLLocksPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication checks for Data Manipulation Language locks. The instance limit is set through the DML_LOCKS initialization parameter and represents the maximum number of locks that can be placed on all tables by all users at any one time. The default is four times the maximum number of transactions. When the limit is reached, processing stops and an Oracle error is produced. Within the bounds of the maximum limit, the setting of the DML_LOCKS parameter has little or no effect on the performance of the server. Therefore, it should be set artificially high to prevent hitting the maximum limit, which is operating-system specific.

The indication has the following attribute:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

DMLLocksPercentage
The current number of Data Manipulation Language (DML) locks as a percentage of the maximum number of locks defined for the instance. The instance limit is set through the DML_LOCKS initialization parameter and represents the maximum number of locks that can be placed on all tables by all users at any one time. When the limit is reached, processing stops and an Oracle error occurs.

This indication has the following thresholds:

- Maximum DML Locks Percentage

For more information about these thresholds, see "Thresholds" on page 138.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Lock Count indication

Occurs when the number of locks exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The <Type> Lock Count for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold> locks
and is currently at <LockCount> locks.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication monitors the number of active locks of a user-specified type. The active lock output is useful to detect potential problems in your database performance. A *lock* is the means by which integrity of data is protected by preventing more than one user from accessing or changing the same data or object at the same time. An *active lock* is a lock that is currently operating. Lock types and thresholds are specified in the Lock Types parameter in the form **LOCK_TYPE:THRESHOLD**.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

LockCount
The number of LockType locks currently held.

Type The type of user or system lock. Locks control concurrent access to data. Any process that is blocking other processes is likely holding one of these locks. User locks are obtained by user applications. User type locks include: TM (DML lock), TX (Row Transaction lock), ST (Space Transaction lock), UL (User defined lock). System type locks can be found in the Oracle documentation.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Number of Deadlocks indication

Occurs when the number of deadlocks exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Number of Deadlocks for Oracle instance <InstanceName> has
crossed above the predefined threshold of <Threshold> deadlocks and is
currently at <Deadlocks> deadlocks.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication monitors for large occurrences of deadlocks. A *deadlock* occurs when two or more users are waiting for data locked by each other. Deadlocks can cause transactions to hang. Oracle automatically resolves deadlocks by rolling back one of the processes. When a deadlock is detected, a trace file is produced in the directory that is specified in the USER_DUMP_DEST initialization parameter that shows which processes were involved in the deadlock and which processes were blocking and waiting. If deadlocks are occurring, there could be an application design problem. The maximum number of deadlocks is specified in the V$SYSSTAT table.

The indication has the following attribute:

Deadlocks
The number of deadlocks detected since the instance was started.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following thresholds:

- Maximum Number of Deadlocks

For more information about these thresholds, see "Thresholds" on page 138.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Number of Enqueue Timeouts indication

Occurs when the number of enqueue timeouts exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Number of Enqueue Timeouts for Oracle instance
<InstanceName> has crossed above the predefined threshold
of <Threshold> enqueue timeouts and is currently
at <EnqueueTimeouts> enqueue timeouts.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication monitors for large occurrences of enqueue timeouts. An *enqueue* is another name for a lock. *Enqueue timeouts* occur when table and row locks time-out before they can complete. The default value of the ENQUEUE_RESOURCES initialization parameter defines the number of resources that can be concurrently locked. This value is derived from the PROCESSES initialization parameter. For three or fewer processes, the default value is 20. For four to 10 processes, the default value is ((PROCESSES - 3) * 5) + 20, and for more than 10 processes, the default value is ((PROCESSES - 10) * 2) + 55. If applications are using a large number of tables, increase this value.

The indication has the following attribute:

EnqueueTimeouts
The total number of enqueue (table and row) locks that timed out before they could complete.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following thresholds:

- Maximum Enqueue Timeouts

For more information about these thresholds, see “Thresholds” on page 138.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Lock resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Number of Deadlocks	An indication occurs if the number of deadlocks exceeds this value.	100
Maximum DML Locks Percentage	An indication occurs if the percentage of DML locks exceeds this value. The maximum percentage of DML Locks is compared with the maximum number of DML locks as defined in the initSID.ora parameter 'dml_locks.'	95
Maximum Enqueue Timeouts	An indication occurs if the number of enqueue timeouts exceeds this value.	100

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Lock resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Lock Types	The selected types of locks to monitor and the thresholds representing the maximum number allowed before an indication is set. The format for each entry is LOCK_TYPE:THRESHOLD.	TM:40 TX:40 UL:40
Instance Lock Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Current DML Locks DML Locks Maximum DML Locks Percentage Enqueue Timeouts Lock count for lock type Q*: Row cache Lock count for lock type N*: Library cache pin Lock count for lock type L*: Library cache Number of Deadlocks TM Lock Count TX Lock Count UL Lock Count

The following table lists the lock command line and GUI type name and description:

Locks	Description
BL	Buffer hash table instance lock
CF	Cross-instance function invocation instance lock
CI	Control file schema global enqueue lock
CU	Cursor bind lock
DF	Data file instance lock
DL	Direct loader parallel index create lock
DM	Mount/ startup db primary/ secondary instance lock
DR	Distributed recovery process lock
DX	Distributed transaction entry lock
FS	File set lock
HW	Space management operations on a specific segment lock
IN	Instance number lock
IR	Instance recovery serialization global enqueue lock
IS	Instance state lock
IV	Library cache invalidation instance lock
JQ	Job queue lock
KK	Thread kick lock
L*	Library cache lock instance lock
MM	Mount definition global enqueue lock
MR	Media recovery lock
N*	Library cache pin instance lock
PF	Password File lock
PI	Parallel operation lock
PR	Process startup lock
PS	Parallel operation lock
Q*	Row cache instance lock
RT	Redo thread global enqueue lock
SC	System commit number instance lock
SM	SMON lock
SN	Sequence number instance lock
SQ	Sequence number enqueue lock
SS	Sort segment lock
ST	Space transaction enqueue lock
SV	Sequence number value lock
TA	Generic enqueue lock
TM	DML enqueue lock
TS	Temporary segment enqueue lock
TT	Temporary table enqueue lock
TX	Transaction enqueue lock
UL	User supplied lock
UN	User name lock

Locks	Description
US	Undo segment DDL lock
WL	Being-written redo log instance lock

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	Lock	**CurrentDMLLocks** The total number of locks on tables that are undergoing a Data Manipulation Language operation (insert, update, delete) currently referenced by all users. **Deadlocks** The number of deadlocks detected since the instance was started. **DMLLocksPercentage** The current number of Data Manipulation Language (DML) locks as a percentage of the maximum number of locks defined for the instance. **DMLLocksMaximum** The maximum allowable total of all locks on tables currently referenced by all users. **EnqueueTimeouts** The total number of enqueue (table and row) locks that timed out before they could complete. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **BLCount** The number of buffer hash table instance locks detected since the instance was started. **CFCount** The number of cross-instance function invocation instance lock detected since the instance was started. **CICount** The number of control file schema global enqueue locks. **CUCount** The number of cursor bind locks detected since the instance was started. **DFCount** The number of data file instance locks detected since the instance was started.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleInstance	Lock	**DMCount** The number of Mount/ startup db primary/ secondary instance locks detected since the instance was started. **DRCount** The number of distributed recovery process locks detected since the instance was started. **DXCount** The number of distributed transaction entry locks detected since the instance was started. **FSCount** The number of file set locks detected since the instance was started. **HWCount** The number of space management operations on a specific segment locks detected since the instance was started. **INCount** The number of instance number locks detected since the instance was started. **IRCount** The number of instance recovery serialization global enqueue locks detected since the instance was started. **ISCount** The number of instance state locks detected since the instance was started. **IVCount** The number of library cache invalidation instance locks detected since the instance was started. **JQCount** The number of job queue locks detected since the instance was started. **KKCount** The number of thread kick locks detected since the instance was started. **LibraryCacheLockCount** The number of library cache lock instance locks detected since the instance was started. **MMCount** The number of mount definition global enqueue locks detected since the instance was started. **MRCount** The number of media recovery locks detected since the instance was started.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleInstance	Lock	**LibraryCachePinLockCount** The number of library cache pin instance locks detected since the instance was started. **PFCount** The number of password file locks detected since the instance was started. **PICount** The number of parallel operation locks detected since the instance was started. **PRCount** The number of process startup locks detected since the instance was started. **PSCount** The number of parallel operation locks detected since the instance was started. **RowCacheLockCount** The number of row cache instance locks detected since the instance was started. **RTCount** The number of redo thread global enqueue locks detected since the instance was started. **SCCount** The number of system commit number instance locks detected since the instance was started. **SMCount** The number of SMON locks detected since the instance was started. **SNCount** The number of sequence number instance locks detected since the instance was started.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleInstance	Lock	**SQCount** The number of sequence number enqueue locks detected since the instance was started. **SSCount** The number of sort segment locks detected since the instance was started. **STCount** The number of space transaction enqueue locks detected since the instance was started. **SVCount** The number of sequence number value locks detected since the instance was started. **TACount** The number of generic enqueue locks detected since the instance was started. **TMCount** The number of DML enqueue locks detected since the instance was started. **TSCount** The number of temporary segment enqueue locks detected since the instance was started. **TTCount** The number of temporary table enqueue locks detected since the instance was started. **TXCount** The number of transaction enqueue locks detected since the instance was started. **ULCount** The number of user supplied locks detected since the instance was started. **UNCount** The number of user name locks detected since the instance was started. **USCount** The number of undo segment DDL locks detected since the instance was started. **WLCount** The number of being-written redo log instance locks detected since the instance was started.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleLock -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Maximum_DMLLocksPercentage 95.000000 \
-t Maximum_EnqueueTimeouts 2.000000 \
-t Maximum_Deadlocks 2.000000 \
-AddPar InstanceLockMetrics "numDeadlocks" \
-AddPar InstanceLockMetrics "numDMLLocksPercentage" \
-AddPar InstanceLockMetrics "numCurrentDMLLocks" \
-AddPar InstanceLockMetrics "numEnqueueTimeouts" \
-AddPar InstanceLockMetrics "numDMLLocksMaximum" \
-AddPar InstanceLockMetrics "numTMLockCount" \
-AddPar InstanceLockMetrics "numTXLockCount" \
-AddPar InstanceLockMetrics "numULLockCount" \
-DelPar LockTypes "TM:40" \
-DelPar LockTypes "TX:40" \
-DelPar LockTypes "UL:40" \
-AddPar LockTypes "TM:50" \
-AddPar LockTypes "TX:50" \
-AddPar LockTypes "UL:50" \
-e Oracle_High_LockCount \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_EnqueueTimeouts \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_DMLLocksPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_Deadlocks \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Log Event

Description

Monitors events in the Oracle background log for Oracle errors.

The resource model only reports an error once and only checks for new entries in the **ALERT** log each time the resource model is run. An indication is sent for each matched entry in the Alerts file that was added during the last cycle.

If the resource model reports any errors, check the **ALERT** log and any associated trace files for the instance. The **ALERT** log file is a special trace file that contains a chronological log of messages and errors. The Oracle **ALERT** log is named **alert**_*sid*.**log** on UNIX, and *sid***ALRT.LOG** or **alert**_*sid*.**log** on Windows. It is located in the BACKGROUND_DUMP_DEST initialization parameter, which defaults to **$ORACLE_HOME/rdbms/log** on UNIX, and **%ORACLE_HOME%\rdbms** on Windows. In order to determine the location of this file, the resource model first checks the database, and if that is unsuccessful (for example, the database is down), the resource model checks the Oracle initialization file for the location.

The handling of messages in the alert file is based on Regular Expressions specified by default:

- If there are category/level conflicts in format, the worst-case event is sent. For example, if a log entry matches a Regular Expression with an assignment of Category 1 and a Regular Expression with an assignment of Category 0, the indication will be Category 0.
- The resource model behavior can be changed based on entries in the Regular Expressions file. The Regular Expressions file is a Java properties file. Each line contains a key=value pair. In this case, the keys are the regular expressions that will be matched in the Alerts file and the values are the assigned categories for these patterns. You can add, delete, or modify any of these regular expressions to alter the patterns and assigned categories.

  You can change the categories and values that the resource model queries by altering the Regular Expressions file. The Regular Expressions file is located in **$LCF_DATDIR/LCFNEW/ITM/PACS/Oracle**. The format file is a per-instance file and has the implication that each monitored instance on the endpoint has its own file.
- The alert file checks are based strictly on the resource model cycle time, not when Oracle makes entries. During each cycle, it searches all the log entries that have been added since the last cycle.
- When the IBM Tivoli Monitoring engine is stopped and then (later) restarted, the resource model does not send indications for old entries in the log file. Therefore, if the resource model is stopped and then restarted, it will not look at log entries that were added while it was stopped.

The errors that the resource model monitors in the alert log include the following:

- **Category 0 (Fatal)**
  - ORA-0204 error in reading control file
  - ORA-0206 error in writing control file
  - ORA-0210 cannot open control file
  - ORA-0257 archiver is stuck
  - ORA-0333 redo log read error
  - ORA-0345 redo log write error

  - ORA-0440 – ORA-0485 background process failure
  - ORA-0600 – ORA-0639 internal errors
  - ORA-1114 datafile I/O write error
  - ORA-1115 datafile I/O read error
  - ORA-1116 cannot open datafile
  - ORA-1118 cannot add a data file
  - ORA-1578 data block corruption
- **Category 1 (Critical)**
  - ORA-1135 file accessed for query is offline
  - ORA-1547 tablespace is full
  - ORA-1555 snapshot too old
  - ORA-1562 failed to extend rollback segment
  - ORA-1628 – ORA-1632 maximum extents exceeded
  - ORA-1650 – ORA-1656 tablespace is full
  - ORA-4031 out of shared memory
- **Category 2 (Minor)**
  - ORA-3113 end of file on communication channel
  - ORA-6501 PL/SQL internal error
  - 'cannot allocate new log' - this error indicates that Oracle is unable to perform a log switch. Increase the number of redo logs to resolve this problem.
- **Category 3 (Warning)**
- **Category 4 (Harmless)**

Resource model overview	
Internal name	OracleLogEvent
Category	Oracle
Indications	**Category 0 Oracle Log Event** occurs when a new Category Zero event registers in the Oracle log.
	Category 1 Oracle Log Event occurs when a new Category One event registers in the Oracle log.
	Category 2 Oracle Log Event occurs when a new Category Two event registers in the Oracle log.
	Category 3 Oracle Log Event occurs when a new Category Three event registers in the Oracle log.
	Category 4 Oracle Log Event occurs when a new Category Four event registers in the Oracle log.
Tasks and built-in actions	None
Default cycle time	300 seconds (5 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Category 0 Oracle Log Event	Oracle_Log_Event_ Category_Zero	Fatal	No	149
Category 1 Oracle Log Event	Oracle_Log_Event_ Category_One	Critical	No	150
Category 2 Oracle Log Events	Oracle_Log_Event_ Category_Two	Minor	No	151
Category 3 Oracle Log Event	Oracle_Log_Event_ Category_Three	Warning	No	152
Category 4 Oracle Log Event	Oracle_Log_Event_ Category_Four	Harmless	No	153

Category 0 Oracle Log Event indication

Occurs when a new Category Zero event registers in the Oracle log. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: <Text> : Category 0`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

FileName
The name of the file to which the Oracle instance is logging.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Offset The offset (in bytes) from the beginning of the log file where the log event starts.

LogEventSeverity
The severity (as an integer) of the log event. The severity number is determined by the number assigned to the pattern it matches in the regular expression file.

Text The text of the log event.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Category 1 Oracle Log Event indication

Generates an event a new Category One event registers in the Oracle log. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: <Text> : Category 1`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

FileName
The name of the file to which the Oracle instance is logging.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Offset The offset (in bytes) from the beginning of the log file where the log event starts.

LogEventSeverity
The severity (as an integer) of the log event. The severity number is determined by the number assigned to the pattern it matches in the regular expression file.

Text The text of the log event.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Category 2 Oracle Log Event indication

Occurs when a new Category Two event registers in the Oracle log. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: <Text> : Category 2`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

FileName
The name of the file to which the Oracle instance is logging.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Offset The offset (in bytes) from the beginning of the log file where the log event starts.

LogEventSeverity
The severity (as an integer) of the log event. The severity number is determined by the number assigned to the pattern it matches in the regular expression file.

Text The text of the log event.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1

Setting	Default value
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Category 3 Oracle Log Event indication

Occurs when a new Category Three event registers in the Oracle log. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: <Text> : Category 3`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

FileName
The name of the file to which the Oracle instance is logging.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Offset The offset (in bytes) from the beginning of the log file where the log event starts.

LogEventSeverity
The severity (as an integer) of the log event. The severity number is determined by the number assigned to the pattern it matches in the regular expression file.

Text The text of the log event.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Category 4 Oracle Log Event indication

Generates an event a new Category Four event registers in the Oracle log. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: <Text> : Category 4`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

FileName
The name of the file to which the Oracle instance is logging.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Offset The offset (in bytes) from the beginning of the log file where the log event starts.

LogEventSeverity
The severity (as an integer) of the log event. The severity number is determined by the number assigned to the pattern it matches in the regular expression file.

Text The text of the log event.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

None

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Log Event resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Log Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Category 0 Event Count Category 1 Event Count Category 2 Event Count Category 3 Event Count Category 4 Event Count

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	Log	**Category0EventCount** The number of Category 0 Log Events in the log event file. **Category1EventCount** The number of Category 1 Log Events in the log event file. **Category2EventCount** The number of Category 2 Log Events in the log event file. **Category3EventCount** The number of Category 3 Log Events in the log event file. **Category4EventCount** The number of Category 4 Log Events in the log event file. **OracleDatabase.DatabaseName*** The name of an Oracle database. **InstanceName*** The name of an Oracle database instance.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleLogEvent -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-AddPar InstanceLogMetrics "numCategory0EventCount" \
-AddPar InstanceLogMetrics "numCategory1EventCount" \
-AddPar InstanceLogMetrics "numCategory2EventCount" \
-AddPar InstanceLogMetrics "numCategory3EventCount" \
-AddPar InstanceLogMetrics "numCategory4EventCount" \
-e Oracle_Log_Event_Category_Two \
 -o 1 -h 0 -severity MINOR -SendTBSM -SendTec \
-e Oracle_Log_Event_Category_Four \
 -o 1 -h 0 -severity HARMLESS -SendTBSM -SendTec \
-e Oracle_Log_Event_Category_Three \
 -o 1 -h 0 -severity WARNING -SendTBSM -SendTec \
-e Oracle_Log_Event_Category_Zero \
 -o 1 -h 0 -severity FATAL -SendTBSM -SendTec \
-e Oracle_Log_Event_Category_One \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Maximum Extents

Description

Alerts on those segments whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold. This information can help determine which segments are approaching the maximum allowable number of extents. Objects of segment_type, CACHE, are not included.

An *extent* is a contiguous set of data blocks allocated for storing data. Extents are grouped into data structures called *segments*. *Maximum extents* are the total number of extents that can be allocated for a segment.

Objects can reject additional extents for the following reasons:

- The tablespace in which the object has been stored does not have enough contiguous space to allocate additional extents
- The segment has already allocated the maximum number of extents as set by the DBA or by the data block size and operating system

When the number of extents for an object reaches the value of the MAXEXTENTS storage parameter, the operation fails to allocate a new extent. If the block size value of MAXEXTENTS is less than the maximum allowable, increase the value of MAXEXTENTS parameter for that object. Otherwise, export the object, drop and recreate the object with larger extent sizes, and import the data.

Set the parameter, **Exclude Rollback Segments**, to **Yes**, to exclude the number of extents in rollback segments.

Resource model overview	
Internal name	OracleMaximumExtents
Category	Oracle
Indications	**Low Free Extents** occurs when the number of free MaxExtents is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Free Extents	Oracle_Low_FreeExtents	Critical	Yes	157

Low Free Extents indication

Occurs when the number of free MaxExtents is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of free extents for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined threshold <Threshold>
and is currently at <FreeExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Minimum Free Extents

For more information about this threshold, see "Thresholds" on page 158.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes

Setting	Default value
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Maximum Extents resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Extents	An indication occurs when the number of free extents is lower than this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Maximum Extents resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Exclude Rollback Segments	YES ignores rollback segments. NO does not ignore rollback segments.	Yes
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Current Extents Free Extents Percent Extents Allocated

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**FreeExtents** Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **CurrentExtents** The number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** Percentage of current extents to the maximum number allowed for the segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleMaximumExtents -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeExtents 5.000000 \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-AddPar ExcludeRollbackSegments "Yes" \
-e Oracle_Low_FreeExtents \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Maximum Extents by Tablespace

Description

Alerts on segments, in specified tablespaces, whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.

An *extent* is a contiguous set of data blocks allocated for storing data. Extents are grouped into data structures called *segments*. *Maximum extents* are the total number of extents that can be allocated for a segment.

Objects can reject additional extents for the following reasons:

- The tablespace in which the object has been stored does not have enough contiguous space to allocate additional extents
- The segment has already allocated the maximum number of extents as set by the dba or by the data block size and operating system

When the number of extents for an object reaches the value of the MAXEXTENTS storage parameter, the operation fails to allocate a new extent. If the block size value of MAXEXTENTS is less than the maximum allowable, increase the value of MAXEXTENTS parameter for that object. Otherwise, export the object, drop and recreate the object with larger extent sizes, and import the data.

Set the parameter, **Exclude Rollback Segments**, to **Yes**, to exclude the number of extents in rollback segments.

This resource model can use tokens to monitor a set of tables specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleMaximumExtentsByTablespace
Category	Oracle
Indications	**Low Free Extents** occurs when the number of free maximum extents is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Low Free Extents	Oracle_Low_FreeExtentsByTablespace	Critical	Yes	161

Low Free Extents indication

Occurs when the number of free maximum extents is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of free extents for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined threshold
<Threshold> and is currently at <FreeExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

PctExtentsAllocated
Percentage of current extents to the maximum number allowed for the segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Minimum Free Extents

For more information about this threshold, see "Thresholds" on page 162.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Maximum Extents by Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Extents	An indication occurs when the number of free extents is lower than this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Maximum Extents by Tablespace resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Include/Exclude	Includes or excludes the contents of the tablespaces names field.	Include
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Current Extents Free Extents Percent Extents Allocated
Tablespace Names	Designates the tablespaces names you want to include or exclude. Use spaces to separate names.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
Oracle Segment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** Percentage of current extents to the maximum number allowed for the segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region \
-add OracleMaximumExtentsByTablespace -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeExtentsByTablespace 5.000000 \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-AddPar IncludeExcludeTablespaces "Include" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
```

```
-AddPar List "SYSTEM" \
-e Oracle_Low_FreeExtentsByTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Maximum Extents by User

Description

Alerts on segments, for a specified user, whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold. Checks the value of MAXEXTENTS for a segment of a specified user and reports the number of extents that can still be allocated to objects for segments of a specified user. This information can help determine which segments are approaching the Maximum allowable number of extents. Objects of segment_type, CACHE, are not included.

This resource model checks the value of MAXEXTENTS in each object and reports the number of extents that can still be allocated to each object. This information can help determine which segments do not have room for additional extents. Objects of segment_type, CACHE, are not included.

An *extent* is a contiguous set of data blocks allocated for storing data. Extents are grouped into data structures called *segments*. *Maximum extents* are the total number of extents that can be allocated for a segment.

Objects can reject additional extents for the following reasons:

- The tablespace in which the object has been stored does not have enough contiguous space to allocate additional extents
- The segment has already allocated the maximum number of extents as set by the DBA or by the data block size and operating system

When the number of extents for an object reaches the value of the MAXEXTENTS storage parameter, the operation fails to allocate a new extent. If the block size value of MAXEXTENTS is less than the maximum allowable, increase the value of MAXEXTENTS parameter for that object. Otherwise, export the object, drop and recreate the object with larger extent sizes, and import the data.

Set the parameter, **Exclude Rollback Segments**, to **Yes**, to exclude the number of extents in rollback segments.

This resource model can use tokens to monitor a set of users specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleMaximumExtentsbyUser
Category	Oracle
Indications	**Low Free Extents** occurs when the number of Free Maximum Extents is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds (1 hour)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Low Free Extents	Oracle_Low_FreeExtentsByUser	Critical	Yes	166

Low Free Extents indication

Occurs when the number of Free Maximum Extents is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of free extents for the Oracle segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined threshold
<Threshold> and is currently at <FreeExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

PctExtentsAllocated
Percentage of current extents to the maximum number allowed for the segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Minimum Free Extents

For more information about this threshold, see "Thresholds" on page 167.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Maximum Extents by User resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Extents	An indication occurs when the number of free maximum extents is lower than this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Maximum Extents by User resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Current Extents Free Extents Percent Extents Allocated

Parameter	Description	Default value
User Name	Specifies the Oracle user name.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** Maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** Percentage of current extents to the maximum number allowed for the segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleMaximumExtentsByUser -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeExtentsByUser 5.000000 \
-AddPar IncludeUser "SYS" \
```

```
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-e Oracle_Low_FreeExtentsByUser \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Multi-Threaded Server

Description

Note: This resource model is applicable only if the instance has been configured for the multi-threaded server. This resource model must be configured in order to run properly. Set the following configurations in the initialization parameter:

```
mts_dispatchers="(protocol=tcp)(dispatchers=3)(pool=on)(tick=1)
                 (connections=100)(sessions=400)"
mts_servers=5
mts_max_servers=10
```

Monitors the following information:

- The percentage of time that dispatcher processes for the protocol with the most contention are busy
- The time (in hundredths of a second) that a response waits in the response queue for a dispatcher process to route it, for the protocol with the longest average wait time
- The current number of shared-server processes as a percentage of the instance limit
- Reports the average wait time (in hundredths of a second) that a request waits in the request queue

Resource model overview	
Internal name	OracleMTS
Category	Oracle
Indications	**High Dispatcher Busy Percentage** occurs when the dispatcher busy percentage exceeds the specified threshold.
	High Dispatcher Wait Time occurs when the dispatcher wait time exceeds the specified threshold.
	High Shared Server Process Percentage occurs when the shared server process percentage exceeds the specified threshold.
	High Shared Server Process Highwater Mark Percentage occurs when the shared server process high water mark percentage exceeds the specified threshold.
	High Shared Server Request Queue Wait Time occurs when the shared server request queue wait time exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds (10 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Dispatcher Busy Percentage	Oracle_High_ DispatcherBusyPercentage	Critical	Yes	171
High Dispatcher Wait Time	Oracle_High_ DispatcherWaitTime	Critical	Yes	172
High Shared Server Process Percentage	Oracle_High_ SharedServerProcessPercentage	Critical	Yes	173
High Shared Server Process Highwater Mark Percentage	Oracle_High_ SharedServerProcessHWM Percentage	Critical	Yes	174
High Shared Server Request Queue Wait Time	Oracle_High_ SharedServerRequestQueue WaitTime	Critical	Yes	175

High Dispatcher Busy Percentage indication

Occurs when the dispatcher busy percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: The Dispatcher Busy Percentage for the <Protocol> protocol for Oracle instance <InstanceName> has crossed above the predefined threshold of <Threshold> percent and is currently at <DispatcherBusyPercentage> percent.`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Indicates the percentage of time that the dispatcher processes for each protocol are busy. If the dispatcher processes for a specific protocol are busy for more than 50% of the time, you can improve performance by adding more dispatcher processes. Do this by increasing the value of the MTS_MAX_DISPATCHERS initialization parameter.

The indication has the following attributes:

DispatcherBusyPercentage
The percentage of time that dispatcher processes for the specified protocol are busy.

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Protocol
The protocol utilized by one or more dispatchers.

This indication has the following thresholds:

- Maximum Dispatcher Busy Percentage

For more information about these thresholds, see "Thresholds" on page 176.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Dispatcher Wait Time indication

Occurs when the dispatcher wait time exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Dispatcher Wait Time for the <Protocol> protocol
for Oracle instance <InstanceName> has crossed above the predefined threshold of
<Threshold> hundredths of a second and is currently at
<DispatcherWaitTime> hundredths of a second.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the longest average wait time exceeds 0.1 seconds, you can improve performance by adding more dispatcher processes. Do this by increasing the value of the MTS_MAX_DISPATCHERS initialization parameter for Oracle 8i or 9i, or MAX_DISPATCHERS for Oracle 9i.

The indication has the following attributes:

DispatcherWaitTime
The average time (in hundredths of a second) that a response waits in the response queue for all dispatchers of the specified protocol to route it.

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Protocol
The protocol utilized by one or more dispatchers.

This indication has the following thresholds:

- Maximum Dispatcher Wait Time

For more information about these thresholds, see "Thresholds" on page 176.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Shared Server Process Percentage indication

Occurs when the shared server process percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Shared Server Process Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold>
percent and is currently at <SharedServerProcessPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Indicates the current number of shared server processes as a percentage of the instance limit. This controls the maximum number of shared server processes allowed to run simultaneously (the default is 20). If the shared server process ratio exceeds 85%, consider increasing the MTS_MAX_SERVERS initialization parameter for Oracle 8i or 9i, or MAX_SERVERS for Oracle 9i.

The indication has the following attribute:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

SharedServerProcessPercentage
The current number of shared-server processes as a percentage of the instance limit.

This indication has the following thresholds:

- Maximum Shared Server Process Percentage

For more information about these thresholds, see "Thresholds" on page 176.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Shared Server Process Highwater Mark Percentage indication

Occurs when the shared server process high water mark percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Shared Server Process Highwater Mark Percentage for
Oracle instance <InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<SharedServerProcessHWMPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attribute:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

SharedServerProcessHWMPercentage
The highest number of shared-server processes as a percentage of the instance limit.

This indication has the following thresholds:

- Maximum Shared Server Process Highwater Mark Percentage

For more information about these thresholds, see "Thresholds" on page 176.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Shared Server Request Queue Wait Time indication

Occurs when the shared server request queue wait time exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Shared Server Request Queue Wait Time for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> hundredths of a second and is currently at
<SharedServerWaitTime> hundreths of a second.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Indicates the average wait time (in hundredths of a second) that a request waits in the request queue. If the average request time exceeds 0.1 seconds, you can improve performance by adding more shared-server processes. To add more shared-server processes, increase the value of the MTS_MAX_SERVERS initialization parameter for Oracle 8i or 9i, or MAX_SERVERS for Oracle 9i.

The indication has the following attribute:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

SharedServerWaitTime
The average wait time (in hundredths of a second) that a request waits in the request queue.

This indication has the following thresholds:

- Maximum Shared Server Request Queue Wait Time

For more information about these thresholds, see "Thresholds" on page 176.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Multi-Threaded Server resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Dispatcher Busy Percentage	An indication occurs when the dispatcher busy percentage exceeds this value.	95
Maximum Dispatcher Wait Time	An indication occurs when the dispatcher wait time exceeds this value.	500
Maximum Shared Server Process Percentage	An indication occurs when the shared server process percentage exceeds this value.	95
Maximum Shared Server Process Highwater Mark Percentage	An indication occurs when the shared server process percentage high-water-mark exceeds this value.	95
Maximum Shared Server Request Queue Wait Time	An indication occurs when the shared server request queue wait time exceeds this value.	500

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Multi-Threaded Server resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Dispatcher Protocol MTS Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Busy Percentage Dispatcher Wait Time
Instance MTS Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Mark Percentage Shared Server Process Highwater Shared Server Process Percentage Shared Server Wait Time

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleDispatcherProtocol	MTS	**BusyPercentage** The percentage of time that dispatcher processes for the specified protocol are busy. **DispatcherWaitTime** The average time (in hundredths of a second) that a response waits until dispatchers of the specified protocol route it from the response queue. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **Protocol*** The protocol utilized by one or more dispatchers.

Managed resource	Context	Properties
OracleInstance	MTS	**InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **SharedServerProcessHWMPercentage** The highest number of servers running at the same time since the instance started. **SharedServerProcessPercentage** The current number of shared-server processes as a percentage of the instance limit. **SharedServerWaitTime** The average wait time (in hundredths of a second) that a request waits in the request queue.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleMTS -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Maximum_DispatcherBusyPercentage 95.000000 \
-t Maximum_DispatcherWaitTime 500.000000 \
-t Maximum_SharedServerProcessHWMPercentage 95.000000 \
-t Maximum_SharedServerProcessPercentage 95.000000 \
-t Maximum_SharedServerRequestQueueWaitTime 500.000000 \
-AddPar DispatcherProtocolMTSMetrics "numBusyPercentage" \
-AddPar DispatcherProtocolMTSMetrics "numDispatcherWaitTime" \
-AddPar InstanceMTSMetrics "numSharedServerWaitTime" \
-AddPar InstanceMTSMetrics "numSharedServerProcessPercentage" \
-AddPar InstanceMTSMetrics "numSharedServerProcessHWMPercentage" \
-e Oracle_High_SharedServerRequestQueueWaitTime \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_SharedServerProcessPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_DispatcherWaitTime \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_SharedServerProcessHWMPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_DispatcherBusyPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Other Performance Monitors

Description

Monitors the following performance-related metrics of an Oracle database:

- The session with the greatest number of open cursors, which the resource model reports as a percentage of the limit defined by the **OPEN_CURSORS** initialization parameter for the instance
- The block get rate, which is the basic measure of the rate at which the application system references the database
- The percentage of blocks accessed that were updated
- The ratio of cluster key scan block gets to cluster key scans (If the ratio exceeds one, the rows for a cluster key are stored in multiple data blocks.)
- The ratio, as a percentage, of freelist waits to the total number of requests for data
- The current number of Oracle processes as a percentage of the instance maximum
- The sort overflow percentage, which yields the number of sorts that are using temporary segments
- The number of rows in the SYS.DUAL table
- The current system-wide value from **V$SYSSTAT** for the specified statistic

Heterogeneous services connect Oracle and non-Oracle systems. This resource model examines the heterogeneous services accessing the Oracle instance at the monitoring interval and reports how long the service has been running. The resource model enables the user to filter for a particular service.

Resource model overview	
Internal name	OracleOtherPerformance
Category	Oracle

Resource model overview	
Indications	**High Any V$SYSSTAT** occurs when the value of the statistic from V$SYSSTAT exceeds the predefined threshold.
	High Changed Block Percentage occurs when the Changed Block Percentage for the particular Oracle Instance crosses above the predefined threshold.
	High Freelist Waits Ratio occurs when the Freelist Waits Ratio for the particular Oracle Instance exceeds the predefined threshold.
	High Open Cursors Percentage occurs when the percentage of open cursors over the maximum open cursors for a particular session exceeds the predefined threshold.
	High Process Percentage occurs when the Process Percentage for the particular Oracle Instance exceeds the predefined threshold.
	High Session Percentage occurs when the Session Percentage for the particular Oracle Instance exceeds the predefined threshold.
	High Sort Overflow Percentage occurs when the Sort Overflow Percentage for the particular Oracle Instance crosses above the predefined threshold.
	Low Any V$SYSSTAT occurs when the value of the statistic from V$SYSSTAT crosses below the predefined threshold.
	Low Block Get Rate occurs when the Block Get Rate is less than the predefined threshold.
	Unavailable Heterogeneous Agent occurs when the Heterogeneous Agent is unavailable.
Tasks and built-in actions	None
Default cycle time	1800 seconds (30 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Any V$SYSSTAT	Oracle_High_SysStat	Critical	Yes	181
High Changed Block Percentage	Oracle_High_ ChangedBlockPercentage	Critical	Yes	182
High Freelist Waits Ratio	Oracle_High_ FreelistWaitsRatio	Critical	Yes	183
High Open Cursors Percentage	Oracle_High_OpenCursors	Critical	Yes	184

Indication	Generated event	Default severity	Clearing events	Page
High Process Percentage	Oracle_High_ ProcessPercentage	Critical	Yes	186
High Session Percentage	Oracle_High_ SessionPercentage	Critical	Yes	187
High Sort Overflow Percentage	Oracle_High_ SortOverflowPercentage	Critical	Yes	188
Low Any V$SYSSTAT	Oracle_Low_SysStat	Critical	Yes	189
Low Block Get Rate	Oracle_Low_ BlockGetRate	Critical	Yes	190
Unavailable Heterogeneous Agent	Oracle_Unavailable_ HeterogeneousAgent	Critical	Yes	191

High Any V$SYSSTAT indication

Occurs when the value of the statistic from V$SYSSTAT exceeds the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The value for statistic <StatName> for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> and is currently <Value>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ClassNumber
The number that represents a statistics class. The class numbers represent the following: 1 User, 2 Redo, 4 Enqueue, 8 Cache, 16 OS, 32 Oracle Real Application Cluster, 64 SQL, 128 Debug.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

StatName
The name of the statistic.

Value The system statistic value.

The High Any V$SYSSTAT indication thresholds are set with the Monitored V$SYSSTAT Parameters and Thresholds parameter for this resource model.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Changed Block Percentage indication

Occurs when the Changed Block Percentage for the particular Oracle instance crosses above the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Changed Block Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at <ChangedBlockPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication reports the balance between queries made and the DML within the database application. Changes in this ratio indicate and quantify changes to index structures or application usage. The ratio is calculated as:

[*db block changes* / (*db block gets* + *consistent gets*)] * 100

The indication has the following attributes:

ChangedBlockPercentage
The percentage of blocks that were accessed and updated by users. The percentage is the balance between queries made and the DML within the database application.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following thresholds:

- Maximum Changed Block Percentage

For more information about these thresholds, see “Thresholds” on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Freelist Waits Ratio indication

Occurs when the Freelist Waits Ratio for the particular Oracle Instance exceeds the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Freelist Waits Ratio for Oracle instance <InstanceName>
has crossed above the predefined threshold of <Threshold> percent
and is currently at <FreelistWaitsRatio> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication calculates the freelist waits ratio as:

(*number of free list waits / total number of requests for data*) * 100

If the ratio exceeds 1%, increase the number of freelists for the relevant tables. An Oracle table is created with a default of one freelist. This might not be enough for insert- and update-intensive tables. When two or more processes are searching the freelist at the same time, a process might need to request additional information from disk, which can result in a resource wait. To avoid this problem, export the data from the insert- and update-intensive tables, drop the tables, recreate them with a bigger **FREELIST** parameter, and import the data.

The indication has the following attributes:

FreelistWaitsRatio
The ratio of freelist waits to the total number of requests for data.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following thresholds:

- Maximum Freelist Waits Ratio

For more information about these thresholds, see "Thresholds" on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Open Cursors Percentage indication

Occurs when the percentage of open cursors over the maximum open cursors for a particular session exceeds the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Open Cursor Percentage for Oracle Instance
<InstanceName> for session <SessionID> has crossed
above the predefined threshold of <Threshold> percent and is currently
at <OpenCursorsPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The location of private SQL areas is dependent on the use of a multi-threaded or dedicated server. A multi-threaded server uses the shared buffer pool to store private SQL; a dedicated server uses the user's Program Global Area (PGA). In both cases, the maximum number of private SQL areas that an individual session can process is defined by the **OPEN_CURSORS** initialization parameter (the default is 50). Within the bounds of the maximum limit, the setting of this parameter has little or no effect on the performance of the server; therefore, it should be set artificially high to prevent hitting the maximum limit. The maximum limit is operating-system dependent.

The indication has the following attributes:

AccessObject
The name of the object currently locked by this session.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

LockWait
The address of lock waiting for, or NULL if there is none.

LockWaitTime
The time (in seconds) since current mode was granted.

LogonTime
The time of logon for the specified session.

Machine
The name of the machine where the client process is executing.

OpenCursors
The number of cursors currently open by this session.

OpenCursorsPercentage
Per session, the percentage of open cursors to maximum allowed cursors per session.

OSUser
The operating system user name.

Process
The process identifier of the client process.

ProcessAddress
The address of the process that owns this session.

Program
The name of the client program being executed by the client process.

Server The server type as one of the following: dedicated, shared, pseudo, or none.

SessionID
The session identifier.

SQLHashValue
The hash value of the SQL statement used with SQL_ADDRESS to identify the SQL statement that is currently being executed.

SQLText
The text piece of a SQL statement.

Username
The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

This indication has the following thresholds:

- Maximum Open Cursors Percentage

For more information about these thresholds, see "Thresholds" on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1

Setting	Default value
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Process Percentage indication

Occurs when the process percentage for the particular Oracle instance exceeds the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Process Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at <ProcessPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication reports the current total number of Oracle processes running on the instance, as a percentage of the maximum. The maximum is set by the **PROCESSES** initialization parameter for the instance (the default is 50). If you increase the value of the PROCESSES parameter, you must also increase the value of SESSIONS if it is explicitly set in the initialization parameter file. Otherwise, SESSIONS defaults to PROCESSES * 1.1, which is acceptable. When setting this parameter, set one process for each connected user, and one process for each background process. Each instance requires at least four background processes (SMON, DBWR, LGWR, and PMON), but there can be a number of additional background processes, including the following:

- ARCn — If the database is running in ARCHIVELOG mode
- RECO — If the distributed option has been installed
- CKPT — If the checkpoint process is running
- DBWn — One process for each additional database writer
- Dnnn— One process for each dispatcher
- Snnn — One process for each shared server
- LCKn — One process for each parallel server lock process

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

ProcessPercentage
The current total number of Oracle processes running on an instance, as a

percentage of the maximum. The maximum is set by the PROCESS initialization parameter for the instance.

This indication has the following thresholds:

- Maximum Process Percentage

For more information about these thresholds, see "Thresholds" on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Session Percentage indication

Occurs when the Session Percentage for the particular Oracle instance exceeds the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Session Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at <SessionPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

SessionPercentage
The percentage of current sessions to the maximum allowed number of sessions.

This indication has the following thresholds:

- Maximum Session Percentage

For more information about these thresholds, see "Thresholds" on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Sort Overflow Percentage indication

Occurs when the Sort Overflow Percentage for the particular Oracle instance crosses above the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Sort Overflow Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at <SortOverflowPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

For a system running mainly medium-sized sorts and configured with the shared-server option, increase the SORT_AREA_SIZE parameter to improve performance. The sort overflow ratio is calculated as:

Sorts(disk) / (Sorts(memory) + Sorts(disk))

Disk sorts require the creation of temporary segments on disk to store the intermediate sort results. This occurs if the amount of data being sorted exceeds the value of the SORT_AREA_SIZE initialization parameter. Ideally, the ratio of disk sorts to memory sorts should be less than 5%. To increase the percentage of memory sorts, increase the value of SORT_AREA_SIZE. However, the sort area is allocated for each user, so increase the value in small increments to avoid allocating too much memory to sort areas.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

SortOverflowPercentage
The percentage of sorts that are using temporary segments.

This indication has the following thresholds:

- Maximum Sort Overflow Percentage

For more information about these thresholds, see "Thresholds" on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Any V$SYSSTAT indication

Occurs when the value of the statistic from V$SYSSTAT crosses below the predefined threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The value for statistic <StatName>
for Oracle instance <InstanceName> has crossed below the predefined threshold of
<Threshold> and is currently at <Value>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ClassNumber
The number that represents a statistics class. The class numbers represent the following: 1 User, 2 Redo, 4 Enqueue, 8 Cache, 16 OS, 32 Oracle Real Application Cluster, 64 SQL, 128 Debug.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

StatName
The statistic name for the specified session.

Value The statistic value for the specified session.

The Low Any V$SYSSTAT indication thresholds are set with the Monitored V$SYSSTAT Parameters and Thresholds parameter for this resource model.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Block Get Rate indication

Occurs when the Block Get Rate is less than the predefined threshold. The Block Get Rate is the basic measure of the rate at which an application system references the database. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Block Get Rate for Oracle Instance
<InstanceName> has crossed below the predefined threshold of
<Threshold> and is currently <BlockGetRate>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication calculates the block get rate as:

(*db block gets* + *consistent gets*) / second

The indication has the following attributes:

BlockGetRate
The rate at which the application system references the database.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following thresholds:

- Minimum Block Get Rate

For more information about these thresholds, see “Thresholds” on page 192.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Unavailable Heterogeneous Agent indication

Occurs when the Heterogeneous Agent is unavailable. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Heterogenous Agent Service <AgentID>:
<Program> for Oracle Instance <InstanceName> is unavailable.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AgentID
The Net8 session identifier used for connections to a heterogeneous service agent. The identifier must be the same as listed in the LISTENER.ORA file.

Agent_Type
The type of heterogeneous service agent.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Machine
The name of the operating system machine.

OSUser
The operating system username of the user.

ProcessID
The operating system process identifier of the heterogeneous service agent.

Program
The program name of the heterogeneous service agent.

RunningDays
The number of days this agent has been running.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Other Performance Monitors resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Changed Block Percentage	An indication occurs if the Changed Block Percentage for a particular Oracle instance exceeds this value.	20
Maximum Freelist Waits Ratio	An indication occurs if the Freelist Waits ratio for a particular Oracle instance exceeds this value. This ratio is calculated as the number of freelist waits over the total number of requests for data.	2
Maximum Open Cursors Percentage	An indication occurs if the percentage of a session's open cursors exceeds this value. This percentage is reported as the session with the greatest number of open cursors over the limit defined by the OPEN_CURSORS initialization parameter for the instance.	85
Maximum Process Percentage	An indication occurs if the process percentage for a particular Oracle instance exceeds this value.	90
Maximum Session Percentage	An indication occurs if the session percentage for a particular Oracle instance exceeds this value.	90
Maximum Sort Overflow Percentage	An indication occurs if the Sort Overflow Percentage for a particular Oracle instance exceeds this value.	10
Minimum Block Get Rate	An indication occurs if the Block Get Rate, which is the basic measure of the rate at which an application system references the database, is lower than this value.	40

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Other Performance Monitors resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Block Get Rate Changed Block Percentage Freelist Waits Ratio Process Percentage Session Percentage Sort Overflow Percentage
Monitored Heterogeneous Agents	This list contains the names of all Oracle Heterogeneous Agents that this resource model monitors.	None
Monitored V$SYSSTAT Parameters and Thresholds	This list contains all the parameters from the V$SYSSTAT table that this resource model monitors and their appropriate threshold types and levels. For example, the default value of enqueue waits:High:0 means that if the value of V$SYSSTAT.ENQUEUE WAITS is greater than 0, then it will send the High Any V$SYSSTAT indication described on 181. If the default value stated enqueue waits:Low:5 then if the value of V$SYSSTAT.ENQUEUE WAITS was less than 5, then it would send the Low Any V$SYSSTAT Indication described on 189.	enqueue waits:High:0

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleHSAgent	Performance	**AgentID*** The Net8 session identifier used for connections to a heterogeneous service agent. The identifier must be the same as listed in the LISTENER.ORA file. **AgentType** The type of heterogeneous service agent. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **Program** The program name of the heterogeneous service agent. **RunningDays** The number of days this agent has been running.
OracleInstance	Performance	**BlockGetRate** The rate at which the application system references the database. **ChangedBlockPercentage** The percentage of blocks that were accessed and updated by users. The percentage is the balance between queries made and the DML within the database application. **FreelistWaitsRatio** The ratio of freelist waits to the total number of requests for data. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **ProcessPercentage** The current total number of Oracle processes running on an instance, as a percentage of the maximum. The maximum is set by the PROCESS initialization parameter for the instance. **SessionPercentage** The percentage of current sessions to the maximum allowed number of sessions. **SortOverflowPercentage** The percentage of sorts that are using temporary segments.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleOtherPerformance -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_ChangedBlockPercentage 20.000000 \
-t Oracle_Maximum_FreelistWaitsRatio 2.000000 \
-t Oracle_Maximum_OpenCursors 85.000000 \
-t Oracle_Maximum_ProcessPercentage 90.000000 \
-t Oracle_Maximum_SessionPercentage 90.000000 \
-t Oracle_Maximum_SortOverflowPercentage 10.000000 \
-t Oracle_Minimum_BlockGetRate 40.000000 \
-AddPar HSAgentMetrics "strAgentType" \
-AddPar HSAgentMetrics "strProgram" \
-AddPar HSAgentMetrics "RunningDays" \
-AddPar Oracle_HSAgent "MyHSAgent" \
-DelPar Oracle_SysStat "enqueue waits:High:0" \
-AddPar Oracle_SysStat "enqueue waits:High:1" \
-AddPar InstanceMetrics "numBlockGetRate" \
-AddPar InstanceMetrics "numChangedBlockPercentage" \
-AddPar InstanceMetrics "numFreelistWaitsRatio" \
-AddPar InstanceMetrics "numProcessPercentage" \
-AddPar InstanceMetrics "numSessionPercentage" \
-AddPar InstanceMetrics "numSortOverflowPercentage" \
-e Oracle_High_SortOverflowPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_OpenCursors \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_SysStat \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_ProcessPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_SysStat \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_FreelistWaitsRatio \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Unavailable_HeterogeneousAgent \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_BlockGetRate \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_ChangedBlockPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_SessionPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Other Storage

Description

Monitors the following information:

- The percentage of rows retrieved that extend over more than one block, which is called chained rows
- The number of chained rows calculated for a specified cluster in the endpoint database
- The number of chained rows, calculated for a specified table in the endpoint database
- The percentage of deleted rows from the user-specified index that have not been repopulated
- The number of datafiles that can be added before the database reaches the maximum number of datafiles allowed

To run this resource model, you must have a CHAINED_ROWS table to store the information on the chained rows. Create this table by running **$ORACLE_HOME/rdbms/admin/utlchain.sql** as the Oracle user SYS.

If the High Cluster Chained Rows metric shows that chaining is occurring for a cluster, consider recreating the cluster with a larger SIZE parameter.

You can get rid of table chained rows in the following ways:

- Use a copy-out/copy-in sequence for the chained rows. Use this if the total number of chained rows is small in comparison to the total number of rows on the table. See the following example.
  1. Create the CHAINED_ROWS table from the following Oracle script:

     ```
     utlchain.sql
     ```
  2.
     ```
     ANALYZE TABLE INVOICES LIST CHAINED ROWS;
     ```
  3.
     ```
     SELECT OWNER_NAME, TABLE_NAME, HEAD_ROWID, ANALYZE_TIMESTAMP
     FROM CHAINED_ROWS
     WHERE TABLE_NAME = 'INVOICES';
     ```

     ```
     OWNER_NAME           TABLE_NAME           HEAD_ROWID         ANALYZE_T
     -------------------- -------------------- ------------------ ---------
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAA 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAA 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAB 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAC 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAD 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAE 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAF 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAG 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAH 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAI 21-AUG-02
     ACCOUNTING           INVOICES             AAAHZkAABAAAMViAAJ 21-AUG-02
     ```
  4. Create an intermediate table to hold the chained rows

     ```
     CREATE TABLE INV_TEMP AS
     SELECT * FROM INVOICES
     WHERE ROWID IN
       (SELECT HEAD_ROWID
        FROM   CHAINED_ROWS
        WHERE  TABLE_NAME = 'INVOICES');
     ```
  5. Delete the chained rows from the existing table.

```
DELETE FROM INVOICE
WHERE ROWID IN
  (SELECT HEAD_ROWID
   FROM   CHAINED_ROWS
   WHERE  TABLE_NAME = 'INVOICES');
```

6. Typically, row chaining in tables is caused by inadequate PCTFREE value for each data block. If this is the case in your environment, increase the PCTFREE value for the table, such as in the following example:

   ```
   ALTER TABLE INVOICES PCTFREE <value>;
   ```

7. Insert the rows of the intermediate table into the existing table.

   ```
   INSERT INTO INVOICES
   SELECT * FROM INV_TEMP;
   ```

8. Drop the intermediate table.

   ```
   DROP TABLE INV_TEMP;
   ```

9. Clean out the CHAINED_ROWS table.

   ```
   DELETE FROM CHAINED_ROWS
   WHERE TABLE_NAME = 'INVOICES';
   ```

10. Repeat Step 1 to verify that the rows have been unchained.

- Export the data, drop and re-create the table with a larger **pctfree** storage clause, and then re-import the data. This is the most disruptive method of eliminating chained rows, but it gives you a chance to adjust storage parameters. Use this method if there a considerable amount of chained rows.

Resource model overview	
Internal name	OracleOtherStorage
Category	Oracle
Indications	**High Cluster Chained Rows** occurs when the number of chained rows for each cluster specified in the Clusters parameter exceeds the specified threshold.
	High Cluster Key Ratio occurs when the cluster key ratio exceeds the specified threshold.
	High Continued Row Percentage occurs when the continued row percentage exceeds the specified threshold.
	High Percentage Deleted occurs when the percentage of deleted rows exceeds the specified threshold.
	High Table Chained Rows occurs when the number of table chained rows exceeds the specified threshold.
	Low Number of Datafiles occurs when the number of datafiles is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Cluster Chained Rows	Oracle_High_ ClusterChainedRows	Critical	Yes	198
High Cluster Key Ratio	Oracle_High_ ClusterKeyRatio	Critical	Yes	199
High Continued Row Percentage	Oracle_High_ ContinuedRowPercentage	Critical	Yes	200
High Percentage Deleted	Oracle_High_ PercentageDeleted	Critical	Yes	201
High Table Chained Rows	Oracle_High_ TableChainedRows	Critical	Yes	202
Low Number of Datafiles	Oracle_Low_ NumberOfDatafiles	Critical	Yes	203

High Cluster Chained Rows indication

Occurs when the number of chained rows for each cluster specified in the Clusters parameter exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Number of Chained Rows for Oracle cluster
<ClusterOwner>.<ClusterName> on Oracle database
<DatabaseName> has crossed above the predefined threshold of
<Threshold> chained rows and is currently
at <ClusterChainedRows> chained rows.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If this indication shows that chaining is occurring for a cluster, consider recreating the cluster with a larger SIZE parameter.

The indication has the following attributes:

ClusterChainedRows
The number of chained rows calculated for a specified cluster.

ClusterName
The name of the specified cluster.

ClusterOwner
The username of the cluster owner.

This indication has the following thresholds:

- Maximum Cluster Chained Rows

For more information about these thresholds, see “Thresholds” on page 204.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Cluster Key Ratio indication

Occurs when the cluster key ratio exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Cluster Key Ratio for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold>-to-1 and is currently at
<ClusterKeyRatio>-to-1.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication indicates the ratio of cluster key scan block gets to cluster key scans. If the ratio is greater than one, the rows for a cluster key are stored in multiple data blocks. To analyze the cluster for row chaining, use the Cluster Chained Rows metric.

The indication has the following attribute:

ClusterKeyRatio
The ratio of cluster key scan block gets to cluster key scans. If the ratio is greater than one, the rows for a cluster key are stored in multiple data blocks.

This indication has the following thresholds:

- Maximum Cluster Key Ratio

For more information about these thresholds, see “Thresholds” on page 204.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes

Setting	Default value
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Continued Row Percentage indication

Occurs when the continued row percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Continued Row Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold>
percent and is currently at <ContinuedRowPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Indicates the percentage of rows retrieved that extend over more than one block, which is called chained rows.

If the indication reports a percentage that is steadily increasing over time, identify which tables are experiencing chaining and increase the PCTFREE for these tables. A row is recorded as chained only if the access is performed by RowID. Full table scans of tables that contain chained rows do not cause the **V$SYSSTAT** statistic **table fetch continued row** to increase.

The indication has the following attributes:

ContinuedRowPercentage
The percentage of rows retrieved that extend over more than one block, which is called chained rows. The percentage should be close to 0, except in applications that have long columns, or rows that are larger than one block (spanned rows), where chaining is unavoidable.

This indication has the following thresholds:

- Maximum Continued Row Percentage

For more information about these thresholds, see “Thresholds” on page 204.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1

Setting	Default value
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Percentage Deleted indication

Occurs when the percentage of deleted rows exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Percentage Deleted for Oracle index
<IndexOwner>.<IndexName> on Oracle database
<DatabaseName> has crossed above the predefined threshold
of <Threshold> percent and is currently at
<PercentageDeleted> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Indicates the percentage of deleted rows from each index specified in the Indexes parameter that have not been repopulated. The percentage of space used by an index determines if it needs to be rebuilt or coalesced. To prevent uneven growth of indexes, run this resource model on indexes with rows that are inserted and deleted frequently.

The indication has the following attributes:

IndexName
The name of the index.

IndexOwner
The username of the index owner.

PercentageDeleted
The percentage of deleted rows from the user-specified index. Deleted rows include rows that have not been repopulated.

This indication has the following thresholds:

- Maximum Percentage Deleted

For more information about these thresholds, see “Thresholds” on page 204.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1

Setting	Default value
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Table Chained Rows indication

Occurs when the number of table chained rows exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Number of Chained Rows for Oracle table
<TableOwner>.<TableName> on Oracle database
<DatabaseName> has crossed above the predefined threshold of
<Threshold> chained rows and is currently
at <TableChainedRows> chained rows.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Indicates the number of chained rows of each table specified in the Tables parameter.

The indication has the following attributes:

TableChainedRows
The number of rows in a specified table that are chained rows. Chained rows are rows that are chained from one data block to another, or which have migrated to a new block, requiring a link to preserve the old ROWID.

TableName
The name of the indexed object.

TableOwner
The username for the owner of the indexed object.

This indication has the following thresholds:

- Maximum Table Chained Rows

For more information about these thresholds, see “Thresholds” on page 204.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0

Setting	Default value
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Number of Datafiles indication

Occurs when the number of datafiles is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Number of Datafiles for Oracle database
<DatabaseName> has crossed below the predefined threshold of
<Threshold> datafiles and is currently at
<NumberOfDatafiles> datafiles.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This metric indicates how many more datafiles can be added before the database reaches the maximum number of datafiles allowed. It compares the actual number of datafiles with the maximum number of datafiles that can be opened for this instance, specified by the DB_FILES initialization parameter.

The indication has the following attributes:

NumberOfDatafiles
The number of datafiles in a database. When you create a database, you define the maximum number of datafiles. If the database reaches the limit, it will not be able to add additional datafiles.

This indication has the following thresholds:

- Minimum Number of Datafiles

For more information about these thresholds, see "Thresholds" on page 204.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business

Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Other Storage resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Cluster Chained Rows	An indication occurs if the cluster-chained rows exceeds this value.	5
Maximum Cluster Key Ratio	An indication occurs if the cluster key ratio exceeds this value.	1
Maximum Continued Row Percentage	An indication occurs if the continued row percentage exceeds this value.	50
Maximum Percentage Deleted	An indication occurs if the percentage deleted exceeds this value.	50
Maximum Table Chained Rows	An indication occurs if the table-chained rows exceeds this value.	5
Minimum Number of Datafiles	An indication occurs if the number of datafiles is lesser than this value.	100

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Other Storage resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Cluster Chaining Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Chained Rows
Clusters	The clusters to monitor for the Cluster Chained Rows indication. Format: **owner.cluster_name**.	None
Database Storage Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Number of Datafiles
Index Storage Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Percentage Deleted
Indexes	The indexes to monitor for the Percentage Deleted indication. Format: **owner.index_name**.	None

Parameter	Description	Default value
Instance Chaining Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Continued Row Percentage
Instance Performance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Cluster Key Ratio
Table Chaining Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Chained Rows
Tables	The tables to monitor for the Table Chained Rows indication. Format: **owner.table_name**.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleCluster	Chaining	**ChainedRows** The number of rows in a specified table that are chained rows. Chained rows are rows that are chained from one data block to another, or which have migrated to a new block, requiring a link to preserve the old ROWID. **ClusterName*** The name of the specified cluster. **ClusterOwner*** The username of the cluster owner. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace containing the specified table. NULL appears for partitioned, temporary and index-organized tables.

Managed resource	Context	Properties
OracleTable	Chaining	**ChainedRows** The number of rows in a specified table that are chained rows. Chained rows are rows that are chained from one data block to another, or which have migrated to a new block, requiring a link to preserve the old ROWID. **TableName*** The name of the specified table. **TableOwner*** The username of the table owner. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment.
OracleInstance	Chaining	**ContinuedRowPercentage** The percentage of rows retrieved that extend over more than one block, which is called chained rows. The percentage should be close to 0, except in applications that have long columns, or rows that are larger than one block (spanned rows), where chaining is unavoidable. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database.
OracleInstance	Performance	**ClusterKeyRatio** The ratio of cluster key scan block gets to cluster key scans. If the ratio is greater than one, the rows for a cluster key are stored in multiple data blocks. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database.

Managed resource	Context	Properties
OracleIndex	Storage	**IndexName*** The name of the index. **IndexOwner*** The username of the index owner. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTable.TableName*** The name of the indexed object. **OracleTable.TableOwner*** The username for the owner of the indexed object. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PercentageDeleted** The percentage of deleted rows from the user-specified index. Deleted rows include rows that have not been repopulated.
OracleDatabase	Storage	**NumberOfDatafiles** The number of datafiles in a database. **DatabaseName*** The name of an Oracle database.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleOtherStorage -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Maximum_ClusterChainedRows 5.000000 \
-t Maximum_ClusterKeyRatio 1.000000 \
-t Maximum_ContinuedRowPercentage 50.000000 \
-t Maximum_PercentageDeleted 50.000000 \
-t Maximum_TableChainedRows 5.000000 \
-t Minimum_NumberOfDatafiles 100.000000 \
-AddPar InstancePerformanceMetrics "numClusterKeyRatio" \
-AddPar DatabaseStorageMetrics "numNumberOfDatafiles" \
-AddPar InstanceChainingMetrics "numContinuedRowPercentage" \
-AddPar IndexStorageMetrics "numPercentageDeleted" \
-AddPar IndexList "IndexOwner.IndexName" \
-AddPar ClusterChainingMetrics "numChainedRows" \
-AddPar ClusterList "ClusterOwner.ClusterName" \
-AddPar TableChainingMetrics "numChainedRows" \
-AddPar TableList "TableOwner.TableName" \
-e Oracle_High_ContinuedRowPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_NumberOfDatafiles \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
```

```
-e Oracle_High_TableChainedRows \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_PercentageDeleted \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_ClusterChainedRows \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_ClusterKeyRatio \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

PGA

Description

Note: This resource model is applicable for Oracle 9i only.

Monitors the following in the program global area:

- **Multipass Executions** — the total number of work areas executed with multi-pass memory size.
- **Optimal Percentage** — the percentage of work areas executed with optimal memory size.
- **Work Area Percentage** — the percentage of program global area memory that is available for work areas after other components of the database have allocated.
- **Work Area Max Size** — the maximum size of a memory work area executed in AUTO mode.
- **Component Area** — the amount of memory consumed by consumers of program global area memory other than for auto workareas.

In order for the PGA resource model to run properly, the WORKAREA_SIZE_POLICY initialization parameter must be set to ″Auto.″ You can set this value on a running database by typing the following SQL commands:

```
alter system set pga_aggregate_target = <size>;
alter system set workarea_size_policy = auto;
```

The *program global area*, or PGA, is a nonshared memory region that contains data and control information for a server process. Oracle creates a program global area whenever a server process starts. The program global area memory allocated for active work areas is automatically derived from the PGA_AGGREGATE_TARGET initialization parameter. Oracle honors the PGA_AGGREGATE_TARGET limit set by the DBA to control the amount of program global area memory allotted to SQL work areas. Oracle also maximizes the number of work areas that are using an optimal amount of program global area memory (cache memory) to maximize the performance of all the memory-intensive SQL operators. The remaining work areas are executed in one-pass mode, unless the program global area memory limit is so low that multi-pass execution is required to further reduce the use of program global area memory and honor the program global area target limit.

The *work area* is an area of memory used to perform data work such as sorts, or hash joins. You can control and tune the size of a work area. Large work areas improve the performance of a particular operator at the cost of higher memory consumption. The size of a work area should be large enough to accommodate the input data and auxiliary memory structures allocated by the corresponding SQL operator. This size is known as the optimal size of a work area. The *optimal percentage* shows the percentage in which the work area ran in optimal mode. A work area runs in optimal mode when it executes operations completely in memory.

When the work area size is too small for the input data size, multiple passes over the input data are needed, also called *multipass executions*. Multipass executions increase the response time of the operator and degrade performance. Avoid multipass executions by configuring your system with a reasonable amount of program global area memory. You should strive to have most work areas running with an optimal size, and a smaller number of them running with a one-pass size. Multipass executions should be avoided.

Resource model overview	
Internal name	OraclePGA
Category	Oracle
Indications	**High PGA Multipass Executions** occurs when the number of multipass executions exceeds the specified threshold.
	High PGA Optimal Percentage occurs when the program global area optimal percentage exceeds the specified threshold.
	Low PGA Component Area occurs when the program global area component area is less than the specified threshold.
	Low PGA Work Area Max Size occurs when the maximum size for a work area in the program global area exceeds the specified threshold.
	Low PGA Work Area Percentage occurs when the percentage of PGA memory in work areas is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	1800 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High PGA Multipass Executions	Oracle_High_ PGAMultipassExecutions	Critical	Yes	211
High PGA Optimal Percentage	Oracle_High_ PGAOptimalPercentage	Critical	Yes	212
Low PGA Component Area	Oracle_Low_ PGAComponentArea	Critical	Yes	213
Low PGA Work Area Max Size	Oracle_Low_ PGAWorkAreaMaxSize	Critical	Yes	214
Low PGA Work Area Percentage	Oracle_Low_ PGAWorkAreaPercentage	Critical	Yes	215

High PGA Multipass Executions indication

Occurs when the number of multipass executions exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The PGA multipass executions for Oracle
instance <InstanceName> has crossed above the predefined threshold
of <Threshold> executions and is currently
at <PGAMultipassExecutions> executions.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the number of multipass executions is high, consider increasing the value of the PGA_AGGREGATE_TARGET parameter. Also consider increasing the value of PGA_AGGREGATE_TARGET when the percentage of one-pass executions is high compared to optimal. If the percentage of optimal work area is 100%, consider reducing PGA_AGGREGATE_TARGET.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PGAMultipassExecutions
Total number of work areas executed with multi-pass memory size.

This indication has the following thresholds:

- Maximum PGA Multipass Executions

For more information about these thresholds, see “Thresholds” on page 216.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business

Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High PGA Optimal Percentage indication

Occurs when the program global area optimal percentage exceeds the specified threshold. This is to monitor the percentage of work areas created with the optimal size. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The PGA optimal percentage for Oracle
instance <InstanceName> has crossed above the predefined threshold
of <Threshold> percent and is currently
at <PGAOptimalPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PGAOptimalPercentage
Percentage of work areas executed with optimal memory size.

This indication has the following thresholds:

- Maximum PGA Optimal Percentage

For more information about these thresholds, see “Thresholds” on page 216.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low PGA Component Area indication

Occurs when the program global area component area is less than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The PGA component area for Oracle
instance <InstanceName> has crossed below the predefined
threshold of <Threshold> percent and is
currently at <PGAComponentArea> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the value returned by this metric is negative, increase the size of PGA memory by increasing the value of the initialization parameter PGA_AGGREGATE_TARGET. If automatic PGA memory management is turned off, the value returned is not applicable.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PGAComponentArea
Amount of memory consumed by consumers of program global area memory other than for auto workareas.

This indication has the following thresholds:

- Minimum PGA Component Area

For more information about these thresholds, see "Thresholds" on page 216.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business

Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low PGA Work Area Max Size indication

Occurs when the maximum size for a work area in the program global area falls below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The PGA work area max size for Oracle instance
<InstanceName> has crossed below the predefined threshold of
<Threshold> KB and is currently at <PGAWorkAreaMaxSize> KB.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the value returned by this monitor falls below one megabyte, increase the size of PGA memory by increasing the value of the initialization parameter PGA_AGGREGATE_TARGET.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PGAWorkAreaMaxSize
The maximum size of a work area that is executed in AUTO mode.

This indication has the following thresholds:

- Minimum PGA Work Area Max Size

For more information about these thresholds, see “Thresholds” on page 216.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low PGA Work Area Percentage indication

Occurs when the percentage of PGA memory in work areas is lower than the specified threshold. This indication returns the percentage of PGA memory that is available for work areas after other components of the database have allocated their area of PGA memory. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The PGA work area percentage for Oracle
instance <InstanceName> has crossed below the predefined threshold
of <Threshold> percent and is currently
at <PGAWorkAreaPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PGAWorkAreaPercentage
The percentage of program global area memory that is available for work areas after other components of the database have allocated their area of program global area memory.

This indication has the following thresholds:

- Minimum PGA Work Area Percentage

For more information about these thresholds, see “Thresholds” on page 216.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the PGA resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum PGA Multipass Executions	An indication occurs if the PGA multi-pass execution number exceeds this value.	0
Maximum PGA Optimal Percentage	An indication occurs if the PGA optimal percentage exceeds this value.	99
Minimum PGA Component Area	An indication occurs if the PGA component area is less than this value.	0
Minimum PGA Work Area Max Size	An indication occurs if the PGA work area maximum size is less than this value.	1024
Minimum PGA Work Area Percentage	An indication occurs if the PGA work area percentage exceeds this value.	40

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the PGA resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	PGA Component Area PGA Multipass Executions PGA Optimal Percentage PGA Work Area Percentage PGA Work Area Max Size

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	Memory	**InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **PGAComponentArea** Amount of memory consumed by consumers of program global area memory other than for auto work areas. **PGAMultipassExecutions** Total number of work areas executed with multi-pass memory size. **PGAOptimalPercentage** Percentage of work areas executed with optimal memory size. **PGAWorkAreaMaxSize** The maximum size of a work area that is executed in AUTO mode. **PGAWorkAreaPercentage** The percentage of program global area memory that is available for work areas after other components of the database have allocated their area of program global area memory.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OraclePGA -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_PGAMultipassExecutions 0.000000 \
-t Oracle_Maximum_PGAOptimalPercentage 99.000000 \
-t Oracle_Maximum_PGAWorkAreaPercentage 0.000000 \
-t Oracle_Minimum_PGAComponentArea 0.000000 \
-t Oracle_Minimum_PGAWorkAreaMaxSize 1024.000000 \
-AddPar InstanceMetrics "PGAMultipassExecutions" \
-AddPar InstanceMetrics "PGAOptimalPercentage" \
-AddPar InstanceMetrics "PGAWorkAreaPercentage" \
-AddPar InstanceMetrics "PGAWorkAreaMaxSize" \
-AddPar InstanceMetrics "PGAComponentArea" \
-e Oracle_Low_PGAComponentArea \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_PGAWorkAreaMaxSize \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_PGAOptimalPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_PGAMultipassExecutions \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_PGAWorkAreaPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Process State

Description

Monitors the state of Oracle specific processes. States returned include: Low or Unavailable.

Processes are divided into two main groups, user processes and Oracle processes. *User processes* occur when a user runs an application program or an Oracle tool. *Oracle processes* execute Oracle server code. This resource model examines the states of Oracle processes.

Oracle processes are made up of two groups, server processes and background processes. *Server processes* communicate between the user and Oracle server to carry out requests of the user. *Background processes* combine functions that would otherwise be handled by multiple Oracle programs running for each user process. Each instance runs at least four background processes (DBWR, LGWR, SMON, and PMON), but there can be a number of additional background processes.

This resource model monitors the following processes:

ARCn Copies online redo log files to archival storage when the files are full or a log switch occurs.

CKPT (Checkpoint)
Updates datafile headers to record the details of a checkpoint. Does not write blocks to disk.

DBWn (Database Writer)
Writes modified (dirty) buffers in the database buffer cache to the datafiles.

Dnnn (Dispatcher)
Runs only when shared server configuration is used. Allows user processes to share server processes.

LGWR (Log Writer)
Writes all redo entries that were copied into the buffer since the last time it wrote onto a disk.

LMS (Lock Manager Server)
Used in Real Application Clusters only. Provides inter-instance locking in Oracle9i Real Application Clusters.

PMON (Process Monitor)
Performs process recovery when a user process fails. Cleans up the database buffer cache and frees resources used by the user process.

QMNn (Queue Monitor)
Used in Oracle Advanced Queuing only. Monitors the message queues. QMN process failure does not cause the instance to fail.

RECO (Recoverer)
Used with the distributed database configuration to automatically resolve failures involving distributed transactions.

Snnn (Shared Server)
Serves multiple client requests in a shared server configuration, but are not associated with any specific user process.

SMON (System Monitor)
Performs crash recovery, when necessary, at instance startup. Cleans up

temporary segments no longer used and coalesces contiguous free extents within dictionary-managed tablespaces.

SNPn (Job Queue)
Used for batch processing of job queues.

This resource model can also monitor the ARC (Archiver) process by adding it from the Monitored Processes and Threshold parameter for this resource model.

Resource model overview	
Internal name	OracleProcessState
Category	Oracle
Indications	**Low Processes** occurs when the number of a particular Oracle process running on the endpoint for the particular instance crosses below the desired corresponding threshold.
	Unavailable Process occurs when one of the monitored Oracle processes is not running for the particular database instance.
Tasks and built-in actions	None
Default cycle time	300 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Processes	Oracle_Low_Processes	Warning	Yes	219
Unavailable Processes	Oracle_Unavailable_ Process	Critical	Yes	220

Low Processes indication

Occurs when the number of a particular Oracle process running on the endpoint for the particular instance crosses below the desired corresponding threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of Oracle <ProcessName> Processes for
Oracle Instance <InstanceName> has crossed below the threshold of <Threshold>
processes running and is currently at <NumRunning> processes running.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

NumRunning
The number of processes running for a particular type of Oracle process.

ProcessName
The name of a process.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Unavailable Process indication

Occurs when one of the monitored Oracle processes is not running for the particular database instance. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle <ProcessName>
Process for Oracle instance <InstanceName> is unavailable.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

ProcessName
The name of a process.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The Process State thresholds are set with the Monitored Processes and Thresholds parameter as described in the following parameter table.

Parameters

The following table lists the parameters that can be set for the Process State resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Monitored Processes and Thresholds	The Oracle process names to be monitored and their appropriate threshold levels. For example, if you want to monitor the Oracle PMON process, and only expect there to be one such process running per Oracle instance, enter “PMON:1”. This entry would create the Unavailable indication if no such process is running, but would not generate a Low indication. If you want to monitor the Oracle SNP processes, and expect there to be three such processes running per Oracle instance, enter “SNP:3”. This entry would create the Unavailable indication if no such processes are running, and would generate a Low indication if the number falls below three.	CKPT:1 D000:1 DBW:1 LGWR:1 PMON:1 RECO:1 S000:1 SMON:1 SNP:4

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleProcess	State	**NumRunning** The number of processes running for a particular type of Oracle process. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **OracleProcessStateAvailablePercentTime** The percentage of time a process was in an available state. **OracleProcessStateUnavailablePercentTime** The percentage of time a process was in an unavailable state. **ProcessName*** The name of a process.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleProcessState -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-DelPar Oracle_Monitored_Processes "CKPT:1" \
-DelPar Oracle_Monitored_Processes "D000:1" \
-DelPar Oracle_Monitored_Processes "DBW:1" \
-DelPar Oracle_Monitored_Processes "LGWR:1" \
-DelPar Oracle_Monitored_Processes "PMON:1" \
-DelPar Oracle_Monitored_Processes "RECO:1" \
-DelPar Oracle_Monitored_Processes "S000:1" \
-DelPar Oracle_Monitored_Processes "SMON:1" \
-DelPar Oracle_Monitored_Processes "SNP:4" \
-AddPar Oracle_Monitored_Processes "CKPT:2" \
-AddPar Oracle_Monitored_Processes "D000:2" \
-AddPar Oracle_Monitored_Processes "DBW:2" \
-AddPar Oracle_Monitored_Processes "LGWR:2" \
-AddPar Oracle_Monitored_Processes "PMON:2" \
-AddPar Oracle_Monitored_Processes "RECO:2" \
-AddPar Oracle_Monitored_Processes "S000:2" \
-AddPar Oracle_Monitored_Processes "SMON:2" \
-AddPar Oracle_Monitored_Processes "SNP:5" \
-e Oracle_Low_Processes \
 -o 1 -h 0 -severity WARNING -SendTBSM -SendTec \
-e Oracle_Unavailable_Process \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

RDBMS State

Description

Monitors the state of an Oracle database instance.

The resource model connects to the database and runs a SQL statement to determine the state of the managed Oracle database.

This resource model fires indications when an instance is in one of nine states. Table 5 lists the possible states and an explanation of each state.

Table 5. Possible RDBMS states

RDBMS state	State explanation
Becomes Available	Occurs when the instance was not available in the previous request, but is available in the current request.
Becomes Shutdown	Occurs when the instance was not shutdown in the previous request, but is shutdown in the current request.
Becomes Suspect	Occurs when the instance was not suspect in the previous request, but is suspect in the current request.
Becomes Unavailable	Occurs when the instance was not unavailable in the previous request, but is unavailable in the current request.
Becomes Unknown	Occurs when the instance was available in a previous request, but is not responding to the current request.
Shutdown	Occurs when the instance is shutdown for the current request.
Suspect	Occurs when the instance is suspect for the current request.
Unavailable	Occurs when the instance is not available for the current request because the instance is shutdown or suspect.
Unknown	Occurs when the instance is not responding.

If the database is not available or an error is returned, the resource model reads the Oracle Alert log to determine if the Oracle instance was properly shut down. When it determines that the instance was properly shut down, **Status = shutdown**. If the instance was not properly shut down or the resource model cannot connect to the instance and run a simple select statement, **Status = suspect**.

When a database is in the **suspect** state, both of the following conditions exist:

- The resource model cannot access the Oracle instance and run a simple SQL query to determine if the instance is in the **available** state.
- The Oracle Alert log does not indicate that the Oracle instance was properly shutdown.

Note: Providing an invalid user name and password can cause IBM Tivoli Monitoring for Databases: Oracle to determine that the Oracle instance is in the **suspect** state.

Strive to reduce the amount of time between an instance going down and an instance starting up to be as little as possible. Running this resource model will alert you to any changes in the state of a database instance. If there is a problem, run the “Log Event” on page 147 to check for alerts. From the alert log, you can determine possible causes.

Possible causes of instance failure include:

- Losing power causing the server to crash
- Hardware problems that make the server become unavailable
- An operating system crash
- An Oracle background process fail
- Issuing a SHUTDOWN ABORT statement

Oracle performs instance recovery when the database is restarted. Oracle applies committed and uncommitted redo records in the redo log to the datafiles and rolls back uncommitted data. The datafiles and control file are synchronized, and the database is reopened.

Resource model overview	
Internal name	OracleRDBMSState
Category	Oracle
Indications	**Becomes Available** occurs when the Oracle database instance makes the transition from any other state to an available state.
	Becomes Shutdown occurs when the Oracle database instance makes the transition from an available state to a shutdown state.
	Becomes Suspect occurs when the Oracle database instance makes the transition from an available state to a suspect state.
	Becomes Unavailable occurs when the Oracle database instance makes the transition from an available state to an unavailable state (includes suspect or shutdown).
	Becomes Unknown occurs when the Oracle database instance makes the transition from any other state to an unknown state.
	Shutdown occurs when the Oracle database instance is shutdown.
	Suspect occurs when the Oracle database instance is in a suspect state.
	Unavailable occurs when the Oracle database instance is unavailable.
	Unknown occurs when the state of the Oracle database instance cannot be determined by the monitor.
Tasks and built-in actions	None
Default cycle time	300 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Becomes Available	Oracle_Becomes_Available_ RDBMSState	Harmless	Yes	225
Becomes Shutdown	Oracle_Becomes_Shutdown_ RDBMSState	Critical	Yes	226
Becomes Suspect	Oracle_Becomes_Suspect_ RDBMSState	Critical	Yes	227
Becomes Unavailable	Oracle_Becomes_Unavailable_ RDBMSState	Critical	Yes	227
Becomes Unknown	Oracle_Becomes_Unknown_ RDBMS_State	Critical	Yes	228
Shutdown	Oracle_Shutdown_RDBMSState	Critical	Yes	229
Suspect	Oracle_Suspect_RDBMSState	Critical	Yes	230
Unavailable	Oracle_Unavailable_RDBMSState	Critical	Yes	231
Unknown	Oracle_Unknown_RDBMSState	Critical	Yes	231

Becomes Available indication

Occurs when the Oracle database instance makes the transition from any other state to an available state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance <InstanceName>
has become <State> from <PreviousState>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PreviousState
The prior state of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Becomes Shutdown indication

Occurs when the Oracle database instance makes the transition from an available state to a shutdown state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance <InstanceName>
has become <State> from <PreviousState>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PreviousState
The prior state of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Becomes Suspect indication

Occurs when the Oracle database instance makes the transition from an available state to a suspect state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance <InstanceName>
has become <State> from <PreviousState>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PreviousState
The prior state of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Becomes Unavailable indication

Occurs when the Oracle database instance makes the transition from an available state to an unavailable state (includes suspect or shutdown). When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance <InstanceName>
has become <State> from <PreviousState>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PreviousState
The prior state of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Becomes Unknown indication

Occurs when the Oracle database instance makes the transition from any other state to an unknown state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance <InstanceName>
has become <State> from <PreviousState>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

PreviousState
The prior state of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Shutdown indication

Occurs when the Oracle database instance is shutdown. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

`<application_label>: The Oracle instance <InstanceName> is shutdown.`

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Suspect indication

Occurs when the Oracle database instance is in a suspect state. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance
<InstanceName> is in a suspect state.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Unavailable indication

Occurs when the Oracle database instance is unavailable. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Oracle instance
<InstanceName> is Unavailable.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Unknown indication

Note: This resource model only generates an Unknown RDBMS State indication when pushed to a 9i database and the resource in down on the first push.

Occurs when the state of the Oracle database instance cannot be determined by the monitor. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The state of the Oracle
instance <InstanceName> cannot be determined.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

State Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

None

Parameters

None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	State	**InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstanceStateAvailablePercentTime** The percentage of time an instance was in an available state. **OracleInstanceStateSuspectPercentTime** The percentage of time an instance was in a suspect state. **OracleInstanceStateShutdownPercentTime** The percentage of time an instance was in a shutdown state. **OracleInstanceStateUnknownPercentTime** The percentage of time an instance was in an unknown state. **OracleInstanceStateUnavailablePercentTime** The percentage of time an instance was in an unavailable state.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleRDBMSState -c 300 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-e Oracle_Becomes_Unknown_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Unavailable_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Suspect_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Shutdown_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Available_RDBMSState \
 -o 1 -h 0 -severity HARMLESS -SendTBSM -SendTec \
-e Oracle_Shutdown_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Unknown_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Suspect_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Becomes_Unavailable_RDBMSState \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Recursive Calls

Description

Monitors the following information:

- Recursive Calls — The number of recursive calls since the instance was created
- User Calls — The number of user calls since the instance was created
- Recursive Call Rate (Interval) — The number of new recursive calls per second
- Recursive To User Call Ratio — The number of recursive calls compared to the number of user calls

A *user call* is an SQL statement that is executed at the request of the user.

A *recursive call* occurs when one SQL statement requires the execution of a further separate SQL statement. A continued increase in the reported figure indicates poor or decreasing system performance. Some recursive activity is unavoidable.

Recursive calls can be generated by the following activities:

- An object requiring an additional extent for storage (dynamic extension)
- Misses on the dictionary cache
- Firing of database triggers
- DDL statements
- Execution of SQL statements within stored procedures, packages, functions, and anonymous PL/SQL blocks
- Enforcement of referential integrity constraints

If Oracle is making an inordinate number of recursive calls, try to determine which of the previously listed activities is causing most of the recursive calls. Run the application through TKPROF with EXPLAIN PLAN to see what the application is doing. Also, monitor the number of extents in the database to see if there is noticeable dynamic extension. If the recursive calls are caused by dynamic extension, you can reduce the number of calls by allocating larger extents to the relevant objects. A dictionary cache that is too small can also cause recursive calls.

A change in the Recursive To User Calls ratio can reflect an application change or the need to increase the size of the shared buffer pool. A marked change in the data definition language (DDL) workload on the database will also affect this ratio.

Resource model overview	
Internal name	OracleRecursiveCalls
Category	Oracle
Indications	**High Interval Recursive Call Percentage** occurs when the recursive call percentage for the current interval exceeds the specified threshold.
	High Recursive Call Percentage occurs when the recursive call percentage exceeds the specified threshold.
	High Recursive Call Rate occurs when the recursive call rate exceeds the specified threshold.
	High Recursive To User Calls Ratio occurs when the ratio of recursive calls to user calls since the database was started exceeds the specified threshold.

Resource model overview	
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Interval Recursive Call Percentage	Oracle_High_ IntervalRecursiveCallPercentage	Critical	Yes	235
High Recursive Call Percentage	Oracle_High_ RecursiveCallPercentage	Critical	Yes	236
High Recursive Call Rate	Oracle_High_ RecursiveCallRate	Critical	Yes	237
High Recursive To User Calls Ratio	Oracle_High_ RecursiveToUserCallsRatio	Critical	Yes	238

High Interval Recursive Call Percentage indication

Occurs when the recursive call percentage for the current interval exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Interval Recursive Call Percentage for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<IntervalRecursiveCallPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Monitors recursive calls as a percentage of total calls during the last cycle. A *recursive call* is when an SQL statement requires the execution of another separate SQL statement. Total calls include recursive calls and user calls. User calls are SQL executions that are invoked directly by the user.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalRecursiveCallPercentage
The percentage of interval recursive calls for the instance for the current interval.

This indication has the following threshold:

- Maximum Interval Recursive Call Percentage

For more information about this threshold, see "Thresholds" on page 239.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Recursive Call Percentage indication

Occurs when the recursive call percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Recursive Call Percentage for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<RecursiveCallPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Monitors recursive calls as a percentage of total calls since the instance was created. A *recursive call* is when an SQL statement requires the execution of another separate SQL statement. Total calls include recursive calls and user calls. User calls are SQL executions that are invoked directly by the user.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RecursiveCallPercentage
The percentage of recursive calls for the instance.

This indication has the following threshold:

- Maximum Recursive Call Percentage

For more information about this threshold, see "Thresholds" on page 239.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Recursive Call Rate indication

Occurs when the recursive call rate exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Recursive Call Rate for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold> calls
per second and is currently at <RecursiveCallRate> calls per second.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The rate of recursive calls is expressed as calls per second. A *recursive call* is when an SQL statement requires the execution of another separate SQL statement.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RecursiveCallRate
The rate of recursive calls for the instance.

This indication has the following threshold:

- Maximum Recursive Call Rate

For more information about this threshold, see "Thresholds" on page 239.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Recursive to User Calls Ratio indication

Occurs when the ratio of recursive calls to user calls since the database was started exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The Recursive To User Call Ratio for Oracle instance
<InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<RecursiveToUserCallsRatio> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

A *recursive call* is when an SQL statement requires the execution of another separate SQL statement. *User calls* are SQL executions that are invoked directly by the user.

The indication has the following attributes:

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RecursiveToUserCallRatio
The ratio of recursive to user calls. A change in this ratio can reflect an application change or the need to increase the size of the shared buffer pool. A marked change in the data definition language (DDL) workload on the database will also affect this ratio.

This indication has the following threshold:

- Maximum Recursive To User Call Ratio

For more information about this threshold, see "Thresholds" on page 239.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Recursive Call resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Interval Recursive Call Percentage	An indication occurs when the Interval Recursive Call Percentage exceeds this value.	50
Maximum Recursive Call Percentage	An indication occurs when the Recursive Call Percentage exceeds this value.	50
Maximum Recursive Call Rate	An indication occurs when the Recursive Call Rate exceeds this value.	10
Maximum Recursive To User Calls Ratio	An indication occurs when the Recursive to User Call Ratio exceeds this value.	1

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Recursive Calls resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Performance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Interval Recursive Call Percentage Recursive Call Percentage Recursive Call Rate Recursive Calls Recursive To User Calls Ratio User Calls

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	Performance	**InstanceName*** The name of an Oracle database instance. **IntervalRecursiveCallPercentage** Percentage of recursive calls to total calls over the time interval for which the monitor was run. **OracleDatabase.DatabaseName*** The name of an Oracle database. **RecursiveCallRate** The rate of recursive calls for the instance. **RecursiveCalls** The number of recursive calls for the instance. A recursive call occurs when one SQL statement requires the execution of a further separate SQL statement. **RecursiveCallPercentage** The percentage of recursive calls for the instance. **RecursiveToUserCallsRatio** The ratio of recursive to user calls. **UserCalls** The number of user calls for the instance.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleRecursiveCalls -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Maximum_IntervalRecursiveCallPercentage 50.000000 \
-t Maximum_RecursiveCallPercentage 50.000000 \
-t Maximum_RecursiveCallRate 10.000000 \
-t Maximum_RecursiveToUserCallsRatio 1.000000 \
-AddPar InstancePerformanceMetrics "numRecursiveCallRate" \
-AddPar InstancePerformanceMetrics "numRecursiveCallPercentage" \
-AddPar InstancePerformanceMetrics "numIntervalRecursiveCallPercentage" \
-AddPar InstancePerformanceMetrics "numRecursiveToUserCallsRatio" \
-AddPar InstancePerformanceMetrics "numRecursiveCalls" \
-AddPar InstancePerformanceMetrics "numUserCalls" \
-e Oracle_High_IntervalRecursiveCallPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RecursiveCallPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RecursiveCallRate \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RecursiveToUserCallsRatio \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Redo Log

Description

Monitors the following:

- As a percentage, the ratio of misses to gets for the redo allocation latch, and redo copy latch
- The number of times that a user process was unable to allocate space in the redo log buffer
- The number of redo log files that have not been archived, which indicates that the archive process is falling behind
- The average size of a redo entry, which is calculated as the total redo size in bytes, divided by the number of redo entries. This information can be useful in calculating the size of the online redo logs or the log buffer in the system global area (SGA)

Note: The High Redo Logs Not Archived indication is applicable only when the database is running in ARCHIVELOG mode. If the database is in NOARCHIVELOG mode, the metric returns a value of zero.

Redo logs record all changes made to the database. If an instance or database fails, redo logs make it possible to reconstruct. *Latches* are mechanisms that protect shared data structures in the system global area (SGA). Latches can protect who is currently accessing the database. Server and background processes acquire latches while manipulating or looking at data structures. Operating systems determine the use of latches as well as how long processes wait for a latch.

Redo allocation latches control space allocation for redo entries in the redo log buffer. The Oracle user process must obtain the redo allocation latch to allocate space in the buffer. There is only one redo allocation latch, so only one user process can allocate space in the buffer at a time. This single latch ensures a sequential pattern of buffer entries. After space is allocated for a redo entry, the user process can copy the entry into the buffer. This is known as ″copying on the redo allocation latch.″ A process can only copy on the redo allocation latch if the redo entry is smaller than the specified threshold. If the redo entry is too large to copy, then the user process must get a *redo copy latch*. The redo copy latch enables the user process to copy the redo entry into its allocated space in the buffer. Computes with multiple CPUs can have multiple redo copy latches in the redo log buffer. Multiple latches allow multiple processes to copy entries to the redo log buffer concurrently.

Resource model overview	
Internal name	OracleRedoLog
Category	Oracle

Resource model overview	
Indications	**High Average Redo Entry Size** occurs when the average size of redo entries exceeds the specified threshold.
	High Redo Allocation Latch Percentage occurs when the redo allocation latch percentage exceeds the specified threshold.
	High Redo Copy Latch Percentage occurs when the percentage of redo copy latch exceeds the specified threshold.
	High Redo Copy Latch Percentage Increase occurs when the percentage increase of redo copy latch exceeds the specified threshold.
	High Redo Log Space Waits (Interval) occurs when the redo log space waits number exceeds the specified threshold.
	High Redo Logs Not Archived occurs when the redo logs not archived number exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	3600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Average Redo Entry Size	Oracle_High_ AvgRedoEntrySize	Critical	Yes	244
High Redo Allocation Latch Percentage	Oracle_High_ RedoAllocationLatchPercentage	Critical	Yes	245
High Redo Copy Latch Percentage	Oracle_High_ RedoCopyLatchPercentage	Critical	Yes	246
High Redo Copy Latch Percentage Increase	Oracle_High_RedoCopy LatchPercentageIncrease	Critical	Yes	247
High Redo Log Space Waits (Interval)	Oracle_High_ IntervalRedoLogSpaceWaits	Critical	Yes	248
High Redo Logs Not Archived	Oracle_High_ RedoLogsNotArchived	Critical	Yes	249

High Average Redo Entry Size indication

Occurs when the average size of redo entries exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The average redo entry size for Oracle
instance <InstanceName> has crossed above the predefined
threshold of <Threshold> bytes per entry
and is currently at <AvgRedoEntrySize> bytes per entry.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

AvgRedoEntrySize
The total redo size (in bytes) divided by the number of redo entries.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum Average Redo Entry Size

For more information about this threshold, see "Thresholds" on page 250.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Redo Allocation Latch Percentage indication

Occurs when the redo allocation latch percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The redo allocation latch percentage for Oracle
instance <InstanceName> has crossed above the predefined
threshold of <Threshold> percent
and is currently at <RedoAllocationLatchPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RedoAllocationLatchPercentage
The percentage of misses to gets for the redo allocation latch.

This indication has the following threshold:

- Maximum Redo Allocation Latch Percentage

For more information about this threshold, see "Thresholds" on page 250.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Redo Copy Latch Percentage indication

Occurs when the percentage of redo copy latch exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The redo copy latch percentage for Oracle
instance <InstanceName> has crossed above the predefined
threshold of <Threshold> percent and is
currently at <RedoCopyLatchPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RedoCopyLatchPercentage
The percentage of misses to gets for the redo copy latch.

This indication has the following threshold:

- Maximum Redo Copy Latch Percentage

For more information about this threshold, see "Thresholds" on page 250.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Redo Copy Latch Percentage Increase indication

Occurs when the percentage increase of redo copy latch exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The redo copy latch percentage increase for Oracle
instance <InstanceName> has crossed above the predefined
threshold of <Threshold> percent and is
currently at <RedoCopyLatchPercentageIncrease> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RedoCopyLatchPercentageIncrease
As a percentage, the increase of misses to gets for the redo copy latch since the last resource model cycle time. This value could potentially be negative.

This indication has the following threshold:

- Maximum Redo Copy Latch Percentage Increase

For more information about this threshold, see "Thresholds" on page 250.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Redo Log Space Waits (Interval) indication

Occurs when the redo log space waits number exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The redo log space waits for Oracle
instance <InstanceName> has crossed above the predefined
threshold of <Threshold> waits and is
currently at <IntervalRedoLogSpaceWaits> waits.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The V$SYSSTAT statistic, 'redo log space requests,' indicates the number of times that the active log file is full and Oracle has to wait for disk space to be allocated for redo log entries. The redo log space is created by performing a log switch. If this metric consistently increases, consider increasing the size of the online redo log files in order to reduce the number of redo log space waits.

The indication has the following attributes:

DatabaseName
: The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
: The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalRedoLogSpaceWaits
: The number of times Oracle must wait for disk space to be allocated for the redo log entries because the active log file is full.

This indication has the following threshold:

- Maximum Redo Log Space Waits

For more information about this threshold, see "Thresholds" on page 250.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Redo Logs Not Archived indication

Note: This indication is applicable only when the database is running in ARCHIVELOG mode. If the database is in NOARCHIVELOG mode, the indication returns a value of zero.

Occurs when the redo logs not archived number exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The redo logs not archived for Oracle
instance <InstanceName> has crossed above the predefined
threshold of <Threshold> redo log files
and is currently at <RedoLogsNotArchived> redo log files.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If this indication returns a non-zero value, the ARCH process is having difficulty keeping up with the LGWR process.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RedoLogsNotArchived
The number of redo log files that have not been archived.

This indication has the following threshold:

- Maximum Redo Logs Not Archived

For more information about this threshold, see "Thresholds" on page 250.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes

Setting	Default value
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Redo Log resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Average Redo Entry Size	An indication occurs if the average redo entry size exceeds this value.	50000
Maximum Redo Allocation Latch Percentage	An indication occurs if the redo allocation latch percentage exceeds this value.	3
Maximum Redo Copy Latch Percentage	An indication occurs if the redo copy latch percentage exceeds this value.	3
Maximum Redo Copy Latch Percentage Increase	An indication occurs if the increase of redo copy latch percentage exceeds this value.	3
Maximum Redo Log Space Waits (Interval)	An indication occurs if the number of redo log space waits exceeds this value.	4
Maximum Redo Logs Not Archived	An indication occurs if the number of redo logs not archived exceeds this number.	2

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Redo Log resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Average Redo Entry Size Redo Allocation Latch Percentage Redo Copy Latch Percentage Redo Log Space Waites (Interval) Redo Logs Not Archived

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	RedoLog	**AvgRedoEntrySize** The total redo size (in bytes) divided by the number of redo entries. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **RedoAllocationLatchPercentage** The percentage of misses to gets for the redo allocation latch. **RedoCopyLatchPercentage** The percentage of misses to gets for the redo copy latch. **RedoLogsNotArchived** The number of redo log files that have not been archived. **RedoLogSpaceWaits** The number of times Oracle must wait for disk space to be allocated for the redo log entries because the active log file is full.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleRedoLog -c 3600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_AvgRedoEntrySize 50000.000000 \
-t Oracle_Maximum_RedoAllocationLatchPercentage 3.000000 \
-t Oracle_Maximum_RedoCopyLatchPercentage 3.000000 \
-t Oracle_Maximum_RedoCopyLatchPercentageIncrease 3.000000 \
-t Oracle_Maximum_IntervalRedoLogSpaceWaits 4.000000 \
-t Oracle_Maximum_RedoLogsNotArchived 2.000000 \
-AddPar InstanceMetrics "numRedoAllocationLatchPercentage" \
-AddPar InstanceMetrics "numRedoLogsNotArchived" \
-AddPar InstanceMetrics "numAvgRedoEntrySize" \
-AddPar InstanceMetrics "IntervalRedoLogSpaceWaits" \
-AddPar InstanceMetrics "numRedoCopyLatchPercentage" \
-e Oracle_High_IntervalRedoLogSpaceWaits \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_AvgRedoEntrySize \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RedoCopyLatchPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RedoCopyLatchPercentageIncrease \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RedoLogsNotArchived \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RedoAllocationLatchPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Rollback Segment

Description

Monitors the following information:

- As a percentage, the ratio of rollback segment header waits to rollback segment header gets
- The ratio of user rollbacks to the total number of transactions
- The ratio of consistent changes to consistent gets

The Rollback Waits percentage is calculated as:

(*Average_waits / Average_gets*) * 100

If this resource model reports a regularly increasing rollback wait percentage, create additional rollback segments in the database.

The User Rollback percentage indicates that application transactions are failing, or that users are rolling back transactions. When a rollback occurs, considerable system resource is required. User Rollback percentage is calculated as:

(*Rollbacks* / (*Commits* + *Rollbacks*))* 100

The Consistent Change percentage reports the extent to which the applications must exercise the read consistency mechanism. Consistent change percentage is calculated as:

(*consistent changes / consistent gets*) * 100

Resource model overview	
Internal name	OracleRollbackSegment
Category	Oracle
Indications	**High Consistent Change Percentage** occurs when the consistent change percentage exceeds the specified threshold.
	High Rollback Segment Header Waits Percentage occurs when the ratio of rollback segment header waits to gets has increased excessively.
	High User Rollback Percentage occurs when the the user rollback percentage exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds (10 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Consistent Change Percentage	Oracle_High_ ConsistentChangePercentage	Critical	Yes	254
High Rollback Segment Header Waits Percentage	Oracle_High_ RollbackWaitsPercentage	Critical	Yes	255
High User Rollback Percentage	Oracle_High_ UserRollbackPercentage	Critical	Yes	256

High Consistent Change Percentage indication

Occurs when the consistent change percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The consistent change percentage for Oracle
instance <InstanceName> has crossed above the predefined threshold
of <Threshold> percent and is currently
at <ConsistentChangePercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

ConsistentChangePercentage
The percentage of consistent changes to consistent gets.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum Consistent Change Percentage

For more information about this threshold, see “Thresholds” on page 257.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Rollback Segment Header Waits Percentage indication

Occurs when the ratio of rollback segment header waits to gets has increased excessively. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The rollback segment waits percentage for Oracle
database <DatabaseName> has crossed above the predefined threshold of
<Threshold> percent and is currently
at <RollbackWaitsPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Rollback WaitsPercentage
The percentage of rollback segment header waits on a specified data block for a specified length of time.

This indication has the following threshold:

- Maximum Rollback Segment Header Waits Percentage

For more information about this threshold, see “Thresholds” on page 257.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High User Rollback Percentage indication

Occurs when the the user rollback percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The user rollback percentage for Oracle
database <DatabaseName> has crossed above the predefined threshold
of <Threshold> percent and is currently
at <UserRollbackPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

UserRollbackPercentage
A percentage of the number of times users manually issue the ROLLBACK statement or an error occurs when a user attempts a transaction.

This indication has the following threshold:

- Maximum User Rollback Percentage

For more information about this threshold, see “Thresholds” on page 257.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Rollback Segment resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Consistent Change Percentage	An indication occurs if the consistent change percentage exceeds this value.	15
MaximumRollback Segment Header Waits Percentage	An indication occurs if the percentage of rollback segment header waits relative to gets exceeds this value.	2
Maximum User Rollback Percentage	An indication occurs if the user rollback percentage exceeds this value.	20

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Rollback Segment resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Consistent Change Percentage Rollback Waits Percentage User Rollback Percentage

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	Rolllback	**ConsistentChangePercentage** The percentage of consistent changes to consistent gets. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database. **RollbackWaitsPercentage** The percentage of rollback segment header waits on a specified data block for a specified length of time. **UserRollbackPercentage** A percentage of the number of times users manually issue the ROLLBACK statement or an error occurs when a user attempts a transaction.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleRollbackSegment -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_ConsistentChangePercentage 15.000000 \
-t Oracle_Maximum_RollbackWaitsPercentage 2.000000 \
-t Oracle_Maximum_UserRollbackPercentage 20.000000 \
-AddPar InstanceMetrics "numConsistentChangePercentage" \
-AddPar InstanceMetrics "RollbackWaitsPercentage" \
-AddPar InstanceMetrics "UserRollbackPercentage" \
-e Oracle_High_ConsistentChangePercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_UserRollbackPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_RollbackWaitsPercentage \
 -o 1 -h 0 -severity WARNING -SendTBSM -SendTec
```

SGA

Description

Monitors the following:

- The rate at which Oracle finds the data blocks it needs in memory over the lifetime of an instance and for the current monitoring interval. The output indicates the current ratio of buffer cache hits to total requests
- The effectiveness of the dictionary cache over the lifetime of an instance and for the current monitoring interval. The output shows the ratio, as a percentage, of dictionary cache hits to total requests for the monitoring interval
- The percentage of entries in the library cache that were parsed more than once (reloads) over the lifetime of the instance and for the current monitoring interval

The *SGA*, System Global Area, stores a group of shared memory structures that contain data and control information for one Oracle database instance. The *database buffer cache* is a section of the SGA that stores copies of data blocks read from datafiles. The database buffer cache is shared by all user processes concurrently connected to the instance. The *library cache* is a memory structure in the SGA that contains locks, shared SQL and PL/SQL areas. The *dictionary cache* stores information from the data dictionary, including a collection of database tables and views containing reference information about the database, its structures, and its users.

Run the Oracle SGA resource model after the instance has run long enough to have a representative workload. When an instance is started, the Oracle caches are empty and the cache hit rate is low, so running the resource model at this time returns misleading results.

Resource model overview	
Internal name	OracleSGA
Category	Oracle

Resource model overview	
Indications	**High Buffer Cache Hit Percentage** occurs when the buffer cache hit percentage is above the high threshold.
	High Buffer Cache Hit Percentage (Interval) occurs when the buffer cache hit percentage (interval) exceeds the specified threshold.
	High Buffer Waits Percentage occurs when the buffer waits percentage exceeds the specified threshold.
	High Dictionary Cache Hit Percentage occurs when the dictionary cache hit percentage is above the high threshold.
	High Dictionary Cache Hit Percentage (Interval) occurs when the high dictionary cache hit percentage (interval) exceeds the specified threshold.
	Low Buffer Cache Hit Percentage occurs when the buffer cache hit percentage is below the lower threshold.
	Low Buffer Cache Hit Percentage (Interval) occurs when the buffer cache hit percentage (interval) is below the specified threshold.
	Low Dictionary Cache Hit Percentage occurs when the dictionary cache hit percentage is lower than the specified threshold.
	Low Dictionary Cache Hit Percentage (Interval) occurs when the dictionary cache hit percentage (interval) is lower than the specified threshold.
	Low Keep Buffer Cache Hit Percentage occurs when the keep buffer cache hit percentage is below the specified threshold.
	Low Keep Buffer Cache Hit Percentage (Interval) occurs when the keep buffer cache hit percentage (interval) is below the specified threshold.
	Low Library Cache Hit Percentage occurs when the library cache hit percentage is below the specified threshold.
	Low Library Cache Hit Percentage (Interval) occurs when the library cache hit percentage (interval) is below the specified threshold.
	Low Recycle Buffer Cache Hit Percentage occurs when the low recycle buffer cache hit percentage is below the specified threshold.
	Low Recycle Buffer Cache Hit Percentage (Interval) occurs when the recycle buffer cache hit percentage (interval) is below the specified threshold.
Tasks and built-in actions	None
Default cycle time	1800 seconds (30 minutes)

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to

find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Buffer Cache Hit Percentage	Oracle_High_ BufferCacheHitPercentage	Critical	Yes	262
High Buffer Cache Hit Percentage (Interval)	Oracle_High_ IntervalBufferCacheHitPercentage	Critical	Yes	263
High Buffer Waits Percentage	Oracle_High_ BufferWaitsPercentage	Critical	Yes	264
High Dictionary Cache Hit Percentage	Oracle_High_ DictionaryCacheHitPercentage	Critical	Yes	265
High Dictionary Cache Hit Percentage (Interval)	Oracle_High_ IntervalDictionaryCacheHitPercentage	Critical	Yes	266
Low Buffer Cache Hit Percentage	Oracle_Low_ BufferCacheHitPercentage	Warning	Yes	268
Low Buffer Cache Hit Percentage (Interval)	Oracle_Low_ IntervalBufferCacheHitPercentage	Critical	Yes	269
Low Dictionary Cache Hit Percentage	Oracle_Low_ DictionaryCacheHitPercentage	Critical	Yes	270
Low Dictionary Cache Hit Percentage (Interval)	Oracle_Low_ IntervalDictionaryCacheHitPercentage	Critical	Yes	271
Low Keep Buffer Cache Hit Percentage	Oracle_Low_ KeepCacheHitPercentage	Critical	Yes	272
Low Keep Buffer Cache Hit Percentage (Interval)	Oracle_Low_ IntervalKeepCacheHitPercentage	Critical	Yes	273
Low Library Cache Hit Percentage	Oracle_Low_ LibraryCacheHitPercentage	Critical	Yes	274

Indication	Generated event	Default severity	Clearing events	Page
Low Library Cache Hit Percentage (Interval)	Oracle_Low_ IntervalLibraryCacheHitPercentage	Critical	Yes	275
Low Recycle Buffer Cache Hit Percentage	Oracle_Low_ RecycleCacheHitPercentage	Critical	Yes	276
Low Recycle Buffer Cache Hit Percentage (Interval)	Oracle_Low_ IntervalRecycleCacheHitPercentage	Critical	Yes	277

High Buffer Cache Hit Percentage indication

Occurs when the buffer cache hit percentage is above the high threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The buffer cache hit percentage for Oracle
instance <InstanceName> has crossed above the predefined threshold
of <Threshold> percent and is currently
at <BufferCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the high buffer cache hit percentage exceeds 97%, you may be able to make better use of available memory while still maintaining good performance by decreasing the database buffer cache size. Decrease the value of the initialization parameter DB_BLOCK_BUFFERS for Oracle 8i, or DB_CACHE_SIZE for Oracle 9i.

The indication has the following attributes:

BufferCacheHitPercentage
: The percentage of the buffer cache hits to total requests over the lifetime of an instance. The percentage calculates how often a requested block is found in the buffer cache without requiring disk access. The buffer cache is the portion of the SGA that holds copies of Oracle data blocks. All user processes that are connected to the instance share access to the buffer cache.

DatabaseName
: The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
: The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum Buffer Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Buffer Cache Hit Percentage (Interval) indication

Occurs when the buffer cache hit percentage (interval) exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The buffer cache hit percentage (interval) for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<IntervalBufferCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If Buffer Cache Hit Ratio is too high, consider decreasing database buffer cache size by decreasing the value of the initialization parameter DB_BLOCK_BUFFERS (DB_CACHE_SIZE for Oracle9i).

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalBufferCacheHitPercentage
The percentage of the interval buffer cache hits to total requests over the over the time interval for which the resource model was run. The percentage calculates how often a requested block is found in the buffer cache without requiring disk access. The buffer cache is the portion of the SGA that holds copies of Oracle data blocks. All user processes that are connected to the instance share access to the buffer cache.

This indication has the following threshold:

- Maximum Buffer Cache Hit Percentage (Interval)

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Buffer Waits Percentage indication

Occurs when the buffer waits percentage exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The buffer waits percentage for Oracle instance
<InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at <BufferWaitsPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

A non-zero value for this percentage indicates that block contention is occurring. Query the **v$waitstat** table to determine what kind of waits are occurring. Having studied this table, note the following: Avoid resource waits of any kind. If undo rollback segment waits are occurring, increase the number of private rollback segments the monitored database contains. Run the Rollback Segment resource model to examine rollback segment waits. If data block waits are occurring, increase the FREELIST parameter for heavily inserted tables. If in doubt, set FREELIST to 2 for tables suspected of being an insert or update bottleneck. Use the

Freelist Waits Percentage from the Other Performance Monitors resource model to specifically check for this form of block contention.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

BufferWaitsPercentage
The percentage of buffer busy waits to logical reads. This indicates that a user process attempted to acquire a buffer but had to wait because the buffer was held in an incompatible mode.

This indication has the following threshold:

- Maximum Buffer Waits Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Dictionary Cache Hit Percentage indication

Occurs when the dictionary cache hit percentage exceeds the high threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The dictionary cache hit percentage for Oracle
instance <InstanceName> has crossed above the predefined threshold
of <Threshold> percent and is currently
at <DictionaryCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

You might be able to make better use of available memory while still maintaining good performance by decreasing the data dictionary cache size. Achieve this by decreasing the value of the SHARED_POOL_SIZE initialization parameter.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

DictionaryCacheHitPercentage
The ratio, as a percentage, of dictionary cache hits to total requests. If the hit ratio is less than 70%, increase the value of the SHARED_POOL_SIZE initialization parameter. The dictionary cache is a collection of database tables and views containing data about the database, its structures, and its users. The dictionary cache is also known as the row cache because it holds data as rows instead of buffers (which hold entire blocks of data).

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum Dictionary Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Dictionary Cache Hit Percentage (Interval) indication

Occurs when the high dictionary cache hit percentage (interval) exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The dictionary cache hit percentage (interval) for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> percent and is currently at
<IntervalDictionaryCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

You might be able to make better use of available memory while still maintaining good performance by decreasing the data dictionary cache size. Achieve this by decreasing the value of the SHARED_POOL_SIZE initialization parameter.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalDictionaryCacheHitPercentage
The percentage of entries in the library cache that were reloads (parsed more than once) over the time interval for which the resource model was run. Strive to have reloads as near to zero as possible. The library cache stores executable forms of SQL cursors, PL/SQL programs, and Java classes.

This indication has the following threshold:

- Maximum Dictionary Cache Hit Percentage (Interval)

For more information about this threshold, see “Thresholds” on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Buffer Cache Hit Percentage indication

Occurs when the buffer cache hit percentage is below the specified minimum threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The buffer cache hit percentage for Oracle
instance <InstanceName> has crossed below the predefined threshold
of <Threshold> percent and is currently
at <BufferCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

A correctly tuned buffer cache can significantly improve overall database performance. In general, if the hit percentage is below 90%, and the dictionary cache has been tuned, increase the DB_BLOCK_BUFFERS initialization parameter for Oracle 8i or DB_CACHE_SIZE for Oracle 9i. However, note that increasing this parameter also increases the overall size of the SGA. Use the **x$kcbrbh** table or the DB_CACHE_ADVICE view for Oracle 9i to determine how many extra buffers are required. For additional information on using the **x$kcbrbh** table or the DB_CACHE_ADVICE view, see the *Server Administrator's Guide* for the relevant version of Oracle.

The indication has the following attributes:

BufferCacheHitPercentage
: The percentage of the buffer cache hits to total requests over the lifetime of an instance. The percentage calculates how often a requested block is found in the buffer cache without requiring disk access. The buffer cache is the portion of the SGA that holds copies of Oracle data blocks. All user processes that are connected to the instance share access to the buffer cache.

DatabaseName
: The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
: The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following thresholds:

- Minimum Buffer Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes

Setting	Default value
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Buffer Cache Hit Percentage (Interval) indication

Occurs when the buffer cache hit percentage (interval) is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The buffer cache hit percentage (interval) for Oracle
instance <InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at
<IntervalBufferCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If Buffer Cache Hit Percentage (Interval) is low, allocate more memory to the database buffer cache by increasing the value of the initialization parameter DB_BLOCK_BUFFERS (DB_CACHE_SIZE for Oracle9i).

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalBufferCacheHitPercentage
The percentage of the interval buffer cache hits to total requests over the time interval for which the resource model was run.

This indication has the following threshold:

- Minimum Buffer Cache Hit Percentage (Interval)

For more information about this threshold, see “Thresholds” on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Dictionary Cache Hit Percentage indication

Occurs when the dictionary cache hit percentage is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The dictionary cache hit percentage for Oracle
instance <InstanceName> has crossed below the predefined threshold
of <Threshold> percent and is currently
at <DictionaryCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the dictionary cache hit percentage is less than 85%, increase the value of the SHARED_POOL_SIZE initialization parameter. Note that increasing SHARED_POOL_SIZE will increase the size of the SGA. If this is made unnecessarily large, it will impact the amount of memory that is available to other processes.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

DictionaryCacheHitPercentage
The ratio, as a percentage, of dictionary cache hits to total requests. If the hit ratio is less than 85%, increase the value of the SHARED_POOL_SIZE initialization parameter. The dictionary cache is a collection of database tables and views containing data about the database, its structures, and its users. The dictionary cache is also known as the row cache because it holds data as rows instead of buffers (which hold entire blocks of data).

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Minimum Dictionary Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Dictionary Cache Hit Percentage (Interval) indication

Occurs when the dictionary cache hit percentage (interval) is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The dictionary cache hit percentage (interval) for Oracle
instance <InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at
<IntervalDictionaryCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Allocate more memory to the data dictionary cache by increasing the value of the SHARED_POOL_SIZE initialization parameter.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalDictionaryCacheHitPercentage
The ratio, as a percentage, of dictionary cache hits to total requests over the time interval for which the resource model was run.

This indication has the following threshold:

- Minimum Dictionary Cache Hit Percentage (Interval)

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Keep Buffer Cache Hit Percentage indication

Occurs when the keep buffer cache hit percentage is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The keep buffer cache hit percentage for Oracle instance
<InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at <KeepCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the Keep Buffer Cache Hit Percentage is low, increase the size of the KEEP buffer pool by increasing the value of the BUFFER_POOL_KEEP initialization parameter for Oracle8i instances (DB_KEEP_CACHE_SIZE for Oracle9i).

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

KeepCacheHitPercentage
The percentage of the keep buffer pool cache hits to total requests over the lifetime of an instance.

This indication has the following threshold:

- Minimum Keep Buffer Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Keep Buffer Cache Hit Percentage (Interval) indication

Occurs when the keep buffer cache hit percentage (interval) is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The keep buffer cache hit percentage for Oracle instance
<InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at
<IntervalKeepCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the Keep Buffer Cache Hit Percentage (Interval) is low, increase the size of the KEEP buffer pool by increasing the value of the BUFFER_POOL_KEEP initialization parameter for Oracle8i instances (DB_KEEP_CACHE_SIZE for Oracle9i).

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8

characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalKeepCacheHitPercentage
The percentage of the keep buffer pool cache hits to total requests over the time interval for which the resource model was run.

This indication has the following threshold:

- Minimum Keep Buffer Cache Hit Percentage (Interval)

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Library Cache Hit Percentage indication

Occurs when the library cache hit percentage is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The library cache hit percentage for Oracle
instance <InstanceName> has crossed below the predefined threshold
of <Threshold> percent and is currently
at <LibraryCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the library cache hit percentage is less than the specified threshold, allocate more memory to the library cache by increasing the value of the SHARED_POOL_SIZE initialization parameter.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

LibraryCacheHitPercentage
The percentage of entries in the library cache that were reloads (parsed more than once) over the lifetime of the instance. Strive to have reloads as near to zero as possible. The library cache stores executable forms of SQL cursors, PL/SQL programs, and Java classes.

This indication has the following threshold:

- Minimum Library Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Library Cache Hit Percentage (Interval) indication

Occurs when the library cache hit percentage (interval) is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The library cache hit percentage (interval) for Oracle
instance <InstanceName> has crossed below the predefined threshold
of <Threshold> percent and is currently
at <IntervalLibraryCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The goal is to have the library cache hit percentage as near to 100% as possible. If the library cache hit percentage is less than the specified threshold, allocate more memory to the library cache by increasing the value of the SHARED_POOL_SIZE initialization parameter.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalLibraryCacheHitPercentage
The percentage of entries in the interval library cache that were reloads (parsed more than once) over the time interval for which the resource model was run. Strive to have reloads as near to zero as possible. The library cache stores executable forms of SQL cursors, PL/SQL programs, and Java classes.

This indication has the following threshold:

- Minimum Library Cache Hit Percentage (Interval)

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Recycle Buffer Cache Hit Percentage indication

Occurs when the low recycle buffer cache hit percentage is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The recycle buffer cache hit percentage for Oracle
instance <InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at <RecycleCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the Recycle Buffer Cache Hit Percentage is low, increase the size of the RECYCLE buffer pool by increasing the value of the BUFFER_POOL_RECYCLE initialization parameter for Oracle8i instances (DB_RECYCLE_CACHE_SIZE for Oracle9i).

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

RecycleCacheHitPercentage
The percentage of the recycle buffer pool cache hits to total requests over the lifetime of an instance.

This indication has the following threshold:

- Minimum Recycle Buffer Cache Hit Percentage

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Low Recycle Buffer Cache Hit Percentage (Interval) indication

Occurs when the recycle buffer cache hit percentage (interval) is below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The recycle buffer cache hit percentage for Oracle
instance <InstanceName> has crossed below the predefined threshold of
<Threshold> percent and is currently at
<IntervalRecycleCacheHitPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

If the Recycle Buffer Cache Hit Percentage (Interval) is low, increase the size of the RECYCLE buffer pool by increasing the value of the BUFFER_POOL_RECYCLE initialization parameter for Oracle8i instances (DB_RECYCLE_CACHE_SIZE for Oracle9i).

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalRecycleCacheHitPercentage
The percentage of the interval recycle buffer pool cache hits to total requests over the time interval for which the resource model was run.

This indication has the following threshold:

- Minimum Recycle Buffer Cache Hit Percentage (Interval)

For more information about this threshold, see "Thresholds" on page 278.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the SGA resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Buffer Cache Hit Percentage	An indication occurs when the Buffer Cache Hit Percentage exceeds this value.	97
Maximum Buffer Cache Hit Percentage (Interval)	An indication occurs when the Buffer Cache Hit Percentage (Interval) exceeds this value.	97
Maximum Buffer Waits Percentage	An indication occurs when the Buffer Waits Percentage exceeds this value.	15
Maximum Dictionary Cache Hit Percentage	An indication occurs when the Dictionary Cache Hit Percentage exceeds this value.	95
Maximum Dictionary Cache Hit Percentage (Interval)	An indication occurs when the Dictionary Cache Hit Percentage (Interval) exceeds this value.	95
Minimum Buffer Cache Hit Percentage	An indication occurs when the Buffer Cache Hit Percentage is less than this value.	70
Minimum Buffer Cache Hit Percentage (Interval)	An indication occurs when the Buffer Cache Hit Percentage (Interval) is less than this value.	70
Minimum Dictionary Cache Hit Percentage	An indication occurs when the Dictionary Cache Hit Percentage is less than this value.	85
Minimum Dictionary Cache Hit Percentage (Interval)	An indication occurs when the Dictionary Cache Hit Percentage (Interval) is less than this value.	85
Minimum Keep Buffer Cache Hit Percentage	An indication occurs when the Keep Buffer Cache Hit Percentage is less than this value.	90
Minimum Keep Buffer Cache Hit Percentage (Interval)	An indication occurs when the Keep Buffer Cache Hit Percentage (Interval) is less than this value.	90
Minimum Library Cache Hit Percentage	An indication occurs when the Library Cache Hit Percentage is less than this value.	99
Minimum Library Cache Hit Percentage (Interval)	An indication occurs when the Library Cache Hit Percentage (Interval) is less than this value.	99
Minimum Recycle Buffer Cache Hit Percentage	An indication occurs when the Recycle Buffer Cache Hit Percentage is less than this value.	90
Minimum Recycle Buffer Cache Hit Percentage (Interval)	An indication occurs when the Recycle Buffer Cache Hit Percentage (Interval) is less than this value.	90

Parameters

None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleInstance	Memory	**BufferBusyWaits** The number of buffer busy waits in a specified length of time. **BufferCacheCGets** The number of times a consistent read was requested for a block in a specified length of time. **BufferCacheDBGets** The number of times a CURRENT block was requested in a specified length of time. **BufferCacheHitPercentage** The percentage of the buffer cache hits to total requests over the lifetime of an instance. **BufferCachePhysReadsDir** Logged in Oracle 9i only. Number of reads directly from disk, bypassing the buffer cache. **BufferCachePhysReadsDirLob** Logged in Oracle 9i only. Number of lob reads directly from disk, bypassing the buffer cache. **BufferCacheSessLogReads** Logged in Oracle 9i only. The sum of "db block gets" plus "consistent gets." **BufferWaitsPercentage** The percentage of buffer busy waits to logical reads. This indicates that a user process attempted to acquire a buffer but had to wait because the buffer was held in an incompatible mode. **DictionaryCacheHitPercentage** The ratio, as a percentage, of dictionary cache hits to total requests. **InstanceName*** The name of an Oracle database instance. **IntervalBufferCacheHitPercentage** The percentage of the interval buffer cache hits to total requests over the time interval for which the resource model was run. **IntervalDictionaryCacheHitPercentage** The percentage of entries in the library cache that were reloads (parsed more than once) over the time interval for which the resource model was run. **IntervalKeepCacheHitPercentage** The percentage of the interval keep buffer pool cache hits to total requests over the time interval for which the resource model was run.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleInstance	Memory	**IntervalLibraryCacheHitPercentage** The percentage of entries in the interval library cache that were reloads (parsed more than once) over the time interval for which the resource model was run. Strive to have reloads as near to zero as possible. The library cache stores executable forms of SQL cursors, PL/SQL programs, and Java classes. **IntervalRecycleCacheHitPercentage** The percentage of the interval recycle buffer pool cache hits to total requests over the time interval for which the resource model was run. **KeepCacheCGets** The number of keep cache consistent gets. **KeepCacheDBGets** The number of keep cache database blocks gets. **KeepCacheHitPercentage** The percentage of the keep buffer pool cache hits to total requests over the lifetime of an instance. **KeepCachePhysReads** The number of keep cache physical reads. **LibraryCacheHitPercentage** The percentage of entries in the library cache that were reloads (parsed more than once) over the lifetime of the instance. **LibraryCachePinHits** Logged in Oracle 9i only. The number of times that all of the metadata pieces of the library object were found in memory. **LibraryCachePins** The number of times a PIN was requested for objects in the library cache. **LibraryCacheReloads** Logged in Oracle 8i only. The number of object PINs following the first PIN performed since the object handle was created, and which requires loading the object from disk. **OracleDatabase.DatabaseName*** The name of an Oracle database. **RecycleCacheCGets** The number of recycle cache consistent gets. **RecycleCacheDBGets** The number of recycle cache database blocks gets. **RecycleCacheHitPercentage** The percentage of the recycle buffer pool cache hits to total requests over the lifetime of an instance. **RecycleCachePhysReads** The number of recycle cache physical reads.
Note: An asterisk (*) denotes a key property.		

Managed resource	Context	Properties
OracleInstance	Memory	**RowCacheGets** The total number of requests for data object information for all data dictionary caches. **RowCacheFixed** The total number of fixed entries in the cache for all data dictionary caches. **RowCacheMisses** The total number of data requests resulting in cache misses for all data dictionary caches. **RowCacheUsage** Logged in Oracle 8i only. The total number of cache entries that contain valid data for all data dictionary caches.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleSGA -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Maximum_BufferCacheHitPercentage 97.000000 \
-t Oracle_Maximum_IntervalBufferCacheHitPercentage 97.000000 \
-t Oracle_Maximum_BufferWaitsPercentage 15.000000 \
-t Oracle_Maximum_DictionaryCacheHitPercentage 95.000000 \
-t Oracle_Maximum_IntervalDictionaryCacheHitPercentage 95.000000 \
-t Oracle_Minimum_BufferCacheHitPercentage 70.000000 \
-t Oracle_Minimum_IntervalBufferCacheHitPercentage 70.000000 \
-t Oracle_Minimum_DictionaryCacheHitPercentage 85.000000 \
-t Oracle_Minimum_IntervalDictionaryCacheHitPercentage 85.000000 \
-t Oracle_Minimum_KeepCacheHitPercentage 90.000000 \
-t Oracle_Minimum_IntervalKeepCacheHitPercentage 90.000000 \
-t Oracle_Minimum_LibraryCacheHitPercentage 99.000000 \
-t Oracle_Minimum_IntervalLibraryCacheHitPercentage 99.000000 \
-t Oracle_Minimum_RecycleCacheHitPercentage 90.000000 \
-t Oracle_Minimum_IntervalRecycleCacheHitPercentage 90.000000 \
-AddPar InstanceMetrics "numBufferCacheHitPercentage" \
-AddPar InstanceMetrics "numIntervalBufferCacheHitPercentage" \
-AddPar InstanceMetrics "numLibraryCacheHitPercentage" \
-AddPar InstanceMetrics "numIntervalLibraryCacheHitPercentage" \
-AddPar InstanceMetrics "numDictionaryCacheHitPercentage" \
-AddPar InstanceMetrics "numIntervalDictionaryCacheHitPercentage" \
-AddPar InstanceMetrics "numBufferWaitsPercentage" \
-AddPar InstanceMetrics "numKeepCacheHitPercentage" \
-AddPar InstanceMetrics "numIntervalKeepCacheHitPercentage" \
-AddPar InstanceMetrics "numRecycleCacheHitPercentage" \
-AddPar InstanceMetrics "numIntervalRecycleCacheHitPercentage" \
-e Oracle_High_BufferWaitsPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_IntervalBufferCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_IntervalRecycleCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
```

```
-e Oracle_Low_BufferCacheHitPercentage \
 -o 1 -h 0 -severity WARNING -SendTBSM -SendTec \
-e Oracle_Low_IntervalLibraryCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_IntervalBufferCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_RecycleCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_BufferCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_LibraryCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -NoSendTBSM -NoSendTec \
-e Oracle_Low_DictionaryCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_IntervalDictionaryCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_IntervalKeepCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_DictionaryCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_IntervalDictionaryCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_Low_KeepCacheHitPercentage \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

SQL Number

Description

Queries a resource for a numeric value as specified by a user-defined SQL select statement.

Use this resource model to create your own method of monitoring information that is specific to your operational needs. The ability to define a freeform SQL select statement enables the integration of existing performance monitoring tools (particularly those reporting monitored values to internal Oracle tables within the subscribing database).

When specifying the SQL statement, do not terminate the SQL statement with a semicolon (;), forward slash (/), or backward slash (\). The select statement can return multiple columns and multiple rows. The trigger value (the value against which the monitoring criteria is evaluated) must be a numeric value.

The *index* parameter defines which column contains the trigger value. The columns begin with the number one (not zero-based).

An SQL select statement might return no rows. Use the No Rows As parameter to specify the value to be returned if no rows are returned from the SQL statement.

If you use this resource model to search for an alphanumeric value, instead of a numeric value, an error occurs. Use "SQL String" on page 294 to search for an alphanumeric value.

Resource model overview	
Internal name	OracleFreeFormSQLNumber
Category	Oracle
Indications	**Decreases Below SQL Number** occurs when the result of the query decreased below the specified threshold.
	Does not equal SQL Number occurs when the result of the query does not equal the specified threshold.
	Equals SQL Number occurs when the result of the query equals the specified threshold.
	Greater than SQL Number occurs when the result of the query exceeds the specified threshold.
	Increase of SQL Number occurs when the result of the query is increased by the specified threshold amount or greater.
	Increases Beyond SQL Number occurs when the result of the query exceeds the specified threshold.
	Less Than SQL Number occurs when the result of the query is less than the specified threshold.
	Percent increase of occurs when the result of the query increases as a percentage over the previous result by more than the specified threshold.
Tasks and built-in actions	None
Default cycle time	300 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Decreases Below SQL Number	Oracle_ DecreasesBelowSQLNumber	Critical	Yes	285
Does not equal SQL Number	Oracle_ DoesNotEqualSQLNumber	Critical	Yes	286
Equals SQL Number	Oracle_ EqualsSQLNumber	Critical	Yes	287
Greater than SQL Number	Oracle_ GreaterThanSQLNumber	Critical	Yes	288
Increase of SQL Number	Oracle_ IncreaseOfSQLNumber	Critical	Yes	289
Increases Beyond SQL Number	Oracle_ IncreasesBeyondSQLNumber	Critical	Yes	289
Less Than SQL Number	Oracle_ LessThanSQLNumber	Critical	Yes	290
Percent increase of	Oracle_ PctIncreaseOfSQLNumber	Critical	Yes	291

Decreases Below SQL Number indication

Occurs when the result of the query decreased below the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> has decreased below the predefined
threshold of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see "Thresholds" on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Does not equal SQL Number indication

Occurs when the result of the query does not equal the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for
Oracle database <DatabaseName> does not equal the
predefined threshold of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see "Thresholds" on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Equals SQL Number indication

Occurs when the result of the query equals the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> equals the predefined threshold of
<Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see “Thresholds” on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1

Setting	Default value
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Greater than SQL Number indication

Occurs when the result of the query exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> exceeds the predefined threshold
of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see "Thresholds" on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business

Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Increase of SQL Number indication

Occurs when the result of the query is increased by the specified threshold amount or greater. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> has increased by more than the predefined
threshold of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see “Thresholds” on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Increases Beyond SQL Number indication

Occurs when the result of the query exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> has increased beyond the predefined
threshold of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see "Thresholds" on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Less Than SQL Number indication

Occurs when the result of the query is less than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> is less than the predefined threshold
of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see "Thresholds" on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Percent increase of indication

Occurs when the result of the query increases as a percentage over the previous result by more than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for the Oracle
database <DatabaseName> has increased by more than the predefined
threshold of <Threshold> percent and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8

characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has the following thresholds:

- Threshold for SQL Number

For more information about these thresholds, see "Thresholds" on page 292.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the SQL Number resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Threshold for SQL Number	This value represents the number against which the query compares.	0

Parameters

The following table lists the parameters that can be set for the SQL Number resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Designated Indication	Select an indication as the mode of comparison between the result and the threshold that generates an occurrence. Choose from: PctIncreaseOf, IncreaseOf, DecreasesBelow, IncreasesBeyond, NotEquals, Equals, LessThan, and GreaterThan.	GreaterThan
Index	Enter the column number that corresponds to the value being monitored within the SQL statement you specified. Columns begin with one (not zero-based).	None

Parameter	Description	Default value
Metric Label	Enter a label which describes the metric produced by the SQL statement.	SQL Number Metric
No Rows As	Specifies the value to be returned if no rows are returned from the SQL statement.	0
SQL statement	Enter the query to monitor your resource.	None

Tasks and built-in actions

None

Logging

This resource model does not log information.

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFreeFormSQLNumber -c 300 \
-t SQLNumberThreshold 0.000000 \
-AddPar Index 1 \
-DelPar NoRowsAs 0 \
-AddPar NoRowsAs 1 \
-DelPar MetricLabel "SQL Number Metric" \
-AddPar MetricLabel "My SQL Number Metric Label" \
-AddPar SQL "select 1 from dual" \
-AddPar DesignatedIndication "GreaterThan" \
-e Oracle_DoesNotEqualSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_IncreaseOfSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_DecreasesBelowSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_PctIncreaseOfSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_EqualsSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_IncreasesBeyondSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_LessThanSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_GreaterThanSQLNumber \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

SQL String

Description

Queries a resource for an alphanumeric value that is specified by a user-defined SQL select statement.

Note: The performance of your environment may be affected if you specify a large number of objects to process. This resource model performs comparisons on all rows of the returned results. If a query returns 5000 rows, then the resource model completes 5000 comparisons. To compare only one row, wrap the query in a statement of the form:

```
select <columns> from <old query> where rownum = 1
```

Use this resource model to create your own method of monitoring information specific to your operational needs. The ability to define a freeform SQL select statement enables the integration of existing performance monitoring tools (particularly those reporting monitored values to internal Oracle tables within the subscribing database).

When specifying the SQL statement, do not terminate the SQL statement with a semicolon (;), forward slash (/), or backward slash (\). The select statement can return multiple columns and multiple rows. The trigger value (the value against which the monitoring criteria is evaluated) must be an alphanumeric value.

The *index* parameter defines which column contains the trigger value. The columns begin with the number one (not zero-based).

An SQL select statement might return no rows. Use the No Rows As parameter to specify the value to be monitored is no rows are returned from the SQL statement.

Resource model overview	
Internal name	OracleFreeFormSQLString
Category	Oracle
Indications	**Changes from SQL String** occurs when the string query changed from the specified threshold.
	Changes to SQL String occurs when the result of the query changed to the specified threshold.
	Mismatches SQL String occurs when the result of the query does not match the specified threshold.
	SQL String Matches occurs when the query matches the specified threshold.
Tasks and built-in actions	None
Default cycle time	300 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Changes from SQL String	Oracle_ ChangesFromSQLString	Critical	Yes	295
Changes to SQL String	Oracle_ ChangesToSQLString	Critical	Yes	296
Mismatches SQL String	Oracle_ MismatchesSQLString	Critical	Yes	296
SQL String Matches	Oracle_ MatchesSQLString	Critical	Yes	297

Changes from SQL String indication

Occurs when the string query changed from the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> has changed from the predefined
threshold of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business

Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Changes to SQL String indication

Occurs when the result of the query changed to the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> has changed to the predefined threshold
of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Mismatches SQL String indication

Occurs when the result of the query does not match the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle
database <DatabaseName> does not match the predefined threshold
of <Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

SQL String Matches indication

Occurs when the query matches the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The result of the SQL query for Oracle database
<DatabaseName> matches the predefined threshold of
<Threshold> and is currently <Result>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8

characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

Result The value being monitored within the SQL statement specified.

SQL The user-defined query that monitors your resource.

This indication has no thresholds.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

This resource model has no numeric thresholds.

Parameters

The following table lists the parameters that can be set for the SQL String resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Designated Indication	Select an indication as the mode of comparison between the result and the threshold that generates an occurrence. Choose from: Changes from, Changes to, Mismatches, and Matches.	Matches
Index	Enter the column number that corresponds to the value being monitored within the SQL statement you specified. Columns begin with one (not zero-based).	None
Metric Label	Enter a label which describes the metric produced by the SQL statement.	SQL String Metric
No Rows As	Specifies the value to be returned if no rows are returned from the SQL statement.	ERROR
SQL statement	Enter the query to monitor your resource.	None
Threshold	Enter the value against which you want to compare your results.	None

Tasks and built-in actions

None

Logging

This resource model does not log information.

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleFreeFormSQLString -c 300 \
-AddPar Index 1 \
-DelPar MetricLabel "SQL String Metric" \
-AddPar MetricLabel "My SQL String Metric Label" \
-AddPar SQL "select * from dual" \
-AddPar DesignatedIndication "Matches" \
-DelPar NoRowsAs "ERROR" \
-AddPar NoRowsAs "NO ROWS RETURNED" \
-AddPar StringThreshold "STRING THRESHOLD" \
-e Oracle_MismatchesSQLString \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_ChangesToSQLString \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_ChangesFromSQLString \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_MatchesSQLString \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Temporary Extents

Description

Note: This resource model is not applicable for Oracle 9i.

Alerts on those temporary segments whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.

Extents are contiguous sets of data blocks for storing data. *Temporary extents* are extents that make up a temporary segment. *Temporary segments* are created by Oracle when a SQL statement needs a temporary work area to complete execution. When a statement finishes execution, the temporary segment's extents are returned to the system for future use.

A temporary segment is used whenever a sort is too large to be performed in memory; that is, the amount of space required exceeds the value of the SORT_AREA_SIZE initialization parameter. Oracle creates a segment in the temporary tablespace of the user who performs the sort operation.

If the number of extents for an object reaches the value of the MAXEXTENTS storage parameter, and the object needs to allocate an additional extent, the operation will fail. Check the storage parameters for the temporary tablespace, and ensure that they are appropriate for your applications.

Oracle allocates and deallocates temporary segments frequently. To avoid fragmentation of the SYSTEM and other tablespaces that might hold temporary segments by default, you should create a tablespace specifically for temporary segments and specify this tablespace as the user's temporary tablespace.

Resource model overview	
Internal name	OracleTemporaryExtents
Category	Oracle
Indications	**Low Free Temporary Extents** occurs when the number of free extents for the temporary segment is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Low Free Temporary Extents	Oracle_Low_FreeTempExtents	Critical	Yes	301

Low Free Temporary Extents indication

Occurs when the number of free extents for the temporary segment is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of free extents for the Oracle temporary segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined threshold <Threshold>
and is currently at <FreeExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
The maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Minimum Free Temporary Extents

For more information about this threshold, see “Thresholds” on page 302.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Temporary Extents resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Temporary Extents	An indication occurs when the number of free temporary extents is lower than this value.	5

Parameters

The following table lists the parameters that can be set for the Temporary Extents resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** The maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** The percentage of current extents to the maximum number allowed for the segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleTemporaryExtents -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeTempExtents 5.000000 \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-e Oracle_Low_FreeTempExtents \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -Send
```

Temporary Extents by Tablespace

Description

Note: This resource model is not applicable for Oracle 9i.

Alerts on those temporary segments within specified tablespaces whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.

A temporary segment is used whenever a sort is too large to be performed in memory; that is, the amount of space required exceeds the value of the SORT_AREA_SIZE initialization parameter. Oracle creates a segment in the temporary tablespace of the user who performs the sort operation.

If the number of extents for an object reaches the value of the MAXEXTENTS storage parameter, and the object needs to allocate an additional extent, the operation will fail. Check the storage parameters for the temporary tablespace, and ensure that they are appropriate for your applications.

Oracle allocates and deallocates temporary segments frequently. To avoid fragmentation of the SYSTEM and other tablespaces that might hold temporary segments by default, you should create a tablespace specifically for temporary segments and specify this tablespace as the user's temporary tablespace.

This resource model can use tokens to monitor a set of tables specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleTemporaryExtentsByTablespace
Category	Oracle
Indications	**Low Free Temporary Extents** occurs when the number of free extents for the temporary segment is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
Low Free Temporary Extents	Oracle_Low_FreeTempExtentsByTablespace	Critical	Yes	305

Low Free Temporary Extents indication

Occurs when the number of free extents for the temporary segment is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of free extents for the Oracle temporary segment
<SegmentOwner>.<SegmentName> in tablespace
<TablespaceName> on database <DatabaseName> has
crossed below the predefined threshold <Threshold> and is currently
at <FreeExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
Identifies the name of an Oracle database that uniquely identifies a specific database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
The maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

PctExtentsAllocated
The percentage of current extents to the maximum number allowed for the segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Minimum Free Temporary Extents

For more information about this threshold, see "Thresholds" on page 306.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Temporary Extents by Tablespace resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Temporary Extents	An indication occurs when the Free Temporary Extents is less than this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Temporary Extents by Tablespace resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Include/Exclude	Includes or excludes the contents of the tablespaces names field.	Include
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Current Extents Free Extents Percent Extents Allocated
Tablespace Names	Designates the tablespace names you want to include or exclude. Only temporary segments contained within these tablespaces will be monitored. Use spaces to separate names.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** The maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** The percentage of current extents to the maximum number allowed for the segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region \
-add OracleTemporaryExtentsByTablespace -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeTempExtents 5.000000 \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-AddPar IncludeExcludeTablespaces "Include" \
-DelPar NumberOfRows "50" \
```

```
-AddPar NumberOfRows "25" \
-AddPar List "SYSTEM" \
-e Oracle_Low_FreeTempExtentsByTablespace \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Temporary Extents by User

Description

Note: This resource model is not applicable for Oracle 9i.

Alerts on those temporary segments for a specified user whose free extents (maximum allowed extents minus the segment's currently allocated extents) are less than the specified threshold.

A temporary segment is used whenever a sort is too large to be performed in memory; that is, the amount of space required exceeds the value of the SORT_AREA_SIZE initialization parameter. Oracle creates a segment in the temporary tablespace of the user who performs the sort operation.

If the number of extents for an object reaches the value of the MAXEXTENTS storage parameter, and the object needs to allocate an additional extent, the operation will fail. Check the storage parameters for the temporary tablespace, and ensure that they are appropriate for your applications.

Oracle allocates and deallocates temporary segments frequently. To avoid fragmentation of the SYSTEM and other tablespaces that might hold temporary segments by default, you should create a tablespace specifically for temporary segments and specify this tablespace as the user's temporary tablespace.

This resource model can use tokens to monitor a set of users specified by the token. See Appendix E, "Using tokens to customize resource model parameters" on page 519 for more information.

Resource model overview	
Internal name	OracleTemporaryExtentsByUser
Category	Oracle
Indications	**Low Free Temporary Extents** occurs when the number of free extents for the temporary segment is lower than the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	**Generated event**	**Default severity**	**Clearing events**	**Page**
Low Free Temporary Extents	Oracle_Low_FreeTempExtentsByUser	Critical	Yes	310

Low Free Temporary Extents indication

Occurs when the number of free extents for the temporary segment is lower than the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The number of free extents for the Oracle temporary segment
<SegmentOwner>.<SegmentName> in tablespace <TablespaceName>
on database <DatabaseName> has crossed below the predefined threshold
<Threshold> and is currently at <FreeExtents>.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

CurrentExtents
The number of extents currently allocated to the specified segment.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

FreeExtents
The maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment.

MaxExtents
The maximum number of extents allowed for the specified segment.

PctExtentsAllocated
The percentage of current extents to the maximum number allowed for the segment.

SegmentName
The name of the segment.

SegmentOwner
The username of the segment owner.

SegmentType
The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.

TablespaceName
The name of the tablespace that contains this segment.

This indication has the following threshold:

- Minimum Free Temporary Extents

For more information about this threshold, see "Thresholds" on page 311.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Temporary Extents by User resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Minimum Free Temporary Extents	An indication occurs when Free Temporary Extents is less than this value.	5

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Temporary Extents by User resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Number of Rows	Specifies the number of objects with the worst-case extents to return.	50
Segment Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Current Extents Free Extents Percent Extents Allocated
User Name	Specifies the Oracle user name. Only temporary segments owned by this user will be monitored.	None

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleSegment	Storage	**CurrentExtents** The number of extents currently allocated to the specified segment. **FreeExtents** The maximum number of extents allowed for the specified segment less the number of extents currently allocated to the specified segment. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleTablespace.TablespaceName*** The name of the tablespace that contains this segment. **PctExtentsAllocated** The percentage of current extents to the maximum number allowed for the segment. **SegmentName*** The name of the segment. **SegmentOwner*** The username of the segment owner. **SegmentType*** The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleTemporaryExtentsByUser -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg  \
-t Oracle_Minimum_FreeTempExtentsByUser 5.000000 \
-AddPar IncludeUser "SYS" \
-AddPar SegmentMetrics "numPctExtentsAllocated" \
-AddPar SegmentMetrics "numFreeExtents" \
-AddPar SegmentMetrics "numCurrentExtents" \
-DelPar NumberOfRows "50" \
-AddPar NumberOfRows "25" \
-e Oracle_Low_FreeTempExtentsByUser \
 -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Transaction

Description

Monitors the following:

- Any transactions locked by another user and returns the longest time, in seconds, that a transaction has been blocked
- The total number of active transactions as a percentage of the TRANSACTIONS initialization parameter for the instance
- The number of client requests made per transaction
- The amount of DML (Data Manipulation Language) work that each transaction performs
- An overview of the work rate being run against the instance
- The identity of long-running transactions and how long those transactions have been running

Set up the response level thresholds to suit your particular environment.

Transactions are logical units of work that contain one or more SQL statements executed by a single user. Transactions begin with the user's first executable SQL statement and end when the transactions are committed or rolled back by the user. *Long-running transactions* are currently active transactions whose process time has exceeded the threshold value.

Note: If a batch process occurs while this resource model is scheduled, the thresholds might not be valid during the time when the batch process is running.

Blocked transactions are transactions that are blocked by another user's lock. Blocked transactions can also occur when users connect to the system, run one or more SQL statements, and do not commit or roll back their transactions, thus stopping others from performing certain tasks on the objects. For the High Lock Wait Time threshold, you should specify an acceptable time limit in seconds that a transaction should wait for an unreleased lock before the resource model triggers.

Active transactions are transactions that are currently executing. The active transaction percentage is calculated by taking the number of active transactions divided by the maximum number of concurrent transactions as defined by the TRANSACTIONS initialization parameter for the instance. Monitoring active transactions is useful to determine the efficiency of the database. Once that TRANSACTIONS limit is reached, the database hangs. It remains hung until other transactions complete.

If the active transaction value regularly reports a 90% or greater usage figure, increase the TRANSACTIONS initialization parameter for the instance. This sets the maximum number of concurrent transactions allowed for that instance. Increasing this parameter will also increase the SGA size and can increase the number of rollback segments allocated for an 8i database or a 9i database in manual undo management mode.

Active transactions require memory in the SGA for process and recording. Each transaction is assigned to a rollback or undo segment to record the entries. A high number of active transactions requires a high number of rollback or undo segments. If the percentage of active transactions is high, there could be a space problem for the process and recording of these transactions. If an instance is using rollback segments, and a transaction runs out of rollback space but needs to keep

writing, it will either reuse an extent from a rollback segment, or will allocate a new extent for the rollback segment. Either way, the database could slow down to handle the space shortage. If the number of transactions is increasing, it might be necessary to add rollback segments. Use the **Rollback Segments** resource model to determine if there is contention for rollback segments.

The TRANSACTIONS initialization parameter defaults to 1.1* the SESSIONS initialization parameter, and, in turn, PROCESSES. This allows for recursive transactions. *Recursive transactions* are system generated SQL statements that occur behind the scenes in order to execute a transaction.

If this resource model regularly reports a low percentage figure, you can choose to decrease the TRANSACTIONS parameter. By decreasing this number, you free the SGA memory that can be allocated for other purposes.

Calls Per Transaction are client requests made per transaction. Calls do any of the following: describe, parse, open, fetch, close, or execute. Calls per transaction can be used to detect changes in the application, or in the way in which it is being used. The reported value can change considerably when ad hoc queries are issued.

Block changes are caused by Data Manipulation Language (DML) work. Creating or dropping indexes impacts this value considerably and might lead to inconclusive values because the figure also includes changes to index blocks.

Resource model overview	
Internal name	OracleTransaction
Category	Oracle
Indications	**High Active Transactions Percentage** occurs when the number of active transactions exceeds the specified threshold.
	High Block Changes Per Transaction occurs when the amount of DML (Data Manipulation Language) work that each transaction performs is high.
	High Call Rate occurs when the call rate exceeds the specified threshold.
	High Calls Per Transaction occurs when the calls per transaction value exceeds the specified threshold.
	High Lock Wait Time occurs when the lock wait time exceeds the specified threshold.
	High Long Running Transactions occurs when the long running transaction value exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	600 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High Active Transactions Percentage	Oracle_High_ ActiveTransactionsPercentage	Critical	Yes	315
High Block Changes Per Transaction	Oracle_High_ BlockChangesPerTransaction	Critical	Yes	316
High Call Rate	Oracle_High_CallRate	Critical	Yes	317
High Calls Per Transaction	Oracle_High_ CallsPerTransaction	Critical	Yes	318
High Lock Wait Time	Oracle_High_LockWaitTime	Critical	Yes	319
High Long Running Transactions	Oracle_High_ LongRunningTransactions	Critical	Yes	320

High Active Transactions Percentage indication

Occurs when the number of active transactions exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The active transactions percentage for Oracle
instance <InstanceName> has crossed above the predefined threshold
of <Threshold> percent and is currently
at <ActiveTransactionsPercentage> percent.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication provides information that can help the DBA determine whether the TRANSACTIONS parameter should be increased or decreased. The TRANSACTIONS initialization parameter specifies the maximum number of concurrent transactions. Greater values increase the size of the SGA and can increase the number of rollback segments allocated. The default value exceeds SESSIONS (and, in turn, PROCESSES) to allow for recursive transactions.

The indication has the following attributes:

ActiveTransactionsPercentage
: The total number of active transactions as a percentage of the TRANSACTIONS initialization parameter for the instance.

DatabaseName
: The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
: The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum Active Transactions Percentage

For more information about this threshold, see "Thresholds" on page 322.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Block Changes Per Transaction indication

Occurs when the amount of DML (Data Manipulation Language) work that each transaction performs is high. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The block changes per transaction for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold>
block changes per transaction and is currently at <BlockChangesPerTransaction> block
changes per transaction.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The indication has the following attributes:

BlockChangesPerTransaction
The amount of DML (Data Manipulation Language) work that each transaction performs.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified

by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- Maximum Block Changes Per Transaction

For more information about this threshold, see "Thresholds" on page 322.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Call Rate indication

Occurs when the call rate exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The call rate for Oracle instance <InstanceName>
has crossed above the predefined threshold of <Threshold> calls per second
and is currently at <CallRate> calls per second.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication provides an overview of the work rate being run against the instance. Calls do any of the following: describe, parse, open, fetch, close, or execute. The call rate is dependent on the design of an application. Use of an array interface will also affect this figure.

The indication has the following attributes:

CallRate
The work rate being run against the instance. Calls do any of the following: describe, parse, open, fetch, close, or execute.

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- High Call Rate

For more information about this threshold, see "Thresholds" on page 322.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Calls Per Transaction indication

Occurs when the calls per transaction value exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The calls per transaction for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold>
calls per transaction and is currently at <CallsPerTransaction>
calls per transaction.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This metric monitors the number of client requests made per transaction. Calls do any of the following: describe, parse, open, fetch, close, or execute. Calls per transaction can be used to detect changes in the application, or in the way in which it is being used. The reported value can change considerably when ad hoc queries are issued.

The indication has the following attributes:

CallsPerTransaction
The number of client requests made per transaction.

DatabaseName
The name of an Oracle database. The database name contains up to 8

characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

This indication has the following threshold:

- High Calls Per Transaction

For more information about this threshold, see "Thresholds" on page 322.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Lock Wait Time indication

Occurs when the lock wait time exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The lock wait time for Oracle session <SessionID>
has crossed above the predefined threshold of <Threshold> seconds and
is currently at <LockWaitTime> seconds.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

Monitors whether any transactions are locked by another user and returns the longest time, in seconds, that a transaction has been blocked.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

LockID
The address of lock being waited for, if any.

LockWaitTime
The time (in seconds) since current mode was granted.

Object
The name of the object.

ObjectOwner
The username of the user who owns the schema that contains the table or index.

SessionID
The session identifier.

SQLText
The text piece of a SQL statement.

Username
The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

This indication has the following threshold:

- Maximum Lock Wait Time

For more information about this threshold, see "Thresholds" on page 322.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Long Running Transactions indication

Occurs when the long running transaction value exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The longest running transaction time for Oracle
instance <InstanceName> has crossed above the predefined threshold of
<Threshold> seconds and is currently at <TimeRunningSeconds> seconds.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

This indication reports possible issues and bottlenecks in the SQL or database design. The output can be used to determine the identity of long-running transactions and how long those transactions have been running. Set up the response level thresholds to suit your particular environment.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

SessionID
The session identifier.

StartTime
The start time for the specified transaction.

SQLText
The text piece of a SQL statement.

TimeRunningSeconds
The number of seconds the transaction has been running.

Username
The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

This indication has the following threshold:

- Maximum Long Running Transactions

For more information about this threshold, see “Thresholds” on page 322.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Transaction resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum Active Transactions Percentage	An indication occurs when the percentage of active transactions exceeds this value.	95
Maximum Block Changes Per Transaction	An indication occurs when the percentage of block changes per transaction exceeds this value.	3
Maximum Call Rate	An indication occurs when the call rate exceeds this value.	90
Maximum Calls Per Transaction	An indication occurs when the number of calls per transaction exceeds this value.	1500
Maximum Lock Wait Time	An indication occurs when the number of calls per transaction exceeds this value.	60
Maximum Long Running Transactions	An indication occurs when the number of long running transactions exceeds this value.	180

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Transaction resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
Instance Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Active Transactions Percentage Block Changes Per Transaction Call Rate Calls Per Transaction

Parameter	Description	Default value
Session Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	Blocked Transactions LockID Object Object Owner SQL Text User Name
Transaction Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	SQL Text User Name Start Time Running Time

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleTransaction	Transaction	**Address*** The location of the transaction state object. **TransactionSeconds** Time of the longest running transaction. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **OracleSession.SessionID*** The session identifier. **StartTime** The start time for the specified transaction. **Username** The name of the user owning the transaction.

Managed resource	Context	Properties
OracleInstance	Transaction	**ActiveTransactionsPercentage** The total number of active transactions as a percentage of the TRANSACTIONS initialization parameter for the instance. **BlockChangesPerTransaction** The amount of DML (Data Manipulation Language) work that each transaction performs. **CallsPerTransaction** The number of client requests made per transaction. **CallRate** The work rate being run against the instance. Calls do any of the following: describe, parse, open, fetch, close, or execute. **InstanceName*** The name of an Oracle database instance. **OracleDatabase.DatabaseName*** The name of an Oracle database.
OracleSession	Transaction	**LockWaitTime** The time (in seconds) since current mode was granted. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **SessionID*** The session identifier. **Username** The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleTransaction -c 600 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg \
 -t Oracle_Maximum_ActiveTransactionsPercentage 95.000000 \
 -t Oracle_Maximum_BlockChangesPerTransaction 3.000000 \
 -t Oracle_Maximum_CallRate 90.000000 \
 -t Oracle_Maximum_CallsPerTransaction 1500.000000 \
 -t Oracle_Maximum_LockWaitTime 60.000000 \
 -t Oracle_Maximum_LongRunningTransactions 180.000000 \
```

```
-AddPar InstanceMetrics "numActiveTransactionsPercentage" \
-AddPar InstanceMetrics "numCallsPerTransaction" \
-AddPar InstanceMetrics "numBlockChangesPerTransaction" \
-AddPar InstanceMetrics "CallRate" \
-AddPar TransactionMetrics "TransactionSeconds" \
-AddPar TransactionMetrics "StartTime" \
-AddPar TransactionMetrics "strUsername" \
-AddPar TransactionMetrics "strSQLText" \
-AddPar SessionMetrics "numLockWaitTime" \
-e Oracle_High_CallRate \
   -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_ActiveTransactionsPercentage \
   -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_BlockChangesPerTransaction \
   -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_CallsPerTransaction \
   -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_LongRunningTransactions \
   -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
-e Oracle_High_LockWaitTime \
   -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Undo Space

Description

Note: This resource model is applicable for Oracle 9i only.

Monitors the following undo errors:

- No Space Error
- Snapshot Too Old Error

All Oracle databases maintain records of committed transactions, or changes to the data. These records are used to roll back, or undo, changes to the database. Oracle refers to these stored transaction records as *undo*. The Undo Space resource model monitors the space availability for storing these undo records. If undo records do not have enough space to record the data, an error occurs.

There are two ways to manage undo space:

- Manual undo management mode, with rollback segments
- Automatic undo management mode, with undo tablespaces

The undo management mode is determined at instant startup using the UNDO_MANAGEMENT initialization parameter. The option to automatically manage undo space with undo tablespaces is new with Oracle9i.

The *snapshot too old error*, or ORA-01555 error, occurs when rollback records needed by a reader for consistent read are overwritten by other writers. If this error occurs when in automatic undo management mode, increase the setting of the UNDO_RETENTION initialization parameter to be appropriate to the size of the undo tablespace.

The *no space error* occurs when requested space is denied in the undo tablespace because all of the space in the undo tablespace was in use by active transactions. If this error occurs, add more space to the undo tablespace.

Resource model overview	
Internal name	OracleUndoSpace
Category	Oracle
Indications	**High No Space Error Count (Interval)** occurs when the no space error count exceeds the specified threshold.
	High Snapshot Old Error Count (Interval) occurs when the snapshot old error count exceeds the specified threshold.
Tasks and built-in actions	None
Default cycle time	1800 seconds

Target managed resource

OracleDatabaseManager, OracleInstanceManager

Indications and events

The following table summarizes the indications for this resource model, the events associated with the indications, the default severity of the events, and where to find a detailed description of the indication. The resource model generates an

event when the threshold you specify for the indication is triggered.

Indication	Generated event	Default severity	Clearing events	Page
High No Space Error Count (Interval)	Oracle_High_ IntervalNoSpaceErrCnt	Critical	Yes	327
High Snapshot Old Error Count (Interval)	Oracle_High_ IntervalSSOldErrCnt	Critical	Yes	328

High No Space Error Count (Interval) indication

Occurs when the no space error count exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The no space error count for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold>
executions and is currently at <IntervalNoSpaceErrCnt> executions.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The No Space Error Count is the count of nospaceerrcnt occurrences for the prior monitoring cycle. If this value exceeds zero, add more space to the undo tablespace.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalNoSpaceErrCnt
Identifies the number of times space was requested in the undo tablespace, but no free space was available. That is, all of the space in the undo tablespace was in use by active transactions. To correct this, add more space to the undo tablespace.

This indication has the following threshold:

- Maximum No Space Error Count (Interval)

For more information about this threshold, see “Thresholds” on page 329.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

High Snapshot Old Error Count (Interval) indication

Occurs when the snapshot old error count exceeds the specified threshold. When the indication occurs often enough to trigger an event, the event delivers a message to the Tivoli Enterprise Console in the following format:

```
<application_label>: The snapshot old error count for Oracle instance
<InstanceName> has crossed above the predefined threshold of <Threshold>
errors and is currently at <IntervalSSOldErrCnt> errors.
```

If you have Tivoli Business Systems Manager configured for your system, Tivoli Enterprise Console forwards the message to Tivoli Business Systems Manager.

You can check the health of this resource model in the IBM Tivoli Monitoring Web Health Console. For more information, see the IBM Tivoli Monitoring Web Health Console documentation.

The Snapshot Old Error Count is the count of ssolderrcnt for the prior monitoring cycle. If this value exceeds zero, increase the UNDO_RETENTION initialization parameter.

The indication has the following attributes:

DatabaseName
The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.

InstanceName
The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

IntervalSSOldErrCnt
Snapshot Too Old error count.

This indication has the following threshold:

- Maximum Snapshot Old Error Count (Interval)

For more information about this threshold, see "Thresholds" on page 329.

The following table describes the default settings for this indication.

Setting	Default value
Send indications to Tivoli Enterprise Console	Yes
Send indications to Tivoli Business Systems Manager	Yes
Occurrences	1
Holes	0
Associated tasks and built-in actions	None

Note: If you have Tivoli Business Systems Manager configured for your systems, Tivoli Enterprise Console automatically forwards events to Tivoli Business Systems Manager. Do not change the configuration of the indication to send events to Tivoli Business Systems Manager.

Thresholds

The following table lists the thresholds that can be set for the Undo resource model. For each threshold it shows the name, a short description, and the default value:

Threshold	Description	Default value
Maximum No Space Error Count (Interval)	An indication occurs when the no space error count exceeds this value.	0
Maximum Snapshot Old Error Count (Interval)	An indication occurs when the snapshot old error count exceeds this value.	0

Parameters

Note: A plus symbol (+) denotes parameters that feature selective logging. Selective logging enables you to choose metrics/properties that you want to log. The selective logging metrics are listed in the value field of the Parameters window.

The following table lists the parameters that can be set for the Undo Space resource model. The table shows the name, a short description, and the default value for each parameter:

Parameter	Description	Default value
UndoStat Metrics +	Select the metrics you want to log. See the following logging table for a description of each metric.	No Space Error Count (Interval) Snapshot Old Error Count (Interval)

Tasks and built-in actions

None

Logging

You can log data for the properties of the managed resource listed in the following table. The table shows the context of the managed resource and the properties that the resource model logs for the IBM Tivoli Monitoring Web Health Console.

Managed resource	Context	Properties
OracleUndoStat	Undo	**BeginTime*** The start of the specified instance time interval. **NoSpaceErrCnt** The number of OER (snapshot too old) errors reported in the current instance. If this is a nonzero value, the current undo tablespace requires more space. **OracleDatabase.DatabaseName*** The name of an Oracle database. **OracleInstance.InstanceName*** The name of an Oracle database instance. **SSOldErrCnt** Snapshot Too Old error count.
Note: An asterisk (*) denotes a key property.		

Return codes

Table 2 on page 7 contains a listing of resource model return codes, their description, and what action you can take to resolve each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field, or by using the **wdmlseng** command.

CLI example

```
wdmeditprf -P OracleProfile#tme-region -add OracleUndoSpace -c 1800 \
-Log -LogDisable -p 12:00 -Agg no -ap 00:15 -NoMin -NoMax -Avg \
 -t Oracle_Maximum_IntervalNoSpaceErrCnt 0.000000 \
 -t Oracle_Maximum_IntervalSSOldErrCnt 0.000000 \
 -AddPar UndoStatMetrics "IntervalNoSpaceErrCnt" \
 -AddPar UndoStatMetrics "IntervalSSOldErrCnt" \
 -e Oracle_High_IntervalSSOldErrCnt \
    -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec \
 -e Oracle_High_IntervalNoSpaceErrCnt \
    -o 1 -h 0 -severity CRITICAL -SendTBSM -SendTec
```

Chapter 3. Tasks

IBM Tivoli Monitoring for Databases: Oracle tasks are operations or sets of operations that perform database operations routinely. This chapter contains information about the tasks for IBM Tivoli Monitoring for Databases: Oracle. The section for each task describes how to configure and run each task by covering the following information:

Description
Purpose of the task.

Authorization role
Role required to run the task.

Target endpoint
Identifies the target upon which the task is run. Target endpoints include: OracleDatabaseManager, OracleInstanceManager, or managed node (where the server is installed).

GUI data entry fields
List of the options for the task that are available in the Tivoli desktop graphical user interfaces. These options correspond to the parameters in the command syntax.

CLI syntax
Syntax for the **wruntask** command that you use to run every task from the command line. All tasks that you run from the command line contain the following syntax:

```
wruntask -t <"Task Name"> -l <"Task Library Name"> -h <"Object Name"> \
 -a <"Additional Parameters">
```

where:

-t <*Task Name***>**
Name of the task to run.

-l <*Task Library Name***>**
Name of the task library that contains the task. ITMOracleTasks is the name of the task library for IBM Tivoli Monitoring for Databases: Oracle.

-h <*Object Name***>**
Name of the object about which the task gathers data.

-a <*Additional Parameters***>**
Additional parameters for the task, such as Date or Database Name. Some of the additional parameters might be required and some might be optional. The parameters must be typed in the order in which they appear in the syntax. If you do not want to specify a parameter, use empty quotation marks like the following:

```
-a ""
```

Use quotation marks around the name of a variable that contains spaces.

CLI example
The example for the task contains a brief description of the example and an example of the syntax, such as the following:

The task in the following example shows the current running SQL for the user **SYS**:

```
wruntask -t CurrentRunningSQL -l ITMOracleTasks -h
@OracleDatabaseManager:v816@manzana -o 15 -a SelectionType=All
                                          -a UserName="SYS"
```

Usage notes
Additional notes relevant to using the task.

See also
Additional commands of relevance for using the task.

There is a corresponding IBM Tivoli Monitoring for Databases: Oracle command for each of the IBM Tivoli Monitoring for Databases: Oracle tasks. Table 7 on page 333 contains the names of the commands. Using a Tivoli task offers the following benefits:

- You can set up tasks to run on a schedule within a Tivoli job.
- You can set up tasks to run in response to the indications for a resource model.
- You can set arguments for a task in the Tivoli desktop graphical user interface and save them to run at another time (In contrast, you must type all arguments every time you run a task in the command line.).
- Tasks appear as icons that you can click and run in the Tivoli desktop graphical user interface.

See the *Working with Tasks and Jobs* chapter of the *IBM Tivoli Monitoring for Databases: Oracle User's Guide* for more information on working with tasks and jobs.

Table 6. IBM Tivoli Monitoring for Databases: Oracle tasks

Goal	Refer to
Comparing the standard task GUI and CLI names	"List of Tasks by GUI and CLI Names" on page 333
Understanding the task dialogs common to standard tasks	"Common task dialog boxes" on page 333
Understanding the AdvancedNetworkOption task	"AdvancedNetworkOption" on page 336
Understanding the ConfigureTECOracle task	"ConfigureTECOracle" on page 339
Understanding the CurrentRunningSQL task	"CurrentRunningSQL" on page 344
Understanding the DisableResourceModels task	"DisableResourceModels" on page 346
Understanding the EnableResourceModels task	"EnableResourceModels" on page 349
Understanding the Listener task	"Listener" on page 351
Understanding the OracleTBSMDiscovery task	"OracleTBSMDiscovery" on page 353

Refer to the *IBM Tivoli Monitoring for Databases: Oracle User's Guide* for information on running and customizing tasks.

Refer to the *Tivoli Management Framework Reference Manual* for information on the **wruntask** command.

List of Tasks by GUI and CLI Names

The following table compares the GUI and CLI names for the IBM Tivoli Monitoring for Databases: Oracle standard tasks.

Table 7. Desktop and command line task names

GUI Name	CLI Name
AdvancedNetworkOption	AdvancedNetworkOption
ConfigureTECOracle	ConfigureTECOracle
CurrentRunningSQL	CurrentRunningSQL
DisableResourceModels	DisableResourceModels
EnableResourceModels	EnableResourceModels
Listener	Listener
OracleTBSMDiscovery	OracleTBSMDiscovery

Common task dialog boxes

The standard tasks in the ITMOracleTasks task library share two common dialog boxes:

- **Create a Report File** dialog box (not featured in the AdvancedNetworkOption, Listener, or OracleTBSMDiscovery tasks)
- **TEC** dialog box (not featured in the OracleTBSMDiscovery task)

Using the Create a Report File dialog box

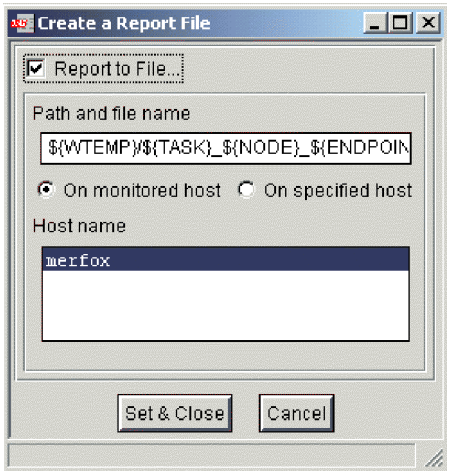
The ConfigureTECOracle, CurrentRunningSQL, DisableResourceModels, and EnableResourceModels tasks enable the user to save task output to a file by using the **Create a Report File** dialog box. Using this feature, instead of the **Save to File** option, enables you to:

- Send the task output to the monitored host, or you can specify a host (Similar to the options offered by IBM Tivoli Monitoring.)
- Display a drop-down list of available hosts
- Use a default path and file name from the GUI.
- Always get output because the **Create a Report File** does not time out

Display the **Create a Report File** dialog box by doing the following:

1. Open a task argument dialog box for the task for which you wish to save output.

2. Click **Report to File** to display the **Create a Report File** dialog box.



Report to File
Select to save the task output to a file.

Path and file name
Displays the directory path for the output destination. This is also the file name for the output after it is saved.

This field displays a list of variables as a default response. All variables, except *WTEMP*, are local to the endpoint running the task. You can use some or all of the variables, or you can enter your own specific information. The variables include:

${DATE}
The current date in *YYYYMMDD* format.

${TIME}
The current time in *HHMMSS* format.

${NODE}
The name of the managed node (host) on which to run the task. Although this information is also included in *${ENDPOINT}*, using a separate variable, such as *${NODE}*, makes sorting easier.

${TASK}
The task CLI command name, such as **DisableResourceModels**.

${ENDPOINT}
The name of the endpoint on which to run the task.

${WTEMP}
A temporary directory on the managed node on which to save the file. The task uses the **wtemp** command to identify this directory.

On monitored host
Select to create the output file on the monitored host against which the task was run (Mutually exclusive with **On specified host**.).

On specified host
Creates the output file on the specified host as designated in the **Host name** field (Mutually exclusive with **On monitored host**.). You cannot save output files on multiple hosts.

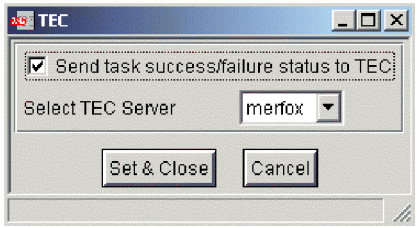
Host name
Displays a list of host names on which to save the output file. Use this field with the **On specified host** field.

Using the TEC dialog box

The **TEC** dialog box sends the task success or failure status to the Tivoli Enterprise Console event server.

Display the **TEC** dialog box by doing the following:

1. Open a task argument dialog box for the task for which you wish to send status.
2. Click **Notify TEC** to display the **TEC** dialog box.



Send task success/failure status to TEC
Select to send a message to the Tivoli Enterprise Console. The sent message reports the success or failure of a task completion.

Select TEC server
Displays a drop-down list of available Tivoli Enterprise Console servers. Select a server to receive the task success or failure status notices.

AdvancedNetworkOption

Description

AdvancedNetworkOption does the following, depending on the options you choose:

- Disables Advanced Network Option
- Enables Advanced Network Option

You must configure SQL*Net for encryption. After you install and configure SQL*Net, you must install and configure Advanced Network Option on both the client and server machines. Configure the parameters for SQL*Net in the **SQLNET.ORA** file. Set the following parameters:

- SQLNET.CRYPTO_SEED — Set to a random string of characters that acts as the seed value for the generation. This value must be set on the client and the server. The minimum length of this seed is 10 characters while the maximum length is 70 characters. We recommend that you use many characters for the key to ensure that it is more random and difficult to decrypt.
- SQLNET.ENCRYPTION_SERVER and SQLNET.ENCRYPTION_CLIENT — Specify one of the following set levels for each parameter:
  - ACCEPTED — enable encryption if requested by the other side
  - REJECTED — do not enable encryption if requested by the other side
  - REQUESTED — enable encryption if allowed by the other side
  - REQUIRED — enable encryption or abort the connection

You must also configure IBM Tivoli Monitoring for Databases: Oracle. The client, OracleSQLEngine, is local to the database machine. The local client means there is no network transfer of data requiring encryption. Configure the client side of the Advanced Network Option in the **SQLNET.ORA** file. The database server and the remote SQLPLUS clients connecting to this database are set up for Advanced Network Option in their **SQLNET.ORA** files. However, since the IBM Tivoli Monitoring for Databases: Oracle processes that connect to the database run locally on the database machine, these should also be considered as clients. Therefore, you must define the client side settings locally in the SQLNET.ORA file. A mismatch with SQLNET.CRYPTO_CHECKSUM_SERVER and SQLNET.CRYPTO_CHECKSUM_CLIENT causes an error. The following settings cause an ORA-12660 error:

sqlnet.crypto_checksum_client=REJECTED

sqlnet.crypto_checksum_server=REQUIRED

—OR—

sqlnet.crypto_checksum_client=REQUIRED

sqlnet.crypto_checksum_server=REJECTED

Valid specifications include:

sqlnet.crypto_checksum_client=REQUESTED

sqlnet.crypto_checksum_server=ACCEPTED

—OR—

sqlnet.crypto_checksum_client=REQUESTED

sqlnet.crypto_checksum_server=REQUESTED

Authorization role

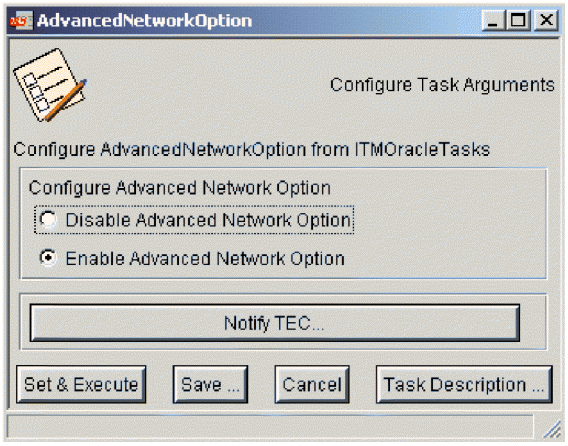
senior and oracle_dba (you must have both roles)

Target endpoint

OracleDatabaseManager or OracleInstanceManager

GUI data entry fields

The following shows the **AdvancedNetworkOption** dialog, followed by a description of each field.



Disable Advanced Network Option
Select to disable Advanced Network Option.

Enable Advanced Network Option
Select to enable Advanced Network Option.

Notify TEC
Displays the **TEC** dialog so that you can forward the success or failure of the task to a Tivoli Enterprise Console server. See "Using the TEC dialog box" on page 335.

CLI syntax

AdvancedNetworkOption
–a DisableAdvancedNetworkOption = {**Y** | **N**}
[**–a EnableAdvancedNetworkOption** = {**Y** | **N**}]
[**–a NotifyTEC** = {**Y** | **N**}]
[**–a TECServer** = <*servername*>]

where:

DisableAdvancedNetworkOption
Y disables the Advanced Network Option. **N** does not disable the Advanced Network Option.

GUI Name: **Disable Advanced Network Option**

EnableAdvancedNetworkOption

Y enables the Advanced Network Option. **N** does not enable the Advanced Network Option.

GUI Name: **Enable Advanced Network Option**

NotifyTEC

Y sends the success or failure message to the Tivoli Enterprise Console. **N** does not send the success or failure message to Tivoli Enterprise Console. The default is **N**. If you specify **Y**, specify a valid **TECServer** argument or no message is sent.

CLI example

```
wruntask
-t AdvancedNetworkOption
-l "ITMOracleTasks"
-a DisableAdvancedNetworkOption=Y
```

Usage notes

Advanced Network Option provides data encryption to prevent unauthorized persons from reading data over a network. All data is encrypted into a cipher, and then transmitted over the network. Encryption keys, known only to the sending and receiving parties, are used to encrypt and decrypt the data between the user and receiver. Encryption keys should not be sent over the network, so Advanced Network Option uses an algorithm to automatically distribute session keys. A different random session key generates for every SQL*Net connection. When the algorithm generates a session key, a random number is used to secure the key. The encryption process starts when the client and server generate random numbers, which helps prevent attacks that depend upon repetitive sequences.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrttask**, **wcrtjob**, and **wgettask**.

ConfigureTECOracle

Description

Provides Tivoli Enterprise Console configuration options. You can configure Tivoli Enterprise Console to receive events from the following:

- IBM Tivoli Monitoring resource models
- Tasks from the **ITMOracleTasks** task library

The task adds the class and rule set definitions of the selected configuration option to a valid rule base, if the class and rule set definitions are not already defined in the specified rule base. For more information, see the *IBM Tivoli Monitoring for Databases: Oracle User's Guide*.

Before you run this task, the following software must be installed:

- Tivoli Enterprise Console Event Server
- IBM Tivoli Monitoring for Databases: Oracle on the Tivoli management region server of the Tivoli management region on which you want to run this task.

ConfigureTECOracle does the following, depending on the options you choose:

- Creates a rule base in the directory where Tivoli Enterprise Console is installed.
- Provides Tivoli Enterprise Console configuration for the specified options. It adds class and rule set definitions to a valid rule base for the options, if they are not already defined in the specified rule base.
- Copies a specified rule base into the newly created rule base.
- Loads the rule base.
- Restarts the event server.
- Creates event groups (This option is not available for Tivoli Enterprise Console, Version 3.7.).
- Adds filters to an event group for the Tivoli Enterprise Console configuration options specified (This option is not available for Tivoli Enterprise Console, Version 3.7.).

Authorization role

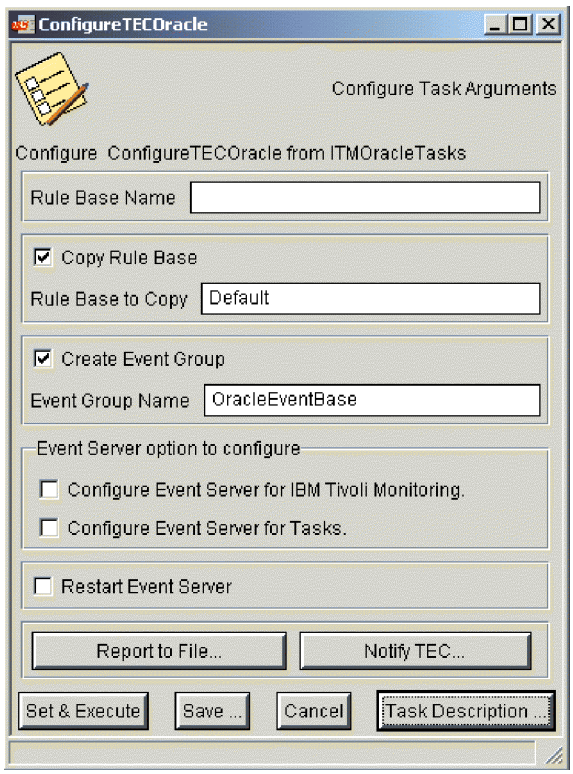
senior and oracle_dba (you must have both roles)

Target endpoint

Managed node (where the event server is installed)

GUI data entry fields

The following shows the **ConfigureTECOracle** dialog, followed by a description of each field.



Rule Base Name

Name of the rule base to configure. This can be the new name for a rule base that you want to create or the name of an existing rule base. If you specify an existing rule base, **ConfigureTECOracle** checks to make sure both its class and rule set files are defined correctly. Enter only the name; a full path is ignored. A rule base consists of a set of expressions (rule set files) used by the event server to determine if an event meets the rule conditions. The rules may also define a set of actions that are taken when an event meets the specified rule conditions.

Copy Rule Base

Uses an existing rule base as the basis for the rule base you are setting up for this configuration option.

Rule Base to Copy

Name of the rule base to copy. If you leave this field blank after selecting the **Copy Rule Base** check box, the task uses the **Default** rule base. If you use a rule base other than **Default**, it must be a valid rule base.

The **Default** rule base contains correctly defined default classes. Although IBM Tivoli Monitoring for Databases: Oracle does not need these classes, other applications (such as adapters) can require them.

Create Event Group

Note: This option is not available for Tivoli Enterprise Console, Version 3.7. For information on creating event groups for that version, refer to the Tivoli Enterprise Console, Version 3.7, User's Guide.

An event group is a configured logical area of responsibility. An event

group is used to notify users that an event that matches a specified set of criteria has occurred. Event groups are configured on the event server to create a single alarm indicator that represents many different, but related, events. Each event group has its own icon on the event console.

Event Group Name

Note: This option is not available for Tivoli Enterprise Console, Version 3.7. For information on creating event groups for that version, refer to the Tivoli Enterprise Console, Version 3.7, User's Guide.

Name of the event group that you create. If you select the Create Event Group check box and do not enter an event group name, the task creates and configures an event group called OracleEventBase. If you specify an existing event group, the task configures the event group that you named.

Event Server option to configure

To set up an event group, you must define the selection criteria of the events you want to monitor. This data constitutes an event group filter. You can select from the following two predefined filters to add to the **Event Group Name** specified elsewhere in this dialog (see Event Group Name).

- **Configure Event Server for IBM Tivoli Monitoring** — enables the event server to receive all events sent from resource models.
- **Configure Event Server for Tasks** — enables the event server to receive all events sent from **ITMOracleTasks** tasks.

Restart Event Server

Loads the rule base and starts the event server, if it is not already running. When you create a new rule base or modify an existing one, you must restart the event server for any rule base configurations to take effect.

If the event server is not running, this task starts it. If the event server is running, this task stops and restarts it. If you do not use the task to restart the event server, you must load the rule base and restart the event server manually. (See the *IBM Tivoli Enterprise Console User's Guide* for information on how to do this.)

Report to File

Displays the **Create a Report File** dialog so that you can save the output information for this task to a file. See "Using the Create a Report File dialog box" on page 333.

Notify TEC

Displays the **TEC** dialog so that you can forward the success or failure of the task to a Tivoli Enterprise Console server. See "Using the TEC dialog box" on page 335.

CLI syntax

ConfigureTECOracle
–a RuleBaseName = <*rulebasename*>
[**–a CopyBase** = {**Y** | **N**}]
[**–a CopyBaseName** = <*rulebasetocopy*>]
[**–a ConfigureForITM** = {**Y** | **N**}]
[**–a ConfigureForTask** = {**Y** | **N**}]}
[**–a RestartServer** = {**Y** | **N**}]
[**–a NotifyTEC** = {**Y** | **N**}]
[**–a TECServer** = <*servername*>]
[**–a ReportToFile** = {**Y** | **N**}]

[**–a ReportFileName** = <*filename*>]
[**–a SaveReportFileOn** = {**MonitoredHost** | **SpecifiedHost**}]
[**–a ReportHostName** = <*hostname*>]

where:

RuleBaseName
<*rulebasename*> is the name to give to the rule base.

GUI Name: **Rule Base Name**

CopyBase
Y uses an existing rule base as the basis for the rule base you are setting up. **N** does not use the existing rule base.

GUI Name: **Copy Rule Base**

CopyBaseName
<*rulebasetocopy*> is the name of the rule base to copy.

GUI Name: **Rule Base to Copy**

ConfigureForITM
Y enables the event server to receive all events sent from resource models. **N** does not set this option.

GUI Name: **Configure Event Server for IBM Tivoli Monitoring**

ConfigureForTask
Y enables the event server to receive all events sent from **ITMOracleTasks** tasks. **N** does not set this option.

GUI Name: **Configure Event Server for Tasks**

RestartServer
Y restarts the server. **N** does not restart the server.

GUI Name: **Restart Event Server**

NotifyTEC
Y sends the success or failure message to the Tivoli Enterprise Console. **N** does not send the success or failure message to Tivoli Enterprise Console. The default is **N**. If you specify **Y**, specify a valid **TECServer** argument or no message is sent.

TECServer
<*servername*> is the name of the Tivoli Enterprise Console server to receive the message.

ReportToFile
Y saves the output of this task to a file. **N** does not save the output of this task to a file and is the default. If **Y**, specify the file with **ReportFileName** and, optionally, the host with **SaveReportFileOn**.

ReportFileName
<*filename*> is the path to and the name of the file to create as the task output.

SaveReportFileOn
MonitoredHost puts the output file on the host the task was run against. **SpecifiedHost** puts the output file on a specified host. Specify the host with **ReportHostName**.

ReportHostName

<*hostname*> is the name of the host on which to save the file created when you use the **SpecifiedHost** argument.

CLI example

```
wruntask
-t ConfigureTECOracle
-l "ITMOracleTasks"
-h @ManagedNode:nemuchay
-a RuleBaseName=OracleBase1
-a CopyBase=Y
-a CopyBaseName=Default
-a ConfigureForITM=Y
-a ConfigureForTask=Y
```

Usage notes

You must restart the event server after defining new classes so that Tivoli Enterprise Console can recognize and display instances of classes. Because each command defines new classes, you must stop and restart the event server for each instance of these defined classes.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrttask**, **wcrtjob** and **wgettask**.

CurrentRunningSQL

Description

Shows current SQL statements for any user connected to an Oracle database. This task provides a means of identifying problem SQL statements or SQL statements that need to be optimized in order to improve overall database performance.

Authorization role

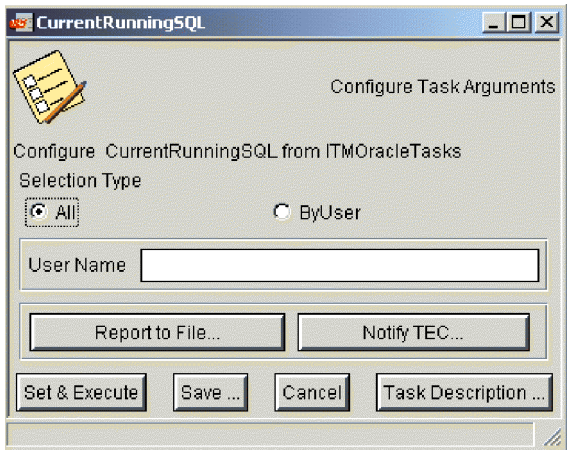
oracle_dba, oracle_monitor, oracle_user, and senior

Target endpoint

OracleDatabaseManager, or OracleInstanceManager

GUI data entry fields

The following shows the **CurrentRunning SQL** dialog box, followed by a description of each field.



Selection Type

All shows the SQL for all connected users.

ByUser shows the SQL for one user, which you specify in the **User Name** text box.

User Name

Specifies the user for whom you want to show the current SQL statement.

CLI syntax

CurrentRunningSQL
–a SelectionType = {**All** | **ByUser**}
[**–a UserName** = <*user_name*>]
[**–a NotifyTEC** = {**Y** | **N**}]
[**–a TECServer** = <*servername*>]
[**–a ReportToFile** = {**Y** | **N**}]
[**–a ReportFileName** = <*filename*>]
[**–a SaveReportFileOn** = {**MonitoredHost** | **SpecifiedHost**}]
[**–a ReportHostName** = <*hostname*>]

where:

SelectionType

All specifies that you want to display the current SQL statements for all users.

ByUser specifies that you want to display the SQL statement for a specific user account.

UserName

<*user_name*> specifies the user for whom you want to show the current SQL statement.

NotifyTEC

Y sends the success or failure message to the Tivoli Enterprise Console. **N** does not send the success or failure message to Tivoli Enterprise Console. The default is **N**. If you specify **Y**, specify a valid **TECServer** argument or no message is sent.

TECServer

<*servername*> is the name of the Tivoli Enterprise Console server to send the message to.

ReportToFile

Y saves the output of this task to a file. **N** does not save the output of this task to a file and is the default. If **Y**, specify the file with **ReportFileName** and, optionally, the host with **SaveReportFileOn**.

ReportFileName

<*filename*> is the path to and the name of the file to create as the task output.

SaveReportFileOn

MonitoredHost puts the output file on the host the task was run against. **SpecifiedHost** puts the output file on a specified host. Specify the host with **ReportHostName**.

ReportHostName

<*hostname*> is the name of the host on which to save the file created when you use the **SpecifiedHost** argument.

CLI example

The following example shows the current running SQL for the user **SYS**.

```
wruntask
-t CurrentRunningSQL
-l ITMOracleTasks
-h @OracleDatabaseManager:v817@manzana
-o 15
-a SelectionType=All
-a UserName="SYS"
```

Usage notes

Most system performance problems are caused by poorly written SQL and PL/SQL statements. This task enables the DBA to identify SQL statements that are most frequently executed during the course of an applications execution. Analysis and optimization of the SQL statement can improve application performance.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrttask**, **wcrtjob** and **wgettask**.

DisableResourceModels

Description

Disables any resource models that are running on an Oracle database or instance endpoint and optionally shuts down the database.

Note: Upon machine reboot or IBM Tivoli Monitoring engine restart, IBM Tivoli Monitoring enables all resource models previously distributed to the database or instance object to monitor the database or instance. If you want to disable monitoring for an Oracle database or instance to which you previously distributed resource models, following any machine reboot or engine restart, run this task to disable any resource models from monitoring the database or instance.

Authorization role

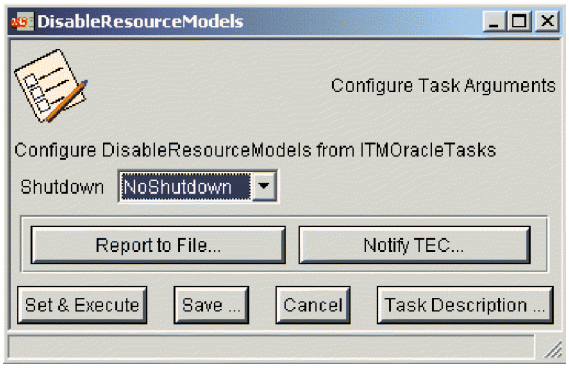
oracle_dba and senior

Target endpoint

OracleDatabaseManager, or OracleInstanceManager

GUI data entry fields

The following shows the **DisableResourceModels** dialog, followed by a description of each field.



Shutdown Displays a list of the shutdown options that determine what happens to the database when the resource models are disabled.

- **Abort** — Specifies that the database will be aborted.
- **Immediate** — Specifies that the database will shut down immediately.
- **NoShutdown** — Specifies that the database will not be shut down.
- **Normal** — Specifies that the database will shut down normally.
- **Transactional** — Allows active transactions to complete before shutting down the database.

CLI syntax

DisableResourceModels
–a ShutdownOption = {**Abort** | **Immediate** | **NoShutdown** | **Normal** | **Transactional**}
[**–a NotifyTEC** = {**Y** | **N**}]

[**–a TECServer** = <*servername*>]
[**–a ReportToFile** = {**Y** | **N**}]
[**–a ReportFileName** = <*filename*>]
[**–a SaveReportFileOn** = {**MonitoredHost** | **SpecifiedHost**}]
[**–a ReportHostName** = <*hostname*>]

where:

ShutdownOption
Specifies what happens to the database when the resource models are disabled. See the description in the GUI Data Entry Fields section.

NotifyTEC
Y sends the success or failure message to the Tivoli Enterprise Console. **N** does not send the success or failure message to Tivoli Enterprise Console. The default is **N**. If you specify **Y**, specify a valid **TECServer** argument or no message is sent.

TECServer
<*servername*> the name of the Tivoli Enterprise Console server to receive the message.

ReportToFile
Y saves the output of this task to a file. **N** does not save the output of this task to a file and is the default. If **Y**, specify the file with **ReportFileName** and, optionally, the host with **SaveReportFileOn**.

ReportFileName
<*filename*> is the path to and the name of the file to create as the task output.

SaveReportFileOn
MonitoredHost puts the output file on the host the task was run against. **SpecifiedHost** puts the output file on a specified host. Specify the host with **ReportHostName**.

ReportHostName
<*hostname*> is the name of the host on which to save the file created when you use the **SpecifiedHost** argument.

CLI example

The following example disables Oracle resource models running against the database **v817@manzana**, but does not shut down the database.

```
wruntask
-t DisableResourceModels
-l ITMOracleTasks
-h @OracleDatabaseManager:v817@manzana
-o 15
-a ShutdownOption=NoShutdown
```

Usage notes

This task disables any resource models that are running on an Oracle database or instance endpoint and optionally shuts down the database. This is useful if the database is taken down for maintenance purposes. If this task is not run, the user must manually disable all resource models to prevent spurious alerts from firing. In a spurious alert, resource models give errors because they are unable to connect to the database endpoint. When this task is run, the IBM Tivoli Monitoring engine is updated to disable the resource models , but IBM Tivoli Monitoring profiles are

not updated and may still show the resource models as enabled. To selectively disable resource models, edit and distribute the relevant IBM Tivoli Monitoring profiles rather than running this task.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrttask**, **wcrtjob**, and **wgettask**.

EnableResourceModels

Description

Enables previously disabled resource models by directly updating the IBM Tivoli Monitoring engine at the endpoint and, optionally, starting the database.

Authorization role

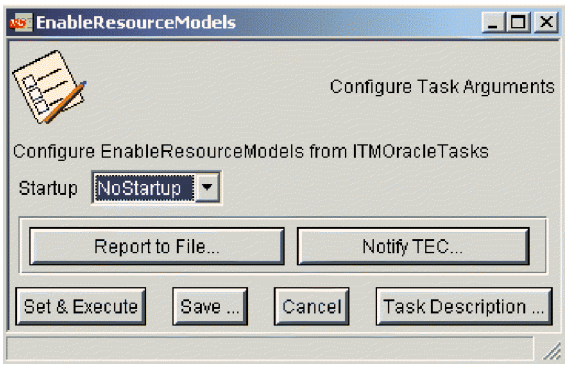
oracle_dba and senior

Target endpoint

OracleDatabaseManager, or OracleInstanceManager

GUI data entry fields

The following shows the **EnableResourceModels** dialog box. A description of each field follows.



Startup

Displays the startup options that determine what happens to the database after you enable the resource models. If your Oracle server allows multiple instances to access a single database concurrently, specify whether to start the instance in **Exclusive** or **Parallel** mode. **NoStartup** does not start up the database.

CLI syntax

EnableResourceModels
–a StartupOption = {**Exclusive** | **Parallel** | **NoStartup**}
[**–a NotifyTEC** = {**Y** | **N**}]
[**–a TECServer** = <*servername*>]
[**–a ReportToFile** = {**Y** | **N**}]
[**–a ReportFileName** = <*filename*>]
[**–a SaveReportFileOn** = {**MonitoredHost** | **SpecifiedHost**}]
[**–a ReportHostName** = <*hostname*>]

where:

StartupOption

If your Oracle server allows multiple instances to access a single database concurrently, specify whether to start the instance in **Exclusive** or **Parallel** mode. **NoStartup** does not start up the database.

NotifyTEC

Y sends the success or failure message to the Tivoli Enterprise Console. **N**

does not send the success or failure message to Tivoli Enterprise Console. The default is **N**. If you specify **Y**, specify a valid **TECServer** argument or no message is sent.

TECServer
<*servername*> is the name of the Tivoli Enterprise Console server to send the message to.

ReportToFile
Y saves the output of this task to a file. **N** does not save the output of this task to a file and is the default. If **Y**, specify the file with **ReportFileName** and, optionally, the host with **SaveReportFileOn**.

ReportFileName
<*filename*> is the path to and the name of the file to create as the task output.

SaveReportFileOn
MonitoredHost puts the output file on the host the task was run against. **SpecifiedHost** puts the output file on a specified host. Specify the host with **ReportHostName**.

ReportHostName
<*hostname*> is the name of the host on which to save the file created when you use the **SpecifiedHost** argument.

CLI example

The following example enables Oracle resource models that are running against the database **v817@manzana**, but does not start the database.

```
wruntask
-t EnableResourceModels
-l ITMOracleTasks
-h @OracleDatabaseManager:v817@manzana
-o 15
-a StartupOption=NoStartup
```

Usage notes

This task enables previously disabled resource models by directly updating the IBM Tivoli Monitoring engine at the endpoint. It does not alter the resource model state in IBM Tivoli Monitoring profiles. The task only enables resource models that were previously disabled by the DisableResourceModels task. The task also optionally starts up the Oracle database.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrttask**, **wcrtjob**, and **wgettask**.

Listener

Description

Starts or stops the Oracle Listener. The Oracle Listener is a process on the Oracle server that listens for connection requests from clients.

Authorization role

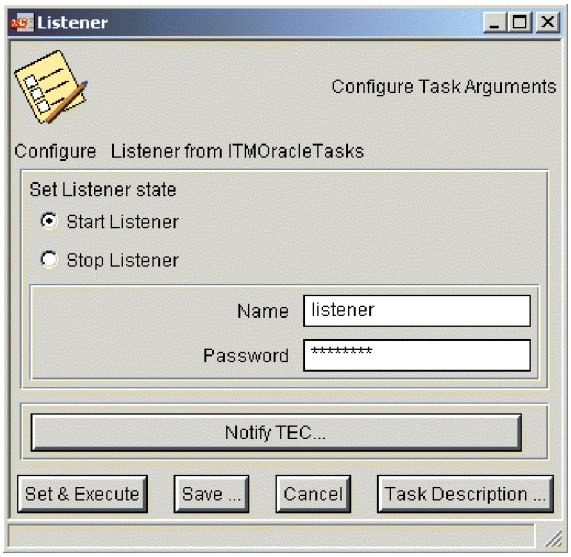
oracle_dba and senior

Target endpoint

OracleDatabaseManager, or OracleInstanceManager

GUI data entry fields

The following shows the **Listener** dialog box, followed by a description of each field.



Set Listener state

Starts or stops the Oracle Listener.

Start Listener specifies that the listener process will be started.

Stop Listener specifies that the listener process will be stopped.

Name Specifies the name of the specific listener to start or stop. The default listener name,`listener`, displays automatically in the **Name** text box.

Password

Specifies the password required to stop a listener process as specified in Oracle.

Note: The value entered in this field must match the value assigned to the PASSWORDS_LISTENER parameter in the Administrator's **listener.ORA** file. The **listener.ORA** file is located in the installed Oracle directory.

Notify TEC
Displays the **TEC** dialog so that you can forward the success or failure of the task to a Tivoli Enterprise Console server. See "Using the TEC dialog box" on page 335.

CLI syntax

Listener
–a listener_mode = {**Start Listener** | **Stop Listener**}
[**–a listener_name** = <*listener_name*>]
[**–a listener_password** = <*listener_password*>]

where:

listener_mode
Specifies whether to start or stop the listener function on the Oracle Server.

listener_name
The name of the Oracle Listener as defined by the Oracle Administrator. The default value for this parameter is "listener."

listener_password
Specifies the password required to stop a listener process as specified in Oracle.

Note: The value entered in this field must match the value assigned to the PASSWORDS_LISTENER parameter in the Administrator's **listener.ORA** file. The **listener.ORA** file is located in the installed Oracle directory.

CLI example

```
wruntask -t Listener
-l ITMOracleTasks
-h @OracleDatabaseManager:v817@manzana
-o 15
-a listener_mode="Start Listener"
-a listener_name="ohioServer"
-a listener_password="swordfish"
```

Usage notes

The Listener utility in Oracle establishes listen endpoints on a machine. These listen endpoints are addresses that clients and servers use to connect to a database. Use the Listener task to start and stop the Listener utility in Oracle. Tivoli uses Oracle's **lsnrctl** utility to start and stop the Listener.

The Oracle Listener is capable of supporting multiple Oracle instances or one instance for every Listener depending on the Oracle configuration.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrttask**, **wcrtjob**, and **wgettask**.

OracleTBSMDiscovery

Description

Sends a DISCOVER event to Tivoli Business Systems Manager for each Oracle administration server and application server that IBM Tivoli Monitoring for Databases: Oracle discovered (or is currently managing). For any resources that were removed since the last time this task was run, this task sends a GONE event to Tivoli Business Systems Manager. If the task completes successfully, you receive a list of resources for which DISCOVER and GONE events were sent to Tivoli Business Systems Manager.

You must install the following software before running this task:

- Tivoli Enterprise Console Event Server
- Tivoli Enterprise Console Logfile Adapter
- IBM Tivoli Monitoring for Databases: Oracle (install on the Tivoli management region server where you want to run this task)

For more information on discovery or Tivoli Business Systems Manager, see the *IBM Tivoli Monitoring for Databases: Oracle User's Guide*.

Authorization role

senior

Target endpoint

Managed node (where the event server is installed)

GUI data entry fields

This task has no arguments.

CLI syntax

OracleTBSMDiscovery

CLI example

```
wruntask
-t OracleTBSMDiscovery
-l "ITMOracleTasks"
-h nemuchay
```

Usage notes

None.

See also

See also the following commands in the *Tivoli Management Framework Reference Manual*: **wruntask**, **wcrtjob**, and **wgettask**.

Chapter 4. Commands

This chapter describes the IBM Tivoli Monitoring for Databases: Oracle commands and provides a brief description and the authorization required to run the command. IBM Tivoli Monitoring for Databases: Oracle commands begin with **wo** to distinguish them from Tivoli **w** commands.

Before running commands, you must establish the Tivoli environment, and install IBM Tivoli Monitoring for Databases: Oracle.

Table 8 on page 356 summarizes these commands. After the table, a section for each command describes how to run the command by covering the following information:

Description
Purpose of the command.

Authorization role
Role required to run the command.

CLI syntax
Syntax that you enter on the command line. The syntax contains the command name, which begins with the **wo** prefix. A list of the parameters for the command and a definition of each parameter follow the command name.

CLI example
The example for the command contains a brief description of the example and an example of the syntax.

Tivoli command syntax

The following special characters define Tivoli command syntax:

[ ] Identifies elements that are optional. Those not enclosed in brackets are required

... Indicates that you can specify multiple values for the previous element. Separate multiple values by a space, unless otherwise directed by a command's information.

If the ellipsis for an element follows a closing bracket, use the syntax within the brackets to specify multiple values. For example, to specify two administrators for the option [**–a** *admin*]..., use **–a admin1 –a admin2**.

If the ellipses for an element is within the brackets, use the syntax of the last element to specify multiple values. For example, to specify two hosts for the option [**–h** *host* ...], use **–h host host2**.

| Indicates mutually exclusive information. You can use the element on either the left or right of the vertical bar.

'{ }' Delimits a set of mutually exclusive elements when one of them is required. If the elements are optional, they are enclosed in brackets ([ ]).

In addition to the special characters, the typeface conventions described in the Preface are used.

Following are two examples:

- **wcrtpr** [**–a** *admin*] ... [**–s** *region*] [**–m** *resource*] ... *name*

  The *name* argument is the only required element for the **wcrtpr** command. The brackets around the options indicate that they are optional. The ellipsis after the **–a** *admin* and **–m** *resource* options indicate that you can use those options multiple times to specify multiple administrators and resources, respectively.
- **wchkdb** [**–o** *outfile*] [**–u**] [**–x**] '{**–f** *infile* | **–i** | *object* ...}'

  The **–f**, **–i**, and *object* elements are mutually exclusive. The braces surrounding them indicate that one of these elements is required. If you specify the *object* argument, you can specify more than one object.

List of commands

The following table lists command names, purpose statements, and required roles:

Table 8. Command quick reference table

Command	Purpose	Required Role
wochregdb	Changes the properties of a registered OracleDatabaseManager resource in a Tivoli management region	oracle_dba
wocpresource	Copies Oracle resource records between profiles	admin
wocprole	Copies Oracle role records between profiles	admin
wocpuser	Copies Oracle user records between profiles	admin
wocrtresource	Creates a new Oracle resource record	admin
wocrtrole	Creates a new Oracle role record	admin
wocrtuser	Creates a new Oracle user record	admin
wodelresource	Deletes Oracle resource records	admin
wodelrole	Deletes Oracle role records	admin
wodeluser	Deletes Oracle user records	admin
wogetresource	Lists information about an existing Oracle resource	user
wogetrole	Lists information about an existing Oracle role	user
wogetuser	Lists information about an existing Oracle user	user
wolsresources	Lists the Oracle resources in a profile	user
wolsroles	Lists the Oracle roles in a profile	user
wolsusers	Lists the Oracle users in a profile	user
womvresource	Moves Oracle resources from one profile to another	admin
womvrole	Moves Oracle roles from one profile to another	admin
womvuser	Moves Oracle users from one profile to another	admin
wopopresources	Populates a resource profile from an OracleDatabaseManager resource	admin, oracle_user

Table 8. Command quick reference table (continued)

Command	Purpose	Required Role
wopoproles	Populates a role profile from an OracleDatabaseManager resource	admin, oracle_user
wopopusers	Populates a user profile from an OracleDatabaseManager resource	admin, oracle_user
woregdb	Creates and registers an OracleDatabaseManager resource in a Tivoli management region	oracle_dba
wosetresource	Modifies the attributes of an Oracle resource record	admin, oracle_user
wosetresources	Modifies the attributes of multiple Oracle resource records	admin
wosetrole	Modifies the attributes of an Oracle role record	admin
wosetroles	Modifies the attributes of multiple Oracle role records	admin
wosetuser	Modify the attributes of an Oracle user record	admin
wosetusers	Modifies the attributes of multiple Oracle user records	admin
wocprole	Copies Oracle role records between profiles	admin
woshutdown	Shuts down an OracleDatabaseManager or OracleInstanceManager resource	oracle_dba
wostartup	Starts up an OracleDatabaseManager or OracleInstanceManager resource	oracle_dba

wochregdb

Purpose

Changes the properties of a registered OracleDatabaseManager resource in a Tivoli management region.

Authorization

oracle_dba

Format

```
wochregdb
[–h ORACLE_HOME]
[–t TNS_ADMIN]
[–o owner]
[–g owner-group]
[–u username]
[–p password]
database-name
```

where:

-h *ORACLE_HOME*
: The full path of the Oracle database directory.

-t *TNS_ADMIN*
: The directory path to the SQL*Net configuration files. If this option is left blank, the default directory **/var/opt/oracle** or *ORACLE_HOME***/network/admin** is used.

-o *owner*
: The owner of the Oracle server binaries at the endpoint. This is the user ID on the host.

-g *owner-group*
: The operating system group of the Oracle database owner.

-u *username*
: The Oracle dba user name under which this database is registered.

-p *password*
: The password for *username*.

-n *database-name*
: The name of the database.

Examples

In this example, you change the home directory, the owner, and the user for the database named **inventory@gordo** on a Windows NT machine:

```
wochregdb -h "D:\orant"-o oracle -u sysuser inventory@gordo
```

Usage

The **wochregdb**command enables you to edit the database properties so you can modify the database information.

Comments

None.

wocpresource

Purpose

Copies Oracle resource records between profiles, provided they are in different profile managers.

Authorization

admin

Format

wocpresource *source destination* [*resource_name* ...]

where:

source	Specifies the profile from which the resource records are copied.
destination	Specifies the profile to which the resource records are copied.
resource name	Specifies a resource name in the *resource* profile. This argument can be specified multiple times.

Examples

The following command example copies a resource record from one profile to another.

```
wocpresource NorthAmerica International EpsonLP1
```

where:

NorthAmerica	Identifies the profile from which to copy the resource record.
International	Identifies the profile to which to copy the resource record.
EpsonLP1	Identifies the resource record to copy.

Usage

The **wocpresource** command copies one or more resource records specified in the *resource_name* argument from the *source* profile to the *destination* profile. If *resource_name* is not specified, all resource records from the source profile are copied to the *destination* profile. The source and destination profiles must be in different profile managers.

Comments

See also, the **wodelresource** and **womvresource** commands.

wocprole

Purpose

Copies Oracle role records between profiles, provided they are in different profile managers.

Authorization

admin

Format

wocprole *source_profile destination_profile* [*role_name ...*]

where:

source_profile Specifies the profile from which the role records are copied.

destination_profile
Specifies the profile to which the role records are copied.

role_name Specifies a role name in the role profile. This argument can be specified multiple times.

Examples

The following command example copies a role record from one profile to another.

```
wocprole accounting human_resource PAYROLL
```

where:

accounting Identifies the profile from which to copy the role record.

human_resource
Identifies the profile to which the role record is copied.

PAYROLL Identifies the role record to copy.

Usage

The **wocprole** command copies one or more role records specified in the *role_name* argument from the profile specified in the *source_profile* argument to the profile specified in the *destination_profile* argument. If *role_name* is not specified, all role records from the source profile are copied to the destination profile. The source and destination profiles must be in different profile managers.

Comments

See also, the **wodelrole** and **womvrole** commands.

wocpuser

Purpose

Copies Oracle user records between profiles, provided they are in different profile managers.

Authorization

admin

Format

wocpuser *source_profile destination_profile* [*user_name* ...]

where:

source_profile Specifies the profile from which the user records are copied.

destination_profile
Specifies the profile to which the user records are copied.

user_name Specifies a user name in the user profile. This argument can be specified multiple times.

Examples

The following command example copies a user record from one profile to another.

```
wocpuser accounting human_resource R_LYNCH
```

where:

accounting Identifies the profile from which to copy the user record.

human_resource
Identifies the profile to which the user record is copied.

R_LYNCH Identifies the user record to copy.

Usage

The **wocpuser** command copies one or more user records specified in the *user_name* argument from the profile specified in the *source_profile* argument to the profile specified in the *destination_profile* argument. If *user_name* is not specified, all user records from the source profile are copied to the destination profile. The source and destination profiles must be in different profile managers.

Comments

See also, the **wodeluser** and **womvuser** commands.

wocrtresource

Purpose

Creates a new Oracle resource record.

Authorization

admin

Format

wocrtresource
[**–c** *'{type value}'*]
[**–C** *'{type value}'*]
[**–i** *'{type value}'*]
[**–l** *'{type value}'*]
[**–p** *'{type value}'*]
[**–r** *'{type value}'*]
[**–R** *'{type value}'*]
[**–s** *'{type value}'*]
[**–t** *'{type value}'*]
[[**–x** *attr_name attr_value*] ...]
profile_name resource_name

where:

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*. This option may be repeated.

profile_name Specifies the name of the profile in which to create the resource record.

resource_name Specifies the resource name.

The remaining options are all followed by an argument of the form *'{type value}'*, where *type* is one of **DEFAULT**, **LIMITED**, or **UNLIMITED**, and *value* is the numerical value to be assigned.

–c CPU per call

–C CPU per session

–i Idle time

–l Composite limit

–p Private SGA

–r Logical reads per call

–R Logical reads per session

–s Sessions per user

–t Connect time

Examples

```
wocrtresource -c '{DEFAULT 0}' -c '{LIMITED 69}'
-i '{UNLIMITED 0}' -l '{DEFAULT 0}' -p '{LIMITED 9600}'
-r '{UNLIMITED 0}' -R '{DEFAULT 0}' -s '{LIMITED 69}'
-t '{UNLIMITED 0}' oracle_resources misc_res
```

where:

-c '{DEFAULT 0}'
Specifies the default CPU per call.

-c '{LIMITED 69}'
Specifies a limit of 69 for CPU per session.

-i '{UNLIMITED 0}'
Specifies unlimited idle time.

-l '{DEFAULT 0}'
Specifies the default composite limit.

-p '{LIMITED 9600}'
Specifies a limit of 9600 for SGA size.

-r '{UNLIMITED 0}'
Specifies an unlimited number of reads per call.

-R '{DEFAULT 0}'
Specifies a default number of logical reads per session.

-s '{LIMITED 69}'
Specifies a limit of 69 sessions per user.

-t '{UNLIMITED 0}'
Specifies an unlimited connect time.

oracle_resources
Identifies the profile in which to create the resource.

misc_res Provides the name of the resource to create.

Usage

The **wocrtresource** command creates a new resource specified by the *resource_name* argument in the Oracle resource profile specified by the *profile_name* argument. Any attributes not explicitly specified on the command line are generated from the resource default record. If an attribute is neither specified on the command line nor defaulted by the profile, an error is generated and the resource record is not created. All attributes are validated against the profile validation policy.

Comments

See also, the **wosetresource**, **wodelresource**, and **wogetresource** commands.

wocrtrole

Purpose

Creates a new Oracle role record.

Authorization

admin

Format

wocrtrole
[**–a NONE** | **OS** | **PASSWORD**]
[**–p** *password*]
[**–R** *assigned_roles*]
[**–S** *system_privileges*]
[[**–x** *attr_name attr_value*] ...]
profile_name role_name

where:

–a NONE Selects no authentication.

–a OS Selects OS authentication.

–a PASSWORD
Selects password authentication.

–p *password* Specifies a password.

–R *assigned roles*
Specifies the assigned roles of this role, where *assigned_roles* is a string representation of a sequence of the form:

'{*count* [{*role_name is_grantable is_default*}] ... }'

where *count* is the number of assigned roles, *role_name* is the double-quoted role name, and *is_grantable* and *is_default* can take the value **TRUE** or **FALSE**.

For example:

```
'{2 {"payroll" FALSE FALSE}
{"payables" FALSE TRUE}}'
```

–S *system_privileges*
Specifies the role's system privileges, where *system_privileges* is a string representation of a sequence of the form:

'{*count* [{*privilege is_grantable*}] ... }'

where *count* is the number of privileges, *privilege* is the double-quoted privilege name, and *is_grantable* takes the value **TRUE** or **FALSE**.

For example:

```
'{2 {"updatesalary" FALSE}
{"createsalary" FALSE}}'
```

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*.

profile_name Specifies the name of the profile in which to create the role record.

role_name Specifies the role name.

Examples

```
wocrtrole -a PASSWORD -p new_role1 -R '{2 {"payroll" FALSE FALSE}
{"payables" FALSE TRUE}}' -S '{2 {"updatesalary" FALSE}
{"createsalary" FALSE}}' oracle_roles new_role
```

where:

-a PASSWORD Specifies that the role is password authenticated.

-p new_role1 Identifies the password for the role as "new_role1."

-R '{2 {"payroll" FALSE FALSE} {"payables" FALSE TRUE}}'
Specifies that the new role has two assigned roles: `payroll`, which is not grantable and is not the default, and `payables`, which is not grantable, but is the default.

-S '{2 {"updatesalary" FALSE} {"createsalary" FALSE}}'
Specifies that the new role has two system privileges: `updatesalary` and `createsalary`, neither of which is grantable.

oracle_roles Identifies the profile in which to create the role.

new_role Provides the name of the new role.

Usage

The **wocrtrole** command creates a new role specified by the *role_name* argument in the Oracle role profile specified by the *profile_name* argument. Any attributes not explicitly specified on the command line are generated from the role default record. If an attribute is neither specified on the command line nor defaulted by the profile, an error is generated and the role record is not created. All attributes are validated against the profile validation policy.

Comments

See also, the **wosetrole**, **wodelrole**, and **wogetrole** commands.

wocrtuser

Purpose

Creates a new Oracle user record.

Authorization

admin

Format

wocrtuser
[**–a TRUE | FALSE**]
[**–o TRUE | FALSE**]
[**–p** *password*]
[**–d** *default_tablespace*]
[**–t** *temporary_tablespace*]
[**–R** *roles*]
[**–S** *system_privileges*]
[**–O** *object_privileges*]
[**–Q** *quotas*]
[**–r** *resource_profile*]
[[**–x** *attr_name attr_value*] ...]
profile_name user_name

where:

–a TRUE Selects OS authentication.

–a FALSE Selects database authentication.

–o TRUE Allows the Oracle user to change the password.

–o FALSE Disallows the Oracle user from changing the password.

–p *password* Specifies a password.

–d *default_tablespace*
Specifies a default tablespace.

–t *temporary_tablespace*
Specifies a temporary tablespace.

–R *roles* Specifies the user's roles, where roles is a string representation of a sequence of the form:

'{*count* [{*role_name is_grantable is_default*}] ... }'

where *count* is the number of roles, *role_name* is the double-quoted role name, and *is_grantable* and *is_default* can take the value **TRUE** or **FALSE**.

For example:

```
'{2 {"payroll" TRUE FALSE}
{"payables" FALSE TRUE}}'
```

–S *system_privileges*
Specifies the user's system privileges, where *system_privileges* is a string representation of a sequence of the form:

'{*count* [{*privilege is_grantable*}] ... }'

where *count* is the number of privileges, *privilege* is the double-quoted privilege name, and *is_grantable* takes the value **TRUE** or **FALSE**.

For example:

```
'{2 {"updatesalary" FALSE}
{"createsalary" TRUE}}'
```

–O *object_privileges*
Specifies the user's object privileges, where *object_privileges* is a string representation of a sequence of the form:

'{*priv_count* [{*grantee privilege* {*col_count* [*column*] ... } *schema object is_grantable*}] ... }

where *priv_count* is the number of privileges, *grantee* is the name of the user receiving this privilege, *privilege* is the privilege name, *col_count* is the number of columns this applies to, *column* is a column name, *schema* is the schema name of the database, *object* is the object name, and *is_grantable* can take the value **TRUE** or **FALSE**. The names are all double quoted.

For example:

```
'{1 {"R_LYNCH" "update" {1 "Salary"}
"Acctg1" "GrossPay" FALSE}}
```

–Q *quotas*
Specifies the user's quotas, where quotas is a string representation of a sequence of the form:

'{*count* [{*tablespace is_limited limit_value*}] ... }'

where *count* is the number of quotas, *tablespace* is the double-quoted tablespace name, *is_limited* can take the value **TRUE** or **FALSE**, and *limit_value* is the numerical value of the limit.

For example:

```
'{2 {"Acctg_01" FALSE 0}
{"Acctg_02" TRUE 5}}
```

–r *resource_profile*
Specifies a resource profile.

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*.

profile_name
Specifies the name of the profile in which to create the user record.

user_name
Specifies the user's name.

Examples

```
wocrtuser -a FALSE -o TRUE -p rsmith -r default -d SYSTEM
-t TEMP -R '{2 {"payroll" TRUE FALSE} {"payables" FALSE TRUE}}'
-S '{2 {"updatesalary" FALSE} {"createsalary" TRUE}}'
-O '{1 {"R_LYNCH" "Updage" {1 "Salary"} "GrossPay" "Acctg1" FALSE}}'
-Q '{2 {"TEMP" FALSE 0} {"USER" TRUE 50000}}' oracle_users r_lynch
```

where:

-a FALSE
Specifies that the user is not OS authorized.

-o TRUE
Specifies that the user can change the password.

-p rsmith
Identifies the password as "rsmith".

-r default Specifies that the resource profile is the “default.

-d SYSTEM Identifies the default tablespace as “SYSTEM”.

-t TEMP Identifies the temporary tablespace as “TEMP”.

-R '{2 {"payroll" TRUE FALSE} {"payables" FALSE TRUE}}
Specifies that the user has two roles: `payroll`, which is grantable but not the default, and `payables`, which is not grantable but is the default.

-S '{2 {"updatesalary" FALSE} {"createsalary" TRUE}}'
Specifies that the user has two system privileges: `updatesalary`, which is not grantable, and `createsalary`, which is grantable.

-O '{1 {"R_LYNCH" "update" {1 "Salary"} "GrossPay" "Acctg1" FALSE}}'
Specifies that the user has one object privilege. In this case, a user called `R_LYNCH` receives the `update` privilege on column `Salary` for the object `GrossPay.Acctg1.` This privilege is not grantable.

-Q '{2 {"TEMP" FALSE 0} {"USER" TRUE 50000}}'
Specifies that the user has two tablespace quotas. In tablespace `TEMP`, the user can allocate unlimited space. In tablespace `USER`, the user can allocate up to 50000 bytes.

oracle_users Identifies the profile in which to create the new user.

r_lynch Provides the name of the new user.

Usage

The **wocrtuser** command creates a new Oracle user specified by the *user_name* argument in the Oracle user profile specified by the *profile_name* argument. Any attributes not explicitly specified on the command line are generated from the user default record. If an attribute is neither specified on the command line nor defaulted by the profile, an error is generated and the user record is not created. All attributes are validated against the profile validation policy.

Comments

See also, the **wosetuser**, **wodeluser**, and **wogetuser** commands.

wodelresource

Purpose

Deletes Oracle resource records.

Authorization

admin

Format

wodelresource [**–u**] *profile_name resource_name ...*

where:

–u	Finds occurrences of this resource in user profiles and changes them to DEFAULT.
profile_name	Specifies the name of the profile from which to delete the records.
resource_name	Specifies resource names of the records to delete. This argument can be specified multiple times.

Examples

The following command example deletes two resource records:

```
wodelresource accounting CPARKER BTURNER
```

where:

accounting	Identifies the profile from which to delete the resource record.
CPARKER and BTURNER	Identify the names of the resource records to delete.

Usage

The **wodelresource** command deletes the resource or resources specified in the *resource_name* argument from the profile specified in the *profile_name* argument.

Context

See also, the **wocrtresource** command.

wodelrole

Purpose

Deletes Oracle role records.

Authorization

admin

Format

wodelrole *profile_name role_name ...*

where:

profile_name Specifies the name of the profile from which to delete the records.

role_name Specifies role names of the records to delete. This argument can be specified multiple times.

Examples

The following command example deletes two role records:

```
wodelrole humanresource LSMITH RPOSSO
```

where:

humanresource Identifies the profile from which to delete the role record.

LSMITH RPOSSO Identifies the names of the role records to delete.

Usage

The **wodelrole** command deletes the role or roles specified in the *role_name* argument from the profile specified in the *profile_name* argument.

Comments

See also, the **wocrtrole** command.

wodeluser

Purpose

Deletes Oracle user records.

Authorization

admin

Format

wodeluser *profile_name user_name ...*

where:

profile_name Specifies the name of the profile from which to delete the records.

user_name Specifies user names of the records to delete. This argument can be specified multiple times.

Examples

The following command example deletes a user record:

```
wodeluser accounting LJOHNSON
```

where:

accounting Identifies the profile from which to delete the user record

LJOHNSON Identifies the user record to delete.

Usage

The **wodeluser** command deletes the user or users specified in the *user_name* argument from the profile specified in the *profile_name* argument.

Comments

See also, the **wocrtuser** command.

wogetresource

Purpose

Lists information about an existing Oracle resource.

Authorization

user

Format

wogetresource [**–c**] [**–C**] [**–i**] [**–l**] [**–p**] [**–r**] [**–R**] [**–s**] [**–t**] [**–x**] *profile_name resource_name*

where:

–c	Returns the CPU per call.
–C	Returns the CPU per session.
–i	Returns the idle time.
–l	Returns the composite limit.
–p	Returns the private SGA.
–r	Returns the number of logical reads per call.
–R	Returns the number of logical reads per session.
–s	Returns the number of sessions per user.
–t	Returns the connect time.
–x	Lists the role's AEF attributes, detailing for each one the attribute name and value.
profile_name	Specifies the name of the profile in which to create the resource record.
resource_name	Specifies the resource name.

If no options are specified, the command behaves as if all options were specified.

Examples

```
wogetresource northamerica_mktg ab3print_ibm

Database Resource Details:
Resource Name: AB3PRINT_IBM
CPU Per Call: Default
CPU Per Session: 69
Idle Time: Unlimited
Composite Limit: Default
Private SGA: 96
Logical Reads Per Call: Unlimited
Logical Reads Per Session: Default
Sessions Per User: 69
Connect Time: Unlimited

AEF attributes:
       None.
```

Usage

The **wogetresource** command lists information about the existing resource specified in the *resource_name* argument from the profile specified in the *profile_name* argument.

Comments

See also, the **wocrtresource**, **wosetresource**, and **wosetresources** commands.

wogetrole

Purpose

Lists information about an existing Oracle role.

Authorization

user

Format

wogetrole [**–a**] [**–p**] [**–R**] [**–S**] [**–x**] *profile role_name*

where:

–a	Returns the authentication type.
–p	Returns the password.
–R	Lists the role's assigned roles, detailing for each one the role name, whether it is a grantable role, and whether it is a default role.
–S	Lists the role's system privileges, detailing for each one the name and whether it is grantable.
–x	Lists the role's AEF attributes, detailing for each one the attribute name and value.
profile	Specifies the name of the profile.
role_name	Specifies the name of the Oracle role.

If no options are specified, the command behaves as if all options were specified.

Examples

The following command example lists all of a role record's attributes:

```
wogetrole NorthAmerica payroll

Database Role Details:
Role Name: RECEIVABLE_1
Authentication: PASSWORD
Password: _FjKlU0RbtXe003V1cGM31C

Assigned Roles:
  PAYROLL:
      Grant Option: No
      Default Role: No
  PAYABLES:
      Grant Option: No
      Default Role: Yes

System Privileges:
  updatesalary:
      Grant Option: No
  createsalary:
      Grant Option: No

AEF attributes:
      None.
```

Usage

The **wogetrole** command lists information about the existing role specified in the *role_name* argument from the profile specified in the *profile* argument.

Comments

See also, the **wocrtrole**, **wosetrole**, and **wosetroles** commands.

wogetuser

Purpose

Lists information about an existing Oracle user.

Authorization

user

Format

wogetuser [**–a**] [**–o**] [**–p**] [**–r**] [**–d**] [**–t**] [**–R**] [**–S**] [**–O**] [**–Q**] [**–x**] *profile user_name*

where:

–a	Returns the authentication type.
–o	Indicates whether the Oracle user has control of the password.
–p	Returns the password.
–r	Returns the resource profile name.
–d	Returns the default tablespace name.
–t	Returns the temporary tablespace name.
–R	Lists the user's roles, detailing for each one the role name, whether it is a grantable role, and whether it is a default role.
–S	Lists the user's system privileges, detailing for each one the name and whether it is grantable.
–O	Lists the user's object privileges, detailing for each one the grantee, the privilege name, the schema name, the object name, whether it is grantable, and a list of columns to which it applies.
–Q	Lists the user's quotas, detailing for each one the tablespace name and the size, which is either unlimited or a numerical value in bytes.
–x	Lists the user's AEF attributes, detailing for each one the attribute name and value.
profile	Specifies the name of the profile.
user_name	Specifies the name of the Oracle user.

If no options are specified, the command behaves as if all options were specified.

Examples

The following example lists all of a user record's attributes:

```
wogetuser NorthAmerica jw_smith

Database User Details:
User Name: JW_SMITH
Authentication: Database
Can the Oracle user change password: Yes
Password: _FzAfzYXYJFAY4HbTC
Resource Profile: DEFAULT
Temporary Tablespace: TEMP
Default Tablespace: SYSTEM
```

```
Roles:
  PAYROLL:
      Grant Option: Yes
      Default Role: No
  RECEIVABLES:
      Grant Option: No
      Default Role: Yes

System Privileges:
  createsalary:
      Grant Option: No
  updatesalary:
      Grant Option: Yes

Object Privileges:
  Update:
      Schema: Acctg1
      Object: GrossPay
      Grantee: r_lynch
      Grant Option: No
      Column: Salary

Quotas:
      None.

AEF attributes:
      None.
```

Usage

The **wogetuser** command lists information about the existing user specified in the *user_name* argument from the profile specified in the *profile* argument.

Comments

See also, the **wocrtuser**, **wosetuser**, and **wosetusers** commands.

wolsresources

Purpose

Lists the Oracle resources in a profile.

Authorization

user

Format

wolsresources *profile*

where *profile* specifies the name of the resource profile whose members to list.

Examples

The following example lists all the resources in a profile:

```
wolsresources NorthAmerica
```

which returns:

```
SMITH
LYNCH
BROWN
DAVIS
BAKER
MORGAN
DORHAM
FARMER
HUBBARD
```

Usage

The **wolsresources** command lists the names of the resources that are members of the Oracle resource profile specified in the *profile* argument.

Comments

See also, the **wogetresource** command.

wolsroles

Purpose

Lists the Oracle roles in a profile.

Authorization

user

Format

wolsroles *profile*

where *profile* specifies the name of the resource profile whose members to list.

Examples

The following example lists all the roles in a profile:

```
wolsroles NorthAmerica
```

which returns:

```
PAYROLL
PAYABLES
RECEIVABLES
INVOICE
CREDIT
```

Usage

The **wolsroles** command lists the names of the roles that are members of the Oracle role profile specified in the *profile* argument.

Comments

See also, the **wogetrole** command.

wolsusers

Purpose

Lists the Oracle users in a profile.

Authorization

user

Format

wolsusers *profile*

where *profile* specifies the name of the user profile whose members to list.

Examples

The following command example lists all the users in a profile:

```
wolsusers NorthAmerica_Mktg
```

which returns:

```
HAWKINS
WEBSTER
YOUNG
GORDON
COLTRANE
ROLLINS
SHORTER
HENDERSON
SHEPPARD
WELLINS
RAMIREZ
```

Usage

The **wolsusers** command lists the names of the users that are members of the Oracle user profile specified in the *profile* argument.

Comments

See also, the **wogetuser** command.

womvresource

Purpose

Move Oracle resources from one profile to another.

Authorization

admin

Format

womvresource *source destination* [*resource_name*...]

where:

source	Specifies the profile from which the resource records are moved.
destination	Specifies the profile to which the resource records are moved.
resource_name	Specifies the resource name of the record to move. This argument can be specified multiple times.

Examples

The following command example moves a resource record from one profile to another:

```
womvresource NorthAmerica International jw_smith
```

where:

NorthAmerica	Identifies the profile from which to move the resource record.
International	Identifies the profile to which the resource record is moved.
jw_smith	Identifies the resource record to move.

Usage

The **womvresource** command moves one or more resources identified by the *resource_name* argument from the profile specified in the source argument to the profile specified in the *destination* argument. If *resource_name* is not specified, all resources in the profile are moved.

Comments

See also, the **wocpresource** and **wolsresources** commands.

womvrole

Purpose

Moves Oracle roles from one profile to another.

Authorization

admin

Format

womvrole *source_profile destination_profile* [*role_name*...]

where:

source_profile Specifies the profile from which the role records are moved.

destination_profile
Specifies the profile to which the role records are moved.

role_name Specifies the role name of the record to move. This argument can be specified multiple times.

Examples

The following command example moves a role record from one profile to another:

```
womvrole NorthAmerica International payroll
```

where:

NorthAmerica Identifies the profile from which to move the role record.

International Identifies the profile to which the role record is moved.

payroll Identifies the role record to move.

Usage

The **womvrole** command moves one or more roles identified by the *role_name* argument from the profile specified in the *source_profile* argument to the profile specified in the *destination_profile* argument. If *role_name* is not specified, all roles in the profile are moved.

Comments

See also, the **wocprole** and **wolsroles** commands.

womvuser

Purpose

Moves Oracle users from one profile to another.

Authorization

admin

Format

womvuser *source_profile destination_profile* [*user_name*...]

where:

source_profile Specifies the profile from which the user records are moved.

destination_profile
Specifies the profile to which the user records are moved

user_name Specifies the user name of the record to move. This argument can be specified multiple times.

Examples

The following command example moves a user record from one profile to another:

```
womvuser International NorthAmerica r_lynch
```

where:

international Identifies the profile from which to move the user record.

NorthAmerica Identifies the profile to which the user record is moved.

r_lynch Identifies the user record to move

Usage

The **womvuser** command moves one or more users identified by the *user_name* argument from the profile specified in the *source_profile* argument to the profile specified in the *destination_profile* argument. If *user_name* is not specified, all users in the profile are moved.

Comments

See also, the **wocpuser** and **wolsusers** commands.

wopopresources

Purpose

Populates a resource profile from an OracleDatabaseManager resource.

Authorization

admin and oracle_user

Format

wopopresources [**–m** | **–o**] *database_name profile_name*

where:

–m	An entry that exists on a *database_name* and *profile_name* is not updated, but any other entries on *database_name* are appended to *profile_name*.
–o	Any entry in *database_name* is written into *profile_name*. An attempt to add an existing record will result in the old record being overwritten.
database_name	Specifies the database name.
profile_name	Identifies the resource profile to populate.

Examples

```
wopopresources -o orcl@hyde oracle_resources
```

Usage

The **wopopresources** command populates the OracleResourceManagerProfile *profile_name* from the OracleDatabaseManager *database_name*. Existing entries in *profile_name* can either be appended to or overwritten depending on the options specified.

Comments

See also, the **wopoproles** and **wopopusers** commands.

wopoproles

Purpose

Populates a role profile from an OracleDatabaseManager resource.

Authorization

admin and oracle_user

Format

wopoproles [–m | –o] *database_name profile_name*

where:

–m	An entry that exists on *database_name* and *profile_name* is not updated, but any other entries on *database_name* are appended to *profile_name*.
–o	Any entry in *database_name* is written into *profile_name*. An attempt to add an existing record results in the old record being overwritten.
database_name	Specifies the database name.
profile_name	Identifies the user profile to populate.

Examples

```
wopoproles -o orcl@hyde oracle_users
```

Usage

The **wopoproles** command populates the OracleRoleManagerProfile *profile_name* from the OracleDatabaseManager *database_name*. Existing entries in *profile_name* can either be appended to, or overwritten, depending on the options specified.

Comments

See also, the **wopoproles** and **wopopresources** commands.

wopopusers

Purpose

Populates a user profile from an OracleDatabaseManager resource.

Authorization

admin and oracle_user

Format

wopopusers [–m | –o] *database_name profile_name*

where:

–m	An entry that exists on *database_name* and *profile_name* is not updated, but any other entries on *database_name* are appended to *profile_name*.
–o	Any entry in *database_name* is written into *profile_name*. An attempt to add an existing record will result in the old record being overwritten.
database_name	Specifies the database name.
profile_name	Identifies the user profile to populate.

Examples

```
wopopusers -o orcl@hyde oracle_users
```

Usage

The **wopopusers** command populates the OracleUserManagerProfile *profile_name* from the OracleDatabaseManager *database_name*. Existing entries in *profile_name* can either be appended to or overwritten depending on the options specified.

Comments

See also, the **wopoproles** and **wopopresources** commands.

woregdb

Purpose

Registers a single database so you can manage it in the Tivoli environment.

Authorization

oracle_dba

Format

```
woregdb
-e endpoint-name
-s ORACLE_SID
-h ORACLE_HOME
-o owner
-g owner-group
-n database-name
-r policy-region
[-t TNS_ADMIN]
[-u username]
[-p password | -P]
[-i]
[-m proxy-ManagedNode-Name]
```

where:

-e *endpoint-name*
The label of the endpoint where the database resides.

-s *ORACLE_SID*
The Oracle system identifier for the database.

-h *ORACLE_HOME*
The full path of the Oracle database directory.

-o *owner* The owner of the Oracle server binaries at the endpoint. This is the user ID on the host.

-g *owner-group* The operating system group of the Oracle database owner.

-n *database-name*
The name of the database.

-r *policy-region* The policy region in which to register the Oracle database. The policy region must be on the same Tivoli management region as the endpoint.

-t *TNS_ADMIN*
The directory path to the SQL*Net configuration files. If this option is left blank, the default directory **/var/opt/oracle** or *ORACLE_HOME***/network/admin** is used.

-u *username* A DBA privileged user name for this database.

-p *password* The password for *username*.

-P Reads the password from standard input.

-i Ignores the database state if specified.

-m *proxy-ManagedNode-Name*
The name of the managed node to be used as the proxy host.

Examples

The following example registers a database named **Inventory** on endpoint **gordon** in the offline state, where *ORACLE_SID* = **PROD**, *ORACLE_HOME* = **/opt/oracle**, *policy-region* = **gordon_region**, *owner* = **oracle**, and *owner-group* = **dba**:

```
woregdb -e gordon -s PROD -h /opt/oracle -o oracle -g dba \
-n Inventory -r gordon_region -i
```

The following example registers a database named Inventory on endpoint jekyll in the online state, where *ORACLE_SID* = **v817**, *ORACLE_HOME* = **/jekyll/disk0/oracle/8.1.7**, *policy_region* = **Databases**, *owner* = **oracle**, and *owner-group* = **dba**:

```
woregdb -e jekyll -s v817 -h /jekyll/disk0/oracle/8.1.7 -o oracle \
-g dba -n Inventory -r Databases
```

Usage

The **woregdb** command registers a single database so you can manage it in a Tivoli environment.

Comments

None.

wosetresource

Purpose

Modifies the attributes of an Oracle resource record.

Authorization

admin

Format

wosetresource
[**–c** *'{type value}'*]
[**–C** *'{type value}'*]
[**–i** *'{type value}'*]
[**–l** *'{type value}'*]
[**–p** *'{type value}'*]
[**–r** *'{type value}'*]
[**–R** *'{type value}'*]
[**–s** *'{type value}'*]
[**–t** *'{type value}'*]
[[**–x** *attr_name attr_value*] ...]
profile_name resource_name

where:

–x *attr_name attr_value*
: Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*. This option can be repeated.

profile_name
: Specifies the name of the profile in which to create the resource record.

resource_name
: Specifies the resource name.

The remaining options are all followed by an argument of the form:

'{type value}'

where type is one of **DEFAULT**, **LIMITED**, or **UNLIMITED**, and *value* is the numerical value to be assigned.

–c
: CPU per call

–C
: CPU per session

–i
: Idle time

–l
: Composite limit

–p
: Private SGA

–r
: Logical reads per call

–R
: Logical reads per session

–s
: Sessions per user

–t
: Connect time

Examples

```
wosetresources -c '{UNLIMITED 0}' oracle_resources misc_res misc_res2
```

Usage

The **wosetresources** command modifies the attributes of the existing Oracle resources identified by the *resource_name* argument, in the Oracle resource profile specified by the *profile_name* argument. All attributes are validated against the profile validation policy.

Comments

See also, the **wosetresource**, **wodelresource**, and **wogetresource** commands.

wosetresources

Purpose

Modifies the attributes of multiple Oracle resource records.

Authorization

admin

Format

wosetresources
[**–c** *'{type value}'*]
[**–C** *'{type value}'*]
[**–i** *'{type value}'*]
[**–l** *'{type value}'*]
[**–p** *'{type value}'*]
[**–r** *'{type value}'*]
[**–R** *'{type value}'*]
[**–s** *'{type value}'*]
[**–t** *'{type value}'*]
[[**–x** *attr_name attr_value*] ...]
profile_name resource_name ...

where:

–x *attr_name attr_value*
: Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*. This option can be repeated.

profile_name
: Specifies the name of the profile in which to find the resource records.

resource_name
: Specifies a resource name. This argument can be repeated.

The remaining options are all followed by an argument of the form:

'{type value}'

where type is one of **DEFAULT**, **LIMITED**, or **UNLIMITED**, and value is the numerical value to be assigned.

–c
: CPU per call

–C
: CPU per session

–i
: Idle time

–l
: Composite limit

–p
: Private SGA

–r
: Logical reads per call

–R
: Logical reads per session

–s
: Sessions per user

–t
: Connect time

Examples

```
wosetresources -c '{UNLIMITED 0}' oracle_resources misc_res misc_res2
```

Usage

The **wosetresources** command modifies the attributes of the existing Oracle resources identified by the *resource_name* argument, in the Oracle resource profile specified by the *profile_name* argument. All attributes are validated against the profile validation policy.

Comments

See also, the **wosetresource**, **wodelresource**, and **wogetresource** commands.

wosetrole

Purpose

Modifies the attributes of an Oracle role record.

Authorization

admin

Format

wosetrole
[**–a NONE** | **OS** | **PASSWORD**]
[**–R** *assigned_roles*]
[**–p** *password*]
[**–S** *system_privileges*]
[**–n** *new_role_name*]
[[**–x** *attr_name attr_value*] ...]
profile_name role_name

where:

–a NONE Selects no authentication.

–a OS Selects OS authentication.

–a PASSWORD
Selects password authentication.

–R *assigned_roles*
Specifies the assigned roles of this role, where *assigned_roles* is a string representation of a sequence of the form:

'{*count* [{*role_name is_grantable is_default*}] ... }'

where *count* is the number of assigned roles, *role_name* is the double-quoted role name, and *is_grantable* and *is_default* can take the value **TRUE** or **FALSE**.

For example:

```
'{2 {"payroll" TRUE TRUE}
{"payables" TRUE FALSE}}'
```

–p *password* Specifies a password.

–S *system_privileges*
Specifies the role's system privileges, where *system_privileges* is a string representation of a sequence of the form:

'{*count* [{*privilege is_grantable*}] ... }'

where *count* is the number of privileges, *privilege* is the double-quoted privilege name, and *is_grantable* takes the value **TRUE** or **FALSE**.

–n *new_role_name*
Changes the role name.

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*.

profile_name Specifies the name of the profile in which to find the role record.

role_name Specifies the role name.

Examples

```
wosetrole -R '{1 {"International" FALSE FALSE}}' oracle_roles test_role
```

Usage

The **wosetrole** command modifies the attributes of the existing Oracle role identified by the *role_name* argument in the Oracle role profile specified by the *profile_name* argument. All attributes are validated against the profile validation policy.

Comments

See also, the **wocrtrole**, **wosetrole**s, and **wogetrole** commands.

wosetroles

Purpose

Modifies the attributes of multiple Oracle role records.

Authorization

admin

Format

wosetroles
[**–a NONE** | **OS** | **PASSWORD**]]
[**–p** *password*]
[**–R** *assigned_roles*]
[**–S** *system_privileges*]
[[**–x** *attr_name attr_value*] ...] *profile_name role_name* ...

where:

–a NONE Selects no authentication.

–a OS Selects OS authentication.

–a PASSWORD
Selects password authentication.

–R *assigned_roles*
Specifies the assigned roles of these roles, where *assigned_roles* is a string representation of a sequence of the form:

'{*count* [{*role_name is_grantable is_default*}] ... }'

where *count* is the number of assigned roles, *role_name* is the double-quoted role name, and *is_grantable* and *is_default* can take the value **TRUE** or **FALSE**.

For example:

```
'{2 {"payroll" FALSE FALSE} \
{"payables" TRUE FALSE}}'
```

–p *password* Specifies a password.

–S *system_privileges*
Specifies the roles' system privileges, where *system_privileges* is a string representation of a sequence of the form:

'{*count* [{*privilege is_grantable*}] ... }'

where *count* is the number of privileges, *privilege* is the double-quoted privilege name, and *is_grantable* takes the value **TRUE** or **FALSE**.

For example:

```
'{2 {"updatesalary" TRUE} {"createsalary" TRUE}}'
```

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*.

profile_name Specifies the name of the profile in which to find the role records.

role_name Specifies a role name. This argument can be specified multiple times.

Examples

```
wosetroles -R '{1 {"NorthAmerica" FALSE FALSE 0}}' oracle_users
jw_smith
```

Usage

The **wosetroles** command modifies the attributes of the existing Oracle roles identified by the *role_name* arguments in the Oracle role profile specified by the *profile_name* argument. All attributes are validated against the profile validation policy.

Comments

See also, the **wocrtrole**, **wosetrole**, and **wogetrole** commands.

wosetuser

Purpose

Modifies the attributes of an Oracle user record.

Authorization

admin

Format

wosetuser
[**–a TRUE** | **FALSE**]
[**–o TRUE** | **FALSE**]
[**–p** *password*]
[**–d** *default_tablespace*]
[**–t** *temporary_tablespace*]
[**–R** *roles*]
[**–S** *system_privileges*]
[**–O** *object_privileges*]
[**–Q** *quotas*]
[**–r** *resource_profile*]
[[**–x** *attr_name attr_value*] ...]
[**–u** *new_user_name*]
profile_name user_name

where:

–a TRUE Selects OS authentication.

–a FALSE Selects database authentication.

–o TRUE Allows Oracle user to change password.

–o FALSE Disallows Oracle user from changing password.

–p *password* Specifies a password.

–d *default_tablespace*
Specifies a default tablespace.

–t *temporary_tablespace*
Specifies a temporary tablespace.

–R *roles* Specifies the user's roles, where *roles* is a string representation of a sequence of the form:

'{*count* [{*role_name is_grantable is_default*}] ... }'

where *count* is the number of roles, *role_name* is the double-quoted role name, and *is_grantable* and *is_default* can take the value **TRUE** or **FALSE**.

For example:

```
'{2 {"createinvoice" FALSE}
"creditinvoice" FALSE}}'
```

–O *object_privileges*
Specifies the user's object privileges, where *object_privileges* is a string representation of a sequence of the form:

'{*priv_count* [{*grantee privilege* {*col_count* [*column*] ... } *schema object is_grantable*}] ... }'

where *priv_count* is the number of privileges, *grantee* is the name of the user receiving the privilege, *privilege* is the privilege name, *col_count* is the number of columns this applies to, *column* is a column name, *schema* is the schema name, *object* is the object name, and *is_grantable* can take the value **TRUE** or **FALSE**. The names are all double quoted.

For example:

```
'{1 {"jw_smith" "create" {1 "Invoice"}
"Acctg2" "invoice" TRUE}}'
```

–Q *quotas* Specifies the user's quotas, where quotas is a string representation of a sequence of the form:

'{*count* [{*tablespace is_limited limit_value*}] ... }'

where *count* is the number of quotas, *tablespace* is the double-quoted tablespace name, *is_limited* can take the value **TRUE** or **FALSE**, and *limit_value* is the numerical value of the limit.

For example:

```
'{2 {"Invoices" TRUE 70}
"Credits" TRUE 160}}'
```

–r *resource_profile*
Specifies a resource profile.

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*.

–u *new_user_name*
Changes the user name.

profile_name Specifies the name of the profile.

user_name Specifies the user's current name.

Examples

```
wosetuser -Q '{1 {"SYSTEM" FALSE 0}}' oracle_users jw_smith
```

Usage

The **wosetuser** command modifies the attributes of the existing Oracle user identified by the *user_name* argument in the Oracle user profile specified by the *profile_name* argument. All attributes are validated against the profile validation policy.

Comments

See also, the **wocrtuser**, **wodeluser**, and **wogetuser** commands.

wosetusers

Purpose

Modifies the attributes of multiple Oracle user records.

Authorization

admin

Format

wosetusers
[**–a TRUE** | **FALSE**]
[**–o TRUE** | **FALSE**]
[**–p** *password*]
[**–d** *default_tablespace*]
[**–t** *temporary_tablespace*]
[**–R** *roles*]
[**–S** *system_privileges*]
[**–O** *object_privileges*]
[**–Q** *quotas*]
[**–r** *resource_profile*]
[[**–x** *attr_name attr_value*] ...]
profile_name user_name ...

where:

–a TRUE Selects OS authentication.

–a FALSE Selects database authentication.

–o TRUE Allows Oracle user to change password.

–o FALSE Disallows Oracle user from changing password.

–p *password* Specifies a password.

–d *default_tablespace*
Specifies a default tablespace.

–t *temporary_tablespace*
Specifies a temporary tablespace.

–R *roles* Specifies the user's roles, where *roles* is a string representation of a sequence of the form:

'{*count* [{*role_name is_grantable is_default*}] ... }'

where *count* is the number of roles, *role_name* is the double-quoted role name, and *is_grantable* and *is_default* can take the value **TRUE** or **FALSE**.

For example:

```
'{2 {"invoice" FALSE TRUE}
{"receive" FALSE FALSE}}'
```

–S *system_privileges*
Specifies the users' system privileges, where *system_privileges* is a string representation of a sequence of the form:

'{*count* [{*privilege is_grantable*}] ... }'

where *count* is the number of privileges, *privilege* is the double-quoted privilege name, and *is_grantable* takes the value **TRUE** or **FALSE**.

For example:

```
'{2 {"createinvoice" FALSE}
{"creditinvoice" FALSE}}'
```

–O *object_privileges*
Specifies the users' object privileges, where *object_privileges* is a string representation of a sequence of the form:

'{*priv_count* [{*grantee privilege* {*col_count* [*column*] ... } *schema object is_grantable*}] ... }'

where *priv_count* is the number of privileges, *grantee* is the name of the user receiving the privilege, *privilege* is the privilege name, *col_count* is the number of columns this applies to, *column* is a column name, *schema* is the schema name, *object* is the object name, and *is_grantable* can take the value **TRUE** or **FALSE**. The names are all double quoted.

For example:

```
'{1 {"jw_smith" "credit" {1 "Invoice"} "Acctg2" "invoice" FALSE}}'
```

–Q *quotas*
Specifies the users' quotas, where *quotas* is a string representation of a sequence of the form:

'{*count* [{*tablespace is_limited limit_value*}] ... }'

where *count* is the number of quotas, *tablespace* is the double-quoted tablespace name, *is_limited* can take the value **TRUE** or **FALSE**, and *limit_value* is the numerical value of the limit.

For example:

```
'{2 {"Credits" TRUE 100}
{"Returns" FALSE 0}}'
```

–r *resource_profile*
Specifies a resource profile.

–x *attr_name attr_value*
Sets the value of the attribute *attr_name* (added using Tivoli/AEF) to *attr_value*.

–u *new_user_name*
Changes the user name.

profile_name
Specifies the name of the profile.

user_name
Specifies each user name. This argument can be specified multiple times.

Examples

```
wosetusers -Q '{1 {"SYSTEM" FALSE 0}}' oracle_users jw_smith r_lynch
```

Usage

The **wosetusers** command modifies the attributes of the multiple Oracle users identified by the *user_name* arguments in the Oracle user profile specified by the *profile_name* argument. All attributes are validated against the profile validation policy.

Comments

See also, the **wocrtuser**, **wodeluser**, and **wogetuser** commands.

woshutdown

Purpose

To shutdown an Oracle database from the Tivoli desktop so you can stop the database operations.

Authorization

oracle_dba

Format

```
woshutdown [–n | –i | –a | –t][–I] database-name
```

where:

–n Normal – Waits for all transactions to complete and all users to log off before shutting down the database.

–i Immediate (default) – Rolls back any uncommitted transactions and disconnects all connected users, and then shuts down the database.

–a Abort – Does not wait for transactions to complete or users to log off. Be careful when using this option, because the database might need recovery afterwards.

–t Transactional Abort – Allows active transactions to complete before shutting down the instance.

–I Specifies that *resource-name* refers to an instance (not needed for a database).

resource-name The name for the database.

Examples

The following example shows an immediate shutdown of a database named **gordon**:

```
woshutdown -i gordon@manzana
```

The following example shows an immediate shutdown of an instance named **orcl@orcl@hyde**:

```
woshutdown -i -I orcl@orcl@hyde
```

Usage

The **woshutdown** command shuts down an Oracle database from the Tivoli desktop so you can stop the database operations.

Comments

None.

wostartup

Purpose

To start a database from the Tivoli desktop so you can use or edit the database.

Authorization

oracle_dba

Format

```
wostartup [–p][–r][–f][–n | –m | –o][–I] resource-name
```

where:

–p	Parallel.
–r	Restricted – Allows only users with RESTRICTED SESSION rights to connect to the database when it is running.
–f	Force (abort).
–n	Nomount – Starts the database, but does not associate it with an instance.
–m	Mount – Associates the database with an instance.
–o	Open (default) – Makes the database available to users.
–I	Only used when starting an instance. Specifies that *resource-name* refers to a database instance.
resource-name	The name of the database.

Examples

The following example performs a default startup of the **v817@manzana** database:

```
wostartup v817@manzana
```

The following example starts up the example database in restricted mode, without mounting the database:

```
wostartup -r -n v817@manzana
```

Usage

The **wostartup** command starts a database from the Tivoli desktop so you can use or edit the database.

Comments

None.

Appendix A. Monitor to resource model migration table

The following table compares the previous Tivoli Manager for Oracle monitors with the current IBM Tivoli Monitoring for Databases: Oracle resource models. Alternatively, Table 10 on page 408 compares resource models to the previous Tivoli Manager for Oracle monitors. Use these tables for functionality mapping. For complete details on the IBM Tivoli Monitoring for Databases: Oracle resource models, see Chapter 2, "Resource models" on page 5. Also included is a task migration table. See Table 11 on page 410 for task name comparisons.

Table 9. Monitor to resource model migration table

Tivoli Manager for Oracle, Version 2.0 monitor name	**IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0 resource model**
Active Transactions	Transaction
Advanced Queue Propagation Status (8i)	Advanced Queue
Alerts	Log Event
Any v$lock	Lock
Any v$sysstat	Other Performance Monitors
AQ (Advanced Queue) Schedule Propagation errors (8i)	Advanced Queue
Archive Free Space	Archive Destinations
Archive Percent Free Space	Archive Destinations
Archive Space (Number of Redo Logs)	Archive Destinations
Archive Used Space	Archive Destinations
Average Message Propagation Rate (across schedule) (8i)	Advanced Queue
Average Redo Entry Size	Redo Log
Average waiting time of "READY" messages (8i)	Advanced Queue
Background Dump Space	Dump Space
Block Changes Per Transaction	Transaction
Block Get Rate	Other Performance Monitors
Blocked Transactions	Transaction
Buffer Cache Hit Ratio	SGA
Buffer Cache Hit Ratio (Interval)	SGA
Buffer Waits Ratio	SGA
Call Rate	Transaction
Calls Per Transaction	Transaction
Chained Rows (cluster)	Other Storage
Chained Rows (table)	Other Storage
Changed Block Ratio	Other Performance Monitors
Cluster Key Ratio	Other Storage
Completed Background Checkpoints	Checkpoints

Table 9. Monitor to resource model migration table (continued)

Tivoli Manager for Oracle, Version 2.0 monitor name	**IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0 resource model**
Consistent Change Ratio	Rollback Segment
Continued Row Ratio	Other Storage
Currently Running Heterogeneous Services (8i)	Other Performance Monitors
DBWR Checkpoints	Checkpoints
Dictionary Cache Hit Ratio	SGA
Dictionary Cache Hit Ratio (Interval)	SGA
Dispatcher Busy Rate	Multi-Threaded Server
Dispatcher Wait Times	Multi-Threaded Server
DML Locks Ratio	Lock
Enqueue Timeouts	Lock
Extents	Extents
Extents by Tablespace	Extents by Tablespace
Extents by User	Extents by User
Free Space Deficit	Free Space Deficit
Free Space Deficit by Tablespace	Free Space Deficit by Tablespace
Free Space Deficit by User	Free Space Deficit by User
Free Space Fragmentation	Free Space Fragmentation
Free Space Fragmentation by Tablespace	Free Space Fragmentation by Tablespace
Free Tablespace	Free Tablespace
Free Tablespace by Tablespace	Free Tablespace by Tablespace
Freelist Waits Ratio	Other Performance Monitors
Index Statistics	Other Storage
Library Cache Hit Ratio	SGA
Library Cache Hit Ratio (Interval)	SGA
Lock Hit Ratio – Parallel	**Withdrawn**
Long Running Transactions	Transaction
Long Table Full Table Scans (Interval)	Full Table Scan
Maximum Extents	Maximum Extents
Maximum Extents by Tablespace	Maximum Extents by Tablespace
Maximum Extents by User	Maximum Extents by User
NT Service Status	Process State
Number of Datafiles	Other Storage
Number of Deadlocks	Lock
Open Cursors	Other Performance Monitors
PCM Conversion Waits	**Withdrawn**
PCM Lock Conversion Time	**Withdrawn**
Percentage of False Pings	**Withdrawn**
Physical I/O Reads	I/O

Table 9. Monitor to resource model migration table (continued)

Tivoli Manager for Oracle, Version 2.0 monitor name	**IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0 resource model**
Physical I/O Writes	I/O
Ping Rate	**Withdrawn**
Process Ratio	Other Performance Monitors
RDBMS State	RDBMS State
Recursive Call Rate	Recursive Calls
Recursive Calls	Recursive Calls
Recursive To User Calls Ratio	Recursive Calls
Redo Allocation Latch Ratio	Redo Log
Redo Copy Latch Ratio	Redo Log
Redo Log Space Waits	Redo Log
Redo Logs Not Archived	Redo Log
Redo Small Copy Ratio	Redo Log
Rollback Waits	Rollback Segment
Row Source Ratio	Full Table Scan
Rows in DUAL Table	Other Performance Monitors
Shared Server Process Ratio	Multi-Threaded Server
Shared Server Wait Time	Multi-Threaded Server
Sort Overflow Ratio	Other Performance Monitors
SQL Number	SQL Number
SQL String	SQL String
Temporary Extents	Temporary Extents
Temporary Extents by Tablespace	Temporary Extents by Tablespace
Temporary Extents by User	Temporary Extents by User
Total waiting time of READY messages	Advanced Queue
Unix Core Dump Space	Dump Space
Unix SQL*Net V1 TCP/IP Listener	Listener State
Unix SQL*Net V2 Listener	Listener State
User Dump Space	Dump Space
User Rollback Ratio	Rollback Segment

Table 10. Resource model and monitor comparison

IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0 resource model	**Tivoli Manager for Oracle, Version 2.0 monitor name**
Advanced Queue	Advanced Queue Propagation Status (8i) AQ (Advanced Queue) Schedule Propagation errors (8i) Average Message Propagation Rate (across schedule) (8i) Average waiting time of ″READY″ messages (8i) Total waiting time of READY messages
Archive Destination	Archive Free Space Archive Percent Free Space Archive Space (Number of Redo Logs) Archive Used Space
Checkpoints	Completed Background Checkpoints DBWR Checkpoints
Dump Space	Background Dump Space Unix Core Dump Space User Dump Space
Extents	Extents
Extents by Tablespace	Extents by Tablespace
Extents by User	Extents by User
Free Space Deficit	Free Space Deficit
Free Space Deficit by Tablespace	Free Space Deficit by Tablespace
Free Space Deficit by User	Free Space Deficit by User
Free Space Fragmentation	Free Space Fragmentation
Free Space Fragmentation by Tablespace	Free Space Fragmentation by Tablespace
Free Tablespace	Free Tablespace
Free Tablespace by Tablespace	Free Tablespace by Tablespace
Full Table Scan	Long Table Full Table Scans (Interval) Row Source Ratio
I/O	Physical I/O Reads Physical I/O Writes
Job Queue	**New**
Listener State	Unix SQL*Net V1 TCP/IP Listener Unix SQL*Net V2 Listener

Table 10. Resource model and monitor comparison (continued)

IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0 resource model	**Tivoli Manager for Oracle, Version 2.0 monitor name**
Lock	Any v$lock DML Locks Ratio Enqueue Timeouts
Log Event	Alerts
Maximum Extents	Maximum Extents
Maximum Extents by Tablespace	Maximum Extents by Tablespace
Maximum Extents by User	Maximum Extents by User
Multi-Threaded Server	Dispatcher Busy Rate Dispatcher Wait Times Shared Server Process Ratio Shared Server Wait Time
Other Performance Monitors	Any v$sysstat Block Get Rate Changed Block Ratio Currently Running Heterogeneous Services (8i) Freelist Waits Ratio Open Cursors Process Ratio Rows in DUAL Table Sort Overflow Ratio
Other Storage	Chained Rows (cluster) Chained Rows (table) Cluster Key Ratio Continued Row Ratio Index Statistics Number of Datafiles
PGA	**New**
Process State	NT Service Status
RDBMS State	RDBMS State
Recursive Calls	Recursive Call Rate Recursive Calls Recursive To User Calls Ratio

Table 10. Resource model and monitor comparison (continued)

IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0 resource model	Tivoli Manager for Oracle, Version 2.0 monitor name
Redo Log	Average Redo Entry Size Redo Allocation Latch Ratio Redo Copy Latch Ratio Redo Log Space Waits Redo Logs Not Archived Redo Small Copy Ratio
Rollback Segment	Consistent Change Ratio Rollback Segment User Rollback Ratio
SGA	Buffer Cache Hit Ratio Buffer Cache Hit Ratio (Interval) Buffer Waits Ratio Dictionary Cache Hit Ratio Dictionary Cache Hit Ratio (Interval) Library Cache Hit Ratio Library Cache Hit Ratio (Interval)
SQL Number	SQL Number
SQL String	SQL String
Temporary Extents	Temporary Extents
Temporary Extents by Tablespace	Temporary Extents by Tablespace
Temporary Extents by User	Temporary Extents by User
Transaction	Active Transactions Block Changes Per Transaction Blocked Transactions Call Rate Calls Per Transaction Long Running Transactions
Undo Space	**New**

Table 11. Task migration table

Tivoli Manager for Oracle, Version 2.0 task name	IBM Tivoli Monitoring for Databases: Oracle, Version 5.1.0, task name
DisableMonitoring	DisableResourceModels
EnableMonitoring	EnableResourceModels

Appendix B. Resource model CIM class quick reference

The following table lists the IBM Tivoli Monitoring for Databases: Oracle resource models and the CIM classes they reference. For complete details on the IBM Tivoli Monitoring for Databases: Oracle resource models, see Chapter 2, "Resource models" on page 5.

Table 12. Resource models and their referenced CIM classes

Resource Model	CIM Class
Advanced Queue	OracleQueue OracleQueueSchedule
Archive Destination	OracleArchiveDest OracleDatabase OracleRedoLogGroup
Checkpoints	OracleDatabase OracleInstance
Dump Space	OracleDatabase OracleDumpSpace
Extents	OracleSegment
Extents by Tablespace	OracleSegment
Extents by User	OracleSegment
Free Space Deficit	OracleEquity
Free Space Deficit by Tablespace	OracleEquity
Free Space Deficit by User	OracleEquity
Free Space Fragmentation	OracleDatabase OracleTablespace
Free Space Fragmentation by Tablespace	OracleDatabase OracleTablespace
Free Tablespace	OracleTablespace
Free Tablespace by Tablespace	OracleTablespace
Full Table Scan	OracleDatabase OracleInstance
I/O	OracleDatabase OracleDatafile
Job Queue	OracleJob
Listener State	OracleDatabase OracleListener

Table 12. Resource models and their referenced CIM classes (continued)

Resource Model	CIM Class
Lock	OracleDatabase OracleInstance OracleLock OracleParameter
Log Event	OracleDatabase OracleLogEvent
Maximum Extents	OracleSegment
Maximum Extents by Tablespace	OracleSegment
Maximum Extents by User	OracleSegment
Multi-Threaded Server	OracleDatabase OracleDispatcherProtocol OracleNetwork OracleParameter
Other Performance Monitors	OracleDatabase OracleHSAgent OracleInstance OracleParameter OracleSession OracleSysStat
Other Storage	OracleCluster OracleDatabase OracleIndex OracleInstance OracleParameter OracleTable
PGA	OracleDatabase OracleInstance
Process State	OracleDatabase OracleState OracleProcess OracleUnixProcess
RDBMS State	OracleState
Recursive Calls	OracleDatabase OracleInstance

Table 12. Resource models and their referenced CIM classes (continued)

Resource Model	CIM Class
Redo Log	OracleDatabase OracleInstance
Rollback Segment	OracleDatabase OracleInstance
SGA	OracleDatabase OracleInstance
SQL Number	OracleDatabase OracleFreeform
SQL String	OracleDatabase OracleFreeform
Temporary Extents	OracleSegment
Temporary Extents by Tablespace	OracleSegment
Temporary Extents by User	OracleSegment
Transaction	OracleDatabase OracleInstance OracleSession OracleTransaction
Undo Space	OracleDatabase OracleUndoStat

Appendix C. Creating custom resource models using CIM classes

The IBM Tivoli Monitoring Workbench is a programming tool for creating, modifying, debugging, and packaging resource models for use with IBM Tivoli Monitoring products. Samples of Best Practice Resource Models have also been provided for you to use within the IBM Tivoli Monitoring Workbench. These resource models are intended to be used as working examples for creating new resource models. Customers need to have a current Tivoli Maintenance & Support Contract to receive assistance with problems and issues related to the operation of the IBM Tivoli Monitoring Workbench.

Note: Resource models created with Oracle CIM classes must only be pushed to OracleDatabaseManagers or OracleInstanceManagers. Resource models created with the OracleListener CIM class can only be pushed to OracleInstanceManagers.

Creating custom resource models using the IBM Tivoli Monitoring Workbench

Objective

To create customized resource models in the Workbench using IBM Tivoli Monitoring for Databases: Oracle CIM classes and the Resource Model Wizard to guide you through the process.

Background information

The IBM Tivoli Monitoring Workbench is a programming tool for creating, modifying, debugging, and packaging resource models for use with IBM Tivoli Monitoring products. Samples of the Best Practice Resource Models have been provided for you to use within the IBM Tivoli Monitoring Workbench. The sample resource models are intended to be used as working examples for creating new resource models.

The Tivoli Maintenance and Support Contract covers assistance with problems relating to the operation of the IBM Tivoli Monitoring Workbench, but does not cover assistance for new or modified resource models other than the ones that are included in the IBM Tivoli Monitoring Workbench.

The Resource Model Wizard guides you through the process of creating resource models using IBM Tivoli Monitoring for Databases: Oracle CIM classes. Refer to the IBM Tivoli Monitoring Workbench documentation for more information on how to create resource models.

Required authorization role

admin

Before you begin

Before you begin, you must perform the following steps:

1. Install and configure Windows Management Instrumentation.

   Additional Information: You can download Windows Management Instrumentation from http://msdn.microsoft.com/downloads/.
2. Install and configure IBM Tivoli Monitoring Workbench.

3. Load each IBM Tivoli Monitoring for Databases: Oracle CIM class you want to use.

   Additional Information: Load the classes by running the **mofcomp** command from the **Workbench/w32–ix86** directory in the *IBM Tivoli Monitoring for Databases: Oracle* installation CD. For more information about the **mofcomp** command, refer to the Windows Management Instrumentation documentation.

After you finish

Refer to IBM Tivoli Monitoring Workbench documentation for instructions on how to build and deploy your new resource model. Resource models created to use the IBM Tivoli Monitoring for Databases: Oracle CIM classes need to be distributed to the OracleInstanceManager or the OracleDatabaseManager.

Procedure

1. Open the IBM Tivoli Monitoring Workbench.
2. Select **File** to display the **File** drop-down menu.
3. Select **New** from the **File** drop-down menu to display the **New** window.
4. Select **Java Script Resource Model**.
5. Click **OK** to display the **New Resource Model Workspace** window.
6. Select the **Resource Model Wizard** radio button.
7. Click **OK**.
8. Select the **CIM/WMI** data source type.
9. Select all of the available operating systems on which you want the resource model to run.
10. Click **Next**.
11. Type **ROOT\CIMV2** in the **Connect to namespace** field.

    Additional Information: **ROOT\CIMV2** is the destination where the IBM Tivoli Monitoring for Databases: Oracle specific CIM classes are stored.
12. *Optional:* Type your password.
13. Click **OK** to display the **Select a Class** window.

    Additional Information: The **Selected Class** field displays all available CIM classes for use in your custom resource models. All IBM Tivoli Monitoring for Databases: Oracle CIM classes begin with “Oracle”.
14. Select one or more CIM classes.
15. Select the CIM class properties to monitor from the **Class Properties** group box.
16. Click **Next**.
17. Follow the Resource Model Wizard instructions to complete your resource model. See the IBM Tivoli Monitoring Workbench documentation for detailed instructions.
18. After the wizard is complete, add the CIM classes as platform-specific dependencies to the resource model by doing the following:
    a. Open the **IBM Tivoli Monitoring Workbench** dialog box containing the decision tree for your new resource model.
    b. In the decision tree on the left side of the dialog box, click ″+″ to expand the tree list for the newly created resource model.
    c. Click ″+″ to the left of **Dependencies** to expand the **Dependencies** tree.
    d. Right-click on a platform-specific dependency element to display the **Add** pop-up box.
    e. Click **Add** to display the **Open** dialog box.

f. For the **Look in:** field, scroll to select the IBM Tivoli Monitoring for Databases: Oracle installation CD.

g. Click one of the following directories for the operating system on which the resource models will run:

- Windows: **Workbench/w32–ix86**.

  —OR—

- UNIX (including Linux-ix86, aix4–r1, HP–UX10, solaris2): **Workbench/UNIX**.

h. Click **Open** to add the classes to the **Dependencies** folder.

i. Repeat steps 18d to 18h until all platform-specific dependencies have been updated with the IBM Tivoli Monitoring for Databases: Oracle CIM classes.

Note: Some string properties have numeric values. These properties are marked with a "+" in the CIM Class appendix. To compare these values against numeric thresholds, you must convert the string to an integer using the **parseInt()** function, then write the code manually. See the **Oracle_Sample_OracleSession.dmjsws** workbench file for the complete source code example. The following text is an excerpt from that file:

```
//HINT: OpenCursors is defined as a String value in the CIM class, but its
//value represents a numeric. If you wish to do numeric comparisons or
//calculations with the OpenCursors' value then it should be caste to an
//integer using the Javascript Number object .

curOpenCursors = Number(Svc.GetStrProperty("ROOT\\CIMV2:OracleSession",
                                           idx, "OpenCursors"));

  Svc.SetMapNumElement(hPropTable,"OpenCursors",curOpenCursors);

//HINT: Always verify that the number you received from the instrumentation
//is a valid number.

  if (!isNaN(curOpenCursors)) {
          var curThreshold = Svc.GetThreshold
          ("Threshold_Oracle_Sample_OracleSession_OpenCursors");

//Compare the number of currently open cursors to the defined threshold.
//If this threshold is exceeded, then an indication should be sent.

   if (curOpenCursors > curThreshold) {
           Svc.SetMapNumElement(hPropTable, "Threshold", curThreshold);

Svc.SendEventEx( "Ev_Oracle_Sample_OracleSession_OpenCursors_exceeds",
                 hPropTable);
   }

   //Log the properties for viewing in the Web Health Console

   Svc.LogInstEx ("Sample","OracleSession", hPropTable);

        } else {
           //ERROR:  The instrumentation did not correctly return a
           //valid number for the value of OpenCursors.

      Svc.Trace(0, "Sample_OracleSession: curOpenCursors is NaN");
  }
```

Classes and properties to use in resource models

To create resource models, you need to use providers and their common information model (CIM) classes, parameters, properties, exceptions, and dependencies. A provider is the component of a resource model that delivers the status of the monitored object.

Use the following providers to create resource models:

- OracleArchiveDest
- OracleClassPing
- OracleCluster
- OracleDatabase
- OracleDatafile
- OracleDBCacheAdvice
- OracleDispatcher
- OracleDispatcherProtocol
- OracleDumpSpace
- OracleEquity
- OracleHSAgent
- OracleIndex
- OracleInstance
- OracleJob
- OracleListener
- OracleLock
- OracleLogEvent
- OracleNetwork
- OracleObject
- OracleParameter
- OraclePGAStat
- OraclePQSlave
- OraclePQSysStat
- OracleProcess
- OraclePXProcess
- OraclePXProcessSysStat
- OraclePXSession
- OracleQueue
- OracleQueueSchedule
- OracleRedoLog
- OracleRedoLogGroup
- OracleRollbackSegment
- OracleSegment
- OracleSequence
- OracleSession
- OracleSessStat
- OracleSharedServer
- OracleSQLPlan

- OracleState
- OracleSysStat
- OracleSystemEvent
- OracleTable
- OracleTablespace
- OracleTransaction
- OracleUndoStat
- OracleUnixProcess
- OracleUser

OracleArchiveDest

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 13. CIM class

CIM Name	ROOT\CIMV2: OracleArchiveDest
MOF File Name	OracleArchiveDest.mof
Description	The OracleArchiveDest class makes properties that are associated with an archive destination available, such as an archived redo log destination.

Table 14. Parameters

Parameter	Required	TYPE	Default	Description
None	None	None	None	None

Table 15. Properties

Property	Type	Description
Binding	String	Returns one of the following requirements for success: MANDATORY (must succeed), or OPTIONAL (need not succeed, depending on LOG_ARCHIVE_MIS_SUCCEED_DEST).
DestID*	UInt32	The archive destination identifier.
Destination*	String	The archive destination text string as either a translated primary location, or a standby service name.
Error	String	The text of any last error.
FailBlock	UInt32	Any block number at last error.
FailDate	String	The date and time of any last error.
FailSequence	UInt32	Any log sequence number at last error.
FreeKBytes	UInt32	Any unallocated space on the archive destination device.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
MountPoint	String	The file system directory in which data is placed the contents of a particular drive. For example, /data.
NameSpace	String	One of the following: SYSTEM is a system definition. SESSION is a session definition.
Status	String	The current status of the archive destination as one of the following: • VALID - initialized and available • INACTIVE - no destination information • DEFERRED - disabled manually by the user • ERROR - error during open or copy • DISABLED - disabled after error • BAD PARAM - parameter has errors

Table 15. Properties (continued)

Property	Type	Description
Target	String	Identifies the target. PRIMARY will copy to primary. STANDBY will copy to standby.
TotalKBytes	UInt32	The total capacity (in kilobytes) for the archive destination device.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleClassPing

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 16. CIM class

CIM Name	ROOT\CIMV2: OracleClassPing
MOF File Name	OracleClassPing.mof
Description	The OracleClassPing class makes properties that are associated with blocks pinged per block class available.

Table 17. Parameters

Parameter	Required	TYPE	Default	Description
None	None	None	None	None

Table 18. Properties

Property	Type	Description
Class*	String	The block class.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
X2NullForcedWrite+	String	The number of forced writes for blocks of the specified CLASS due to Exclusive-to-NULL conversions.
X2SforcedWrite+	String	The number of forced writes for blocks of the specified CLASS due to Exclusive-to-Shared conversions.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleCluster

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 19. CIM class

CIM Name	ROOT\CIMV2: OracleCluster
MOF File Name	OracleCluster.mof
Description	The OracleCluster class makes properties that are associated with a cluster available. A cluster is a group of one or more tables physically stored together because they share common columns and are often used together.

Table 20. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 21. Properties

Property	Type	Description
AvgBlocksPerKey+	String	The number of blocks in the table divided by the number of cluster keys.
BufferPool	String	The default buffer pool for the specified cluster.
ChainedRows+	String	The number of chained rows calculated for a specified cluster.
ClusterName*	String	The name of the specified cluster.
ClusterOwner*	String	The username of the cluster owner.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
FreeLists+	String	The number of process freelists allocated to this segment.
FreelistGroups+	String	The number of freelist groups allocated to this segment.
InitialExtent+	String	The byte size assigned to the first extent of a segment at the time a segment is created. Oracle rounds extent sizes to multiples of 5 blocks if the size requested is greater than 5 blocks.
MaxExtents+	String	The maximum number of extents allowed for a specified segment.
NextExtent+	String	The byte size assigned to the next extent allocated to a segment.
TablespaceName	String	The name of the tablespace that contains the cluster.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleDatabase

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 22. CIM class

CIM Name	ROOT\CIMV2: OracleDatabase
MOF File Name	OracleDatabase.mof
Description	The OracleDatabase class makes properties that are associated with an Oracle database available.

Table 23. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 24. Properties

Property	Type	Description
Created	String	The date of the database creation.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
FalsePings	String	The number of times that two or more blocks are accessed by two nodes concurrently, where each node is updating a separate block.
FalsePingPercentage+	String	The percentage of false pings.
LockHitPercentage+	String	The percentage of data block accesses that do not require lock conversions. This percentage indicates how efficiently user processes are distributed across multiple instances.
LogMode	String	Specifies which archive log mode the database is running, either ARCHIVELOG, or NOARCHIVELOG.
MaxExtents+	String	The maximum number of extents allowed for a specified segment.
NumberOfDatafiles+	String	The number of datafiles in a database. When you create a database, you define the maximum number of datafiles. If the database reaches the limit, it will not be able to add additional datafiles.
OpenMode	String	The current mode of the open database. Possible modes include: Mounted, Read Write, and Read Only.
PingRate+	String	The rate of pings, or forced disk writes, across instances over a specified time. A high ping rate can indicate the need to redistribute the user-access configuration so that users who access the same information can do so through the same instances.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleDatafile

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 25. CIM class

CIM Name	ROOT\CIMV2: OracleDatafile
MOF File Name	OracleDatafile.mof
Description	The OracleDatafile class makes properties that are associated with an Oracle database datafile available. A datafile is a physical file of the operating system. Datafiles store the data of all logical structures in the database.

Note: There are no parameters for this provider.

Table 26. Properties

Property	Type	Description
Autoextensible	String	Automatically increases the size of existing datafiles when more space is needed in the database. The datafiles increase in specified increments up to a specified maximum.
AverageIOTime+	String	The average amount of time spent on I/O if the TIMED_STATISTICS parameter is TRUE. If the parameter is FALSE, the time will be 0. The time displays in milliseconds.
Blocking+	String	The number of contiguous blocks that are protected by each PCM lock on the datafile.
CreationTime	String	The date and timestamp of creation.
CurrentBytes+	String	The size of the file in bytes.
CurrentBlocks+	String	The size of the file in Oracle blocks.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
FileID	String	The file identification number.
FileName*	String	A physical operating system file on a disk created by Oracle that contains data structures such as tables and indexes. A data file can belong to only one database.
Frequency+	String	The unit of frequency for file pings.
IncrementBy+	String	Increment file size for autoextension.
MaxBlocks+	String	The maximum file size in blocks.
MaxBytes+	String	The maximum file size in bytes.
Nlocks+	String	The number of PCM locks that are allocated to the datafile.
PhysicalReads+	String	The total number of data blocks read from a datafile when a request for a data block could not be done from a local cache.

Table 26. Properties (continued)

Property	Type	Description
PhysicalWrites+	String	The total number of data blocks written to disk.
ReadTime+	String	The amount of time spent doing reads if the TIMED_STATISTICS parameter is TRUE. If the parameter is FALSE, the time will be 0. The time displays in milliseconds.
StartLk	String	The first lock corresponding to the datafile.
State	String	The type of file (either system or user), and its status. Values include: OFFLINE, ONLINE, SYSTEM, RECOVER, or SYSOFF (an offline file from the SYSTEM tablespace).
Status	String	Specifies the current file status as either AVAILABLE or INVALID. INVALID means that the file number is not in use.
TablespaceName	String	The name of a tablespace in a database that uniquely identifies the tablespace. The tablespace name can contain up to 8 characters.
TotalIO+	String	The total number of physical reads plus the number of times DBWR is required to write.
WriteTime+	String	The amount of time spent doing writes if the TIMED_STATISTICS parameter is TRUE. If the parameter is FALSE, the time will be 0. The time displays in milliseconds.
X2NullForcedWrite+	String	The number of forces writes that occurring for blocks of the specified file due to Exclusive-to-Null conversions.
X2SForcedWrite+	String	The number of forced writes occurring for blocks of the specified file due to Exclusive-to-Shared conversions.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleDBCacheAdvice

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 27. CIM class

CIM Name	ROOT\CIMV2: OracleDBCacheAdvice
MOF File Name	OracleDBCacheAdvice.mof
Description	The OracleDBCacheAdvice class makes properties that are associated with information concerning predictive data for the number of physical reads for the cache size corresponding to each row available.

Table 28. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 29. Properties

Property	Type	Description
BuffersForEstimate+	String	The cache size for prediction (in terms of buffers).
EstdPhysicalReads+	String	The estimated number of physical reads for this cache size.
EstdPhysicalReadFactor+	String	The physical read factor for this cache size (the ratio of the number of estimated physical reads to the number of reads in the real cache). The value is null if there are no physical reads in the real cache.
InstanceName*	String	The label of the object where the resource model running this provider was distributed.
ID*	UInt32	The buffer pool identifier (ranges from 1 to 8).
Name*	String	The buffer pool name.
SizeForEstimate+	String	The cache size for prediction (in megabytes).

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleDispatcher

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 30. CIM class

CIM Name	ROOT\CIMV2: OracleDispatcher
MOF File Name	OracleDispatcher.mof
Description	The OracleDispatcher class makes properties that are associated with a dispatcher process available. A dispatcher process enables a number of clients to connect to the same server without requiring a dedicated server process for each client.

Table 31. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 32. Properties

Property	Type	Description
AvgWaitTime+	String	The average wait time (in hundredths of a second) that a response waits in the response queue for a dispatcher process to route it.
Breaks+	String	The number of breaks that have occurred in this connection.
Bytes+	String	The byte size of messages processed by the dispatcher.
CircuitsCreated+	String	The number of circuits that were created by this dispatcher.
DispatcherName*	String	The name of the dispatcher process.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Messages+	String	The total number of messages processed by the dispatcher.
Protocol	String	The protocol for which the dispatcher will generate a listening endpoint. Valid values include TCP (for TCP/IP) or TCPS (for TCP/IP with SSL).

Table 32. Properties (continued)

Property	Type	Description
Status	String	Displays the current status of the dispatcher. Status includes: • WAIT – dispatcher is idle • SEND – dispatcher is sending a message • RECEIVE – dispatcher is receiving a message • CONNECT – dispatcher is establishing a connection • DISCONNECT – dispatcher is handling a disconnect request • BREAK – dispatcher is handling a break • TERMINATE – dispatcher is in the process of terminating • ACCEPT – dispatcher is accepting connections • REFUSE – dispatcher is rejecting connections
TotalBusyTime+	String	The total busy time for the dispatcher in hundredths of a second.
TotalIdleTime+	String	The total idle time for the dispatcher in hundredths of a second.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleDispatcherProtocol

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 33. CIM class

CIM Name	ROOT\CIMV2: OracleDispatcherProtocol
MOF File Name	OracleDispatcherProtocol.mof
Description	The OracleDispatcherProtocol class makes properties that are associated with dispatcher statistics for each protocol running on a system available.

Note: There are no parameters for this provider.

Table 34. Properties

Property	Type	Description
BusyPercentage+	String	The percentage of time that dispatcher processes for the specified protocol are busy.
DispatcherWaitTime+	String	The average time (in hundredths of a second) that a response waits until dispatchers of the specified protocol route it from the response queue.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Protocol*	String	The protocol utilized by one or more dispatchers.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleDumpSpace

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 35. CIM class

CIM Name	ROOT\CIMV2: OracleDumpSpace
MOF File Name	OracleDumpSpace.mof
Description	The OracleDumpSpace class makes properties that are associated with background, core, and user destination directories specified to receive Oracle alert, trace, and core files available.

Note: There are no parameters for this provider.

Table 36. Properties

Property	Type	Description
Destination*	String	The location of dump space.
FreeKBytes+	String	Unallocated space on the dump space destination.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
TotalKBytes+	String	The total capacity (in kilobytes) for the dump space destination.
Type*	String	The type of dump space destination, as either USER, BACKGROUND, or CORE.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleEquity

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 37. CIM class

CIM Name	ROOT\CIMV2: OracleEquity
MOF File Name	OracleEquity.mof
Description	The OracleEquity class makes the next extent and equity properties that are associated with an Oracle segment available.

Table 38. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 39. Properties

Property	Type	Description
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
Equity+	String	The difference (in bytes) between a segment's NEXT_EXTENT value and the largest contiguous free extent available in the tablespace in which the segment is located. If equity is less than zero, this indicates that there is not a large enough contiguous free extent in the tablespace for the segment to allocate its next extent.
NextExtent+	String	The byte size assigned to the next extent allocated to a segment.
SegmentName*	String	The name of the segment.
SegmentOwner*	String	The username of the segment owner.
SegmentType*	String	The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
TablespaceName*	String	The name the tablespace in which this segment is contained.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleHSAgent

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 40. CIM class

CIM Name	ROOT\CIMV2: OracleHSAgent
MOF File Name	OracleHSAgent.mof
Description	The OracleHSAgent class makes properties that are associated with a heterogeneous service agent currently running on a given host available.

Table 41. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 42. Properties

Property	Type	Description
AgentID*	UInt32	The Net8 session identifier used for connections to a heterogeneous service agent. The identifier must be the same as listed in the LISTENER.ORA file.
AgentType	String	The type of heterogeneous service agent.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Machine	String	The name of the operating system machine.
OSUser	String	The operating system username of the user.
ProcessID	String	The operating system process identifier of the heterogeneous service agent.
Program	String	The program name of the heterogeneous service agent.
RunningDays+	String	The number of days this agent has been running.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleIndex

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 43. CIM class

CIM Name	ROOT\CIMV2: OracleIndex
MOF File Name	OracleIndex.mof
Description	The OracleIndex class makes properties that are associated with an Oracle index available.

Note: There are no parameters for this provider.

Table 44. Properties

Property	Type	Description
AvgLeafBlocksPerKey+	String	The average number of leaf blocks for each value in the index, rounded to the nearest integer. For indexes enforcing UNIQUE and PRIMARY KEY constraints, the value is 1.
BufferPool	String	The name of the default buffer pool used for the index blocks.
Compression	String	Whether the index compression is ENABLED or DISABLED.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
Freelists+	String	The number of process freelists allocated to the specified segment in the index.
FreelistGroups+	String	The number of freelist groups allocated to the specified segment in the index.
IndexName*	String	The name of the index.
IndexOwner*	String	The username of the index owner.
IndexType	String	The type of index. Index types include: NORMAL, BITMAP, FUNCTION-BASED NORMAL, FUNCTION-BASED BITMAP, or DOMAIN.
InitialExtent+	String	The byte size assigned to the first extent of a segment at the time a segment is created. Oracle rounds extent sizes to multiples of 5 blocks if the size requested is greater than 5 blocks.
MaxExtents+	String	The maximum number of extents allowed for the specified segment.
NextExtent+	String	The byte size assigned to the additional extents allocated to a segment.
PercentageDeleted+	String	The percentage of deleted rows from the user-specified index. Deleted rows include rows that have not been repopulated.

Table 44. Properties (continued)

Property	Type	Description
Status	String	The status for a nonpartitioned index as VALID or UNUSABLE.
TableName	String	The name of the indexed object.
TableOwner	String	The username for the owner of the indexed object.
TableType	String	The type of the indexed object, such as TABLE, or CLUSTER.
TablespaceName	String	The name of the tablespace that contains the index.
Uniqueness	String	Whether the index is UNIQUE or NONUNIQUE. Unique indexes have no two rows in a table with duplicate values in the key columns. Nonunique indexes do not impose this column values restriction.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleInstance

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 45. CIM class

CIM Name	ROOT\CIMV2: OracleInstance
MOF File Name	OracleInstance.mof
Description	The OracleInstance class makes properties that are associated with an Oracle instance constituted by a system global area (SGA) and the Oracle background processes available.

Note: There are no parameters for this provider.

Table 46. Properties

Property	Type	Description
ActiveTransactionsPercentage+	String	The total number of active transactions as a percentage of the TRANSACTIONS parameter in the init.ora file for the instance.
AvgRedoEntrySize+	String	The total redo size (in bytes) divided by the number of redo entries.
BlockChangesPerTransaction+	String	The amount of DML (Data Manipulation Language) work that each transaction performs.
BlockGetRate+	String	The rate at which the application system references the database.
BufferCacheCGets+	String	The number of times a consistent read was requested for a block in a specified length of time.
BufferCacheDBGets+	String	The number of times a CURRENT block was requested in a specified length of time.
BufferCacheHitPercentage	String	The percentage of the buffer cache hits to total requests over the lifetime of an instance. The percentage calculates how often a requested block is found in the buffer cache without requiring disk access. The buffer cache is the portion of the SGA that holds copies of Oracle data blocks. All user processes that are connected to the instance share access to the buffer cache.
BufferCachePhysReads+	String	The total number of data blocks read from a disk. This number is the total of the physical reads direct value plus all reads into buffer cache.
BufferCachePhysReadsDir+	String	Number of reads directly from disk, bypassing the buffer cache.
BufferCachePhysReadsDirLob+	String	Number of lob reads directly from disk, bypassing the buffer cache.

Table 46. Properties (continued)

Property	Type	Description
BufferCacheSessLogReads+	String	Sum of “db block gets” plus “consistent gets”.
BufferWaitsPercentage+	String	The percentage of buffer busy waits to logical reads. This indicates that a user process attempted to acquire a buffer but had to wait because the buffer was held in an incompatible mode.
Calls+	String	The work rate (recursive calls + user calls) being run against the instance. Calls do any of the following: describe, parse, open, fetch, close, or execute.
CallsPerTransaction+	String	The number of client requests made per transaction.
ChangedBlockPercentage+	String	The percentage of blocks that were accessed and updated by users. The percentage is the balance between queries made and the DML within the database application.
ClusterKeyRatio+	String	The ratio of cluster key scan block gets to cluster key scans. If the ratio is greater than one, the rows for a cluster key are stored in multiple data blocks.
CompletedBackgroundCheckpoints+	String	The number of times a database writer (DBWR) checkpoint is completed.
ConsistentChangePercentage+	String	The percentage of consistent changes to consistent gets.
ContinuedRowPercentage+	String	The percentage of rows retrieved that extend over more than one block, which is called chained rows. The percentage should be close to 0, except in applications that have long columns, or rows that are larger than one block (spanned rows), where chaining is unavoidable. The current number of Data Manipulation Language (DML) locks as a percentage of the maximum number of locks defined for the instance. The instance limit is set through the DML_LOCKS parameter in the init.ora file and represents the maximum number of locks that can be placed on all tables by all users at any one time. When the limit is reached, processing stops and an Oracle error occurs.
DatabaseStatus	String	The current status of the database.
DBWRCheckpoints+	String	The number of database writer (DBWR) checkpoints requested by the server.
Deadlocks+	String	The number of deadlocks detected since the instance was started.

Table 46. Properties (continued)

Property	Type	Description
DictionaryCacheHitPercentage+	String	The ratio, as a percentage, of dictionary cache hits to total requests. If the hit ratio is less than 70%, increase the value of the init.ora parameter SHARED_POOL_SIZE. The dictionary cache is a collection of database tables and views containing data about the database, its structures, and its users. The dictionary cache is also known as the row cache because it holds data as rows instead of buffers (which hold entire blocks of data).
EnqueueTimeouts+	String	The total number of enqueue (table and row) locks that timed out before they could complete.
FalsePingPercentage+	String	The percentage of false pings for the monitored source.
FreelistWaitsRatio+	String	The ratio of freelist waits to the total number of requests for data.
InstanceID	String	The instance number that is used for instance registration and corresponds to the INSTANCE_NUMBER initialization parameter.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
InstanceRole	String	Specifies one of two possible instance roles, primary or secondary. A primary instance role is the first instance to mount the database. A secondary instance role is the second instance to mount the database. The secondary instance role assumes the primary instance role if the primary instance fails or is shut down. After a failed instance returns to active status, it assumes a secondary instance role. The V$INSTANCE dynamic performance view displays all instance roles.
KeepCacheCGets+	String	Keep cache consistent gets statistic.
KeepCacheDBGets+	String	Keep cache database blocks gotten statistic.
KeepCacheHitPercentage+	String	The percentage of the keep buffer pool cache hits to total requests over the lifetime of an instance.
KeepCachePhysReads+	String	Keep cache physical reads statistic.

Table 46. Properties (continued)

Property	Type	Description
LibraryCacheHitPercentage+	String	The percentage of entries in the library cache that were reloads (parsed more than once) over the lifetime of the instance. Strive to have reloads as near to zero as possible. The library cache stores executable forms of SQL cursors, PL/SQL programs, and Java classes.
LibraryCachePins+	String	The number of times a PIN was requested for objects in the library cache.
LibraryCachePinHits+	String	The number of times that all of the metadata pieces of the library object were found in memory.
LibraryCacheReloads+	String	The number of object PINs following the first PIN performed since the object handle was created, and which requires loading the object from disk.
Logins	String	Specifies whether the login is ALLOWED, or RESTRICTED.
LongScans+	String	The percentage of full table scans that are from long tables.
NamedUsersMax+	String	The maximum number of named users allowed for the database.
Parallel	String	Specifies whether the Oracle Application Cluster is running in Parallel mode. Displays YES for Parallel mode, and NO if it is not Parallel.
PGAComponentArea+	String	Amount of memory consumed by consumers of program global area memory other than for auto work areas.
PGAMultipassExecutions+	String	Total number of work areas executed with multi-pass memory size.
PGAOptimalPercentage+	String	Percentage of work areas executed with optimal memory size.
PGAWorkAreaMaxSize	String	Maximum size of a memory work area executed in AUTO mode.
PGAWorkAreaPercentage+	String	The percentage of program global area memory that is available for work areas after other components of the database have allocated.
ProcessPercentage+	String	The current total number of Oracle processes running on an instance, as a percentage of the maximum. The maximum is set by the PROCESS parameter in the init.ora file for the instance.

Table 46. Properties (continued)

Property	Type	Description
PXProcessLimitPercentage+	String	The percentage of the parallel execution servers high water value to the limit set by the initialization parameter 'parallel_max_servers'.
RecursiveCalls+	String	The number of recursive calls for the instance. A recursive call occurs when one SQL statement requires the execution of a further separate SQL statement.
RecursiveToUserCallsRatio+	String	The ratio of recursive to user calls. A change in this ratio can reflect an application change or the need to increase the size of the shared buffer pool. A marked change in the data definition language (DDL) workload on the database will also affect this ratio.
RecycleCacheCGets+	String	Recycle cache consistent gets statistic.
RecycleCacheDBGets+	String	Recycle cache database blocks gotten statistic.
RecycleCacheHitPercentage+	String	The percentage of the recycle buffer pool cache hits to total requests over the lifetime of an instance.
RecycleCachePhysReads+	String	Recycle cache physical reads statistic.
RedoAllocationLatchPercentage+	String	The percentage of misses to gets for the redo allocation latch.
RedoCopyLatchPercentage+	String	The percentage of misses to gets for the redo copy latch.
RedoLogsNotArchived+	String	The number of redo log files that have not been archived.
RedoLogSpaceWaits+	String	The number of times Oracle must wait for disk space to be allocated for the redo log entries because the active log file is full.
RedoSmallCopyPercentage+	String	The percentage of the total number of redo small copies to the total number of redo entries.
RollbackWaitsPercentage+	String	The percentage of rollback segment header waits on a specified data block for a specified length of time.
RowCacheGets+	String	The total number of requests for data object information for all data dictionary caches.
RowCacheFixed+	String	The total number of fixed entries in the cache for all data dictionary caches.
RowCacheMisses+	String	The total number of data requests resulting in cache misses for all data dictionary caches.
RowCacheUsage+	String	The total number of cache entries that contain valid data for all data dictionary caches.

Table 46. Properties (continued)

Property	Type	Description
RowSourcePercentage+	String	The percentage of total rows retrieved from a full-table scan.
SessionPercentage+	String	The percentage of current sessions to the maximum allowed number of sessions.
SessionsCurrent+	String	The current number of concurrent user sessions.
SessionsHighwater+	String	The highest number of concurrent user sessions since the instance started.
SessionsMax+	String	The maximum number of concurrent user sessions allowed for the instance.
SessionsWarning+	String	The warning limit for concurrent user sessions for the instance.
ShortScans+	String	The percentage of full table scans that are from short tables.
ShutdownPending	String	Specifies whether the database is in a Shutdown Pending state. Displays YES for Shutdown Pending, and NO if it is not in Shutdown Pending state.
SortOverflowPercentage+	String	The percentage of sorts that are using temporary segments.
StartupTime	String	The time that the instance started.
Status	String	The current status of the instance as either STARTED, MOUNTED, or OPEN. • STARTED after startup, but no mount • MOUNTED after startup, mount or alter database close • OPEN after startup or after database open
UserCalls+	String	Identifies logins, parses, or execute requests being posed by the client side applications running under the instance.
UserRollbackPercentage+	String	A percentage of the number of times users manually issue the ROLLBACK statement or an error occurs when a user attempts a transaction.
Version	String	The version number for RDBMS.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleJob

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 47. CIM class

CIM Name	ROOT\CIMV2: OracleJob
MOF File Name	OracleJob.mof
Description	The OracleJob class makes properties that are associated with an Oracle job available. A job is a scheduled routine to be run periodically using the job queue.

Table 48. Parameters

Parameter	Required	Type	Default	Description
None	None	None	None	None

Table 49. Properties

Property	Type	Description
Broken	String	Specifies if an attempt to execute a job is successful. Y displays when no attempt is made to run this job. N displays if an attempt is made to run this job.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
DelayMinutes	Real32	Number of minutes from the current date that this job is next scheduled to be executed. This value is positive when the scheduled time is set in the past, and negative when the scheduled time is set in the future.
Failures*	String	The number of times this job has started and failed since its last successful execution.
InstanceID	String	The instance identification that can execute or is executing a job. The default identification is 0.
Interval	String	A date function that is evaluated at the start of execution that becomes next NEXT_DATE.
JobID*	UInt32	The identifier of a job. Import/export and repeated executions will not change this value.
LastSuccessDate	String	The most recent date on which this job successfully executed.
LastSuccessSec	String	The start time from which this job successfully executed.
LogUser	String	The login username for a submitted job.
NextDate	String	The date that this job will be executed next.
NextSec	String	The time when this job will execute next.
PrivUser	String	The username for the user whose default privileges apply to this job.
SchemaUser	String	The default schema that is used to parse a job.

Table 49. Properties (continued)

Property	Type	Description
ThisDate	String	The date on which this job started executing. Displays null if the job is not executing.
ThisSec	String	The start time from which the most recent job successfully executed.
TotalTime+	String	The total time, in seconds, the system spent executing this job.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleListener

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Note: Resource models created referencing this CIM class must only be pushed to OracleInstanceManagers.

Table 50. CIM class

CIM Name	ROOT\CIMV2: OracleListener
MOF File Name	OracleListener.mof
Description	The OracleListener class makes properties that are associated with one or more listener processes available. The listener is a process on the Oracle server that listens for and accepts connection requests from clients.

Note: There are no parameters for this provider.

Table 51. Properties

Property	Type	Description
ListenerName*	String	The label of the object where the resource model running this provider was distributed.
ListenerState	String	The current state of the listener process: Available, Unavailable, Unknown, Becomes Available, Becomes Unavailable, or Becomes Unknown

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleLock

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 52. CIM class

CIM Name	ROOT\CIMV2: OracleLock
MOF File Name	OracleLock.mof
Description	The OracleLock class makes properties that are associated with a lock available. A lock is a mechanism used to control concurrent access to data and to ensure consistency and integrity.

Note: There are no parameters for this provider.

Table 53. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
LockCount+	String	The number of LockType locks currently held.
LockType*	String	The type of user or system lock. Locks control concurrent access to data. Any process that is blocking other processes is likely holding one of these locks. User locks are obtained by user applications. User type locks include: TM (DML lock), TX (Row Transaction lock), ST (Space Transaction lock), UL (User defined lock). System type locks can be found in the Oracle documentation.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleLogEvent

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 54. CIM class

CIM Name	ROOT\CIMV2: OracleLogEvent
MOF File Name	OracleLogEvent.mof
Description	The OracleLogEvent class makes properties that are associated with errors logged in the alert log available.

Table 55. Parameters

Parameter	Required	Type	Default	Description
CYCLE_TIME	No	NUMERIC_LIST	None	Should be set in the init() method to the actual cycle time of the resource model. This value is used to optimize cache behavior within the class.
MONITOR_ID	No	NUMERIC_LIST	None	Should be set in the init() method of the resource model to a semi-random number or millisecond timestamp, e.g. using the Date.getTime() method. This value is used to distinguish between multiple instances of the same resource model which access the same Oracle log file. Properly setting this value will ensure that each of these resource models receives all relevant entries in the log file. If this value is not set, only one of these resource models will receive any given entry in the log file.

Table 56. Properties

Property	Type	Description
FileName*	String	The name of the file to which the Oracle database is logging.

Table 56. Properties (continued)

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Offset*	UInt32	The offset (in bytes) from the beginning of the log file where the log event starts.
Severity	Uint32	The severity (as an integer) of the log event. The severity number is determined by the number assigned to the pattern it matches in the regular expression file.
Text	String	The text of the log event.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleNetwork

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 57. CIM class

CIM Name	ROOT\CIMV2: OracleNetwork
MOF File Name	OracleNetwork.mof
Description	The OracleNetwork class makes properties that are associated with an Oracle instance available.

Note: There are no parameters for this provider.

Table 58. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
SharedServerMaxConnections+	String	The largest number of virtual circuits in use at one time since the instance started. Raise the value of CIRCUITS if this number reaches the value set for the CIRCUITS initialization parameter.
SharedServerMaxSessions+	String	The largest number of shared server sessions in use at one time since the instance started. Raise the value of SHARED_SERVER_SESSIONS if this number reaches the value set for the SHARED_SERVER_SESSIONS initialization parameter.
SharedServerProcessPercentage+	String	The current number of shared-server processes as a percentage of the instance limit.
SharedServersHighwater+	String	The highest number of servers running at the same time since the instance started. Raise the value of SHARED_SERVERS if this number reaches the value set for the MAX_SHARED_SERVERS initialization parameter.
SharedServersStarted+	String	The total number of shared servers started since the instance started. This number does not include the shared servers started during startup.
SharedServersTerminated+	String	The total number of shared servers that Oracle stopped since the instance started.

Table 58. Properties (continued)

Property	Type	Description
SharedServerWaitTime+	String	The average wait time (in hundredths of a second) that a request waits in the request queue.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleObject

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 59. CIM class

CIM Name	ROOT\CIMV2: OracleObject
MOF File Name	OracleObject.mof
Description	The OracleObject class makes properties that are associated with an object in the database available.

Note: There are no parameters for this provider.

Table 60. Properties

Property	Type	Description
Created	String	The timestamp that the object was created.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
LastDDLTime	String	The timestamp for the last modification of the object as a result from a DDL command (which includes grants and revokes).
ObjectID	String	The dictionary object number for the object.
ObjectName*	String	The name of the object.
ObjectOwner*	String	The username of the object owner.
ObjectType*	String	The type of the object, such as TABLE, or INDEX.
Status	String	The current status of the object, such as VALID, INVALID, or N/A.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleParameter

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 61. CIM class

CIM Name	ROOT\CIMV2: OracleParameter
MOF File Name	OracleParameter.mof
Description	The OracleParameter class makes properties that are associated with an initialization parameter available. Initialization parameters are value and configuration settings to be used on database startup.

Note: There are no parameters for this provider.

Table 62. Properties

Property	Type	Description
Description	String	A descriptive text comment about the parameter.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
IsDefault	String	Specifies whether the user specifies the parameter as an initialization, or default, parameter.
ParameterName*	String	The name of the parameter. Upper or lower cases in filenames is significant only if case is significant on the host operating system.
Value	String	The current value for a parameter modified within the session, otherwise, is the instance-wide parameter value.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OraclePGAStat

Description

The following tables detail the CIM Class, parameters, properties, exceptions, and dependencies of this provider.

Note: Use this CIM class to create resource models for Oracle 9i only.

Table 63. CIM Class

CIM Name	ROOT\CIMV2: OraclePGAStat
MOF File Name	OraclePGAStat.mof
Description	The OraclePGAStat class makes properties that are associated with PGA memory usage statistics available.

Note: There are no parameters for this provider.

Table 64. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
StatName*	String	The statistic name for the Program Global Area.
Value	String	The statistic value for the Program Global Area.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OraclePQSlave

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 65. CIM class

CIM Name	ROOT\CIMV2: OraclePQSlave
MOF File Name	OraclePQSlave.mof
Description	The OraclePQSlave class makes properties that are associated with system statistics for parallel query slave processes available.

Note: There are no parameters for this provider.

Table 66. Properties

Property	Type	Description
BusyTimeTotal+	String	The total amount of time spent busy while processing statements in the current session.
CPUSecsTotal+	String	The total amount of CPU time spent on the current session.
IdleTimeTotal+	String	The total amount of time spent idle while processing statements in the current session.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Sessions+	String	The number of sessions that have used this parallel execution server.
SlaveName*	String	The name of the parallel execution server.
Status	String	The current status of the parallel execution server. Status is either BUSY or IDLE.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OraclePQSysStat

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 67. CIM class

CIM Name	ROOT\CIMV2: OraclePQSysStat
MOF File Name	OraclePQSysStat.mof
Description	The OraclePQSysStat class makes properties that are associated with parallel query system statistics available.

Note: There are no parameters for this provider.

Table 68. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
StatName*	String	Identifies the name of the statistic. Statistic names for an instance include: • Servers Busy - number of servers that are currently busy • Servers Idle - number of servers that are currently idle • Servers Highwater - number of active servers that have partaken in more than or at least one operation • Server Sessions - number of operations executed on all servers • Servers Started - number of servers started • Servers Shutdown - number of servers shutdown • Servers Cleaned Up - number of servers cleaned up due to process death • Queries Initiated – number of parallel queries initiated • DML Initiated - number of parallel DML operations that were initiated • DFO Trees - number of DFO trees executed • Local Msgs Sent - number of local (intra-instance) messages sent • Distr Msgs Sent - number of remote (inter-instance) messages sent • Local Msgs Recv'd - number of remote (inter-instance) messages received • Distr Msgs Recv'd - number of remote (inter-instance) messages received
Value	String	The current value of the statistic.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleProcess

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 69. CIM class

CIM Name	ROOT\CIMV2: OracleProcess
MOF File Name	OracleProcess.mof
Description	The OracleProcess class makes properties that are associated with an Oracle process, including server and background processes, available.

Note: There are no parameters for this provider.

Table 70. Properties

Property	Type	Description
Address	String	The location of the process state object.
Background	String	One of the following process types: 1 for a background process, or NULL for a normal process.
Description	String	A description of the process.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
ProcessID*	String	The Oracle process identifier.
ProcessName	String	The name of a process.
Program	String	The current program in progress.
OSProcessID	String	The unique integer used by the operating system kernel to identify a process.
Username	String	The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OraclePXProcess

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 71. CIM class

CIM Name	ROOT\CIMV2: OraclePXProcess
MOF File Name	OraclePXProcess.mof
Description	The OraclePXProcess class makes properties that are associated with information about a parallel execution process available.

Note: There are no parameters for this provider.

Table 72. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
OSProcessID	String	The operating system process identification.
ProcessID	String	The identification of the specified process.
ProcessServerName*	String	The name of the cluster database (such as P000, P001, etc.).
SessionID	String	The session identification of slave, if one is in use.
Status	String	The state of the cluster database. State includes either IN USE, or AVAILABLE.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OraclePXProcessSysStat

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 73. CIM class

CIM Name	ROOT\CIMV2: OraclePXProcessSysStat
MOF File Name	OraclePXProcessSysStat.mof
Description	The OraclePXProcessSysStat class makes properties that are associated with system statistics related to parallel execution processes available.

Note: There are no parameters for this provider.

Table 74. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.

Table 74. Properties (continued)

Property	Type	Description
StatName*	String	Identifies the name of the specified statistic. Statistic names include: • Servers In Use - the number of PX servers that are currently performing parallel operations • Servers Available - the number of PX servers that are available to perform parallel operations • Servers Started - the number of times the system has created a PX server process • Server Shutdown - The number of times a PX server process shutdown. PX server processes shutdown if not used recently. The length of time it remains "Available" is set by the initialization parameter PARALLEL_SERVER_IDLE_TIME. Consider increasing this parameter, if needed to improve performance by avoiding the latency of PX server process creation. • Servers HWM - the maximum number of concurrent PX server processes. Consider increasing the PARALLEL_MAX_SERVERS if this number equals the initialization parameter value. This allows an increase in throughput, especially for systems under-utilized with a large "Parallel operations downgraded to serial" V$SYSSTAT statistic. • Servers Cleaned Up - the number of times PMON cleaned up a PX server. Should only occur during abnormal termination of a parallel operation. • Sessions - the number of sessions created by PX servers • Memory Chunks Allocs - the number of large memory chunks assigned by PX servers • Memory Chunks Freed - the number of large memory chunks that are free • Memory Chunks Current - the number of large memory chunks that are being used • Memory Chunks HWM - the maximum number of concurrently allocated memory chunks • Buffers allocated - the number of times a message buffer is allocated • Buffers freed - the number of times a message buffer is freed • Buffers Current - the current number of message buffers being used • Buffers HWM - the maximum number of concurrently allocated message buffers
Value	String	The value of the specified statistic.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OraclePXSession

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 75. CIM class

CIM Name	ROOT\CIMV2: OraclePXSession
MOF File Name	OraclePXSession.mof
Description	The OraclePXSession class makes properties that are associated with information about a session running parallel execution available.

Note: There are no parameters for this provider.

Table 76. Properties

Property	Type	Description
Degree+	String	The degree of parallelism used by the server set.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
QCSessionID+	String	The session identifier for the parallel coordinator.
QCInstanceID+	String	The instance number on which the parallel coordinator runs.
RequiredDegree+	String	The degree of parallelism requested by a user when a statement was issued. This value is prior to any resource, multi-user, or load balancing reductions.
ServerGroup+	String	The logical group of servers to which the cluster database process belongs.
ServerNumber+	String	The logical number of the cluster database process that is within a server set.
ServerSet+	String	The logical set of servers to which the cluster database process belongs. Single server groups have two server sets at the most.
SessionID*+	String	The session identifier.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleQueue

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 77. CIM class

CIM Name	ROOT\CIMV2: OracleQueue
MOF File Name	OracleQueue.mof
Description	The OracleQueue class makes properties that are associated with a database queue available.

Note: There are no parameters for this provider.

Table 78. Properties

Property	Type	Description
AvgReadyWait+	String	The average wait time of all READY messages in the queue.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
Expired+	String	The number of queue messages in the EXPIRED state.
QueueName*	String	The name of the specified queue.
QueueOwner*	String	The username of the queue owner.
QueueType	String	The type of the queue.
Ready+	String	The number of queue messages in the READY state.
TotalReadyWait+	String	The total wait time for all READY messages in the queue.
Waiting+	String	The number of queue messages in the state WAITING state.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleQueueSchedule

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 79. CIM class

CIM Name	ROOT\CIMV2: OracleQueueSchedule
MOF File Name	OracleQueueSchedule.mof
Description	The OracleQueueSchedule class makes properties that are associated with a database queue schedule available.

Note: There are no parameters for this provider.

Table 80. Properties

Property	Type	Description
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
Destination*	String	The destination name for the queue. This name is currently limited to be a DBLINK name.
Failures+	String	The number of times the execution failed. If this number is 16, the schedule will be disabled.
LastErrorDate	String	The date of the most recent unsuccessful execution.
LastErrorMsg	String	The error number and error message text for the most recent unsuccessful execution.
LastErrorTime	String	The time of the most recent unsuccessful execution.
LastRunDate	String	The date on the last successful execution.
LastRunTime	String	The time of the last successful execution. Time displays in an HH:MI:SS format.
NextRunDate	String	The date when the next schedule will start.
NextRunTime	String	The time of day when the next schedule will start. Time displays in an HH:MI:SS format.
PropagationRate+	String	The propagation rate for the specified schedule. The propagation rate is the total number of bytes propagated in this schedule divided by the total time, in seconds, spent by the system in executing this schedule.
QueueName*	String	The name of the specified queue.
QueueOwner*	String	The username of the queue owner.
ScheduleDisabled	String	Specifies if queue scheduling is enabled or disabled. N appears if scheduling is enabled, and Y if disabled. Disabled scheduling will not be executed.
StartDate	String	The date to start propagation. Date displays in the default date format.
StartTime	String	The time of day to start propagation. Time displays in an HH:MI:SS format.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleRedoLog

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 81. CIM class

CIM Name	ROOT\CIMV2: OracleRedoLog
MOF File Name	OracleRedoLog.mof
Description	The OracleRedoLog class makes properties that are associated with an online redo log available. An online redo log is a file that protects altered database data in memory that has not been written to the datafiles.

Note: There are no parameters for this provider.

Table 82. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
GroupID*	UInt32	The redo log group identifier number.
Member*	String	The name of the redo log member.
Status	String	The status of this log member. Status includes: INVALID (inaccessible file), STALE (incomplete file contents), DELETED (file is no longer used), or blank (file is in use).

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleRedoLogGroup

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 83. CIM class

CIM Name	ROOT\CIMV2: OracleRedoLogGroup
MOF File Name	OracleRedoLogGroup.mof
Description	The OracleRedoLogGroup class makes properties that are associated with a redo log group available. A redo log group is a grouping of redo logs for the purpose of multiplexing redo logs and safeguarding against corruption of one or more logs.

Note: There are no parameters for this provider.

Table 84. Properties

Property	Type	Description
Archived	String	The archive status as one of the following: YES if archiving is enabled, NO if archiving is disabled.
Bytes	Uint32	The byte size of the log.
FirstChangeID+	String	The lowest system change number in the log. Every committed transaction is assigned a unique system change number.
FirstTime	String	The time of the first system change number in the log. Every committed transaction is assigned a unique system change number.
GroupID*+	String	The Log group number.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Members+	String	The number of members in the selected log group.
Status	String	The current status for the monitored source. Log Group status includes Unused, Current, Active, Clearing, Clearing_Current, and Inactive.
ThreadID*+	String	The Log thread number.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleRollbackSegment

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 85. CIM class

CIM Name	ROOT\CIMV2: OracleRollbackSegment
MOF File Name	OracleRollbackSegment.mof
Description	The OracleRollbackSegment class makes properties that are associated with a rollback segment available. A rollback segment is an Oracle database structure that stores undo information for transactions.

Note: There are no parameters for this provider.

Table 86. Properties

Property	Type	Description
AverageActive+	String	The average number of bytes in active extents in the rollback segment, averaged over time.
AverageShrink+	String	The average number of bytes that are freed during a shrink for a rollback segment.
DatabaseName*	UInt32	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Extends+	String	The number of times that a rollback segment size is extended.
Extents+	String	The number of extents in the rollback segment.
Gets+	String	The number of header requests in a rollback segment.
InitialExtent+	String	The byte size assigned to the first extent of a segment at the time a segment is created. Oracle rounds extent sizes to multiples of 5 blocks if the size requested is greater than 5 blocks.
InstanceID	String	The identification of the rollback segment owning the Oracle Real Application Cluster instance number.
MaxExtents+	String	The maximum number of extents allowed for the specified segment.
NextExtent+	String	The byte size assigned to the next extent allocated to a segment.
SegmentID+	String	The identification number of the rollback segment.
SegmentName*	String	The name of the rollback segment.
SegmentOwner*	String	The username of the segment owner.
Shrinks+	String	The number of times the size of a rollback segment decreases in order to stay at the optimal size.
Status	String	One of the following status options for the rollback segment: Online, Offline, Partly Available, Invalid, or Pending Offline

Table 86. Properties (continued)

Property	Type	Description
TablespaceName	String	The name of the tablespace containing the rollback segment.
Waits+	String	The number of rollback segment header requests that resulted in waits.
Wraps+	String	The number of times a rollback segment entry has wrapped from one extent to another.
XActs+	String	The number of active transactions in a rollback segment.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSegment

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 87. CIM class

CIM Name	ROOT\CIMV2: OracleSegment
MOF File Name	OracleSegment.mof
Description	The OracleSegment class makes properties that are associated with a segment available. A segment is a set of extents that are allocated for a specific data structure and stored in the same Tablespace.

Note: There are no parameters for this provider.

Table 88. Properties

Property	Type	Description
CurrentBlocks+	String	The number of blocks currently allocated to the specified segment.
CurrentBytes+	String	The number of bytes currently allocated to the specified segment.
CurrentExtents+	String	The number of extents currently allocated to the specified segment.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
DatafileName	String	The name of the database file.
MaxExtents+	String	The maximum number of extents allowed for the specified segment.
NextExtent+	String	The byte size assigned to the next extent allocated to a segment.
SegmentName*	String	The name of the segment.
SegmentOwner*	String	The username of the segment owner.
SegmentType*	String	The type of the segment. Segment types include: index partition, table partition, table, cluster, index, rollback, deferred rollback, temporary, cache, lobsegment, and lobindex.
TablespaceName*	String	The name the tablespace in which this segment is contained. The name of the redo log member.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSequence

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 89. CIM class

CIM Name	ROOT\CIMV2: OracleSequence
MOF File Name	OracleSequence.mof
Description	The OracleSequence class makes properties that are associated with a sequence available. A sequence is a mechanism to generate a serial list of unique numbers for numeric columns of a database's tables.

Note: There are no parameters for this provider.

Table 90. Properties

Property	Type	Description
CacheSize+	String	The amount of sequence numbers to cache.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
IncrementBy+	String	The incremental value by which sequence is increased.
LastNumber+	String	The last sequence number written to a disk. If a sequence is caching, the number written is the last number placed in the sequence cache. This number is typically greater than the last sequence number that was used.
MaxValue+	String	The maximum value for the specified sequence.
MinValue+	String	The minimum value for the specified sequence.
SequenceName*	String	The name of the specified sequence.
SequenceOwner*	String	The username of the sequence owner.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSession

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 91. CIM class

CIM Name	ROOT\CIMV2: OracleSession
MOF File Name	OracleSession.mof
Description	The OracleSession class makes properties that are associated with a session available. A session is a user connection to an Oracle instance through a user process. A session begins when the user connects and ends when the user disconnects or exits the database application.

Note: There are no parameters for this provider.

Table 92. Properties

Property	Type	Description
AccessObject	String	The name of the object currently locked by this session.
AccessOwner	String	The owner of the object currently locked by this session.
GroupID*	UInt32	The redo log group identifier number.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
LockWait	String	The address of lock waiting for, or NULL if there is none.
LockWaitTime+	String	The time (in seconds) since current mode was granted.
LogonTime	String	The time of logon for the specified session.
Machine	String	The name of the machine where the client process is executing.
Member*	String	The name of the redo log member.
OpenCursors+	String	The number of cursors currently open by this session.
OSUser	String	The operating system user name.
Process	String	The process identifier of the client process.
Program	String	The name of the client program being executed by the client process.
Server	String	The server type as one of the following: dedicated, shared, pseudo, or none.
Status	String	The current status of the session: • ACTIVE – session is currently executing SQL • INACTIVE or KILLED – session is marked to be killed • CACHED – session is temporarily cached for use by Oracle*XA • SNIPED - session inactive or waiting on the client
SQLAddress	String	The address of the SQL statement used with SQL_HASH_VALUE to identify the SQL statement that is currently being executed.

Table 92. Properties (continued)

Property	Type	Description
SQLHashValue	String	The hash value of the SQL statement used with SQL_ADDRESS to identify the SQL statement that is currently being executed.
SQLText	String	The text piece of a SQL statement.
Type	String	The session type.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSessStat

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 93. CIM class

CIM Name	ROOT\CIMV2: OracleSessStat
MOF File Name	OracleSessStat.mof
Description	The OracleSessStat class makes properties that are associated with user session statistics available.

Note: There are no parameters for this provider.

Table 94. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
ClassName	String	The class name for the specified session.
SessionID*	UInt32	The session identifier.
StatName*	String	The statistic name for the specified session.
Value	String	The statistic value for the specified session.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSharedServer

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 95. CIM class

CIM Name	ROOT\CIMV2: OracleSharedServer
MOF File Name	OracleSharedServer.mof
Description	The OracleSharedServer class makes properties that are associated with a shared server process available.

Note: There are no parameters for this provider.

Table 96. Properties

Property	Type	Description
Breaks+	String	The total number of breaks.
Bytes+	String	The total number of bytes for all messages.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
Messages+	String	The number of messages processed by a shared server.
ProcessAddress	String	The process address for a shared server.
SharedServerName*	String	The name of the shared server.
Status	String	Specifies the status of the shared server. Shared server status includes: • EXEC – currently executing SQL • WAIT (ENQ) - waiting for a lock • WAIT (SEND) - waiting to send data to a user • WAIT (COMMON) – idle and waiting for a user request • WAIT (RESET) - waiting for a circuit to reset following a break • QUIT – terminating the server
TotalBusyTime+	String	The total busy time in hundredths of a second.
TotalIdleTime+	String	The total idle time as hundredths of a second.
TotalRequestsTaken+	String	The total number of requests taken from the common queue throughout the lifetime of the server.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSQLPlan

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 97. CIM class

CIM Name	ROOT\CIMV2: OracleSQLPlan
MOF File Name	OracleSQLPlan.mof
Description	The OracleSQLPlan class makes properties that are associated with the execution plan information for each child cursor loaded in the library cache available.

Note: There are no parameters for this provider.

Table 98. Properties

Property	Type	Description
Address*	String	The handle to the parent address for the specified cursor. The ADDRESS and HASH_VALUE columns can be joined with V$SQLAREA to add cursor-specific information.
HashValue*	UInt32	The hash value of a specified parent statement in the library cache. The ADDRESS and HASH_VALUE columns can be joined with V$SQLAREA to add cursor-specific information.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
ObjectName	String	The table name or index name.
ObjectOwner	String	The username of the user who owns the schema that contains the table or index.
Operation	String	The name of the internal operation that is performed in this step (for example, TABLE ACCESS).
Options	String	A variation on the operation listed in the OPERATION column (for example, FULL).
SQLText	String	A column that contains one piece of the SQL text.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleState

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 99. CIM class

CIM Name	ROOT\CIMV2: OracleState
MOF File Name	OracleState.mof
Description	The OracleState class makes properties that are associated with the state of an instance available.

Note: There are no parameters for this provider.

Table 100. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
State	String	Displays the current state of the instance. Possible states include: Available, Unavailable, Shutdown, Suspect, Unknown.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSysStat

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 101. CIM class

CIM Name	ROOT\CIMV2: OracleSysStat
MOF File Name	OracleSysStat.mof
Description	The OracleSysStat class makes properties that are associated with system statistics available.

Note: There are no parameters for this provider.

Table 102. Properties

Property	Type	Description
Class	UInt32	The number that represents a statistics class. The class numbers represent the following: 1 User, 2 Redo, 4 Enqueue, 8 Cache, 16 OS, 32 Oracle Real Application Cluster, 64 SQL, 128 Debug.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
StatName*	String	The name of the statistic.
Value	UInt32	The system statistic value.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleSystemEvent

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 103. CIM class

CIM Name	ROOT\CIMV2: OracleSystemEvent
MOF File Name	OracleSystemEvent.mof
Description	The OracleSystemEvent class makes properties that are associated with information on total waits for an event available.

Note: There are no parameters for this provider.

Table 104. Properties

Property	Type	Description
AverageWait+	String	The average amount of time waited for this event, in hundredths of a second.
Event*	String	The name of the wait event.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
TotalTimeouts+	String	The total number of timeouts for this event.
TimeWaited+	String	The total amount of time waited for this event, in hundredths of a second.
TotalWaits+	String	The total number of waits for this event.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleTable

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 105. CIM class

CIM Name	ROOT\CIMV2: OracleTable
MOF File Name	OracleTable.mof
Description	The OracleTable class makes properties that are associated with an Oracle table available.

Note: There are no parameters for this provider.

Table 106. Properties

Property	Type	Description
BufferPool	String	The default buffer pool for the specified object. NULL appears for partitioned tables.
ChainedRows+	String	The number of rows in a specified table that are chained rows. Chained rows are rows that are chained from one data block to another, or which have migrated to a new block, requiring a link to preserve the old ROWID.
ClusterName	String	The name of the cluster, if any, to which the table belongs.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
FreeListGroups+	String	The number of freelist groups allocated to this segment. NULL appears for partitioned tables.
FreeLists+	String	The number of process freelists allocated to this segment. NULL appears for partitioned tables.
InitialExtent+	String	The byte size assigned to the first extent of a segment at the time a segment is created. Oracle rounds extent sizes to multiples of 5 blocks if the size requested is greater than 5 blocks. NULL appears for partitioned tables.
MaxExtents+	String	The maximum number of extents allowed for the specified segment. NULL appears for partitioned tables.
NextExtent+	String	The byte size assigned to the next extent allocated to a segment. NULL appears for partitioned tables.
TableLock	String	Specifies whether table locking is enabled or disabled.
TableName*	String	The name of the specified table.
TableOwner*	String	The username of the table owner.
TablespaceName	String	The name of the tablespace containing the specified table. NULL appears for partitioned, temporary and index-organized tables.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleTablespace

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 107. CIM class

CIM Name	ROOT\CIMV2: OracleTablespace
MOF File Name	OracleTablespace.mof
Description	The OracleTablespace class makes properties that are associated with a tablespace available. A Tablespace is a logical unit of storage in an Oracle database.

Note: There are no parameters for this provider.

Table 108. Properties

Property	Type	Description
AllocatedBytes+	String	The total number of bytes dedicated for use by this tablespace. This value is the total sum of the datafiles included in the tablespace.
AllocationType	String	The type of extent allocation used for the tablespace.
Contents	String	The tablespace contents as PERMANENT or TEMPORARY.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
ExtentManagement	String	One of two ways to enable tablespaces to allocate space in extents, either by the data dictionary for dictionary-managed tablespaces, or by the tablespace for locally managed tablespaces. The method of extent management is selected when the tablespace is created. This method cannot be altered.
FreeBytes+	String	The number of unallocated bytes within this tablespace.
FSFI+	String	The Free Space Fragmentation Index. This index calculates the size of the largest extent as a percentage of the total free space without considering the number of extents in a tablespace.
InitialExtent+	String	The default byte size assigned to the first extent of a segment created within this tablespace. Oracle rounds extent sizes to multiples of 5 blocks if the size requested is greater than 5 blocks.
Logging	String	The default logging attribute.
MaxExtents+	String	The default maximum number of extents allowed for a segment created within this tablespace.
NextExtent+	String	The default byte size assigned to the next extent allocated to a segment created within this tablespace.
PctIncrease+	String	The default percent by which the size of the next allocated extent of a segment created within this tablespace is increased.

Table 108. Properties (continued)

Property	Type	Description
Status	String	Specifies the current tablespace status as either ONLINE, OFFLINE, or READ ONLY.
TablespaceID	String	The tablespace identifier.
TablespaceName*	String	The name of the tablespace. The tablespace name can contain up to 8 characters.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleTransaction

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 109. CIM class

CIM Name	ROOT\CIMV2: OracleTransaction
MOF File Name	OracleTransaction.mof
Description	The OracleTransaction class makes properties that are associated with a transaction available. A transaction is a logical unit of work containing one or more SQL statements.

Note: There are no parameters for this provider.

Table 110. Properties

Property	Type	Description
Address*	String	The location of the transaction state object.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
SessionID+	String	The session identifier for the specified transaction.
SQLText	String	The text piece of a SQL statement.
StartTime	String	The start time for the specified transaction.
TimeRunningSeconds+	String	The number of seconds the transaction has been running.
Username	String	The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleUndoStat

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Note: Use this CIM class to create resource models for Oracle 9i only.

Table 111. CIM class

CIM Name	ROOT\CIMV2: OracleUndoStat
MOF File Name	OracleUndoStat.mof
Description	The OracleUndoStat class makes properties that are associated with undo statistical data available.

Note: There are no parameters for this provider.

Table 112. Properties

Property	Type	Description
BeginTime*	String	The start of the specified instance time interval.
EndTime	String	The end of the specified instance time interval.
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
NoSpaceErrCnt+	String	Identifies the number of times space was requested in the undo tablespace, but no free space was available. That is, all of the space in the undo tablespace was in use by active transactions. To correct this, add more space to the undo tablespace.
SSOldErrCnt+	String	Snapshot Too Old error count.
UndoBlks+	String	The total number of consumed undo blocks. Use this column to obtain the consumption rate of undo blocks, and estimate the size of the undo tablespace required to accommodate your system workload.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleUnixProcess

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 113. CIM class

CIM Name	ROOT\CIMV2: OracleUnixProcess
MOF File Name	OracleUnixProcess.mof
Description	The OracleUnixProcess class makes properties that are associated with a Unix process running by way of Oracle available.

Note: There are no parameters for this provider.

Table 114. Properties

Property	Type	Description
InstanceName*	String	The name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file and corresponds to the Oracle System Identifier (SID) of the instance.
OSProcessID	String	A unique integer used by the operating system kernel to identify a process.
ProcessName*	String	The name of a process used to uniquely identify that process.
Username	String	The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

OracleUser

Description

The following tables detail the CIM class, parameters, properties, exceptions, and dependencies of this provider.

Table 115. CIM class

CIM Name	ROOT\CIMV2: OracleUser
MOF File Name	OracleUser.mof
Description	The OracleUser class makes properties that are associated with a user of the database available.

Note: There are no parameters for this provider.

Table 116. Properties

Property	Type	Description
AccountStatus	String	The current status of the account. Status includes: locked, expired, or unlocked.
Created	String	The date of creation for the user account.
DatabaseName*	String	The name of an Oracle database. The database name contains up to 8 characters and corresponds to the name specified in the CREATE DATABASE statement and identified in the DB_NAME parameter in the database initialization parameter file.
DefaultTablespace	String	The default tablespace for data storage.
ExpiryDate	String	The date of user account expiration.
LockDate	String	The date the account was locked, if the account status is locked.
Profile	String	The user resource profile name.
TempTablespace	String	The default tablespace for temporary table storage.
UserID	String	The identification number of the user connected to the server.
UserName*	String	The name of the user as recognized by the Oracle server and other users so that the user can connect to and access objects in a database. Each user name is associated with a password that also must be entered to connect to an Oracle database.

Note: * Denotes a CIM key property. + Denotes a CIM numeric property being represented as a string. This value must be cast to a number in the resource model using the Javascript Number object.

Appendix D. Tivoli Enterprise Console classes

This appendix contains the Tivoli Enterprise Console classes delivered with IBM Tivoli Monitoring for Databases: Oracle. The classes contain the new slot values for the event.

Slots are the fields in a Tivoli event. All Tivoli events have a base set of slots as described in the *Tivoli Enterprise Console User's Guide*. In addition to these slots, IBM Tivoli Monitoring for Databases: Oracle adds slots for additional information. You can reference these classes and slots to assist you in writing your own business rules.

Tasks

Collectively, the task files implement the following class hierarchy:

```
Event
  ESMTask
    OracleTask_Succeeded
    OracleTask_Failed
    OracleTask_Abend
```

ESMTask.baroc:

```
TEC_CLASS:
        ESMTask ISA EVENT
        DEFINES {
                taskname: STRING;
                tasklib: STRING;
                collection: STRING;
                source: default=ESMTASK;
                endpoint: STRING;
                exit_code: INTEGER;
           };
END
```

OracleTask.baroc:

```
TEC_CLASS :
        OracleTask_Succeeded ISA ESMTask
        DEFINES {
        severity: default=HARMLESS;
        };
END

TEC_CLASS :
        OracleTask_Failed ISA ESMTask
        DEFINES {
        severity: default=WARNING;
        };
END

TEC_CLASS :
        OracleTask_Abend ISA ESMTask
        DEFINES {
        severity: default=CRITICAL;
        };
END
```

Resource models

Collectively, the resource model files implement the following class hierarchy:

```
TMW_Event
  ITMSystem_Base
  ITMDatabase_Base
    ITMOracle_Base
      Oracle_Database
        individual database resource model classes
      Oracle_Instance
        individual instance resource model classes
```

ITMApplications.baroc:

```
TEC_CLASS :
        ITMSystem_Base ISA TMW_Event;
END

TEC_CLASS :
        ITMDatabase_Base ISA TMW_Event;
END
```

ITMOracle.baroc:

```
TEC_CLASS :
        ITMOracle_Base ISA ITMDatabase_Base
        DEFINES {
  interp      : STRING;
  context      : STRING;
  oracle_home     : STRING;
  oracle_sid     : STRING;
  application_oid     : STRING;
  application_version : STRING;
  application_class   : STRING;
  application_label   : STRING;
        };
END

TEC_CLASS :
        Oracle_Database ISA ITMOracle_Base;
END

TEC_CLASS :
        Oracle_Instance ISA ITMOracle_Base;
END
```

ITMOracleResourceModels.baroc:

OracleAdvancedQueue resource model

Oracle_High_AverageReadyMessageWaitingTimeInDays

```
        TEC_CLASS :
         Oracle_High_AverageReadyMessageWaitingTimeInDays ISA Oracle_Instance
         DEFINES {
          databasename : STRING;
          queuename : STRING;
          queueowner : STRING;
          threshold : REAL;
          averagereadywait : REAL;

          severity: default = CRITICAL;
         };
        END
```

Oracle_High_AverageReadyMessageWaitingTimeInHours

```
TEC_CLASS :
 Oracle_High_AverageReadyMessageWaitingTimeInHours ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  averagereadywait : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_AverageReadyMessageWaitingTimeInMinutes

```
TEC_CLASS :
 Oracle_High_AverageReadyMessageWaitingTimeInMinutes ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  averagereadywait : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_AverageReadyMessageWaitingTimeInSeconds

```
TEC_CLASS :
 Oracle_High_AverageReadyMessageWaitingTimeInSeconds ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  averagereadywait : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_MessagePropagationErrorCount

```
TEC_CLASS :
 Oracle_High_MessagePropagationErrorCount ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  destination : STRING;
  lasterrordate : STRING;
  lasterrortime : STRING;
  lasterrormsg : STRING;
  threshold : REAL;
  failures : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_NumberOfMessages

```
TEC_CLASS :
 Oracle_High_NumberOfMessages ISA Oracle_Instance
 DEFINES {
  messagestatus : STRING;
  queueowner : STRING;
  queuename : STRING;
  databasename : STRING;
```

```
  threshold : REAL;
  numberofmessages : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_TotalReadyMessageWaitingTimeInDays

```
TEC_CLASS :
 Oracle_High_TotalReadyMessageWaitingTimeInDays ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  totalreadywait : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_TotalReadyMessageWaitingTimeInHours

```
TEC_CLASS :
 Oracle_High_TotalReadyMessageWaitingTimeInHours ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  totalreadywait : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_TotalReadyMessageWaitingTimeInMinutes

```
TEC_CLASS :
 Oracle_High_TotalReadyMessageWaitingTimeInMinutes ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  totalreadywait : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_TotalReadyMessageWaitingTimeInSeconds

```
TEC_CLASS :
 Oracle_High_TotalReadyMessageWaitingTimeInSeconds ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  totalreadywait : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_AverageMessagePropagationRate

```
TEC_CLASS :
 Oracle_Low_AverageMessagePropagationRate ISA Oracle_Instance
 DEFINES {
```

```
  databasename : STRING;
  queuename : STRING;
  queueowner : STRING;
  threshold : REAL;
  averagemessagepropagationrate : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleArchiveDest resource model

Oracle_High_UsedKB

```
TEC_CLASS :
 Oracle_High_UsedKB ISA Oracle_Database
 DEFINES {
  instancename : STRING;
  destination : STRING;
  binding : STRING;
  faildate : STRING;
  mountpoint : STRING;
  namespace : STRING;
  target : STRING;
  error : STRING;
  archivingstatus : STRING;
  threshold : REAL;
  failsequence : REAL;
  failblock : REAL;
  freekbytes : REAL;
  totalkbytes : REAL;
  freespacepercentage : REAL;
  usedkbytes : REAL;
  destid : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Invalid_ArchiveDestination

```
TEC_CLASS :
 Oracle_Invalid_ArchiveDestination ISA Oracle_Database
 DEFINES {
  destination : STRING;
  binding : STRING;
  faildate : STRING;
  error : STRING;
  mountpoint : STRING;
  namespace : STRING;
  target : STRING;
  instancename : STRING;
  archivingstatus : STRING;
  failsequence : REAL;
  failblock : REAL;
  destid : REAL;
  totalkbytes : REAL;
  freekbytes : REAL;
  freespacepercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_FreeKB

```
TEC_CLASS :
 Oracle_Low_FreeKB ISA Oracle_Database
 DEFINES {
  destination : STRING;
```

```
  binding : STRING;
  faildate : STRING;
  error : STRING;
  mountpoint : STRING;
  namespace : STRING;
  target : STRING;
  instancename : STRING;
  archivingstatus : STRING;
  threshold : REAL;
  failsequence : REAL;
  failblock : REAL;
  freekbytes : REAL;
  totalkbytes : REAL;
  freespacepercentage : REAL;
  usedkbytes : REAL;
  destid : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_FreeSpacePercentage

```
TEC_CLASS :
 Oracle_Low_FreeSpacePercentage ISA Oracle_Database
 DEFINES {
  destination : STRING;
  binding : STRING;
  faildate : STRING;
  error : STRING;
  mountpoint : STRING;
  namespace : STRING;
  target : STRING;
  instancename : STRING;
  archivingstatus : STRING;
  failsequence : REAL;
  failblock : REAL;
  freekbytes : REAL;
  totalkbytes : REAL;
  usedkbytes : REAL;
  destid : REAL;
  freespacepercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_NumberRedoLogs

```
TEC_CLASS :
 Oracle_Low_NumberRedoLogs ISA Oracle_Database
 DEFINES {
  instancename : STRING;
  destination : STRING;
  binding : STRING;
  namespace : STRING;
  target : STRING;
  faildate : STRING;
  error : STRING;
  mountpoint : STRING;
  archivingstatus : STRING;
  destid : REAL;
  failsequence : REAL;
  failblock : REAL;
  totalkbytes : REAL;
  freekbytes : REAL;
  threshold : REAL;
  freespacepercentage : REAL;
```

```
  usedkbytes : REAL;
  numberredologs : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_NotArchiving_LogMode

```
TEC_CLASS :
 Oracle_NotArchiving_LogMode ISA Oracle_Database
 DEFINES {
  logmode : STRING;
  databasename : STRING;

  severity: default = CRITICAL;
 };
END
```

OracleCheckpoints resource model

Oracle_High_DBWRCheckpoints

```
TEC_CLASS :
 Oracle_High_DBWRCheckpoints ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  dbwrcheckpoints : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_CompletedBackgroundCheckpoints

```
TEC_CLASS :
 Oracle_Low_CompletedBackgroundCheckpoints ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  completedbackgroundcheckpoints : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleDumpSpace resource model

Oracle_High_Used_Dump_Space_Percentage

```
TEC_CLASS :
 Oracle_High_Used_Dump_Space_Percentage ISA Oracle_Database
 DEFINES {
  instancename : STRING;
  type : STRING;
  destination : STRING;
  threshold : REAL;
  usedpercentage : REAL;
  freekbytes : REAL;
  totalkbytes : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleExtents resource model

Oracle_High_CurrentExtents

```
TEC_CLASS :
 Oracle_High_CurrentExtents ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  segmentname : STRING;
  segmentowner : STRING;
  segmenttype : STRING;

  currentextents : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleExtentsByTablespace

Oracle_High_CurrentExtentsByTablespace

```
TEC_CLASS :
 Oracle_High_CurrentExtentsByTablespace ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  segmentname : STRING;
  segmenttype : STRING;
  segmentowner : STRING;
  currentextents : REAL;
  pctextentsallocated : REAL;
  freeextents : REAL;
  maxextents : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleExtentsByUser resource model

Oracle_High_CurrentExtentsByUser

```
TEC_CLASS :
 Oracle_High_CurrentExtentsByUser ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  segmentname : STRING;
  segmentowner : STRING;
  segmenttype : STRING;
  currentextents : REAL;
  maxextents : REAL;
  freeextents : REAL;
  pctextentsallocated : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreeFormSQLNumber resource model

Oracle_DecreasesBelowSQLNumber

```
TEC_CLASS :
 Oracle_DecreasesBelowSQLNumber ISA Oracle_Instance
 DEFINES {
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
```

```
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_DoesNotEqualSQLNumber

```
TEC_CLASS :
 Oracle_DoesNotEqualSQLNumber ISA Oracle_Instance
 DEFINES {
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_EqualsSQLNumber

```
TEC_CLASS :
 Oracle_EqualsSQLNumber ISA Oracle_Instance
 DEFINES {
  result : STRING;
  threshold : STRING;
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;

  severity: default = WARNING;
 };
END
```

Oracle_GreaterThanSQLNumber

```
TEC_CLASS :
 Oracle_GreaterThanSQLNumber ISA Oracle_Instance
 DEFINES {
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_IncreaseOfSQLNumber

```
TEC_CLASS :
 Oracle_IncreaseOfSQLNumber ISA Oracle_Instance
 DEFINES {
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_IncreasesBeyondSQLNumber

```
TEC_CLASS :
 Oracle_IncreasesBeyondSQLNumber ISA Oracle_Instance
 DEFINES {
```

```
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_LessThanSQLNumber

```
TEC_CLASS :
 Oracle_LessThanSQLNumber ISA Oracle_Instance
 DEFINES {
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_PctIncreaseOfSQLNumber

```
TEC_CLASS :
 Oracle_PctIncreaseOfSQLNumber ISA Oracle_Instance
 DEFINES {
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;
  result : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

OracleFreeFormSQLString resource model

Oracle_ChangesFromSQLString

```
TEC_CLASS :
 Oracle_ChangesFromSQLString ISA Oracle_Instance
 DEFINES {
  result : STRING;
  threshold : STRING;
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;

  severity: default = WARNING;
 };
END
```

Oracle_ChangesToSQLString

```
TEC_CLASS :
 Oracle_ChangesToSQLString ISA Oracle_Instance
 DEFINES {
  result : STRING;
  threshold : STRING;
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;

  severity: default = WARNING;
 };
END
```

Oracle_MatchesSQLString

```
TEC_CLASS :
 Oracle_MatchesSQLString ISA Oracle_Instance
 DEFINES {
  result : STRING;
  threshold : STRING;
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;

  severity: default = WARNING;
 };
END
```

Oracle_MismatchesSQLString

```
TEC_CLASS :
 Oracle_MismatchesSQLString ISA Oracle_Instance
 DEFINES {
  result : STRING;
  threshold : STRING;
  sql : STRING;
  databasename : STRING;
  metriclabel : STRING;

  severity: default = WARNING;
 };
END
```

OracleFreeSpaceDeficit resource model

Oracle_Low_Equity

```
TEC_CLASS :
 Oracle_Low_Equity ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  segmentname : STRING;
  segmentowner : STRING;
  segmenttype : STRING;
  equity : REAL;
  nextextent : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreeSpaceDeficitByTablespace resource model

Oracle_Low_EquityByTablespace

```
TEC_CLASS :
 Oracle_Low_EquityByTablespace ISA Oracle_Database
 DEFINES {
  segmentname : STRING;
  segmenttype : STRING;
  tablespacename : STRING;
  segmentowner : STRING;
  databasename : STRING;
  equity : REAL;
  nextextent : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreeSpaceDeficitByUser resource model

Oracle_Low_EquityByUser

```
TEC_CLASS :
 Oracle_Low_EquityByUser ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  segmentname : STRING;
  segmenttype : STRING;
  segmentowner : STRING;
  threshold : REAL;
  equity : REAL;
  nextextent : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreespaceFragmentation resource model

Oracle_Low_FreeSpaceFragmentationIndex

```
TEC_CLASS :
 Oracle_Low_FreeSpaceFragmentationIndex ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  freespacefragmentationindex : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreespaceFragmentationByTablespace resource model

Oracle_Low_FreeSpaceFragmentationIndexByTablespace

```
TEC_CLASS :
 Oracle_Low_FreeSpaceFragmentationIndexByTablespace ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  freespacefragmentationindex : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreeTablespace resource model

Oracle_Low_PercentFreeTablespace

```
TEC_CLASS :
 Oracle_Low_PercentFreeTablespace ISA Oracle_Database
 DEFINES {
  tablespacename : STRING;
  databasename : STRING;
  percentfreebytes : REAL;
  mbfree : REAL;
  mbused : REAL;
  mballocated : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFreeTablespaceByTablespace resource model

Oracle_Low_PercentFreeTablespaceByTablespace

```
TEC_CLASS :
 Oracle_Low_PercentFreeTablespaceByTablespace ISA Oracle_Database
 DEFINES {
  tablespacename : STRING;
  databasename : STRING;
  percentfreebytes : REAL;
  mballocated : REAL;
  mbfree : REAL;
  mbused : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleFullTableScan resource model

Oracle_High_LongTableFullTableScans

```
TEC_CLASS :
 Oracle_High_LongTableFullTableScans ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervallongtablefulltablescans : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RowSourcePercentage

```
TEC_CLASS :
 Oracle_High_RowSourcePercentage ISA Oracle_Database
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  rowsourcepercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleIO resource model

Oracle_High_PhysicalReads

```
TEC_CLASS :
 Oracle_High_PhysicalReads ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  tablespacename : STRING;
  filename : STRING;
  physicalreads : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_PhysicalWrites

```
TEC_CLASS :
 Oracle_High_PhysicalWrites ISA Oracle_Instance
 DEFINES {
```

```
  databasename : STRING;
  tablespacename : STRING;
  filename : STRING;
  physicalwrites : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleJobQueue resource model

Oracle_High_JobFailures

```
TEC_CLASS :
 Oracle_High_JobFailures ISA Oracle_Instance
 DEFINES {
  loguser : STRING;
  schemauser : STRING;
  lastsuccessdate : STRING;
  nextdate : STRING;
  interval : STRING;
  databasename : STRING;
  jobid : REAL;
  threshold : REAL;
  failures : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_JobBroken

```
TEC_CLASS :
 Oracle_JobBroken ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  loguser : STRING;
  schemauser : STRING;
  lastsuccessdate : STRING;
  jobid : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_JobPastDue

```
TEC_CLASS :
 Oracle_JobPastDue ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  lastsuccessdate : STRING;
  interval : STRING;
  nextdate : STRING;
  jobid : REAL;
  threshold : REAL;
  delayminutes : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleListenerState resource model

Oracle_Becomes_Available_ListenerState

```
TEC_CLASS :
 Oracle_Becomes_Available_ListenerState ISA Oracle_Database
 DEFINES {
  listenername : STRING;
```

```
  listenerstate : STRING;

  severity: default = HARMLESS;
 };
END
```

Oracle_Becomes_Unavailable_ListenerState

```
TEC_CLASS :
 Oracle_Becomes_Unavailable_ListenerState ISA Oracle_Database
 DEFINES {
  listenername : STRING;
  listenerstate : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Becomes_Unknown_ListenerState

```
TEC_CLASS :
 Oracle_Becomes_Unknown_ListenerState ISA Oracle_Database
 DEFINES {
  listenername : STRING;
  listenerstate : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Unavailable_ListenerState

```
TEC_CLASS :
 Oracle_Unavailable_ListenerState ISA Oracle_Database
 DEFINES {
  listenername : STRING;
  listenerstate : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Unknown_ListenerState

```
TEC_CLASS :
 Oracle_Unknown_ListenerState ISA Oracle_Database
 DEFINES {
  listenername : STRING;
  listenerstate : STRING;
  errormsg : STRING;

  severity: default = CRITICAL;
 };
END
```

OracleLock resource model

Oracle_High_Deadlocks

```
TEC_CLASS :
 Oracle_High_Deadlocks ISA Oracle_Instance
 DEFINES {
                instancename : STRING;
  threshold : REAL;
  deadlocks : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_DMLLocksPercentage

```
TEC_CLASS :
 Oracle_High_DMLLocksPercentage ISA Oracle_Instance
 DEFINES {
                instancename : STRING;
  threshold : REAL;
  dmllockspercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_EnqueueTimeouts

```
TEC_CLASS :
 Oracle_High_EnqueueTimeouts ISA Oracle_Instance
 DEFINES {
                instancename : STRING;
  threshold : REAL;
  enqueuetimeouts : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_LockCount

```
TEC_CLASS :
 Oracle_High_LockCount ISA Oracle_Instance
 DEFINES {
                instancename : STRING;
  type : STRING;
  threshold : REAL;
  lockcount : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleLogEvent resource model

Oracle_Log_Event_Category_Zero

```
TEC_CLASS :
 Oracle_Log_Event_Category_Zero ISA Oracle_Instance
 DEFINES {
  data1: INTEGER;
  data2: STRING;
  instancename : STRING;
  filename : STRING;
  text : STRING;
  offset : REAL;
  logeventseverity : REAL;

  severity: default = FATAL;
 };
END
```

Oracle_Log_Event_Category_One

```
TEC_CLASS :
 Oracle_Log_Event_Category_One ISA Oracle_Instance
 DEFINES {
  data1: INTEGER;
  data2: STRING;
  instancename : STRING;
  filename : STRING;
  text : STRING;
  offset : REAL;
  logeventseverity : REAL;
```

```
  severity: default = CRITICAL;
 };
END
```

Oracle_Log_Event_Category_Two

```
TEC_CLASS :
 Oracle_Log_Event_Category_Two ISA Oracle_Instance
 DEFINES {
  data1: INTEGER;
  data2: STRING;
  instancename : STRING;
  filename : STRING;
  text : STRING;
  offset : REAL;
  logeventseverity : REAL;

  severity: default = MINOR;
 };
END
```

Oracle_Log_Event_Category_Three

```
TEC_CLASS :
 Oracle_Log_Event_Category_Three ISA Oracle_Instance
 DEFINES {
  data1: INTEGER;
  data2: STRING;
  instancename : STRING;
  filename : STRING;
  text : STRING;
  offset : REAL;
  logeventseverity : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_Log_Event_Category_Four

```
TEC_CLASS :
 Oracle_Log_Event_Category_Four ISA Oracle_Instance
 DEFINES {
  data1: INTEGER;
  data2: STRING;
  instancename : STRING;
  filename : STRING;
  text : STRING;
  offset : REAL;
  logeventseverity : REAL;

  severity: default = HARMLESS;
 };
END
```

OracleMaximumExtents resource model

Oracle_Low_FreeExtents

```
TEC_CLASS :
 Oracle_Low_FreeExtents ISA Oracle_Database
 DEFINES {
  tablespacename : STRING;
  databasename : STRING;
  segmentname : STRING;
  segmentowner : STRING;
  segmenttype : STRING;
  freeextents : REAL;
  maxextents : REAL;
  currentextents : REAL;
```

```
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleMaximumExtentsByTablespace resource model

Oracle_Low_FreeExtentsByTablespace

```
TEC_CLASS :
 Oracle_Low_FreeExtentsByTablespace ISA Oracle_Database
 DEFINES {
  tablespacename : STRING;
  segmentowner : STRING;
  segmenttype : STRING;
  segmentname : STRING;
  databasename : STRING;
  freeextents : REAL;
  currentextents : REAL;
  maxextents : REAL;
  pctextentsallocated : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleMaximumExtentsByUser resource model

Oracle_Low_FreeExtentsByUser

```
TEC_CLASS :
 Oracle_Low_FreeExtentsByUser ISA Oracle_Database
 DEFINES {
  segmentname : STRING;
  segmenttype : STRING;
  tablespacename : STRING;
  segmentowner : STRING;
  databasename : STRING;
  freeextents : REAL;
  currentextents : REAL;
  maxextents : REAL;
  pctextentsallocated : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleMTS resource model

Oracle_High_DispatcherBusyPercentage

```
TEC_CLASS :
 Oracle_High_DispatcherBusyPercentage ISA Oracle_Instance
 DEFINES {
  protocol : STRING;
  busypercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_DispatcherWaitTime

```
TEC_CLASS :
 Oracle_High_DispatcherWaitTime ISA Oracle_Instance
 DEFINES {
```

```
  protocol : STRING;
  dispatcherwaittime : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_SharedServerProcessHWMPercentage

```
TEC_CLASS :
 Oracle_High_SharedServerProcessHWMPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  sharedserverprocesshwmpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_SharedServerProcessPercentage

```
TEC_CLASS :
 Oracle_High_SharedServerProcessPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  sharedserverprocesspercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_SharedServerRequestQueueWaitTime

```
TEC_CLASS :
 Oracle_High_SharedServerRequestQueueWaitTime ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  sharedserverwaittime : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleOtherPerformance resource model

Oracle_High_ChangedBlockPercentage

```
TEC_CLASS :
 Oracle_High_ChangedBlockPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  changedblockpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_FreelistWaitsRatio

```
TEC_CLASS :
 Oracle_High_FreelistWaitsRatio ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  freelistwaitsratio : REAL;
```

```
  severity: default = CRITICAL;
 };
END
```

Oracle_High_OpenCursors

```
TEC_CLASS :
 Oracle_High_OpenCursors ISA Oracle_Instance
 DEFINES {
  username : STRING;
  server : STRING;
  logontime : STRING;
  process : STRING;
  lockwaittime : STRING;
  processaddress : STRING;
  program : STRING;
  lockwait : STRING;
  accessobject : STRING;
  type : STRING;
  accessowner : STRING;
  osuser : STRING;
  machine : STRING;
  sqlhashvalue : STRING;
  sqltext : STRING;
  sqladdress : STRING;
  instancename : STRING;
  sessionstatus : STRING;
  sessionid : REAL;
  threshold : REAL;
  opencursors : REAL;
  opencursorspercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_ProcessPercentage

```
TEC_CLASS :
 Oracle_High_ProcessPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  processpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_SessionPercentage

```
TEC_CLASS :
 Oracle_High_SessionPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  sessionpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_SortOverflowPercentage

```
TEC_CLASS :
 Oracle_High_SortOverflowPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  sortoverflowpercentage : REAL;
```

```
  severity: default = CRITICAL;
 };
END
```

Oracle_High_SysStat

```
TEC_CLASS :
 Oracle_High_SysStat ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  statname : STRING;
  threshold : REAL;
  value : REAL;
  classnumber : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_BlockGetRate

```
TEC_CLASS :
 Oracle_Low_BlockGetRate ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  threshold : REAL;
  blockgetrate : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_SysStat

```
TEC_CLASS :
 Oracle_Low_SysStat ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  statname : STRING;
  threshold : REAL;
  classnumber : REAL;
  value : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Unavailable_HeterogeneousAgent

```
TEC_CLASS :
 Oracle_Unavailable_HeterogeneousAgent ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  agenttype : STRING;
  program : STRING;
  machine : STRING;
  osuser : STRING;
  processid : STRING;
  agentid : REAL;
  runningdays : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleOtherStorage resource model

Oracle_High_ClusterChainedRows

```
TEC_CLASS :
 Oracle_High_ClusterChainedRows ISA Oracle_Instance
 DEFINES {
  clusterowner : STRING;
  clustername : STRING;
  threshold : REAL;
  clusterchainedrows : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_ClusterKeyRatio

```
TEC_CLASS :
 Oracle_High_ClusterKeyRatio ISA Oracle_Instance
 DEFINES {
                instancename: STRING;
  threshold : REAL;
  clusterkeyratio : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_ContinuedRowPercentage

```
TEC_CLASS :
 Oracle_High_ContinuedRowPercentage ISA Oracle_Instance
 DEFINES {
                instancename: STRING;
  threshold : REAL;
  continuedrowpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_PercentageDeleted

```
TEC_CLASS :
 Oracle_High_PercentageDeleted ISA Oracle_Instance
 DEFINES {
  indexname : STRING;
  indexowner : STRING;
  threshold : REAL;
  percentagedeleted : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_TableChainedRows

```
TEC_CLASS :
 Oracle_High_TableChainedRows ISA Oracle_Instance
 DEFINES {
  tableowner : STRING;
  tablename : STRING;
  threshold : REAL;
  tablechainedrows : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_NumberOfDatafiles

```
TEC_CLASS :
 Oracle_Low_NumberOfDatafiles ISA Oracle_Instance
 DEFINES {
                databasename: STRING;
```

```
  numberofdatafiles : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OraclePGA resource model

Oracle_High_PGAMultipassExecutions

```
TEC_CLASS :
 Oracle_High_PGAMultipassExecutions ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  pgamultipassexecutions : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_PGAOptimalPercentage

```
TEC_CLASS :
 Oracle_High_PGAOptimalPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  pgaoptimalpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_PGAComponentArea

```
TEC_CLASS :
 Oracle_Low_PGAComponentArea ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  pgacomponentarea : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_PGAWorkAreaMaxSize

```
TEC_CLASS :
 Oracle_Low_PGAWorkAreaMaxSize ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  pgaworkareamaxsize : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_PGAWorkAreaPercentage

```
TEC_CLASS :
 Oracle_Low_PGAWorkAreaPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
```

```
  pgaworkareapercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleProcessState resource model

Oracle_Low_Processes

```
TEC_CLASS :
 Oracle_Low_Processes ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  processname : STRING;
  threshold : REAL;
  numrunning : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_Unavailable_Process

```
TEC_CLASS :
 Oracle_Unavailable_Process ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  processname : STRING;

  severity: default = CRITICAL;
 };
END
```

OracleRDBMSState resource model

Oracle_Becomes_Available_RDBMSState

```
TEC_CLASS :
 Oracle_Becomes_Available_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;
  previousstate : STRING;

  severity: default = HARMLESS;
 };
END
```

Oracle_Becomes_Shutdown_RDBMSState

```
TEC_CLASS :
 Oracle_Becomes_Shutdown_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;
  previousstate : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Becomes_Suspect_RDBMSState

```
TEC_CLASS :
 Oracle_Becomes_Suspect_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;
  previousstate : STRING;
```

```
  severity: default = CRITICAL;
 };
END
```

Oracle_Becomes_Unavailable_RDBMSState

```
TEC_CLASS :
 Oracle_Becomes_Unavailable_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;
  previousstate : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Becomes_Unknown_RDBMSState

```
TEC_CLASS :
 Oracle_Becomes_Unknown_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;
  previousstate : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Shutdown_RDBMSState

```
TEC_CLASS :
 Oracle_Shutdown_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Suspect_RDBMSState

```
TEC_CLASS :
 Oracle_Suspect_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Unavailable_RDBMSState

```
TEC_CLASS :
 Oracle_Unavailable_RDBMSState ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
  state : STRING;

  severity: default = CRITICAL;
 };
END
```

Oracle_Unknown_RDBMSState

```
TEC_CLASS :
 Oracle_Unknown_RDBMSState ISA Oracle_Instance
 DEFINES {
```

```
  instancename : STRING;
  state : STRING;

  severity: default = CRITICAL;
 };
END
```

OracleRecursiveCalls resource model

Oracle_High_IntervalRecursiveCallPercentage

```
TEC_CLASS :
 Oracle_High_IntervalRecursiveCallPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
                threshold : STRING;
  intervalrecursivecallpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RecursiveCallPercentage

```
TEC_CLASS :
 Oracle_High_RecursiveCallPercentage ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
                threshold : STRING;
  recursivecallpercentage : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RecursiveCallRate

```
TEC_CLASS :
 Oracle_High_RecursiveCallRate ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
                threshold : STRING;
  recursivecallrate : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RecursiveToUserCallsRatio

```
TEC_CLASS :
 Oracle_High_RecursiveToUserCallsRatio ISA Oracle_Instance
 DEFINES {
  instancename : STRING;
                threshold : STRING;
  recursivetousercallsratio : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleRedoLog resource model

Oracle_High_AvgRedoEntrySize

```
TEC_CLASS :
 Oracle_High_AvgRedoEntrySize ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  avgredoentrysize : REAL;
```

```
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_IntervalRedoLogSpaceWaits

```
TEC_CLASS :
 Oracle_High_IntervalRedoLogSpaceWaits ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervalredologspacewaits : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RedoAllocationLatchPercentage

```
TEC_CLASS :
 Oracle_High_RedoAllocationLatchPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  redoallocationlatchpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RedoCopyLatchPercentage

```
TEC_CLASS :
 Oracle_High_RedoCopyLatchPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  redocopylatchpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RedoCopyLatchPercentageIncrease

```
TEC_CLASS :
 Oracle_High_RedoCopyLatchPercentageIncrease ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  redocopylatchpercentageincrease : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RedoLogsNotArchived

```
TEC_CLASS :
 Oracle_High_RedoLogsNotArchived ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  redologsnotarchived : REAL;
  threshold : REAL;
```

```
  severity: default = CRITICAL;
 };
END
```

Oracle_High_RedoSmallCopyPercentage

```
TEC_CLASS :
 Oracle_High_RedoSmallCopyPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  redosmallcopypercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleRollbackSegment resource model

Oracle_High_ConsistentChangePercentage

```
TEC_CLASS :
 Oracle_High_ConsistentChangePercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  consistentchangepercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_RollbackWaitsPercentage

```
TEC_CLASS :
 Oracle_High_RollbackWaitsPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  rollbackwaitspercentage : REAL;
  threshold : REAL;

  severity: default = WARNING;
 };
END
```

Oracle_High_UserRollbackPercentage

```
TEC_CLASS :
 Oracle_High_UserRollbackPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  userrollbackpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleSGA resource model

Oracle_High_BufferCacheHitPercentage

```
TEC_CLASS :
 Oracle_High_BufferCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
```

```
  buffercachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_BufferWaitsPercentage

```
TEC_CLASS :
 Oracle_High_BufferWaitsPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  bufferwaitspercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_DictionaryCacheHitPercentage

```
TEC_CLASS :
 Oracle_High_DictionaryCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  dictionarycachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_IntervalBufferCacheHitPercentage

```
TEC_CLASS :
 Oracle_High_IntervalBufferCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervalbuffercachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_IntervalDictionaryCacheHitPercentage

```
TEC_CLASS :
 Oracle_High_IntervalDictionaryCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervaldictionarycachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_BufferCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_BufferCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  buffercachehitpercentage : REAL;
  threshold : REAL;
```

```
  severity: default = WARNING;
 };
END
```

Oracle_Low_KeepCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_KeepCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  keepcachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_DictionaryCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_DictionaryCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  dictionarycachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_IntervalBufferCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_IntervalBufferCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervalbuffercachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_IntervalDictionaryCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_IntervalDictionaryCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervaldictionarycachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_IntervalKeepCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_IntervalKeepCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  keepcachehitpercentage : REAL;
  threshold : REAL;
```

```
  severity: default = CRITICAL;
 };
END
```

Oracle_Low_IntervalLibraryCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_IntervalLibraryCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervallibrarycachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_IntervalRecycleCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_IntervalRecycleCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  intervalrecyclecachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_LibraryCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_LibraryCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  librarycachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_Low_RecycleCacheHitPercentage

```
TEC_CLASS :
 Oracle_Low_RecycleCacheHitPercentage ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  recyclecachehitpercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleTemporaryExtents resource model

Oracle_Low_FreeTempExtents

```
TEC_CLASS :
 Oracle_Low_FreeTempExtents ISA Oracle_Database
 DEFINES {
  segmentname : STRING;
  segmenttype : STRING;
  segmentowner : STRING;
  tablespacename : STRING;
```

```
  databasename : STRING;
  freeextents : REAL;
  maxextents : REAL;
  currentextents : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleTemporaryExtentsByTablespace resource model

Oracle_Low_FreeTempExtentsByTablespace

```
TEC_CLASS :
 Oracle_Low_FreeTempExtentsByTablespace ISA Oracle_Database
 DEFINES {
  tablespacename : STRING;
  segmentowner : STRING;
  segmentname : STRING;
  segmenttype : STRING;
  databasename : STRING;
  freeextents : REAL;
  currentextents : REAL;
  maxextents : REAL;
  pctextentsallocated : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleTemporaryExtentsByUser resource model

Oracle_Low_FreeTempExtentsByUser

```
TEC_CLASS :
 Oracle_Low_FreeTempExtentsByUser ISA Oracle_Database
 DEFINES {
  segmentname : STRING;
  tablespacename : STRING;
  segmentowner : STRING;
  segmenttype : STRING;
  databasename : STRING;
  freeextents : REAL;
  currentextents : REAL;
  maxextents : REAL;
  pctextentsallocated : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleTransaction resource model

Oracle_High_ActiveTransactionsPercentage

```
TEC_CLASS :
 Oracle_High_ActiveTransactionsPercentage ISA Oracle_Instance
 DEFINES {
  transactionsparametervalue : STRING;
  databasename : STRING;
  instancename : STRING;
  activetransactionspercentage : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_BlockChangesPerTransaction

```
TEC_CLASS :
 Oracle_High_BlockChangesPerTransaction ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  blockchangespertransaction : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_CallRate

```
TEC_CLASS :
 Oracle_High_CallRate ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  callrate : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_CallsPerTransaction

```
TEC_CLASS :
 Oracle_High_CallsPerTransaction ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  callspertransaction : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_LockWaitTime

```
TEC_CLASS :
 Oracle_High_LockWaitTime ISA Oracle_Instance
 DEFINES {
  sessionid : STRING;
  username : STRING;
  object : STRING;
  objectowner : STRING;
  lockid : STRING;
  sqltext : STRING;
  databasename : STRING;
  instancename : STRING;
  lockwaittime : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_LongRunningTransactions

```
TEC_CLASS :
 Oracle_High_LongRunningTransactions ISA Oracle_Instance
 DEFINES {
  sessionid : STRING;
  username : STRING;
  sqltext : STRING;
  databasename : STRING;
```

```
  instancename : STRING;
  timerunningseconds : REAL;
  starttime : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

OracleUndoSpace resource model

Oracle_High_IntervalNoSpaceErrCnt

```
TEC_CLASS :
 Oracle_High_IntervalNoSpaceErrCnt ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  begintime : STRING;
  endtime : STRING;
  intervalnospaceerrcnt : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Oracle_High_IntervalSSOldErrCnt

```
TEC_CLASS :
 Oracle_High_IntervalSSOldErrCnt ISA Oracle_Instance
 DEFINES {
  databasename : STRING;
  instancename : STRING;
  begintime : STRING;
  endtime : STRING;
  intervalssolderrcnt : REAL;
  threshold : REAL;

  severity: default = CRITICAL;
 };
END
```

Appendix E. Using tokens to customize resource model parameters

You can customize certain resource models to monitor PeopleSoft and SAP tables, or specific tables and users that you define. This functionality uses tokens to search for specific tables or users and is available on all ″By Tablespace″ and ″By User″ resource models.

Table 117. Guidelines for using tokens

Goal	Refer to
Understand what tokens are and how to use them	“Understanding tokens” on page 519
View the resource models that use tokens	“Determining which resource models use tokens” on page 519
Learn how to create your own token	“Creating your own tokens” on page 520
View predefined PeopleSoft and SAP tokens	“Viewing tokens for PeopleSoft and SAP tables” on page 521

Understanding tokens

Tokens are keywords that represent tables or users as specified in the external file, **oracle.tokens**. IBM Tivoli Monitoring for Databases: Oracle provides a predefined set of tokens to search for PeopleSoft and SAP tablespaces. See “Viewing tokens for PeopleSoft and SAP tables” on page 521 to view the PeopleSoft and SAP tokens.

You can also create your own token in the **oracle.tokens** file to monitor a set of tablespaces or users. See “Creating your own tokens” on page 520 for instructions on how to create a token. You can create tokens for any of the ″By Tablespace″ or ″By User″ resource models.

For example, if you were to edit the file and add the following token and its contents:

```
EastCoast = Jones, Garcia, Johnson, Parker, Hansen
```

then you have created a token representing a set of users. You can input the token ″EastCoast″ in the ″User Name″ parameter in any ″By User″ resource model, and it would expand the monitoring capability to include the users defined in the ″EastCoast″ token.

Determining which resource models use tokens

The following resource models enable you to use tokens to search for specified tablespaces or users:

- Extents by Tablespace
- Extents by User
- Free Space Deficit by Tablespace
- Free Space Deficit by User
- Free Space Fragmentation by Tablespace
- Free Tablespace by Tablespace

- Maximum Extents by Tablespace
- Maximum Extents by User
- Temporary Extents by Tablespace
- Temporary Extents by User

These resource models have a parameter called either ″Tablespace Names″ or ″User Name″ in which you can input a token to be monitored.

Creating your own tokens

Do the following to create your own token:

1. Open the **oracle.tokens** file.

   Additional Information: There are two locations for the oracle.tokens file:

   - On each gateway: **$BINDIR/../lcf_bundle.40/generic/ITM/PACS/ORACLE/oracle.tokens**. Editing this file updates all endpoints.

     —OR—

   - On each endpoint where the databases have been discovered: **$LCF_DATDIR/LCFNEW/ITM/PACS/Oracle/oracle.tokens**. Editing this file updates only the endpoint on which you edit the file.

2. Edit the file by doing the following.

   a. Type the token, or keyword name that will represent a set of tables or users.

   b. Type ″=″ following the token name.

   c. Type any table or user names to be monitored, separated by commas.

      Additional Information: Do not use the ″/,″ or ″#″ symbols in the contents of the token.

3. *Optional:* If the **oracle.tokens** file was edited on a gateway, push the file out to the endpoint by doing one of the following:

   - Run OracleDiscovery on the endpoint.

     —OR—

   - Run

     ```
     idlcall <OID of the OracleInstanceManager object> InitializeEndpoint
     ```

     Additional Information: You can determine the object identifier (OID) with the following command:

     ```
     wlookup –ar OracleInstanceManager
     ```

4. *Optional:* If IBM Tivoli Monitoring is currently running on the endpoint, you must restart the IBM Tivoli Monitoring engine for the new tokens to take effect.

   Additional Information: Restart the engine on a Unix or Windows operating system with one of the following commands:

   - **Unix:**

     ```
     wdmcmd -stop -e <endpoint>
     wdmcmd -restart -e <endpoint>
     ```

     —OR—

   - **Windows:**

     ```
     wdmcmd -stop -e <endpoint>
     net stop winmgmt
     wdmcmd -restart -e <endpoint>
     ```

5. Insert the token in the appropriate ″By Tablespace″ or ″By User″ resource model in the ″Tablespace Name″ or ″User Name″ parameter to begin monitoring the contents of the token.

Viewing tokens for PeopleSoft and SAP tables

The tokens predefined in the **oracle.tokens** file specify sets of PeopleSoft or SAP tables. You can use these tokens in any of the “By Tablespace” resource models. If you specify the token in the ″Tablespace Name″ parameter, it expands to include monitoring of all of the associated tables.

PeopleSoft tables with predefined tokens include:

- All PeopleSoft tables
- PeopleSoft Payroll tables
- PeopleSoft Human resource tables
- PeopleSoft Base benefits tables

SAP tables with predefined tokens include:

- Largest SAP tables
- SAP Sales and distribution tables
- Default SAP tablespaces

All PeopleSoft tables

Token PeopleSoftAllTables

Tables PS_EMPLOYEES, PS_EMPLOYEES_LNG, PS_EMPLOYMENT, PS_EMPLOYMENT_LNG, PS_EMPLOYMENT_LNG1, PS_EMPLOYMENT_LNG2, PS_EMPLOYMENT_LNG3, PS_HS_EMPLOYMENT, PS_HS_EMPL_REL_CAN, PS_HS_EMPL_REL_LNG, PS_HS_EMPL_SUB_CAN, PS_HS_EMPL_SUB_LNG, PS_INJ_CLMADDR_CAN, PS_JOB, PS_PERSONAL_DATA, PS_PERSONL_DTA_LNG, PS_PERS_DATA_AET, PS_PERS_DATA_EFFDT, PS_PERS_DTAEFF_LNG, PS_PERS_NID, PS_JOB_EARNS_DIST, PS_JOB_APPROVALS, PS_STATE_TAX_DATA, PS_GENL_DEDUCTION, PS_BAL_ADJ_UI_CAN, PS_CAN_CHECK_YTD, PS_CAN_DED_BALANCE, PS_CAN_ERN_BALANCE, PS_CAN_TAX_BALANCE, PS_CAN_TAX_DATA, PS_CHECK_YTD, PS_DEDUCTION_BAL, PS_EARNINGS_BAL, PS_FED_TAX_DATA, PS_TAX_BALANCE, PS_LOCAL_TAX_DATA, PS_BAL_ADJ_ARR, PS_BAL_ADJ_CHK, PS_BAL_ADJ_CN_CHK, PS_BAL_ADJ_CN_DED, PS_BAL_ADJ_CN_ERN, PS_BAL_ADJ_CN_TAX, PS_BAL_ADJ_DED, PS_BAL_ADJ_ERN, PS_BAL_ADJ_GRN, PS_BAL_ADJ_TAX, PS_DED_ARREARS, PS_GARN_RULE, PS_GARN_SCHED, PS_GARN_SPEC, PS_GENL_DED_CD, PS_BAS_PARTIC, PS_BAS_PARTIC_COST, PS_BAS_PARTIC_DPND, PS_BAS_PARTIC_INVT, PS_BAS_PARTIC_OPTN, PS_BAS_PARTIC_PLAN, PS_BENEF_COMMENT, PS_BEN_PROG_PARTIC, PS_DEPENDENT_BENEF, PS_DISABILITY_BEN, PS_FSA_BENEFIT, PS_FSA_PAYMENT, PS_HEALTH_BENEFIT, PS_HEALTH_DEPENDNT, PS_LEAVE_ACCRUAL, PS_LEAVE_PLAN, PS_LIFE_ADD_BEN, PS_LIFE_ADD_BENEFC, PS_PENSION_BENEFC, PS_PENSION_PLAN, PS_RTRMNT_PLAN, PS_SAVINGS_BENEFIC, PS_SAVINGS_INVEST, PS_SAVINGS_PLAN, PS_VACATION_BEN

PeopleSoft payroll tables

Token PeopleSoftPayrollTables

Tables PS_STATE_TAX_DATA, PS_GENL_DEDUCTION, PS_BAL_ADJ_UI_CAN, PS_CAN_CHECK_YTD, PS_CAN_DED_BALANCE, PS_CAN_ERN_BALANCE, PS_CAN_TAX_BALANCE, PS_CAN_TAX_DATA, PS_CHECK_YTD, PS_DEDUCTION_BAL, PS_EARNINGS_BAL, PS_FED_TAX_DATA, PS_TAX_BALANCE, PS_LOCAL_TAX_DATA, PS_BAL_ADJ_ARR, PS_BAL_ADJ_CHK, PS_BAL_ADJ_CN_CHK, PS_BAL_ADJ_CN_DED, PS_BAL_ADJ_CN_ERN, PS_BAL_ADJ_CN_TAX, PS_BAL_ADJ_DED, PS_BAL_ADJ_ERN, PS_BAL_ADJ_GRN, PS_BAL_ADJ_TAX, PS_DED_ARREARS, PS_GARN_RULE, PS_GARN_SCHED, PS_GARN_SPEC, PS_GENL_DED_CD

PeopleSoft Human Resources tables

Token PeopleSoftHRTables

Tables PS_EMPLOYEES, PS_EMPLOYEES_LNG, PS_EMPLOYMENT, PS_EMPLOYMENT_LNG, PS_EMPLOYMENT_LNG1, PS_EMPLOYMENT_LNG2, PS_EMPLOYMENT_LNG3, PS_HS_EMPLOYMENT, PS_HS_EMPL_REL_CAN, PS_HS_EMPL_REL_LNG, PS_HS_EMPL_SUB_CAN, PS_HS_EMPL_SUB_LNG, PS_INJ_CLMADDR_CAN, PS_JOB, PS_PERSONAL_DATA, PS_PERSONL_DTA_LNG, PS_PERS_DATA_AET, PS_PERS_DATA_EFFDT, PS_PERS_DTAEFF_LNG, PS_PERS_NID, PS_JOB_EARNS_DIST, PS_JOB_APPROVALS, PS_BEN_PROG_PARTIC

PeopleSoft Base Benefits tables

Token PeopleSoftBaseBenTables

Tables PS_BAS_PARTIC, PS_BAS_PARTIC_COST, PS_BAS_PARTIC_DPND, PS_BAS_PARTIC_INVT, PS_BAS_PARTIC_OPTN, PS_BAS_PARTIC_PLAN, PS_BENEF_COMMENT, PS_BEN_PROG_PARTIC, PS_DEPENDENT_BENEF, PS_DISABILITY_BEN, PS_FSA_BENEFIT, PS_FSA_PAYMENT, PS_HEALTH_BENEFIT, PS_HEALTH_DEPENDNT, PS_LEAVE_ACCRUAL, PS_LEAVE_PLAN, PS_LIFE_ADD_BEN, PS_LIFE_ADD_BENEFC, PS_PENSION_BENEFC, PS_PENSION_PLAN, PS_RTRMNT_PLAN, PS_SAVINGS_BENEFIC, PS_SAVINGS_INVEST, PS_SAVINGS_PLAN, PS_VACATION_BEN

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Token SAPLargestTables

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Token SAPSalesAndDistTables

Tables VBAP, VBLOG, LIPS, MARC, VBBS, MARA, VBFA, VBUP, VBUK, ACCTIT, MARD, VBHDR, VBPA, MVKE, VBAK, KONP, LIKP, VAKPA, NAST, MLAN, VBRP, KAPOL, VBEP, KNVV, S032, MAKT, MSEG, KOCLU, GLT0, VBKD, KNA1, MVER, BSIS, MBEW, BKPF, VEPVG, RFBLG, S031, ADRC,

KNVD, TMC4, NRIV_LOKAL, BSIM, T683S, NRIV, TFDIR, ADRV, T160M, ADRCT, ADRG, KNVP, BSID, ACCTCR, CDCLS, KNVI, VBRK, M_VMVL, CKMI1, VEDA, EUDB, VBUV, KNEX, RF048, RSMPTEXTS, VF_DEBI, VKDFS, KNB1, MKPF, CDHDR, ACCTHD, J_1AINFMET, VLKPA, SADR, VRKPA, WRF3, LIPSDG, VBEX, INDX, KNC1, M_VMCF

Default SAP Tablespaces

Token SAPDefaultTablespaces

Tables PSAPBTABD, PSAPDICTD, PSAPDOCUD, PSAPSTABD, PSAPLOADD, PSAPPOOLD, PSAPVB0101D, PSAPVB0102D, PSAPPROTD, PSAPCLUD, PSAPUSERID, PSAPSOURCED, PSAPVB0201D, PSAPVB0202D

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