

USER'S GUIDE

Notes, Notices, and Cautions

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, notices, and cautions, and they are used as follows:



NOTE: A NOTE indicates important information that helps you make better use of your computer system.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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Preface

This guide is intended for anyone who uses a Dell OpenManage Remote Assistant Card II (DRAC II). It can be used by both first-time and experienced system users who want to learn about the features and operation of the DRAC II. The chapters and appendixes are summarized as follows:

- Chapter 1, “Introduction,” provides an overview of the DRAC II features.
- Chapter 2, “Installing the DRAC II,” explains how to install the DRAC II.
- Chapter 3, “Configuring and Using the DRAC II,” explains how to configure and use a DRAC II.
- Chapter 4, “Maintenance and Troubleshooting,” explains basic troubleshooting and maintenance of the DRAC II.
- Appendix A, “Technical Specifications,” contains reference material for users interested in learning more about the details of the DRAC II.
- Appendix B, “Racconf Utility,” contains information on configuring the DRAC II using the racconf utility.

Other Documents You May Need

Besides this *User's Guide*, the following documentation is included with your system:

- Your system's *Installation and Troubleshooting Guide*, which provides detailed information on your system and procedures for removing and replacing parts on your system
- Your system's *User's Guide*, which provides general information about your system
- Your *System Information* document that came with the system
- Your system's management software documentation

Typographical Conventions

The following list defines (where appropriate) and illustrates typographical conventions used as visual cues for specific elements of text throughout this document:

- *Keycaps*, the labeling that appears on the keys on a keyboard, are enclosed in angle brackets.

Example: <Enter>

- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.

Example: <Ctrl><Alt><Enter>

- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed when referenced.

Example: "Use the **format** command to"

In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

Example: "Type `format a:` to format the diskette in drive A."

- *Filenames* and *directory names* are presented in lowercase bold.

Examples: **autoexec.bat** and **c:\windows**

- *Syntax lines* consist of a command and all its possible parameters. Commands are displayed in lowercase bold; variable parameters (those for which you substitute a value) are displayed in lowercase italics; constant parameters are displayed in lowercase bold. The brackets indicate items that are optional.

Example: **del** [*drive:*] [*path*] *filename* [/p]

- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

Example: `del c:\myfile.doc`

- *Screen text* is text that appears on the screen of your monitor or display. It can be a system message, for example, or it can be text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.

Example: The following message appears on your screen:

```
No boot device available
```

Example: "Type `md c:\p`programs and press <Enter>."

- *Variables* are placeholders for which you substitute a value. They are presented in italics.

Example: DIMM_x (where x represents the DIMM socket designation).



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CHAPTER 1

Introduction

The Dell OpenManage™ Remote Assistant Card II (DRAC II) is an optional system management card designed to provide remote management capabilities for Dell™ PowerEdge™ systems. With the addition of the DRAC II, system administrators can manage and monitor a PowerEdge system through a modem or network connection, even when the system itself is down.

DRAC II Kit

The DRAC II kit includes:

- DRAC II hardware
- DRAC II version 2.4 or later firmware flash diskette
- External power adapter and power cable (in countries where certified)
- Personal Computer Memory Card International Association (PCMCIA) modem (optional)
- *Dell OpenManage Server Assistant CD*
- *Dell OpenManage Systems Management CD*
- *Documentation CD*

DRAC II Features

The DRAC II offers a complete hardware and software solution to the challenge of remote systems management. A major feature of the DRAC II is the ability to allow an administrator to remotely access an inoperable system and get the system up and running as quickly as possible. The DRAC II provides alert notification when the system is down and allows full access to the down system. In addition, the DRAC II logs the probable cause of the system crash and saves the current error display.

The DRAC II is a peripheral component interconnect (PCI) card, with its own microprocessor and memory. The card is powered by the system when the system has power, or it can operate from its integrated battery module. In addition, an external power adapter is provided that allows the DRAC II to remain powered up indefinitely when the system is off.

The DRAC II can alert a system administrator before a probable system crash. By communicating with the system's embedded system management hardware, it can report warnings or errors related to voltages, temperatures, and fan speeds.

The DRAC II features include:

- Remote access via a 10Base-T network connection, a modem or RS232 serial port
- Ability to perform a full console redirection (text or graphics), including keyboard and mouse redirection
- Ability to alert an administrator in the event of a system crash
- Ability to deliver alerts by dialing out to a management station, sending a message to a numeric or alphanumeric pager, or sending a Simple Network Management Protocol (SNMP) trap over the network connection
- System health monitoring that includes information on a system's voltages, temperatures, and cooling fan status via communication with the system's embedded system management (ESM) hardware
- Out-of-band management capabilities
- Ability to view the system event logs and power-on self-test (POST) codes
- Ability to perform a shutdown and reset and to control the system's power from a remote console
- PCI 2.1-compliant bus interface
- Battery-powered operation for up to 30 minutes in the event of a power failure
- External power adapter that allows the DRAC II to remain operational indefinitely when the system is off
- One PCMCIA modem socket for the optional modem
- Password-level security management
- Remote Floppy Boot (RFB) utility for remotely booting a managed node from a diskette in the management station
- Access to the DRAC II through the Internet

Supported Configurations

The following sections include hardware, operating systems and basic input/output system (BIOS), embedded server management (ESM), and base management controller (BMC) requirements supported by DRAC II.

Hardware Platforms

The following hardware platforms are supported by DRAC II:

PowerEdge: 300, 1300, 1400, 2300, 2400, 2450, 2500, 2550, 4300, 4350, 4400, 6300, 6350, 6400, 6450, and 8450

Operating System Platforms

The following operating system platforms are supported by DRAC II:

- Microsoft® Windows NT® 4.0, Service Pack 3 (SP3) or later

NOTE: For clusters, the management station and the managed node must have the same service pack.

- Microsoft Windows® 2000 Advanced Server, Service Pack 1 (SP1)
- Novell® NetWare® 4.11 With Support Pack 5 or later, NetWare 4.2, NetWare 5.0, NetWare 5.1, and NetWare 6.0 (console redirection supports text-mode only)

NOTE: NetWare is not supported on hardware platforms with AGP video, including: PowerEdge 300, 1300, 2300, 4300, and 4350 systems.

- Red Hat Linux 7.0, Red Hat Linux 7.1, and Red Hat Linux 7.2 (console redirection supports text-mode only)

NOTE: Linux is not supported on hardware platforms with AGP video, including: PowerEdge 300, 1300, 2300, 4300, and 4350 systems.



BIOS, ESM, and BMC Requirements

Table 1-1 details BIOS, ESM, and BMC requirements supported by DRAC II:

Table 1-1. BIOS, ESM, and BMC Requirements

PowerEdge System	BIOS Version Support	ESM/BMC Version Support
PowerEdge 300	A00 or later	ESM not supported
PowerEdge 1300	A02 or later	ESM not supported
PowerEdge 1400	A01 or later	ESM not supported
PowerEdge 2300	A05 or later	ESM 3.14 or later
PowerEdge 2400	A00 or later	ESM 3.14 or later
PowerEdge 2450	A00 or later	ESM 5.21 or later
PowerEdge 2500	A00 or later	ESM 5.33 or later
PowerEdge 2550	A00 or later	ESM 5.33 or later
PowerEdge 4300	A02 or later	ESM 3.18 or later
PowerEdge 4350	A04 or later	ESM 3.18 or later

Table 1-1. BIOS, ESM, and BMC Requirements (continued)

PowerEdge System	BIOS Version Support	ESM/BMC Version Support
PowerEdge 4400	A00 or later	ESM 3.14 or later
PowerEdge 6300	A03 or later	ESM 3.17 or later
PowerEdge 6350	A00 or later	ESM 3.17 or later
PowerEdge 6400	A02 or later	ESM 5.26 or later
PowerEdge 6450	A02 or later	ESM 5.26 or later
PowerEdge 8450	A00 or later	BMC 0.16 or later

Check your system's BIOS or firmware version level during the boot routine. If the version is not at the required level, you must update it to the correct version. You can find instructions to update the BIOS and system management firmware revisions for all PowerEdge systems on the Dell | Support website at support.dell.com.

Instrumentation Requirements

NOTICE: The DRAC II firmware version must be compatible with the proper version of the managed node software (Dell OpenManage Hardware Instrumentation Package [HIP] or Dell OpenManage Server Agent) to be a supported configuration. If you install Dell OpenManage Server Agent 4.0 or later, you must also install DRAC II firmware version 2.4. Failure to properly match firmware and hardware can cause the DRAC II to work improperly and adversely affect the console redirect feature.

Do not replace hardware. Update the DRAC II firmware to the level that supports that managed node software version. The following table matches the correct firmware versions to the correct managed node software versions.

Table 1-2. DRAC II Firmware Level and Matching Managed Node Software Version

DRAC II Firmware Version	Matching HIP or Server Agent Version
2.0	HIP 3.5
2.1	HIP 3.5
2.2	HIP 3.5.1
2.2.1	HIP 3.5.2

Table 1-2. DRAC II Firmware Level and Matching Managed Node Software Version (continued)

DRAC II Firmware Version	Matching HIP or Server Agent Version
2.2.2	HIP 3.5.2 with Windows 2000 Patch <i>NOTE: The Windows 2000 patch for HIP 3.5.2 can be downloaded from the Dell Support website at support.dell.com.</i>
2.3	Server Agent 4.0 or later
2.4	Server Agent 4.0 or later

Version Compatibility

Table 1-3 describes backwards compatibility support for the version 2.4 firmware:

Table 1-3. Backwards Compatibility

Management Station		Managed Node	
DRAC II Web Console Version	Network Node Manager Special Edition (NNM SE) Version	Firmware Version 2.4 and Server Agent 4.0 or later	DRAC
1.5	1.3	No	Yes DRA Only
2.0	1.4	Yes DRA Only	Yes DRA Only
2.1	1.4	Yes DRA Only	Yes DRA Only
2.2	1.5, 1.5.1	Yes DRA Only	Yes DRA Only
2.2.1	1.5.2	Yes DRA Only	Yes DRA Only
2.3	1.6	Yes DWC/DRA	Yes DRA Only
2.3.1	1.6	Yes DWC/DRA	Yes DRA Only
2.3.2	N/A	Yes DWC	No
2.3.3	N/A	Yes DWC	No
2.4	N/A	Yes DWC	No
2.4.1	N/A	Yes DWC	No

How the DRAC II Works

The DRAC II comes with software modules that provide a set of operating system-specific services. These services interface with the DRAC II hardware to allow in-band

configuration as well as console redirection to the out-of-band connection. The following subsection describes the software modules used with the DRAC II.

DRAC II Software Modules

The DRAC II software architecture is built upon several independent software modules that run under a specific operating system. The modules include hardware device drivers, application services, management services, and user interfaces. Table Table 1-4 summarizes the software modules for the DRAC II.

Table 1-4. Software Modules

Software Module	Description
Hardware Device Drivers	DRAC II device driver under Windows NT, Windows 2000, NetWare, and Red Hat Linux operating systems
Console Redirection Service	Graphics capture service and virtual mouse service for Windows NT and Windows 2000; text mode for NetWare and Linux
Management Services	SNMP extension agent under Windows NT, Windows 2000, Novell NetWare, and Linux
User Interface	DRAC II Web Console
Address Book Server	Contains the IP address/telephone number of the DRAC II for Windows NT and Windows 2000

Table 1-5 summarizes the Dell OpenManage software required to operate the DRAC II.

Table 1-5. Dell OpenManage Software Modules

Software Module	Description
Dell OpenManage IT Assistant	A system management console program installed on the management station to configure the DRAC II and provide monitoring and management services.
Dell OpenManage Server Agent	A set of services installed on the managed node systems to monitor the health of the system and notify the console when a problem arises.
DRAC II	A hardware interface card that allows for remote management of systems, recreating the management console in an external system or workstation and allowing an administrator to access a system either via a modem, over a local area network (LAN), or RS232.

Hardware device drivers allow applications and other system-level services to access the DRAC II hardware. These drivers are operating-system specific.

The console redirection service provides the DRAC II with the graphics screen content to send to the remote console. When the system runs in text mode, the DRAC II hardware captures the screen content automatically.



NOTE: For graphical redirection, the remote system is performing the redirection process; therefore, a percentage of available microprocessor time is consumed when the process is active. Dell recommends that you stop console redirection when not needed so that the system is free for its normal tasks. In addition, Dell recommends that the managed system run in a low-resolution graphics mode, such as 800 x 600, and at a maximum of 256 colors to minimize the redirection task.

Management services are operating-system-specific services that support standard management protocols. An enterprise network system is typically run by a management application. This application is based on certain management standards, such as SNMP. Management through SNMP uses the in-band network.

The address book system resides on the management station and contains the Internet protocol (IP) address/phone number of the DRAC II. This module works under Windows NT and Windows 2000.

DRAC II in the Dell OpenManage Environment

The user interfaces for the DRAC II are the Dell OpenManage IT Assistant for in-band configuration and the DRAC II Web Console for out-of-band access. IT Assistant is installed on the management console and is used to configure the DRAC II. Dell OpenManage Server Agent must be installed on the managed node to configure the DRAC II with IT Assistant.

When the System is Operational

When you access a remote system using the DRAC II, the DRAC II Web Console gives you the following options for managing the system:

- The **System Health** window lets you view information such as the ambient temperature of the DRAC II. This window also lists the firmware installed on the system and the system's BIOS version, as well as the current status of the DRAC II's battery, wall adapter voltage, and PCI bus voltage. The **Set Refresh** button in this window allows you to adjust the monitoring polling period.
- The **System Information** window specifies which system you are accessing and the system's BIOS version, baseboard, microprocessor(s), slots, ports, and chassis.
- The **Event Log** window keeps a record of remote system events, DRAC II events, and POST logs.

- The **Remote Access** window contains the console redirect service, which allows you to view the screen of the remote system. From this window, you can use the management station's mouse and keyboard to perform management functions such as system reset, power off, power cycle, power on, and graceful shutdown. You can also take a screen capture of the remote system and store the image as a **.bmp** file or as a **.txt** file in text-only mode.

When the System is Nonoperational

An important feature of the DRAC II is its ability to notify an administrator when a system fails. To do this, the DRAC II sends an alert notification by dialing out to a management station, sending a page, or sending an SNMP trap. After receiving the alert, the administrator can connect to the DRAC II using the DRAC II Web Console application and view the event log to determine the nature of the problem. The DRAC II Web Console connects to the DRAC II via the 10 Mb/s network interface controller (NIC) on a local area network/wide area network (LAN/WAN) or the optional PCMCIA modem, both of which are located on the DRAC II. The DRAC II also captures the screen at the time of the crash so that the administrator can possibly analyze the cause.

To get the system up and running again, the administrator can perform a remote reset or power cycle and view the boot process.

In addition, the RFB feature can be used to remotely boot the system to MS-DOS® or to diagnostics diskettes when troubleshooting the system.

DRAC II Security

The following sections describe security features of the DRAC II.

Encrypted Password Authentication

DRAC II supports encrypted password authentication for connections via the DRAC II NIC over TCP/IP and Point-to-Point Protocol (PPP) dial-in connections over the DRAC II modem. The encryption method used within the PPP connection is the MD5 Challenge-Handshake Authentication Protocol (CHAP). MD5 is a one-way hash algorithm that encrypts American Standard Code for Information Interchange (ASCII) data.

Valid Login

The remote interface to the DRAC II requires a valid login. When establishing a remote connection to a DRAC II, the user enters a user name and password at the remote console. The password is then encrypted through the CHAP in the modem connection, and the user name and encrypted password are sent to the DRAC II. The DRAC II receives the user name and encrypted password and begins the process of authentication. The saved password in the DRAC II (for this user name) is also encrypted. It is compared with the encrypted password received from the remote

user. If there is a match, the user is validated and access to the DRAC II is granted. No other commands are recognized or processed by the authentication process until validation occurs.

VT100 Connection Capabilities

The DRAC II provides VT100 connection capabilities. Password encryption is not used for this type of connection. Since the VT100 connection is a direct-connect terminal emulation, password encryption is not warranted. Terminal security is provided by nonencrypted authentication of the user name and password. The firmware prevents display of the password on the terminal. Only system power management features (such as reset and power cycle) and text console redirection are provided via the VT100 interface. Access to a graphical operating system is not available.

DRAC II Web Console

The DRAC II Web Console interface is the user interface for remote access to the DRAC II. It is proprietary and provides no direct access to the host operating system (OS). Typically remote access to the DRAC II is used when no administrator is locally logged into the system. If an administrator does log on to the local system, operating system access is protected by standard OS security measures. Users accessing the DRAC II remotely use the CHAP and do not use the OS security. When a remote user accesses a DRAC II and performs a console redirection, a pop-up notification box appears at the system console stating that remote console redirection is occurring. The notification box disappears within 5 seconds. In addition, it is possible for the DRAC II to be remotely accessed through the Internet using a PowerEdge system as a middle tier management station. For more information, see "Configuring Your Network to Access the DRAC II From the Internet."



CHAPTER 2

Installing the DRAC II

This chapter describes procedures for performing the following tasks:

- Upgrading the basic input/output system (BIOS) on your system
- Installing the Dell OpenManage Remote Assistant Card II (DRAC II) in a Dell PowerEdge system
- Installing Dell OpenManage Server Agent and Dell OpenManage IT Assistant

NOTICE: Read the installation instructions in this manual and in the system *Installation and Troubleshooting Guide* before installing your DRAC II.

System Requirements

The DRAC II is compatible with Microsoft Windows NT, Windows 2000, Novell NetWare 4.11 (with Service Pack 5 or later), NetWare 4.2, NetWare 5.0, NetWare 5.1, NetWare 6.0, Red Hat Linux 7.0, Red Hat Linux 7.1, and Red Hat Linux 7.2. The DRAC II requires the Dell OpenManage Server Agent to be configurable with Dell OpenManage IT Assistant.



NOTES: If a management station and a managed node both run Windows NT and are part of a cluster configuration, they must use the same service pack.

If the managed node is running NetWare or Linux, the console redirect feature is text only.

Upgrading the System BIOS

If you are adding the DRAC II to an existing system, you may need to update the system's BIOS prior to installing the DRAC II. Doing so ensures full support for the DRAC II. For supported configurations, see Chapter 1, "Introduction." For BIOS requirements, see Table 1-1.

To update your system's BIOS, perform the following steps:

1. Obtain a copy of the most current version of your system's BIOS.

Upgrades are available on the Dell | Support website at support.dell.com.

2. Launch the executable file and follow the prompts to create a BIOS flash diskette.
3. Insert the BIOS diskette and reboot the system.
The system should boot to the BIOS upgrade menu.
4. Follow the instructions on the BIOS upgrade menu.

Installing the DRAC II

Perform the following steps to install the DRAC II.



CAUTION: Before you begin installing a DRAC II, carefully read the safety instructions in your *System Information* document.

1. Power down the system and all attached peripheral devices.
2. Disconnect your system and peripherals from their power sources. Also disconnect any telephone or telecommunication lines from the system.

Doing so reduces the potential for personal injury or shock.



CAUTION: The power supplies in your system or storage system may produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the system covers and access any of the components inside the system.

3. Remove the system cover according to the instructions in your system *Installation and Troubleshooting Guide*.

NOTICE: The PC Card modem cannot be inserted into the DRAC II while the DRAC II is powered on. When installing a modem, you must first turn off the system, disconnect the external power adapter from the DRAC II, and remove the DRAC II from the system. Removing the DRAC II from the system ensures that its integrated battery is not providing power to the circuitry on the DRAC II.

4. If your DRAC II kit included a Personal Computer Memory Card International Association (PCMCIA) modem, install the modem in the socket on the DRAC II mounting bracket.

Press firmly to seat the modem in the socket.

5. Determine the peripheral component interconnect (PCI) expansion slot in which you install the DRAC II.

There is a designated slot in systems that support the Dell embedded system management (ESM) connector. Only this slot has a space that accommodates the ESM connector. The ESM connector must align with the corresponding connector in the system board. For example, in a PowerEdge 6300 system, the DRAC II must be installed in slot PCI3 in order to align with the ESM connector on the system board. See Figure 2-1 below and your PowerEdge system

Installation and Troubleshooting Guide or documentation updates (if any) that were provided with your DRAC II.



NOTE: On a PowerEdge 8450 there is no ESM connector on the system board. Attach the IPMI connector on the system board. The ribbon cable for a PowerEdge 8450 is supplied in the DRAC II kit.

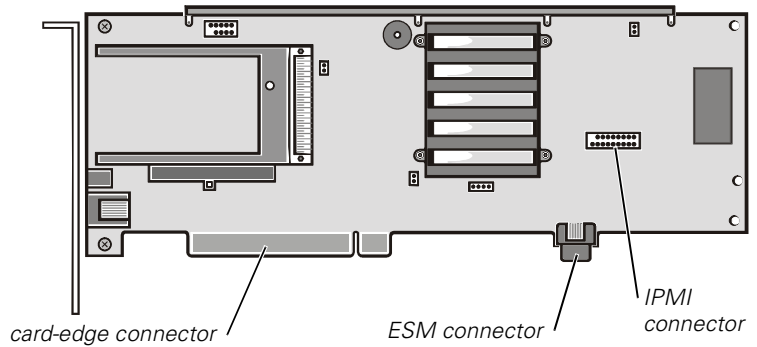


Figure 2-1. DRAC II Connectors

6. If another expansion card is already installed in the required slot, move the other expansion card to another slot.
7. Follow the instructions for installing PCI expansion cards in your PowerEdge system *Installation and Troubleshooting Guide* to install the DRAC II.

Ensure that the card-edge connector and the ESM connector are fully seated into the system board.

8. If you will be using a network connection with the DRAC II, attach the twisted-pair cable to the RJ45 connector on the DRAC II. See Figure 2-2 for location of the input/output (I/O) connectors.



NOTE: The DRAC II should be connected only to a switch or hub that supports a 10Base-T Ethernet connection.

9. If you will be using a modem with the DRAC II, attach a modem adapter cable to the PCMCIA modem and connect an analog telephone line to the adapter cable.
10. Replace the system cover.
11. If you have an optional external power adapter, plug it into the external power input connector on the DRAC II. See Figure 2-2 for the location of this connector.

The DRAC II does not require the external power adapter; however, using it allows the DRAC II to remain operational indefinitely when the system is off.

12. Reconnect the system and all associated peripheral devices to their AC power sources and turn them on.

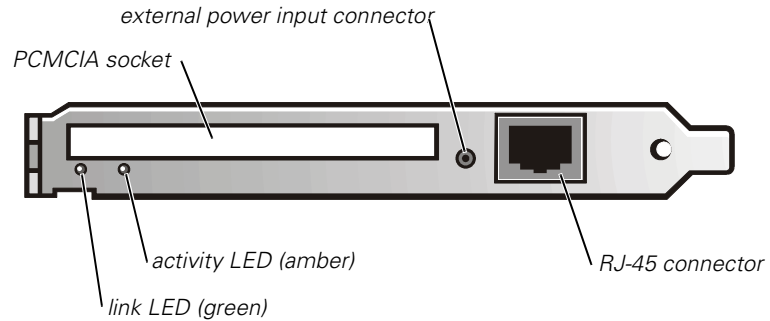


Figure 2-2. DRAC II I/O Connectors

Installing the Software

After you install the DRAC II, you may need to install or upgrade Server Agent and IT Assistant.

To take advantage of the new features in DRAC II, you may need to:

- Install or upgrade the software for your managed node from the *Dell OpenManage Systems Management CD*
- Install or upgrade the software for your management station from the *Dell OpenManage Systems Management CD*
- Upgrade the DRAC II firmware

The following subsections provide information on installing the DRAC II software. The DRAC II software contains two components:

- Managed node software

A managed node is typically a server that contains a DRAC II, the appropriate version of Dell OpenManage Server Agent, and DRAC II agent. The DRAC II agent consists of Windows services or Novell NetWare loadable modules (NLMs) or Linux driver/daemons (depending on the operating system running on the system), that are automatically started when the system is booted.

- Management station software

The management station is a system (typically a workstation running Windows NT 4.0 or Windows 2000) that contains the appropriate versions of IT Assistant and the DRAC II Web Console. The management station software consists of services and a browser-based user interface.

If you want to configure and manage the DRAC II using IT Assistant, use IT Assistant version 5.2 or later.

Installing the Managed Node Software Under Windows NT or Windows 2000



*NOTE: The simple network management protocol (SNMP) service must be installed on the managed node prior to installing the managed node software. The recommended SNMP Traps **Community Name** is public. The rights for the community must be set to READ WRITE.*

On Windows 2000, the **drac2wdm.sys** driver must be installed using Windows hardware wizard before installing the DRAC II agents. DRAC II agents installation fails if the DRAC II driver is not present.

Dell now installs the DRAC II driver for Windows 2000 on your system. However, for other operating systems (Novell NetWare, Microsoft Windows NT, and Red Hat Linux), the drivers are installed with the DRAC II agents.

If you are installing or upgrading to Windows 2000, you must install the **drac2wdm.sys** driver by performing the following steps:

1. After the DRAC II is inserted in the system and Windows 2000 starts, the **Found New Hardware Wizard** launches automatically if the DRAC II driver is not installed.
2. On the **Found New Hardware Wizard** dialog box, click **Next**. The Wizard displays these messages: *This wizard will complete the installation for this device: Base System Device.*
3. Click **Next** to search for a suitable driver for the device.
4. Deselect **Floppy Disk drives** if it is checked, and select **CD-ROM drives** if it is not already checked.
5. Insert the *Dell OpenManage Server Assistant* CD or the *Dell OpenManage Systems Management* CD into the managed node CD drive.
6. Click **Next**.

Autorun on the CD launches while the hardware wizard searches for drivers.
7. Close the dialog that opens. The box might be titled **Dell OpenManage Server Assistant, Dell OpenManage Setup**, or **Choose Setup Language**, depending on what CD is used.

The hardware wizard finds **drac2wdm.inf** on the CD.
8. Click **Next**.
9. Click **Finish**.



NOTES: When installing the managed node software from Dell OpenManage Systems Management CD, the firmware of the DRAC II must be version 2.4 or later or the DRAC II does not function properly. Upgrade the DRAC II firmware before or after the installation of Server Agent. See "Firmware Installation," found later in this document.

PowerEdge 2400, 2450, 4400, 6400, and 6450 users should upgrade their video drivers to revision A5393T (ATI version 4.00.1381.3254) for Windows NT and revision A5.39.2 (ATI version 5.0.2195.3247) for Windows 2000. The drivers are available on the Dell | Support website at support.dell.com. You might upgrade the video drivers before or after installing Server Agent.

Express Setup

Perform the following steps to install the managed node software using Express Setup:

1. Assuming the DRAC II (and DRAC II driver for Windows 2000) is installed, insert the *Dell OpenManage Systems Management* CD.

Autorun launches the Dell OpenManage Installation.
2. Click **Next**.

The software license agreement displays.
3. Click **Accept**.
4. On the **Select System Type** screen, click **Managed Node**.
5. On the **Select Setup Type** screen, click **Express Setup**.

The **Installation Summary** displays.
6. Click **Next**.
7. Click **Yes** to confirm the installation.

The application being installed is highlighted during installation and checked when installation of that application is complete.
8. After the installation is complete, you are prompted to reboot your system.
9. Click **Yes** to reboot.
10. Click **Finish**.
11. Click **OK** to confirm reboot.
12. Go to "Installing the Management Station Software for Windows NT or Windows 2000," found later in this document.

Custom Setup

Perform the following steps to install the managed node software using Custom Setup:

1. Assuming the DRAC II (and DRAC II driver for Windows 2000) is installed, insert the *Dell OpenManage Systems Management* CD.

Autorun launches the **Dell OpenManage Installation**.

2. Click **Next**.
The software license agreement displays.
3. Click **Accept**.
4. On the **Select System Type** screen, click **Managed Node**.
5. On the **Select Setup Type** screen, click **Custom Setup**.
You are prompted for a **Destination Drive** and **Destination Directory**.
6. Accept the defaults or click **Browse** to change them.
7. Click **Next**.
The system automatically selects services for which it detects the necessary hardware.
8. At the **Management Node Software** screen, ensure that **Remote Management** and **Dell OpenManage Server Administrator** are selected. Deselect **Storage Management**, **Diagnostic Service**, and **Other Management Agents** unless you want to install them. They are not required for the DRAC II.
9. Click **Next**.
The **Installation Summary** displays.
10. Click **Next**.
11. Click **Yes** to confirm the installation.
The application being installed is highlighted during installation and checked when installation of that application is complete.
12. After the installation is complete, you are prompted to reboot your system.
13. Click **Yes** to reboot.
14. Click **Finish**.
15. Click **OK** to confirm reboot.
16. Go to "Installing the Management Station Software for Windows NT or Windows 2000," found later in this document.

Installing the Managed Node Software Under NetWare 5.x and NetWare 6.0

To install the DRAC II agent on a managed node running Netware 5.x and NetWare 6.0 perform the following steps:

1. Insert the *Dell OpenManage Systems Management* CD.
2. At the NetWare prompt, type `CDROM`.
NetWare responds with the CD volume label.
3. Type `NWCONFIG`.
4. Press <Enter>.
5. Press the down arrow to **Product Options**.
6. Press <Enter>.
7. Press the up arrow to **Install a Product Not Listed**.
8. Press <Enter>.
9. Press <F3> to specify a path.
10. Type in the volume label of the CD and the path to the DRAC II agent:
`Appcd30_a00:\Netware`.
11. Press <Enter>.
12. Press the down arrow to highlight **DRAC Agent**.
13. Press <Enter> to check the box.
14. Press <F10>.
15. The following prompt appears: `Do you want to change the default security settings for the Dell OpenManage Server Agent?`
16. Answer **No** to keep the default password "calvin," or answer **Yes** to choose a new password.
17. Press <Enter>.
18. Press any key to continue.
19. Press <Esc> two times.
20. Press <Enter> to exit **nwconfig**.
21. At the prompt, type `Restart Server`.
22. Press <Enter>.

Installing the Managed Node Software Under Red Hat Linux 7.0, Red Hat Linux 7.1, or Red Hat Linux 7.2

The following subsections provide instructions for installing managed node software on systems running Red Hat Linux versions 7.0, 7.1, and 7.2.

Kernel Support

Table 2-1 identifies the kernels supported by the following software:

Table 2-1. Kernels Supported by DRAC II

System	Kernel Package Name
Red Hat Linux 7.0 (single processor) kernel-2.2.16-22	DRAC-RH70-UP-2.4-3 DRAC-RH70-Common-2.4-8
Red Hat Linux 7.0 (symmetric multiprocessor [SMP]) kernel-smp-2.2.16-22	DRAC-RH70-SMP-2.4-3 DRAC-RH70-Common-2.4-8
Red Hat Linux 7.0 (enterprise) kernel-enterprise-2.2.16-22	DRAC-RH70-EN-2.4-3 DRAC-RH70-Common-2.4-8
Red Hat Linux 7.1 (single processor) kernel-2.4.3-6	DRAC-RH71-SBE-UP-2.4-1 DRAC-RH71-Common-2.4-5
Red Hat Linux 7.1 (symmetric multiprocessor [SMP]) kernel-smp-2.4.3-6	DRAC-RH71-SBE-SMP-2.4-1 DRAC-RH71-Common-2.4-5
Red Hat Linux 7.1 (enterprise) kernel-enterprise-2.4.3-6	DRAC-RH71-SBE-EN-2.4-1 DRAC-RH71-Common-2.4-5
Red Hat Linux 7.2 (single processor) kernel-2.4.7-10	DRAC-Driver-2.4.1-3 DRAC-Common-2.4.1-2
Red Hat Linux 7.2 (symmetric multiprocessor [SMP]) kernel-smp-2.4.7-10	DRAC-Driver-2.4.1-3 DRAC-Common-2.4.1-2
Red Hat Linux 7.2 (enterprise) kernel-enterprise-2.4.7-10	DRAC-Driver-2.4.1-3 DRAC-Common-2.4.1-2

You can verify your kernel by running the command `uname -r`.

To install the DRAC II on a system running the Red Hat Linux operating system, perform the following steps.



NOTES: You must insert the DRAC II into the system before installing the DRAC II Red Hat Package Manager (RPM).

You must install SNMP before installing the DRAC II software.

NOTICE: You must uninstall any pre-existing DRAC II software installations.

1. Determine what DRAC II RPMs are already installed by typing the following command: `rpm -qa | grep DRAC`.
2. Delete any RPMs that are listed by typing the following command: `rpm -e <DRAC-RPM-name>`.

For example:

```
rpm -e DRAC-RH71-SBE-UP-2.4-1
```

NOTE: You must first delete any common RPMs before deleting other RPMs.



3. Start the GNOME desktop if it is not already open. At the prompt, type `startx`.
4. Press <Enter>.
5. Close the GNOME hint box if it appears.
6. Close any warning boxes that appear.
7. Insert the *Dell OpenManage Systems Management* CD.

The file manager should appear. If not, launch file manager. The **Location** box in file manager should show `/mnt/cdrom`.

8. Double-click the **start.sh** icon.
Dell OpenManage Setup launches.
9. Click **Next**.
The software license agreement displays.
10. Click **Accept**.
11. Click **Express Setup**.

The **Installation Summary** displays.

12. Click **Next**.
13. Click **Yes** to install selected components.
14. You are prompted to reboot your system.
15. Click **Finish**.
16. Click **OK** to confirm reboot.
17. Go to "Installing the Management Station Software for Windows NT or Windows 2000," found later in this document.

DRAC II Software Basics for Red Hat Linux

The following list describes basic software information for DRAC II with Red Hat Linux:

- To display the current setting of the DRAC II, type the following command:

```
racconf
```
- To verify that DRACSnmp (SNMP extension agent for DRAC II) is loaded, type the following command:

```
ps -ax | grep DRACSnmp
```
- To verify that DRACd (DRAC II daemon) is loaded, type the following command:

```
ps -ax | grep DRACd
```
- To start, stop, or restart DRACSnmp, type the following command:

```
/etc/rc.d/init.d/DRACSnmp [start, stop, restart]
```
- To start, stop, or restart DRACd, type the following command:

```
/etc/rc.d/init.d/DRACd [start, stop, restart]
```



NOTE: Both DRACSnmp and DRACd are started automatically when you install the package, and they are stopped automatically when you uninstall the package.

- To determine which version you have installed, use a package management tool such as GnoRPM, or use the RPM query command (`rpm -q`) to determine if the package is installed.

For example: `rpm -q DRAC-RH70-SMP`

- To determine which files were installed and where they are located, type the following command: `rpm -ql <package name>`

The binaries and RPMs are installed as shown in Table 2-2.

Table 2-2. Installed Files

File Name	Location
racconf	/usr/sbin/
DRACd	/usr/sbin/
DRACSnmp	/usr/sbin/
Mrmibmain	/usr/sbin/
rac.o	/lib/modules/[kernel-version-number]/misc/
racconf.ini	/etc/
rc.modules	/etc/rc.d
omsasync	/usr/sbin/

The RPM installs the startup script for the DRAC II daemon and DRACSnmp in the following directories:

```
/etc/rc.d/rc3.d  
/etc/rc.d/rc5.d  
/etc/rc.d/rc6.d  
/etc/rc.d/rc0.d
```

To remove a package, type the following command: `rpm -e [package name]`

Open Issues With DRAC II Under Red Hat Linux

DRAC II is supported on precompiled kernels that are a part of the Red Hat Linux 7.0, Red Hat Linux 7.1, and Red Hat Linux 7.2 distribution. DRAC II is not supported on recompiled kernels with other configuration options (for example, kernels configured for performance tuning purposes).

Linux might fail to load when started on recompiled kernels. If a “failure to load” occurs, you must either restore the kernel and modules from backup, or you must reinstall the kernel from the Red Hat RPM packages.

Installing the Management Station Software for Windows NT or Windows 2000



*NOTES: If you have the DRAC II Web Console version 2.3.1 or earlier installed, you must uninstall it before performing an upgrade. Uninstall the console using **Add/Remove Programs**. You must then restart the system.*

Microsoft Internet Explorer 4.0 or later must be installed before the installation of the management station software on Windows NT/Windows 2000 Management Stations. Management Station software installation fails if Internet Explorer is not present.

Custom Setup



NOTE: Dell recommends that you use Custom Setup rather than Express Setup because Express Setup installs additional software that is not required for DRAC II.

1. Insert the *Dell OpenManage Systems Management* CD.

Autorun launches **Dell OpenManage Installation**.

2. Click **Next**.

The software license agreement displays.

3. Click **Accept**.



NOTE: If you are installing the management station software on any system other than a PowerEdge system, skip step 4 and continue with step 5.

4. On the **Select System Type** window, click **Mgmt Station**.
5. On the **Select Setup Type** window, click **Custom Setup**.

6. You are prompted for a **Destination Drive** and **Destination Directory**.
7. Accept the defaults or click **Browse** to change them.
8. Click **Next**.
9. On the **Management Station Software** screen, select **Remote Management** and **IT Assistant**.
Array Manager selects automatically with IT Assistant.
10. Deselect **Other Management Applications** unless you want to install them. The applications are not required for DRAC II.
11. Click **Next**.
The **Installation Summary** displays.
12. Click **Next**.
13. Click **Yes** to confirm the installation.
The application being installed is highlighted during installation and checked when installation of that application is complete.
14. You are prompted to reboot your system.
15. Click **Yes** to reboot.
16. Click **Finish**.
17. Click **OK** to confirm reboot.



NOTE: Remote Access Service (RAS) has to be installed and the service running, and dial-up networking must be configured, if you plan to use a modem for out-of-band management.

18. If you are going to install RAS, see “Remote Access Service Setup for Windows NT Management Stations,” in the following section for the appropriate operating system. If you are not using RAS, go to Chapter 3, “Configuring and Using the DRAC II.”

Remote Access Service Setup for Windows NT Management Stations

To set up RAS for Windows NT management station(s), perform the following steps:

1. Click the **Start** button, point to **Settings—> Control Panel**.
2. Double-click the **Network** icon and click the **Services** tab.
3. Highlight **Remote Access Service** (if **Remote Access Service** is not already listed, add it to the list using system default settings) and click **Properties**.

4. At the **Remote Access Setup** dialog box, highlight a port entry in the list (if necessary, add an available modem), and click **Configure**.
5. At the **Configure Port Usage** dialog box, click **Dial-out and Receive calls**, and then click **OK**.
6. At the **Remote Access Setup** dialog box, click **Network**.
7. At the **Network Configuration** dialog box, perform the following steps:
 - a. Under **Dial-out Protocols**, select the **TCP/IP** check box only.
 - b. Under **Server Settings, Allow Remote Clients Running**, select the **TCP/IP** check box only.
 - c. Under **Encryption Settings**, select the **Allow Any Authentication Including Clear Text** check box. Do not select the **Enable Multilink** check box.
8. Click **Configure** for TCP/IP.
9. At the **RAS Server TCP/IP Configuration** dialog box, perform the following steps:
 - a. Under **Allow Remote TCP/IP Clients to Access**, select **Entire Network** or **This Computer Only**, depending on the level of security that you require.
 - b. Assign TCP/IP addresses as appropriate. Do not select the **Allow Remote Clients to Request a Predetermined IP Address** check box.
 - c. Click **OK**.
 - d. At the **Network Config** dialog box, click **OK**.
 - e. Click **Continue** at the **Remote Access Setup** dialog box.
 - f. Close the **Network** window.
 - g. Click **Yes** to restart your system.

Dial-Up Networking Setup for Windows NT Management Stations

To set up dial-up networking for Windows NT management station(s), perform the following steps:

1. Click the **Start** button, point to **Programs—> Accessories—> Dial-up Networking**.

2. At the **Dial-Up Networking** dialog box, click **New** under **Phonebook entry to dial**.
 - If the **New Phonebook Entry** dialog box appears, proceed to step 3.
 - If the **New Phonebook Entry Wizard** dialog box appears, type `drac-ppp` in the **Name the new phonebook** entry field, check the **I know all about phonebook entries...** check box, and click **Finish**. Proceed to step 3b.
3. At the **New Phonebook Entry** dialog box, click the **Basic** tab and perform the following steps:
 - a. In the **Entry Name** field, type `drac-ppp`.
 - b. Select the **Use Telephony Dialing Properties** check box.
 - c. In the **Dial Using** field, select the same modem you specified in step 4 of the previous section, "Remote Access Service Setup for Windows NT Management Stations."

Do not select the **Use another port if busy** check box.
 - d. Click **Configure...**
4. At the **Modem Configuration** dialog box, ensure **Initial speed (bps)** is set correctly, select the **Enable Hardware Flow Control** check box, select **Enable Modem Control** (optional) and **Enable Modem Compression** (optional), enable or disable the modem speaker (optional), and click **OK**.
5. At the **New Phonebook Entry** dialog box, click the **Server** tab and perform the following steps:
 - a. In the **Dial-Up Server Type** field, select **PPP: Windows NT, Windows 95 Plus, Internet**.
 - b. Under **Network Protocols**, make sure only the **TCP/IP** check box is selected.
 - c. Select the check boxes for **Enable Software Compression** and **Enable PPP LCP** extensions.
 - d. Click **TCP/IP Settings...**
6. At the **PPP TCP/IP Settings** dialog box, perform the following steps:
 - a. Click **Server Assigned IP Address**.
 - b. Click **Server Assigned Name Server Addresses**.
 - c. Select the check boxes for **Use IP Header Compression** and **Use Default Gateway on Remote Network**.
 - d. Click **OK**.

7. At the **New Phonebook Entry** dialog box, click the **Script** tab and confirm the default settings:
 - **None** selected for **After dialing (login)**.
 - **None** displayed in the **Run this script:** field.
8. Click the **Security** tab and click **Accept Any Authentication Including Clear Text**.
9. Click the **X.25** tab, make sure **Network** is set to **(none)**, and click **OK**.
10. At the **Dial-Up Networking** dialog box, click **Close**.
11. Restart the system.

Remote Access Service Setup for Windows 2000 Management Stations

To set up Remote Access Service for Windows 2000 management station(s), perform the following steps:

1. Right-click **My Computer**.
2. Click **Manage**.
3. Double-click **Services and Applications**.
4. Double-click **Services**.
5. If the **Service Startup type** is not **Automatic**, right-click **Routing and Remote Access**. (To determine if the startup type is automatic, look for the word "Automatic" in the **Startup Type** column).
6. Click **Properties**.
7. Click the drop-down box in the **Startup Type** field.
8. Click **Automatic**.
9. Click **Apply**.
10. Click **OK**.
11. If **Routing and Remote Access** service is not started, right-click on the service and click **Start**. (To determine if the service is started, look for the word "Started" in the **Status** column). Service should start automatically on subsequent restarts.
12. If **DRAC CardObject Server** is not started, right-click the service and click **Start**. (To determine if the service is started, look for the word "Started" in the **Status** column). Service should start automatically on subsequent restarts.

Dial-Up Networking Setup for Windows 2000 Management Stations

To set up dial-up networking for Windows 2000 management station(s), perform the following steps:

1. Click the **Start** button, and point to **Programs—> Accessories—> Communications—> Network and Dial-up Connections**.
2. Double-click **Make New Connection**.
3. In the **Network Connection Wizard** window, choose **Next**.
4. If required, complete the **Location Information** and specify that location on the **Phone and Modem Options** screen.
5. Choose **Dial up to private network**.
6. Click **Next** four times.
7. Type the following name for the connection: `drac-ppp`.
8. Click **Finish**.
9. Restart the system.

Firmware Installation

If you ordered a DRAC II with your system, Dell installed the version 2.4 firmware. If you are adding the DRAC II or upgrading, you can upgrade the firmware on the DRAC II by using a firmware flash diskette for the version of firmware you want to load to the DRAC II. Any DRAC II can be upgraded to version 2.4 with a firmware upgrade.

NOTICE: The DRAC II firmware version must be compatible with the proper version of the managed node software (Dell OpenManage Hardware Instrumentation Package (HIP) or Dell OpenManage Server Agent) to be a supported configuration. Failure to properly match firmware and hardware can cause the DRAC II to work improperly and adversely affect the console redirect feature. See Table 1-2 for a list of firmware versions with supported HIP and Server Agent versions.

If you do not have a version 2.4 or later firmware flash diskette, you can download the firmware file from the Dell | Support website at support.dell.com. When you run the file, you receive a series of prompts to guide you through the creation of a firmware flash diskette.

After you have created the diskette or if you are using the diskette that came with your DRAC II, follow these steps to update your firmware:

1. Insert the diskette in the diskette drive and restart the system.

The software on the diskette automatically flashes the new firmware to the DRAC II.

2. When the flash completes, remove the flash diskette.
3. Reboot the system.



CHAPTER 3

Configuring and Using the DRAC II

The Dell OpenManage Remote Assistant Card II (DRAC II) helps you monitor your Dell system environment by extending the system management capabilities of the Dell OpenManage IT Assistant and the Dell OpenManage Server Agent. Using the DRAC II Web Console, you can remotely monitor and manage your PowerEdge system through a network or modem connection.

For complete information on installing and using the Server Agent, see the *Dell OpenManage Server Agent User's Guide*. For complete information on installing, configuring, and using the IT Assistant, see the *Dell OpenManage IT Assistant User's Guide*. You can find both *User's Guides* on your documentation CD. For the latest information on configuring and using the DRAC II, see the **dracread.txt** file on the *Dell OpenManage Systems Management CD*.

This chapter describes procedures for performing the following tasks:

- Adding a DRAC II administrator using IT Assistant
- Configuring the network properties of the DRAC II with IT Assistant
- Configuring the modem properties of the DRAC II with IT Assistant
- Configuring DRAC II alerts with IT Assistant
- Configuring the DRAC II using the racconf utility
- Using the DRAC II Web Console for server management
- Connecting to the serial port
- Using the Remote Floppy Boot utility for remotely booting a managed node from a diskette in the management station
- Access to the DRAC II through the Internet

Configuring the DRAC II in the Dell OpenManage Environment

The following subsections provide information on configuring the DRAC II.

Adding a DRAC II Administrator

The DRAC II holds information for up to sixteen administrators. The DRAC II provides out-of-band security by requiring an administrator to provide a user name and password prior to establishing a remote connection. The DRAC II also provides paging services to notify administrators if the system crashes, loses power, or experiences a list of other events. In addition, you can enter an optional callback number to force the DRAC II to hang up on a modem connection and call back to the preconfigured number as an extra security measure.



NOTE: The DRAC II does not have a default user name and password. To establish a remote connection using the DRAC II Web Console, you must assign a user name and password. The defaults for the IT Assistant ("root" and "calvin") do not work unless you assign them.

To create a DRAC II administrator, perform the following steps:

1. Launch IT Assistant by clicking the **Start** button and pointing to **Programs—> Dell OpenManage Applications—> IT Assistant—> IT Assistant**.

2. At the **Security Warning** window, click **Yes**.

If the following prompt appears: Do you want to install the required components for Dell OpenManage IT Assistant?, click **Yes**.

3. At the **Security Warning** window, click **Yes**.

4. At the **Logon Information** window, select **Read/Write** and enter a **Password**. If no password is set up, the default is a blank password.

5. Click **OK**.

You are prompted to configure Discovery.

6. Click **Yes**.

7. At the **Default Discovery Configuration** window, accept the defaults and click **OK**.

8. At the **Subnet Discovery** window, click **Add**.

9. At **Subnet Type**, click the drop-down arrow and select the appropriate subnet type for your network and enter the appropriate information in the block(s) that follow.

For example, if you select IP Address, enter 120.120.120.2 or the IP address for the node you are trying to configure.

10. Accept the defaults for the remainder of the screen and click **OK**.

11. Click **Close** at the **Subnet Directory** window.
12. Click **Servers**.
13. Double-click the **Host Name** of the system to be configured.
14. Click the **Users** tab.
15. Click **Add**.
16. Log in if the Login dialog box displays. The default login for the agent installed on the server with the DRAC II is:

Username: root

Password: calvin

If you enter your own password during setup of the DRAC II agents, the calvin default is overwritten.

17. Click **OK**.
18. Enter a user name in the **Name** field.
19. Enter a new password in the **New Password** field.
20. Enter the new password again.
21. Click the **Configure DRAC User** check box.
22. Enter a telephone number in the **Session Callback Number** field.

The session callback number allows the system to receive a call, hang up, and then call the console back at an assigned number. This security feature limits remote access to a single telephone number to ensure that the system only responds to calls from selected consoles. If a callback number is not entered, the system can respond to calls from any console. This feature is only applicable if you are using a modem.

23. Select the type of pager you have from the **Pager Type** drop-down box.

If a pager type is selected, DRAC II issues a page to the user if DRAC II generates an event that meets the maximum pager severity level.



NOTE: The DRAC II does not page on an event if the system is being "actively managed" through the DRAC II. If any user has a remote session established with the DRAC II during an event, the DRAC II Web Console displays a flashing red icon in the user interface but no page is issued. All remote sessions with the DRAC II must be closed for paging to occur.

24. Enter a service provider telephone number in the **Service Provider** field.

The telephone number of the service provider for *alphanumeric* paging goes here. If numeric paging was selected from the **Pager Type** drop-down box, this box should remain blank. If the modem line to which the DRAC II connects for paging requires a number to be dialed to connect to an outside line, this number

should be separated from the telephone number by a comma. Example: 9,5551212.

25. Enter a pager number in the **Pager Number** field.

For alphanumeric paging, enter the unique pager number or personal identification number (PIN) required by the service provider to identify your pager. Example: 12345.

For numeric paging, enter the pager number. Again, the number dialed to connect to an outside line (if required) should be separated by a comma and four trailing commas should follow the main telephone number. The trailing commas are required to give the paging service time to answer and respond before the customized pager string is sent. Each comma represents approximately one second of delay. Example: 9,5551212,,,,. If your numeric pager requires a PIN number, an example might be 9,5551212,,,,12345,,,,. Adjusting the actual number of commas may be required based on the individual service provider.

26. Select the severity level from the **Minimum Pager Severity Level** drop-down box.
27. Enter a pager string in the **Customized Pager String** field, if desired.

For example, enter 911 for a numeric pager or a system name for an alphanumeric pager.

28. Click **OK**.

The name you entered appears in the **Username** box with a telephone icon next to the name to indicate remote access privilege.

Configuring the Network Properties of the DRAC II

The DRAC II contains an integrated 10Base-T Ethernet network interface controller (NIC) and supports Transmission Control Protocol/ Internet Protocol (TCP/IP). The NIC has a default address of 10.0.0.1 and a default gateway of 0.0.0.0.



NOTES: If the DRAC II is configured to the same IP address as another NIC on the same network, an IP address conflict occurs. The DRAC II stops responding to network commands until the IP address is changed on the DRAC II. The DRAC II must be changed even if the IP address conflict is resolved by changing the other network interface card.

Changing the IP address of the DRAC II causes the DRAC II to reset. If simple network management protocol (SNMP) polls the DRAC II before the card initializes, a temperature warning is logged because the correct temperature is not transmitted until the card is initialized.

To configure the network properties of the DRAC II, perform the following steps:

1. On the **IT Assistant** menu, click **Configuration**.
2. From the submenu, click **Remote Access Hardware**.

3. Click the **Host Name** of the system housing the DRAC II to be configured.
4. Click the **Network** tab.
5. Enter the required information in the **IP Address**, **Subnet Address** and **Default Gateway** fields of the DRAC II (not the system).
6. Click **Save**.



NOTE: To save the IP address to the DRAC II, you must first reset the DRAC II. If SNMP polls the DRAC II before the card is initialized, a temperature warning is issued. The correct temperature is not transmitted until the card completes the reset.

7. Click **Yes**.

The reset takes a couple of minutes for the DRAC II to reinitialize.

Configuring the Modem Properties of the DRAC II

Configuring the DRAC II modem properties is an optional feature; however, a modem is required.

To configure the modem properties of the DRAC II, perform the following steps:

1. On the **IT Assistant** menu, click **Configuration**.
2. From the submenu, click **Remote Access Hardware**.
3. Click the **Host Name** of the system housing the DRAC II to be configured.
4. Click the **Modem** tab.
5. Select **Pulse** or **Tone** in the **Dial Mode** field.
6. Enter an initialization string in the **Initialization String** field.

If you want to use the DRAC II default string, then leave this field empty.

7. Select a baud rate from the **Baud Rate** drop-down menu.
8. Click **Save**.



NOTE: To save the modem properties to the DRAC II, you must first reset the DRAC II. If SNMP polls the DRAC II before the card is initialized, a temperature warning is issued. The correct temperature is not transmitted until the card completes the reset.

9. Click **Yes**.

It takes a few minutes for the DRAC II to reinitialize.

Configuring the Alert Properties of the DRAC II

The DRAC II can be configured to respond to alert conditions from the system's embedded server management (ESM) hardware or to other conditions such as operating system crashes or power failures. In addition to paging, the DRAC II can send an SNMP trap to preconfigured destinations. The DRAC II can also dial-out to a remote system and transfer the event information.



NOTE: The DRAC II does not alert on an event if the system is being "actively managed" through the DRAC II. If any user has a remote session established with the DRAC II during an event, the DRAC II Web Console displays a flashing red icon in the user interface but no alerts are issued. All remote sessions with the DRAC II must be closed for alerting to occur.

To configure the alert properties of the DRAC II, perform the following steps:

1. On the IT Assistant menu, click **Configuration**.
2. From the submenu, click **Remote Access Hardware**.
3. Click the **Host Name** of the system housing the DRAC II to be configured.
4. Click the **Alerts** tab.
5. Enter an IP address in the **Destination IP Address** field of a management station if you want the DRAC II to send SNMP traps to a management station when an event occurs.
6. Enter the name in the **Community Name** field to which to send the trap.
7. Enter the number of a management station in the **Dial-Out Number** field if you want the DRAC II to call a management station and transfer event information.

If the modem line to which the DRAC II connects for paging requires a number to be dialed to connect to an outside line, separate this number from the telephone number by a comma. Example: 9,5551212.

8. Click **Add**.

Configuring Your Network to Access the DRAC II From the Internet

To access the DRAC II through the Internet, you must first set up a PowerEdge system to act as an address book server (middle-tier management station).

Requirements for Management Stations to Access DRAC II From the Internet

To access DRAC II from the Internet, management stations must have the following components installed:

- Windows NT or Windows 2000 operating system
- HTTP server (Microsoft Internet Information Services (IIS) or equivalent)



- Microsoft Internet Explorer 4.0 or later (Netscape not currently supported)
- Two network interface controllers (NICs) or one NIC and a modem

NOTES: If you plan to use a modem to connect to DRAC II on the managed node, the management station must have the Remote Access Server (RAS) — both Routing and RAS for Windows 2000 — installed with dialup networking properly configured.

For Internet connections, the DRAC II client connects to the DRAC II command server located on the management station. If the management station is behind a firewall, open the following ports: 6001 (used by the client to communicate with the DRAC II), 6003 (used by the client to communicate with the address book service), and 6005 (used for the dialup connection).

For Intranet and virtual private network (VPN) connections where no http server is used, the DRAC II client does not go through the DRAC II command server to connect to the DRAC II or address book service. If the management station is behind a firewall, open the following ports: 5001 (used by the client to communicate with the DRAC II), 5003 (used by the client to communicate with the address book service), and 5005 (used for the dialup connection).

Setting Up a System as an Address Book System

To set up a system as an address book system, perform the following steps:

1. Connect one NIC to the Internet and the other to the LAN for the managed nodes.

-OR-

Connect the NIC to the Internet and the modem to an analog telephone line.

2. Using the *Dell OpenManage Systems Management CD*, install **Remote Management** from the **Management Station Applications** menu.
3. Restart the system.
4. Launch the DRAC II Web Console by clicking the **Start** button and pointing to **Programs—> Dell OpenManage Applications—> Dell Remote Assistant—> DRAC II Web Console**.
5. Click **New Session** to open the address book.
6. In the **Favorite Management Stations** box, double-click the **(LOCAL)** management station icon.
7. In the address book, click **Add**.
8. Add the **Server Name** and **IP Address** of the managed node (or the modem number of the DRAC II) and click **OK**. Input address book information for all the managed nodes on the LAN.
9. Open a **cmd** window and ping all the IP addresses in the address book to verify that each is receiving messages. If the ping request times-out, verify that your DRAC II network connections and IP addresses are correct.

10. From the DRAC II Web Console, double-click a server name in the address book.
11. Enter the **User Name** and **Password** to verify that you are able to connect to the DRAC II.

When four selections appear in the left side of the console window, the connection has been made successfully. Verify each managed node.

12. Close the DRAC II Web Console.

Configuring a Desktop, Laptop, or PowerEdge System as the DRAC II Web Console

To set up a system to act as the DRAC II Web Console, perform the following steps.



NOTE: The DRAC II Web Console feature is not supported on Windows 9x.

1. Connect the NIC to the Internet, or the modem to an analog telephone line.
2. Using the *Dell OpenManage Systems Management CD*, install **Remote Management** from the **Management Station Applications** menu.
3. Restart the system.
4. Connect to your Internet service provider (ISP).
5. Launch the DRAC II Web Console by clicking the **Start** button and pointing to **Programs—> Dell OpenManage Applications—> Dell Remote Assistant—> DRAC II Web Console**.
6. Click **New Session** to open the address book.
7. In the **Favorite Management Station** dialog box, click **Add New Station**.
8. In the **Add New Management Station** dialog box, type `http://` and the IP address or system name of the address book server established in the previous section.
9. Click **OK**.

A globe icon with the URL for the address book server appears.

10. Double-click the new icon.

The address book you established in the previous section appears in the **Address Book** box.

11. Double-click the server name of the managed node you want to remotely manage.
12. Enter the requested information in the **User Name** and **Password** fields.
13. Click **OK**.

You should now be able to connect to the DRAC II and remotely manage the managed node.

Configuring the DRAC II Outside the Dell OpenManage Environment

The simplest and fastest way to configure the DRAC II is with IT Assistant. However, for the Windows and Linux operating systems, the DRAC II can also be configured using the `racconf` utility. The `racconf` utility is installed along with the DRAC II agents on the managed node. See Appendix B, "Racconf Utility," for a detailed explanation of the `racconf` utility.

If the `racconf` utility is used to configure the DRAC II, IT Assistant does not recognize any of the users created with `racconf` unless the `OMSASync` utility is run after `racconf` to synchronize the DRAC II database and the Dell OpenManage Server Agent database.

NOTICE: If IT Assistant connects to a managed node on a server and the DRAC II was configured with `racconf`, IT Assistant deletes all user IDs from the DRAC II when the User's tab on IT Assistant is selected unless `OMSASync` is used. `OMSASync` must be used every time `racconf` is used.

Using the Racconf Utility Under Windows NT and Windows 2000

1. Click the **Start** button and point to **Find** (or **Search**)—> **Files or Folder**.
2. Enter `racconf.ini` in the **Named** file field.
3. Click **Find Now**.
4. When the file is located, double-click the file icon to open **racconf.ini** in Notepad.
5. Scroll down to the NetConfig group.



NOTE: Ensure there are no spaces or other characters between the equal sign (=) and the start of the address. Do not press <Enter> after typing in the address. Use the arrow keys to position the cursor to the next line.

6. Change the `IpAddr` from 10.0.0.1 (the factory default) to the desired IP address for the DRAC II.
7. Change the `SubNetMask` from 0.0.0.0 (the factory default) to the desired subnet mask address for the DRAC II.
8. Change the `GatewayAddr` from 0.0.0.0 (the factory default) to the desired gateway address for the DRAC II.
9. Scroll to the `AdminEntryxx` groups.



NOTE: Ensure there are no spaces or other characters between the equal sign (=) and the start of the name and password. Do not press <Enter> after typing. Use the arrow keys to position the cursor to the next line. Administrator name and password should be lowercase.

10. Enter the administrator alias for `AdminEntry0`.



11. Enter the password for AdminEntry0.

NOTE: There must be at least one DRAC II administrator to log in to the DRAC II. No entries are required for the other 15 administrators but AdminEntry1 through AdminEntry15 can be configured for additional DRAC II administrators.

12. See Appendix B, "Racconf Utility," for details on configuring the other parameters of the **AdminEntryxx** group and the other configurable groups in the **racconf.ini** file. Configure other parameters and groups as desired.
13. Close Notepad.
14. Click **Yes** to save the changes.
15. Copy the **racconf.ini** file to the root directory, which is usually **c:**
16. Click the **Start** button and then click **Run**.
17. Type `cmd` in the **Run** field.
18. Click **OK**.
19. Change the drive letter in the **cmd.exe** window to **c:** if the drive letter is not **c:**
20. At the prompt, type `racconf /c racconf.ini`.
21. Press <Enter>.

After a few seconds the response `Loading information from INI file to the DRAC card...` appears. Next, a request to reset the card appears. The card must be reset for the new settings to take effect.

22. At the prompt, type `racconf /r`.
23. Press <Enter>.

The response `Resetting Card` appears.

Resetting the card takes 1.5 to 2 minutes. The reset is complete when the response `Reset Complete` appears.

24. Type `omsasync` at the command line prompt to run the OMSASync utility which syncs the DRAC II user IDs with Server Agent (for more information on using the OMSASync utility, see your **syncread.txt** file.)
25. Press <Enter>.

Using the Racconf Utility Under NetWare

1. At the server prompt, type:

```
unzip sys:\system\dell\omsa\racconf.zip.
```

2. Press <Enter>.

After **racconf.ini** inflates, the message `Press any key to close the screen` appears.

3. Press any key.
4. Type `edit`.
5. Press <Enter>.
6. Press <Insert>.
7. Scroll to **SYS**.
8. Press <Enter>.
9. Scroll to **racconf.ini**.
10. Press <Enter> twice.

The **racconf.ini** opens for editing.

11. Scroll down to the **NetConfig** group.



NOTE: Ensure there are no spaces or other characters between the equal sign (=) and the start of the address. Do not press <Enter> after typing in the address. Use the arrow keys to position the cursor to the next line.

12. Change the `IpAddr` from 10.0.0.1 (the preinstalled default) to the appropriate IP address for the DRAC.
13. Change the `SubNetMask` from 0.0.0.0 (the preinstalled default) to the appropriate subnet mask address for the DRAC.
14. Change the `GatewayAddr` from 0.0.0.0 (the preinstalled default) to the appropriate gateway address for the DRAC.
15. Scroll to the `AdminEntryxx` groups.



NOTE: Ensure there are no spaces or other characters between the equal sign (=) and the start of the name and password. Do not press <Enter> after typing. Use the arrow keys to position the cursor to the next line.

16. Enter the administrator alias for `AdminEntry0`.
17. Enter the password for `AdminEntry0`.



NOTE: There must be at least one DRAC II administrator to log in to the DRAC. No entries are required for the other 15 administrators but `AdminEntry1` through `AdminEntry15` can be configured for additional DRAC II administrators.

18. See Appendix B, "Racconf Utility," for details on configuring the other parameters of the **AdminEntryxx** group and the other configurable groups in the **racconf.ini** file. Configure other parameters and groups as desired.

19. Press <Esc>.
20. Highlight **Yes** and press <Enter> to save the file.
21. Press <Esc>.
22. Highlight **Yes** and press <Enter> to exit the **Edit** window.
23. Type `netbasic`.
24. Press <Enter>.
25. Type `shell`.
26. Press <Enter>.
27. At the shell prompt, type: `copy racconf.ini c:\nwserver\racconf.ini`.
28. Press <Enter>.
29. Type:

```
copy \system\dell\omsa\racconf.exe c:\nwserver\racconf.exe
```
30. Press <Enter>.
31. Type `exit`.
32. Press <Enter>.
33. At the NetWare prompt, type: `down`
34. Press <Enter>.
35. At the MS-DOS prompt, type `racconf /c racconf.ini`.
36. Press <Enter>.

After a few seconds the response, `Loading information from INI file to the DRAC card` appears.

Shortly after that a request to reset the card appears. The card must be reset for the new settings to take effect.
37. To reset the card, type `racconf /r`.
38. Press <Enter>.

The response, `Resetting Card` appears. Resetting the card takes 1.5 to 2 minutes. The reset is complete when the response `Reset Complete` appears.
39. Type `server`.
40. Press <Enter>.
41. At the NetWare prompt, type `omsasync`

42. Press <Enter> to run the OMSASync module which syncs the DRAC II user IDs with Server Agent.

Using the Racconf Utility Under Red Hat Linux

To use the racconf utility, perform the following steps:

1. At the prompt, type `cd /etc`.
2. Press <Enter>.
3. At the prompt, type `vi racconf.ini`.
4. Press <Enter>.
5. Press <Insert>.
6. Scroll down to the NetConfig group.



NOTE: Ensure there are no spaces or other characters between the equal sign (=) and the start of the address. Do not press <Enter> after typing in the address. Use the arrow keys to position the cursor to the next line.

7. Change the IpAddr from 10.0.0.1 (the preinstalled default) to the appropriate IP address for the DRAC II.
8. Change the SubNetMask from 0.0.0.0 (the preinstalled default) to the appropriate subnet mask address for the DRAC II.
9. Change the GatewayAddr from 0.0.0.0 (the preinstalled default) to the appropriate gateway address for the DRAC II.
10. Scroll to the AdminEntryxx groups.



NOTE: Ensure there are no spaces or other characters between the equal sign (=) and the start of the name and password. Do not press <Enter> after typing. Use the arrow keys to position the cursor to the next line. Ensure the administrator name and password are lowercase.

11. Enter the administrator alias for AdminEntry0.
12. Enter the password for AdminEntry0.



NOTE: There must be at least one DRAC II administrator to log in to the DRAC II. No entries are required for the other 15 administrators but AdminEntry1 through AdminEntry15 can be configured for additional DRAC II administrators.

13. See Appendix B, "Racconf Utility," for details on configuring the other parameters of the **AdminEntryxx** group and the other configurable groups in the **racconf.ini** file. Configure other parameters and groups as desired.
14. Press <Esc>.
15. Press <Shift ><:>.

16. Type `wq`.

17. Press <Enter>.

Linux writes the new data to the **racconf.ini** file.

18. Type `racconf -c racconf.ini`.

19. Press <Enter>.

After a few seconds the response `Loading information from INI file to the DRAC card...` appears. Shortly after that a request to reset the card appears. The card must be reset for the new settings to take effect.

20. At the prompt, type `racconf -r`.

21. Press <Enter>.

The response `Resetting Card` appears. Resetting the card takes 1.5 to 2 minutes. The reset is complete when the response `Reset Complete` appears.

22. Type `omsasync` at the command line prompt to run the OMSASync utility which syncs the DRAC II user IDs with Server Agent (For more information on using the OMSASync utility, see your **syncread.txt** file).

23. Press <Enter>.

Using the DRAC II Web Console

The DRAC II Web Console is the application used to perform out-of-band system monitoring tasks. The DRAC II Web Console allows remote system reset, unattended reboot of a hung system, and remote power on and power off operations.

To use the DRAC II Web Console, perform the following steps:

1. On the management station, click the **Start** button and point to **Programs—> Dell OpenManage Applications—> Dell Remote Assistant—> DRAC II Web Console**.
2. Click **New Session**.
3. Double-click the **LOCAL** icon in the **Favorite Management Station** box.
4. Click **Add**.
5. Select either **Network** or **Modem** in the **Connect Using** area.
6. In the **Server Name** field, enter the server name.
7. In the **IP Address** or **Modem** fields, enter each item respectively.
8. Click **OK**.
9. In the **Address Book** box, double-click **Server Name**.

The **User Login** box opens.

10. In the **User Name** and **Password** fields, enter a user name and password.

11. Click **OK**.

Four menu selections appear in the lower left frame.

12. Click **System Health**.

This item displays four DRAC II parameters (ambient temperature, wall adaptor voltage, PCI bus voltage, and battery status). Some basic system status is shown.

13. Click **Details** for additional system information.

14. Click **Close** to close the **System Details** window.

15. Close the **System Health** window.

16. Click **System Info**.



NOTE: The system information presented by the DRAC II is static information from system management BIOS (SMBIOS). This information should not be considered a valid system status because it does not provide real-time information for monitoring the system. To view the current system status, use IT Assistant.

17. Click the buttons at the top of the screen for additional information.

18. Close the **System Info** window.

19. Click **Event Log**.

This item provides the DRAC II Event Log, the System Event Log (provided by ESM or IPMI), and the system power-on self-test (POST) log.

- Click **Copy to Clipboard** to copy and paste information on your local clipboard.
- Click **Clear** to delete all information displayed in the event logs.
- Click **Refresh** to update the displayed events.
- Click **All POST Log** to display all data for all POST logs. DRAC II stores information for up to four POST logs.
- Click **Current POST Log** to display the log that displayed when you booted the system.
- Click **Clear all POST Log** to delete all POST log information.



NOTE: On systems using ESM, DRAC II does not clear the current POST log. The POST codes read by the DRAC II are stored in ESM and are only cleared when the system is booted. The BIOS only sends POST codes to ESM during boot. After the system is booted, no further POST codes are sent.

20. Close the **Event Log** window.

21. Click **Remote Access**. The redirection bar can be moved anywhere on the screen.

22. Click the **Start/Stop Console Redirection** icon (the green eye). If you are connected to a managed node running Windows NT or Windows 2000, a graphic console appears. A text console appears for managed nodes running NetWare or Linux. This function also redirects mouse and keyboard functions. The user may now operate the managed node remotely.
23. To end Console Redirection, click **Start/Stop Console Redirection** icon (red eye) again.



NOTE: When using the remote console to redirect the keyboard and/or mouse on the remote system, conflicts may arise if another user is at the managed node and is simultaneously using the keyboard and mouse.

24. Click the **Power Management** icon (the red down arrow). This function allows the remote user to control the power of the managed node. The remote power management functions are used to bring a system down or get the system back up and running in the event the operating system locks or power is interrupted at the managed node.



NOTE: Some systems support a power-button override feature that allows you to disable the power button. However, if the power button is disabled, you will not be able to use the DRAC II Power Management feature to shut down or boot a system remotely. You must enable the power button to use Power Management.

25. Click **Cancel** to close the **Power Management** window.



NOTE: To use Snapshot, you must first turn on console redirection.

26. Click the **Snapshot** icon (camera).

A **Save As** box appears. You can select the default file name or enter a new one. This function takes a picture of the displayed console and saves it to the hard drive. A graphic console is saved as a bitmap (.**bmp**) file and a text console is saved as a text (.**txt**) file.

27. Click **Save** to save the snapshot and close the window, or click **Cancel** to close the window.
28. Click the **Show Last Crash Screen** icon (blue display).

This item displays the last text screen on the remote console before a crash to assist in troubleshooting. This text cannot be displayed during Console Redirection.



NOTES: Do not set the IT Assistant system reset timer for fewer than 30 seconds. It takes approximately 30 seconds following a system crash for the DRAC II to capture the crash screen for viewing.

*The crash screen in Windows 2000 is a graphics screen and cannot be displayed by the DRAC II **Show Last Crash Screen** function.*

The three remaining icons are **Generate <Ctrl>**, **Generate <Alt>**, and **Generate <Ctrl+Alt+Del>**. These icons are clicked or selected to perform the <Ctrl>, <Alt>

and <Ctrl><Alt> keyboard functions. These functions can only be used during Console Redirection. These keys cannot be redirected from the keyboard.

29. Close the **Remote Access** window.
30. Close Internet Explorer.

This action automatically disconnects the DRAC II remote session.

Connecting to the Serial Port

The DRAC II has an integrated serial port. By using an adapter cable and terminal emulator, you can access basic functions of the DRAC II through this port.

To use the DRAC II serial port, perform the following steps:

1. Connect a 9-pin null modem cable from a serial port on the management station (usually COM 1 or COM 2) to the serial port adapter cable for DRAC II.
2. Connect the 10-pin serial port connector of the adapter to the serial port on the DRAC II (J2).



NOTE: The following are general instructions for using a terminal emulator to connect to the DRAC II such as Windows HyperTerminal. The exact steps vary depending on the software package used.

3. Launch the terminal emulator program.
4. Open a new session on COM 1 or COM 2 depending on what port the null modem cable is plugged into.
5. Set the baud rate to 57600.
6. Set the number of bits to 8.
7. Set the number of stop bits to N.
8. Set the parity bits to 1.
9. Set the flow control (or handshaking) to None.
10. Set the terminal emulation to VT100 or Auto-detect, if available. Otherwise, set to ANSI.
11. Connect to the DRAC II.

The DRAC II should quickly respond with its header information.

12. Press any key to start the terminal system.

DRAC II Console Redirection With Windows NT and Windows 2000

When you use the DRAC II to perform console redirection of a node running the Windows NT Server operating system, you might notice a delay when you change

from text to graphics mode while the managed node is booting. This delay occurs because the redirection service must be initialized on the managed node before you can view graphics. Similarly, if the managed node is already in graphics mode, the first few graphics screens might take longer to display while the screen transfer process is initializing.

In addition, the mouse does not operate from the DRAC II Web Console at the **Windows Security** and **Login Information** windows. Whenever a mouse is moved on the remote client during redirection, the remote client captures the mouse movements and sends them to the DRAC II.

The DRAC II then sends the mouse movements to host services, so that the same mouse movements can be replayed. The DRAC II host services use Windows APIs to accomplish this playback using **Journals**. The Windows API, as a security measure, does not allow you to playback the mouse on the **Login** screen, **Windows Security** screen, and so on. The **Windows Security** screen, <Ctrl><Alt>, is a new desktop. Windows performs this action so that even if something is wrong on your current desktop, you always connect to the new desktop properly, so that you can take action through the **Task Manager** or reboot the system. This feature is a security measure by Windows.

Dell does not recommend full-screen MS-DOS mode because the console redirection feature may not work properly in systems that use an Advanced Graphics Port (AGP) video bus such as the PowerEdge 300, 1300, 2300, 4300, or 4350 systems.

The DRAC II depends on the BIOS data area to get the current cursor positions when the host is in text mode. In Windows 2000, the BIOS data area is not updated with the correct cursor positions in full-screen mode, so the correct cursor position is unavailable and cannot be redirected.

If you experience a problem after you press <Alt><Enter> to go into full-screen mode in an MS-DOS-prompt window, press <Alt><Enter> again to undo the full screen.

DRAC II Console Redirection With NetWare

The PowerEdge 300, 1300, 2300, 4300, and 4350 systems use AGP video instead of PCI video. These systems have a BIOS issue that does not allow the DRAC II Web Console to properly console-redirect a managed node running the NetWare operating system.

DRAC II Console Redirection With Red Hat Linux

The DRAC II Console Redirection feature is not supported on Red Hat Linux systems with advanced graphics port (AGP) video such as the PowerEdge 300, 1300, 2300, 4300, and 4350. Console redirection on supported systems is text only in a terminal window.

When you redirect the console (remote access), the cursor is positioned to the left of the Red Hat Linux command prompt. Because the Red Hat Linux cursor is an active cursor, the display of the blinking cursor to the right of the command prompt is not supported at this time. Current display of the cursor does not impede the command line functions.

The redirected console displays text only. A graphical X-window is not displayed properly. Press <Ctrl><Alt> on the toolbar, and press a function key (<F1> through <F6>) to display a readable virtual terminal console.

Red Hat Linux 7.x has a graphical splash screen at boot that is not readable with DRAC II Console Redirection. If your default run level in **/etc/inittab** is 5 (GUI mode), you cannot remotely change run levels at boot. It is recommended that if you intend to boot to a different kernel, you change the default bootable kernel in the **/etc/lilo.conf** file before rebooting.

Open **/etc/lilo.conf** with a text editor and change the **DEFAULT=linux** to **linux-smp** or **linux-up**. Save the file then type the following commands at the prompt:

```
lilo -v  
shutdown -r now
```

Linux reboots to the desired kernel.

Connecting to the DRAC II by Modem

When you use the DRAC II application program to connect to the DRAC II over a modem connection, the DRAC II functions as a Remote Access Service (RAS) system in that it provides an Internet Protocol (IP) address to the remote console. The DRAC II can obtain IP addresses using the following two methods:

- Through the Dynamic Host Configuration Protocol (DHCP) client
- Through RAS on the management station

The network interface controller (NIC) in the DRAC II functions as a Dynamic Host Configuration Protocol (DHCP) client. If a DHCP system exists on your network, the DRAC II obtains the IP addresses from the DHCP system.



*NOTE: When you use this method, the DRAC II searches for a DHCP system only when the DRAC II is first turned on. DHCP can be disabled using the **racconf** utility. See Appendix B, "Racconf Utility."*

If no DHCP system exists on your network, the DRAC II uses the default address range of 128.0.0.1 through 128.0.0.3.



NOTE: When you use this method, you are limited to one modem session at a time per console to avoid IP address conflicts.

You can configure the DRAC II to dial out to a management station when an event occurs. In this situation, RAS on the management station assigns the IP addresses. You can configure RAS on the management station to use DHCP or to use a static address pool.

PPP authentication occurs at the time of negotiation with RAS. The DRAC II uses Password Authentication Protocol (PAP) to authenticate with RAS. To allow the DRAC II to dial out to a management station for alert notification, you must create an account on the management station with the user name **drac** and the password **drac**.

To facilitate console redirection using a modem, the Address Book entry in the DRAC II application program must be configured to select between the DRAC II and either an earlier version of the DRAC (in PowerEdge 2200 systems) or the ESM (in PowerEdge 4100 and 4200 systems). Whenever you add or edit a managed system, make sure that you select the appropriate choice for the DRAC (choose DRAC II for the DRAC software version 2.x).



*NOTES: For DRAC II entries in the managed server address book, the **Connect Using** field is disabled because the DRAC II is using the RAS modem. Configure **Connect Using** for earlier versions of the DRAC II only.*

*For earlier versions of the DRAC, do not enable the RAS modem in the **Edit Connections** dialog box.*

Multiple Sessions in DRAC II Web Console

The DRAC II Web Console can support more than one session at a time using a network connection.

If you are using the modem connection and you have more than one modem configured for RAS, the console can support more than one session with the following limitations:

You must configure dial-up networking with the **Use Another Port If Busy** check box selected for drac-ppp under the menu item **Edit Phonebook Entry—> Basic**.



NOTE: With this configuration, you cannot use the callback feature on the DRAC II, because the telephone number depends on the modem from which you are dialing.

If your DRAC II-equipped systems are on a network where DHCP is unavailable, the default IP address 128.0.0.1 is used. An IP address conflict occurs if you run two simultaneous modem sessions in the same console.

Also, DRAC II-equipped systems cannot support simultaneous active sessions from “remote consoles” on both the modem and network interfaces.

Missing System Information

The DRAC II acquires information about the system when the system boots. If changing the IP address of the DRAC II or some other method resets the DRAC II, system information is unavailable until the system is rebooted.

System Monitoring and Alerting on Windows NT and Windows 2000

DRAC II communicates with the system's ESM to collect event logs, POST codes, and so on. DRAC II can be configured to dial out to a management station, send a page, or send an SNMP trap over the out-of-band (OOB) network in the event of a system failure or critical event.



NOTE: If you are connected to a DRAC II with the DRAC II Web Console, you are considered to be “actively managing” the DRAC II. Since an administrator is online and

can observe the status of the DRAC II, no alerts are sent in if an event occurs. The red warning icon flashes on the DRAC II Web Console to alert the administrator and opening the Event Log page displays the cause of the event.

In the case of an event, DRAC II attempts to contact an administrator in the following sequence:

- Send an SNMP trap over the OOB network.
- Send a page.
- Dial out to a management station.

The first method is to send an SNMP trap to each configured destination (up to eight). Next, the DRAC II goes to the second method, paging, where it runs through a list of pager numbers. Finally, the DRAC II dials out to the management station. The alerting process terminates as soon as the DRAC II establishes a connection to a station.

To support the dial-out notification feature on the DRAC II, the management station must allow for remote access (dial-in). To configure a user profile on the management station so that the DRAC II can establish a connection and log an alert, perform the following steps:

1. At the management station, click the **Start** button, point to **Programs—> Administrative Tools—> User Manager for Domains**.
2. From the **User** menu, select **New User**.
3. At the **New User** window, type `drac` in the **Username**, **Password**, and **Confirm Password** fields.
4. Select the **Password Never Expires** check box, and then click **Dialin**.
5. At the **Dial-in Information** window, select the **Grant Dial-in Permission To User** check box, and click **No Call Back**.
6. Click **OK**.
7. At the **New User** window, click **Groups**.
8. At the **Group Memberships** window, select the appropriate group for the user from the window on the right side of the screen, and move the group to the left window. You can control access permissions for each group.
9. Click **OK** to exit the **Group Memberships** window.
10. At the **New User** window, click **Add**.
11. Exit the **User Manager** screen.

Location of DRAC II Event Logs

Alert events logged by DRAC II are entered into the Windows application log on the management station where the DRAC II service is running.

Paging

DRAC II supports both numeric and alphanumeric paging. For numeric paging, the card sends up to a 50-digit binary coded decimal (BCD) string to the pager. The string is configured by the user through IT Assistant, and can be the telephone number of the DRAC II, or any other numeric string that the customer sends.

For alphanumeric paging, the card sends the severity level, followed by an additional ASCII string (up to 50 characters), which is also preconfigured by the user in IT Assistant (this could be system name, building location, and so on). This string is followed by the event description.

Example pager message: `Critical: Server MAPLE, Building C, phone 555-1234 DRAC temperature sensor detected a failure.`

Alphanumeric Paging

Instructions for alphanumeric paging setup are in the IT Assistant online help.

When using the alphanumeric paging function of a DRAC II on a PowerEdge 300, 1300, 1400, or 8450 system, you must enter a custom string in the user setup box of the DRAC II configuration window in the Dell OpenManage Server Console to identify the system. The DRAC II does not send an alphanumeric page with the system name on any of these systems.

Test the Pager Feature in IT Assistant

When you are configuring users for DRAC II remote access under the **Users** tab of IT Assistant, a test pager feature sends out a generic message followed by the user's customized pager string.

For example, with an alphanumeric pager, if the user enters **Server #4** as the customized pager string, the test pager feature sends out the following message: `Test Page from DRAC: Server #4`. Similarly, with a numeric pager, if the user enters 911 as the customized pager string, the test pager feature sends out the following message: `100200911`.

Remote Access to the System Utility Partition

When you remotely reboot your PowerEdge system using the DRAC II, you can enter the system utility partition (if you have a utility partition installed on your hard drive) by pressing the appropriate key sequence during the boot process. When you perform this action using the DRAC II, a special remote menu (text-only) is displayed. Some features that are normally available in the utility partition menu, such as **Choose a Language** or **Create Diskettes** are disabled when running remotely. For more information about the utility partition, see your PowerEdge system *User's Guide*.



*NOTE: Dell recommends that you disable the video test group when remotely running the system diagnostics because the DRAC II does not support graphical video redirection without support from the operating system. For more information on using the system diagnostics, see your PowerEdge system *Installation and Troubleshooting Guide*.*

Using Remote Floppy Boot (RFB)

RFB is a utility that allows you to remotely boot a managed node from a diskette in the management station. You can remotely boot the managed node from an MS-DOS-bootable diskette by using DRAC II Power Management and RFB to restart the system. RFB can also be used to upgrade the BIOS of a managed node using the BIOS flash diskette or diagnostics diskettes in the management station.

Both the DRAC II firmware and DRAC II Web Console must be at the 2.4 or later version level to use RFB.

Platforms Supporting RFB

Table 3-1 details PowerEdge systems and BIOS versions that support RFB:

Table 3-1. Platforms Supporting RFB

PowerEdge System	BIOS Version
PowerEdge 1400	A01 or later
PowerEdge 2400	A00 or later
PowerEdge 2450	A00 or later
PowerEdge 2500	A00 or later
PowerEdge 2550	A00 or later
PowerEdge 4400	A00 or later
PowerEdge 6400	A02 or later
PowerEdge 6450	A02 or later
PowerEdge 8450	A00 or later



NOTES: Because the PowerEdge 8450 does not automatically recognize the DRAC II, to use RFB on this system it must be specifically configured for RFB. For more information, see “Configuring the PowerEdge 8450 for RFB.”

Because the optional ROM support that is necessary for RFB functionality is not enabled on the DRAC II hardware versions C2 and C3, RFB is not supported on these versions. To use the RFB utility, you must be using the DRAC II revision E. To identify the version number of your DRAC II, locate the version number on the narrow edge of the DRAC II adjacent to the real-time clock. Or, use the `racconf` utility to determine the version number. When the `racconf` command is entered, the response will include a line showing ROM size. If the ROM is 1 MB, the hardware version is C2 or C3. If the ROM is 2 MB, the version is E.

The BIOS of other PowerEdge systems is not BIOS Boot Specification (BBS) compliant and does not support the RFB feature.

Starting RFB

To start RFB from the management station, perform the following steps:

1. Launch the DRAC II Web Console by clicking the **Start** button and pointing to **Programs—> Dell OpenManage Applications—> Dell Remote Assistant—> DRAC II Web Console**.
2. Click **New Session**.
3. Connect to target DRAC II in the target node.
4. Click the **Remote Access** icon in the left pane.
5. Click the **Power Management** icon on the **Redirection** bar.
6. On the **Power Management** screen, choose either **System Reset**, **Power Off**, **Power Cycle**, or **Graceful OS Restart**.
7. Select **Start Floppy Redirection**.
8. Click **OK**.

A warning dialogue box appears asking if you are sure you want to shutdown the managed node. Click **Yes**.

9. Place the boot diskette in the management station's diskette drive.

The node restarts in the manner selected in step 6 and boots to the remote diskette.

Stopping RFB

To stop RFB, click on the **Stop Remote Floppy Boot** icon (an image of a diskette with a red "X" superimposed). The icon will turn gray, indicating that RFB has been stopped.

Configuring the PowerEdge 8450 for RFB

To use the RFB utility on the PowerEdge 8450, it must first be configured. To configure the PowerEdge 8450 for RFB, perform the following steps at the managed node:

1. Restart the system.
2. When the **Setup** prompt appears, press <F2> to enter the **Setup** program.
3. Press the right-arrow key to highlight **Advanced**.
4. Press the down-arrow key to highlight **Advanced Chipset Control**.
5. Press <Enter>.
6. Press the down-arrow key to highlight **Multi-Boot Support**.

7. If **Multi-Boot Support** is already enabled, skip to the next step. If not, press the <+> key to change the setting from **disabled** to **enabled**.
8. Press <F10> to save and exit.

The system restarts.



CHAPTER 4

Maintenance and Troubleshooting

This chapter provides information about maintaining and troubleshooting the Dell OpenManage Remote Assistant Card II (DRAC II).



NOTE: See the ***dracread.txt*** file on the Dell OpenManage Systems Management CD for the latest information about maintaining and troubleshooting the DRAC II.

The DRAC II is a high reliability solid-state electronic device. The battery pack is the only component that requires periodic maintenance.

Replacing the Battery Pack

If you get an error message related to the DRAC II battery in the DRAC II event log in the DRAC II Web Console, the battery pack on the DRAC II might need to be replaced.

Removing the Battery Pack

Follow these instructions to remove the battery pack.



CAUTION: The power supplies in your system or storage system may produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the system covers and access any of the components inside the system.

1. Turn off the system and disconnect all peripherals.

NOTICE: See "Protecting Against Electrostatic Discharge" in your *System Information* document.

2. Remove the cover.
3. Remove the DRAC II from the system.

For additional instructions, see the information on expansion cards in your PowerEdge system *Installation and Troubleshooting Guide*.

4. Disconnect the battery wire harness from the DRAC II.
5. Remove the four screws from the battery housing.



NOTE: Dispose of the nickel-metal hydride battery pack at the proper recycling facility.

Installing the New Battery Pack

To install the new battery pack, perform the following steps:

1. Attach the battery pack to the card using the four screws removed in the previous section.
2. Make sure that the battery is oriented with the wire harness toward the Personal Computer Memory Card International Association (PCMCIA) modem socket. See Figure A-1 in Appendix A, "Technical Specifications."
3. Connect the battery wire harness to the battery connector (J8).
4. Press firmly until the connector snaps into place.
5. Reinstall the DRAC II in the system.

Verify that the DRAC II is installed in the proper slot for the system. For additional instructions, see your PowerEdge system *Installation and Troubleshooting Guide*.

6. Reconnect the system peripherals and turn on the system.

Common Problem Situations and Solutions

The following section describes common problems encountered using DRAC II and solutions to the problems.

DRAC II Web Console connects through the modem but then drops the connection or does not respond properly after connected.

The modem driver supplied by the modem manufacturer must be installed on the management station to ensure proper operation of the DRAC II through a modem connection.

None of the Power Management features work except for Graceful OS Restart.

The DRAC II is not installed in the system correctly. The ESM Connector (J10) on the DRAC II is not properly connected with the system board. Remove and reinstall the DRAC II paying close attention to the connection of the J10 connector.

All of the Power Management features work except for Graceful OS Restart.

The DRAC II server agents are not installed properly on the managed node or the driver is not working properly. On a Windows operating system (OS), the DRAC II Console Redirection Service may not be started.

Cannot add a DRAC II User or alert, or change the DRAC II IP address or modem parameters.

The SNMP security is not set to `READ WRITE` or the SNMP **Community Name** on the management station does not match the **Community Name** on the managed node and the name specified in IT Assistant.

DRAC II does not appear under the status tab of IT Assistant.

This problem is usually one with SNMP. Verify that the SNMP service, module or daemon (depending on the OS) is installed or loaded properly and running on both the managed node and the management station. Verify that the DRAC II agents are installed. Restart both the managed node and the management station.

No graphic console redirection from a managed node running Windows.

Verify that the DRAC II agents are installed on the node. Verify the DRAC II Console Redirection Service is started. If the service shows it is started, stop the service and restart to make sure the service is not hung. Restart the system if the service hangs. If the agents are installed but you cannot find the console redirection service, restart the system. Another possibility is that the version of DRAC II firmware does not match the version of DRAC II agents. See "Instrumentation Requirements" in Chapter 1 for the supported configurations of PowerEdge systems.

With the DRAC II installed, the system will not come up. The system power light is on but there is no video.

This problem is usually a hardware issue, which requires that the card be replaced. Try another DRAC II, if one is available, to isolate the issue to the card.

With the DRAC II installed, the system hangs during BIOS initialization.

Restart the system.

I successfully configured the DRAC II, but am unable to connect with the DRAC II Web Console via the network.

The Internet protocol (IP) address in the DRAC II Web Console Address Book does not match the IP address configured in the DRAC II. Verify that the IP Address in both locations match.

The network is down or the transmission control protocol/IP (TCP/IP) stack of the management station is experiencing difficulties. Try issuing a **ping** to another system.

The physical network connection is broken. Verify all cables from the management station to the DRAC II are connected and working.

The hub into which the cable from the DRAC II is plugged does not support 10 Mb/sec Ethernet. Verify that the hub is 10 Mb/sec or that it auto-switches to 10 Mb/sec.

There is a DRAC II hardware problem. Run the `racconf` utility by opening a command window on the managed node and typing `racconf`. If the returned page includes blank lines and zeros to the right of the colons, turn off the system and remove the DRAC II. After a few seconds, reinstall the DRAC II in the system and run `racconf` again. If blank lines and zeros appear again, replace the card.



NOTE: If you run `racconf` and the NIC address returns all zeros or all "F"s (but the other display information is valid), replace the card.

With console redirection showing a Windows graphic screen, I switched to a full page MS-DOS window (a text screen). When I switch back to a graphic screen, my graphics are garbled or the system hangs.

PowerEdge 2400, 2450, 4400, 6400, and 6450 users should upgrade their video drivers to revision A5393T (ATI version 4.00.1381.3254) for Windows NT and revision

A5.39.2 (ATI version 5.0.2195.3247) for Windows 2000. The drivers are available at the Dell | Support website at support.dell.com.

When the system restarts and the video switches from text to graphics, the system hangs.

PowerEdge 2400, 2450, 4400, 6400, and 6450 users should upgrade their video drivers to revision A5393T (ATI version 4.00.1381.3254) for Windows NT and revision A5.39.2 (ATI version 5.0.2195.3247) for Windows 2000. The drivers are available at the Dell | Support website at support.dell.com.

The DRAC II Device Driver Service will not start.

The DRAC II was removed from the system or not properly inserted in the PCI slot. On a PowerEdge 8450, verify that the PCI card retention tab on the back panel of the system is latched and the green light emitting diode above the DRAC II is lit.

DRAC II Alert Messages

DRAC II alert messages consist of information, status, warning, and failure messages for battery, external AC power adapter voltage, DRAC II temperature, and embedded server management (ESM) conditions. These messages assist you in identifying a system problem and provide you with information to help you resolve the problem. You can view the alert messages with the DRAC II Web Console by establishing a session to a DRAC II and viewing the event log. The DRAC II Web Console Event Log contains three categories of information: DRAC II event log, system event log, and power-on self-test (POST) log.

The Dell OpenManage IT Assistant allows you to view other logs related to your Dell system. Click the **Help** icon in the IT Assistant for detailed information on viewing logs.

If a problem persists after you attempt a corrective action, if you are not able to perform the corrective action, or if you need a replacement part to resolve a problem, contact Dell for technical assistance.

Table 4-1 lists the DRAC II alert messages, along with their causes and corrective actions.



NOTE: Alert messages are preceded by two backslashes and the name of the system generating the alert (\\systemname).

Table 4-1. DRAC II Alert Messages

Message	Cause	Corrective Action
DRAC battery absent	The DRAC II failed to detect a battery.	Check the battery module connection on the card.
DRAC battery charge failure detected	The battery on the DRAC II failed to charge properly.	Replace the battery.

Table 4-1. DRAC II Alert Messages (continued)

Message	Cause	Corrective Action
DRAC battery charge low	The battery charge on the DRAC II is low.	This condition is normal after a system loses power and the DRAC II has been operating on battery power. The system must be on for several hours for the battery to fully charge.
DRAC battery charge returned to normal	The battery is now fully charged after being low.	No action is required.
DRAC battery fast charge count approaching limit	The number of charge cycles on the battery has exceeded 1000.	The battery should be replaced before the number of charge cycles exceeds 1100.
DRAC battery fast charge count exceeded limit	The number of charge cycles on the battery has exceeded 1100.	Replace the battery immediately.
DRAC detected critical status reported by ESM	The ESM reported a failure event to the DRAC II.	Check the ESM event log through the IT Assistant or DRAC II Web Console. Take corrective action as indicated for any failure alert message.
DRAC detected normal status reported by ESM	The ESM reported a normal event to the DRAC II.	Check the ESM event log through the IT Assistant or DRAC II Web Console.
DRAC detected warning status reported by ESM	The ESM reported a warning event to the DRAC II.	Check the ESM event log through the IT Assistant or DRAC II Web Console. Take corrective action as indicated for any warning alert message.
DRAC lost communication with ESM	ESM program memory may be temporarily corrupted, or the communication path to the ESM may have been interrupted.	Turn the system off and on again to reset the ESM.

Table 4-1. DRAC II Alert Messages (continued)

Message	Cause	Corrective Action
DRAC temperature sensor detected a failure	The on-board temperature of the DRAC II has exceeded its failure range.	Check for a fan failure or obstructed airflow. If necessary, replace the fan. Otherwise, turn off the system and call Dell for technical assistance.
DRAC temperature sensor returned to normal	The on-board temperature of the DRAC II has returned to its normal range.	No action is required.
DRAC temperature sensor warning detected	The on-board temperature of the DRAC II has exceeded its warning range.	Make sure the user-settable temperature threshold is set correctly. Check for a fan failure or obstructed airflow. Ensure that the system cover is properly attached. If necessary, replace the fan. If the problem persists, turn off the system and call Dell for technical assistance.
DRAC external AC power adapter voltage sensor detected a failure	The voltage of the external AC power adapter for the DRAC II has exceeded its failure range.	Ensure that the adapter plug is fully seated in the card and the power cable is attached to the electrical outlet.
DRAC external AC power adapter voltage sensor returned to normal	The voltage of the external AC power adapter for the DRAC II has returned to its normal range.	No action is required.
DRAC external AC power adapter voltage sensor warning detected	The voltage of the external AC power adapter for the DRAC II has exceeded its warning range.	Ensure that the user-settable voltage threshold is set correctly. Make sure the adapter plug is fully seated in the card and the power cable is attached to the electrical outlet.

Removing a DRAC II From a System

Removing a DRAC II from a host system requires an orderly sequence of steps. The DRAC II is backed up by a battery and remains active after the host system is turned off. However, the DRAC II has protection circuitry that disconnects the battery

whenever the card is removed from the peripheral component interconnect (PCI) bus connector.

The DRAC II monitors the power state of the host system. When the host is turned off, the DRAC II saves data to its nonvolatile random-access memory (NVRAM). This process can take up to 15 seconds to complete. If the DRAC II is removed before it finishes updating its NVRAM, the NVRAM can become corrupted and cause the DRAC II to lose data and revert back to its factory default configuration.



APPENDIX A

Technical Specifications

Table A-1. Technical Specifications

Power	
System power	+5 V at 2.5 A maximum +12 V at 400 mA maximum
External AC power adapter capacity	+6 V at 2.5 A maximum
Battery backup capacity	1200 mAh (30 minutes of operation)
PCI Interface Identification Values	
Subsystem ID	0767
Vendor ID	101E
Device ID	9063
Class Code	088000 (Generic System Peripheral)
Network Interface	
Network interface	(IEEE) 802.3I 10Base-T 10 Mbps

NOTE: For the full name of an abbreviation or acronym used in this table, see the "Glossary."

Table A-1. Technical Specifications (continued)

Connectors (See Figure A-1)		
Connector	Description	Type
J1	Not used	
J2	RS232 serial port connector	10-pin connector
J3	Hard reset jumper	2-pin jumper
J4	PCMCIA modem socket	68-pin connector
J5	IPMI connector	20-pin connector
J6	External AC power jack	3-pin connector
J7	Flash jumper	2-pin connector
J8	Battery connector	3-pin connector
J9	RJ45 for LAN connector	8-pin connector
J10	ESM connector	20-pin connector
J11	5 V to 3.3 V converter	2-pin jumper
Microprocessor		
Microprocessor type	Intel® 80L960JA 3.3V embedded 32-bit microprocessor	
Speed	16 MHz	
Instruction cache	2 KB	
Data cache	1KB with write-through operation	
Memory		
DRAM	16 MB	
Flash	2 MB	
NVRAM	128 KB	
Environmental		
Operating temperature	0 to 50 degrees Celsius	

NOTE: For the full name of an abbreviation or acronym used in this table, see the "Glossary."

Table A-1. Technical Specifications (continued)

	Additional Hardware
PCI card	ASIC (AMI MG9063) (a modified version of the MG9060 on the PowerEdge RAID Controller [PERC])
Modem	PCMCIA - Cirrus Logic CL-PD6710
Ethernet SMC91C94	10 Mbit/sec
RTC	Dallas DS1287
UART	16C2552
Serial port	RS-232
ESM	RS-485
I2C controller	8584
Battery	1/2 hour continuous use Rechargeable nickel metal hydride; user replaceable Automatically disconnected electrically when the card is removed to prevent shorting out 3-4 hours to fully recharge
Environmental sensors	LM79

NOTE: For the full name of an abbreviation or acronym used in this table, see the "Glossary."

Table A-1. Technical Specifications (continued)

Additional Hardware (continued)	
System monitoring	ESM connector monitors: POST code log Ambient temperature BIOS information System name ESM unique ID

NOTE: For the full name of an abbreviation or acronym used in this table, see the "Glossary."

See the **dracread.txt** file on the *Dell OpenManage Systems Management* CD for the latest information on hardware specifications.

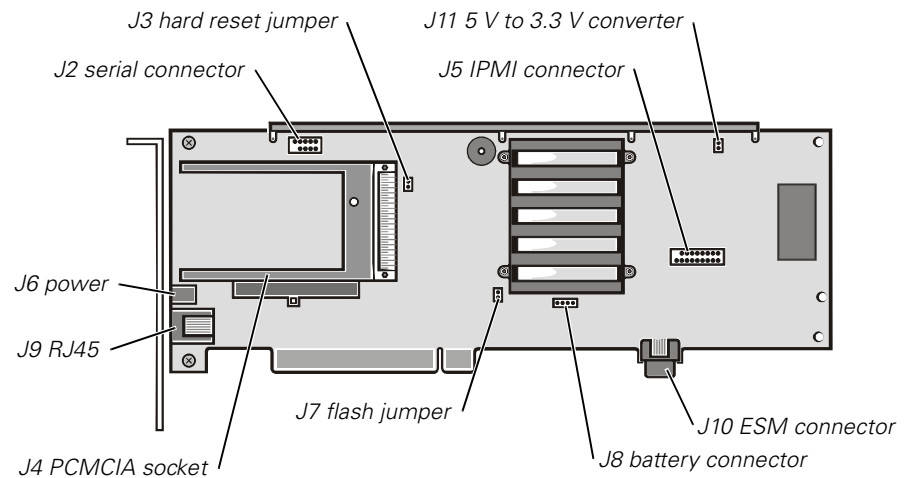


Figure A-1. DRAC II Connectors



APPENDIX B

Racconf Utility

Racconf is a command line utility for setting up and configuring the Dell OpenManage Remote Assistant Card II (DRAC II).

All command switches are case sensitive and should use lowercase letters. The command line design facilitates batch mode use of the utility. A series of calls to the program can upgrade the DRAC II's firmware, configure a parameter to a specific value, and shutdown the card prior to servicing.

The utility is compatible with all versions of DRAC firmware (version 1.5–version 2.4). Features supported by this utility that were introduced in version 2.3 of the DRAC II firmware do not function properly on a DRAC II using earlier firmware versions. These features include the **/a** option for administrator entries 8 through 15 and the **/o** option that sets the DRAC II configuration back to the factory default values.

Versions of this utility are available for Microsoft Windows NT, Windows 2000, Linux, and MS-DOS. The utilities are included on the *Dell OpenManage Systems Management CD*.

The Windows NT version consists of two files, **racconf.exe** and **dra.dll**. This utility requires the **drac2wdm.sys** driver (service) to be running in order to work properly.

Command Line Options

The racconf utility uses a set of command line switches to determine what operation to perform. A forward slash (/) must precede each command when entered on a system running Windows NT, Windows 2000, or MS-DOS. A hyphen must precede each command when entered on a system running Linux.

The following switches are defined (the forward slash convention is shown):

- <none> Default display of DRAC II information.
- /a[0–15]** Display administrator entry.
- /b** Display battery information.
- /c [file]** Configure card using given file.
- /d** Issue hard reset to the card.

- /fb** [*file*] Upgrade DRAC II's firmware with given image file using the card's boot block routines (DOS version only).
- /fi** [*file*] Upgrade DRAC II's firmware with given image file.
- /i** Display miscellaneous information.
- /l** Display card health and trigger levels.
- /m**[0-7] Display management station entry.
- /o** Restore DRAC II to factory default configuration.
- /r** Issue soft reset to card.
- /s** Shutdown the DRAC II.
- /t**[0-7] Display simple network management protocol (SNMP) trap destination.
- /h** or **/?** Display usage screen.
- /w** Reads card configuration and writes a configuration file using the file name given. (This option has been purposely left out of the usage display.)

Default Display

A display of general DRAC II information is shown when the racconf utility is invoked with no switches or arguments.

The display includes information relating to the firmware version being used by the DRAC II and its network address.

Example:

```
C:\>racconf
```

```
Loading configuration from DRAC card. Please wait...
```

```
Firmware Version      : 2.4
Firmware Build Date   : Mar 30 2001
Processor              : i960 JA
Processor Speed       : 16 Mhz
Memory Size           : 16 MB
ROM Size               : 2 MB
NVRAM Size            : 128 KB
Modem Type            : Absent
Host Bridge           : MG9063
```

```
Network Controller      : SMC 91C96
NIC Address             : 00 40 d9 00 70 75
IP Address              : 10.0.0.1      (factory default)
Subnet Mask             : 255.255.0.0   (factory default)
PCMCIA Controller      : CL6710
PC Card Manufacturer    :
PC Card Product Name    :
Utility Build Date      : May 1 2001
Utility Build Time      : 15:38:43
Utility Version         : 2.4.0
```

Dell Remote Assistant Card Configuration Utility - Version 2.4.0 - (the version of the RACCONF.EXE utility you are using)



*NOTE: For a complete list see the **/w** switch.*

/a (/a- /a15) — Display Administrator Entry

The **/a** option switch displays the parameters associated with all administrators configured to access the DRAC II remotely. This information includes the administrator's alias name, dial-in callback number, and paging parameters. Appending an entry index value next to the switch displays information specific to the administrator (see the example below). Passwords are not displayed but are indicated by a series of asterisks.

Example:

```
C:>racconf /a
Administrator Alias: JimB   Password: *****
Callback Number      :
Pager Number        :
Service Provider #   :
Pager Type           : None
Custom Code          :
Page On              :
```



```
Pager Number      :
Service Provider # :
Pager Type        : None
Custom Code       :
Page On           :
Page on Sunday    : 11111111111111111111111111111111
Page on Monday    : 11111111111111111111111111111111
Page on Tuesday   : 11111111111111111111111111111111
Page on Wednesday : 11111111111111111111111111111111
Page on Thursday  : 11111111111111111111111111111111
Page on Friday    : 11111111111111111111111111111111
Page on Saturday  : 11111111111111111111111111111111
```

/b — Display Battery Information

The **/b** option switch displays information regarding the state of the DRAC II's onboard battery. The **Fast Charge Count** is a measure of the battery's operating life. The battery should be replaced prior to reaching a **Fast Charge Count** of 1100 cycles.

Example:

```
C:\>racconf /b
```

```
DRAC Card Battery Information
```

```
Battery Type      : Rechargeable Battery Pack
```

```
Battery Status    : Good
```

```
Battery Charge State: Trickle Charging
```

```
Fast Charge Count : 2
```

/c — Configure Card

The **/c** option switch sets the DRAC II's configuration based on the contents of the given file. The file structure contains a series of configuration groups and individual parameter key words that instructs the racconf utility on how the DRAC II should be configured.

The file may contain a full or partial configuration set. The only restriction is that the file header must be present. The file header is as follows:

```
# Dell Remote Assistant Card configuration file
# Version 2.4 - DO NOT EDIT/REMOVE THE FOLLOWING LINE
[Version 2.4]
```



NOTES: If a session to the card is established, the configuration parameters will not take effect.

If you do not use this header, any administrator names and passwords will remain in the file after the /c switch. If you do use this header, the administrator names and passwords will be removed from the file for security reasons.

A soft reset of the card (/r) may be needed before some configurations take effect.

Example:

```
C:\>racconf /c admin0.ini
```

```
Loading information from INI file to the DRAC Card ...
```

```
You may need to reset the card for the changes to come to effect
```

/d — Hard Reset

The **/d** option switch performs a hard reset of the DRAC II. All processes on the card are abruptly interrupted. Any data not yet written to the card's nonvolatile random-access memory (NVRAM) are lost.

The utility returns to the command prompt once the DRAC II has completed the reset cycle and is able to accept commands once again.

Example:

```
C:\>racconf /d
```

```
Resetting Card...
```

```
Reset Complete
```

/fb — Firmware Upgrade, Boot Block Method (MS-DOS only)

The **/fb** option switch performs a DRAC II firmware upgrade using the low-level routines located in boot block area of the card's flash read-only memory (ROM). The flash ROM is updated with the firmware image contained within the file given as an argument. After the new image has been written to the flash ROM, the DRAC II is reset.

Prior to updating the flash ROM, the card's configuration is saved. After the DRAC II has been reset with the new firmware image, the saved configuration is written back to the card.

This option can be used in the event that the DRAC II is not able to respond through its normal command interface.

The utility returns to the command prompt after the DRAC II is able to accept commands once again.

Example:

```
C:\>racconf /fb d24e0330.ima

Flashing firmware image from file d24e0330.ima ...

Flash Size           : 0x200000

Build Vers of Image : 2.4

Build Date of Image : Mar 30 2001 09:07:24

Build Vers of ROM    : 2.3

Build Date of ROM    : Feb 16 2001 12:16:02
```

/fi — Firmware Upgrade

The ***/fi*** option switch performs a DRAC II firmware upgrade using the card's normal command interface. The DRAC II's flash ROM is updated with the firmware image contained within the file given as an argument. After the new image has been written to the flash ROM, the DRAC II is reset.

Prior to updating the flash ROM, the card's configuration is saved. After the DRAC II has been reset with the new firmware image, the saved configuration is written back to the card.

The utility returns to the command prompt once the DRAC II is able to accept commands once again.

Example:

```
C:\>racconf /fi d24e0330.ima

ROM Version           : 2.3

ROM Build Date        : Feb 13 2001

ROM Build Time         : 19:27:11

Firmware Version      : 2.4

Firmware Build Date   : Mar 30 2001
```

Firmware Build Time : 15:38:43

Flashing Image to DRAC Card, Please wait...

Flash Complete

Flash Upgrade Successful

/h or /? — Help

The `/h` or `/?` option switches display the utility usage screen.

Example:

```
C:\>racconf /h
```

```
usage : racconf arg1 arg2...
```

```
/a[0 - 15] - Display Admin entry [0 - 15], /a displays all
```

```
/b          - Display Battery information
```

```
/c [file] - Configure card with given file
```

```
/d          - Issue harD reset to card
```

```
/fi [file] - Flash upgrade firmware image with given file  
            (*.ima)
```

```
/i          - Display mIscellaneous information
```

```
/l          - Display card heaLth and trigger levels
```

```
/m[0 - 7] - Display Management Station [0 - 7], /m displays all
```

```
/o          - Restore Factory Defaults to the Card
```

```
/r          - Issue soft Reset to card
```

```
/s          - Issue Shutdown to card
```

```
/t[0 - 7] - Display SNMP Trap destination [0 - 7], /t display  
            all
```

```
/h or /?   - Display this screen
```

/i — Miscellaneous Information

The `/i` option switch displays the DRAC II's auto recovery configuration and heartbeat timeout setting.

Example:

```
C:\>racconf /i
```

Miscellaneous Configurations

Auto Recovery Method : Disabled

Auto Recovery Timeout: 30

HeartBeat Timeout : 15

Server ID : 0

/l — Card Health

The `/l` option switch displays the DRAC II's hardware health monitoring limits and poll frequency.

Example:

```
C:\>racconf /l
```

```
DRACII Card Health
```

```
Temperature
```

```
Low Warning : 5 Low Alert : 0
```

```
High Warning : 45 High Alert : 50
```

```
Poll Period : 10 secs
```

```
Wall Adapter Voltage
```

```
Low Warning : 5.5 Low Alert : 5.0
```

```
High Warning : 9.0 High Alert : 9.5
```

```
Poll Period : 10 secs
```

```
PCI 5 Volt
```

```
Low Warning : 4.5 Low Alert : 4.0
```

```
High Warning : 5.5 High Alert : 6.0
```

```
Poll Period : 10 secs
```

/m (/m0–/m7) — Display Management Station Entry

The `/m` option switch displays the management station entries configured on the card. The parameters include the phone numbers of management stations that the DRAC II will dial out to based on the event type indicated by the entry's severity mask.

The `/m` option displays all eight management station entries (0 through 7). Appending an index value displays information specific to that management station entry.

Example:

```
C:\>racconf /m

Management Stations

Station 0      :

Severity Mask : Information Warning Error Fatal

.

.

.

Station 7      :

Severity Mask : Information Warning Error Fatal
```

Example:

```
C:\>racconf /m0

Management Stations

Station 0      :

Severity Mask : Information Warning Error Fatal
```

`/o` — Restore Default Configuration

The `/o` option switch sets the DRAC II to its default configuration. During this process, the card's NVRAM chip set is erased and a reset is performed. The utility returns to the command prompt after the DRAC II is able to accept commands once again.

Example:

```
C:\>racconf /o

This will restore the default values for the Card.

Do you want to Proceed (Y/N)

Restoring Factory defaults

Default values assigned to the Card
```

/r — Soft Reset

The **/r** option switch performs a soft reset of the DRAC II. Any data not yet saved to the card's NVRAM is written at this time. A local reset is then performed internally on the card. The utility returns to the command prompt once the DRAC II is able to accept commands again.

Example:

```
C:\>racconf /r
Resetting Card...
Reset Complete
```

/s — Card Shutdown

The **/s** option switch takes the DRAC II out of service. Any data not yet saved to the card's NVRAM is written at this time. The battery backup circuitry is disabled, and the card's microprocessor is halted.

This command should be issued prior to servicing the card or system.

The card does not respond until the system is power cycled or reset.

Example:

```
C:\>racconf /s
WARNING! - Shutdown of the card requires that all
power be removed from the card and the system
to be cycled off and on to restart the card.
Do you wish to continue (Y/N)?Y
Shutting down DRAC card, Please wait...
Shutdown complete
```

/t (/t0–/t7) — Display SNMP Trap Destination Entry

The **/t** option switch displays the SNMP trap destination configured on the card. The parameters include the IP addresses and community names of the destination nodes to which the DRAC II issues traps based on the event type indicated by the entry's severity mask.

The **/t** option displays all eight SNMP trap destination entries (0 through 7). Appending an index value displays information specific to that SNMP trap destination entry.

Example:

```
C:\>racconf /t
```

```
SNMP Configuration
```

```
Destination 0 : 0.0.0.0      Community Name :  
Severity Mask : Information Warning Error Fatal
```

```
.  
. .
```

```
Destination 7 : 0.0.0.0      Community Name :  
Severity Mask : Information Warning Error Fatal
```

Example:

```
C:\>racconf /t0
```

```
SNMP Configuration
```

```
Destination 0 : 0.0.0.0      Community Name :  
Severity Mask : Information Warning Error Fatal
```

/w — Write Configuration File

The **/w** option switch reads the current DRAC II configuration and writes a configuration file using the file name given (in lowercase letters). The file created contains the card's current configuration but does not write the administrator aliases or passwords.



NOTE: This option has been purposely left out of the usage display.

Example:

```
C:\>racconf /w <filename>.ini
```

```
Loading information from DRAC Card ...
```

```
Successfully created configuration file.
```

See the following subsection, "Configuration File (racconf.ini)," for examples of all the settings.

Configuration File (racconf.ini)

The racconf uses a text-based configuration file with configuration groups and parameter keys, similar to Windows .ini files. The file may contain any number of groups and parameters but must begin with the following header:

```
# Dell Remote Assistant Card configuration file

# Version 2.4 - DO NOT EDIT/REMOVE THE FOLLOWING LINE

[Version 2.4]
```

All lines beginning with '#' are treated as comments and ignored by the utility. Adding '#' at the middle of a line, that does not also have '#' at the beginning may cause the utility to function incorrectly.

All equal signs ('=') must be preceded by exactly one blank space and should be followed immediately by the values, if any, without any space in between. There should also be no trailing spaces in any line. Configuration files that do not follow the above guidelines may cause the utility to function incorrectly.

The sections that follow describe each of the configuration groups and their parameter keys.

AdminEntry

This group contains keys to configure administrator properties and preferences. AdminEntry0 is for the first administrator in the list, AdminEntry1 is for the second, and so on up to AdminEntry15, which corresponds to the sixteenth administrator.



NOTE: Administrator alias and password must be lowercase.

Administrator alias: name

Password: password

Security Feature:

The administrator alias and password are deleted from the file during the configuration process. To use the configuration file again, these items must be readded.



NOTE: When the IT Assistant is used to add a user to a DRAC II, all previous users entered through the racconf utility are removed.

If the user needs to use the same configuration on more than one system, then a temporary file should be created from the master.

CallBackNumber:

Security Feature:

When this administrator dials into the DRAC II, successfully logs in, and drops the line, the DRAC II dials back to the caller at this number.

Default: (empty)

Pager Number:

Default: (empty)

Valid Values: Example: 9,18005551212,,,,7289882

“9” is the number used to dial through a PBX to get an outside line. The single comma forces a one-second pause before dialing. “18005551212” is the number of the pager being dialed. The four commas force a four-second pause before entering a number that is displayed on the pager. “7289882” is the number that will appear on the pager. For numeric paging, the Pager Number is both the Services Access number and pager number and the Service Provider number parameter is blank.

Page Type:

Default: None

Valid Values: None, Numeric, AlphaNumeric

Service Provider:



NOTE: This is used for alphanumeric paging. This is the phone number of the paging service provider.

Default: None

Preferences:



NOTE: Paging preferences indicate the levels of alerts for which the administrator would like to receive pages. To specify multiple levels, include more than one Preferences key for the same administrator.

Default: None

Valid Values: None, Information, Warning, Error, Fatal

Custom Code:



NOTE: This code is included in numeric/alphanumeric page string to help identify the location of the DRAC II/server originating the alert.

Default: None

Valid Values: Numeric string for numeric pagers and alphanumeric string for alphanumeric pagers

PageOn xxxx:

Paging preferences are based on hourly intervals for each day of the week. xxxx may be a day of the week Sunday through Saturday. Each line should have a string of 24 characters (0s or 1s only), each representing one hour within that day beginning at 12:00 am (or 00:00 hr).

Example:

PageOn Sunday =000000001111111111110000

Method3: ManagedConsole

Valid Values: SNMPTrap, Page, ManagedConsole

RetriesMethodx: (The number of retries to be attempted for each method)

Default:

Method1: 1

Method2: 2

Method3: 3

NotificationFrequency: (The number of seconds to wait before retrying)

Default: 10

Example:

```
[AlertTableConfig]
AlertMethod1 =SNMPTrap
AlertMethod2 =Page
AlertMethod3 =ManagementStation
RetriesMethod1 =1
RetriesMethod2 =2
RetriesMethod3 =3
NotificationFrequency =10
```

AutoRecoveryConfig

This group contains keys to configure the DRAC II's auto-recovery feature. This feature allows the DRAC II to take action after it has determined that the host server's operating system is hung or has crashed. The DRAC II can either reset or power cycle the system.

AutoRecovery Method:

Default: Disable

Valid Values: Disable, Hardware Reset, Hardware Powercycle

AutoRecovery Timer:



NOTE: This is the time in seconds the DRAC II waits after determining the host operating system is hung or has crashed, before taking action.

Default: 30

Example:

```
[AutoRecoveryConfig]
AutoRecovery Method =Disable
AutoRecovery Timer =30
```

DHCPConfig

This group contains keys to enable and disable the DHCP client on the DRAC II. In normal operation the DRAC II attempts to obtain IP addresses to be used for dial in connections in place of using its default IP pool.

In environments that do not have a DHCP server (or do not want to use any addresses of the scope), this feature can be disabled. When the DHCP client is disabled, the IPPoolStart parameter is used.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

DHCPClient:

Default: Enable

Valid Values: Enable, Disable

Example:

```
[DHCPConfig]
DHCPClient =Enable
```

DialOutConfig

This group contains keys to configure dial-out parameters used in conjunction with the management station alert method.

The alias and password must correspond to a configured user on the management station. The user configuration must also allow dial-in permissions.

Alias: (name of user on Management Station)

Password: (password of user on Management Station)

Example:

```
[DialOutConfig]
Alias =drac
Password =drac
```

ESMConfig

This group contains the keys to configure the ESM monitoring parameters. The poll period is the time period, in seconds, between ESM reads to determine event

occurrences. The ESM monitor timeout is the timeout period, in seconds, before aborting ESM accesses because of no response.

Poll Period:

Default Value : 30

ESM Monitor Timeout

Default Value : 10

Example:

```
[ESMConfig]
```

```
Poll Period =30
```

```
ESM Monitor Timeout =10
```

ExtModem

This group contains keys to configure the External modem, if present.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

BaudRate:

Default: 57600

Valid Values: 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

DialMode:

Default: Tone

Valid Values: Pulse, Tone

ExtraModemInitString:

Default: (empty)

Valid Values: (Standard modem init strings and/or modem specific strings)

Example:

```
[ExtModem]
```

```
BaudRate =57600
```

```
DialMode =Tone
```

```
ExtraModemInitString =
```

ManagementStation

This group contains keys to specify the phone numbers of management stations that the DRAC II can dial out to when an alert condition occurs. The management station in turn generates an event log entry based on the alert.

Phone number: Phone number for modem attached to management station

Default: None

Management Station Severity Mask:



NOTE: The management station severity mask is a set of preferences indicating the levels of alerts for which the DRAC II will dial out to the management station. To specify multiple levels, include multiple preference keys.

Default: (all four levels)

Valid Values: None, Information, Warning, Error, Fatal

Example:

```
[ManagementStation0]
```

```
PhoneNumber =
```

```
Management Station Severity Mask =Information
```

```
Management Station Severity Mask =Warning
```

```
Management Station Severity Mask =Error
```

```
Management Station Severity Mask =Fatal
```

MiscConfig

This group contains keys for miscellaneous configuration items.

HeartBeatTimeout:



NOTE: This value is the number of seconds that the DRAC II waits between two successive heartbeats from the operating system's DRAC II driver. If there is no heartbeat received after two time this value, the DRAC II assumes that the host operating system is hung or has crashed.

Default: 15

ServerID: (number 0-99 used to identify the host server)

Default: 0

Example:

```
[MiscConfig]
HeartBeatTimeout =15
ServerID =0
```

NetConfig

This group contains keys to configure the IP address and related items.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

IpAddr:

Default: 10.0.0.1

Valid Values: (Any valid unique IP address)

SubNetMask:

Default: 0.0.0.0

Valid Values: (Any valid Subnet Mask)

GatewayAddr:

Default: 0.0.0.0

Valid Values: (Any valid IP Address, which points to a gateway)

Example:

```
[NetConfig]
IpAddr =10.0.0.1
SubNetMask =0.0.0.0
GatewayAddr =0.0.0.0
```

PCCardModem

This group contains keys to configure the PCCard modem, if present.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

BaudRate:

Default: 57600

Valid Values: 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

DialMode:

Default: Tone

Valid Values: Pulse, Tone

ExtraModemInitString:

Default: (empty)

Valid Values: (Standard modem init strings and/or modem specific strings)

Example:

```
[PCCardModem]
```

```
BaudRate =57600
```

```
DialMode =Tone
```

```
ExtraModemInitString =
```

PCIVoltConfig

This group contains keys to manage the monitoring of the host's PCI 5-volt (V) signal of the slot in which the DRAC II resides.

Low Warning:

Default: 4.5

Low Alert:

Default: 4.0

High Warning:

Default: 5.5

High Alert:

Default: 6.0

Monitoring:

Default: Enable

Valid Values: Enable, Disable

Polling Time: (Gives the time interval between two successive measurements)

Default: 10

Period: (Gives the granularity or units for polling time)

Default: Secs

Valid Values: secs, mins, hours, days

The general idea is that the normal PCI 5-V level would be between the low warning and the high warning limits. If the voltage either drops below the low warning or rises above the high warning, the DRAC II would generate a warning condition alert. Typically, the low alert value should be lower than the low warning and the high alert should be higher than the high warning so that if the voltage continues to either drop (going below low warning) or to climb (going above high warning), then the DRAC II generates an error condition alert.

So, usually low alert < low warning < normal value < high warning < high alert.

Example:

```
[PCIVoltConfig]
Low Warning =4.5
Low Alert =4.0
High Warning =5.5
High Alert =6.0
Polling Time =10
Period =secs
Monitoring =Enable
```

PPPConfig

This group contains a key to configure PPP related items.

IPPoolStart: (Start address of three consecutive addresses to be used on PPP connections through the DRAC II's modems). If the **DHCPClient** parameter is set to **Disable**, this value is used.

Default: 128.0.0.1

Valid Values: (Any valid unique IP, with two successive free IPs)

Example:

```
[PPPConfig]
IPPoolStart =128.0.0.1
```


RACTempConfig

This group contains keys to manage the monitoring of the DRAC II's onboard temperature.

Low Warning:

Default: 5

Low Alert:

Default: 0

High Warning:

Default: 45

High Alert:

Default: 50

Monitoring:

Default: Enable

Valid Values: Enable, Disable

Polling Time: (Gives the time interval between two successive measurements)

Default: 10

Period: (Gives the granularity or units for Polling Time)

Default: Secs

Valid Values: Secs, Mins, Hours, Days

The general idea is that the normal DRAC II temperature would be between the low warning and the high warning limits. If the temperature either drops below the low warning or rises above the high warning, the DRAC II would generate a warning condition alert. Typically the low alert value should be lower than the low warning and the high alert should be higher than the high warning. If the temperature continues to drop below the low warning or climb above the high warning, the DRAC II then generates an error condition alert.

So, usually low alert < low warning < normal value < high warning < high alert.

Example:

```
[RACTempConfig]
```

```
Low Warning =5
```

```
Low Alert =0
```

```
High Warning =45
```

```
High Alert =50
Polling Time =10
Period =secs
Monitoring =Enable
```

SNMPDest

This group contains keys to specify up to 8 SNMP trap destinations to which the DRAC II can send notification of alert conditions occurring in the system.

IpAddr:

Default: 0.0.0.0

Valid Values: (Any valid unique IP address)

Community name:

Default: (none)

Valid Values: (Any valid SNMP Community name)

SNMP Severity Mask:



NOTE: Preferences indicating the levels of alerts for which the DRAC II issues SNMP traps to the designated node address. To specify multiple levels, include multiple preference keys.

Default: (all four levels)

Valid Values: None, Information, Warning, Error, Fatal

Example:

```
[SNMPDest0]
```

```
IpAddr =0.0.0.0
```

```
Community Name =
```

```
Snm Severity Mask =Information
```

```
Snm Severity Mask =Warning
```

```
Snm Severity Mask =Error
```

```
Snm Severity Mask =Fatal
```

SnmServerConfig

This group contains keys to identify the DRAC II's SNMP parameters.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

Community Name: (Name of the SNMP Community)

EnterpriselD:

```
[SnmServerConfig]
```

```
Community Name =
```

```
EnterpriselD =0
```

TerminalServerConfig

This group contains keys to enable/disable the VT100 Terminal Server interface on the DRAC II's serial port. Disabling this feature allows the DRAC II to support an external modem on its serial port.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

Terminal Server Config:

Default: Enable

Valid Values: Enable, Disable

Example:

```
[TerminalServerConfig]
```

```
Terminal Server Config =Enable
```

TCPIPConfig

This group contains keys to configure advanced internal parameters of the DRAC II's TCP/IP communication stack.



NOTE: A soft reset of the card must be performed before the configuration takes effect.

NOTICE: Although these parameters have been exposed to configuration, use of any settings other than ones defined here is not recommended. Any other setting may adversely effect the DRAC II's ability to communicate with other node on the network. The DRAC II's operation may also become unpredictable.

Key value ranges:

```
EtherMTU = 46-1500
```

TCPTTL = 60-512

SRTTBase = 0-4096

SRTTDefault = 6-512

TCPreXmtMin = 2-512

TCPreXmtMax = 128-4096

The default settings are recommended and allow the DRAC II to function well in most environments. In environments where longer delays may occur, such as those involving satellite link relays, the slow connection settings can be used.

Default Settings	Slow Connection Recommendations
-------------------------	--

EtherMTU =1500	EtherMTU =500
----------------	---------------

TCPTTL =60	TCPTTL =128
------------	-------------

SRTTBase =0	SRTTBase =256
-------------	---------------

SRTTDefault =6	SRTTDefault =384
----------------	------------------

TCPreXmtMin =2	TCPreXmtMin =2
----------------	----------------

TCPreXmtMax =128	TCPreXmtMax =1024
------------------	-------------------

Example:

```
[TCPIPConfig]
```

```
EtherMTU =1500
```

```
TCPTTL =60
```

```
SRTTBase =0
```

```
SRTTDefault =6
```

```
TCPreXmtMin =2
```

```
TCPreXmtMax =128
```

WallAdapterVoltConfig

This group contains keys to manage the monitoring of the DRAC II's wall adapter voltage, if present.

Low Warning:

Default: 5.5

Low Alert:

Default: 5.0

High Warning:

Default: 9.0

High Alert:

Default: 9.5

Monitoring:

Default: Enable

Valid Values: Enable, Disable

Polling Time: (Gives the time interval between two successive measurements)

Default: 10

Period: (Gives the granularity or units for Polling Time)

Default: secs

Valid Values: secs, mins, hours, days

The general idea is that the normal wall adapter voltage would be between the low warning and the high warning limits. If the voltage either drops below the low warning or rises above the high warning, the DRAC II would generate a warning condition alert. Typically the low alert value should be lower than the low warning and the high alert should be higher than the high warning so that if the voltage continues to either drop (going below low warning) or to climb (going above high warning), then the DRAC II generates an error condition alert.

So, usually low alert < low warning < normal value < high warning < high alert.

Example:

```
[WallAdapterVoltConfig]
```

```
Low Warning =5.5
```

```
Low Alert =5.0
```

```
High Warning =9.0
```

```
High Alert =9.5
```

```
Polling Time =10
```

```
Period =secs
```

```
Monitoring =Enable
```




Glossary

The following list defines or identifies technical terms, abbreviations, and acronyms used in Dell™ user documents.

A

Abbreviation for ampere(s).

AC

Abbreviation for alternating current.

adapter card

An expansion card that plugs into an expansion-card connector on the computer's system board. An adapter card adds some specialized function to the computer by providing an interface between the expansion bus and a peripheral device. Examples of adapter cards include network cards, sound cards, and SCSI adapters.

application program

Software, such as a spreadsheet or word processor, designed to help you perform a specific task or series of tasks. Application programs run from the operating system.

ASCII

Acronym for American Standard Code for Information Interchange. A text file containing only characters from the ASCII character set (usually created with a text editor, such as Notepad in Windows), is called an ASCII file.

ASIC

Acronym for application-specific integrated circuit.

backup

A copy of a program or data file. As a precaution, you should back up your computer's hard-disk drive on a regular basis. Before making a change to the configuration of your computer, you should back up important start-up files from your operating system.

backup battery

The backup battery maintains system configuration, date, and time information in a special section of memory when the system is turned off.

baud rate

A measurement of data transmission speed. For example, modems are designed to transmit data at one or more specified baud rate(s) through the COM (serial) port of a computer.

BIOS

Acronym for basic input/output system. Your computer's BIOS contains programs stored on a flash memory chip. The BIOS controls the following:

- Communications between the microprocessor and peripheral devices, such as the keyboard and the video adapter
- Miscellaneous functions, such as system messages

bit

The smallest unit of information interpreted by your computer.

boot routine

When you start your computer, it clears all memory, initializes devices, and loads the operating system. Unless the operating system fails to respond, you can reboot (also called *warm boot*) your computer by pressing <Ctrl><Alt>; otherwise, you must perform a cold boot by pressing the reset button or by turning the computer off and then back on.

bus

An information pathway between the components of a computer. Your computer contains an expansion bus that allows the microprocessor to communicate with controllers for all the various peripheral devices connected to the computer. Your computer also contains an address bus and a data bus for communications between the microprocessor and RAM.

byte

Eight contiguous bits of information, the basic data unit used by your computer.

C

Abbreviation for Celsius.

cache

A fast storage area that keeps a copy of data or instructions for quicker data retrieval. For example, your computer's BIOS may cache ROM code in faster RAM. Or, a disk-cache utility may reserve RAM in which to store frequently accessed information from your computer's disk drives; when a program makes a request to a disk drive for data that is in the cache, the disk-cache utility can retrieve the data from RAM faster than from the disk drive.

card-edge connector

The metal-contact section on the bottom of an expansion card that plugs into an expansion-card connector.

CD

Abbreviation for compact disc. CD drives use optical technology to read data from CDs. CDs are read-only storage devices; you cannot write new data to a CD with standard CD drives.

controller

A chip that controls the transfer of data between the microprocessor and memory or between the microprocessor and a peripheral device such as a disk drive or the keyboard.

CPU

Abbreviation for central processing unit. See also **microprocessor**.

cursor

A marker, such as a block, underscore, or pointer that represents the position at which the next keyboard or mouse action will occur.

device driver

A program that allows the operating system or some other program to interface correctly with a peripheral device, such as a printer. Some device drivers—such as network drivers—must be loaded from the **config.sys** file (with a **device=** statement) or as memory-resident programs (usually, from the **autoexec.bat** file). Others—such as video drivers—must load when you start the program for which they were designed.

directory

Directories help keep related files organized on a disk in a hierarchical, "inverted tree" structure. Each disk has a "root" directory; for example, a **c:\>** prompt normally indicates that you are at the root directory of hard-disk drive C. Additional directories that branch off of the root directory are called *subdirectories*. Subdirectories may contain additional directories branching off of them.

DRAC II agent

Consists of Windows services or Novell NetWare loadable modules (NLMs) or Linux driver/daemons (depending upon the operating system), that are automatically started on system boot-up.

DRAM

Abbreviation for dynamic random-access memory. A computer's RAM is usually made up entirely of DRAM chips. Because DRAM chips cannot store an electrical charge indefinitely, your

computer continually refreshes each DRAM chip in the computer.

ESM

Abbreviation for Embedded Server Management.

expansion-card connector

A connector on the computer's system board or riser board for plugging in an expansion card.

GUI

Acronym for graphical user interface.

host adapter

A host adapter implements communication between the computer's bus and the controller for a peripheral device. (Hard-disk drive controller subsystems include integrated host adapter circuitry.) To add a SCSI expansion bus to your system, you must install or connect the appropriate host adapter.

I/O

Abbreviation for input/output. The keyboard is an input device, and a printer is an output device. In general, I/O activity can be differentiated from computational activity. For example, when a program sends a document to the printer, it is engaging in output activity; when the program sorts a list of terms, it is engaging in computational activity.

ID

Abbreviation for identification.

in-band management

Receiving status from and issuing control commands to the server over the local area network or wide area network (LAN/WAN) through the system's network interface card (NIC). This path is the normal way to access the system when the system is operating correctly.

IPMI

Abbreviation for Intelligent Platform Management Interface.

jumper

Jumpers are small blocks on a circuit board with two or more pins emerging

from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit. Jumpers provide a simple and reversible method of changing the circuitry in a printed circuit board.

KB

Abbreviation for kilobyte(s), 1,024 bytes.

key combination

A command requiring you to press multiple keys at the same time. For example, you can reboot your computer by pressing the <Ctrl><Alt> key combination.

LAN

Acronym for local area network. A LAN system is usually confined to the same building or a few nearby buildings, with all equipment linked by wiring dedicated specifically to the LAN.

LED

Abbreviation for light-emitting diode. An electronic device that lights up when a current is passed through it.

local bus

On a computer with local-bus expansion capability, certain peripheral devices (such as the video adapter circuitry) can be designed to run much faster than they would with a traditional expansion bus. Some local-bus designs allow peripherals to run at the same speed and with the same width data path as the computer's microprocessor.

mA

Abbreviation for milliampere(s).

mAh

Abbreviation for milliampere-hour(s).

Mb

Abbreviation for megabit.

MB

Abbreviation for megabyte(s). The term *megabyte* means 1,048,576 bytes; however, when referring to hard drive storage, the term is often rounded to mean 1,000,000 bytes.

MB/sec

Abbreviation for megabytes per second.

Mbps

Abbreviation for megabits per second.

MHz

Abbreviation for megahertz.

microprocessor

The primary computational chip inside the computer that controls the interpretation and execution of arithmetic and logic functions. Software written for one microprocessor must usually be revised to run on another microprocessor. *CPU* is a synonym for microprocessor.

modem

A device that allows your computer to communicate with other computers over telephone lines.

mouse

A pointing device that controls the movement of the cursor on a screen. Mouse-aware software allows you to activate commands by clicking a mouse button while pointing at objects displayed on the screen.

MS-DOS

Abbreviation for Microsoft Disk Operating System.

NIC

Acronym for network interface controller.

NVRAM

Abbreviation for nonvolatile random-access memory. Memory that does not lose its contents when you turn off your computer. NVRAM is used for maintaining the date, time, and system configuration information.

out-of-band

Communications that use a remote assistance card to remotely manage a server using a modem or an integrated NIC on the card. The out-of-band path is used for remote management of a server or for accessing server information when the server or network is down.

out-of-band management

Receiving status from and issuing control commands to the server over the local area network or wide area network (LAN/WAN) through the Dell OpenManage Remote Assistant Card's (DRAC) network interface card (NIC) or a path other than the LAN/WAN such as the DRAC's plug-in modem. This path may also be used when the system is operating correctly, but this path is typically used when the system is experiencing problems.

parameter

A value or option that you specify to a program. A parameter is sometimes called a *switch* or an *argument*.

PCI

Abbreviation for Peripheral Component Interconnect. A standard for local-bus implementation developed by Intel Corporation.

PCMCIA

Abbreviation for Personal Computer Memory Card International Association. PCMCIA is an international trade association that has developed standards for devices such as modems and external hard drives, that can be plugged into portable computers.

peripheral device

An internal or external device—such as a printer, a disk drive, or a keyboard—connected to a computer.

POST

Acronym for power-on self-test. Before the operating system loads when you turn on your computer, the POST tests various system components such as RAM, the disk drives, and the keyboard.

readme file

A text file included with a software package or hardware product that contains information supplementing or updating the documentation for the software or hardware. Typically, readme files provide installation information, describe new product enhancements or corrections that have not yet been documented, and list known problems or other things you

need to be aware of as you use the software or hardware.

RFB

RFB is a utility that allows you to remotely boot a managed node from a diskette in the management station. You can remotely boot the managed node from a DOS-bootable diskette by using DRAC Power Management and RFB to restart the system. RFB can also be used to upgrade the BIOS of a managed node using the BIOS flash diskette in the management station.

ROM

Acronym for read-only memory. Your computer contains some programs essential to its operation in ROM code. Unlike RAM, a ROM chip retains its contents even after you turn off your computer. Examples of code in ROM include the program that initiates your computer's boot routine and the POST.

RTC

Abbreviation for real-time clock. Battery-powered clock circuitry inside the computer that keeps the date and time after you turn off the computer.

serial port

An I/O port used most often to connect a modem to your computer. You can usually identify a serial port on your computer by its 9-pin connector.

SNMP

Abbreviation for Simple Network Management Protocol. SNMP is an industry-standard interface that allows a network manager to remotely monitor and manage workstations.

switch

On a system board, switches control various circuits or functions in your computer system. These switches are known as *DIP switches*; they are normally packaged in groups of two or more switches in a plastic case. Two common DIP switches are used on system boards: *slide switches* and *rockerswitches*. The names of the switches are based on how the settings (on and off) of the switches are changed.

system board

As the main circuit board, the system board usually contains most of your computer's integral components, such as the following:

- Microprocessor
- RAM
- Controllers for standard peripheral devices, such as the keyboard
- Various ROM chips

Frequently used synonyms for system board are *motherboard* and *logic board*.

System Setup program

A BIOS-based program that allows you to configure your computer's hardware and customize the computer's operation by setting such features as password protection and energy management. Some options in the System Setup program require that you reboot the computer (or the computer may reboot automatically) in order to make a hardware configuration change. Because the System Setup program is stored in NVRAM, any settings remain in effect until you change them again.

UART

Abbreviation for Universal Asynchronous Receiver-Transmitter.

utility

A program used to manage system resources—memory, disk drives, or printers, for example.

V

Abbreviation for volt(s).

Windows NT

High-performance server and workstation operating system software developed by Microsoft that is intended for technical, engineering, and financial applications.



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