



How-to Guide

Manufacturing Integration and Intelligence

KPI Configuration GUIDE

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Applicable Releases:

SAP MII 14.0

SAP NetWeaver Composition 7.30 SP7

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1 Introduction

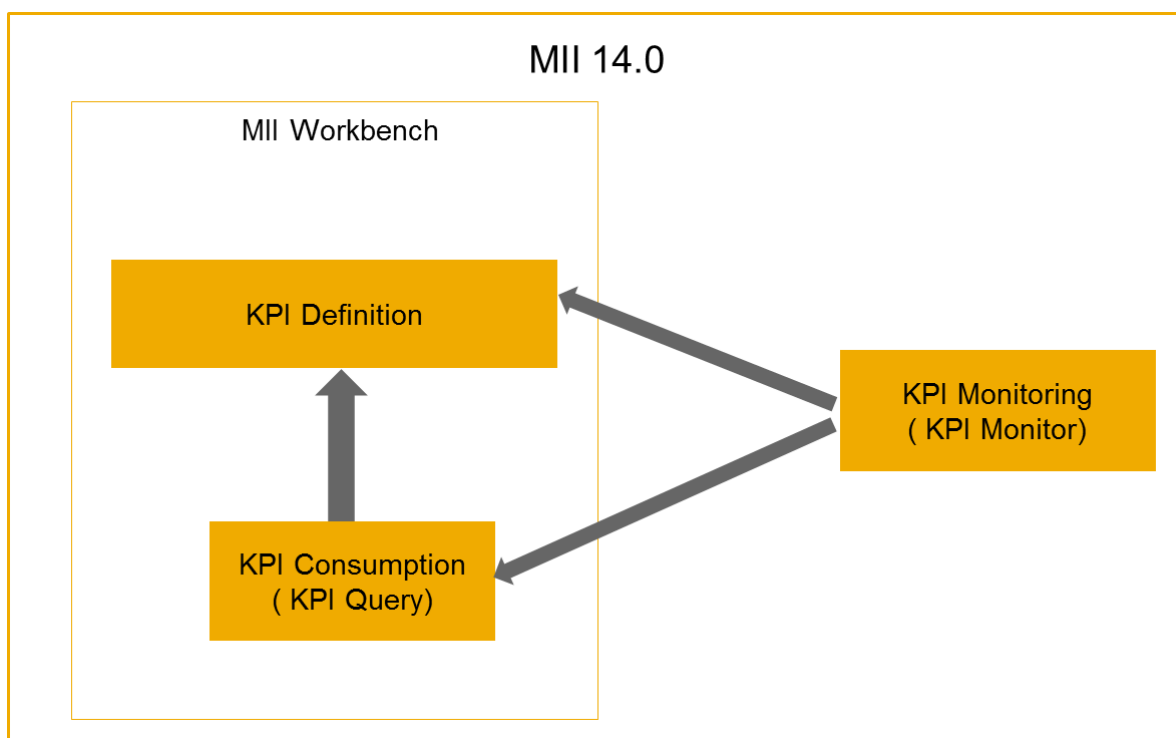
KPIs or key performance indicators are the critical areas for a business which validate, how well is the business performing on various aspects. KPIs for a particular business scenario tell the owners and stakeholders about which areas are functioning well and which areas need attention and improvement for their overall business to function well and perform better.

MII 14.0 provides one such framework for the MII users. They can create, consume and monitor their business using various modules of the KPI Framework. The KPI framework in MII 14.0 provides capability for users to create KPIs specific to their business scenario, customize it as per their needs, and later consume these KPIs which will then, give a wholesome picture to the business users about their business's performance on various levels.

This document will lead you through all the steps necessary for the initial configuration, creation and consumption of the KPI framework and all of its components. After all the necessary configurations are done, you can consume the various features of the KPI Framework developed in MII 14.0.

The entire KPI framework will enable the user to define, consume and also monitor the KPIs. The wholesome KPI framework will be a composition of 3 major parts namely,

1. KPI Definition
2. KPI Query
3. KPI Monitor



The complete KPI framework has been implemented to work on the following 3 aspects:

➤ KPI Object Definition

This part of the KPI framework enables the users to define their KPIs as required. The definition part is where the users can create and customize KPIs as per their requirements. They can create KPIs as per their business needs and any particular scenario. Various KPIs can be defined and saved for all those areas of the business which need to be monitored and tracked for the overall business's performance to be monitored.

The KPI object definition as provided in MII 14.0 is a part of MII Workbench.

➤ KPI Data Acquisition

This is the part of the KPI framework that gathers data for the KPI calculations and saves the calculated values in the database, to be accessed and utilized later on. The data acquisition part makes use of the information and customizations done by the user in the definition part. Based on this information, the KPI calculations take place and the generated data gets stored in the independent data tables in the system's configured database. This information and generated KPI data can later be consumed.

➤ KPI Data Consumption

The KPI data generated and saved in the data acquisition module of the KPI framework can be ultimately consumed by the users in order to track and monitor their system's performance. MII provides this information in multiple ways. Textual as well as graphical display of the system's KPIs can be viewed by the user using this module.

The aforementioned sections of the framework have been designed to meet the following key requirements:

- Enable the MII users to create KPIs and modify/customize them as per the need
- Allow the users to define specific details for every KPI like the KPI type, dimensions for a KPI, allow him to define color ranges, specify target value, do necessary calculations etc. among many others
- Provide capability to configure various data sources for KPIs like MII Query Templates or Transactions, or even other KPIs
- Provide Alerting capability on all KPIs by enabling the users to define specific threshold conditions for each alert
- Provide capability to add roles to KPI which can access that KPI and ensure that only specific users have access to the defined KPIs
- Create KPI queries to retrieve, insert, delete the KPI data and query other details associated with a KPI
- Provide a user friendly UI to consume the KPI data and query the KPI value and more details like the status, trend, etc. for given dimension values under a specified time period and also be able to view the changes in KPIs as a graphical display

In the sections to follow, we will see each of these modules of the KPI framework and also, how to use them.

2 Configure KPI Object

It will be possible for the user to create two types of KPIs namely,

- Base KPI
- Composite KPI

Users can create Base KPI to measure the performance of a system that is independent of other external systems for its KPI calculations. Whereas, when a user needs to measure the KPI of a system such that its performance is calculated from several other dependent systems' performances, then users should create Composite KPIs.

Hence, 'Availability' or 'Production Rate' of a Line is examples of Base KPIs, whereas the OEE (Overall Equipment Effectiveness) is a Composite KPI type. The following sections explain in detail, the aforementioned types of KPIs and the differences between them:

Base KPI

These are the performance indicators of any system which are not dependent on other external KPIs. The system performs on its own without any dependency on other derived systems. Thus, they are called 'Base' KPIs. Or in other words, the KPIs at the most granular level of a system are Base KPIs. These KPIs measure the performance of the basic entities of a functional system.

In the MII KPI Framework, the Base KPIs can be configured to have a data source which can be typically an MII query template or an MII Transaction.

Examples of Base KPI are Availability, Performance, Quality, Efficiency etc.

Composite KPI

These performance indicators are a combination of one or more KPIs. The composite KPIs are dependent on atleast one external KPI for the KPI calculations. The Composite KPIs are calculated based on the KPIs of all of its dependent systems. Thus, a system consisting of several modules or functional entities will have its performance measured as a Composite KPI. Such a system's overall performance will depend on the performance of each of its building blocks.

More than one data source can be configured for Composite KPIs, with atleast one of them being a Base or Composite KPI and the other can be either a query template or a transaction.

An example of Composite KPI is OEE which is derived as,

$$\text{Quality} * \text{Performance} * \text{Availability}$$

Difference between Base & Composite KPIs:

1. Base KPIs are not dependent on other KPIs for their calculations whereas Composite KPIs are dependent on one or more external KPIs
2. Base KPI can have only one data source configured whereas Composite KPIs can have more than one data provider
3. Base KPI cannot have other KPIs as a data provider, but in Composite KPIs, it is a must to have atleast one KPI added as a data provider

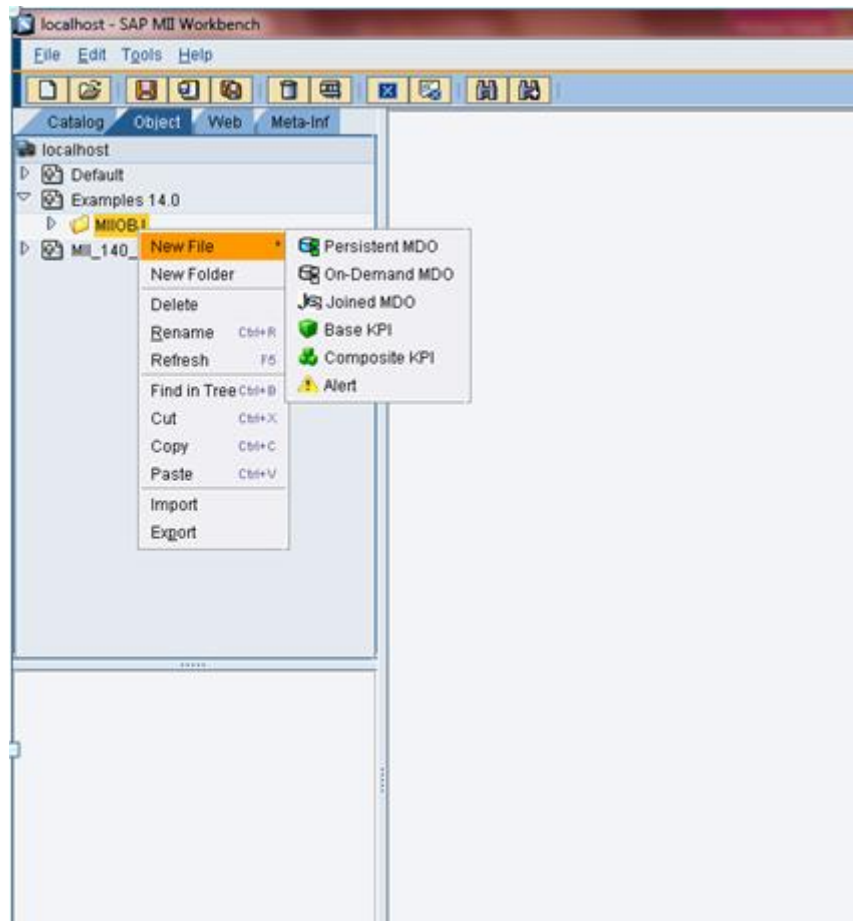
The created KPIs can be retrieved using KPI query and the KPI data will be consumed on KPI Monitor, which will be listed as one of the MII Admin screens.

The KPIs can be created by users on MII Workbench. Following steps mention the definition process in detail:

Step 1. Open the MII **Workbench** by clicking on the link on the left hand side panel of MII Admin screen under the category '**Content Development**', as shown in the figure below:



Step 2. Under the '**Object**' tab of the workbench, select the created project and right click. Select 'New File' and then select either the '**Base KPI**' or the option '**Composite KPI**'



Step 3. General Screen: After selection of the appropriate KPI file type, enter the details on the '**General**' category panel for the KPI Object Definition in the following fields:

- **Description:** The 'Description' field is an optional field, for the user to input descriptive text about the KPI definition. Relevant information like the purpose of creating the KPI or the system information, for which the KPI is being created, can be given in this field by the user.
- **Data Type:** User can select the data type for the KPI as:
 - Integer
 - Float
 - Double
 - LongUser can chose one of these data types and the calculated KPI value will be displayed to the user in the chosen format. If the user wants to round off the KPI values, then 'Integer' type can be selected, whereas for high precision values, 'Double' or 'Long' data type should be selected.
- **Unit of Measure:** This is an optional field that allows the user to specify the Unit of measurement for that particular KPI. If user is defining a KPI to measure the pressure KPI of a system, then appropriate unit of measure can be entered as 'Bar' or 'Pascal', whereas for some systems the relevant unit of measure can be defined in percentages(eg. Availability) or 'units/per day' to measure performance of a machine producing a certain item in bulk.
- **Mode:** The 'Mode' of KPI will be preselected based on the KPI type chosen by the user to be created. This field will be disabled for the user. It is only to display whether the user is trying to create a Base or a Composite KPI.
- **KPI Type:** This field can be used to categorize the performance of a business in one of the 3 states, Green, Yellow or Red. To do so, the users can define the span of values (maximum and minimum) for every state. These values are consumed later to visualize the KPIs. The KPI type can be selected from one of the following choices:
 - Positive
 - Negative
 - Bi-directional

The minimum and maximum threshold values for the type of KPI selected can be specified by the user in the 'From' & 'To' columns in the colour range table.

Following section describes each of these types in detail and when to use which type of KPI:

Positive KPI

These are the key performance indicators which are considered good if they have a higher positive value. The positive KPIs are expected to have a high numeric value.

Examples of Positive KPI: Efficiency, Availability etc.

The higher their values, the better is the system's performance.

In the figure below, if the KPI value is between 0.0 to 50.0, then status would be marked as 'Red', between 50.0 to 60.0 will be marked as 'Yellow' and if it exceeds or is equal to 60.0, it is considered as 'Green' status.

Thus, higher the KPI value, the better is the performance.

Type

Color	From	To
Green	60.0	Max
Yellow	50.0	60.0
Red	0.0	50.0

Negative KPI

These are opposite to Positive KPIs. The value of Negative KPIs is desired to be as low as possible. A decreasing value of these KPIs indicates a good performance.

Example of Negative KPIs: System Downtime, Incident Management, Safety Hazards etc.

For the attached figure below, the higher the KPI value, the worse the performance. The desired KPI value for this system is between 10.0 and 20.0. A KPI value beyond 30.0 is a 'Red' status.

Type

Color	From	To
Red	30.0	Max
Yellow	20.0	30.0
Green	10.0	20.0

Bi-directional KPI

These are special type of KPIs for which, the expected values are defined to be between a specific upper limit and lower limit. The KPI value above the upper limit and below the lower limit is considered undesirable and unexpected.

Examples of Bidirectional KPIs: Temperature Range of Boilers, Frequency Range etc.

For the figure below, if the KPI value is any value less than 0.0, or between 350.0 and 600.0, then it is considered as 'Red'; a KPI value between 0.0 to 100.0 or between 200.0 and 350.0 is considered as 'Yellow' or warning zone. The desired performance is achieved when the KPI value is between 100.0 and 200.0

Type	Bi-directional		
	Color	From	To
	Red	350.0	600.0
	Yellow	200.0	350.0
	Green	100.0	200.0
	Yellow	0.0	100.0
	Red	Min	0.0

For each type of KPI, the user will be able to define the minimum and maximum threshold values as 'From' and 'To' values in a table, to mark the KPI trend in 3 colour ranges - Red, Yellow or Green. User can define numeric values to mark the status of the KPI to be in Red, Yellow or Green range; which conventionally would mean alerting condition, warning condition and an expected condition, respectively.

- **Aggregation Logic:** This field defines the logic to be used for the aggregation of the KPI values while querying the KPI values. User can select one of the following choices:
 - **MIN** – the minimum value from the retrieved results will be returned as a result of the query. Use this option to find the minimum value of the KPI that a particular system encountered over a certain period of time
 - **MAX** – the maximum of all the values returned will be the result of the query. Use this option to find the maximum value of the KPI that a particular system encountered over a certain period of time
 - **AVG** – the average of all the values obtained will be returned as result of the query. Use this aggregation logic to find out the average KPI value of a system.
 - **SUM** – summation of all the KPI values obtained will be returned as query result. Use this option to find out the total number of goods produced by say, a workcenter over a given period of time.

- RANGE – this aggregation logic gives the difference between the maximum and minimum value of the KPI. Use this logic to find the span of extremities of the business’s performance.

- Custom Properties: User can add several additional properties for customizing the KPI definition as additional metadata information. Properties will be created as name-value pairs. These properties can be added, edited & deleted as per user requirements. These values can be queried by another user if required.

The screenshot shows the SAP MII NWDI Configuration tool interface. The left-hand pane displays a tree structure under 'Examples 14.0' > 'MIIOBJ' > 'KPI' > 'Availability'. The main configuration area is titled 'Availability' and contains the following fields and components:

- Description:** This KPI Configuration measures 'Availability'
- Data Type:** Float
- Unit of Measure:** %
- Mode:** Base (selected), Composite
- Type:** Positive
- Range:** A table with columns 'Color', 'From', and 'To':

Color	From	To
Green	90.0	Max
Yellow	80.0	90.0
Red	0.0	80.0
- Target Value:** 90
- Aggregation Logic:** AVG
- Custom Properties:** A table with columns 'Name' and 'Value' and buttons 'Add', 'Edit', and 'Delete' below it.

At the bottom left, there is a 'Template Categories' pane with 'Properties' selected, listing categories like General, Data Provider, Dimensions, Lifecycle, Visualization, Security, Role Mapping, Alert, and KPI Relationship View.

Step 4. Data Provider Screen: Select a data provider for the KPI calculations on the '**Data Provider**' panel of the workbench. As per the KPI Definitions, for Base KPIs, the data source can be a transaction or any query template. For Composite KPIs, data source can be a transaction, a query template and other predefined Base and Composite KPIs. To select a data provider, perform the following steps:

Method 1:

- a) Click on the '**Load**' button and select a saved query template or transaction.
- b) Click '**OK**'

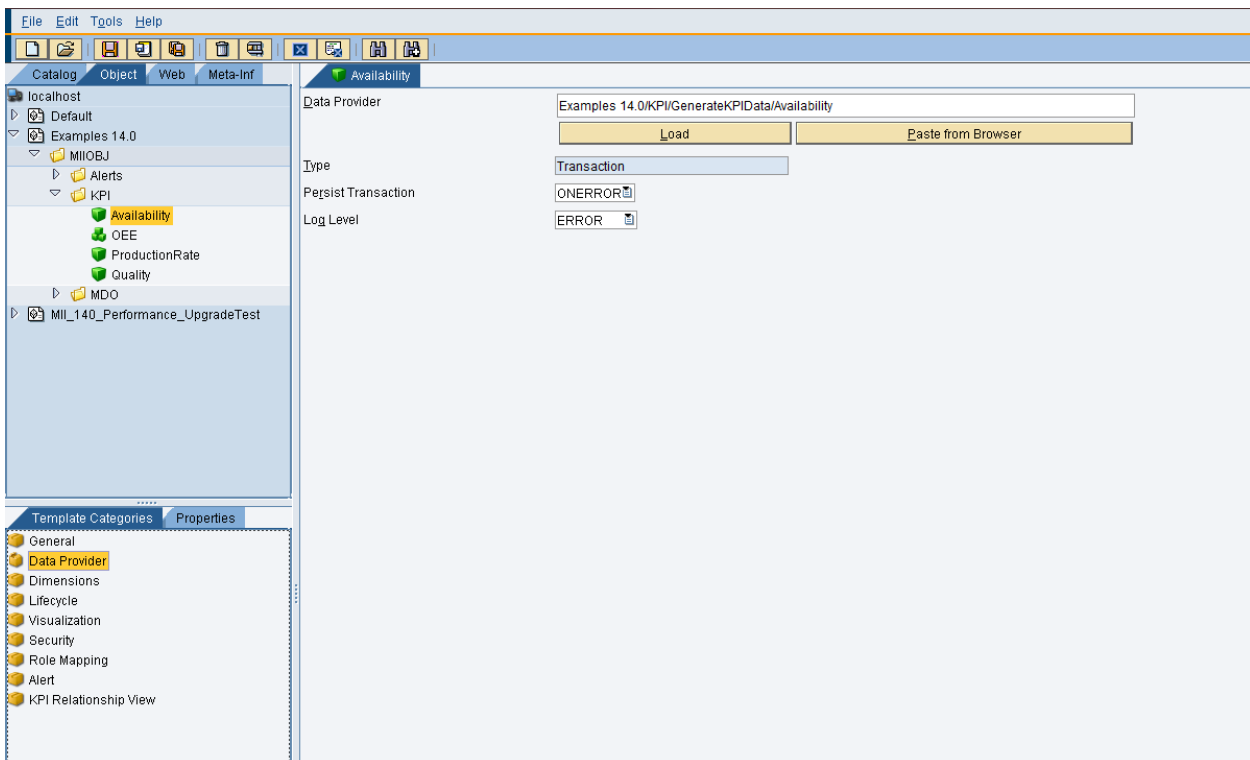
Method 2:

- a) On the left hand side pane under the tab 'Catalog' where the projects are created, select a pre saved query template or transaction.
- b) Click on '**Paste from Browser**'

Method 3:

- a) Drag and drop the appropriate data provider file in the text field

The selected query template will be loaded for the current KPI file as a data source. Additionally, for Composite KPI, select one or more KPIs from the list of KPIs listed under the field 'KPI Data Provider'

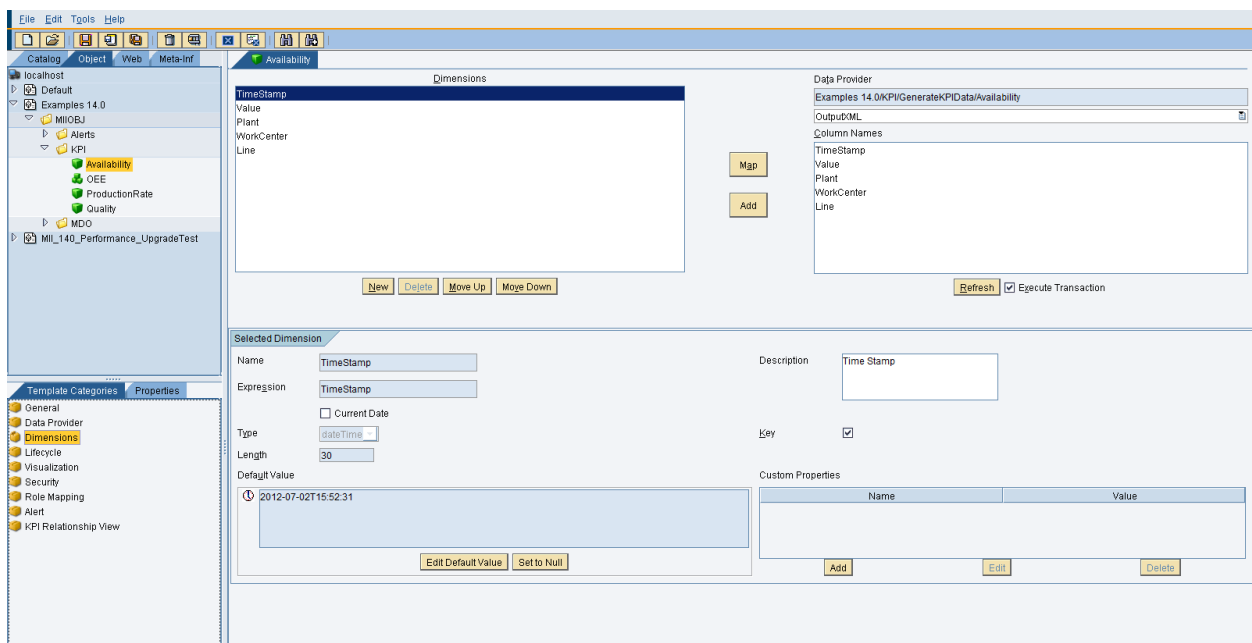


Step 5. Dimensions Screen: Add new dimensions and create the mapping for each of them using one of the columns from the data providers. Various other properties like 'Default Value' and 'Key' field can be customized for each dimension created on this screen.

Maximum 128 dimensions can be added by the user. These dimensions are optional in the KPI definition, but mandatory to be mapped if present.

To add a new dimension, click on the 'New' button and to map it with a data source column, click on the 'Map' button.

To define a custom mathematical expression for the calculation of 'Value' dimension of KPI, click on 'Edit Expression' and provide the appropriate mathematical expression.




Step 6. Lifecycle Screen: The next step is to create schedulers for the Data Acquisition of values for the defined KPI file. Users can do this on the '**Lifecycle**' panel.

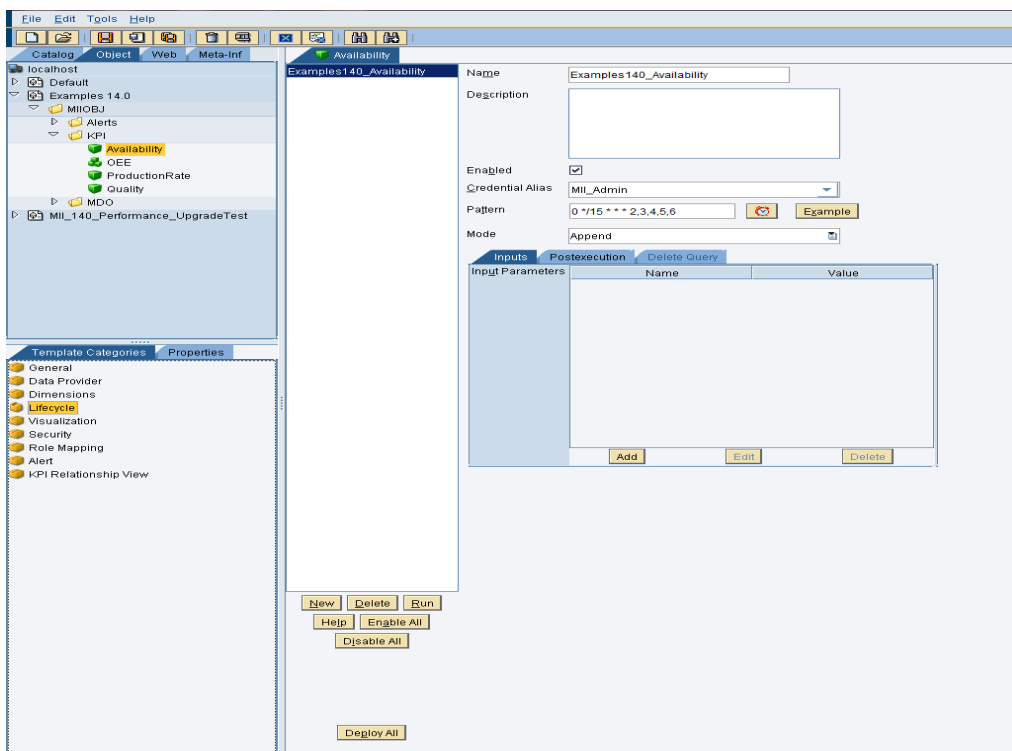
This is an important step in the definition process of a KPI file. To generate and then store the generated KPI values in the system, it is necessary to create schedulers, define the time pattern to run these scheduler jobs and deploy them on the system.

If the user skips to create scheduler for the KPI file, the file will still be valid, but the KPI values will not be generated and saved. User can later edit the file and create scheduler jobs as and when required using the 'Lifecycle' panel of the workbench or by using the 'Scheduler' screen on the MII admin page.

While creating a scheduler, the user can define a time pattern for the scheduler to be run. Each time the scheduler runs as per the defined schedule, the data provider query is executed and the values for each of the KPI dimensions are calculated and stored in the respective KPI tables.

To create a new scheduler,

- Click on '**New**' button
- Provide an appropriate name of the scheduler
- Enable the scheduler by checking the '**Enabled**' checkbox
- Select a pattern for the scheduler to run. To select the pattern, click on the  button
- Select the mode of the scheduler, '**Append**' to append the KPI values and '**Delete**' to delete the stored KPI values.
- Click on '**Deploy All**' to deploy the scheduler.
- Run the scheduler by clicking on the '**Run**' button



Step 7. Visualization Screen: Next step is to define the query and display template for the KPI file. This is an optional step, and user may or may not choose to provide the query template and display template inputs on this panel.

If the user wants to view the graphical representation of his KPI data for the generated KPI file on the UI screen called KPI Monitor screen, then a query template name and a display template name has to be given on the Visualization panel.

The UI screen that consumes this information is called KPI Monitor, which will be described in detail in the later part of this document.

To visualize the KPI statistical data, the user will have to first create a KPI query that uses the same KPI as its data source, whose data needs to be visualized. The user then needs to create a display template of his choice and provide necessary configurations to it. The display template specified on this screen will be used to provide a graphical representation of the KPI value on the KPI Monitor.

To define the query template or display template,

Method 1:

- a) Click on the '**Load**' button and select a query template or display template
- b) Click '**OK**'

Method 2:

- a) On the left hand side pane under the tab 'Catalog' where the projects are created, select a pre saved query template or transaction.
- b) Click on '**Paste from Browser**'

Method 3:

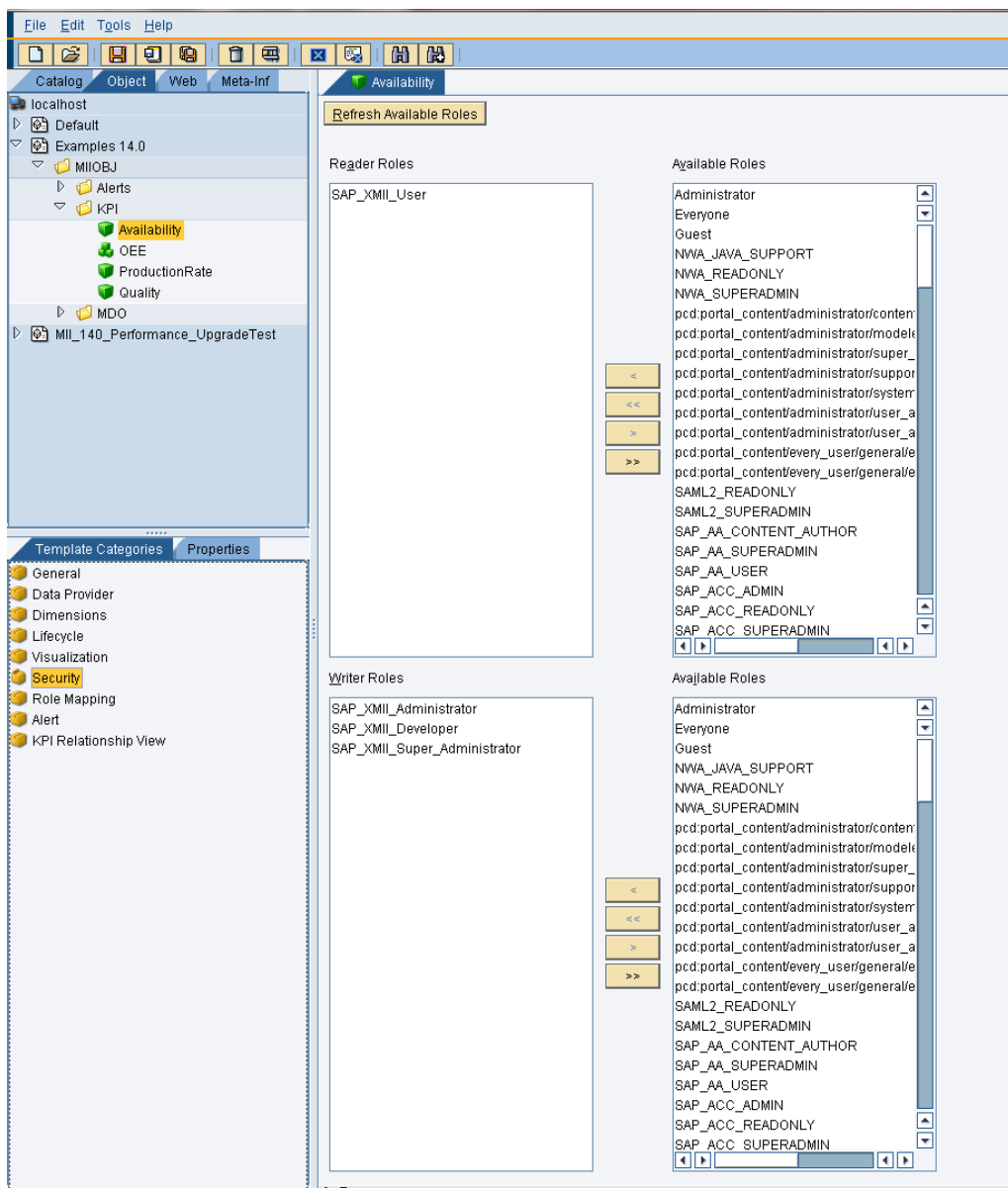
- a) Drag and drop the appropriate data provider file in the text field

The screenshot displays the SAP MII NWDI Configuration Guide interface. The main window is titled 'Availability' and is divided into several sections:

- Navigation Tree (Left):** Shows a hierarchy starting with 'localhost' and 'Examples 14.0'. Under 'Examples 14.0', there is a folder 'MIIOBJ' containing 'Alerts' and 'KPI'. Under 'KPI', there are 'Availability' (highlighted), 'OEE', 'ProductionRate', and 'Quality'. Below this is 'MDO' and 'MII_140_Performance_UpgradeTest'.
- Template Categories (Bottom Left):** A list of categories including 'General', 'Data Provider', 'Dimensions', 'Lifecycle', 'Visualization' (highlighted), 'Security', 'Role Mapping', 'Alert', and 'KPI Relationship View'.
- Query Template Section:**
 - Text: 'Query Template' followed by a text input field containing 'Examples 14.0/KPI/GetAvailability'.
 - Buttons: 'Load' and 'Paste from Browser'.
 - Table: A table with two columns, 'Name' and 'Value', currently empty.
 - Buttons: 'Add', 'Edit', and 'Delete'.
- Display Template Section:**
 - Text: 'Display Template' followed by a text input field containing 'Examples 14.0/KPI/LineChart'.
 - Buttons: 'Load' and 'Paste from Browser'.
 - Table: A table with two columns, 'Name' and 'Value', currently empty.
 - Buttons: 'Add', 'Edit', and 'Delete'.

Step 8. Security Screen: The Security screen is common to all MII Workbench objects that define the security levels for various users. Various reader & writer roles can be defined for the KPI object using this screen. The user that has a Reader role can open a KPI definition file, and a Writer role can edit that definition file. A user with the Reader role and no Writer role cannot edit and save a definition file.

Role Mapping Screen: The Role Mapping screen allows the user to define the KPI users having specific roles to which the KPI related notifications have to be made accessible. Only assigned user/Roles will have access to the KPI values. The user roles added on this screen will have notifications sent by the MII14.0 alert framework for the related KPI file. Assign reader roles and writer roles for the current KPI file by using the 'Security' and 'Role Mapping' panel



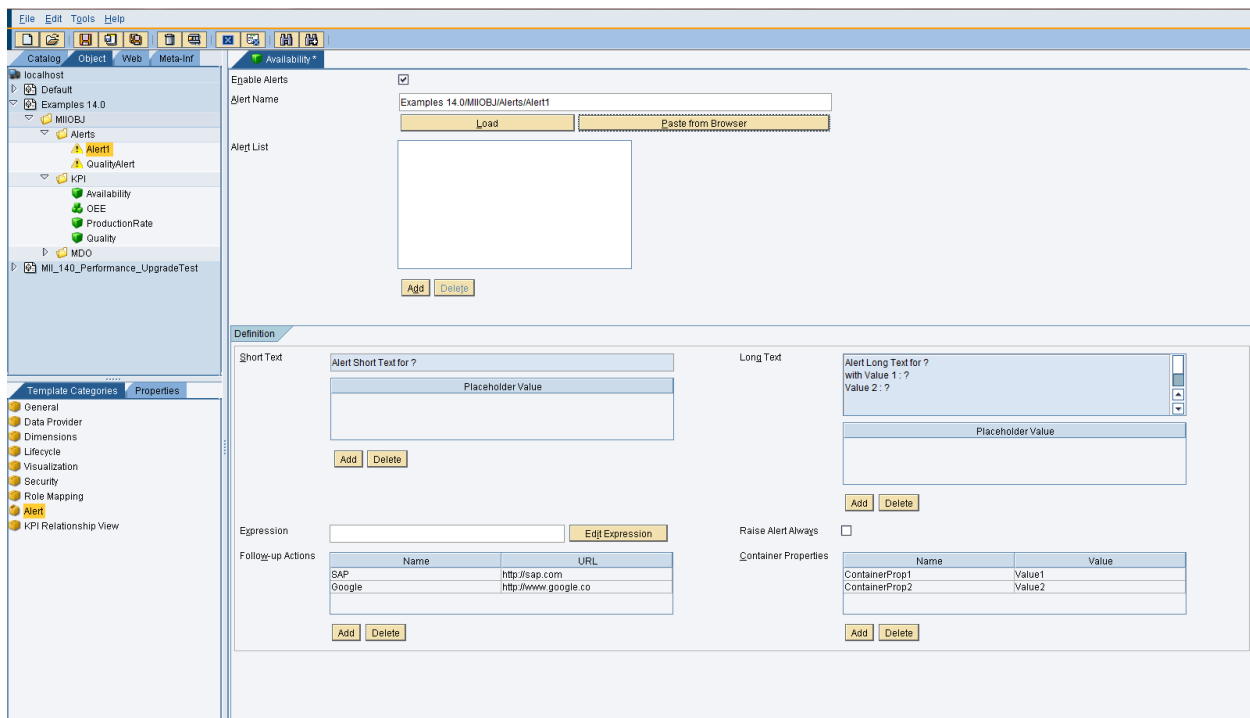
The screenshot displays the SAP NetWeaver Administrator interface for configuring the 'Availability' object. The left pane shows the object hierarchy: localhost > Default > Examples 14.0 > MIIOBJ > Alerts > KPI > Availability. The 'Availability' object is selected, and its properties are shown in the bottom-left pane, with 'Role Mapping' highlighted. The main area is titled 'Availability' and contains a 'Refresh Available Roles' button. Below this, there are two columns: 'Assigned Roles' and 'Available Roles'. The 'Assigned Roles' list includes: SAP_XMII_Administrator, SAP_XMII_Approver, SAP_XMII_Developer, SAP_XMII_DynamicQuery, SAP_XMII_Mobile, SAP_XMII_ProjectManagement, SAP_XMII_Read_Only, SAP_XMII_Super_Administrator, and SAP_XMII_User. The 'Available Roles' list includes: Administrator, Everyone, Guest, NWA_JAVA_SUPPORT, NWA_READONLY, NWA_SUPERADMIN, pcd.portal_content/administrator/content, pcd.portal_content/administrator/model, pcd.portal_content/administrator/super, pcd.portal_content/administrator/support, pcd.portal_content/administrator/system, pcd.portal_content/administrator/user_a, pcd.portal_content/administrator/user_a, pcd.portal_content/very_user/general, pcd.portal_content/very_user/general, SAML2_READONLY, SAML2_SUPERADMIN, SAP_AA_CONTENT_AUTHOR, SAP_AA_SUPERADMIN, SAP_AA_USER, SAP_ACC_ADMIN, SAP_ACC_READONLY, SAP_ACC_SUPERADMIN, SAP_ADSCALLER, SAP_APPLICATION_DEPLOYER, SAP_ARCH_CO_EXECUTE, SAP_ARCH_CO_VIEW, SAP_ARCH_SUPERADMIN, SAP_ARCH_XMLDAS_VIEW, SAP_BC_BCE_ACTIVATION, SAP_BC_BCE_AUTHOR, SAP_BPM_Navigation, SAP_BPM_SuperAdmin, SAP_BPM_SuperDisplay, SAP_BRM_NWA_ADMIN, SAP_BRM_NWA_READONLY, SAP_CAF_ADMIN, SAP_CAF_DEVELOPER, SAP_CR_ADMINISTRATOR, SAP_CR_DEVELOPER, SAP_CR_DISPLAYER, SAP_CR_TEAM_ORGANIZER, SAP_CR_TRANSPORTER, SAP_CTS_DEPLOY, SAP_CTS_DI_CONFIGURATOR, SAP_DI_ADMINISTRATOR, SAP_DI_CONFIGURATOR, SAP_DI_DEVELOPER, and SAP_DI_GUEST. Navigation buttons (<, <<, >, >>) are located between the two lists.

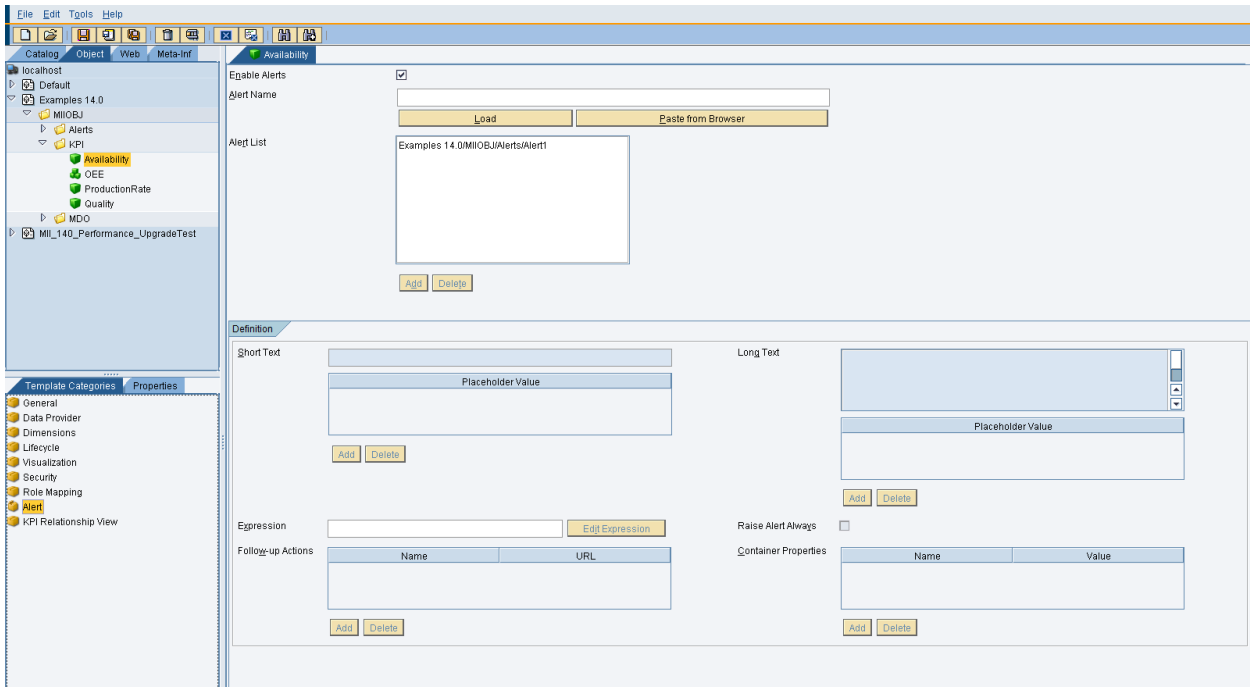
Step 9. Alert Screen: If users want to use KPIs to raise alerts in order to notify of a specific event, then alerts need to be added and configured accordingly for the KPI.

The Alert files will have the following icon adjacent to them: 

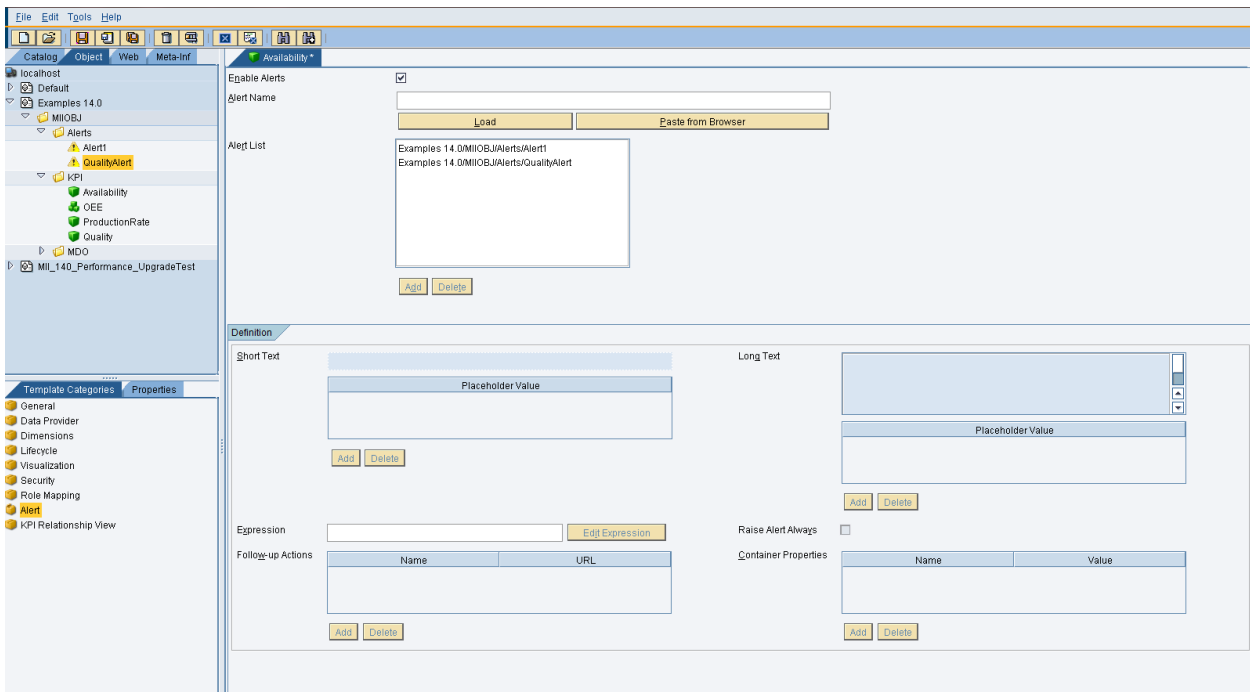
To add and configure the alerts,

- In the field 'Alert Name', load an alert file that is already created and saved in the system. The properties of the alert file selected will be populated in respective fields in the lower panel.
- These loaded properties can be edited and new properties can be added.
- After adding required properties, enable the checkbox 'Raise Always' if you want the alert to be raised everytime the alert condition defined in the 'Expression' field is met.
- Click on '**Add**' button to add the configured alert to the KPI
- Select the checkbox '**Enable Alerts**' to enable the added alerts



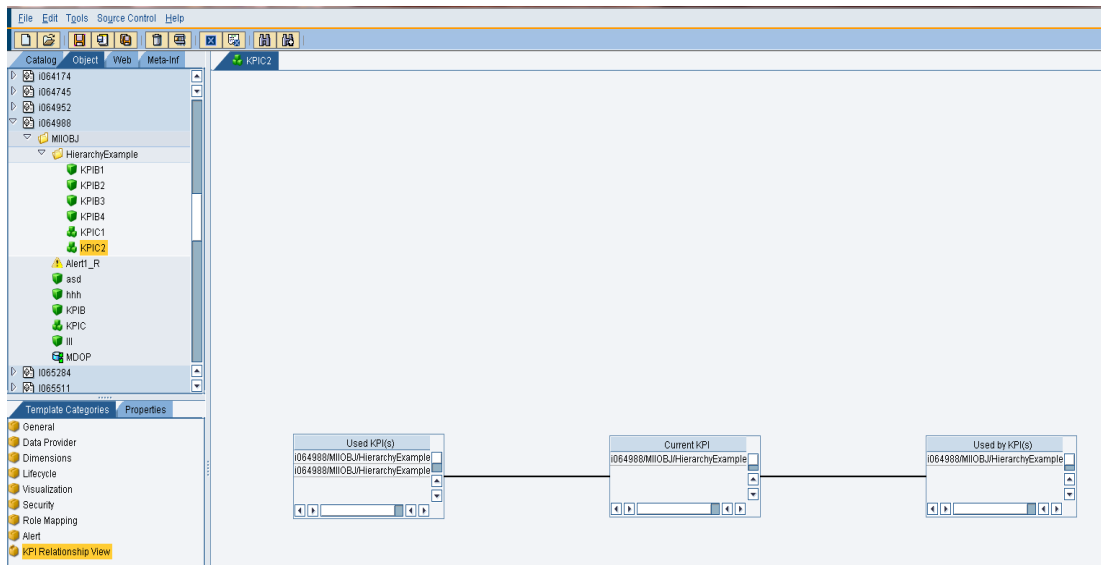


More than one alerts can be configured and added to the KPI for different alerting conditions

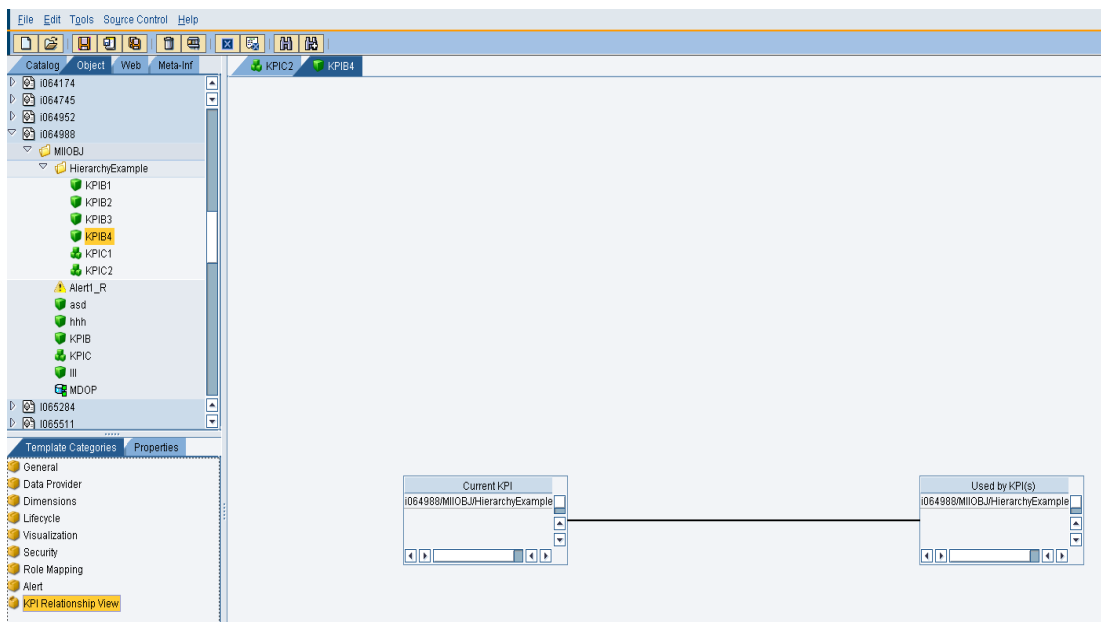


Step 10. Relationship View Screen: The 'Relationship View' is a read only screen that has shows the hierarchical relationship of a given KPI with the other KPI files in the system. For example, a composite KPI can have Base and Composite KPIs as its child KPIs and in turn can itself be a child KPI of another composite KPI. This screen summarizes the relationship of such a KPI for the ease of understanding for the user.

The screen shows 3 tables, namely 'Current KPI' which displays the name of the current KPI file, 'Used KPIs' which lists down all the KPIs used by current KPI in its definition and 'Used By KPIs' which lists down all the KPIs that have used the current KPI as its child.



As the Base KPIs cannot add any KPIs as their data providers, hence for Base KPIs, only the columns 'Current KPI' and 'Used By KPIs' will be displayed, as seen in below figure:



3 Configure KPI Query

In the KPI framework, KPI Query will be used to query the KPI values by defining certain parameters, insert specific values to the KPI tables, delete values from KPIs and to query various other information related to KPI files. To create KPI query, the users first need to configure KPI Connector.

If there are any existing KPI connectors already created in the system, then those connectors should be utilized instead of creating new ones. It is also possible (but not necessary) to create new KPI Connectors if needed.

3.1 Configure KPI Connector

Open the 'Data Server' screen of MII, which is under the category 'Data Services' on the left hand side panel of MII Admin screen. Create a KPI Connector or a Virtual KPI Connector using this screen.

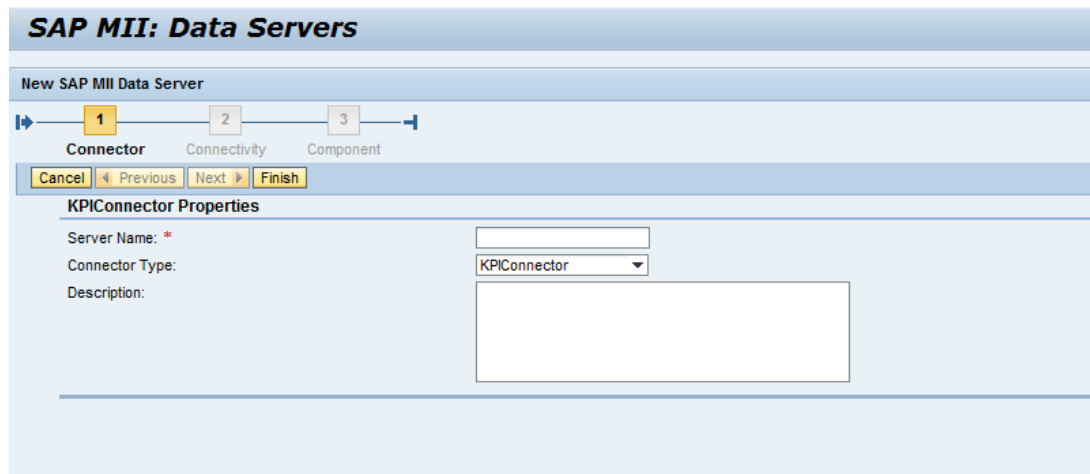
3.1.1 Create a KPI Connector:

Step 1. Click on 'Create' button



Step 2. Enter the name of KPI Connector on the next screen.

Step 3. In the 'Connector Type' combobox, select the option 'KPICConnector', as shown in the figure below:



SAP MII: Data Servers

New SAP MII Data Server

1 Connector 2 Connectivity 3 Component

Cancel Previous Next Finish

KPIConnector Properties

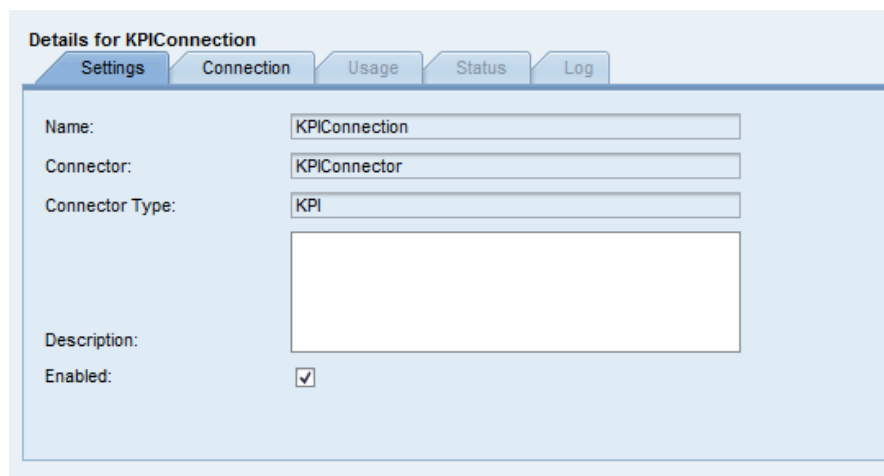
Server Name: *

Connector Type: KPIConnector

Description:

Step 4. Click 'Finish'

Step 5. Select the checkbox 'Enabled'



Details for KPIConnection

Settings Connection Usage Status Log

Name: KPIConnection

Connector: KPIConnector

Connector Type: KPI

Description:

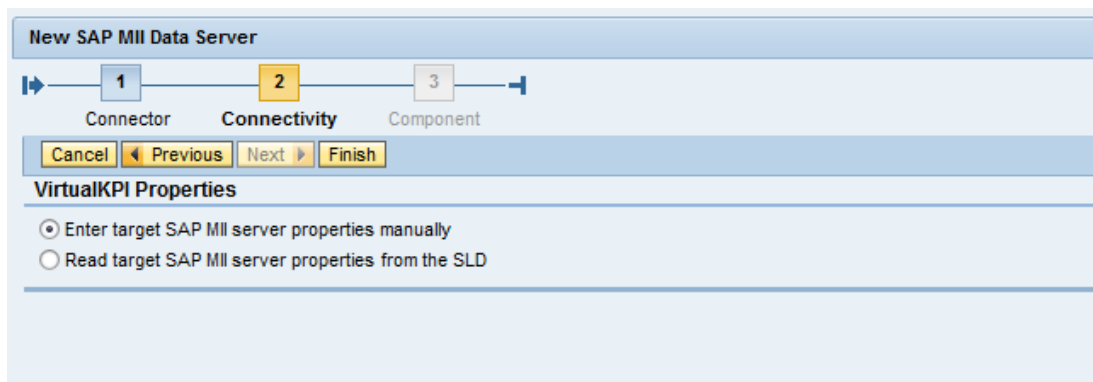
Enabled:

Step 6. Save the connector by clicking the 'Save' button

3.1.2 Create a Virtual KPI Connector:


To access KPIs defined on another MII System use Virtual KPI Connectors. To create a Virtual KPI Connector, follow the following steps:

- Step 1.** On the 'Data Server' screen, click on '**Create**' button
- Step 2.** Enter the name of Virtual KPI Connector
- Step 3.** In the '**Connector Type**' combobox, select the option 'Virtual KPI'
- Step 4.** Click '**Next**'
- Step 5.** Select the option to either enter the server properties manually or read it from an SLD



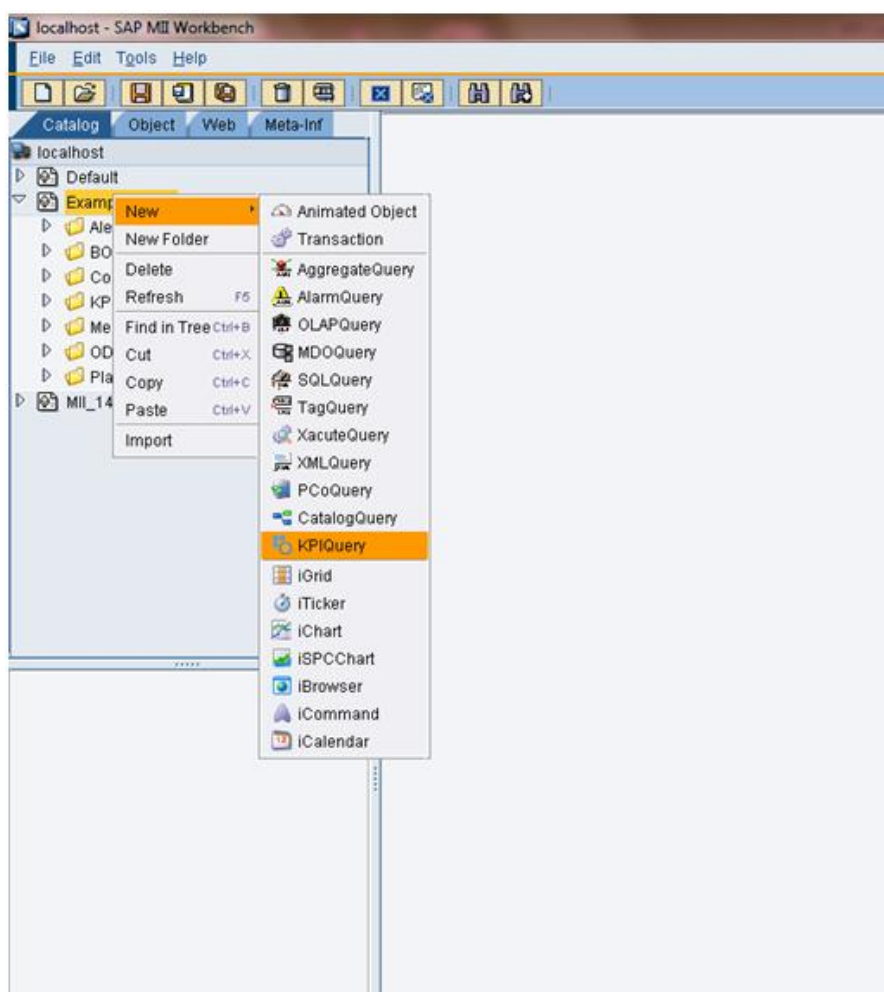
- Step 6.** Click '**Finish**'
- Step 7.** Select the checkbox '**Enabled**'
- Step 8.** Select the 'Connection' tab and enter the details of the remote server to connect to
- Step 9.** Save the connector by clicking the '**Save**' button

After the KPI Connectors are configured, then a KPI Query can be created to query the KPI data and other related information.

The icon used for KPI Query is: 

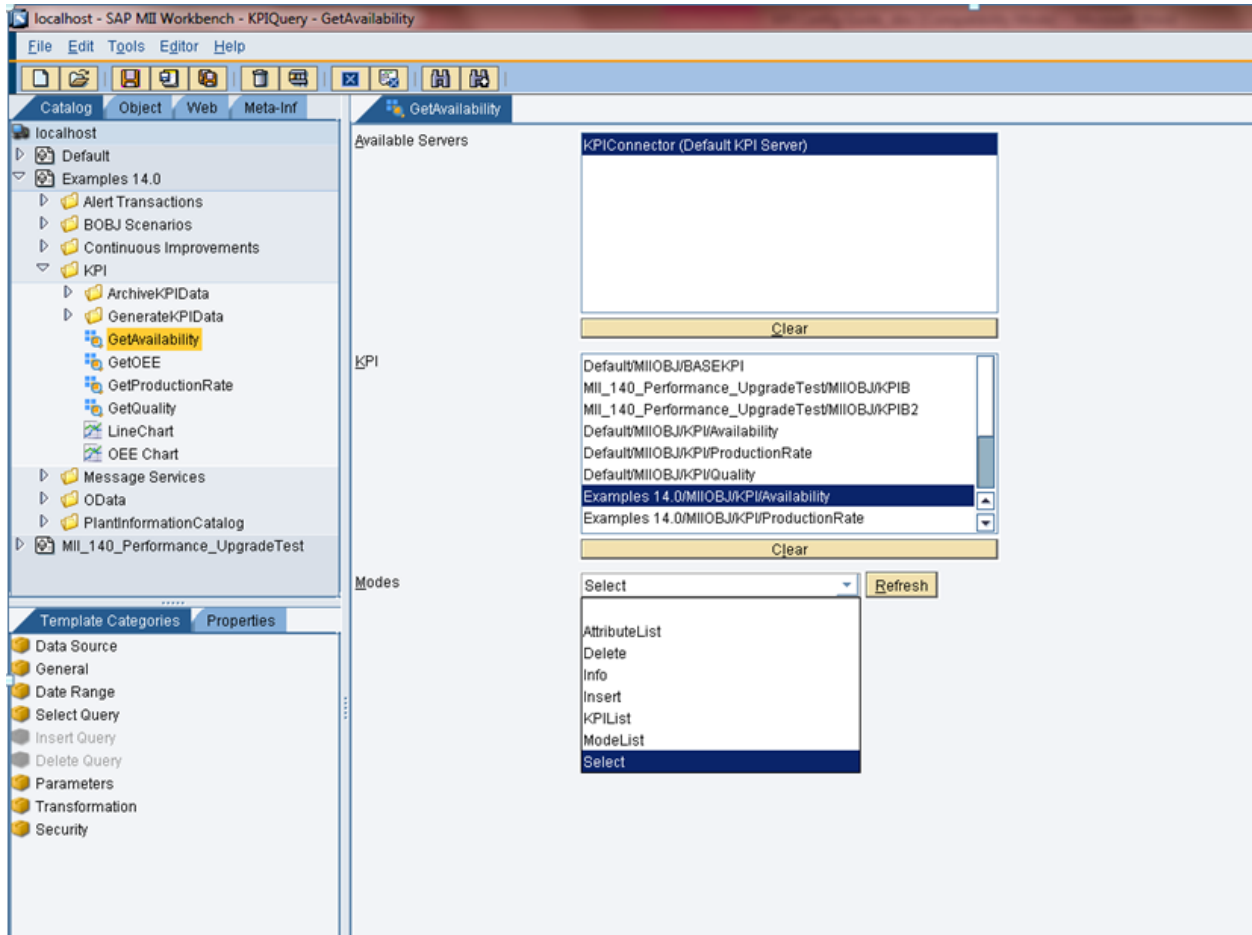
To create a KPI Query, use the following steps:

- Step 1.** Open the MII Workbench
- Step 2.** Under the 'Catalog' tab of the workbench, select the created project and right click. Select 'New' and then select 'KPI Query'



- Step 3.** All the template categories will be loaded in the lower left hand side panel of the workbench
- Step 4.** On the 'Data Source' panel, select one of the available servers (KPI Connectors)
- Step 5.** Select the KPI to be queried from the list of KPIs in the field 'KPI'

Step 6. Select the mode of the KPI Query.



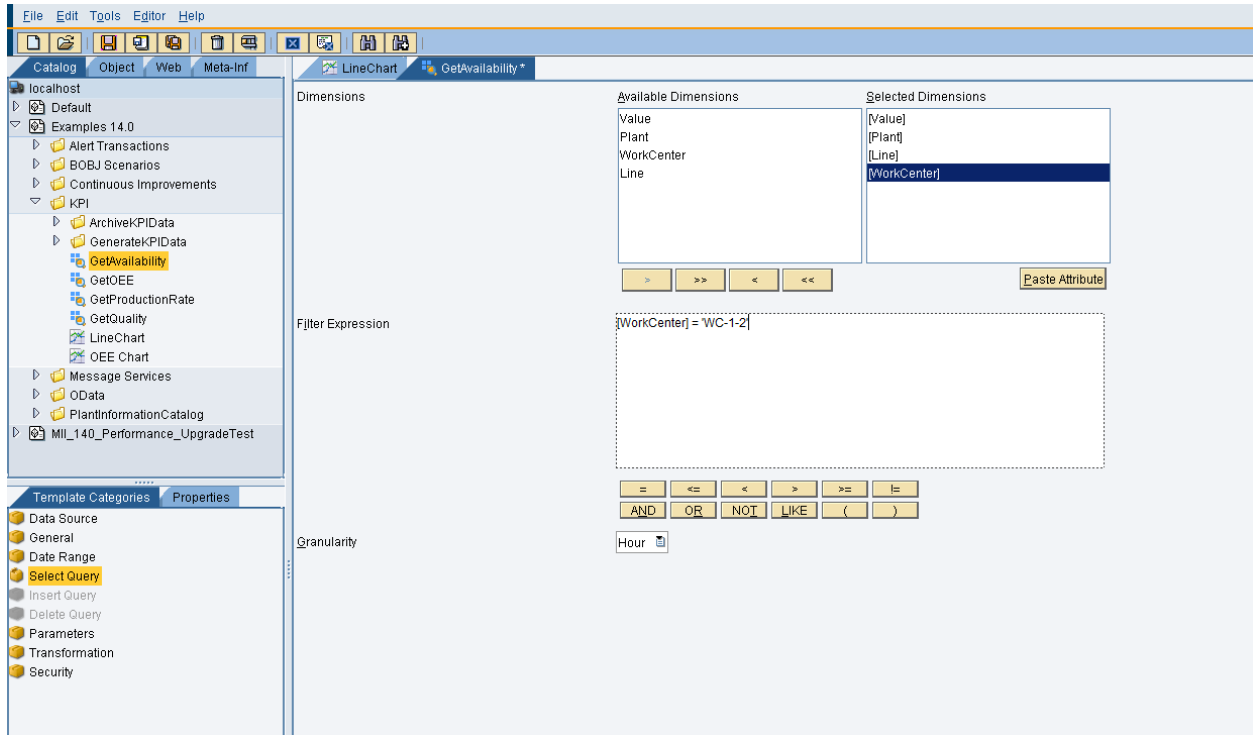
Users can select one of the several modes of the KPI Query. Based on different modes, the KPI Query would behave in different ways. The different Modes are listed below:

1. AttributeList: This mode is used to list all the Dimensions of the KPI.
2. Delete: This mode is used to delete data from the dataset of the Selected KPI.
3. Info: This mode is used to list all the basic information about a KPI like Custom Properties, Description, type and threshold ranges.
4. Insert: This mode is used to insert data in the dataset for the provided KPI.
5. KPIList: This mode is used to list all the KPIs created in the provided Data Server.
6. ModeList: This mode is used to list all the modes this KPI Query listens to.
7. Select: This mode is used to retrieve the data from the Dataset of the provided KPI

Step 7. Depending on the mode selected by the user for the KPI query, appropriate panels will get enabled to define further configurations for the KPI Query in that mode.

- **SELECT MODE**

Step 1. Users can provide filter expressions and granularity for querying the KPI data if the 'Select' mode of the query is used.



In the example used in the above screenshot, the user has created a KPI Query in 'Select' mode where all the dimensions of the KPI are being queried, and the filter expression provided is for the specified WorkCentre. The granularity used is '**Hour**'.

If the user needs to see the unique dataset independent of the granularity, then he can select the granularity '**None**'.

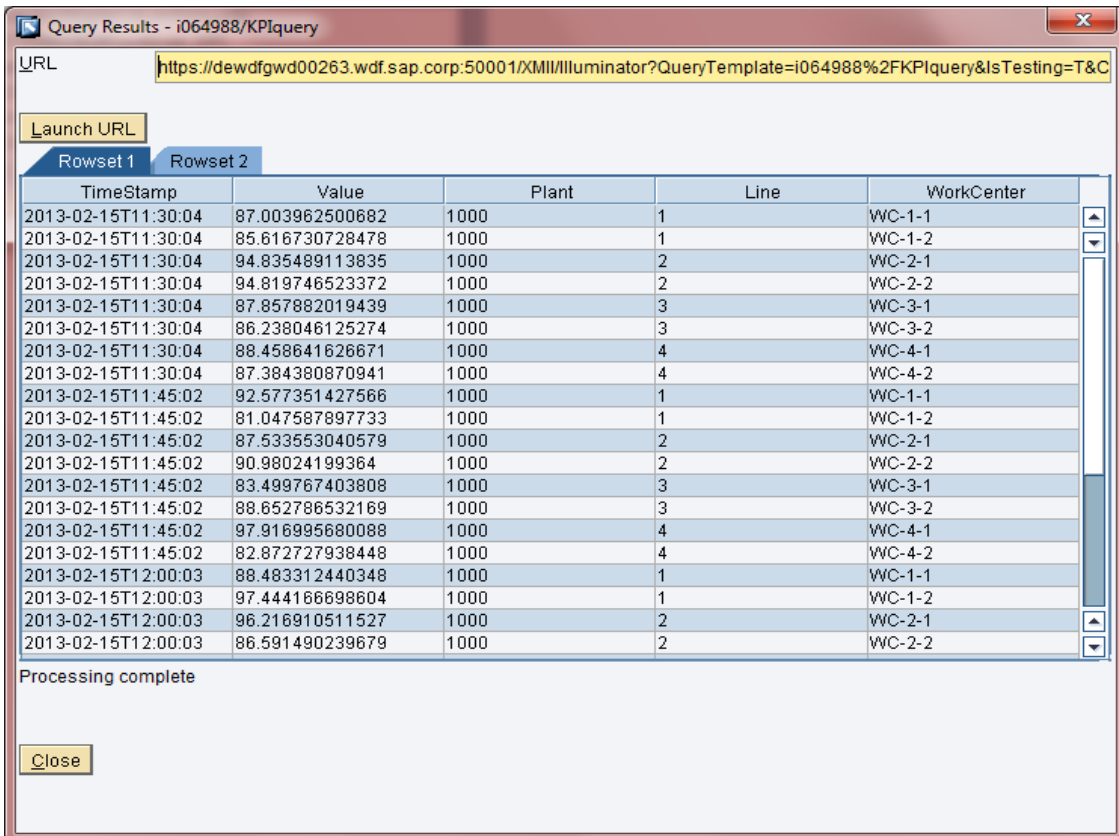
To get the KPI values on per day basis, user can use the granularity '**Day**' and the data for each day will be returned as the result of the query.

Similarly, if he needs the data for a week or month, then he can use granularity '**Week**' or '**Month**' accordingly.

If the user wants to see all the KPI data that has got generated for the corresponding KPI file, then he can use the granularity '**Raw**' and the entire dataset for the KPI will be returned as the result of KPI query.

Query Result:

The output of a 'Select' query is as shown in figure below. The output contains two rowsets. The first rowset contains the result of the query for all the selected dimensions as per the filter criteria given, whereas the second rowset displays the meta data information like the threshold values for color ranges, description, unit of measure and the target value. This information can be used to plot the values for this KPI on a chart and the different ranges can be highlighted according to the defined color range.



Query Results - i064988/KPIquery

URL: <https://dewdfgwd00263.wdf.sap.corp:50001/XMI/IIIuminator?QueryTemplate=i064988%2FKPIquery&IsTesting=T&C>

Launch URL

Rowset 1		Rowset 2			
TimeStamp	Value	Plant	Line	WorkCenter	
2013-02-15T11:30:04	87.003962500682	1000	1	WC-1-1	▲
2013-02-15T11:30:04	85.616730728478	1000	1	WC-1-2	▼
2013-02-15T11:30:04	94.835489113835	1000	2	WC-2-1	
2013-02-15T11:30:04	94.819746523372	1000	2	WC-2-2	
2013-02-15T11:30:04	87.857882019439	1000	3	WC-3-1	
2013-02-15T11:30:04	86.238046125274	1000	3	WC-3-2	
2013-02-15T11:30:04	88.458641626671	1000	4	WC-4-1	
2013-02-15T11:30:04	87.384380870941	1000	4	WC-4-2	
2013-02-15T11:45:02	92.577351427566	1000	1	WC-1-1	
2013-02-15T11:45:02	81.047587897733	1000	1	WC-1-2	
2013-02-15T11:45:02	87.533553040579	1000	2	WC-2-1	
2013-02-15T11:45:02	90.98024199364	1000	2	WC-2-2	
2013-02-15T11:45:02	83.499767403808	1000	3	WC-3-1	
2013-02-15T11:45:02	88.652786532169	1000	3	WC-3-2	
2013-02-15T11:45:02	97.916995680088	1000	4	WC-4-1	
2013-02-15T11:45:02	82.872727938448	1000	4	WC-4-2	
2013-02-15T12:00:03	88.483312440348	1000	1	WC-1-1	
2013-02-15T12:00:03	97.444166698604	1000	1	WC-1-2	
2013-02-15T12:00:03	96.216910511527	1000	2	WC-2-1	▲
2013-02-15T12:00:03	86.591490239679	1000	2	WC-2-2	▼

Processing complete

Close

Query Results - i064988/KPIquery

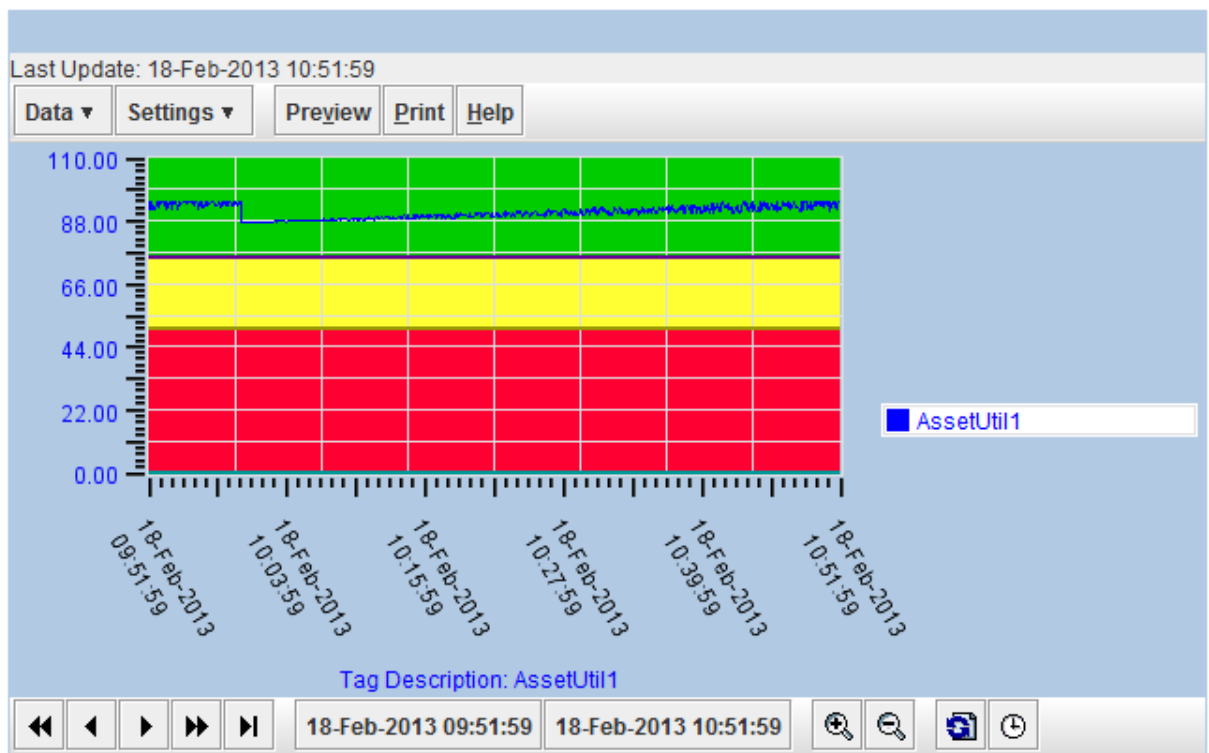
URL: <https://dewdfgwd00263.wdf.sap.corp:50001/XMII/Illuminator?QueryTemplate=i064988%2FKPIquery&IsTesting=T&C>

Launch URL

Red_From	Red_To	Yellow_From	Yellow_To	Green_From	Green_To	Target	UnitOfMeasure
0	50	50	75	75	100	95	%

Processing complete

Close



Calculation Examples:

Consider the data in the KPI Dataset as:

Timestamp	Value	Plant	Line
01-01-2013 12:10:01	10	P1	L1
01-01-2013 12:10:01	20	P1	L2
01-01-2013 12:10:01	15	P2	L1
01-01-2013 12:10:01	12	P2	L2
01-01-2013 13:10:01	18	P1	L1
01-01-2013 13:10:01	19	P1	L2
01-01-2013 13:10:01	14	P2	L1
01-01-2013 13:10:01	9	P2	L2

For Aggregation Logic as “MIN” and Granularity as “DAY”, the calculation of the KPI will be:

Timestamp	Value	Plant	Line
01-01-2013 00:00:00	10	P1	L1
01-01-2013 00:00:00	19	P1	L2
01-01-2013 00:00:00	14	P2	L1
01-01-2013 00:00:00	9	P2	L2

The Value of the KPI on “01-01-2013” for Plant “P1” and Line “L1” will be the minimum of 10 and 18 hence the value will be 10.

Similarly the Value of the KPI for Plant “P2” and Line “L2” will be the minimum of 9 and 12 hence the Value of the KPI is 9.

Consider the following KPI Dataset for another example:

Timestamp	Value	Plant	Line
01-01-2013 12:10:01	10	P1	L1
01-01-2013 12:10:01	20	P1	L2
01-01-2013 12:10:01	15	P2	L1
01-01-2013 12:10:01	12	P2	L2
01-01-2013 12:45:01	18	P1	L1
01-01-2013 12:45:01	19	P1	L2
01-01-2013 12:45:01	14	P2	L1
01-01-2013 12:45:01	9	P2	L2

Now, consider Aggregation Logic as “MAX” and Granularity as “Hour”, the calculation of the KPI will be done as:

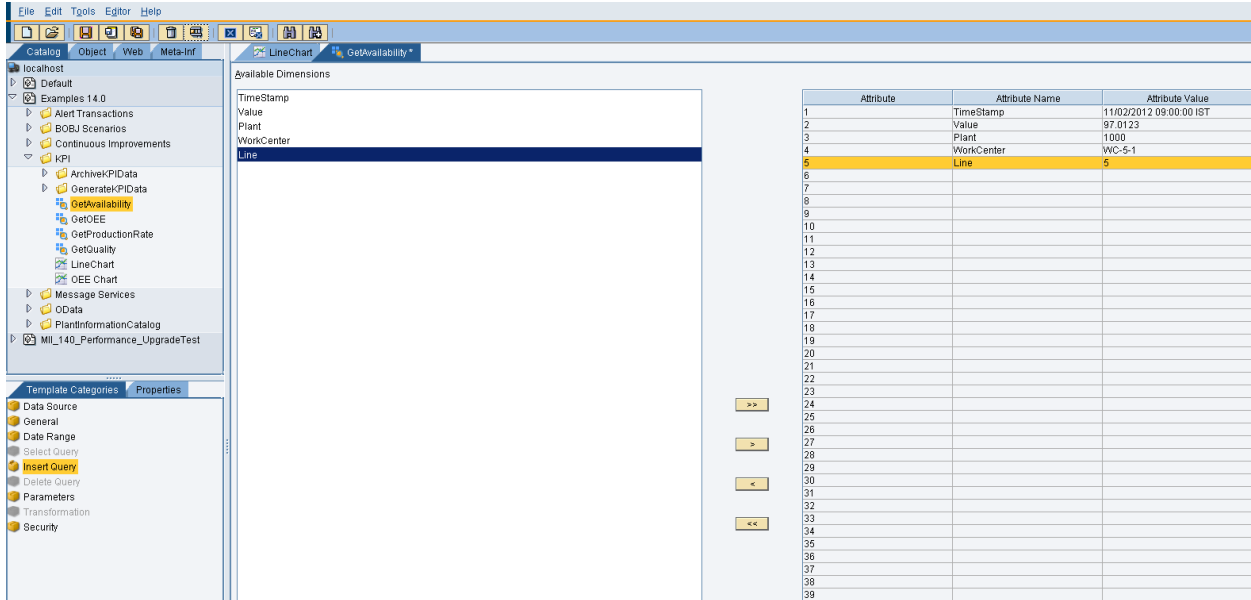
Timestamp	Value	Plant	Line
01-01-2013 12:00:01	18	P1	L1
01-01-2013 12:00:01	20	P1	L2
01-01-2013 12:00:01	19	P2	L1
01-01-2013 12:00:01	12	P2	L2

The Value of the KPI for 12th hour, Plant “P1” and Line “L1” would be the maximum of 18 and 10 hence the value is 18.

Similarly, the Value of the KPI for 12th hour, Plant “P2” and Line “L2” would be the maximum of 12 and 9 hence the value is 9.

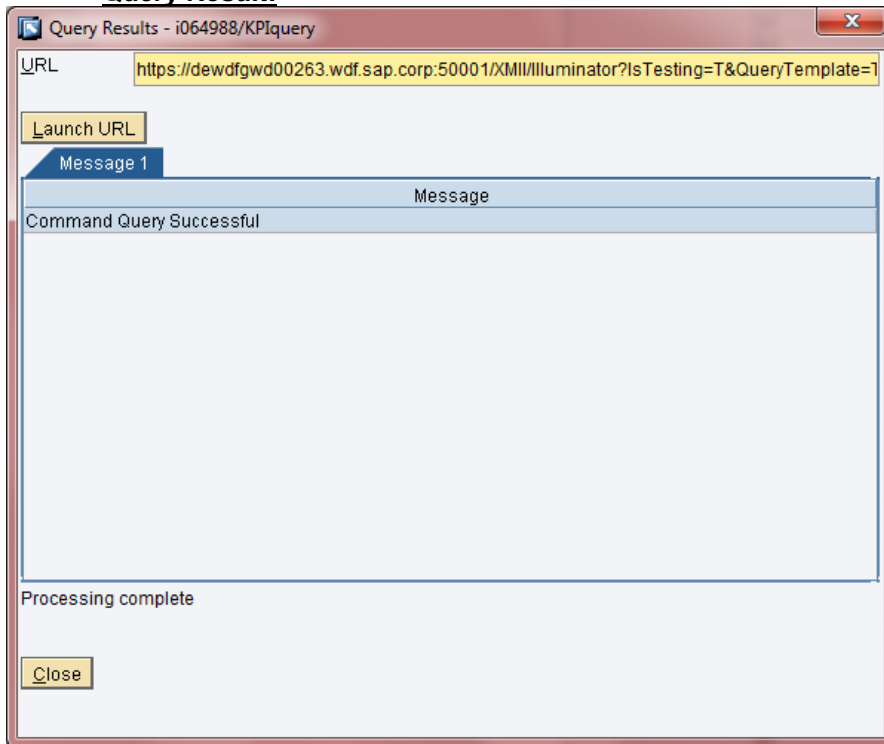
- **INSERT MODE**

Using the 'Insert' mode of the query, the users can input certain set of KPI values in the tables using the panel 'Insert Query'



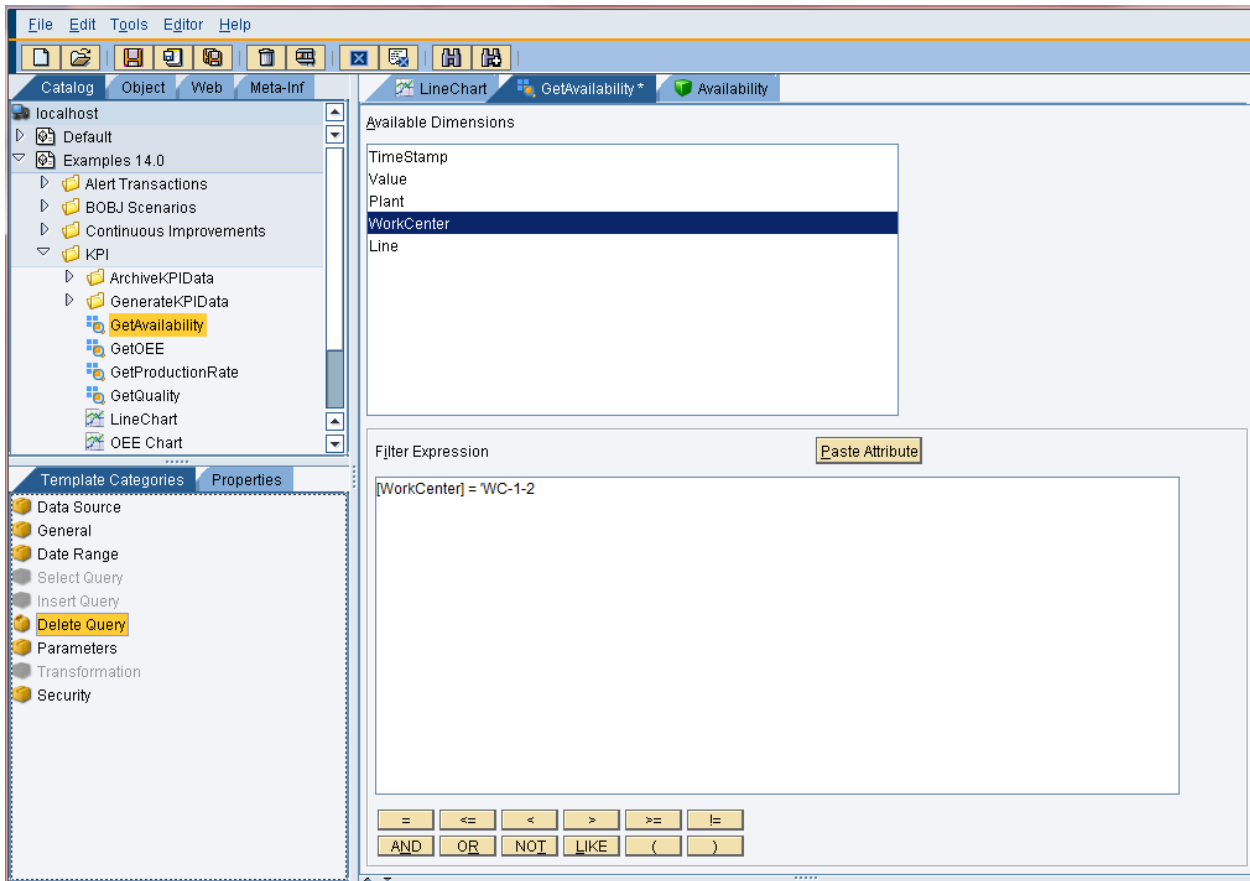
In the example above, data values for all the KPI columns have been specified to be inserted into the KPI tables, as seen in the screenshot. When the user executes this KPI query, then these values will be inserted into the KPI data tables. User can verify the same using the KPI query in 'Select' mode.

Query Result:



- **DELETE MODE**

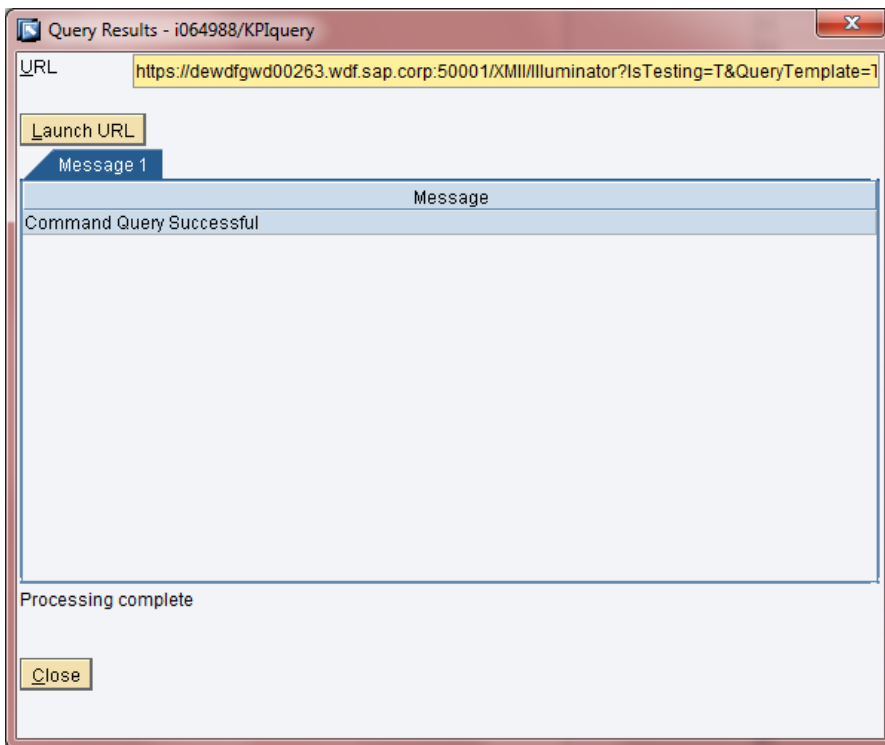
Step 1. If the 'Delete' mode of the query is selected, then users can delete KPI values by providing appropriate filter conditions



In the example as seen above, the filter expression provided for 'Delete' query is for the workcenter 'WC-1-2'. Hence, all the data with workcenter value 'WC-1-2' will be deleted when the KPI query is executed.

If no filter expression is provided, then all the data in the KPI tables will be deleted.

Query Result:

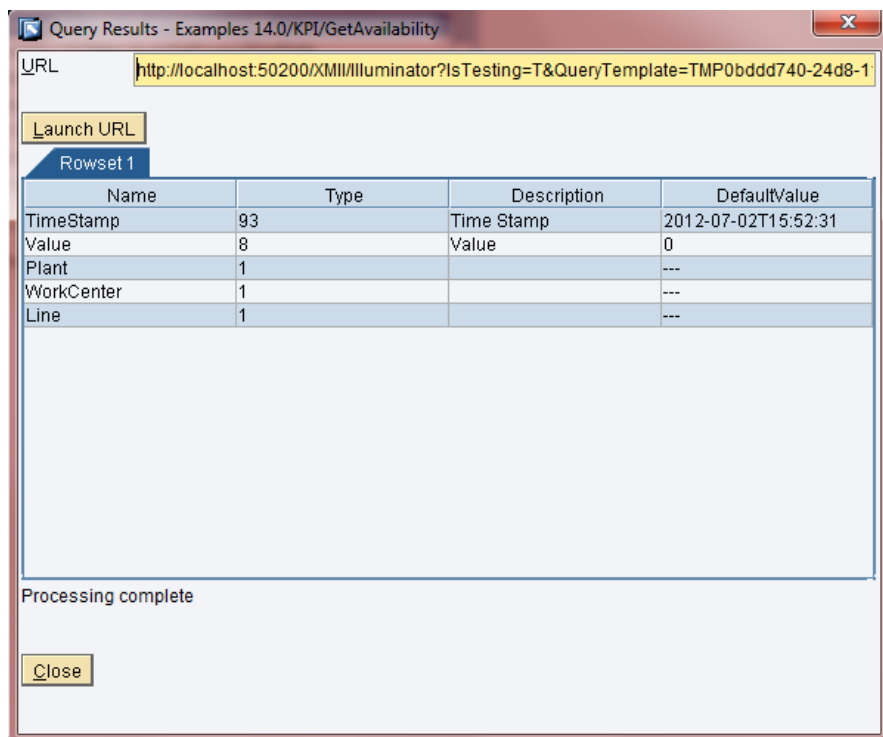


Users can utilize the 'AttributeList', 'Info', 'KPIList', 'ModeList' modes to get metadata and various other information related to the KPI selected as the data source for the KPI Query

- **ATTRIBUTELIST MODE**

This mode can be used to get the list of all the dimensions created for the KPI selected as Data Source for this query. The query results returned will contain the Dimension Name, the SQL Type of the column in the data table, the description for the dimension if any, and the default value for that dimension as defined on the 'Dimensions' screen in the KPI Definition.

Query Result:



Query Results - Examples 14.0/KPI/GetAvailability

URL <http://localhost:50200/XMII/Illuminator?IsTesting=T&QueryTemplate=TMP0bdd740-24d8-1>

Launch URL

Rowset 1

Name	Type	Description	DefaultValue
TimeStamp	93	Time Stamp	2012-07-02T15:52:31
Value	8	Value	0
Plant	1		---
WorkCenter	1		---
Line	1		---

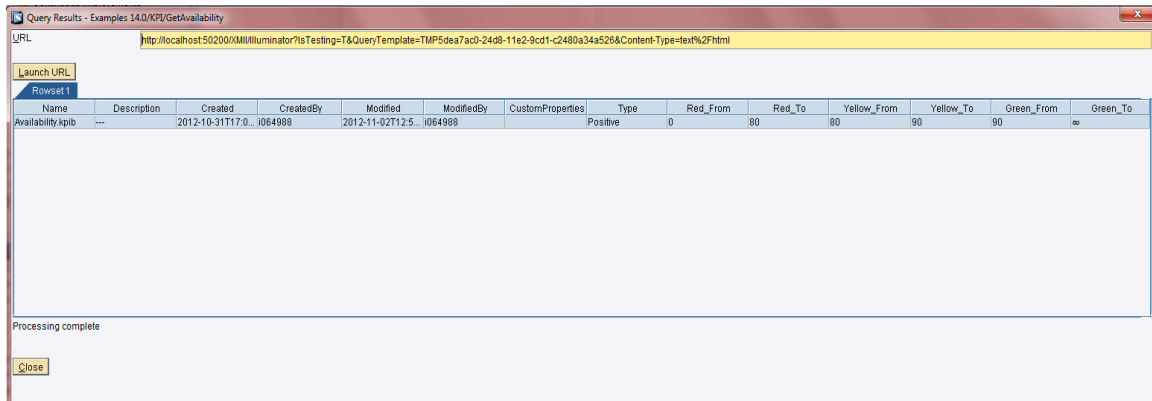
Processing complete

Close

- **INFO MODE**

This mode will return the metadata related information about the KPI file. Details like KPI name, the description for the file, custom properties added for the KPI, the colour range selection details and user related information like 'Created By', 'Created On', 'Modified By' and 'Modified On' are displayed to the user as a result of the KPI query in this mode.

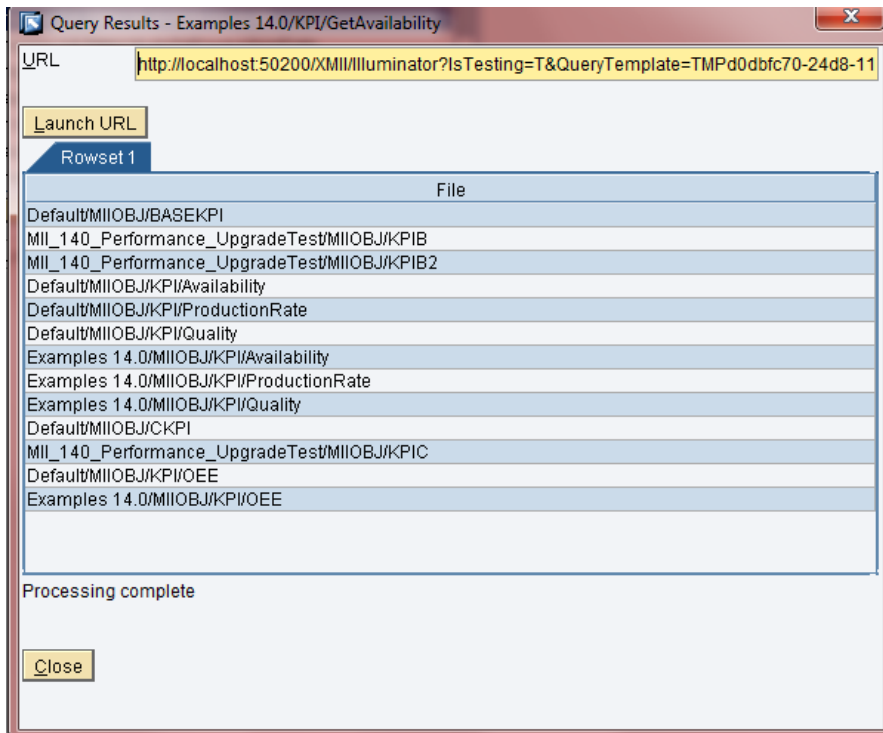
Query Result:



- **KPI LIST MODE**

This mode can be used to get the list of all the KPIs that exist in the given test system. Following screenshot shows the list of all the KPIs that are returned as a result of running the KPI query in KPI List mode.

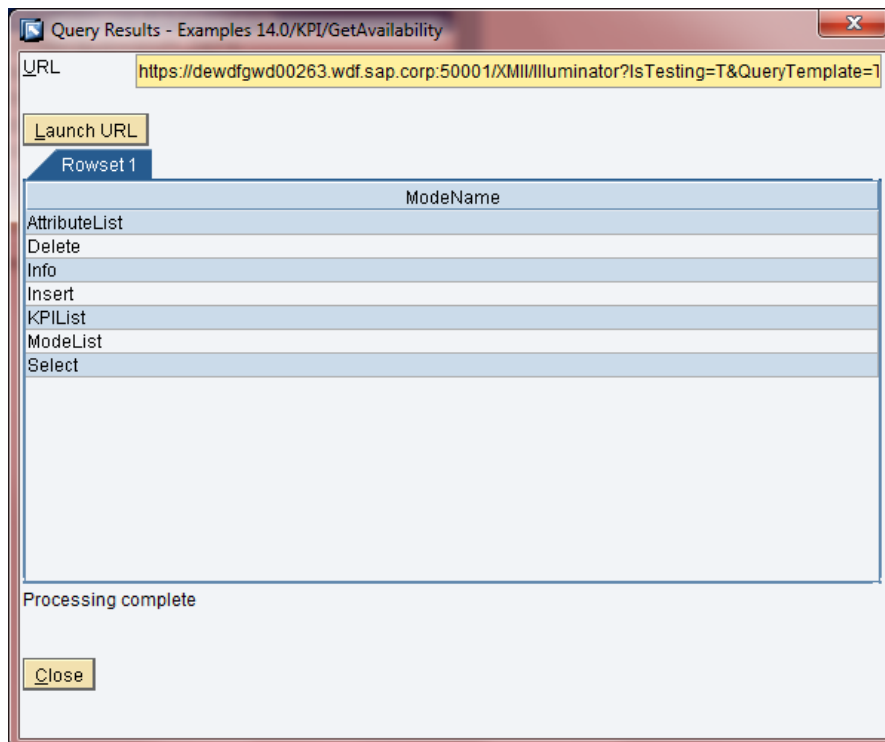
Query Result:



- **MODELIST MODE**

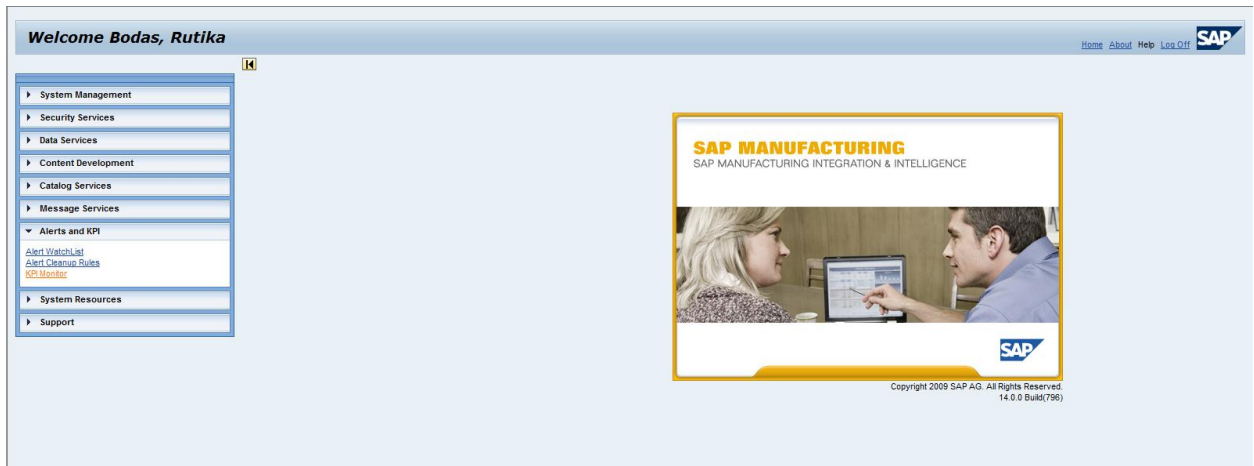
This mode lists down all the modes supported by KPI Query.

Query Result:



4 Configure KPI Search Templates

The KPI Monitor is a new webdynpro screen which is listed under the group 'Alerts and KPI' on the MII admin screen when user logs in to the MII system.



This screen can be used by the logged in user to monitor various KPIs which have been predefined on the MII system using the workbench. This screen can be used to query for various details associated with a KPI and monitor the changes accordingly.

A single user can create multiple KPI Search Templates that will enable him to view KPI values and many other details about that KPI at one go. Several different configurations for a combination of multiple KPIs can be created and saved as separate search templates. This way, once the configurations are done, he can view the search template results whenever he chooses to.

A search template is nothing but a set of user defined rules to query KPI related data for one or more KPI files at one go. Once a search template is configured by the user, then the user can utilize that predefined search template to run the search and get the KPI value and other related information as per the configuration made, all at once, on the KPI Monitor screen.

These KPI Configurations can also be exported by the MII user from one system and can be imported to another system. This way, he will not have to redo these configurations again on the new destination system and he can use the search template configurations as it is on the KPI Monitor screen.

But at the same time, an important point to be noted here is that all the KPI files used in the exported search templates should exist on the target system in same folder structure.

The following sections will elaborate on the use of KPI Search Templates and how to utilize the KPI Monitor screen.

4.1 Create Search Template

Using the KPI Monitor screen, the MII users can create multiple search templates to monitor and analyze the KPI results for multiple systems at once, by configuring a search template with different combinations of KPI files, with various dimensions and their values, and also, different time durations to get the KPI values and other statistical data and hence take necessary actions to improve the performance of the system, based on the results obtained.

Use Case Example

Let us try to understand this by taking the use case of a business scenario where a plant supervisor has to monitor the KPIs - Availability, Performance and Quality of a given system and ultimately monitor the overall effectiveness or OEE for that system.

OEE is a standard performance measurement index that is derived from the formula:

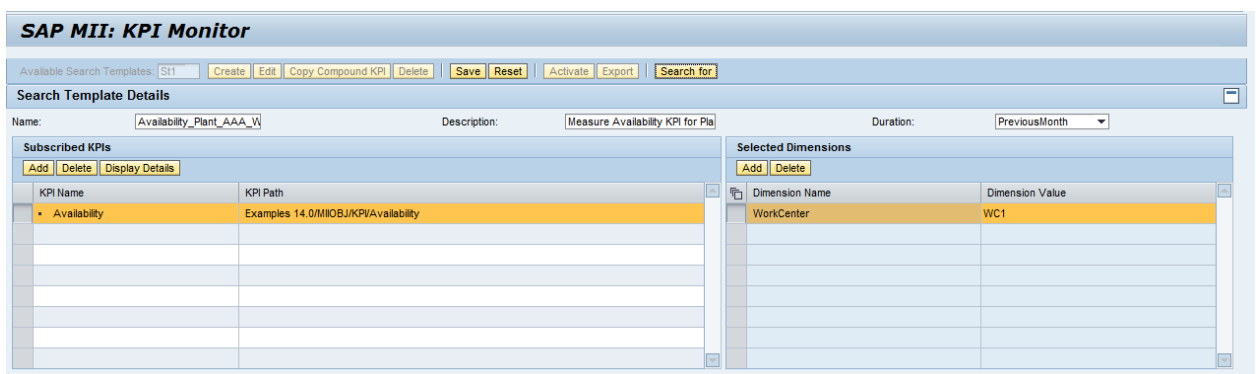
$$\text{OEE} = \text{Availability} * \text{Performance} * \text{Quality}$$

As it is derived from three KPIs, hence it is a KPI of the type 'Composite' and the rest of the KPIs are Base KPIs. The user will have to create all these KPIs on the MII Workbench with necessary configurations (as mentioned in previous sections) and run schedulers to generate and save the KPI values over time before trying to use them on KPI Monitor screen.

User can then utilize the KPI Monitor screen and get the detailed information about all of these KPIs by configuring appropriate search templates.

Different Search Templates for Different Users

1. If the given MII user is a plant supervisor for a certain plant 'AAA', and wants to monitor the 'Availability' of the system for a given Work Center 'WC1' for the previous month, then he can configure a KPI search template, name it 'Availability_Plant_AAA_WC1' and save this configuration. At a later point in time, he can come and run this search template and view the entire details about system's availability over the selected time duration.



The screenshot shows the SAP MII: KPI Monitor interface. At the top, there are buttons for 'Available Search Templates: S11', 'Create', 'Edit', 'Copy Compound KPI', 'Delete', 'Save', 'Reset', 'Activate', 'Export', and 'Search for'. Below this is the 'Search Template Details' section. The 'Name' field contains 'Availability_Plant_AAA_W', 'Description' is 'Measure Availability KPI for Pla', and 'Duration' is set to 'PreviousMonth'. There are two main tables: 'Subscribed KPIs' and 'Selected Dimensions'. The 'Subscribed KPIs' table has one row with 'Availability' as the KPI Name and 'Examples 14.0/MIOBJ/KPI/Availability' as the KPI Path. The 'Selected Dimensions' table has one row with 'WorkCenter' as the Dimension Name and 'WC1' as the Dimension Value.

2. If the mentioned supervisor now wants to measure the 'Production Rate' of the same system for production lines 'L1', and 'L2' separately, then he can create 2 separate search templates and add 'ProductionRate' KPI and 'Line' dimension to each search template and save different values against the dimensions in each, say 'L1 and 'L2'. This way, he can individually measure the 'Production Rate' for Line 'L1' and for 'L2' of the system by saving two similar, but different search templates in the system.

SAP MII: KPI Monitor

Available Search Templates: Availability_Plant_AAA_WC1 Create Edit Copy Compound KPI Delete Save Reset Activate Export Search for

Search Template Details

Name: ProductionRate_LineL1 Description: Measure Prod rate for Plant1-1 Duration: PreviousMonth

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
ProductionRate	Examples 14.0/MIOBJ/KPVProductionRate	Line	L1
		Plant	Plant1

SAP MII: KPI Monitor

Available Search Templates: ProductionRate_LineL1 Create Edit Copy Compound KPI Delete Save Reset Activate Export Search for

Search Template Details

Name: ProductionRate_LineL2 Description: Duration: PreviousMonth

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
ProductionRate	Examples 14.0/MIOBJ/KPVProductionRate	Line	L2
		Plant	Plant1

- Same way, if the head supervisor of the all plants may want to monitor the 'Quality' KPI for Plant 'Plant1' and the OEE of 'Plant2' at once and compare the results then, he can create a new search template, say 'Quality_Plant1_OEE_Plant2', add the respective Quality and OEE KPI files to his search template, choose time duration for which he wants to see the KPI data and save the search template.

Configuration:

SAP MII: KPI Monitor

Available Search Templates: ProductionRate_LineL2 Create Edit Copy Compound KPI Delete Save Reset Activate Export Search for

Search Template Details

Name: Quality_Plant1_OEE_Plant2 Description: Duration: PreviousMonth

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
Quality	Examples 14.0/MIOBJ/KPVQuality	Plant	Plant1
OEE	Examples 14.0/MIOBJ/KPVQEE		

SAP MII: KPI Monitor

Available Search Templates: ProductionRate_LineL2 Create Edit Copy Compound KPI Delete Save Reset Activate Export Search for

Search Template Details

Name: Quality_Plant1_OEE_Plant1 Description: Duration: PreviousMonth

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
• Quality	Examples 14.0/MIOBJ/KPI/Quality	Plant	Plant2
▶ OEE	Examples 14.0/MIOBJ/KPI/OEE		

Result:

SAP MII: KPI Monitor

Available Search Templates: Quality_Plant1_OEE_Plant2 Create Edit Copy Compound KPI Delete Save Reset Activate Export Search for

Search Template Details

Name: Quality_Plant1_OEE_Plant1 Description: Duration: CurrentMonth

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
▶ OEE	Examples 14.0/MIOBJ/KPI/OEE	Plant	Plant1
• Quality	Examples 14.0/MIOBJ/KPI/Quality		

Details for Quality_Plant1_OEE_Plant2

KPI Name	Aggregation Logic	Data Type	UOM	Target	Status	Trend	Current Value
▶ OEE	AVG	Float	%	95			706961.62
• Quality	AVG	Float	%	95	■	↗	88.97

Thus, a same MII user can create multiple search templates to measure different KPIs for different time periods or dimension values.

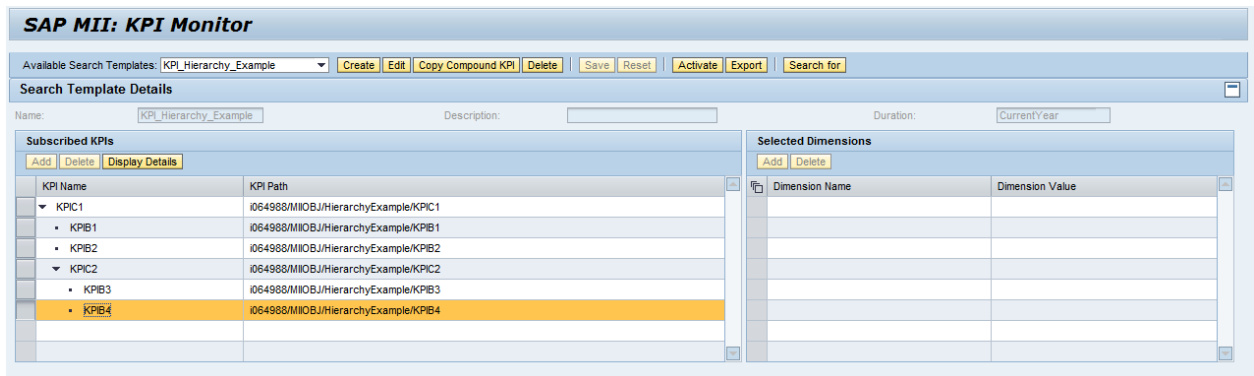
KPI Hierarchy on KPI Monitor Screen

The base KPIs added by the users on the search template will be added as leaf node which cannot be expanded on the screen. Whereas, when a user adds a Composite KPI, then its child KPIs will automatically get added and will be listed under that node on the screen if the user has access to all of the child KPI files.

If the user does not have access to all the child KPIs of a Composite KPI that is added on the template, then only those child KPIs will be listed for which the user has access.

A Composite KPI node will always be created as an expandible node on the screen that can be expanded till its last leaf node. This means that if a Composite KPI 'KPIC1' consists of 3 KPIs, base KPI 'KPIB1', base KPI 'KPIB2 and a composite KPI 'KPIC2', then the node KPIC1 can be expanded to

see the first level hierarchy : KPIB1, KPIB2 and KPIC2 under it. In turn, the composite KPI 'KPIC2' can be expanded to see its child KPIs, say 'KPIB3' and 'KPIB4' and so on. Please refer the following screenshot:



SAP MII: KPI Monitor

Available Search Templates: KPI_Hierarchy_Example [Create](#) [Edit](#) [Copy Compound KPI](#) [Delete](#) [Save](#) [Reset](#) [Activate](#) [Export](#) [Search for](#)

Search Template Details

Name: KPI_Hierarchy_Example Description: Duration: CurrentYear

Subscribed KPIs

KPI Name	KPI Path
▼ KPIC1	i064988/MIOBJ/HierarchyExample/KPIC1
• KPIB1	i064988/MIOBJ/HierarchyExample/KPIB1
• KPIB2	i064988/MIOBJ/HierarchyExample/KPIB2
▼ KPIC2	i064988/MIOBJ/HierarchyExample/KPIC2
• KPIB3	i064988/MIOBJ/HierarchyExample/KPIB3
• KPIB4	i064988/MIOBJ/HierarchyExample/KPIB4

Selected Dimensions

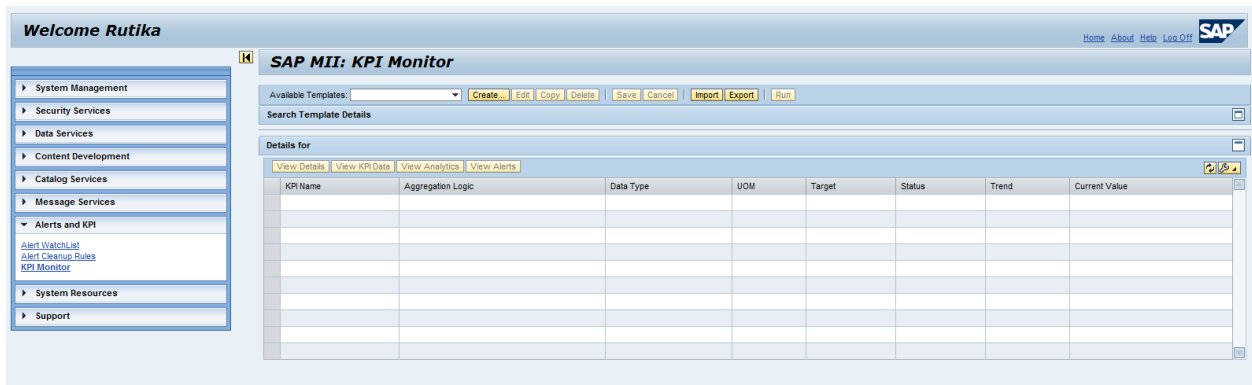
Dimension Name	Dimension Value

An important point to note here is that after adding a Composite KPI to the search template, only those child KPIs will only be seen to which the user has been given access while defining them on the MII workbench.

Steps to Create Search Template

To create a search template on the KPI Monitor screen, use the following steps:

Step 1. Click on 'Create' button



Welcome Rutika

SAP MII: KPI Monitor

Available Templates: [Create](#) [Edit](#) [Copy](#) [Delete](#) [Save](#) [Cancel](#) [Import](#) [Export](#) [Run](#)

Search Template Details

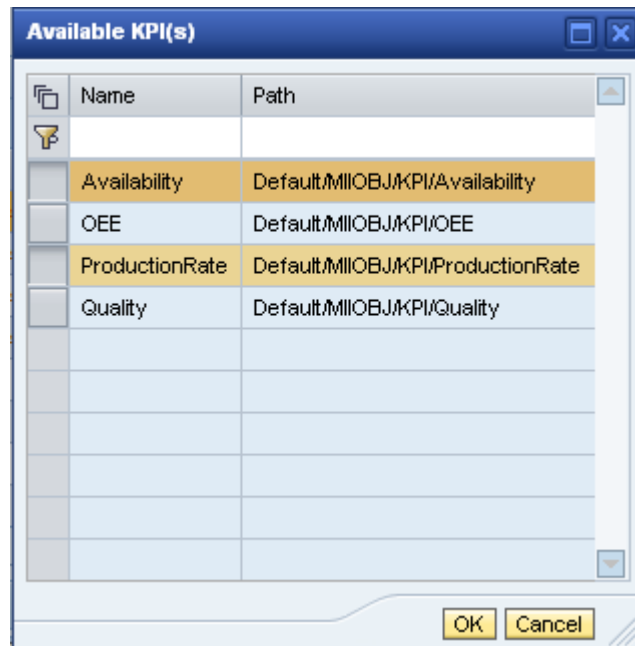
Details for

KPI Name	Aggregation Logic	Data Type	UOM	Target	Status	Trend	Current Value

Step 2. Enter the details like 'Name' of the search template, 'Description' (optional) and the 'Duration' fields.

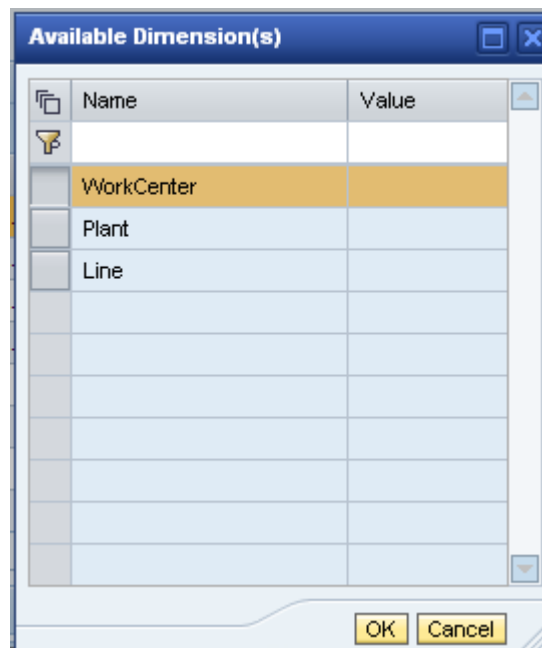
Step 3. To subscribe to a set of KPIs, add those KPIs to the search template. To add KPIs, click on the 'Add' button under the heading 'Subscribed KPIs'

Step 4. A pop up will appear listing down all the KPIs to which the logged in user has been granted access. Select one or more KPIs from the list and click 'OK'



Step 5. For each KPI added, additional details like 'Dimensions' can be added. To add dimensions for a specific KPI that has been added in the previous step, select the KPI name and click on the 'Add' button under the header '**Selected Dimensions**'

Step 6. A new pop up window will appear listing down all the additional dimensions that were saved in the KPI's definition on the workbench. Select one or more of those dimensions and click '**OK**'



Step 7. Provide a value for that dimension that you want to monitor on the screen.

Similarly, dimensions can be optionally added for the rest of the KPIs also.

Search Template Details

Name: Description: Duration:

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
• Availability	Examples 14.0/MIOBJ/KPI/Availability	Plant	1000
▶ OEE	Examples 14.0/MIOBJ/KPI/OEE	Line	4
• ProductionRate	Examples 14.0/MIOBJ/KPI/ProductionRate		
• Quality	Examples 14.0/MIOBJ/KPI/Quality		

Step 8. Save the search template by clicking the ‘Save’ button

4.2 Run Search Template

Step 1. To run the created search template, click on the ‘Run’ button.

Step 2. The results of the search template will be loaded collectively for all the subscribed KPIs in the lower panel.

Available Search Templates: [Create](#) [Edit](#) [Copy Compound KPI](#) [Delete](#) [Save](#) [Reset](#) [Activate](#) [Export](#) [Search for](#)

Search Template Details

Name: Description: Duration:

Subscribed KPIs		Selected Dimensions	
KPI Name	KPI Path	Dimension Name	Dimension Value
• Availability	Examples 14.0/MIOBJ/KPI/Availability		
▶ OEE	Examples 14.0/MIOBJ/KPI/OEE		
• ProductionRate	Examples 14.0/MIOBJ/KPI/ProductionRate		
• Quality	Examples 14.0/MIOBJ/KPI/Quality		

Details for

[Display Details](#) [View KPI Data](#) [View Analytics](#) [View Alerts](#)

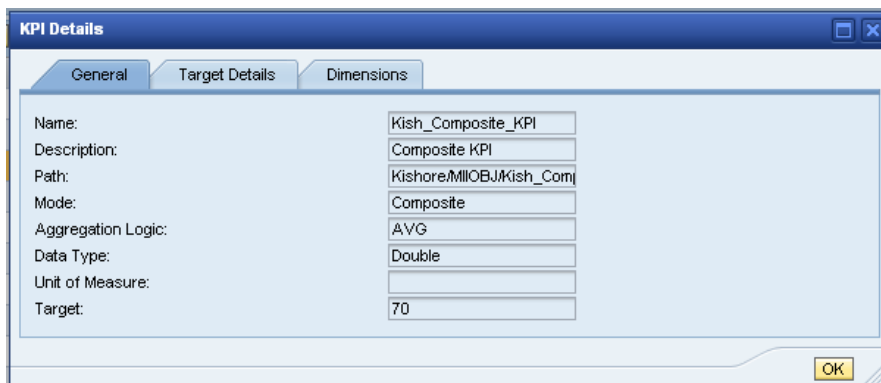
KPI Name	Aggregation Logic	Data Type	UOM	Target	Status	Trend	Current Value
• Availability	AVG	Float	%	90	ⓘ	↗	88.73
▶ OEE	AVG	Float	%	95			
• ProductionRate	AVG	Float	%	95			
• Quality	AVG	Float	%	95			

4.3 View Additional Details

The 'View Additional Details' button lets the user view the properties defined for the KPI file creating its definition on the workbench. On click of this button, a pop up appears that contains the KPI file related details in 3 different tabs.

The tab named 'General' will display the properties of the KPI file defined on the 'General' panel in the workbench, whereas the color range selection values and the type of KPI can be seen in the tab 'Target Details'. The Dimensions tab displays all the dimensions created for that KPI on the 'Dimensions' panel in workbench.

- Step 1.** To view additional details about the definition of a specific KPI file, select that KPI in the results panel
- Step 2.** Click on the button 'View Details'
- Step 3.** A pop up will appear with definition details displayed on the screen for the selected KPI in various tabs



The screenshot shows a dialog box titled "KPI Details" with three tabs: "General", "Target Details", and "Dimensions". The "General" tab is active, displaying the following fields:

Name:	Kish_Composite_KPI
Description:	Composite KPI
Path:	Kishore/MIIOBJ/Kish_Com
Mode:	Composite
Aggregation Logic:	AVG
Data Type:	Double
Unit of Measure:	
Target:	70

An "OK" button is located at the bottom right of the dialog box.

4.4 View Analytical Data

'View KPI Data' & 'View Analytics'

To view analytical data of each KPI configured in the search template, a KPI query should be created and added on the Visualization panel of the KPI file's definition. While creating this KPI query template, use the same KPI as the data source, whose data has to be analyzed on the KPI monitor screen.

Similarly, to view the data in graphical form, create a display template that uses the KPI query just mentioned above in its 'Data Mapping' panel and add it to the Visualization panel of KPI's definition.

4.4.1 View the results of the KPI query

When the user clicks on the button 'View KPI Data', then the KPI Query template mentioned on the 'Visualization' panel of KPI Definition will be executed and KPI values for the selected time duration will be displayed on running the search template.

The rest of the properties other than KPI values will be obtained from the query template that is configured by the user in the 'Visualization' panel of the KPI definition.

If the user does not specify any KPI query template name on the Visualization panel, then an error message will be displayed if he tries to view the KPI data on this screen, saying 'Unable to load query template from KPI'. Thus, a KPI query has to be created with the current KPI as its data source, and added on the Visualization panel of the KPI definition, to be able to view the KPI related data on the KPI Monitor screen.

To view the KPI values and dimensions and the values, use the following steps:

- Step 1.** Click on the button '**View KPI Data**'
- Step 2.** The corresponding results of the query will be loaded in the lower panel

Available Search Templates: OEE

Search Template Details

Details for

Display Details | Hide KPI Data | View Analytics | View Alerts

KPI Name	Aggregation Logic	Data Type	UOM	Target	Status	Trend	Current Value
• Availability	AVG	Float	%	90	ⓘ	↗	88.73
▸ OEE	AVG	Float	%	95			
• ProductionRate	AVG	Float	%	95			
• Quality	AVG	Float	%	95			

KPI Data

Value	Plant	Line	WorkCenter	TimeStamp
94.3130	1000	1	WC-1-1	11/02/2012 09:00:00 IST
84.7260	1000	1	WC-1-2	11/02/2012 09:00:00 IST
80.6575	1000	2	WC-2-1	11/02/2012 09:00:00 IST
89.7601	1000	2	WC-2-2	11/02/2012 09:00:00 IST
90.9195	1000	3	WC-3-1	11/02/2012 09:00:00 IST
84.2320	1000	3	WC-3-2	11/02/2012 09:00:00 IST
85.1765	1000	4	WC-4-1	11/02/2012 09:00:00 IST
81.8012	1000	4	WC-4-2	11/02/2012 09:00:00 IST
97.0123	1000	5	WC-5-1	11/02/2012 09:00:00 IST
87.4098	1000	1	WC-1-1	11/02/2012 10:00:00 IST
86.1790	1000	1	WC-1-2	11/02/2012 10:00:00 IST
89.0303	1000	2	WC-2-1	11/02/2012 10:00:00 IST
90.5296	1000	2	WC-2-2	11/02/2012 10:00:00 IST
89.2675	1000	3	WC-3-1	11/02/2012 10:00:00 IST
89.5323	1000	3	WC-3-2	11/02/2012 10:00:00 IST
89.4812	1000	4	WC-4-1	11/02/2012 10:00:00 IST
89.6489	1000	4	WC-4-2	11/02/2012 10:00:00 IST
84.6575	1000	5	WC-5-1	11/02/2012 10:00:00 IST

4.4.2 View the graphical display of the KPI data

The KPI data that is displayed to the user on the KPI Monitor screen by 'View KPI Data' will be displayed in graphical format using the button 'View Analytics'. When user click on the button 'View Analytics', then the display template specified by the user on the 'Visualization' panel will be executed and the resulting plot will be rendered to the user on the screen.

If the user has not specified any display template on the 'Visualization' panel, then an error message will be displayed, saying 'Unable to load display template from KPI'.

To view KPI values in graphical format, use the steps mentioned below:

Step 1. Click on the button 'View Analytics'.

Step 2. An applet will be loaded in the lower panel displaying the graphical form of the generated KPI data.

SAP MII: KPI Monitor

Available Search Templates: OEE

Search Template Details

Details for

KPI Name	Aggregation Logic	Data Type	UOM	Target	Status	Trend	Current Value
• Availability	AVG	Float	%	90	⚠	↔	88.52
▶ OEE	AVG	Float	%	95			
• ProductionRate	AVG	Float	%	95			
• Quality	AVG	Float	%	95			

KPI Analytics

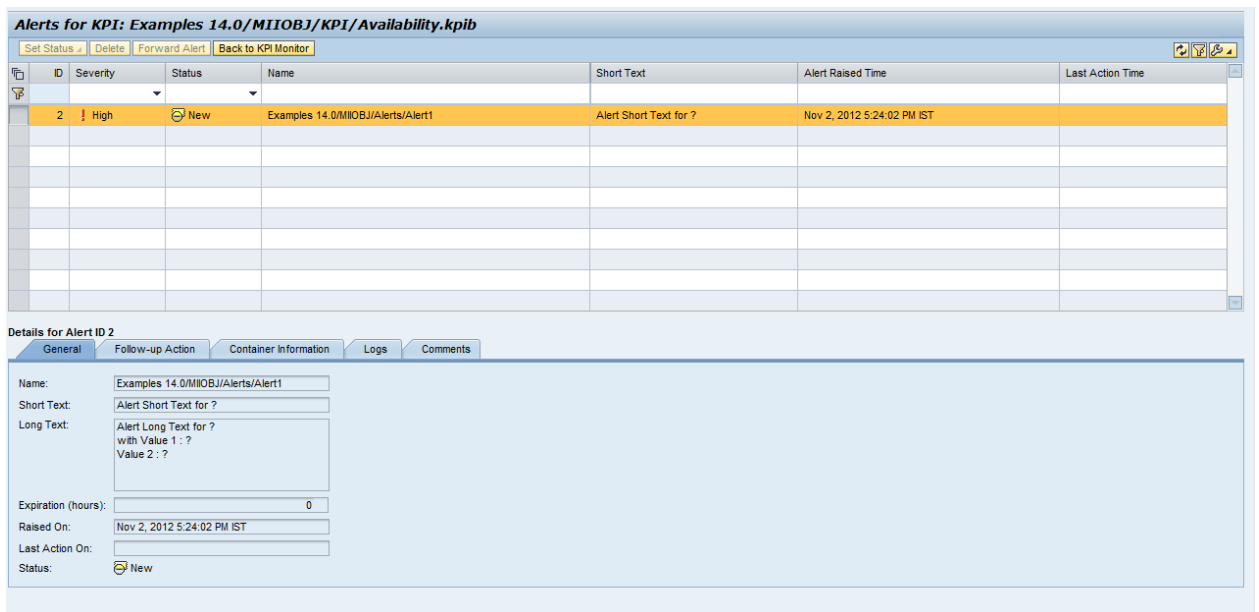
Tag Description: Value

4.5 View KPI Alerts

If the user has configured alerts in the KPI definition to be raised through the KPI, then those alerts can also be viewed and monitored using this screen.

To view the alerts raised through a specific KPI,

- Step 1.** Select that KPI in the results panel.
- Step 2.** Click on 'View Alerts'
- Step 3.** The user will be directed to a screen that displays all the alerts raised for that selected KPI file.



Alerts for KPI: Examples 14.0/MIIOBJ/KPI/Availability.kpi

Set Status | Delete | Forward Alert | Back to KPI Monitor

ID	Severity	Status	Name	Short Text	Alert Raised Time	Last Action Time
2	High	New	Examples 14.0/MIIOBJ/Alerts/Alert1	Alert Short Text for ?	Nov 2, 2012 5:24:02 PM IST	

Details for Alert ID 2

General | Follow-up Action | Container Information | Logs | Comments

Name: Examples 14.0/MIIOBJ/Alerts/Alert1

Short Text: Alert Short Text for ?

Long Text: Alert Long Text for ?
with Value 1 : ?
Value 2 : ?

Expiration (hours): 0

Raised On: Nov 2, 2012 5:24:02 PM IST

Last Action On:

Status: New

Users can navigate back to the 'KPI Monitor' screen by clicking the button '**Back to KPI Monitor**'

The detailed steps mentioned in this document are the steps to create, configure and consume all the components of the **KPI Framework** developed in MII 14.0

5 Appendix

5.1 Icon Library



Base KPI



Composite KPI



Alert



KPI Query



Scheduler Pattern Editor Icon



Rising KPI Trend



Constant KPI Trend



Falling KPI Trend



Green Status



Yellow Status



Red Status

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