OMi Management Pack for SAP HANA

Software Version: 1.00

Operations Manager i for Linux and Windows® operating systems

User Guide

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Contents

Chapter 1: OMi Management Pack for SAP HANA

The OMi Management Pack for SAP HANA (OMi MP for SAP HANA) works with Operations Manager i (OMi) and enables you to monitor SAP HANA database environments. It includes Health Indicators (HIs) that analyze the events that occur in the SAP HANA databases and report the health status. It also provides out-of-the-box Management Templates for monitoring different types of SAP HANA environments - scale up and scale out. These Management Templates consist of a wide range of Aspects which enable the monitoring of SAP HANA components.

These Management Templates can be seamlessly deployed by administrators for monitoring SAP HANA databases in an environment. The Subject Matter Experts (SMEs) and developers can easily customize the SAP HANA Management Templates.

OMi MP for SAP HANA supports the following:

- Automated instance based deployment and simplified configuration.

- Provides a 360 degree monitoring of the health and performance of SAP HANA database and its underlying infrastructure in all deployment scenarios.

- Ready to deploy out-of- the-box management solutions to suit different monitoring requirements.

Remote Monitoring

OMi MP for SAP HANA is installed as an add-on content on OMi. A node must be installed with Operations Agent and should be configured as a Remote Node with capabilities to connect to the HANA nodes using remote JDBC connectivity. The SAP HANA JDBC jar or SAP HANA client needs to be available on the remote managed node.
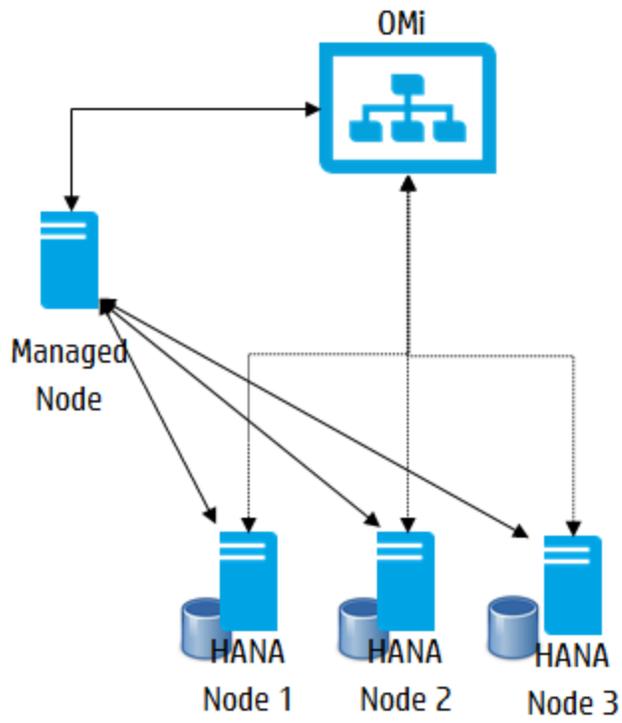
Chapter 2: Getting Started

The following section provides step-by-step instructions for monitoring SAP HANA databases using OMi MP for SAP HANA.

Task 1: Adding Remote Managed Node to BSM 9.2x or OMi 10.x Console

> **Note:** OMi MP for SAP HANA monitors SAP HANA databases through remote monitoring. The remote managed node is a node outside the HANA system that needs to be configured and added to BSM 9.2x or OMi 10.x for monitoring SAP HANA databases.

Before you begin monitoring, follow these steps to add the nodes.

1. Open the Monitored Nodes pane from Administration:

    On BSM 9.2x, click **Admin > Operations Management > Setup > Monitored Nodes**.

    On OMi 10.x, click **Administration > Setup and Maintenance > Monitored Nodes**.

2. In the Node Views pane, click **Predefined Node Filters > Monitored Nodes** and then click and then click **Computer > Windows** or **Unix**. The Create New Monitored Node dialog box appears.

3. Specify the Primary DNS Name, IP address, Operating System, and Processor Architecture of the node and click **OK**.

    The newly created node is saved as a Configuration Item (CI) instance in Run-time Service Model (RTSM).

    > **Note:** The remote managed node with Operations Agent needs to be activated on OMi server and certificate needs to be granted.

Task 2: Enabling the Enrichment Rules

You must enable the following enrichment rules to populate the SAP HANA CI's display label with additional information about container or the hostname:

- **SoftwareElementDisplayLabelForNewHost**

- **SoftwareElementDisplayLabelForExistingHost**

- **SoftwareElementDisplayLabelPopulator**

To enable the Enrichment rules, follow these steps:

1. Open the Enrichment manager pane:

   On BSM 9.2x, click **Admin > RTSM Administration > Modeling > Enrichment manager**.

   On OMi 10.x, click **Administration > RTSM Administration > Modeling > Enrichment manager**.

2. In the Enrichment Rules pane, select **SoftwareElementDisplayLabelForNewHost** from the list.

3. Right-click and select **Properties**.

   The Enrichment Rule Properties window appears.

4. Click **Next**.

5. Select **Rule is Active**.

6. Click **Finish**.

7. In the Enrichment Rules pane, click to save the changes.

8. Select **SoftwareElementDisplayLabelForExistingHost** and repeat steps 3 to 7.

9. Select **SoftwareElementDisplayLabelPopulator** and repeat steps 3 to 7.

Task 3: Deploying the HANA Service Discovery Aspect

To discover the SAP HANA databases in the environment, you can deploy the HANA Service Discovery Aspect to the remote managed node by following these steps:

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > SAP HANA > Aspects

3. In the HANA Aspects folder, click the **HANA Service Discovery Aspect** that you want to deploy, and then click 🛰️. The Assign and Deploy wizard opens.

4. In the **Configuration Item** tab, click the remote managed node CI and then click **Next** to go to **Required Parameters**.

5. In the **Required Parameters** tab, you must specify the mandatory parameters. To specify the values for the mandatory parameters, follow these steps:

   a. Select the **JDBC Url to connect with HANA system** instance parameter in the list, and then click 🖊️ **Edit**.

      The Edit Parameter: JDBC Url to connect with HANA system dialog box opens.

      For example, you can specify the following url:

      `jdbc:sap://hanavm1.ind.hpe.com:31015;hanavm1:31015?reconnect=true&timeout=0`

   b. Specify the value and click **OK**.

   c. Select the **Directory containing HANA JDBC driver to connect to the HANA** parameter in the list, and then click 🖊️ **Edit**.

      The Edit Parameter: User Name to connect to the HANA system dialog box opens.

      For example, you can specify the directory on the remote managed node on Windows which contains *ngdbc.jar* as `C:/HANA/driver`.

   d. Select **Value**, specify the value and click **OK**.

   e. Select the **User Name to connect to the HANA system** parameter in the list, and then click 🖊️ **Edit**.

      The Edit Parameter: User Name to connect to the HANA system dialog box opens.

   f. Select **Value**, specify the value, and then click **OK**.

g. Select the **Password to connect to the HANA system** parameter in the list, and then click

     Edit.

     The Edit Parameter: Password to connect to the HANA system dialog box opens.

h. Select **Value**, specify the value, and then click **OK**.

6. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, select the

     JDBC Url to connect with HANA system parameter, and click   **Edit**.

     The Edit Instance Parameter: SAP HANA database SID window appears.

> **Note:** For SSL configurations, you must specify the value for the Encrypt parameter. You
> need to set the value to true to enable SSL encryption. In addition, you need to specify the
> values for the other parameters related to SSL.

7. In the Dependent Values pane, you can edit and change the values by following these steps:

a. Select a parameter and click   **Edit**. For example, you can select JAVA installation
directory.

     The Edit Parameter: JAVA installation directory window appears.

b. Click **Value**, specify the value and click **OK**.

c. Click **OK**.

8. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, click **Next** to go
to the **Configure Options** tab.

9. *(Optional)*. If you do not want to enable the assignment immediately, clear the Enable Assigned
Objects or Enable Assignment(s) check box.

     On BSM 9.2x, clear the **Enable Assigned Objects** check box.

     On OMi 10.x, clear the **Enable Assignment(s)** check box.

     You can then enable the assignment later using the Assignments & Tuning pane.

10. Click **Finish**.

> **Note:** After the HANA Service Discovery Aspect is deployed, a message stating the `Assignment`
> `and deployment jobs created` appears. To check the status of the deployment job, go to the
> following location:
>
> On BSM 9.2x, click **Admin > Operations Management > Monitoring > Deployment Jobs**.
>
> On OMi 10.x, click **Administration > Monitoring > Deployment Jobs**.

Task 4: Verifying Discovery

After you deploy the HANA Service Discovery Aspect, you must verify if the CIs are populated in the Browse Views.

To view the CIs populated in the Browse Views pane, follow these steps:

1. Open the Event Perspective pane:

   On BSM 9.2x, click **Applications > Operations Management > Event Perspective**.

   On OMi 10.x, click **Workspaces > Operations Console > Event Perspective**.

2. In the Browse Views pane, select the **HANA_Topology** view.

   The CIs are populated in the Browse Views pane.

Task 5: Deploying the HANA Management Templates or HANA Aspects

This sectionprovides information about user privilege required for monitoring, data collection, deploying management templates and aspects. For more information about deploying HANA Management Template, go to Task 5a: Deploying HANA Management Templates and for more information about deploying HANA Aspects, go to Task 5b: Deploying HANA Aspects.

User Privilege

OMi MP for SAP HANA user must be assigned the MONITORING role of the standard SAP HANA database, that contains the read-only privileges for all the system and monitoring views.

OMi MP for SAP HANA uses the following are the monitoring views:

- M_BACKUP_CATALOG

- M_BLOCKED_TRANSACTIONS

- M_CONNECTIONS

- M_CS_COLUMNS

- M_CS_TABLES

- M_DATABASE

- M_DISKS

- M_EVENTS

- M_HOST_INFORMATION

- M_HOST_RESOURCE_UTILIZATION

- M_INIFILE_CONTENTS

- M_LANDSCAPE_HOST_CONFIGURATION

- M_LICENSE

- M_SAVEPOINT_STATISTICS

- M_SERVICES

- M_SERVICE_MEMORY

- M_TABLES

- M_TENANTS

- _SYS_STATISTICS.HOST_LONG_IDLE_CURSOR

- _SYS_STATISTICS.HOST_LONG_RUNNING_STATEMENTS

- _SYS_STATISTICS.HOST_LONG_SERIALIZABLE_TRANSACTION

- _SYS_STATISTICS.HOST_UNCOMMITTED_WRITE_TRANSACTION

- _SYS_STATISTICS.STATISTICS_ALERTS

- _SYS_STATISTICS.STATISTICS_ALERT_INFORMATION

- _SYS_STATISTICS.STATISTICS_CURRENT_ALERTS

Data Collection

Frequency (polling interval) at which each Aspect must be monitored is predefined with a default value in a specific frequency parameter. Frequency parameter is an expert parameter that is defined for each of the metrics regardless of whether they are for generating events or not.

Following are the four predefined frequency parameters:

Parameter	Frequency
Very High	5 mins
High	15 mins
Medium	1 hour
Low	24 hours

After Management Templates and Aspects are deployed, collector is triggered based on the predefined frequency parameter in a specific Aspect. You can modify the default value of the parameter at the following levels:

- During deployment of the Management Template or Aspects using the Management Templates & Aspects pane.

- After deployment using the Assignments & Tuning pane.

For more information about how to modify the parameter values, see Tuning Parameters.

Task 5a: Deploying HANA Management Templates

You **must** deploy the HANA Service Discovery Aspect even if the CIs are already populated by any other source such as SiteScope, DDM and so on. For more information, see Task 3: Deploying the HANA Service Discovery Aspect.

You can deploy the HANA Management Templates by following these steps:

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > SAP HANA > Management Templates

3. In the **HANA Management Templates** folder, select the **Management Template** that you want to deploy, and then click . The Assign and Deploy wizard opens.

4. In the **Configuration Item** tab, select the discovered HANA system to which you want to assign the Management Template, and then click **Next** to go to the **Required Parameters** tab.

> **Note:** You do not need to specify the values for the required parameters as these have been already specified while deploying the HANA Service Discovery Aspect.

5. Click **Next** to go to **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x.

   > **Note:** In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, you can override the default values of any parameter. You can specify a value for each parameter at the Management Template level. By default, parameters defined as expert parameters are not shown. To view expert parameters, click 🔧 **Show Expert Parameters**.

6. *(Optional)*. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, select the **SAP HANA Database SID** parameter, and click 🖉 **Edit**. The Edit Instance Parameter: SAP HANA database SID window appears.

7. *(Optional)*. In the Dependent Values pane, you can edit the values by following these steps:

   a. Select a parameter and click 🖉 **Edit**.

      For example, you can select **Frequency for Service Status**. The Edit Parameter: Frequency for Service Status window appears.

   b. Click **Value**, specify the value.

   c. Click **OK**.

8. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, click **Next** to go to **Configure Options** tab.

9. *(Optional)*. If you do not want to enable the assignment immediately, clear the Enable Assigned Objects or Enable Assignment(s) check box.

   On BSM 9.2x, clear the **Enable Assigned Objects** check box.

   On OMi 10.x, clear the **Enable Assignment(s)** check box.

   You can then enable the assignment later using the Assignments & Tuning pane.

10. Click **Finish**.

Task 5b: Deploying HANA Aspects

You **must** deploy the HANA Service Discovery Aspect even if the CIs are already populated by any other source such as SiteScope, DDM and so on. For more information, see Task 3: Deploying the HANA Service Discovery Aspect.

You can deploy HANA Aspects to the remote managed nodes by following these steps:

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > SAP HANA > Aspects

3. In the Management Templates & Aspects pane, click the HANA Aspect that you want to deploy, and then click . The Assign and Deploy wizard opens.

4. In the **Configuration Item** tab, click the remote managed node CI to which you want to assign the Aspect, and then click **Next** to go to **Required Parameters**.

   > **Note:** To view remote managed node, select the **Also Show CIs of Type Node** check box.

5. In the **Required Parameters** tab, update the SAP HANA database SID.

6. Click **Next** to go to **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x.

   > **Note:** In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, you can override the default values of any parameter. You can specify a value for each parameter at the Aspect level. By default, parameters defined as expert parameters are not shown. To view expert parameters, click **Show Expert Parameters**.

7. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, select the **SAP HANA Database SID** parameter, and click **Edit**. The Edit Instance Parameter: SAP HANA database SID window appears.

8. *(Optional).* In the Dependent Values pane, you can edit the values by following these steps:

   a. Select a parameter and click **Edit**. For example, you can select **Frequency for Service Status**.

      The Edit Parameter: Frequency for Service Status window appears.

   b. Click **Value**, specify the value and click **OK**.

   c. Click **OK**.

9. Click **Next** to go to **Configure Options** tab.

10. *(Optional).* If you do not want to enable the assignment immediately:

On BSM 9.2x, clear the **Enable Assigned Objects** check box.

On OMi 10.x, clear the **Enable Assignment(s)** check box.

You can then enable the assignment later using the Assignments & Tuning pane.

11. Click **Finish**.

Monitoring SAP HANA Environment

After you deploy Management Template and Aspects, you can analyze the status and health of HANA CIs from the following perspectives:

- Event Perspective

- Health Perspective

- Performance Perspective

Event Perspective

The Event Perspective provides complete information of events from an Event Perspective. In the Event Perspective, you can view the event information of the SAP HANA CI that are monitored by OMi MP for SAP HANA.

To view the Event Perspective of SAP HANA CIs, follow these steps:

1. Open the Operations Management pane:

    On BSM 9.2x, click **Applications > Operations Management > Event Perspective**.

     On OMi 10.x, click **Workspaces > Operations Console > Event Perspective**.

    The View Explorer pane appears.

2. In the **Browse Views** tab, select **HANA_Deployment** that contains the SAP HANA CIs for which you want to view the events. Alternatively, you can use **Search** tab to find a SAP HANA CI.

3. Click the SAP HANA CI for which you want to view the Event Perspective. The list of events for the selected SAP HANA CI appears on the Event Browser pane.

    When you click an event from the Event Browser, the Event Details pane opens where you can view the following details:

    - **General** - Displays the detailed information about the selected event such as Severity, Lifecycle State, Priority, Related CI and so on.

○ **Additional Info** - Displays more detailed information about the attributes of the selected event.

○ **Source Info** - Displays an overview of the information available about the source of the selected event.

○ **Actions** - Displays the list of actions available for a selected event. There are two types of possible actions: User Actions and Automatic Action.

○ **Annotations** - Displays a list of the annotations attached to the selected event.

○ **Custom Attributes** - Displays a list of the attributes that either an administrator or the responsible user manually configured and added to the selected event.

○ **Related Events** - Displays an overview of all the events that are related to the event selected in the Event Browser.

○ **History** - Displays the history of the selected event.

○ **Resolver Hints** - Displays the information used to identify the node and CI associated with an event.

○ **Instructions** - Displays instruction information designed to help operators handle the associated event.

○ **Forwarding** - Displays the transfer of ownership details if any, for the events.

Health Perspective

The Health Perspective provides a high-level view of the overall health information of the related CIs in the context of events. In the Health Perspective, you can view the health information of the SAP HANA CIs that are monitored by OMi MP for SAP HANA.

To view the Health Perspective of SAP HANA CIs, follow these steps:

1. Open the Operations Management pane:

   On BSM 9.2x, click **Applications > Operations Management > Health Perspective**.

   On OMi 10.x, click **Workspaces > Operations Console > Health Perspective**.

   The View Explorer pane appears.

2. In the **Browse Views** tab, select **HANA_Deployment** that contains the SAP HANA CIs for which you want to view the health related events. Alternatively, you can use **Search** tab to find a SAP HANA CI.

3. Click the SAP HANA CI for which you want to view the Health Perspective. The list of health related events for the selected SAP HANA CI appears on the Event Browser pane.

   When you click an event from the Event Browser pane, the following panes appear:

- ○ **Health Top View** - Displays the health top view of the selected event.

- ○ **Health Indicators** - Displays the Key Performance Indicators (KPIs) and HIs related to the CI that you select from the Health Top View pane.

- ○ **Actions** - Displays the list of actions available for a selected event.

Performance Perspective

Performance Perspective enables you to populate graphs from existing graph templates. You can also plot customized graphs by selecting the required metrics for a specific CI.

To view the Performance Perspective of SAP HANA CIs using graphs, follow these steps:

1. Open the Operations Management pane:

   On BSM 9.2x, click **Applications > Operations Management > Performance Perspective**.

   On OMi 10.x, click **Workspaces > Operations Console > Performance Perspective**.

   The View Explorer pane appears.

2. In the **Browse Views** tab, select **HANA_Deployment**. The list of CIs appear. Select a specific CI. The performance pane appears, which lists the default graphs available for the **HANA_ Deployment** view.

3. Click the graph you want to plot from the **Graphs** tab, and then click **Draw Graphs**. The selected graph is plotted on the right pane.

> **Note:** For more information about Event Perspective, Health Perspective, and Performance Perspective, see the *Operations Manager i Concepts Guide*.

Chapter 3: Components

The OMi MP for SAP HANA includes the following components for monitoring SAP HANA databases in an environment:

- "HANA Management Templates"

- "HANA Aspects"

- "Parameters"

- "Configuration Items and Configuration Item Types"

- "Run-time Service Model (RTSM) Views"

- "Health Indicators (HIs)"

- "Tools"

- Graph Templates

HANA Management Templates

The Management Templates consists of several Aspects which enables you to monitor SAP HANA databases based on the criticality and type of the environment. By default, the OMi MP for SAP HANA consists of out-of-the-box HANA Management Templates. You can deploy the out-of- the-box Management Template with the default parameters or you can customize the Management Templates based on your requirements. In addition, you can also create Management Templates based on the monitoring requirements using the SAP HANA Aspects.

Overview

The OMi MP for SAP HANA comprises the following Management Templates:

- "Essential HANA Management Template"

- "Extensive HANA Management Template"

How to Access Management Templates

1. Open the Management Templates & Aspects pane:

On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. Click **Configuration Folders > Database Management > SAP HANA > Management Templates**.

Tasks

How to Deploy HANA Management Templates

For information about deploying Management Templates, see Task 5: Deploying the HANA Management Templates or HANA Aspects.

How to Automatically Assign HANA Management Templates and HANA Aspects

To automatically assign HANA Management Templates and HANA Aspects, follow these steps:

1. Open the Automatic Assignment Rules:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Automatic Assignment Rules**.

   On OMi 10.x, click **Administration > Monitoring > Automatic Assignment Rules**.

   Automatic Assignment Rules consists of the Auto-Assignment Rules pane at the top, and a Parameters list pane at the bottom.

2. Click ✳ in the toolbar of the Auto-Assignment Rules pane and select the appropriate option. The Create Auto-Assignment Rule wizard is shown.

3. In the **Select Target View** tab, select the **HANA_Topology** View containing the CIs for which you want to create an automatic assignment, and click **Next** to go to Select Item to Assign.

4. In the **Select Item to Assign** tab, click the HANA Management Template or Aspect that you want to automatically assign to all CIs with a CI type appearing in the selected view.

   Note: The list shows only the management templates that have a root CI type that appears in the view that you selected or, in case an Aspect is auto-assigned it shows the compatible aspects.

   The latest version of the Management Template or Aspect that you want to assign is selected by default. If required, select a different version in column **Version**.

5. Click **Next** to go to **Required Parameters** tab.

6. This step lists all mandatory parameters in the Management Template that do not yet have a value. As they are mandatory, however, all listed parameters *must* be given a value before the Management Template can be deployed.

   If all required values are specified, you can choose one of the following actions:

   ○ Click **Finish** to assign the configuration object to the selected CI and close the wizard or dialog.

   ○ Click **Next** to go to **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, where you can override the default value of any parameter, including those that are not required.

   > **Note:** To access step **Configure Options**, click **Next** in this step, and **Next** again in the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x.

   To change a parameter, double-click it, or select it in the list and click ✏️ **Edit**.

   ○ For standard parameters, the Edit Parameter dialog opens.

      Click **Value**, specify the value, and then click **OK**.

   ○ For instance parameters, the Edit Instance Parameter dialog opens.

      Add instance values, and then for each instance value, specify dependent parameter values. After you specify the instances and dependent parameter values, click **OK**.

7. *(Optional)*. In the **All Parameters** tab on BSM 9.2x or **Parameter Summary** tab on OMi 10.x, specify a value for each parameter that needs to be monitored against a different value than the default value.

   To change a parameter, double-click it, or select it in the list and click ✏️ **Edit**.

   ○ For standard parameters, the Edit Parameter dialog opens.

      Click **Value**, specify the value, and then click **OK**.

   ○ For instance parameters, the Edit Instance Parameter dialog opens.

      Add instance values, and then for each instance value, specify dependent parameter values. After you specify the instances and dependent parameter values, click **OK**.

   Click **Next** to go to the **Configure Options** tab, or **Finish** to save the assignment a nd close the wizard.

8. *(Optional)*. In the **Configure Options** tab, clear the **Enable Assigned Objects** check box on

BSM 9.2x and **Enable Assignment(s)** check box on OMi 10.x if you do not want to activate the assignment immediately. You can activate automatic assignment rules later using Automatic Assignment Rules at **Admin > Operations Management > Monitoring > Automatic Assignment Rules** on BSM 9.2x or **Administration > Monitoring > Assignments & Tuning** on OMi 10.x.

9. Click **Finish** to save the changes and close the wizard. The assignment rule is added to the list of auto-assignment rules.

You can check if the automatic assignment rule successfully created the expected assignments as follows:

1. Open the Assignments & Tuning pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Assignments & Tuning**.

   On OMi 10.x, click **Administration > Monitoring > Assignments & Tuning**.

2. In the **Browse Views** tab, select the view you identified while creating your automatic assignment rule.

3. Expand the view, and select a node that corresponds to the root CI type of the assigned item. Assignments created as a result of Automatic Assignment Rules are shown in the list of assignments at the top of the right pane, and have the value `AutoAssignment` in the column **Assigned By**.

You can consider the following options for tuning the assignment:

- Use the Auto-Assignment Rules pane to tune the parameter values for all assignments triggered by the automatic assignment rule.

- Use the Assignments pane to tune, redeploy, delete, and enable or disable individual assignments.

How to Display an Assignment Report for a HANA Management Template

1. Select the Management Template you want to create the report for.

2. Click **Generate Assignment Report** in the Management Templates & Aspects pane.

   The preconfigured Assignment Report opens.

You can view additional types of reports from the Assignments & Tuning pane.

Essential HANA Management Template

The Essential HANA Management Template monitors the SAP HANA database primary areas such as availability, query performance, backup status, license expiry, and critical infrastructure areas such as CPU performance, Memory performance, and disk performance.

How to Access the Essential HANA Management Template

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. Click **Configuration Folders > Database Management > SAP HANA > Management Templates > Essential HANA Management Template**.

User Interface Reference

Management Template - General

Provides an overview of the attributes of the Management Template.

UI Element	Description
Name	Essential HANA Management Template.
Description	Monitors SAP HANA database primary areas such as availability, query performance, backup status, and so on along with critical infrastructure areas of CPU, Memory and Disk.
ID	A unique Identifier for the GUID version.
Version ID	A unique identifier for this version of the Essential HANA Management Template.
Version	The current version of the Management Template. In this instance, the version of the Management Template is 1.0.

Management Template - Topology View

UI Element	Description
Topology View	HANA_Topology
CI Type	HanaSystem

Management Template - Aspects

The Essential HANA Management Template comprises the following Aspects:

- "HANA Backup Status"

- "HANA Database Availability"

- "HANA Database Memory Usage"

- "HANA System Infrastructure Health"

Extensive HANA Management Template

The Extensive HANA Management Template monitors the primary areas of SAP HANA database such as availability, query performance, backup status, license expiry, internal alerts and so on along with critical infrastructure areas such as CPU performance, disk performance, and memory performance.

How to Access the Extensive HANA Management Template

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. Click **Configuration Folders > Database Management > SAP HANA > Management Templates > Extensive HANA Management Template**.

User Interface Reference

Management Template - General

Provides an overview of the attributes of the Management Template.

UI Element	Description
Name	Extensive HANA Management Template.
Description	Monitors SAP HANA database primary areas such as availability, query performance, backup status, and so on along with critical infrastructure areas of CPU, Memory and Disk.
ID	A unique identifier for the GUID version.
Version ID	A unique identifier for this version of the Extensive HANA Management Template.
Version	The current version of the Management Template. In this instance, the version of the Management Template is 1.0.

Management Template - Topology View

UI Element	Description
Topology View	HANA_Topology
CI Type	HanaSystem

Management Template - Aspects

The Extensive HANA Management Template comprises the following Aspects:

- "HANA Backup Status"

- "HANA Database Availability"

- "HANA Database Memory Usage"

- "HANA Database Space Usage"

- "HANA License Status"

- "HANA Work Load"

- "HANA Database Alerts"

HANA Aspects

HANA Aspect comprises policy templates, instrumentation, and parameters for monitoring the health and performance of SAP HANA databases.

How to Access HANA Aspects

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. Click **Configuration Folders > Database Management > SAP HANA > Aspects**.

Tasks

How to Deploy HANA Aspects

For information about deploying SAP HANA Aspects, see Task 5b: Deploying SAP HANA Aspects.

How to Create HANA Aspects

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > SAP HANA > Aspects

3. In the Configuration Folders pane, click the configuration folder in which you want to create the new Aspect. If you want to create a new configuration folder, click ✳.

4. In the Management Templates & Aspects pane, click ✳, and then click 🖼 **Aspect**. The Add New Aspect wizard opens.

5. In the **General** tab, type a unique **Name** for the new Aspect and click **Next**.

6. Each Aspect enables you to manage one feature or characteristic of one or more types of configuration items. In the **CI Types** tab, select one or more **Available CI Types** to which this Aspect can be assigned, and then click ➡ to add them to the list of assigned CITs. Press **CTRL** or **SHIFT** to select several CITs.

> **Note**: You need to assign the Aspects to the HANA Database CIT.

7. Click **Next**.

8. In the **Aspects** tab, click 🟢 **Add Existing Aspect**. The Add Existing Aspect dialog box opens, which enables you to select an existing Aspect that you want to nest within this Aspect. Click an Aspect, and then click **OK**. Click **Next**.

9. In the **Policy Templates** tab, click 🟢 **Add Policy Templates from List** on BSM 9.2x or **Add Policy Templates From List** on OMi 10.x. The Add Policy Templates From List dialog box opens. Select the policy templates that you want to add, and then click **OK**. Press **CTRL** or **SHIFT** to select several policy templates.

10. If suitable Policy Templates do not exist, follow these steps to add a new Policy Template:

    a. Click 🟡, and then click **Add New Policy Template** to create them from here. The Add Policy Templates from List dialog box opens.

    b. Select the Measurement Threshold Policy Template from the **Type** drop-down list and click **OK**.

    c. Select the **Version** of the policy templates that you want to add.

    > **Note:** Each modification to a policy template is stored as a separate version. Aspects contain specific versions of policy templates. If a new version of a policy template becomes available later, you have to update the Aspect to include the latest version.

    d. In the Add Policy Templates from List dialog box, click **OK**. A new Policy Template is added.

11. *(Optional).* In the **Policy Templates** tab, click the policy template to which you want to add a deployment condition, click 🖊, and then click the 🚦 **Edit Deployment Condition**.

    The Edit Deployment Condition dialog box opens, which enables you to specify deployment conditions for the selected policy template.

    Set the condition and then click **OK**.

12. Click **Next**.

13. In the **Parameters** tab, you see a list of all the parameters from the policy templates that you added to this Aspect.

    To combine parameters:

    a. Press **CTRL** and click the parameters that you want to combine.

    b. Click ⬚. The Edit/Combine Parameters dialog box opens.

    c. Type a **Name** for the combined parameters.

    d. *(Optional).* Specify a **Description**, **Default Value**, and whether the combined parameter is **Read Only**, an **Expert Setting** or **Hidden**.

> **Note:** Read Only prevents changes to the parameter value when the Aspect is assigned to a CI. Hidden also prevents changes, but additionally makes the parameter invisible. Users can choose whether to show expert settings when they make an assignment.

    e. You can set either a specific default value, or you can click **From CI Attribute** and then browse for a CI attribute. When you specify a CI attribute, Operations Console sets the parameter value automatically during deployment of the policy templates, using the actual value of this attribute from the CI. You can also set conditional parameter values here.

    f. Click **OK**.

You can also edit the parameters without combining them, to override the defaults in the policy template. Click one parameter, and then click 🔲. The Edit/Combine Parameters dialog box opens.

14. In the Add New Aspect wizard, click **Finish** to save the Aspect and close the wizard.

The new Aspect appears in the Management Templates & Aspects pane.

Aspects

SAP HANA Aspects are used to monitor the building blocks or units of SAP HANA databases.

User Interface Reference

General	Provides an overview of the general attributes of the SAP HANA Aspects.
CI Type	The type of CIs that the Aspect can be assigned to. This is the type of CI to which the Management Template can be assigned. The SAP HANA Aspects contain the HANA System and HANA Database CITs.
Instrumentation	Provides a single package which contains the binaries for discovery, collection, and data logging.
Aspects	Provides an overview of any Aspects that the SAP HANA Aspects contains. You can expand each item in the list to see more details about the nested Aspect.

Policy Templates	Provides an overview of the policy templates that the SAP HANA Aspect contains. You can expand each item in the list to see more details about the policy template.

The OMi MP for SAP HANA comprises the following SAP HANA Aspects:

HANA Backup Status

This Aspect monitors the data and log backup status. This Aspect contains the following policy templates:

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabase	HANA_LogBackupStatus	SAP_HANA_ Log_Backup_ Status:Failure / SAP_HANA_ Log_Backup_ Status:Success	Last log backup	Measurement Threshold
	HANA_ CompleteDataBackupAge	N/A	This policy template checks the last complete data backup.	Measurement Threshold
	HANA_ CompleteDataBackupStatus	SAP_HANA_ Data_Backup_ Status:Failure / SAP_HANA_ Data_Backup_ Status:Success	Last complete data backup status.	Measurement Threshold
	HANA_High	N/A	This policy template runs JDBC collector/analyzer every HIGH schedule.	Scheduled Task

HANA Database Availability

This Aspect monitors the SAP HANA connection status and services running on all instances. This Aspect contains the following policy templates:

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabas	HANA_	SAP HANA Daemon	This policy	

CI Type	Policy Template	Indicator	Description	Policy Type
e	SerivcesStatus	Status:Up or Down SAP HANA Nameserver Status:Up or Down SAP HANA XSEngine Status:Up or Down SAP HANA Compileserver Status:Up or Down SAP HANA Index Server Status:Up or Down SAP HANA Preprocessor Status:Up or Down	template checks the status of SAP HANA services.	Measurement Threshold
HanaDatabase	HANA_VeryHigh	N/A	This policy template runs JDBC collector/analyzer as per Very High schedule.	Scheduled Task
HanaDatabase	HANA_DB_ Connection_ Status	SAP_HANA_Database_ Connection_ Status:ConnectionFailure / SAP_HANA_ Database_Connection_ Status:Success	This policy template checks the SAP HANA database connection status.	Measurement Threshold
HanaDatabase	HANA_ InactiveserviceCnt	SAP_HANA_Database_ Service_Status:Down / SAP_HANA_Database_ Service_Status:Up	This policy template checks the number of inactive services.	Measurement Threshold

HANA Database Memory Usage

This Aspect monitors the SAP HANA memory usage in terms of used memory, peak used memory, amount of memory used for column tables, delta memory and so on. This Aspect contains the following policy templates:

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabase	HANA_Medium	NA	This policy template runs JDBC	Scheduled Task

CI Type	Policy Template	Indicator	Description	Policy Type
			collector/analyzer every MEDIUM schedule.	
HanaDatabase	HANA_ DeltaMemRecordCount	NA	This policy template checks the delta memory record count.	Measurement Threshold
HanaDatabase	HANA_ RcrdCountColTblPartition	SAP_HANA_ Column_Table_ Record_ Status:High / SAP_HANA_ Column_Table_ Record_ Status:Normal	This policy template checks the record count of column table partition.	Measurement Threshold
HanaDatabase	HANA_DeltaMemorySize	SAP_HANA_ Delta_Memory_ Usage:High / SAP_HANA_ Delta_Memory_ Usage:Normal	This policy template checks the size of delta memory.	Measurement Threshold
HanaDatabase	HANA_ SharedMemoryUsage	SAP_HANA_ Shared_ Memory_ Usage:High / SAP_HANA_ Shared_ Memory_ Usage:Normal	This policy template checks the shared memory usage.	Measurement Threshold
HanaDatabase	HANA_VeryHigh	NA	This policy template runs JDBC collector/analyzer as per Very High schedule.	Scheduled Task
HanaDatabase	HANA_ IndxSrvrUsdHeapMemory	SAP_HANA_ Index_Server_ Heap_Memory_ Usage:High / SAP_HANA_ Index_Server_	This policy template monitors the heap memory usage of the Index server.	Measurement Threshold

CI Type	Policy Template	Indicator	Description	Policy Type
		Heap_Memory_ Usage:Normal		
HanaDatabase	HANA_ NonPartitionRcrdCount	SAP_HANA_ Non_ Partitioned_ Table_Record_ Status:High / SAP_HANA_ Non_ Partitioned_ Table_Record_ Status:Normal	This policy template checks the records of non partitioned tables.	Measurement Threshold
HanaDatabase	HANA_ ColStoreMemAllocUsage	NA	This policy template checks the column table size with respect to memory allocation limit.	Measurement Threshold
HanaDatabase	HANA_High	NA	This policy template runs JDBC collector/analyzer every HIGH schedule.	Scheduled Task

HANA Database Space Usage

This Aspect monitors the SAP HANA database space usage in terms of disk usage, physical memory, record count of column table partition, and so on.

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabase	HANA_Medium	NA	This policy template runs JDBC collector/analyzer every MEDIUM schedule.	Scheduled Task
HanaDatabase	HANA_DiskUsage	SAP_HANA_Disk_ Usage:Full / SAP_ HANA_Disk_ Usage:Normal, SAP_HANA_Disk_	This policy template monitors the disk usage.	Measurment Threshold

CI Type	Policy Template	Indicator	Description	Policy Type
		Usage:High / SAP_ HANA_Disk_ Usage:Normal		
HanaDatabase	HANA_ PhyMemAllocUsage	SAP_HANA_ Physical_Memory_ Usage:High / SAP_ HANA_Physical_ Memory_ Usage:Normal	This policy template checks the physical memory that is consumed in comparison with the allocation limit.	Measurment Threshold
HanaDatabase	HANA_ MemTotalUsage	SAP_HANA_ Physical_Memory_ Usage:High / SAP_ HANA_Physical_ Memory_ Usage:Normal	This policy template checks the physical memory that is consumed.	Measurment Threshold

HANA License Status

This Aspect monitors the licensed memory usage and days remaining for the license to expire. This Aspect contains the following policy templates:

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabase	HANA_ LicensedMemoryUsage	NA	This policy template checks the percentage of licensed memory used.	Measurement Threshold
HanaDatabase	HANA_Low	NA	This policy template runs JDBC collector/analyzer Low schedule.	Scheduled Task
HanaDatabase	HANA_ LicenseExpiration	NA	This policy template collects the days for license expiration.	Measurement Threshold
HanaDatabase	HANA_High	NA	This policy template runs JDBC collector/analyzer every HIGH schedule.	Scheduled Task

HANA Service Discovery

This Aspect discovers the SAP HANA database and the related processes.

CI Type	Policy Template	Indicator	Description	Policy Type
Computer	HANA_ MPLogMonitor	NA	This policy template monitors the scripts, discovery, and collector log files.	LogFile Entry
	HANA_ Discovery	NA	This policy template discovers the HANA infrastructure.	Service Auto-Discovery
	HANA_ Message	NA	This policy template contains the general OPC message policy for SAP HANA.	Open Message Interface
	HANA_ Configuration	NA	This policy template contains the SAP HANA configuration for discovery.	ConfigFile

HANA System Infrastructure Health

This Aspect monitors the host resources utilization. This Aspect contains the following policy templates:

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabase	HANA_ Collect_ SysHealth	NA	This policy template collects system resources summary.	ConfigFile
	HANA_ VeryHigh	NA	This policy template runs JDBC collector/analyzer as per Very High schedule.	Scheduled Task

HANA Database Alerts

This Aspect monitors the internal alerts for SAP HANA.

CI Type	Policy Template	Indicator	Description	Policy Type
hana_ database	HANA_Collect_ InternalEvents	N/A	This policy template collects HANA internal events.	ConfigFile
hana_ database	HANA_VeryHigh	N/A	This policy template runs JDBC collector/analyzer as per Very High schedule	Scheduled Task
hana_ database	HANA_Low	N/A	This policy template runs JDBC collector/analyzer Low schedule.	Scheduled Task
hana_	HANA_Collect_	N/A	This policy template collects SAP HANA	ConfigFile

CI Type	Policy Template	Indicator	Description	Policy Type
database	Alerts		alerts	

HANA Work Load

This Aspect monitors the SAP HANA workload and checks the long running statements, idle cursors, and so on. This Aspect contains the following policy templates:

CI Type	Policy Template	Indicator	Description	Policy Type
HanaDatabase	HANA_Medium	NA	This policy template runs JDBC collector/analyzer every MEDIUM schedule.	Scheduled Task
	HANA_ LongTransactCount	NA	This policy template checks the number of long transactions.	Measurement Threshold
	HANA_ UncommitedTransactCount	NA	This policy template checks the number of uncommitted transactions.	Measurement Threshold
	HANA_VeryHigh	NA	This policy template runs JDBC collector/analyzer as per Very High schedule.	Scheduled Task
	HANA_LongRunninStmnt	NA	This policy template checks the number of long running statements.	Measurement Threshold
	HANA_Low	NA	This policy template runs JDBC collector/analyz	Scheduled Task

CI Type	Policy Template	Indicator	Description	Policy Type
			er Low schedule.	
	HANA_Collect_ TenantsSummary	NA	This policy template collects the tenants summary.	ConfigFile
	HANA_LongIdleCursor	NA	This policy template checks the number of long idle cursors.	Measureme nt Threshold
	HANA_ BlockedTransactCount	NA	This policy template checks the number of blocked transactions.	Measureme nt Threshold
	HANA_ ConnectionCountUsage	SAP_HANA_ Database_ Connection_ Status:NearCapacit y / SAP_HANA_ Database_ Connection_ Status:Success	This policy template checks the percentage of connections that are used.	Measureme nt Threshold
	HANA_ LastSavePointTime	NA	This policy template checks the last save point.	Measureme nt Threshold
	HANA_High	NA	This policy template runs JDBC collector/analyz er every HIGH schedule.	Scheduled Task

Parameters

Parameters are variables that are an integral component of HANA Management Templates, HANA Aspects, and Policy Templates. Each parameter corresponds to a variable. Parameters contain default values that are used for monitoring the SAP HANA databases. You can also modify the values of the variables to suit your monitoring requirements.

Types of Parameters

The parameters are grouped as follows:

- **Instance Parameters** - These parameters are essential for monitoring SAP HANA databases. For example, JDBC Url to connect with HANA system is an Instance Parameter.

- **Mandatory Parameters** - These parameters contain the essential information required by policy templates. For example, User Name to connect to the HANA system is a mandatory parameter.

- **Dependent Parameters** - There are some parameters which are a subset of the mandatory parameters. Such parameters are referred to as dependent parameters. For example, Java Installation Directory is a dependent parameter of JDBC Url to connect with HANA system is an Instance Parameter.

- **Expert Parameters** - These parameters can be used by SMEs and Administrators.

HANA Parameters

OMi MP for SAP HANA contains the following parameters:

Parameter	Parameter Type	Description	Default Values
SAP HANA Database SID	Mandatory	SAP HANA Database SID	CI Attribute: discovered_product_ name
JDBC url to connect with HANA system	Mandatory	JDBC url to connect to the HANA system	
User Name to connect to the HANA system	Mandatory	User name to connect to the HANA system	

Parameter	Parameter Type	Description	Default Values
Password to connect to the HANA system	Mandatory	Password to connect to the HANA system	
Directory containing HANA JDBC driver jar (ngdbc.jar)	Mandatory	Directory containing HANA JDBC driver jar (ngdbc.jar)	
JAVA installation directory		If JAVA is not available in the system path, the JAVA installation directory needs to be updated with JAVA_HOME.	
Encrypt		Enable or Disable SSL encryption	False
Validate certificate		Validate server certificate	False
Hostname in certificate		Host name to verify server identity	
KeyStore		Location of the Java key store	
KeyStore Type		Java keystore file format	
KeyStore Password		Password to access the private key from the keystore file	
TrustStore		Path to trust store file that contains the server public certificates	
TrustStore Type		File format of trust store file	
TrustStore Password		Password to access the trust store file	

Tuning Parameters

You can edit the parameters of the HANA Management Templates that are already deployed to the CIs. To edit the parameters, follow these steps:

1. Open the Assignments & Tuning pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Assignments & Tuning**.

   On OMi 10.x, click **Administration > Monitoring > Assignments & Tuning**.

2. In the **Browse Views** tab, select the **HANA_Deployment** view that contains the CI for which you want to tune parameters. Alternatively, you can use the **Search** tab to find a CI.

3. In the list of CIs, click a **CI**. The Assignments pane shows details of any existing assignments for the CI.

4. Click the assignment for which you want to tune parameters. The Assignment Details pane shows the current parameter values.

5. In the Assignment Details pane, change the parameters:

   a. *(Optional).* By default, the list shows only mandatory parameters. To see all parameters, click ▼ .

   b. Select a parameter in the list, and then click ✎ **Edit**.

      - For standard parameters, the Edit Parameter dialog box opens.

        Click **Value**, specify the value, and then click **OK**.

      - For instance parameters, the Edit Instance Parameter dialog box opens.

        Change the instance values if necessary, and then for each instance value, change dependent parameter values. After you change the instances and dependent parameter values, click **OK**.

6. In the Assignment Details pane, click **Save Changes**.

   Operations Management deploys the new parameter values to the relevant HPE Operation Agents.

Configuration Items and Configuration Item Types

Configuration Items (CIs) are components that have to be managed to deliver an IT Service. CIs typically include IT services, hardware, and software.

Configuration Item Types (CITs) describes the type of a CI and its attributes. The SAP HANA CIs that are discovered in an environment are grouped under the CITs. OMi MP for SAP HANA comprises the following CITs:

- HanaSystem
- HanaDatabase

Run-time Service Model (RTSM) Views

An RTSM View enables you to build and visualize a subset of the overall CI model that comprises CITs related to SAP HANA databases. Using the Views, you can visualize the topology of a SAP HANA environment. In addition, Views can be used to do the following:

- Manage the Event Perspective of SAP HANA CIs
- Manage the Health Perspective of SAP HANA CIs
- Assigning and Tuning the Management Templates, Aspects, and Policy Templates

How to Access the RTSM Views

1. Open the RTSM Views:

   On BSM 9.2x, click **Admin > RTSM Administration > Modeling > Modeling Studio > Resources**.

   On OMi 10.x, click **Administration > RTSM Administration > Modeling > Modeling Studio > Resources**.

2. Click **Resource Type** as **Views**.

3. Click **Operations Management > Databases** from the list.

   You can see the Views for OMi MP for SAP HANA.

By default OMi MP for SAP HANA includes the following Views:

- **HANA_Deployment:** This RTSM View provides information about the SAP HANA database
  topology which includes the components - HanaSystem and HanaDatabase.
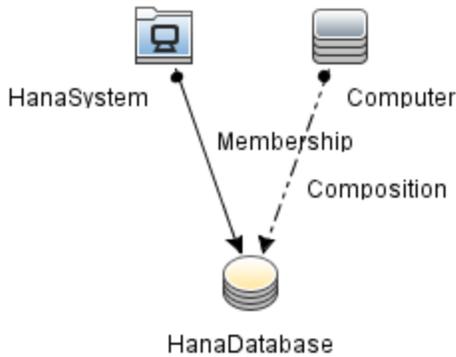
- **HANA_Topology:** This RTSM View provides detailed information about SAP HANA clusters and
  the database processes.
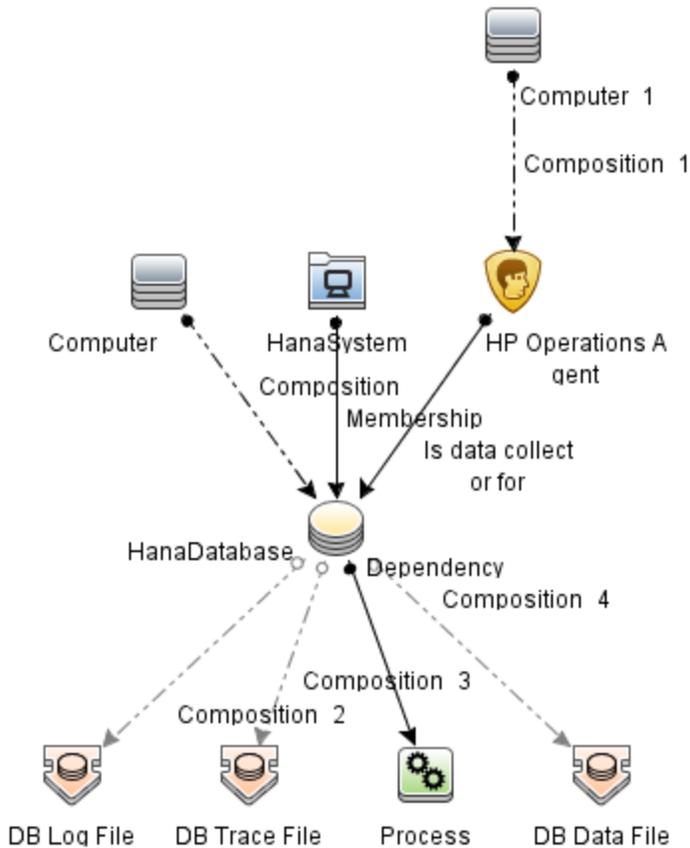
Health Indicators (HIs)

HIs analyze the events that occur in SAP HANA CIs and report the health of the SAP HANA CIs. The OMi MP for SAP HANA includes the following HIs to monitor the SAP HANA-related events.

How to Access Health Indicators (HIs)

HANA System

1. Open the HANA System:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Indicators**.

   On OMi 10.x, click **Administration > Service Health > CI Status Calculation > Health- and Event Type Indicators**.

2. In the CI Types pane, click **Configuration Item > InfrastructureElement > Application System > HanaSystem**.

HANA Database

1. Open the HANA Database:

   On BSM 9.2x, click **Admin > Operations Management > M onitoring > Indicators**.

   On OMi 10.x, click **Administration > Service Health > CI Status Calculation > Health- and Event Type Indicators**.

2. In the CI Types pane, click **Configuration Item > InfrastructureElement > Running Software > Database > HanaDatabase**.

CI Type	HI	Description	Value/Severity
HanaSystem	SAP HANA Data Backup Status	Indicates data backup status	Success/NORMAL, Failure/MAJOR
	SAP HANA Database Connection Status	Indicates database connectivity status	Success/NORMAL, NearCapacity/MAJOR, ConnectionFailure/CRITICAL
	SAP HANA Data Backup Status	Indicates data backup status	Success/NORMAL, Failure/MAJOR

CI Type	HI	Description	Value/Severity
	SAP HANA Database Connection Status	Indicates database connectivity status	Success/NORMAL, NearCapacity/MAJOR, ConnectionFailure/CRITICAL
HanaDatabase	SAP HANA Daemon Status	Indicates daemon service status	Up/NORMAL, Down/CRITICAL
HanaDatabase	SAP HANA Shared Memory Usage	Indicates shared memory usage of a service on a host	Normal/NORMAL, High/MINOR
HanaDatabase	SAP HANA Nameserver Status	Indicates nameserver status	Up/NORMAL, Down/CRITICAL
HanaDatabase	SAP HANA Statisticsserver Status	Indicates statistics service status	Up/NORMAL, Down/CRITICAL
HanaDatabase	SAP HANA XSEngine Status	Indicates XSEngine status	Up/NORMAL, Critical/CRITICAL
HanaDatabase	SAP HANA Disk Usage	Indicates space usage on each disk. This includes space used by non-SAP HANA files.	Normal/NORMAL, High/MINOR, Full/MAJOR
HanaDatabase	SAP HANA Column Table Record Status	Indicates high number of records in non-partitioned column tables	Normal/NORMAL, High/MINOR
HanaDatabase	SAP HANA Compileserver Status	Indicates compileserver status	Up/NORMAL, Critical/CRITICAL
HanaDatabase	SAP HANA Index Server Heap Memory Usage	Indicates heap memory usage by Index server	Normal/NORMAL, High/MAJOR
HanaDatabase	SAP HANA Physical Memory Usage	Indicates physical memory usage on the host. This includes non-SAP HANA processes	Normal/NORMAL, High/MINOR
HanaDatabase	SAP HANA Non Partitioned Table Record Status	Indicates high number of records in row table	Normal/NORMAL, High/MINOR

CI Type	HI	Description	Value/Severity
HanaDatabase	SAP HANA Delta Memory Usage	Indicates high memory size of the delta storage of column tables	Normal/NORMAL, High/MINOR
HanaDatabase	SAP HANA Index Server Status	Indicates index service status	Up/NORMAL, Down/CRITICAL
HanaDatabase	SAP HANA Preprocessor Status	Indicates preprocessor service status	Up/NORMAL, Down/CRITICAL

Tools

The OMi MP for SAP HANA is packaged with tools which enable administering and monitoring the SAP HANA CIs.

How to Access Tools

1. Open the Tools pane:

   On BSM 9.2x, click **Admin > Operation Management > Operations Console > Tools**.

   On OMi 10.x, click **Administration > Operations Console > Tools**.

2. In the CI Types pane, click **ConfigurationItem > InfrastructureElement > RunningSoftware > Database > HanaDatabase**.

It comprises the following tools:

CI Type	Tool Name	Description
Computer	Restart HANA Monitoring	Restarts HANA monitoring on the managed node
	Stop HANA Monitoring	Stops HANA monitoring on the managed node

Graph Templates

Graphs represent pictorial representation of metrics.OMi MP for SAP HANA comprises the following graphs:

How to Access the Graph Templates

1. To access graph templates:

    On BSM 9.2x, click **Admin > Operations Management > Operations Console > Performance Graph Mappings**.

    On OMi 10.x, click **Administration > Operations Console > Performance Graph Mappings**.

2. In the CI Types pane, click **ConfigurationItem > InfrastructureElement > RunningSoftware > Database > HanaDatabase**.

3. In the Performance pane, select a graph and click ![icon] **Draw Graph** to view the details.

Graph	Description
HANA Physical Memory Usage	This graph provides information about the HANA physical memory usage.
HANA Allocated Memory Usage	This graph provides information about the HANA allocated memory usage.
CPU Usage	This graph provides information about the CPU usage.

Chapter 4: Customizing Management Templates

OMi MP for SAP HANA can be customized to suit your monitoring requirements. You can edit the existing SAP HANA Management Templates or create new SAP HANA Management Templates to monitor any database environment.

Customizing SAP HANA Management Templates before Deployment

The following section provides information about customization scenarios for OMi MP for SAP HANA.

- Creating SAP HANA Management Templates
- Editing SAP HANA Management Templates

Creating HANA Management Templates

The following section provides information on creating Management Templates for HANA:

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > SAP HANA > Management Templates

3. Select the HANA configuration folder and if you need to create a new configuration folder, click ✳ . The Create Configuration Folder pane opens.

4. Type the name of the new configuration folder and the description. For example, you can type the new configuration folder name as Test.

5. Click **OK**. The new configuration folder is created.

   Configuration Folders > Database Management > SAP HANA > Management Templates > Test

6. In the Management Templates & Aspects pane, select the new configuration folder and click ✳ and then click ✳ **Management Template**. The Create Management Template wizard opens.

7. In the **General** tab, type a **Name** for the new HANA Management Template and click **Next**.

   A HANA Management Template enables you to manage HANA CIs and all the related dependent CIs.

8. Select **HANA_Deployment** from the list as the Topology View.

   The HANA_Deployment shows the HANA CIs and all the related CITs.

9. Click an item in the topology map to select the **CI Type** of the CIs that this Management Template enables you to manage. This is the type of CI to which the Management Template can be assigned. For example, you can select HANA to monitor SAP HANA databases.

   Click **Next**.

10. In the **Aspects** tab, click 🟢, and then click 🖼 **Add Existing Aspect** to add existing Aspects to the new HANA Management Template. The Add Existing Aspect dialog box opens. Select the Aspects that you want to add, and then click **OK**.

11. For each Aspect that you add, you must specify at least one **Target CI**.

    Click an Aspect in the list, and then in the topology map, click the CIT you want the Aspect to monitor when this Management Template is assigned. (Press **CTRL** to select several CITs.) Each CIT that you select here must correspond to one of the CI types assigned within the Aspect itself (or a child of one of those CITs). For example, you can select HANA CI from the topology map.

12. In the **Parameters** tab, you see a list of all the parameters from the Aspects that you added to this Management Template.

    To combine parameters:

    a. Press **CTRL** and click the parameters that you want to combine.

    b. Click the ⬚.

       The Edit/Combine Parameters dialog box opens.

    c. Type a **Name** for the combined parameters.

    d. *(Optional)*. Specify a **Description**, **Default Value**, and whether the combined parameter is

Read Only, an **Expert Setting**, or **Hidden**.

You can specify either a specific default value, or you can click **From CI Attribute** and then browse for a CI attribute. When you specify a CI attribute, Operations Management sets the parameter value automatically during the deployment of the underlying policy templates, using the actual value of this attribute from the CI. You can also change values of conditional parameters. (The conditions are read-only and cannot be changed at Management Template level.)

Read Only prevents changes to the parameter value when the Management Template is assigned to a configuration item. Hidden also prevents changes, but additionally makes the parameter invisible when the Management Template is assigned, and during parameter tuning. Users can choose whether to show expert settings when they make an assignment.

   e. Click **OK**.

You can also edit the parameters without combining them, to override the defaults in the Aspects or policy templates. Click one parameter, and then click ⬚. The Edit/Combine Parameters dialog box opens.

13. In the Create Management Template wizard, click **Finish** to save the Management Template and close the wizard.

The new Management Template appears in the Management Templates & Aspects pane.

Editing HANA Management Templates

You can edit the HANA Management Templates and modify the following components:

- Parameters
- HANA Aspects

Editing Parameters

Use Case: You are using Essential HANA Management Template to monitor SAP HANA databases in your environment. You are monitoring the inactive services count in the environment and want to modify the parameters corresponding to services count to closely monitor the services.

To closely monitor inactive services in your environment, you must modify the inactive services count parameter.

1. Open the Management Templates & Aspects pane:

    On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

    On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

    Configuration Folders > Database Management > SAP HANA > Management Templates > Essential HANA Management Template

3. Select the **Essential HANA Management Template** from the list, and then click . The Edit Management Template dialog box opens.

4. Click the **Parameters** tab. The list of parameters appear.

5. Double-click the **Frequency for Inactive Services Count** parameter. The Edit/Combine Parameters window appears.

6. You can change the default value by using the drop down text. For example, you can change the value of the parameter tablespace with low free space frequency to High from Medium.

7. Click **OK**. The Edit Management Template dialog box opens.

8. Click **OK**. The version of the HANA Management Template is incremented.

> **Note:** The version number of the HANA Management Template is incremented when any customizations are made to the HANA Management Template.

Editing Aspects

Use Case: You are using Extensive HANA Management Template to monitor a SAP HANA databases. You do not want to use some Aspects which are part of the Extensive HANA Management Template.

1. Open the Management Templates & Aspects pane:

    On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

    On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

Configuration Folders > Database Management > SAP HANA > Management Templates > Essential HANA Management Template

3. Select the **Essential HANA Management Template** from the list, and then click ✏️ . The Edit Management Template dialog box opens.

4. Click the **Aspects** tab. The list of Aspects appear.

5. Select the Aspect that you want to delete from the list. For example, you want to delete the HANA Data Guard Faults Aspect.

6. Click ❌ to delete the selected Aspect.

7. Click **OK**. The version of the HANA Management Template is incremented.

Chapter 5: Troubleshooting

The following section provides information about tools, errors, warnings, and corrective actions related to troubleshooting OMi MP for SAP HANA.

Troubleshooting Tools

The following section provides information about the tools for troubleshooting.

Log Files

The following table provide information about the log file locations and changing the trace levels for troubleshooting.

Feature	Log File Location	Trace Level
Discovery	`<ovdatadir>/log/HANA/HanaCollection_Script.log`	1. Open `<ovdatadir>/tmp/HANA/hanalog4j.properties` 2. To change the trace level, update the attribute `log4j.appender.FILE.Threshold` The new trace level will be applicable during the next run of Discovery Aspect.

Connectivity Metric	`<ovdatadir>/log/HANA/HanaMP.log`
	`<ovdatadir>/log/HANA/HanaCollection_Script.log`
	`<ovdatadir>/log/HANA/HanaMP.log`	

License Count		
Collector or Eventing or DataLogging	`<ovdatadir>/log/HANA/HanaCollection.log`	1. Open `<ovdatadir>/conf/HANA/jdbc/HANA_Config.collConfig` 2. To change the trace level, update the attribute `log4j.level`. The new trace level will be applicable automatically.
Scheduling Script	`<ovdatadir>/log/HANA/collectionManager/collection_schedule.log`	N/A
Collec		1. Open

Featu re	Log File Location	Trace Level
tion Frame work	`<ovdatadir>/log/HANA/collectionMana ger/CollectionManager.log`	`<ovdatadir>/tmp/HANA/collectionMan ager/HANAcmlog4j.properties` 2. To change the trace level, update the attribute `log4j.appender.FILE.Threshold`

Errors and Warnings

The errors and warnings are categorized as described in the following section.

Discovery

The following table provides information about the errors and corrective action related to Discovery.

Erro r Cod e	Error Message	Error Cause	Ale rt	Correcti ve Action
HN-07004	`[ERROR] : [HN-07004] Compiling <Datasource Class Name> for data source HANA_DATA`	This error message appears when a specific class cannot be created. This error occurs only during the first deployment.	No Aler t	Get detailed log and contact support
HN-04001	`[ERROR] [HN-04001] <ovdatadir>/bin/instrumentation/hanalog4j.prop erties not found!`	This error message occurs when changes are made to the Instrumentati on folder.	No Aler t	Run the Stop HANA Monitorin g too to stop the collector. Redeploy Discover

Error Code	Error Message	Error Cause	Alert	Corrective Action
				y Aspect.
HN-01001	[ERROR] [HN-01001] In reading <ovdatadir>/bin/instrumentation/hanalog4j.properties <Error Message	This error message occurs when changes are made to the Instrumentation folder.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.
HN-07005	[HN-07005] Error in creating service xml/config file. Failed with message: <Error Messsage>. Exiting discovery because of the exception	This error message appears when OMi MP for SAP HANA fails to discover the HANA databases.	Alert	Get detailed log and contact support
HN-04004	[ERROR] [HN-04004] <OvDataDir>/tmp/HANA/SrvcDiscHana.xml not available		No Alert	Redeploy the Discovery Aspect. Get detailed log and contact support

Licensing

The following table provides information about the errors and corrective actions related to Licensing.

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-08	[ERROR] [HN-08003] Could not count MP license. HANA conf directory and HANAcmadvconfig.properties path should be passed	This error message occurs	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.

Error Code	Error Message	Error Cause	Alert	Corrective Action
003		when changes are made to the Instrumentation folder.		
HN-04001	"[ERROR] [HN-04001] <ovdatadir>/bin/instrumentation/hanalog4j. properties not found!. <Error Message>	This error message occurs when changes are made to the Instrumentation folder.	No Alert	
HN-01001	[ERROR] [HN-01001] In reading <ovdatadir>/bin/instrumentation/hanalog4j. properties <Error Message>		No Alert	
HN-04002	[HN-04002] Could count MP license. File <OvDataDir>/conf/HANA/jdbc/HANA_Config.txt does not exists	This error message appears when Discovery fails.	No Alert	
HN-04003	[HN-04003] Could count MP license. File <ovdatadir>/bin/instrumentation/HANAcmconf iguration.properties does not exists	This error message occurs when changes are made to the Instrumentation folder.	No Alert	
HN-	[HN-01002] Cannot try for jdbc connectivity. File	This error message	No Al	

Error Code	Error Message	Error Cause	Alert	Corrective Action
01 00 2	`<ovdatadir>/bin/instrumentation/HANAcmconf iguration.properties could not be read`	occurs when changes are made to the Instrumen tation folder.	ert	
H N- 01 00 3	`[HN-01003] File <ovdatadir>/bin/instrumentation/HANAcmconf iguration.properties could not be closed`		No Al ert	Run the Stop HANA Monitoring to stop the collector.Check all the file handles for HANAcmconfiguratio n.properties and close the files manually. Redeploy Discovery Aspect.
H N- 06 00 3	`[HN-06003] Cannot try for jdbc connectivity. Class com.hpe.bsm.content.collector.jdbc.Config Re ader not available in class path`	This error message occurs when changes are made to the Instrumen tation folder.	No Al ert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.
H N- 07 00 1	`[HN-07001] Cannot try for jdbc connectivity. Error invoking configreader clas`	This error message occurs when changes are made to the Instrumen tation folder.	No Al ert	Get detailed log and contact support.
H N- 07	`[HN-07003] MP License count failed for application HANA with instance <HANA SID>`	This error message appears	No Al ert	Get detailed log and contact support.

Error Code	Error Message	Error Cause	Alert	Corrective Action
003		when HANA database connection fails or any run time errors occur in the HANA databases,		

Connectivity Check

The following tables provides information about the errors and corrective actions elated to Connectivity Check.

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-08002	[ERROR] [HN-08002] Could not check jdbc connectivity. HANA conf directory, policy name and cmadvconfig path only should be passed	This error message occurs when changes are made to the Instrumentation folder.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.
HN-04001	[ERROR] [HN-04001] <ovdatadir>/bin/instrumentation/hanalog4j.properties not found!	This error message occurs when changes	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.

Error Code	Error Message	Error Cause	Alert	Corrective Action
		are made to the Instrumentation folder.		
HN-01001	[ERROR] [HN-01001] In reading <ovdatadir>/bin/instrumentation/hanalog4j.properties	This error message occurs when changes are made to the Instrumentation folder.		
HN-04002	[HN-04002] Could not check jdbc connectivity. File <OvDataDir>/conf/HANA/jdbc/HANA_Config.txt does not exists	This error message occurs when Discovery fails.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.
HN-04003	[HN-04003] Could not check jdbc connectivity. File <ovdatadir>/bin/instrumentation/HANAcmconfiguration.properties does not exists	This error message occurs when changes are made to the Instrumentation folder.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.
HN-01002	[HN-01002] Cannot try for jdbc connectivity. File <ovdatadir>/bin/instrumentation/HANAcmconfiguration.properties could not be read	This error message occurs when changes are made to the Instrumentation folder.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-01003	[HN-01003] File `<ovdatadir>/bin/instrumentation/HANAcmconfiguration.properties` could not be closed		No Alert	Run the Stop HANA Monitoring to stop the collector.Check all the file handles for `HANAcmconfiguration.properties` and close the files manually. Redeploy Discovery Aspect.
HN-06003	[HN-06003] Cannot try for jdbc connectivity. Class `com.hpe.bsm.content.collector.jdbc.ConfigR eader` not availabe in class path	This error message occurs when changes are made to the Instrumentation folder.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.
HN-07001	[HN-07001] Cannot try for jdbc connectivity. Error invoking configreader class	This error message occurs when changes are made to the Instrumentation folder.	No Alert	
HN-09001	[HN-09001] JDBC connectivity not available for appplication HANA with instance <HANA SID>	This error message occurs when user credentials are changed.	No Alert	Get detailed log and contact support
HN-09000	[HN-09002] Could not check jdbc connectivity for appplication HANA with instance <HANA SID>	This error message occurs when any	Alert	Get detailed log and contact support

Error Code	Error Message	Error Cause	Alert	Corrective Action
2		run time exceptions or errors occur in HANA databases.		
HN-07002	`[HN-07002] Error sending connectivity status event for <HANA SID>`	This error message appears when opcmon fails during connection.	No Alert	Get detailed log and contact support

Tools

The following tables provide information about tool related errors and warnings.

Annotation Text Tool

Errors

Error Code	Error Message	Error Cause	Alert	Corrective Action

HN-08001	`[ERROR] [HN-08001] USAGE is hana_`
	`schedule_annotation.pl <HANAINSTANCE>`
	`<COLLECTIONID>`
		This error message occurs when changes are made to the Instrumentation folder.	No Alert	Run the Stop HANA Monitoring to stop the collector. Redeploy Discovery Aspect.

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-0200A	[ERROR] [HN-0200A] Opening file <OvDataDir>/tmp/HANA/schedules/<hana sid>/<collection Id> failed with status $ret_stat	This error message appears when scheduling fails to update annotation text due to user permissions issues or any other issues.	No Alert	Check for any detailed message in log, check for user permission, contact support
HN-10001	[ERROR] [HN-10001] Could not update annotation text as the file <ovdatadir>/tmp/HANA/toolsOutput/<HANA SID> /<collection Id> is not available. HANA SID is <HANA SYSTEM IDENTIFIER>	The metric collection has failed or is taking longer than usual.	No Alert	Check for any exceptions in log. Get detailed log and contact support.

Warnings

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-03003	[WARNING] [HN-03003] removing file <ovdatadir>/tmp/HANA/toolsOutput/<HANA SID> /<collection Id>	This error message appears due to permission issues	No Alert	Check for any detailed message in log and check for user permission

Restart Tool

Errors

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-02001	[ERROR]: [HN-02001] Failed to create <ovdatadir>/tmp/collectionManager/stopcollector, hence could not restart collector...	Permission Issues	No Alert	Check for user permissions and rerun the tool.
HN-1000	[ERROR]: [HN-10001] Collector for HANA is still running, try again...	Collector process is	No Alert	Lookup for java

Error Code	Error Message	Error Cause	Alert	Corrective Action
1		not responding.		process with attribute `cmmain_HANA`, kill it manually, send the logs to support and run the tool again

Warnings

Error Code	Error Message	Error Cause	Alert	Corrective Action
HN-03001	`[WARNING] [HN-03001] <ovdatadir>/tmp/collectionManager/stopcollector already exists!!!. Wait for collector to be stopped ...`	Remove the cause	No Alert	Wait for few minutes and rerun the tool.
HN-03002	`[WARNING] : [HN-03002] <ovdatadir>/tmp/HANA/processeslist.txt exists, should have been deleted during previous run. Remove the file manually if it exists after the current run...`		No Alert	Verify if the collector is restarted successfully. Check logfiles for any errors.

Common Errors

Error Code	Error Message	Error Description	Error Cause	Corrective Action
HN-02002	`[ERROR] : [HN-02002] Unable to create <OvDataDir>/tmp/HANA`	No Alert	This error message appears due to user permission issues and occurs when the	Check for user permissions and redeploy Discovery Aspect

Error Code	Error Message	Error Description	Error Cause	Corrective Action
			Discovery Aspect is deployed for the first time.	
HN-02003	[ERROR] : [HN-02003] Unable to create <OvDataDir>/log/HANA	No Alert		
HN-02004	[ERROR] : [HN-02004] Unable to create <OvDataDir>/tmp/HANA/schedules	No Alert		
HN-02005	[ERROR] : [HN-02005] Unable to create <OvDataDir>/conf/HANA	No Alert		
HN-02006	[ERROR] : [HN-02006] Unable to create <OvDataDir>/conf/HANA/jdbc	No Alert		
HN-02007	[ERROR] : [HN-02007] Unable to copy <OvDataDir>/bin/instrumentation/HANA_Config.collConfig to <OvDataDir>/conf/HANA/jdbc/	No Alert		
HN-02008	[ERROR] : [HN-02008] Unable to create <OvDataDir>/conf/dsi2ddf	No Alert		
HN-02009	[ERROR] : [HN-02009] Unable to create <ovdatadir>/conf/dsi2ddf/nocoda.opt	No Alert		
HN-0200B	[ERROR] : [HN-0200B] Unable to create <ovdatadir>/tmp/collectionManager	No Alert		
HN-0200C	[ERROR] : [HN-0200C] Unable to create <ovdatadir>log/collectionManager	No Alert		
HN-05001	[ERROR] [HN-05001] can't create object of OvParam::Template; $!	No Alert	This error message appears due to run-time errors.	Check prerequisites and System.txt file for detailed messages and contact support
HN-06001	[ERROR] : [HN-06001] java version should be 1.6.* and above; hence collection/discovery will not be started	No Alert	This error message appears when Java	Install java version 1.6 or above and redeploy

Error Code	Error Message	Error Description	Error Cause	Corrective Action
			version 1.6 or above is not installed.	Discovery Aspect
HN-06002	[ERROR] : [HN-06002] jdbc jar for HANA (ngdbc.jar) is not available; hence collection/discovery will not be started	No Alert	This error message appears when the jdbc.jar is not available.	Install SAP HANA Client or Solution Manager or HANA Studio or copy the driver jar (ngdbc.jar) to the managed node and redeploy Discovery Aspect

Appendix: Metrics and Data Sources

The following table provides information about the Aspect relation with the Metrics and Policies.

Table Name	Aspect	Policy	Collectionid.MetricID	Column name in Table
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ SvcKey	HANASVC
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0001	HANASYSTEM
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0002	HANAINSTANCE
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0003	HANAHOST
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0004	HANA_SRVC_NAME
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0005	HANA_ALLOC_ MEM_MB
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0006	HANA_USED_MEM_ MB
HANA_ SHARED_ MEMORY	HANA Database Memory Usage	HANA_ SharedMemoryUsage	HANA_ C0001.Hana_ M0007	HANA_USED_MEM_ PCT
HANA_	HANA	HANA_	HANA_	HANATBL

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
MEMORY_ DELTA	Database Memory Usage	DeltaMemRecordCou nt HANA_ DeltaMemorySize	C0009.Hana_ TblKey	
HANA_ MEMORY_ DELTA	HANA Database Memory Usage	HANA_ DeltaMemRecordCou nt HANA_ DeltaMemorySize	HANA_ C0009.Hana_ M0001	HANASYSTEM
HANA_ MEMORY_ DELTA	HANA Database Memory Usage	HANA_ DeltaMemRecordCou nt HANA_ DeltaMemorySize	HANA_ C0009.Hana_ M0002	HANAINSTANCE
HANA_ MEMORY_ DELTA	HANA Database Memory Usage	HANA_ DeltaMemRecordCou nt HANA_ DeltaMemorySize	HANA_ C0009.Hana_ M0003	HANAHOST
HANA_ MEMORY_ DELTA	HANA Database Memory Usage	HANA_ DeltaMemRecordCou nt HANA_ DeltaMemorySize	HANA_ C0009.Hana_ M0004	HANA_SCH_TBL
HANA_ MEMORY_ DELTA	HANA Database Memory Usage	HANA_ DeltaMemRecordCou nt HANA_ DeltaMemorySize	HANA_ C0009.Hana_ M0005	HANA_DELTA_ MEM_MB
HANA_ MEMORY_ DELTA	HANA Database Memory Usage	HANA_ DeltaMemRecordCou nt HANA_ DeltaMemorySize	HANA_ C0009.Hana_ M0006	HANA_DELTA_ Record_M
HANA_ LSTSAVEPOIN T	HANA Work Load	HANA_ LastSavePointTime	HANA_ C0024.Hana_ SvPtKey	HANASVPNTPRT

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
HANA_ LSTSAVEPOIN T	HANA Work Load	HANA_ LastSavePointTime	HANA_ C0024.Hana_ M0001	HANASYSTEM
HANA_ LSTSAVEPOIN T	HANA Work Load	HANA_ LastSavePointTime	HANA_ C0024.Hana_ M0002	HANAINSTANCE
HANA_ LSTSAVEPOIN T	HANA Work Load	HANA_ LastSavePointTime	HANA_ C0024.Hana_ M0003	HANAHOST
HANA_ LSTSAVEPOIN T	HANA Work Load	HANA_ LastSavePointTime	HANA_ C0024.Hana_ M0004	HANAPORT
HANA_ LSTSAVEPOIN T	HANA Work Load	HANA_ LastSavePointTime	HANA_ C0024.Hana_ M0006	HANALSTSVPNTTIM E
HANA_LOG_ BKSTATUS	HANA Backup Status	HANA_ LogBackupStatus	HANA_ C0004.Hana_ M0001	HANASYSTEM
HANA_LOG_ BKSTATUS	HANA Backup Status	HANA_ LogBackupStatus	HANA_ C0004.Hana_ M0002	HANAINSTANCE
HANA_LOG_ BKSTATUS	HANA Backup Status	HANA_ LogBackupStatus	HANA_ C0004.Hana_ M0004	HANALOGBKSTATU S
HANA_ LNGTRANSCN T	HANA Work Load	HANA_ LongTransactCount	HANA_ C0021.Hana_ M0001	HANASYSTEM
HANA_ LNGTRANSCN T	HANA Work Load	HANA_ LongTransactCount	HANA_ C0021.Hana_ M0002	HANAINSTANCE
HANA_ LNGTRANSCN T	HANA Work Load	HANA_ LongTransactCount	HANA_ C0021.Hana_ M0003	HANALNGTRANSCN T
HANA_LIC_ USAGE	HANA License Status	HANA_ LicenseExpiration HANA_ LicensedMemoryUsa	HANA_ C0014.Hana_ M0001	HANASYSTEM

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
		ge		
HANA_LIC_ USAGE	HANA License Status	HANA_ LicenseExpiration HANA_ LicensedMemoryUsa ge	HANA_ C0014.Hana_ M0002	HANAINSTANCE
HANA_LIC_ USAGE	HANA License Status	HANA_ LicenseExpiration HANA_ LicensedMemoryUsa ge	HANA_ C0014.Hana_ M0003	HANADAYSTOLICE XPRY
HANA_LIC_ USAGE	HANA License Status	HANA_ LicenseExpiration HANA_ LicensedMemoryUsa ge	HANA_ C0014.Hana_ M0004	HANAPRODLIMIT
HANA_LIC_ USAGE	HANA License Status	HANA_ LicenseExpiration HANA_ LicensedMemoryUsa ge	HANA_ C0014.Hana_ M0005	HANAPRODUSAGE
HANA_LIC_ USAGE	HANA License Status	HANA_ LicenseExpiration HANA_ LicensedMemoryUsa ge	HANA_ C0014.Hana_ M0006	HANALICMEMUSAG E
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ DbIns	HANADBINS
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0001	HANASYSTEM
HANA_HEAP_ MEMORY	HANA Database Memory	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0002	HANAINSTANCE

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
	Usage			
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0003	HANAHOST
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0004	HANA_SRVC_NAME
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0005	HANA_Heap_AllocMB
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0006	HANA_Heap_ UsedMB
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0007	HANAHeapMem_ UsedPct
HANA_HEAP_ MEMORY	HANA Database Memory Usage	HANA_ IndxSrvrUsdHeapMe mory	HANA_ C0005.Hana_ M0008	HANA_allctn_limit
HANA_DB_ SVC	HANA Database Availabilit y	HANA_ SerivcesStatus	HANA_ C0007.Hana_ SvcKey	HANASVCKEY
HANA_DB_ SVC	HANA Database Availabilit y	HANA_ SerivcesStatus	HANA_ C0007.Hana_ M0001	HANASYSTEM
HANA_DB_ SVC	HANA Database Availabilit y	HANA_ SerivcesStatus	HANA_ C0007.Hana_ M0002	HANAINSTANCE
HANA_DB_ SVC	HANA Database	HANA_ SerivcesStatus	HANA_ C0007.Hana_	HANAHOST

Table Name	Aspect	Policy	Collectionid.MetricID	Column name in Table
	Availability		M0003	
HANA_DB_ SVC	HANA Database Availability	HANA_ SerivcesStatus	HANA_ C0007.Hana_ M0004	HANASERVICE
HANA_DB_ SVC	HANA Database Availability	HANA_ SerivcesStatus	HANA_ C0007.Hana_ M0005	HANASERVICESTA TUS
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ DbIns	HANADBINS
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0001	HANASYSTEM
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0002	HANAINSTANCE
HANA_DB_ RESUSAGE	HANA Database Space	HANA_ PhyMemAllocUsage	HANA_ C0006.Hana_ M0003	HANAHOST

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
	Usage HANA System Infrastruc ture Health	HANA_ MemTotalUsage HANA_Collect_ SysHealth		
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0004	HANAUsedPhy_ MemPct
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0005	HANAFreePhy_ memGB
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0006	HANAUsedPhy_ memGB
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0007	HANATTLCPUUSER TIME

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
	ture Health			
HANA_DB_ RESUSAGE	HANA Database Space Usage HANA System Infrastruc ture Health	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0008	HANATTLCPUSYSTI ME
HANA_DB_ RESUSAGE	"HANA Database Space Usage HANA System Infrastruc ture Health"	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0009	HANATTLCPUWIOTI ME
HANA_DB_ RESUSAGE	"HANA Database Space Usage HANA System Infrastruc ture Health"	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0010	HANATTLCPUIDLET IME
HANA_DB_ RESUSAGE	"HANA Database Space Usage HANA System Infrastruc ture Health"	HANA_ PhyMemAllocUsage HANA_ MemTotalUsage HANA_Collect_ SysHealth	HANA_ C0006.Hana_ M0011	HANAUsdPhyAlcLtM mPc
HANA_DB_ RESUSAGE	"HANA Database	HANA_ PhyMemAllocUsage	HANA_ C0006.Hana_	HANAAlloc_memGB

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
	Space Usage HANA System Infrastruc ture Health"	HANA_ MemTotalUsage HANA_Collect_ SysHealth	M0012	
HANA_DB_ ALLOC	HANA Database Memory Usage	HANA_ ColStoreMemAllocUs age	HANA_ C0012.Hana_ DbIns	HANADBINS
HANA_DB_ ALLOC	HANA Database Memory Usage	HANA_ ColStoreMemAllocUs age	HANA_ C0012.Hana_ M0001	HANASYSTEM
HANA_DB_ ALLOC	HANA Database Memory Usage	HANA_ ColStoreMemAllocUs age	HANA_ C0012.Hana_ M0002	HANAINSTANCE
HANA_DB_ ALLOC	HANA Database Memory Usage	HANA_ ColStoreMemAllocUs age	HANA_ C0012.Hana_ M0003	HANAHOST
HANA_DB_ ALLOC	HANA Database Memory Usage	HANA_ ColStoreMemAllocUs age	HANA_ C0012.Hana_ M0004	HANA_ALOC_ USGE_PCT
HANA_DATA_ BKSTATUS	HANA Backup Status	HANA_ CompleteDataBackup Status	HANA_ C0003.Hana_ M0001	HANASYSTEM
HANA_DATA_ BKSTATUS	HANA Backup Status	HANA_ CompleteDataBackup Status	HANA_ C0003.Hana_ M0002	HANAINSTANCE
HANA_DATA_ BKSTATUS	HANA Backup Status	HANA_ CompleteDataBackup Status	HANA_ C0003.Hana_ M0004	HANADATABKSTAT US
HANA_DATA_ BKPAGE	HANA Backup Status	HANA_ CompleteDataBackup Age	HANA_ C0013.Hana_ M0001	HANASYSTEM

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
HANA_DATA_ BKPAGE	HANA Backup Status	HANA_ CompleteDataBackup Age	HANA_ C0013.Hana_ M0002	HANAINSTANCE
HANA_DATA_ BKPAGE	HANA Backup Status	HANA_ CompleteDataBackup Age	HANA_ C0013.Hana_ M0004	HANADATABKPAGE
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ StoreKey	HANASTORE
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0001	HANASYSTEM
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0002	HANAINSTANCE
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0003	HANAHOST
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0004	HANA_DSK_PATH
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0005	HANA_DVC_ID
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0006	HANA_DSK_ID
HANA_ SPACE_ USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_ C0010.Hana_ M0007	HANA_USGE_TYPE
HANA_	HANA	HANA_DiskUsage	HANA_	HANA_USED_MEM

Table Name	Aspect	Policy	Collectionid.MetricID	Column name in Table
SPACE_USAGE	Database Space Usage		C0010.Hana_M0008	
HANA_SPACE_USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_C0010.Hana_M0009	HANA_TOT_MEM
HANA_SPACE_USAGE	HANA Database Space Usage	HANA_DiskUsage	HANA_C0010.Hana_M0010	HANA_USED_PCT
HANA_SYSTEM	HANA Database Availability	HANA_InactiveserviceCnt	HANA_C0011.Hana_M0001	HANASYSTEM
HANA_SYSTEM	HANA Database Availability	HANA_InactiveserviceCnt	HANA_C0011.Hana_M0002	HANASERVICEINACTCNT
HANA_SYSTEM	HANA Database Availability	HANA_InactiveserviceCnt	HANA_C0011.Hana_M0003	HANASERVICETOTALCNT
HANA_SYSTEM	HANA Database Availability	HANA_InactiveserviceCnt	HANA_C0011.Hana_M0004	HANASERVICEINACTPCT
HANA_TABLE_RECORD	HANA Database Memory Usage	HANA_NonPartitionRcrdCount	HANA_C0008.Hana_TblKey	HANATBL
HANA_TABLE_RECORD	HANA Database Memory Usage	HANA_NonPartitionRcrdCount	HANA_C0008.Hana_M0001	HANASYSTEM
HANA_TABLE_RECORD	HANA Database Memory Usage	HANA_NonPartitionRcrdCount	HANA_C0008.Hana_M0002	HANAINSTANCE

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
HANA_TABLE_ RECORD	HANA Database Memory Usage	HANA_ NonPartitionRcrdCou nt	HANA_ C0008.Hana_ M0003	HANA_SCH_TBL
HANA_TABLE_ RECORD	HANA Database Memory Usage	HANA_ NonPartitionRcrdCou nt	HANA_ C0008.Hana_ M0004	HANA_RCRD_B
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ TntKey	HANATNT
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ M0001	HANASYSTEM
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ M0002	HANAINSTANCE
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ M0003	HANAHOST
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ M0004	HANAPORT
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ M0005	HANATNTNAME
HANA_TENNT_ STTS	HANA Work Load	HANA_Collect_ TenantsSummary	HANA_ C0015.Hana_ M0007	HANATNTSTTS
HANA_ UNCOMTRANS CNT	HANA Work Load	HANA_ UncommitedTransact Count	HANA_ C0019.Hana_ M0001	HANASYSTEM
HANA_ UNCOMTRANS CNT	HANA Work Load	HANA_ UncommitedTransact Count	HANA_ C0019.Hana_ M0002	HANAINSTANCE
HANA_ UNCOMTRANS CNT	HANA Work Load	HANA_ UncommitedTransact Count	HANA_ C0019.Hana_ M0003	HANAUNCOMTRAN SCNT

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
HANA_ LNGIDLECURS	HANA Work Load	HANA_ LongIdleCursor	HANA_ C0025.Hana_ M0001	HANASYSTEM
HANA_ LNGIDLECURS	HANA Work Load	HANA_ LongIdleCursor	HANA_ C0025.Hana_ M0002	HANAINSTANCE
HANA_ LNGIDLECURS	HANA Work Load	HANA_ LongIdleCursor	HANA_ C0025.Hana_ M0003	HANALNGIDLECUR CNT
HANA_ LNGRNGSTMT	HANA Work Load	HANA_ LongRunninStmnt	HANA_ C0027.Hana_ M0001	HANASYSTEM
HANA_ LNGRNGSTMT	HANA Work Load	HANA_ LongRunninStmnt	HANA_ C0027.Hana_ M0002	HANAINSTANCE
HANA_ LNGRNGSTMT	HANA Work Load	HANA_ LongRunninStmnt	HANA_ C0027.Hana_ M0003	HANALNGRNGSTMT CNT
HANA_BLKD_ TRANS	HANA Work Load	HANA_ BlockedTransactCoun t	HANA_ C0017.Hana_ M0001	HANASYSTEM
HANA_BLKD_ TRANS	HANA Work Load	HANA_ BlockedTransactCoun t	HANA_ C0017.Hana_ M0002	HANAINSTANCE
HANA_BLKD_ TRANS	HANA Work Load	HANA_ BlockedTransactCoun t	HANA_ C0017.Hana_ M0003	HANABLCKTRANSC NT
HANA_ CNNCTUSAGE	HANA Work Load	HANA_ ConnectionCountUsa ge	HANA_ C0029.Hana_ M0001	HANASYSTEM
HANA_ CNNCTUSAGE	HANA Work Load	HANA_ ConnectionCountUsa ge	HANA_ C0029.Hana_ M0002	HANAINSTANCE
HANA_ CNNCTUSAGE	HANA Work Load	HANA_ ConnectionCountUsa ge	HANA_ C0029.Hana_ M0003	HANACURRCNNCN T
HANA_	HANA	HANA_	HANA_	HANAMAXCNNCNT

Table Name	Aspect	Policy	Collectionid.Met ricID	Column name in Table
CNNCTUSAGE	Work Load	ConnectionCountUsa ge	C0029.Hana_ M0004	
HANA_ CNNCTUSAGE	HANA Work Load	HANA_ ConnectionCountUsa ge	HANA_ C0029.Hana_ M0005	HANACNNUSEDPC T
HANA_COL_ PARTITION_ RECORD	HANA Database Memory Usage	HANA_ RcrdCountColTblParti tion	HANA_ C0002.Hana_ ColKey	HANACOLNAME
HANA_COL_ PARTITION_ RECORD	HANA Database Memory Usage	HANA_ RcrdCountColTblParti tion	HANA_ C0002.Hana_ M0001	HANASYSTEM
HANA_COL_ PARTITION_ RECORD	HANA Database Memory Usage	HANA_ RcrdCountColTblParti tion	HANA_ C0002.Hana_ M0002	HANAINSTANCE
HANA_COL_ PARTITION_ RECORD	HANA Database Memory Usage	HANA_ RcrdCountColTblParti tion	HANA_ C0002.Hana_ M0003	HANAHOST
HANA_COL_ PARTITION_ RECORD	HANA Database Memory Usage	HANA_ RcrdCountColTblParti tion	HANA_ C0002.Hana_ M0004	HANA_SCH_TBL_ COL
HANA_COL_ PARTITION_ RECORD	HANA Database Memory Usage	HANA_ RcrdCountColTblParti tion	HANA_ C0002.Hana_ M0005	HANA_RCRD_CNT_ BLLN

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