

HP Asset Manager Software License Optimization Best Practice Package

For the Windows[®] operating system

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User Guide

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Overview

The Software License Optimization (SLO) Best Practice package is an add-on of Asset Manager. It contains a collection of software components and features which streamline the management of license contracts and software license compliance for a prioritized list of software titles from software publishers such as Microsoft, Adobe, Oracle, IBM, VMware, Autodesk, HP, Symantec, TIBCO, Red Hat, BMC, and SAP. The templates, models, and software counters provided with the SLO Best Practice package embody the HP best practices for software asset management (SAM).

The SLO Best Practice package can be downloaded from HP Live Network (<https://hpln.hp.com/>). To access this web site, you will need an HP Passport account.

Note: The content of the SLO Best Practice package will be updated on a regular basis to help you manage compliance for more software titles from various software vendors.

This guide is intended for users who want to configure SLO Best Practice package on an Asset Manager instance and generate software license compliance reports in Asset Manager.

In specific, this guide explains how to use the components provided with the SLO Best Practice package to create contracts and licenses, and how to check software compliance by using the software counters tailored for the software products from the most popular software suppliers.

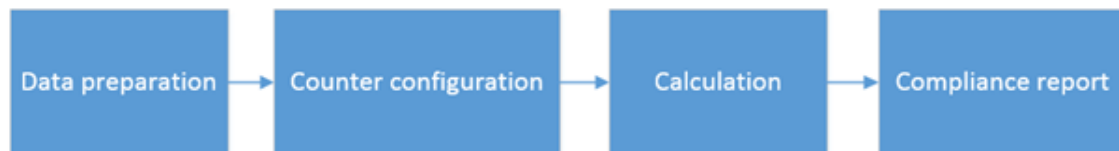
Using the SLO Best Practice package on top of the Asset Manager Software Asset Management module

Asset Manager provides an optional SAM module for software asset management. This module provides comprehensive wizards and tools to manage the full lifecycle of license assets and help you understand costs and track software compliance.

The SLO Best Practice package is an additional component delivering SAM content that streamlines and accelerates software asset management implementation for targeted software suppliers. Together, they provide a suite of tools that can be configured to manage and monitor software installations and licensing for software products in the scope of the SLO Best Practice package within your enterprise.

For further details about the SAM module including general concepts and background, see the *Software assets* guide of Asset Manager.

The whole SAM solution can be broken down into 4 processes, each of which consists of several sub business processes, as shown in the chart below. The steps are explained in detail in later sections.



Using the "Implement SAM BP Package" wizard

Caution: The **Implement SAM BP Package** wizard is a legacy wizard that performs some operations from **Phase 1. Data preparation** to **Phase 3. Calculation**. If you are not familiar with the SLO Best Practice package and this wizard, ignore this section and go through the major steps in order.

The **Implement SAM BP Package** wizard consolidates some necessary tasks during the SLO Best Practice implementation. This wizard helps you prepare and optimize your data (for example, licenses, models and computer types) and its attributes for the software compliance calculation.

Note: This wizard has the following limitations:

- Some actions of the wizard cannot be performed on the web client. Therefore, we recommend that you run this wizard on the Windows client.
- When running some actions that open a screen on the Windows client, the screen may be opened beneath the wizard window and you may have to close the wizard to access the screen.

To use this wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. Following the instructions of the wizard.

Note: Some steps require you to enable workflows or run a certain action for one time.

To enable workflows, check the details of each workflow and make sure that the current date is between the **Start (dStart)** and **End (dEnd)** dates of the workflow (**General** tab, **Validity** section). If the **End** date is empty, the workflow is always valid.

To run a specified action for one time, click **Test** in the action detail and click **Execute**. The actions perform the same operations as the workflows. You can manually trigger the action to get the results immediately instead of allowing it to occur automatically at a specified time.

Step	Nature of the activated object	Reference
1a	Wizard	"Using the "Propagate license type from counter to license models" wizard" on page 31
1b	Wizard	"Using the "Update existing licenses to use SLO Best Practice license model" wizard" on page 12
2	Screen: workflows, actions, and itemized lists	Enable workflows or run the action for one time. Refer to the Note above the table. If necessary, modify one of the itemized list according to "License version update according to maintenance contract" on page 16 .
3	<ul style="list-style-type: none"> • Wizard • Screen: computers 	"Using the "Link / unlink servers to license editions" wizard" on page 23
4	Screen: counters	N/A
5	Wizard	"Using the "Change the counter Group by links" wizard" on page 30
6	N/A	N/A
7	Screen: workflows and actions	Enable workflows or run the action for one time. Refer to the Note above the table and "Pre-calculation workflows" on page 24 .

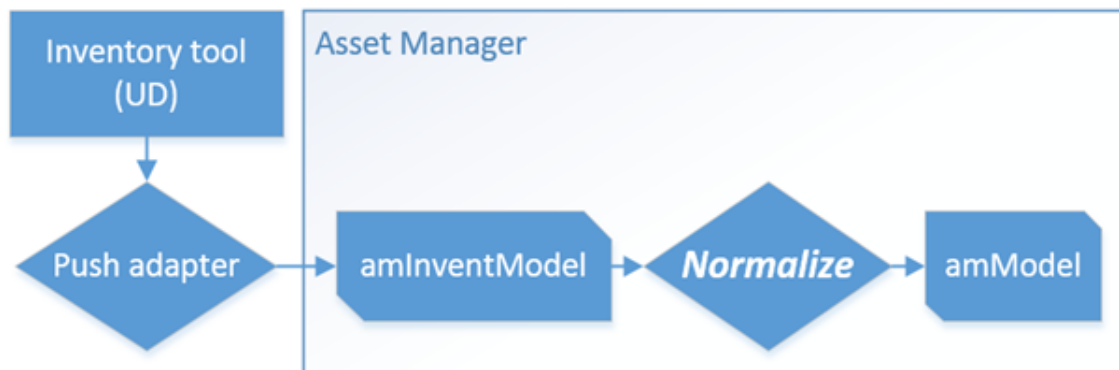
Step	Nature of the activated object	Reference
8	Screen: filtered list and itemized list	The View missing CPU types button displays the software installations with certain status that require some actions. Identify the unrecognized CPU types and/or model numbers associated with the software installations above and map them with appropriate itemized lists using the Add new CPU types button.
9	Screen: actions	Run the pre-count actions (same actions as step 7) again after the missing factors are added. Refer to the Note above the table and " Pre-calculation workflows " on page 24.
10	Screen: workflows and actions	Calculate all counters in batch (automatically or manually). Enable workflows or run the action for one time. Refer to the Note above the table. Refer to " Software counters batch calculation " on page 26.
11	Screen: counter results	Check the calculation results of all counters.
12	Screen: workflows and actions	Enable workflows or run the action for one time. Refer to the Note above the table. If necessary, modify the default execution intervals for the workflow actions. Refer to: <ul style="list-style-type: none"> • "Cleaning old calculation result" on page 18 • "Cleaning old missing installations" on page 18

Phase 1. Data preparation

This section describes the steps needed for data preparation.

Importing and normalizing software installations

In this step, you need to import software installations, normalize software installation models, and link normalized software installation models to counters.



Normalization

The normalization process is needed to manage the relations between inventory models and definitive models. We recommend that you use the normalization solution to manage your software and do calculation for license compliance. Refer to the SLO *Technical Details* guide to understand what the normalization solution is.

To manage the relations between inventory models and definitive models, open **Asset lifecycle** -> **Software asset management** -> **Inventoried software keys**, as shown in the figure below.

<input type="checkbox"/>	Inventoried brand	Inventoried name	Inventoried version	Temporary model	Definitive model	Resolved
<input type="checkbox"/>	Microsoft	Windows Server	2012 std x64	Unknown software installation ...	Microsoft Windows Server 2012 Standard Edition	Yes
<input type="checkbox"/>	Microsoft	Windows Server	2012 dc x64	Unknown software installatio...	Microsoft Windows Server 2012 Datacenter Editio...	Yes
<input type="checkbox"/>	Microsoft	Windows Server	2012 R2 std x64	Unknown software installation ...	Microsoft Windows Server 2012 R2 Standard	Yes
<input type="checkbox"/>	Microsoft	Windows Server	2012 R2 dc x64	Unknown software installation ...	Microsoft Windows Server 2012 R2 Datacenter	Yes
<input type="checkbox"/>	Microsoft	Windows Server	2012 r2 essentials x64...	Unknown software installation ...		Yes

Display selections 0 selected records Action on the selections in current page Page 43 of 46 Total records: 917 20 records per page

Inventoried model Workflow

Inventoried key: POI139245
 Inventoried brand: Microsoft
 Inventoried name: Windows Server
 Inventoried version: 2012 dc x64

Parent model: Operating system software
 Brand: Microsoft Windows Server
 Name of the model: Windows Server
 Version number: 2012 dc x64

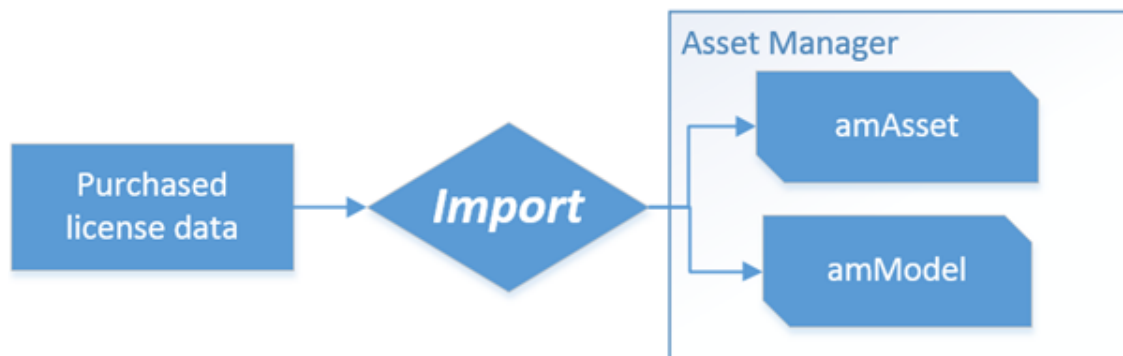
Temporary model: Unknown software installation model
 Definitive model: Microsoft Windows Server 2012 Datacenter Edition
 Resolved
 Remark:

By do this, Asset Manager lists all inventory models that are discovered by the discovery tools and are imported via Connect-IT scenarios or Universal Discovery (UD) push adapter.

You need to specify a definitive model for an inventory model and check the **Resolved** option. Then, all software installations will use the specified model. You can assign a definitive model to multiple inventory models.

Importing licenses and linking licenses to SLO models

In this step, you need to Import licenses and allow Asset Manager to automatically link licenses to correct SLO Best Practice models according to the SKU.



SKU data is stored in the **amInventModel** table. You can access the SKU data in the **SKU library** screen. To open this screen, on the navigation bar, expand **Asset lifecycle**, expand **Software asset management**, and then click **SKU library**.

If your licenses contain SKU information, you can use the built-in Connect-It scenario *Lic_SKU.scn* and *SKU_update.scn* to import the licenses to Asset Manager. To use these scenarios, unzip the SLO Best Practice installation package, and then open the *Lic_SKU.scn* file and the *SKU_update.scn* file in the *licsku* folder.

Caution: The *Lic_SKU.scn* scenario needs to be run before the *SKU_update.scn* scenario.

When importing license assets with these scenarios, Asset Manager uses the definitive model of SKU to create license asset records. By default, when there is no definitive model, a workflow named **Normalize models: SKU record added in 'amInventModel'** is triggered to create a definitive model automatically. The created definitive model uses the Out-of-the-box model **Software License** as the parent model and the definitive model's name is identical to the model name provided in the SKU.

Using the "Linking license model and installation model to software counter" wizard

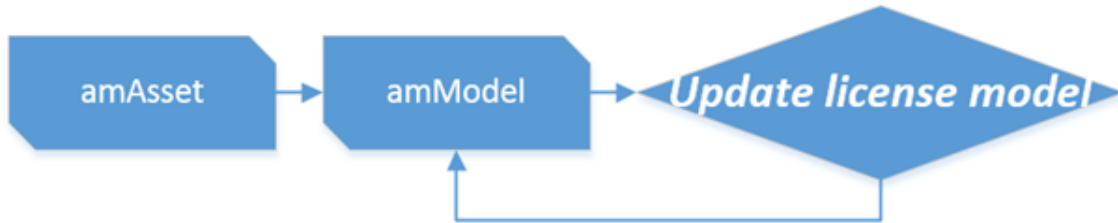


The **Linking license model and installation model to software counter** wizard is used to link license models and software installation models to software counters so that the corresponding licenses and installations can be taken into account by the SLO software counters.

To use this wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **Software counters**.
2. Select a counter in the list.
3. Click **License** or **Installation**. The wizard is opened.
4. The box in the upper area shows the models that are already linked to the counter.
5. The box in the lower area shows the models that can be linked to the counter.
6. You can use the filter to find specific models by clicking **Apply filter**.
7. Select one or more models in the lower box, and then click **Add**.
8. Click **Next**.
9. Click **Finish**.

Using the "Update existing licenses to use SLO Best Practice license model" wizard



The **Update existing licenses to use SLO Best Practice license model** wizard is used to update the license models of the existing licenses with those from the SLO Best Practice package, so the existing licenses can be taken into account by the SLO software counters.

To use this wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. From the main list, select the license models to be updated.
3. Enter or choose a target SLO license model.
4. If you want to continue on creating additional license models, select the **Loop on license models update** option.
5. Click **OK** (web client) or **Finish** (Windows client).

Health check for computers, software installations, and counters (web client)



The health check process helps you monitor the data integrity. To ensure the accuracy of the license calculation, you need to check the inventory data and counter settings using the health check process.

Note: This process is only available on the web client.

Health check widget

You can view the health check result by adding a widget named “Health check report” to the home page, as shown in the following figure.

Health check report				
Check item	Check rule	Unhealthy records	Rule identifier	Context
<i>Inventory data</i>				
	Computers with incomplete CPU information	333	286595	amComputer
	Software installations missing computer information	36	286599	amSoftInstall
	Virtual machines without a host relationship	138	286594	amComputer
	Virtual machines without virtualization technology	93	286596	amComputer
<i>Counter common check</i>				
	Counters (created by template) without link to license or installation models	4	286601	amSoftLicCounter
	Counters whose installation models are not used by any software installation	119	286602	amSoftLicCounter
	Counters without brand or company information	8	286600	amSoftLicCounter
<i>Utilization</i>				
	Computers not scanned in the past 90 days	64	286597	amComputer
	Software not used in the past 3 months	841	286598	amSoftInstall

You can click a check rule to drill down into a detailed widget, as shown in the following figure.

Health check report > Health check detail						
Identifier	IP name	Asset tag	IP address	CPU type	Physical CPU count	Core CPU count
127630	CPU000001	DKT001031	CPU000001	Celeron	0	0
127633	CPU000002	DKT001034	CPU000002	Celeron	0	0
127635	CPU000003	LAP001026	CPU000003	Centrino Sonoma	0	0
127650	CPU000004	LAP000001	CPU000004	Centrino Sonoma	0	0

By default, the detailed widget only shows the first 100 records. If you want to change this behavior, configure the **MaxRecords** parameter in the **Health check report** widget (the first widget). This setting applies to all health check rules. The range is 1 to 500 due to performance considerations.

Change parameters

MaxRecords	=	100
------------	---	-----

OK
Cancel

Managing health check rules

Besides out-of-the-box health check rules, you can add new check rules. To do this, open **Asset lifecycle -> Software asset management -> Manage health check item -> Edit check items and check rules**.

The screenshot shows a web interface for managing health check items. At the top, there is a table with columns: Name, Category, and Show in widget. The table contains three rows: 'Counter common check' (Software counter, Yes), 'Inventory data' (Inventory data, Yes), and 'Microsoft SQL Server' (Software counter, Yes). Below the table is a control bar with 'Display selections', '0 selected records', a checked 'Action on the selections in current page' checkbox, pagination (Page 1 of 1), and 'Total records: 4'. Below this is a form for editing the 'Inventory data' item, with fields for Name, Description, Category, and a code field containing 'HCL_INVENTORY'. A 'Show in widget' checkbox is checked. Below the form are buttons for '+ Add', 'Delete', 'Statistics...', and 'Export excel'. At the bottom, there is a table of check rules under the 'Inventory data' item, with columns for Name and Threshold. The table lists five rules, all with a threshold of 0.

Name	Threshold
Virtual machines without a host relationship	0
Computers with incomplete CPU information	0
Virtual machines without virtualization technology	0
Software installations missing computer information	0

When the **Show in widget** check item option is selected, all check rule that belongs to the check item will be shown in the widget. Otherwise, the widget will ignore the check item. There are several check rules under the check item. By clicking a check rule, you will see the definition of the check rule, as shown in the following figure.

The screenshot shows the 'Health check rule' definition interface. It has a title 'Health check rule' and two main sections: 'Health check rule' and 'AQL Query'. The 'Health check rule' section has fields for Name (Virtual machines without a host relationship), Description (Look for virtual machines which are missing the relationship with host), and Code (HCR_CPU_VMNOHOST). The 'AQL Query' section has fields for Columns (TcpIpHostName,AssetTag,TcpIpAddress), Condition (Virtual machines without a host link), and Threshold (0). At the bottom, there are buttons for Duplicate, Delete, Save, Cancel, and Back. On the right, there is a dropdown menu with 'Actions...' and 'Validate rule syntax' selected.

- The **Threshold** field of the check rule is used to control whether the check rule will be shown in the widget. If the number of matched records is greater than or equal to the value of the threshold, the result will be shown in the widget. Otherwise, the result will be ignored by the widget.
- The **Columns** field allows you to specify the fields you want to show in the detailed report. The context table is defined in **Condition**, which is an AQL query.
- The **Validate rule syntax** action is used to check the grammar of the rule.

Creating contracts using the "Create software contract from template" wizard

The SLO Best Practice package provides a wizard named **Create software contract from template** (sysSamBPContract) to help you define the contract details. The wizard loads the contract templates for the selected software suppliers, which are contained in the SLO Best Practice package.

The wizard will obtain terms and conditions from the contract template. If a document is attached to the contract template, the wizard will link the new contract created from the template to that document.

To create a license contract with this wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. On the **Choose a software contract you want to create** page, select the type of contract you want to create. There are two options.
 - **Create a software contract**: This option triggers the **Create a License Contract** (sysSamBPCreateLicenseContract) wizard.
 - **Create a maintenance contract**: This option triggers the **Create a Maintenance Contract** (sysSamBPCreateMaintContract) wizard.
3. Step for the web client: Click **Apply filter** if you select the **Create a maintenance contract** option.
4. Select a contract template from the list below.
5. Click **OK**.
6. Populate the pages of the wizard according to your requirements.
7. Click **Finish** to validate all parameters.
8. Click **OK**.

For more information about how to populate the contract details, refer to the Asset Manager Contracts guide.

Note: The contract templates are excluded from the **List of contract expenses** report.

Renewing contracts using the "Maintenance Contract Renewal" wizard

The **Maintenance Contract Renewal** wizard walks the user through the process of creating a contract to extend an existing contract that is about to expire.

To use this wizard, follow these steps.

1. Open **Asset lifecycle** -> **Vendor contract management** -> **User actions**.
2. Select the contracts to renew and click **OK**.
3. Populate the contract details and click **Next**.
4. From the existing contract, select the assets that you want to add to the new contract, and then click **Move to the new maintenance contract**. You also have the chance to review the assets and remove those you do not want by clicking **Remove from the new maintenance contract**.
5. Click **Next**.
6. Select additional assets that you want to add to the new contract, and then click **Move to the new maintenance contract**.
7. Click **Next**.
8. Review the details of the new contract and click **Finish** to run the wizard.
9. If you have selected several contracts to renew, repeat the process above to renew the other contracts.

License version update according to maintenance contract

This workflow will trigger the common rule for the different software suppliers supported by the SLO Best Practice package. If a license is in a maintenance contract, the user is authorized to upgrade the application covered by the maintenance contract to the latest released versions; if a license is in a maintenance contract for a period of time, the user is authorized to upgrade the application to the latest released versions before the maintenance contract ends.

This workflow periodically checks the latest application version that the purchased license (which associates with a maintenance contract) gives entitlements to, and then updates the license model to the latest version within the contract entitlement.

For example, if an Microsoft Office Standard 2003 license was purchased in 2004 with a three years' software assurance from 2004 to 2007; and if the software assurance was not renewed for

the license, this license will allow the user to install Office Standard 2007. Therefore, the workflow will upgrade the license to Office Standard 2007 as it is entitled by the initially purchased license. The software counters will count the licenses according to their actual entitlements and the downgrade right which can be retrieved from the **View Linked Counters** wizard, and will roll down the right in excess of the latest version to the previous one.

The historical release dates of each software title are stored as values of the corresponding itemized list in the SLO Best Practice package. These itemized lists can be identified by the records whose **Identifier** follows this pattern:

```
amSAM4<Vendor Name><Software Name><Edition>_US
```

You can customize the provided release dates with dates specific to the location where the software licenses were purchased. You can also create new itemized lists to extend this workflow to licenses that are not covered by the SLO Best Practice package.

- The proper working of this workflow requires that the **BarCode** of your license model meets a certain criteria. Namely, the barcode should contain the string populated in the **Description** field of the itemized list that covers the concerned model.
- If you are not using the SLO Best Practice license models, make sure that your barcode meets this criteria.
- You should also update the corresponding itemized list value for that model. The values are made up of two parts which are separated by colon (for example, SAM4MS_OFFICE_2007_ENT_LIC:2006/11/30). Replace the string before the colon with the actual barcode of the license model.
- Make sure that you have activated the historization on the **amAsset.IModelID** field to track the license update footprint.
- This workflow only applies to software licenses whose **Assignment** is **In use** or **In stock**.
- You can choose to deactivate this workflow if you want to avoid changing your license models. However, you will need to check that the workflow is still deactivated after each new import of the package.

Automatic removal of invalid links between license models and servers

The **Automatic removal of invalid links between license models and servers** (Reference: sysSAM4REMOVELINK_WK) workflow is launched automatically to remove the link between Oracle/SQL/VMware Server license models and servers when the server has been uninstalled or replaced by another version. In the latter circumstance, the user has to rebind the license models and servers according to the new installation using the **Link / unlink servers with license editions** wizard.

Cleaning old calculation result

Each time you click **Calculate** on the detail page of the counter, a record is created in the **Rights / Utilizations count table** (amRightsUsesCount) for each line displayed in the **Results** tab of the counter detail.

The **Clean old calculation result** workflow periodically deletes old records (those were created more than 180 days ago) in the **Rights / Utilizations count** table to prevent the table from getting to large.

Tip: You can configure the days by updating the following line in the **Clean old calculation result action** script.

```
lDays = -180
```

Remember to make changes to the workflow and scripts duplicated from the **Clean old calculation result** workflow to avoid having your changes overridden by future installations.

Note: The workflow is disabled by default.

You can enable it by setting a valid **End** (SQL: dEnd) date.

Cleaning old missing installations

The **Clean old missing installations** workflow periodically deletes software installation records that have been undiscoverable by HP Discovery and Dependency Mapping Inventory on their host computers for certain days (by default it is 180 days).

Tip: You can configure the days by updating the following line in the **Clean old missing installations action** script.

```
lDays = -180
```

Remember to make changes on workflow and scripts duplicated from the **Clean old missing installations** workflow to avoid having your changes overridden by future installations.

Note: The workflow is disabled by default.

You can enable it by setting a valid **End** (SQL: dEnd) date.

Archival

A workflow named **SAM BP Archival** is used to archive all the records that have not been modified in more than 2 years. To enable this workflow, open Asset Manager Application Designer, click the **Enable archival** option on the **Database** menu. After this option is enabled, a new connection (for example, AMDemo<version>en - with archival) is created. To run the workflow, you need to use

this connection in the Automated Process Manager. For more information about Asset Manager archival, see the Asset Manager Administration guide, chapter Archival.

Using the "Resolve duplication with DDMI models" wizard

By default, the SLO Best Practice package installation program inserts installation models at the root of the Asset Manager model tree if no model previously created by DDMI is present in the database. Later, DDMI may insert another model with the same name in a different location of the model tree (depending on the model hierarchy HP Connect-It will apply for the DDMI models), which causes duplicated models.

Caution: If the SLO Best Practice package inserts a model whose name coincides with an existing model, no duplication will occur. However, the SLO Best Practice package will overwrite the existing model.

The **Resolve duplication with DDMI models** wizard aims to resolve such duplications by removing the SLO Best Practice installation models (at the root of the model tree) and have the **Barcode** of the DDMI models updated by that of the SLO Best Practice models, which allows the DDMI model to be taken into account by Asset Manager counters.

Note: We recommend that you run this wizard after you import DDMI data.

To use the wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**. The upper list displays the SLO Best Practice installation models which have duplicated DDMI models.

Note: If the upper list on the first page is empty, there is no duplication with the SLO Best Practice installation models.

2. If all the SLO Best Practice installation models in the upper list have only one duplicated model, or all the models with multiple duplicated models have been proposed a proper replacement model, you can directly remove duplications for all of them because no manual intervention is required. To do this, click **Select all** and go to step 8 (Windows client) or step 9 (Web client).
3. In the upper list, select one of the SLO Best Practice installation models which meet the following criteria:
 - It has multiple duplicated DDMI models (with an asterisk (*) at the beginning).
 - The default model proposed by the wizard to replace your SLO Best Practice model is not what you need.
4. Click **Display duplicated DDMI models** to display all the duplicated models in the lower list.

5. In the lower list, select a desired model and click **Update target model**.
6. Repeat step 3 to 5 until all duplicated SLO Best Practice models in the upper list are proposed with proper models.
7. Click **Select all**.
8. (Windows client) Click **Finish**.
9. Click **OK**.

Creating licenses with the "Create software license" wizard

Caution: The **Create software license** wizard can be only used to create software licenses whose license models are contained in the SLO Best Practice package. If you are not using those license models, you can create licenses using the functionality provided with the SAM module.

For further details, see the Asset Manager Software Assets guide, chapter Software license management, Section Create a software license.

To create a license using the **Create software license** wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. Select a license model from the **Select license model** list.
3. Click **Next**.
4. Populate the details of the license according to your requirements.

Caution: If you want to link an existing license/ maintenance contract to the license, the contract needs to meet the following criteria:

- The contract's **Company** field must be populated.
- The contract's company must have a **Brand** which is associated with the license model selected in Step 2.

Otherwise, the contract will not be available in the proposed list of contracts.

5. Click **Next**.
6. Click **Finish** to exit the wizard.

Caution: If you have existing license records in the Asset Manager database, you may consider modifying these licenses and link them to the models provided by the SLO Best Practice package. Hence, your licenses will be taken into account by the software counters and you will be able to create future licenses using the SLO Best Practice package wizards.

Using the "Merge inventory computers to procured ones" wizard

In the context of the **Merge inventory computers to procured ones** wizard, inventoried computers are referred to those computers whose **Last scan** field or the link to the **uCMDB identifier** field of the **Portfolio items** table is not empty.

Other computers are deemed to be procured computers.

To use this wizard, follow these steps.

1. Open **Portfolio management** -> **Asset configurations** -> **IT equipment** -> **User actions**.
2. From the source computer list, select a computer for which you want to merge the discovered details to a procured computer.
3. From the destination computer list, select a computer to which you want to merge the details of the computer selected in the list above.
4. Click **Merge**. One line is added in the **Computers to be merged** list with some details of both computers.

Caution: The Nature of the two merged records must be the same. Otherwise an error will be displayed and the merge will fail.

5. Repeat step 2 to 4 to merge more computer records.

You can also select records in the **Computers to be merged** list and click **Remove** not to merge details for the selected records.

Note: The **Apply default field and link template** option indicates that a pre-defined list of fields and links will be proposed in the **Fields and links to be merged** list of the following page.

You still have the opportunity to modify this list, though.

6. Click **Next** to proceed to the next page, where you can select the fields or links for which to merge the values from the source computer to the destination computer.
7. Select fields or links in the available field or link list, and click **Add** to add them to the list

below.

If you change your mind and do not want to merge values for some fields or links, select the fields or links in the fields or links to be merged list and click **Remove**.

8. After you select all the fields or links to be merged, review the list and pay close attention to the **Type** field.

Note: You can select the **Save as default template** box to save the list as a template so that you can apply the template next time.

9. Click **Finish** to run the wizard.

Caution: Clicking **Finish** in this step will cause the following actions.

- The inventoried computers will be deleted after the merge.
- Only the values of the fields and links selected are merged from the inventoried computers to the procured ones.
- For those fields and links that are not present in the **Fields and links to be merged** list, the value for the procured computer will be kept.

Phase 2. Counter configuration

This section describes the steps needed for counter configuration.

Using the "Link/Unlink Microsoft SQL Server license type to computer" wizard

The **Link/Unlink Microsoft SQL Server license type to computer** wizard is only available to Microsoft SQL Server currently. It is used to link the license type to the computer. The license model of Microsoft SQL Server has three license types, **By server**, **By CPU**, and **By CPU core**, and their license rules are different. Asset Manager needs to select the license type to pre-calculate the consumed license points on the computer. By using this wizard, users can link or unlink the license types to the computers.

The following steps enables you to link or unlink a license type to one or more computers.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice** -> **Link/Unlink Microsoft SQL Server license type to computer**.
2. Select an option according to your requirements:

- Link Microsoft SQL Server license type to computer
 - Delete the link between Microsoft SQL Server license type and computer
3. Click **OK**.
 4. Select the computer from the upper list and this list can be filtered by **Model name** or **IP address**.
 5. Select the license type from the lower list, there are three types: **By CPU**, **By CPU cores**, and **By server**.
 6. Select the **Loop on linking more** or **Loop on unlinking more** option if you want to continue on creating or deleting more links.
 7. (Windows client) Click **Finish**.
 8. Click **OK**.

Using the "Link / unlink servers to license editions" wizard

Since different editions of some software products (for instance, Oracle Database and SQL Server) have the same footprint on the server, which prevents HP Discovery and Dependency Mapping Inventory from distinguishing them and automatically linking them to the corresponding license models, you need to link their license models to the servers manually. This operation can be automated by using the Link / unlink servers to license editions" wizard this wizard which will propose matching servers with respect to the CPU count restrictions for different editions of software.

For example, Oracle Database Standard Edition One, Standard Edition and Enterprise Editions have different restrictions on the CPU counts of the database servers. The Oracle Database Standard One Edition license model only applies to servers with one or two physical CPU counts.

Note: This wizard is installed only when you choose to import license model during install process. Otherwise, this wizard cannot be imported into Asset Manager.

The following steps enables you to link or unlink a license model with one or more servers.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. Select an option according to your requirements:
 - Link servers to license editions
 - Delete the link between license models and servers

3. Click **OK**.
4. Select a license model from the upper list.
5. Click **Retrieve matching servers**.
6. From the lower list, select one or more servers with which you want to link/unlink the license models selected in the upper list.

Tip: The lower list only lists the servers that meet the CPU count requirement of the selected license model. For example, if you select the Oracle10g Database 10 Standard One Edition license, only servers with one or two CPUs are listed.

7. Select the **Loop on linking more** or **Loop on unlinking more** option if you want to continue on creating or deleting more links.
8. (Windows client) Click **Finish**.
9. Click **OK**.

The automation mechanism of the SLO Best Practice package consists of several workflows. These workflows are launched periodically by Asset Manager Automated Process Manager to improve the performance of the software counters and dashboards, ensure that the software application is updated to the latest version authorized by the maintenance contract and remove the invalid links caused by uninstallation or upgrade.

By default, these workflows are run weekly. Real-time operation can be simulated by increasing the frequency.

Note: The SLO Best Practice package workflows are disabled by default. You need to manually enable them each time after installing the package.

The workflows are enabled by setting valid **Start** (dStart) and **End** (dEnd) dates.

Some of the workflows are inter-dependent for that one may rely on the result of another to ensure its accuracy. Therefore, the following sequence should be respected when using the automatic mechanism.

- Run the pre-calculation workflows.
- Run the software counters batch calculation workflow.
- View the dashboard.

Pre-calculation workflows

The SLO Best Practice package comes with the following pre-calculation workflows along with their complex licensing rules. These workflows are executed periodically to count the license points

of the installed software, thus ensuring that the license points of installations are always up-to-date. Therefore, you can immediately view the number of installations without having to wait for the calculation process to be carried out each time when requested.

Microsoft software counter pre-calculate workflow (Reference: sysSAM4MS_MS_WK).

This workflow carries out the following activities:

- It calls the **Mobile Device Counter Action (sysSAM4MS_MOB_DEV_CNT_Action)** to pre-calculate the software installations of Microsoft Office, Project and Visio by taking both fixed and portable devices into consideration.
- It calls the **Windows server ent Count action (sysSAM4MS_WIN_ENT_CNT_Action)** to pre-calculate the Microsoft Windows Server Enterprise Edition installation count.
- It calls the **SQL server ent cpu count action (sysSAM4MS_SQL_ENT_CNT_Action)** to pre-calculate the installation count of Microsoft SQL Server Enterprise Edition licensed per CPU.
- It calls the **Populate install no. for SQL Server (per core license model) (sysSAM4MS_SQL_ByCore_Action)** to pre-calculate the installation count of Microsoft SQL Server Enterprise Edition and Standard Edition which are licensed per CPU core.

IBM Installation pre-count (Reference: sysSAM4IBM_CNT_WK).

This workflow carries out the following activities:

It calls the **IBM Counter Action (sysSAM4IBM_CNT_Action)** to pre-calculate the installation count of IBM software products.

The workflow calculates the installation points for full-capacity and sub-capacity and stores the results in the **Usage rate** (SQL name: **dUtilization**) field and **No of points** (SQL name: **IUseCount**) field respectively in the **Software installations or utilizations** (SQL name: **amSoftInstall**) table.

Oracle pre-calculate workflow

Oracle officially uses the License Management Services (LMS) tool for Oracle Database/Option audit. However, LMS can only collect information from servers that are running Oracle database instances/options. Yet, there might be some installed database instances/options, which are not running and could lead to potential license overspending. Therefore, the SLO Best Practice package provides two sets of database instance counters to check the compliance, one of which counts consumed licenses based on physical installations (traditional mechanism) and the other counts consumed licenses based on running database instances (data stored in the **amMonitoredApp** table). For more information about the Oracle pre-calculate workflow, refer to the *Managing Oracle Compliance With AM.pdf* white paper that is shipped with the SLO Best Practice package.

HP AM pre-count (sysSAM4HP_AM)

This workflow facilitates the calculation of the Asset Manager Floating User counter. It regularly counts the number of concurrent Floating users connected to Asset Manager and updates the **Field1** field of a user named **Floating** with the maximum number of concurrent **Floating** users for the current month.

The user **Floating** is created by the workflow with the **Status** of the user account field set to **Disabled**, therefore, it will not impact the number of **Named** or **Floating** accounts of your production environment.

With this workflow, you can monitor your Asset Manager usage because the values of **Field1** are historized in the **amFloatingAccessNumber** itemized list.

The itemized list **amFloatingAccessNumber** is created upfront by the workflow when it detects that the last time the workflow is executed is in a prior month than the current month.

In other words, if the first time the **HP AM pre-count** workflow is executed is still within the timeframe of the current calendar month, you may not find the itemized list in the **amItemizedList** table.

The result returned by the pre-calculation workflows will be used to generate the software compliance statistics (when you click **Calculate** to refresh the software counter result).

Software counters batch calculation

The functionality of the **Software counters batch calculation** (Reference: **sysSAM4CALCULATE_WK**) workflow is equivalent to clicking **Calculate** for each software counter in batch. It obtains the results returned by pre-calculation workflows and generates the software compliance statistics. With this workflow:

- User can immediately view the latest software license usage statistics (without having to click the **Calculate** button for each software counter) upon opening the software counters screen.
- Dashboard can be generated efficiently based on the latest software counter results.

Dashboard generation

Dashboard displays the associated statistics, and the statistics uses the data obtained from the result returned by the **Software counters batch calculation** workflow and generates the chart with the function introduced in Technical Guide. Therefore, dashboards can be rendered quickly upon requested.

Because the the pre-calculation workflows and **Software counters batch calculation** workflow are run weekly, and the system relies on the results of these workflows to render the dashboards; therefore, if you want to view the dashboard within one week after installing the SLO Best Practice package, you have to manually execute first the three pre-calculation workflows then the **Software counters batch calculation** workflow.

Counters for Oracle products

For Oracle Database products including Database, Options, and Management Packs, SLO Best Practice package provides two sets of counters to calculate consumption points. By default, only one set is activated and only the result of that set of counters will be included in the compliance reports. Customer can switch between these two sets by setting the **Internal** field in **amSoftLicCounter**.

For Oracle Database

SLO Best Practice package provides two ways to count the number of licenses consumed by Oracle Database. By default, the running-instance-based counters are activated.

- Installation-based counter: The counter only considers physical installations on the machine. These physical installations are saved in the **amSoftInstall** table.
- Running-instance-based counter: The counter only considers running instances on the machine. They are saved in the **amMonitoredApp** table.

For Oracle Database Options/Management Packs:

Oracle offers a range of options that extend the power of Oracle Database Enterprise Edition to meet customers' specific requirements. To allow customers to understand how options are used in production environment, SLO Best Practice package provides two sets of counters (installation-based and in-use-based) to calculate consumption points. By default, the installation-based counters are used.

- Installation-based counter: The counter considers the Options that are installed on the machine, no matter they are used or not.
- In-use-based counter: The counter considers the Options that are currently being used or were previously used within a timeframe, say 366 days. You can customize the timeframe value.

How to activate one set of counters

To switch between two sets of counters, you can open the **Software counters** screen and filter out the counters. Then, check/uncheck the **Do not include in the compliance reports** checkbox to exclude/include the result in the compliance report.

Search criteria

Oracle Database

- Installation-based counter: Name LIKE "Oracle Database%Edition"
- Running-instance-based counter: Name LIKE Oracle Database%(Running Instance)

Oracle Database Options/Management Packs

- Installation-based counter: Name LIKE Oracle%(Active)
- In-use-based counter: Name LIKE Oracle%(In use)

How to change the timeframe for past usage of Options/Management Packs

By default, the Options/Management Packs that are used within 366 days need to be licensed. If you want to change the default value of the timeframe, you can perform the following operations for widgets and counters.

For the **Utilization of Oracle Database Options/Mgmt. Packs** widget, find it in **Administration > Home page widgets**. Then, change the **PastDays** parameter as shown in the following figure.

The screenshot displays the configuration interface for a widget. A modal dialog titled "Configuration" is open, showing the following details:

- Name:** Utilization of Oracle Database Options/Mgmt. Pac
- Type:** [Icon]
- Options:** Legend
- Description:** [Empty field]
- Preview:** Utilization of Oracle Data
- Configuration Dialog:**
 - Parametric:**
 - Type: Number
 - Name: PastDays
 - Default value: 366
 - Widget settings:**
 - Widget name: Oracle Database Options/Mgmt. Packs with the same status
 - UsageStatus: C002
 - UsageStatusClause: C003

The background shows a pie chart with the following data series:

Category	Count
CURRENT_USAGE	37
NO_USAGE	[Not specified]
PAST_USAGE (<=366 Days)	8
PAST_USAGE (>366 Days)	6
PAST_USAGE (>366 Days)	6

For Options/Management Packs in-use-based counters, update the installation query **Scope of the installations or utilizations to be counted** to change the timeframe, as shown in the following figure.

<input type="checkbox"/>	Name	Rights count	Entitlements count	Installations/Utilizations count	Unused installation	Compliance	Cost For Com
<input type="checkbox"/>	Oracle DB option: Multitenant (In use)	0	0	8	0	-8	US\$0
<input type="checkbox"/>	Oracle DB option: OLAP (In use)	100	0	33	0	67	US\$-1541...
<input type="checkbox"/>	Oracle DB option: Partitioning(User) (In use)	0	0	30	0	-30	US\$0

Display selections 0 selected records Action on the selections in current page Page 13 of 139 Total records: 2,767 20 records per page

General Rights **Installations/Utilizations** Results Consolidation Node analysis Cluster analysis History Documents Workflow

Criteria
 Installation/Utilization counter context: Monitored SW Component (amMonSWComp)
 * Scope of the installations or utilizations to be counted: Oracle DB option: OLAP - In-use instances

* Name: Oracle DB option: OLAP - In-use instances
 * Table: Monitored SW Component (amMonSWComp) * SQL name: SAM4ORA_OPT_OL_ENT_MON_INUSE

Query
 MonApp.MonParentPortfolio.seAssignment=0 AND MonApp.bMissing=0 AND MonApp.seLicenseExcluding=0 AND seLicenseExcluding=0 AND (bMissing=0 AND seStatus=3) OR DaysDiff(dtLastSample, dtLastAccess) < 365 AND IModelId IN (SELECT Software.IModelId FROM amSoftLicCounter WHERE Code = 'SAM4ORA_OPT_OL_ENT_MON_INUSE')

Phase 3. Calculation

This section describes the steps needed for calculation.

Manually checking software compliance for the specified counter

You can check the compliance summary in different ways:

- The **Software counters** table (**amSoftLicCounter**), **General** and **Results** tabs.
- The **View linked counters** wizard (**sysSamSoftLicLinkedCount**), which can be accessed from the **Software counters** table by:
 - Selecting **Display counters linked by license transfers** from the **Actions...** drop-down list in the detail of the software counter (Web client).
 - Clicking the **Linked cntrs** button on the right-hand side of the counter details (Windows client). The first screen that appears provides a summary of the linked counters, rights and installations/utilizations count, and consolidated compliance calculation.

To access a high level summary of software compliance for a software supplier, use the SLO Best Practice dashboard.

Updating the results of counters and determining consolidated compliance

To update the results of counters:

1. Open **Asset lifecycle** -> **Software asset management** -> **Software counters**.
2. Select the counter to update.
3. Update the counter results by:
 - Selecting **Recalculate the rights and the installations for the selected counter** from the **Actions...** drop-down list in the detail of the software counter (Web client).
 - Clicking the **Calculate** button on the right-hand side of the counter details (Windows client).

Note: Doing this starts the action **Refresh the software counter** (**sysCoreSoftLicCountCalc**). This is seamless for the user.

Tip: Software counter calculation can be performed automatically by a scheduled workflow that triggers the action **Calculate all Software installation** (**BstSamComputeAllLicAndInstall**) that will regularly refresh the software counter results. See the *Software Assets* guide for more details.

The results of the software counter calculations are stored in the **Rights/Utilizations count** (**amRightUsesCount**) table, which allows some audits (you can track historical records of the software counter calculations). However, the records need to be cleaned by a workflow to avoid an excessive number of records in this table.

4. Examine the results on the **General** and **Results** tabs.

Using the "Change the counter Group by links" wizard

This wizard allows you to change the group by links in software counter details: the group by for counters, rights, entitlements and installations/utilizations.

This wizard is the only way for updating the group by links for counters editable using the wizards (**bAutomated=1**) which are otherwise read only.

Note: After a counter is updated by this wizard, the **Nature** (SQL name: **Type**) field of the counter is populated with the value **Updated by wizard**.

Do not change this value because it is used to protect the counter group by links from being updated inadvertently by installation of future versions. However, it will not prevent the counter from being modified by this wizard again.

To use the wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. Select the counters for which to update the group by links (you can apply one or more filters to narrow down your selections):

Note: You can select multiple counters to process in a batch, but the following columns of the selected counters must have the same value:

- **Counter group by**
- **Rights counter context**
- **Entitlements counter context**
- **Installations/Utilizations counter context**

Note: Only the counter for the most recent version of a software application is available in the list even if there are counters for earlier versions of the same application, provided that these early versions are associated with the more recent version via the **Counter for the previous version** link.

In this way, these counters can be updated with consistent group by links in a batch.

3. Select a new value in the **Change the Group by for selected counters to** list.
4. Click **Next**. The next page allows you to change the group by link for rights, entitlements, and installations/utilizations.
5. Select one or more counters from the upper list.
6. Select a new value for the group by link for rights, entitlements, and installations/utilizations respectively. If you want to handle more counters, select the **Loop on changing group by** box.
7. Click **Finish**.
8. (Windows client) Click **OK**.

Using the "Propagate license type from counter to license models" wizard

This wizard allows you to propagate the license type for a counter to the license models that will afterward be able to be included in the counters definition.

By propagating license type using this wizard, it ensures that the counter and associated license models have consistent license type.

To use the wizard, follow these steps.

1. Open **Asset lifecycle** -> **Software asset management** -> **SLO Best Practice**.
2. Select a software counter whose license type will be propagated to the license models selected below. You can apply the filter to narrow down your selections.
3. Select one or more license models to which to apply the license type of the selected counter.
4. Click **Next**.
5. Click **Finish**.
6. (Windows client) Click **OK**.

Phase 4. Compliance widgets and reports

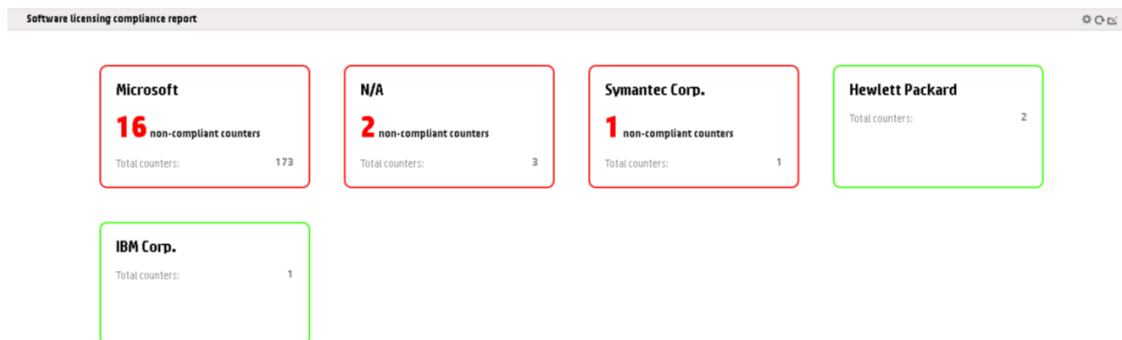
SLO Best Practice package provides several ways to view compliance result: SLO widget, business homepage and dashboard. For some complex licensing model, SLO provides compliance analysis result to help customer understand the inside of licensing calculation.

Adding SLO widget on the home page (web client)

A SLO widget is used to show the software compliance result at three levels: supplier, product and counter.

By clicking the **Add widget** on the home page of the web client, you can add a widget named **Software licensing compliance report**.

Compliance summary at supplier level



The cards have 3 colors: red, yellow and green.

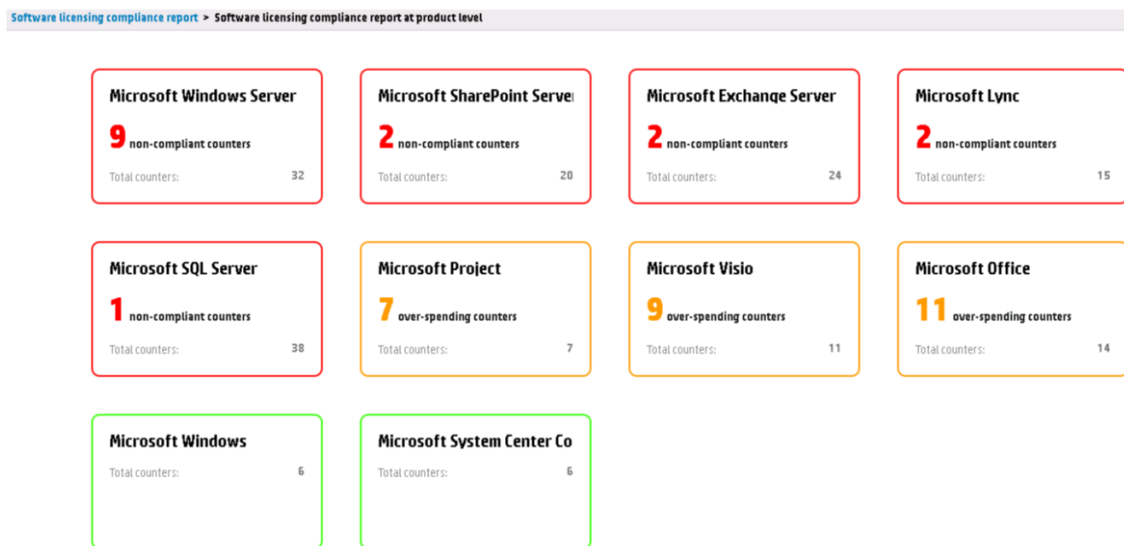
- The red card indicates that some counters of this supplier are not compliant. The SLO widget does not show the number of counters which are over-spent.

For example: Supplier Microsoft has a total of 173 counters, 16 are not compliant.

- The yellow card means that all counters of this supplier are compliant but some counters have surplus licenses. Customers can do optimization to save cost.
- The green card means that all counters of this supplier are compliant and no over-spending cost (all installation have been covered and no surplus license).

Compliance summary at product level

By clicking the supplier card, for example, Microsoft card, the SLO widget will drill down into the product level as shown below. You can view the summary of all products under the selected supplier.



Compliance summary at supplier level

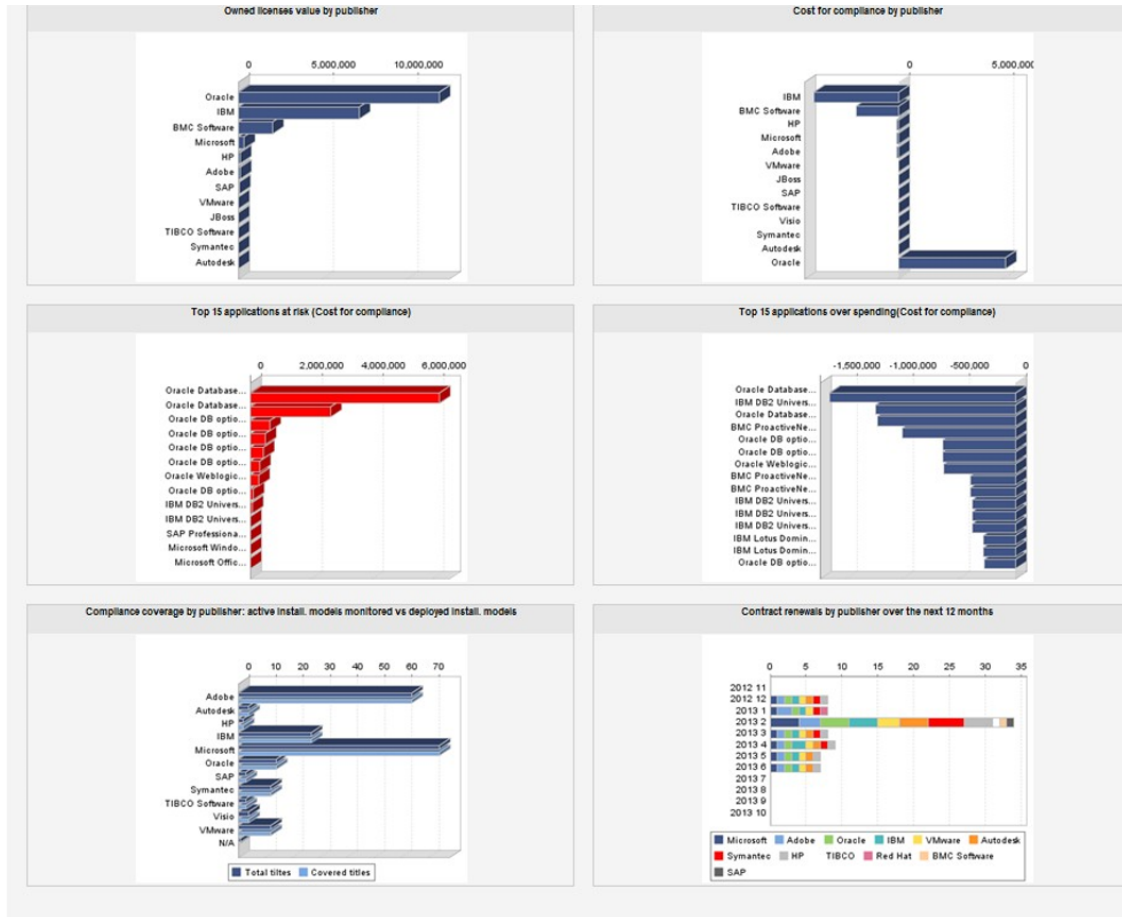
To view the detailed information about the counter, click the product card, for example, Microsoft Windows Server card, the list of counters will show all related counters and the compliance result.

Software licensing compliance report > ... > Software licensing compliance report at counter level

Name	License Metrics	Effective Licenses	Licenses Deployed	License Vs. Deployment	License Upgrade	License Downgrade	Effective Licensing	Licenses Required	Compliance Cost (USD)	Unused D
Microsoft Windows Server 20R2 Device CAL	Device CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2012 User CAL	User CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2012 Std	Processor License	3	12	-9	0	0	-9	9	12000	0
Microsoft Windows Server 2012 R2 User ...	User CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2012 R2 Std	Processor License	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2012 R2 Datac...	Processor License	0	1	-1	0	0	-1	1	N/A	0
Microsoft Windows Server 2012 Device CAL	Device CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2012 Datacent...	Processor License	1	44	-43	0	0	-43	43	217150	0
Microsoft Windows Server 2008 Web	Server License	1	0	1	0	0	1	0	0	0
Microsoft Windows Server 2008 User CAL	User CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2008 Std	Server License	3	19	-16	0	0	-16	16	18933.33	0
Microsoft Windows Server 2008 R2 Web	Server License	1	0	1	0	0	1	0	0	0
Microsoft Windows Server 2008 R2 User ...	User CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2008 R2 Std	Server License	3	11	-8	0	0	-8	8	9466.67	0
Microsoft Windows Server 2008 R2 Ent	Server License	6	43	-37	0	0	-37	37	113836.67	0
Microsoft Windows Server 2008 R2 Devic...	Device CAL	0	0	0	0	0	0	N/A	0	
Microsoft Windows Server 2008 R2 Datac...	Processor License	6	0	6	0	0	2	0	0	

Using the business homepage (web client)

The business homepage contains 6 general charts and links to the dashboard and external resources of licensing rules. To visit the business homepage, open **Asset lifecycle -> Software asset management -> SLO Best Practice**.



Useful links

Software Compliance Dashboards

- [Microsoft SAM Dashboard](#)
- [Microsoft SAM Dashboard \(2\)](#)
- [Adobe SAM Dashboard](#)
- [Adobe SAM Dashboard \(2\)](#)
- [Oracle SAM Dashboard](#)

Using the SLO Best Practice dashboard

For each software supplier, the SLO dashboard presents a high-level summary of:

- Software compliance status of all software titles from the software publisher (by product line)
- The number of maintenance licenses that need renewal within the specified timeframe

Interpreting SLO Best Practice Dashboard

The default dashboard displays a pane with summary statistics for **license compliance by product line plus the statistics for software license renewal**.

To visit the dashboard, open **Asset lifecycle -> Software asset management -> SLO Best Practice/ Dashboard**.



Interpreting license compliance statistics

For each product line, the license compliance dashboard statistics shows a breakdown of licensing and installation figures by software edition. These are calculated and displayed by scripted statistics (one per product line, listed in the **Statistics** screen.)

The statistics are categorized and color-coded into the following categories, if applicable:

- At risk (when the number of installations for a product is greater than the total number of license rights purchased for that product)
- Overspending (when the number of installations for a product is less than the total number of license rights purchased for that product)
- Number of licenses
- Number of software installations/utilizations

To drill down on any statistic, click on the corresponding colored bar. This launches the following detail screen (Windows client) or list screen (Web client), for the software titles in question (excluding the **<Software Vendor> License Software Assurance renewals** dashboard item):

- At risk: drill-down launches the **Software counters (amSoftLicCounter)** screen
- Overspending: drill-down launches the **Software counters (amSoftLicCounter)** screen
- Number of licenses: drill-down launches the **Portfolio items (amPortfolio)** screen and displays the license records taken into account by the software counter
- Number of software installations/utilizations: drill-down launches the **Software installations or utilizations (amSoftInstall)** screen and displays the software installation records taken into account by the software counter.

Note: Because of the special licensing rule of some software titles (Windows Server Enterprise Edition for example), the number of installations displayed on the dashboard, which is a normalized result, may be different from the number of installation records in the drill-down.

Tip: To modify the scripts underlying any of these statistics, use the **Administration/Statistics** link on the navigation bar.

Using the SLO Best Practice Crystal Reports

The SLO Best Practice package imports three predefined reports to help you understand software contract and license costs, as well as identifying the unused software installations. This can help you make informed decision on software budget forecast and solving software compliance issues.

These reports are available under the following link on the navigation bar:

Asset lifecycle -> Software asset management -> SLO Best Practice -> Reports.

Caution: To display Crystal Reports within the Asset Manager Web client correctly, you need to access the Web client using URL with domain name instead of IP address.

- List of contract expenses

This report lists expenses for license contracts from the specified software vendor, sorted by contract **Reference** (ref).

Caution: Caution: This report does not take into account the contract templates delivered with the SLO Best Practice package, which are used as template to create actual contracts only.

- List of license expenses

This report lists license expenses for software titles of the specified software vendor that are in the scope of the SLO Best Practice package, sorted by license model **Name** (Name).

- List of unused software installations

This report shows all installations not used for a specified period of time for those software titles that are in the scope of the SLO Best Practice package, sorted by license model **Name** (Name).

- List of licenses under contract

This report lists the license assets (including quantities and expense information) related to specified contracts.

- IBM PVU report

This is only available when you select vendor IBM (ILMT based) during installation SLO package. Please refer installation guide to learn how to import reports and show report on web client.

Using compliance analysis result

Compliance analysis result helps you understand how the license points are consumed per node or per cluster. It works only for those counters with the option **Rely on compliance analysis result** checked. For example, Microsoft Windows server, Microsoft SQL database, Oracle Database, Oracle WebLogic.

For more information about the technical details of the analysis result tables, see *Technical Guide > Appendix 1. Data model and definition > Software counter data model > Analysis result tables for consumption details*.

How to use compliance analysis result to help analysis

1. Open the software counters screen and select the counter with the **Relies on compliance analysis table** option, the following two tabs show the compliance analysis results.
 - The **Node analysis** tab shows the license consumption (covered by software counter) per node.
 - The **Cluster analysis** tab shows license consumption (covered by software counter) per cluster.

Note: If the cluster is an infrastructure cluster, only standalone nodes are shown on the **Node analysis** tab and the nodes in the cluster are shown on the **Cluster analysis** tab. If the cluster is not an infrastructure cluster, all nodes are shown on the **Node analysis** tab and no cluster information is shown on the **Cluster analysis** tab.

<input type="checkbox"/>	Name	Rights co	Entitlem	Installati	Unused ir	Complian	Cost For
<input type="checkbox"/>	Oracle Database Enterprise Edition	0	0	0	0	0	US\$0
<input type="checkbox"/>	Oracle Weblogic Server Suite Edition	0	0	0	0	0	US\$0

Display selections 0 selected records Action on the selections in current page Page 4 of 14 Total records: 278 20 records per page

General | Rights | Installations/Utilizations | Results | Consolidation | **Node analysis** | Cluster analysis | History | Documents | Workflow

Statistics... Export excel

Node

Node	Calculation method	Factor value	Processor core count	Processor count	Consumed points
CPU000269		0.5	24	0	12
CPU000272		1	16	0	16
Demo computer 14 3		1	2	0	2
CK IBM PHYSVR 01		1	4	0	4

- Select one record on the **Node analysis** tab, for example, “CK IBM PHYSVR01”. You can view the detailed information of the node and calculation on the **Node compliance analysis** tab.

The detailed information of the node including factor value, processor number, consumed points and log information is on the top of the page.

The detailed information of the calculation is in the **Remark** box, it explains how Asset Manager acquires the license consumption.

Node compliance analysis | Installation analysis

Software counter: [Oracle Database Enterprise Edition](#) Node: [CK IBM PHYSVR 01](#)

Processor core count: 4 Processor count: 0

Factor value: 1 Tier value:

Consumed points: 4 Can be aggregated

Calculation method:

Remark:

```

Licensing per core...
Covered VMs: 405396,405402,405407
Soft exists on LPAR, populate core count on LPAR.
0 cores on 0 dedicated LPARs(Has concerned soft installed).
2 cores can be donated from 1 shared dedicated LPARs(has no concerned soft installed).
3 cores on 1 shared LPARs in pool(#1), pool capacity is 3.
To be licensed core count in pool(#1): Min(Core count in LPAR on pool, Pool capacity)=Min(3, 3)=3
3 cores on 2 shared LPARs in pool(#0), pool capacity is 5.
To be licensed core count in pool(#0): Min(Core count in LPAR on pool, Pool capacity + Donating capacity)=Min(3, 5+2)=3
Total core count to be licensed in all shared pools:6
Core count on VMs(VMs' ComputerId Lists:405396,405402,405407) is 6.
Physical core count on physical computer(ComputerId=405383) is 4.
Choose the less one: 4.
    
```

- Click the **Installation analysis** tab. It will list all software installations covered by the software counter on the given node.

Node compliance analysis **Installation analysis**

Software installations

Statistics... Export excel

Filter

« « « » » Total records: 3

<input type="checkbox"/>	Model(SoftInstall)	IT equipment(SoftInstall)	Installation folder(SoftInstall)
<input type="checkbox"/>	Oracle Database 10g Ent	LPAR (SAM400003387:002584)	
<input type="checkbox"/>	Oracle Database 10g Ent	LPAR (SAM400003388:002585)	
<input type="checkbox"/>	Oracle Database 10g Ent	LPAR (SAM400003389:002588)	

Monitored applications

Statistics... Export excel

- Click **Cluster analysis** in the software counter screen, you will see the cluster analysis information. If multiple algorithms are used to count the license consumption, take Microsoft SQL Server as an example, the pre-calculation rule will count license consumption per individual OSE or per physical machine. By default, the minimum consumed points will be used and shown here.

<input type="checkbox"/>	Name	Rights count	Entitlements count	Installations/l	Unused installations	Compliance	Cost For Compl
<input type="checkbox"/>	Microsoft SQL Server 2008 R2 Enterprise (Per Processor)	0	0	0	0	0	US\$0
<input type="checkbox"/>	Microsoft SQL Server 2008 R2 Workgroup (Per Processor)	0	0	0	0	0	US\$0

Display selections 0 selected records Action on the selections in current page Page 9 of 14 Total records: 278 20 records per page

General | Rights | Installations/Utilizations | Results | Consolidation | Node analysis | **Cluster analysis** | History | Documents | Workflow

+ Add Delete Statistics... Export excel

Filter

« « « » » Total records: 1

<input type="checkbox"/>	Cluster	Calculation method	Processor core count	Processor count	Consumed points
<input type="checkbox"/>	Database host cluster for CRM	Licensing individualOSE	0	22	11

- Select one cluster on the **Cluster analysis** tab, you will see the detailed information about the cluster including calculation method, consumed points, processor count and additional useful information in the **Remark** box. The **Can be aggregated** option determines whether this record will be taken into account by the product compliance report (in this example, Microsoft SQL Server 2008 R2).

Cluster compliance analysis | Node compliance analysis

Software counter: [Microsoft SQL Server 2008 R2 Enterprise \(Per Processor\)](#) Cluster: [Database host cluster for CRM](#)

Calculation method: Licensing individual OSE Consumed points: 11

Processor core count: 0 Processor count: 22

Can be aggregated

Remark:

- By clicking on Node compliance analysis tab, you can see the nodes in the cluster and how many license they consumed.

Cluster compliance analysis | **Node compliance analysis**

« « » » Total records: 6

<input type="checkbox"/>	Name(Node)	Calculation method	Consumed points	Factor value	Tier value	Processor core count	Processor count
<input type="checkbox"/>	Demo Virtual machine-1-1		1	0	0		2
<input type="checkbox"/>	Demo Virtual machine-1-2		1	0	0		2
<input type="checkbox"/>	Demo Virtual machine-1-3		4	0	0		8

6. Click the **Node compliance analysis** tab, you can view the nodes in the cluster and the amount of consumed license points.

Cluster compliance analysis | **Node compliance analysis**

« « » » Total records: 6

<input type="checkbox"/>	Name(Node)	Calculation method	Consumed points	Factor value	Tier value	Processor core count	Processor count
<input type="checkbox"/>	Demo Virtual machine-1-1		1	0	0		2
<input type="checkbox"/>	Demo Virtual machine-1-2		1	0	0		2
<input type="checkbox"/>	Demo Virtual machine-1-3		4	0	0		8
<input type="checkbox"/>	Demo Virtual machine-1-4		3	0	0		6
<input type="checkbox"/>	Demo Virtual machine-2-1		1	0	0		2
<input type="checkbox"/>	Demo Virtual machine-2-2		1	0	0		2

How to enable/disable writing software installation analysis into the amSAMInstCompAnalysis table

Saving records in the **amSAMInstCompAnalysis** table may lower the performance due to the execution of compliance pre-calculation script. Therefore, depending on the requirements, AM administrator can enable or disable the flag of saving installation analysis records. To do this, follow these steps.

1. Log on to AM with an administrator user account.
2. Open the **Script libraries** screen.
3. Find and choose the record with the name **SamPreCalcUtilLib**.
4. In the detail pane, look into the script field, find the following line:

CONST INSTANALYSIS_ENABLED

5. Set it to:
 - 0: disable
 - 1: enable

How to use issue analysis result to fix issues

You can open the **Unresolved software licensing issues** screen to check if any issue occurred during the license calculation.

For example, in the screenshot below, there are 3 unresolved issues detected in 2 software counters. You can see the software name, issue category, related counters, related record, and issue description. According to the issue description, you can click **Referenced object** to open the record detail page to fix issues. Then, you can check the **Resolved** option so that the fixed record will be ruled out when opening this screen next time.

Notice that this table only keeps the latest issues analysis per counter. If you run a certain counter again, the previous result generated by the counter will be cleaned and new issue analysis result will be generated.

<input type="checkbox"/>	Software product	Software counter	Category	Referenced object	Tenant
<input type="checkbox"/>	Microsoft SQL Server	Microsoft SQL Server 2005 Standard (Per Processor)	Hardware info error	Demo Server Computer-1-1	
<input type="checkbox"/>	Microsoft SQL Server	Microsoft SQL Server 2005 Standard (Per Processor)	Hardware info error	Demo Server Computer-2-3	
<input type="checkbox"/>		Oracle Database Standard Edition	License policy violation...	Oracle Database 10g Std	

Display selections 0 selected records Action on the selections in current page Page 1 of 1 Total records: 3 20 records per page

Software issue

Resolved Category: Hardware info error

Software product: Microsoft SQL Server Software counter: Microsoft SQL Server 2005 Standard (Per Processor)

Software licensing issue analysis: [Referenced object](#) Referenced object: Demo Server Computer-1-1

Issue description: Core count(ICPUCoreNumber) of the given computer is 0.

Solving software compliance issues

To solve software compliance issues, use the Solve software compliance issues wizard provided by the Software Asset Management module.

Note: Before using this wizard, you should update the counters as described in ["Updating the results of counters and determining consolidated compliance" on page 29](#) to ensure that up-to-date figures are used.

The wizard can be accessed as follows.

1. Start the **Manage software (sysSamLauncher)** wizard by opening **Asset lifecycle -> Software asset management -> User actions -> Manage software**.
2. On the **Choose a Manage Software action OR locate an existing contract** page, select the **Manage software license compliance** option.
3. Click **Next**.
4. On the **Manage software license compliance** page, click **Solve software compliance issues**.

For further details, see the Asset Manager *Software Assets* guide, chapter *Monitoring license compliance of installations*, Section *Processing irregularities between installations/utilizations and licenses*.

Widgets and reports for Oracle products

This section introduces several types of widgets for Oracle products.

Comparison of 'Installed' and 'In use' Oracle Database Options/MGMT Packs

There are two types of counters, **In use** and **Installed**, for each Oracle Options/Pack product. The **Comparison of 'Installed' and 'In use' Oracle Database Options/MGMT Packs** widget shows the software installation count and license consumption for Oracle Options/Pack counters. You can drill down into the **Device** list for Oracle Option/Pack counters and see the license consumption of devices.

Comparison of 'Installed' and 'In use' Oracle Database Options/Mgmt. Packs							
Name	License points	Number of installations	Consumption of installations (per core)	Gap of installations (per core)	Number of in-use instances	Consumption of in-use instances (per core)	Gap of in-use instances (per core)
Oracle DB option: Advanced Analytics	0	2	22	-22	2	22	-22
Oracle DB option: Advanced Compression	0	2	22	-22	1	16	-16
Oracle DB option: Active Data Guard	20	3	24	-4	3	24	-4
Oracle DB option: Advanced Security	24	4	32	-8	4	32	-8
Oracle DB option: Audit Vault	0	1	16	-16	1	16	-16
Oracle DB option: Content Database Suite	0	1	16	-16	1	16	-16
Oracle DB option: Data Mining	0	7	48	-48	7	48	-48
Oracle DB option: Data Profiling and Quality	0	1	8	-8	1	8	-8
Oracle DB option: Database Vault	0	1	8	-8	1	8	-8
Oracle DB option: Data Watch and Repair Connector	0	1	8	-8	1	8	-8
Oracle DB option: In-Memory Database	0	1	8	-8	1	8	-8
Oracle DB option: In-Memory Database Cache	50	35	0	23	6	27	23
Oracle DB option: Label Security	0	1	8	-8	1	8	-8
Oracle DB option: Multitenant	0	1	8	-8	1	8	-8
Oracle DB option: OLAP	100	6	33	67	6	33	67
Oracle DB option: Partitioning	0	3	30	-30	3	30	-30
Oracle DB option: Real Application Cluster	0	3	96	-96	3	96	-96
Oracle DB option: Real Application Testing	0	2	14	-14	2	14	-14
Oracle DB option: Records Database	0	1	8	-8	1	8	-8

Comparison of 'Installed' and 'In use' Oracle Database Options/Mgmt. Packs > Device list for Oracle Database Options/Mgmt. Packs						
Device name	IP address	Consumption of installed instances (per core)	Consumption of in-use instances (per core)	Asset tag	Core number	Core factor
Demo computer 30-13	16.178.145.16	16	16	DEMO-SAM4ORA-COMPUTER-3-7	32	0.5
CPU000311	CPU000311	6	6	SRV00003510	12	0.5

Comparison of 'Installed' and 'In use' Oracle database instances

There are two types of counters, **Installation** and **Running instance**, for each Oracle database product. The **Comparison of 'Installed' and 'In use' Oracle database instances** widget shows the Oracle Database installation count and license consumption for Oracle database counters. You can drill down into the **Device list for Oracle database instances** list for Oracle database counters and see the license consumption of devices.

Comparison of 'Installed' and 'In use' Oracle database instances							
Name	License points	Number of installations	Consumption of installations (per core)	Gap of installations (per core)	Number of in-use instances	Consumption of in-use instances (per core)	Gap of in-use instances (per core)
Oracle Database Enterprise Edition	60	14	171	-111	13	241	-181
Oracle Database Standard Edition	120	13	58	62	8	33	87
Oracle Database Standard One Edition	20	0	0	20	0	0	20
Oracle Database Standard Edition Two	78,670	35	0	0	0	0	78,670

Comparison of 'Installed' and 'In use' Oracle database instances > Device list for Oracle database instances							
Device name	IP address	Consumption of installed instances (per core)	Consumption of in-use instances (per core)	Asset tag	Core number	Core factor	
Demo computer 30-6	16.178.145.9	4	0	DEMO-SAM4ORA-COMPUTER-2-4	4	1	
Demo computer 30-7	16.178.145.10	6	0	DEMO-SAM4ORA-COMPUTER-3-1	6	1	
Demo computer 30-18	16.178.145.21	2	2	DEMO-SAM4ORA-COMPUTER-3-12	64	0.5	
___Demo Virtual machine-30-7	16.178.112.109			DEMO-SAM4ORA-VM-30-7			
Demo computer 30-9	16.178.145.12	16	16	DEMO-SAM4ORA-COMPUTER-3-3	16	1	
___Demo Virtual machine-30-1	16.178.112.103			DEMO-SAM4ORA-VM-30-1			
Demo computer 30-11	16.178.145.14	6	0	DEMO-SAM4ORA-COMPUTER-3-5	6	1	
Demo computer 30-12	16.178.145.15	16	0	DEMO-SAM4ORA-COMPUTER-3-6	32	0.5	
Demo computer 30-13	16.178.145.16	16	16	DEMO-SAM4ORA-COMPUTER-3-7	32	0.5	
___Demo Virtual machine-30-5	16.178.112.107			DEMO-SAM4ORA-VM-30-5			
Demo computer 30-14	16.178.145.17	1	1	DEMO-SAM4ORA-COMPUTER-3-8	16	0.5	
___Demo Virtual machine-30-6	16.178.112.108			DEMO-SAM4ORA-VM-30-6			

Running Oracle Database Options/MGMT Packs

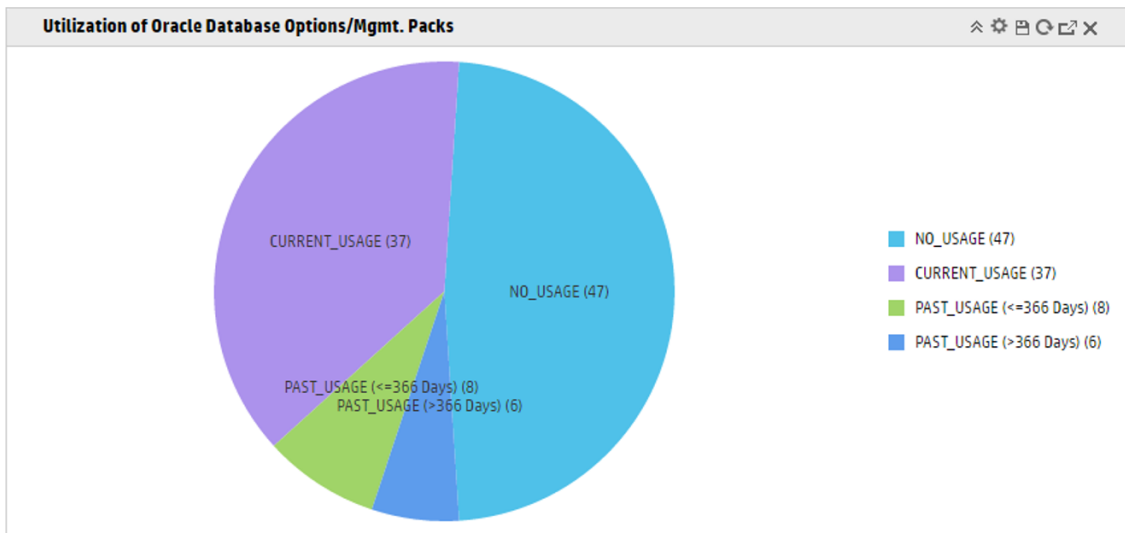
The **Running Oracle Database Options/MGMT Packs** widget shows the utilization of Oracle option/pack instances. You can drill down into **Oracle Database Options/MGMT Packs on the instance** and see how many options/packs are running in that instance.

Running Oracle Database Options/Mgmt. Packs				
Computer name	Asset tag	IP	DB instance	Excluded
CPU000311	SRV00003510	CPU000311	PPM98	No
Demo computer 30-10	DEMO-SAM4ORA-COMPUTER-3-4	16.178.145.13	org_labtest	No
Demo computer 30-13	DEMO-SAM4ORA-COMPUTER-3-7	16.178.145.16		No
Demo computer 30-14	DEMO-SAM4ORA-COMPUTER-3-8	16.178.145.17		No
Demo computer 30-15	DEMO-SAM4ORA-COMPUTER-3-9	16.178.145.18	ora10g_2	No
Demo computer 30-15	DEMO-SAM4ORA-COMPUTER-3-9	16.178.145.18	ora11g_1	No
Demo computer 30-3	DEMO-SAM4ORA-COMPUTER-2-1	16.178.145.6		No
Demo computer 30-4	DEMO-SAM4ORA-COMPUTER-2-2	16.178.145.7		No
Demo computer-Server-4 for oracle	DEMO-SAM4ORA-COMPUTER-CLUSTER-1-1	16.178.145.25	Ora10g_1	No
Demo computer-Server-5 for oracle	DEMO-SAM4ORA-COMPUTER-CLUSTER-1-2	16.178.145.26	Ora10g_1	No
Demo computer-Server-6 for oracle	DEMO-SAM4ORA-COMPUTER-CLUSTER-1-3	16.178.145.27	Ora10g_1	No
Demo Virtual computer-Server-1 VM-1 for oracle	DFMO-SAM4ORA-VM-CLUSTER-1-1	16.178.112.111	Ora10g_1	No

Running Oracle Database Options/Mgmt. Packs > Oracle Database Options/Mgmt. Packs on the instance				
Product	Status	Last sample date	First usage date	Last usage date
Oracle DB option: Total Recall (Running)	PAST_USAGE		2/22/2014 5:31:17 PM	8/22/2015 5:31:17 PM
Oracle DB option: Real Application Cluster (Running)	CURRENT_USAGE			

Utilization of Oracle Database Options/MGMT Packs

The **Utilization of Oracle Database Options/MGMT Packs** widget shows the usage status of Oracle options/packs. They are categorized into four groups. You can drill down into **Oracle Database Options/MGMT Packs with the same status** and see how many options/packs are in a specific status. You can also drill down into the **Oracle Database Options/MGMT Packs list with DB instance information** and see the instance names and host names of one kind of Oracle option/pack.



Utilization of Oracle Database Options/Mgmt. Packs > Oracle Database Options/Mgmt. Packs with the same status

Option/Mgmt.Pack	Usage status	Amount
Oracle DB option: Data Mining (Running)	CURRENT_USAGE	5
Oracle DB option: OLAP (Running)	CURRENT_USAGE	5
Oracle Enterprise Management Pack: Tuning Pack (Running)	CURRENT_USAGE	4
Oracle DB option: In-Memory Database Cache (Running)	CURRENT_USAGE	4
Oracle DB option: Real Application Cluster (Running)	CURRENT_USAGE	4
Oracle DB option: Partitioning(User) (Running)	CURRENT_USAGE	3
Oracle Enterprise Management Pack: Diagnostic Pack (Running)	CURRENT_USAGE	3
Oracle DB option: Active Data Guard (Running)	CURRENT_USAGE	1
Oracle DB option: Retail Data Model (Running)	CURRENT_USAGE	1
Oracle DB option: Warehouse Builder Data Quality (Running)	CURRENT_USAGE	1
Oracle Enterprise Management Pack: Change Management Pack (Running)	CURRENT_USAGE	1

Utilization of Oracle Database Options/Mgmt. Packs > ... > Oracle Option/Pack list with DB instance information

Option/Mgmt. Pack	Usage status	License required	DB instance name	DB instance role	Host name
In-Memory Database C...	CURRENT_USAGE	N	ora11g_1		Demo computer 30-15
In-Memory Database C...	CURRENT_USAGE	N	ora10g_2		Demo computer 30-15
In-Memory Database C...	CURRENT_USAGE	N			Demo Virtual machine-30-1
In-Memory Database C...	CURRENT_USAGE	N	Ora10g_1		Demo Virtual machine-30-6

Oracle Database compliance report

This report shows the Oracle Database compliance result and lists the devices having Oracle database. It only takes activated counters into account. If two sets of counters are activated, both will be shown in the report.

Oracle Database Compliance Report

Compliance report: **Non-Compliant** Calculate date: 4/21/2016 11:29:19AM

Total No. of counters: 7 No. of Oracle Database instance in scope: 83
 No. of Compliant counters: 5 No. of non-compliant counters: 2

Oracle Database Enterprise Edition **Non-compliant**

License metrics:	Effective license	Deployed instance	Consumed license	Consolidate license
Processor license (core based)	60	14	171	-111

Host name	IP address	CPU info	Licensed processor	Licensed core Factor	Consumed license
Standalone					
Demo computer 30-11	16.178.145.14	PentiumD	0	6 1.00	6
Demo computer 30-12	16.178.145.15	Itanium 2	0	32 0.50	16
Demo computer 30-13	16.178.145.16	Itanium 2	0	32 0.50	16
Demo computer 30-14	16.178.145.17	Itanium 2	0	2 0.50	1

Oracle Database Option compliance report

This report shows Oracle Database Options/Management Packs compliance result and lists the devices having options and packs. It only takes activated counters into account. If two sets of counters are activated, both will show in the report.

License metrics:	Effective license	Deployed instance	Consumed license	Consolidate license
Processor license (core based)	20	3	24	-4

Host name	IP address	CPU info	Licensed processor	Licensed core Factor	Consumed license
Standalone					
idsmwin04	CPU000311	Intel Xeon(Intel Xeon X5670)	0	12 0.50	6
Demo computer 30-13	16.178.145.16	Itanium 2	0	32 0.50	16
Demo computer 30-18	16.178.145.21	UltraSPARC-T1	0	4 0.50	2

Oracle Database Option usage report

This report shows the Options/Management Packs usage information based on Oracle Database running instances. You can see the options' usage status.

Option name	Usage	First usage date	Last usage date	Last sample date	Excluded
Database Vault	NO_USAGE				No
Spatial	NO_USAGE				No
Advanced Compression	PAST_USAGE	4/15/2015 4:05:55PM	4/15/2015 4:05:55PM	4/1/2016 8:32:18AM	No
Partitioning	NO_USAGE				No
Real Application Cluster	CURRENT_USAGE	4/15/2015 4:05:55PM	4/1/2016 8:32:18AM	4/1/2016 8:32:18AM	No
OLAP	NO_USAGE				No

Appendix: Supporting inventory data normalized by BDNA

From version 9.4.12.5, SLO Best Practice Package can accept software installation data normalized by BDNA Normalize, thus bringing in useful information such as "obsolete date" and "end-of-life date" to Asset Manager. To use this functionality, you need to use UCMDB 10.20 CP15 which can integrate with BDNA Normalize. For more information, see *UCMDB10.20 Data Flow Management Guide, Chapter 14: Inventory Discovery, section BDNA Normalize Integration*.

The following attributes in Asset Manager correspond to the fields of **MATCH_HOST_SW_PROD.CAT_TAXONOMY_CATEGORY1** in BDNA.

- **amModel.Component**

This Asset Manager field corresponds to the **Component** field in BDNA, which indicates the product component from the catalog for the software product.

- **amSoftlInstall.ServicePack**

This Asset Manager field corresponds to the **ServicePack** field in BDNA, which indicates the service pack level. For example, SP1, SP2, and so on.

- **amModel.dEndOfLife**

This Asset Manager field corresponds to the **End of Life** field in BDNA, which indicates the last day the product is fully supported by the supplier. Partial support may still be available.

- **amModel.dObsolete**

This Asset Manager field corresponds to the **Obsolete** field in BDNA, which indicates the last day the product is officially supported by vendor. If applicable, online self-help system is the only support available after this day.

- **amModel.RecognizedBy**

This Asset Manager field corresponds to the **RecognizedBy** field in BDNA, which indicates the software that can be recognized by BDNA or UD.

- **amModel.LicenseType**

This Asset Manager field corresponds to the **LicenseType** field in BDNA, which has one of the following three values.

- Free
- Commercial
- Unknown

Once you integrate BDNA with UCMDB 10.20 CP15, the software installation model created by Push Adapter/Generic Adapter can be identified by the **RecognizedBy** field. If the model is recognized by BDNA, the value of the **RecognizedBy** field is **BDNA**. In this case, the **BarCode** field of the software installation model stores the **versionid** field in **MATCH_HOST_SW_PROD.CAT_TAXONOMY_CATEGORY1** in BDNA. This is a unique value.

Notice that when software license assets are also normalized with BDNA Technopedia catalog and you want to match the software installations with software licenses, you can compare the versioned in the software installation model with the versionid in the license model, and then link both the models properly to the corresponding software counter. In order for this function to work, you need to update the AM Push Adapter/Generic Adapter in UCMDB 10.20 CP 15 to add the mapping of **sai_version_id** and **BarCode** in the AM software installation model, depending on the adapter you use.

If you use AM Push Adapter, locate and open the pushMappingSWNoNorm.xml file, and then add the line in **red**.

```
<target_ci_type name="SW_amModel">
<!-- BDNA Start -->
<target_mapping name="Component" datatype="STRING" ignore-on-null="true" value="
AMPushFunctions.isBDNA(Root['component'])"/>
<target_mapping name="Edition" datatype="STRING" ignore-on-null="true"
value="AMPushFunctions.isBDNA(Root['edition'])"/>
<target_mapping name="dEndOfLife" datatype="DATE" ignore-on-null="true" value="A
MPushFunctions.isBDNA(Root['end_of_life_date'])"/>
<target_mapping name="dObsolete" datatype="DATE" ignore-on-null="true" value="AM
PushFunctions.isBDNA(Root['obsolete_date'])"/>
<target_mapping name="RecognizedBy" datatype="STRING" ignore-on-null="true" valu
e="AMPushFunctions.isBDNA(AMPushFunctions.getEnumValueByKey(ClassModel
,Root['recognized_by'],'recognition_lib_enum'))"/>
<target_mapping name="licenseType" datatype="STRING" ignore-on-null="true" value
="AMPushFunctions.isBDNA(AMPushFunctions.getEnumValueByKey(ClassModel,
Root['software_license_type'],'software_license_type_enum'))"/>
<target_mapping name="BarCode" datatype="STRING" ignore-on-null="true"
value="AMPushFunctions.isBDNA(Root['sai_version_id'])"/>
<!-- BDNA End -->
```

If you use AM Generic Adapter, locate and open the AM InstalledSoftware Non-norm alize Push.xml file, and then add the line in **red**.

```
<target_entity name="Model" type="'SW_amModel'">
<!-- BDNA Start -->
<target_mapping name="Component" datatype="STRING" is-valid="AMPush.isBDNA()" va
lue="Root['component']"/>
<target_mapping name="Edition" datatype="STRING" is-valid="AMPush.isBDNA()" valu
e="Root['edition']"/>
<target_mapping name="dEndOfLife" datatype="DATE" is-valid="AMPush.isBDNA()" val
ue="Root['end_of_life_date']"/>
<target_mapping name="dObsolete" datatype="DATE" is-valid="AMPush.isBDNA()" valu
e="Root['obsolete_date']"/>
<target_mapping name="RecognizedBy" datatype="STRING" is-valid="AMPush.isBDNA()"
value="AMPush.getEnumValueByKey(ClassModel,Root['recognized_by'],'recognition_li
b_enum')"/>
```



```
<target_mapping name="licenseType" datatype="STRING" is-valid="AMPush.isBDNA()"
value="AMPush.getEnumValueByKey(ClassModel,Root['software_license_type'],'software_license_type_enum')"/>
<target_mapping name="BarCode" datatype="STRING" ignore-on-null="true" value="AM
Push.isBDNA(Root['sai_version_id'])"/>
<!-- BDNA End -->
```

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