Symantec Endpoint Management
Technical Workshop 2017

Achieving Software License Compliance in ITMS

Description	IT Management Suite lets you optimize the usage of licensed software in your environment by comparing the number of the software product installations to the number of purchased licenses and the terms of the license contract that you configure. You can stay compliant with the purchased software licenses and at the same time improve software availability by optimizing usage of existing licenses.
At the end of this lab, you should be able to	▪ Compare Software Licenses to Software Deployments ▪ Understand Software Product Utilization and Usage Data ▪ Create and Analyze Device, User and Hardware License Models
Notes	▪ Lab 1 and 2 are dependent on each other, but Lab 3, 4 and 5 are not and may be started independently. ▪ Feel free to complete the lab using the instructions on the following pages. ▪ Be sure to ask your instructor any questions you may have. ▪ Thank you for coming to our lab session

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Scenario Environment

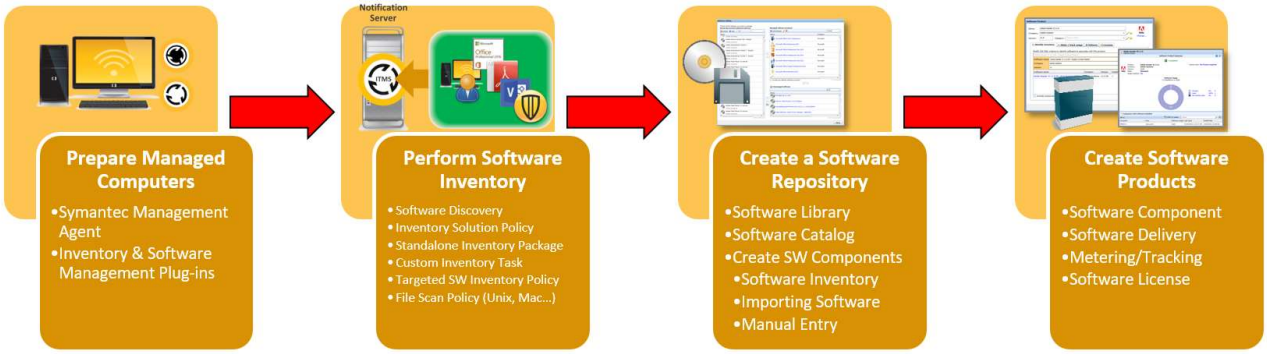
As a member of ACME Healthcare's IT staff, you have been given the assignment to use IT Management Suite to manage the assets in the environment. You are aware that the proper management of software assets is crucial to the efficient functioning of a business and often required by regulatory standards.

You are in charge of defining what you want to accomplish with the software license management system and must develop, populate, and execute the remediation of software assets. You have been provided with the following business objective to achieve along this journey:

- *The objective of software license management is to manage, control, and protect an organization's software assets, including management of the risks arising from the use of those software assets. The proper management of software licenses helps to minimize risks by ensuring that licenses are used in compliance with licensing agreements and are cost-effectively deployed, and that software purchasing and maintenance expenses are properly controlled.*

You have been told that IT Management Suite has been installed on your Notification Server, but you are unsure if it has been configured for the full support of a Software License Management process. You have decided to simplify the implementation and address your most urgent management needs first and to use a phased approach in the order to create an efficient Software License Management System.

This lab exercise also assumes that many of the prerequisites to Software License Management have been accomplished. All of the major items like agent delivery, software inventory, software catalog creation and population and software product and software metering are in place.



Recording Software Licenses

Lab 1: Understanding Software Asset Relationships in ITMS

Within IT Management suite, all of the components that make up software license management are associated in some way to allow for the calculation of utilization and usage.

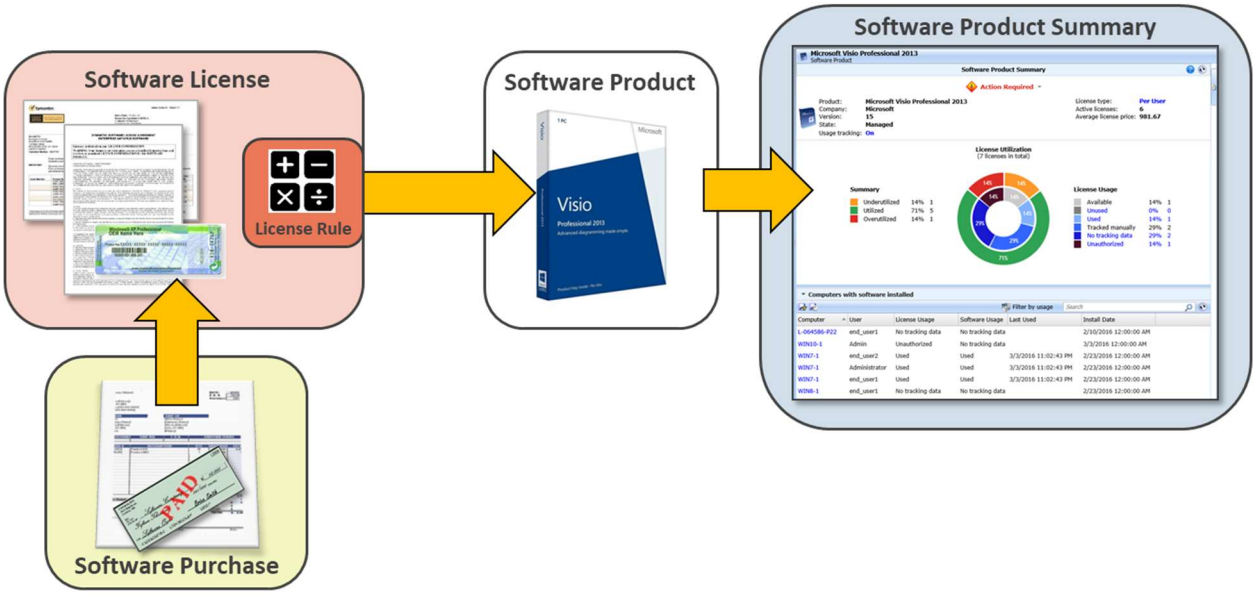


Figure 1: Software Asset Relationships

In this exercise, you familiarize yourself with the components that make up the software license management system. The following steps will walk you through the viewing and creation of the major components that are available to achieve software license management within ITMS:

Walkthrough of Software Licenses and Purchases in the Asset Views

Software Purchases are recorded in the CMDB and can be viewed and entered separately or within a **Software License** if required. To view and edit Software Purchases:

1. Switch to the **SMP** Virtual Machine
2. Open the **Symantec Management Console** by clicking the icon on the Desktop.
3. From the **SMP** computer desktop, double-click the **Symantec Management Console** icon.
4. From the console's menu, select **Home > Service and Asset Management > Software Licensing**
5. On the left pane, select **Software Purchase.** The software purchases appear on the right pane as a list report that shows the Name, Quantity, Purchase Date as well as the Software Product and Software License it is associated to.
6. Right Click on the ***Microsoft Office Professional Plus 2016 Purchase #1*** software purchase record and select **Resource Manager**

7. In the bottom left side, under Resource Associations, notice that it is associated with a software license. This illustrates the relationship of Software Purchase to Software License as illustrated in Figure 1.
8. Close the Resource Manager page and return to the Console view
9. Double click the ***Microsoft Office Professional Plus 2016 Purchase #1*** software purchase record to open the Edit view of the record.
10. Notice that it initially shows all fields that are associated with it. This may not be optimal for rapid data entry or viewing.
11. In the **View** field on the top right side, select **Software Purchase (Global)** from the drop-down list.

12. Notice that the view changes to a more concise mapping of values that show the pertinent items that should be entered for efficient software license management. The important values are already entered like, date of purchase, quantity, and costs associated with it.
13. You notice that the ownership of the software has not been entered and you know Microsoft licensing is owned equally by two users in the organization. To enter this information:
    a. Under **Software Purchase Owners**, select the **+Add** icon. Select **Alan Reid** and press OK
    b. select the **+Add** icon. Select **Andrew Downe**y and press OK
    c. To evenly split the ownership of these owners, press the **Auto Calculate** icon. Notice that 50% has been entered for both.
    d. Press **OK** to save and close the Software Purchase.
14. Return to the console view of Software Purchases
15. Right Click on the ***Microsoft Office Professional Plus 2016 Purchase #1*** software purchase record and select **Resource Manager**
16. In the bottom left side, under Resource Associations, notice that the owners of the purchase now appear and are associated with the software purchase.
17. Close the Resource Manager page and return to the Console view

Software licenses include information about the associated number of purchased licenses as well as software entitlements and use rights included in the software contract or agreements. Like software purchases, they can be viewed and entered separately or in conjunction with each other. To view and edit Software Licenses:

1. From the console's menu, select **Home > Service and Asset Management > Software Licensing**

2. On the left pane, select **Software License.** The software licenses appear on the right pane as a list report that shows the Product Name it is associated with, Name, Description, Start & End date, Status, etc.,
3. Right Click on the ***Microsoft Office Professional Plus 2016 License*** software license record and select **Resource Manager.** (Hint: Sort the report by Name)
4. In the bottom left side, under **Resource Associations**, notice that it is associated with a software purchase as well as a Software Product. This illustrates the relationship of Software Purchase to Software License to Software Product as illustrated in Figure 1. This completes the minimum association needed to represent software license compliance.
5. On the main menu, select **Summaries > Software Summary.** This will show a summary of the software license in the right pane – it indicates that there are 5 licenses purchased, as well as other pertinent details.
6. Close the Resource Manager page and return to the Console view
7. Double click the ***Microsoft Office Professional Plus 2016 License*** software license record to open the Edit view of the record.
8. Notice that it initially shows all fields that are associated with it. This may not be optimal for rapid data entry or viewing.
9. In the **View** field on the top right side, select **Software License (Global)** from the drop-down list.
10. Notice that the view changes to a more concise mapping of values that show the pertinent items that should be entered for efficient software license management. The important values are already entered like, software purchase and product associations.
11. You notice that many of the fields have not been entered and you have the information at hand. To enter this information:
    a. Under **Software License Details**, enter the following:
        i. Maintenance Renewal Cost: **499.95**
        ii. Support Renewal Cost: **259.95**
    b. Under **Software License Details**, enter the following:
        i. Description: **Microsoft Office Pro Plus 2016 - License**
        ii. Status: **Active**
        iii. Approved: **Checked**
    c. You know that there is a single license being used by the Testing Lab in Room 201 that does not connect to the internal network so it can't be inventoried with ITMS. Under **Non-Inventoried Installs**, enter the following:
        i. Select the **+Add** icon. The User page will appear.
        ii. Select **Alan Reid** and press OK

iii. Select the field under **Count** and enter **1**

iv. Select the field under **Description** and type **Testing Lab – Room 201**

v. Select the field under **Type** and select **In Use**

d. Microsoft allows you to 'borrow' licenses from older versions of software that may be underutilized. You would like to utilize a single license from an existing MS Office 2010 license. Under **Software License Sharing**, enter the following:

i. Select the **+Add** icon. The Software License report page appears

ii. Type **Office Professional** in the **Search** field

iii. Select **Microsoft Office Professional Plus 2010** and press OK

iv. Select the field under **Number** and enter **1**

e. Under **Contract's Assigned User** enter the following:

i. Press the "**Click to Select…**" link

ii. Select **Alan Reid** and press OK

f. Under **Contract's Assigned Location** enter the following:

i. Press the "**Click to Select…**" link

ii. Select **Lindon** and press OK

g. Press **OK** to save and close the Software Purchase.

You have just seen how Software Purchases and Licenses can be viewed and edited in the Software Licensing view that originates from the installation of Asset Management Suite 8.1 (or through the default installation of IT Management Suite 8.1).

Walkthrough of Software Licenses and Purchases in the ITMS Views

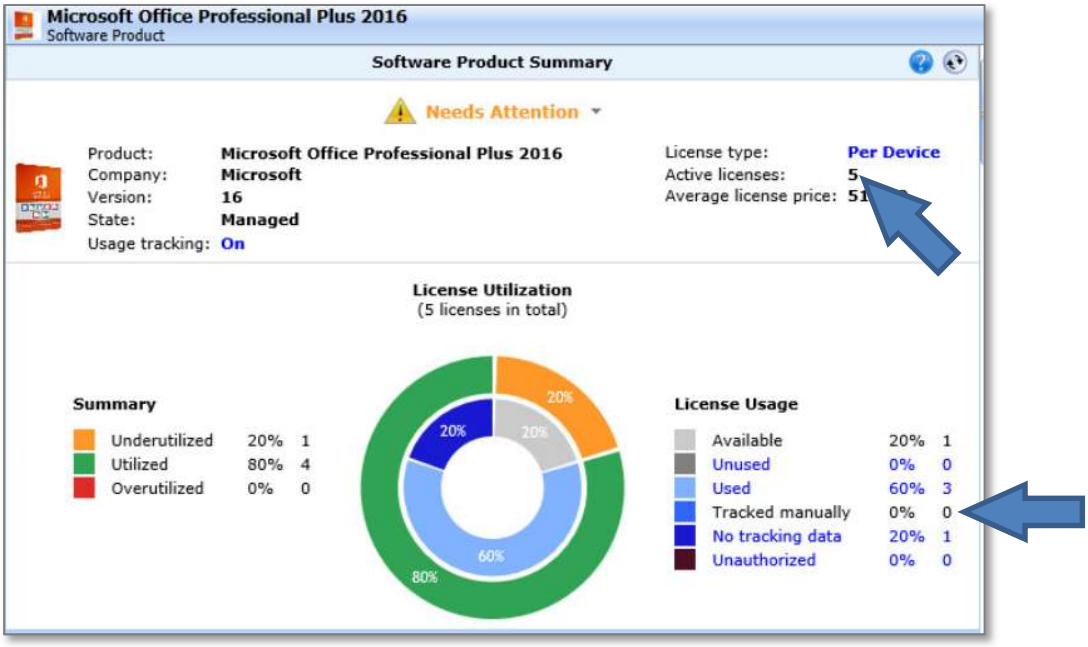
The ITMS Management Views (Enhanced Views) will allow you to see a combined view of Software Licenses, Purchases and Products in one place. To see a unified view of all software components, complete the following steps:

1. Switch to the **SMP** Virtual Machine
2. Open the **Symantec Management Console** by clicking the icon on the Desktop.
3. From the **SMP** computer desktop, double-click the **Symantec Management Console** icon.
4. From the console's menu, select **Manage > Software**
5. On the Left Pane, under **Favorites**, Select the **Corporate Managed Software** filter
6. In the Middle Pane, Select the **Microsoft Office Professional Plus 2016** Software Product in the list. The Software Product Summary appears on the right pane.

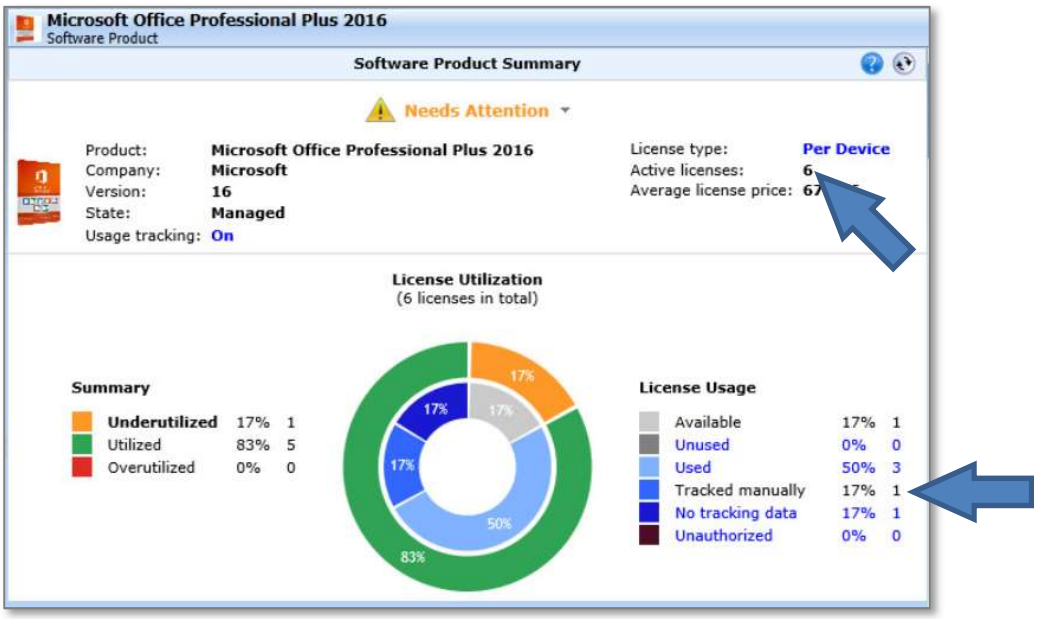
   The **Software Product** includes information on how installations are identified, how usage is tracked, how the product is delivered, as well as the information associated from the Software

license and software purchase to bring it all together in order for you to see your organization's software compliance state.

7. You notice that the information seems to be different than what was entered in the Software License edit view. In particular, you notice that the Active licenses does not reflect the single license you borrowed from Office 2010, and that the Non-Inventoried Install in the Test Lab is not accounted for under the "Tracked Manually" section in the license usage legend.



8. To alleviate this discrepancy, there are scheduled tasks that run on a regular basis that calculate and update these items. We will now run them in an effort to ensure that the calculations are correct for this exercise.
    a. Press the **Windows Start Icon** and select the **Task Scheduler** icon
    b. When Task Scheduler appears, select the **Task Scheduler Library** folder on the right pane.
    c. In the left pane, select both the **NS.Nightly…** and **Ns.Software Product Licensing…** Tasks using CTRL-Click.
    d. Right click on them and select **Run**
    e. Refresh the view as needed and make sure all of the tasks are completed.
9. Return to the Software View, and refresh the Software Product Summary by selecting the refresh button on the pane.
10. You now notice that the calculations and accounting of licenses is correct.



11. To continue viewing the license information, click on the "Per Device" link under License Type: This is the common place where you would enter the Licensing information. You can also Right Click on the Software Product and select ***Configure > Licenses***.'
12. The Software Product view opens to the Licensing Tab.
13. To view the current License & Purchase Information, select the **Microsoft Office Professional Plus 2016 – License** in the List and either double click it, or press the **edit icon** (Pencil).
14. You now see a 'Simple' view of the Software License, Purchase and License Rule associated with this Software Product.

Note: This view is not as comprehensive as the **Edit view** used in the last section, but it is simply meant to convey basic information and to provide a means to quickly enter additional purchases and adjust license information like rules and contract dates. You can still access the Edit view of the License by selecting "Edit Advanced Settings after saving" box which will open the edit view.

15. To view the **License Rule** that is associated with this Software License, select the **Microsoft Office Professional Plus – License Rule** link. The License rule page appears.
16. This page displays the Name of the License Rule, the License Type (Per Device, Per User, and Hardware Processor or Core), as well criteria that scopes the License type.
17. It is currently set to calculate the License by Device count. Notice that a filter selector appears for Authorized Devices.
18. Select the **License Type** drop down menu, and choose **Per User.** You will notice that there are additional options available like Authorized Devices, Authorized Users and Installations Per User.

19. Select the **License Type** drop down menu, and choose **Per Processor/Core.** You will notice that there are additional options available like the choice of Processor or Core based calculation, as well as an Affinity Adjustment Table that allows you to enter Authorized Devices and adjust the hardware use and calculations.
20. These items will be covered in a later lesson, and can be found in the Asset Management Suite 8.1 User Guide if needed.
21. Press **Cancel** (So you don't change the License type from Per Device)

Software License Summaries

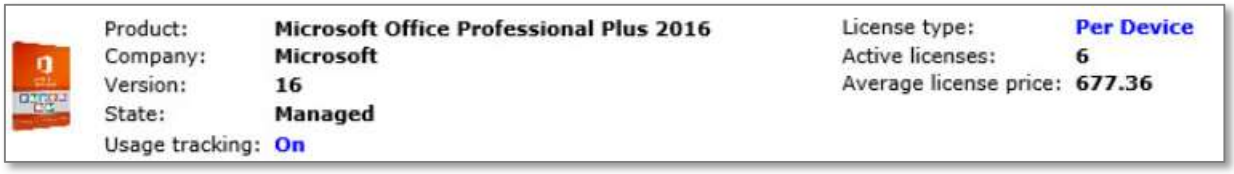
Lab 2: Understanding the Software Product Summary

In the Software Product Summary flipbook, on the Software View page, you can see detailed information about software and license usage on your client computers. The flipbook is available for all software products and this data can be used to create reports, filters in order to manage your licensed software.

Software Product Summary Walkthrough

1. Open the **Symantec Management Console** by clicking the icon on the Desktop.
2. From the **SMP** computer desktop, double-click the **Symantec Management Console** icon.
3. From the console's menu, select **Manage > Software**
4. On the Left Pane, under **Favorites**, Select the **Corporate Managed Software** filter
5. In the Middle Pane, Select the **Microsoft Office Professional Plus 2016** Software Product in the list. The Software Product Summary appears on the right pane. The Software Product summary contains various sections to relay general information, license status, usage, and cost associated with your software product.
6. Overall status of the software product is shown at the top of the page and will display either Compliant, Needs Attention or Action Required.
    - **Compliant** indicates that all software product licenses, purchases and use are in line with the software contract conditions.
    - **Needs Attention** indicates that there are problems with current license utilization. This status is typically displayed when there are underutilized licenses.
    - **Action Required** indicates that there are serious problems with current license utilization that require immediate actions. This status is typically displayed when there are overutilized licenses.
7. In this case, it is displaying "Needs Attention". Select the **Needs Attention** link and notice the message:

8. The Next Section displays General information about the software product like the software product name, company and version.

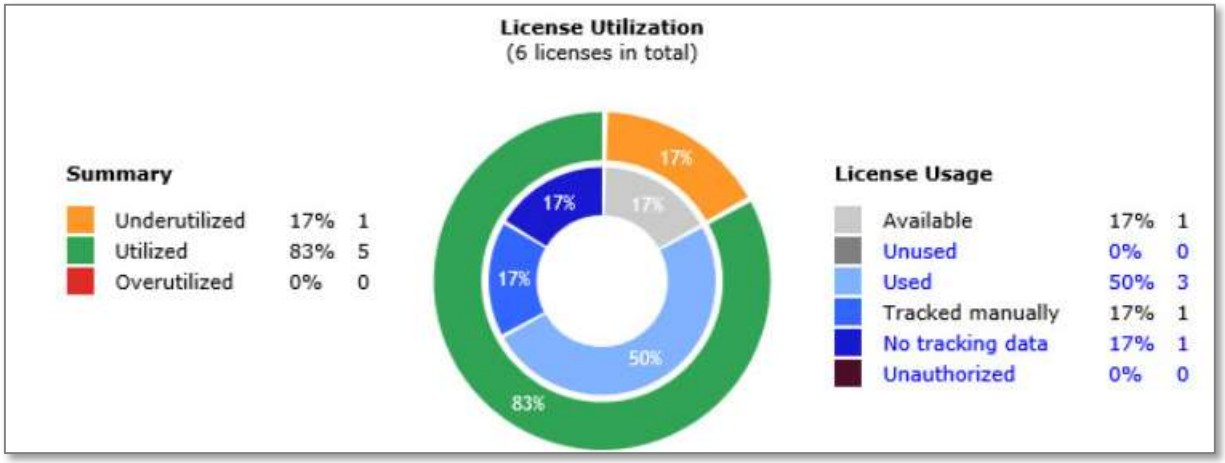


It will also show the State whether Managed or Unmanaged, if Usage tracking is On or Off and type of license rule to which license usage is calculated (per device, per user or per processor/core).

9. Select the **Usage Tracking: On** link. This takes you to the **Application Metering/Tracking** settings of the Software Product – it shows that it has been enabled for the Office applications.
10. Press **Cancel** to close the **Software Product** page
11. If it is a licensed software product, it will also display the calculated number of active licenses for this product as well as the average license price on the right side of the summary. In this case, there are 6 Active licenses (5 Purchased + 1 Borrowed = 6) with an average cost of $677.36.

    The Next Section displays a **License Utilization** pie chart. This color-coded License Utilization pie chart is shown for a licensed software product on the Software Product Summary flipbook. The pie chart consists of two circles:

    - An outer circle that shows the license utilization summary.
    - An inner circle that shows detailed information about license usage

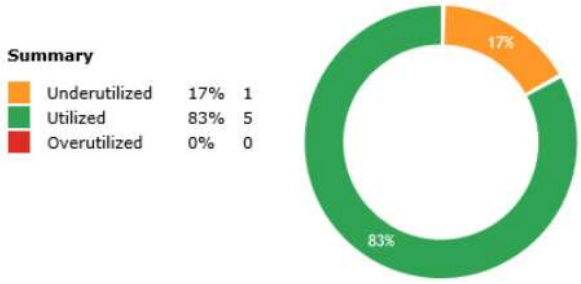


12. Click the sections of this circle to filter and notice the change in the "**Computers with this software installed**" list directly below it.

    The **Computers with software installed** list allows you to filter the results based on usage or utilization as well as export the results to a filter or report.

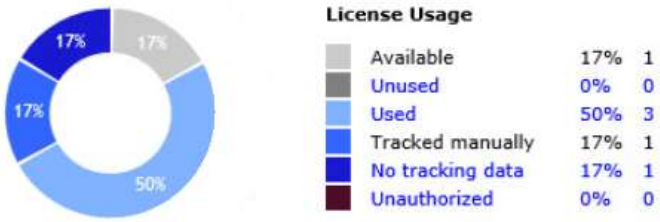
13. Select the **Filter by Usage** icon in the **Computers with software installed** and select various items to show different results in the list display. You can press "Select All" to get the Display back to normal.

14. Notice that there are icons on the top left of the **Computers with software installed** report that allow you to Save results as a filter, or to Export the results as a report. Exporting the results of this pane to a computer filter or computer report will allow you to use them to target specific tasks, policies and even automation policies that will complete actions like software harvesting or alert you to specific conditions.
15. Looking at the **License Utilization Summary chart** we can see that it shows the following information about the usage of software licenses:



- **Underutilized** shows the number of licenses that are not consumed or licenses belonging to software that is installed but not used. Potential savings are shown in the Software Product Summary view based on the average license price. Note that, if software usage tracking is turned on and the software is unused, the license is counted as Underutilized. This is calculated by the following formula.
- **Utilized** shows the number of licenses that are used in a normal way. Note that, software usage tracking is turned off, the license for installed software is always counted as utilized.
- **Overutilized** shows the number of licenses the usage of which exceeds the number of purchased licenses or that were installed without authorization.

16. Looking at the **License Usage Summary chart** shows the following information about the usage of software licenses:



- **Available** shows the number of available licenses that are not consumed.
- **Unused** shows the number of licenses belonging to unused software products that were discovered during software inventory.
- **Used** shows the number of licenses used by software products on inventoried client computers for which usage tracking and metering is turned on.
- **Tracked Manually** shows the number of consumed licenses on the non-inventoried client computers. This number is entered by the administrator in the license editor.

- **No Tracking Data** shows the number of consumed licenses that were discovered by Inventory on the client computers on which the software usage is not tracked.
- **Unauthorized** shows the number of licenses for software found on client computers that do not belong to a defined computer or user filter.

Comparing Licenses to Deployment

Lab 3: Analyzing Device Based License Models

In this exercise, we will use various license model scenarios available in IT Management Suite to illustrate how the software installs compare to what has been purchased and what you are licensed for.

These scenarios will cover many permutations to the Device, User and Hardware based license models and will uncover their respective results in the Software Product Summary view within the Software view.

In addition to the standard results displayed, we will demonstrate the utilization and usage for each software product being tracked.

Scenario One: Device Based License Tracking

In this scenario, we will demonstrate the act of tracking device based licenses using the following criteria:

- Software to Track: **Microsoft Visio Professional 2016**
- Installed on **4** Computers
- Detected Use on **3/4** Computers
- Have Purchased 5 *DEVICE* Licenses
- Can be installed on any machine
- Non-Expiring Contract
- Need to see the current state

Preparing the Software Product for Device Based License Tracking

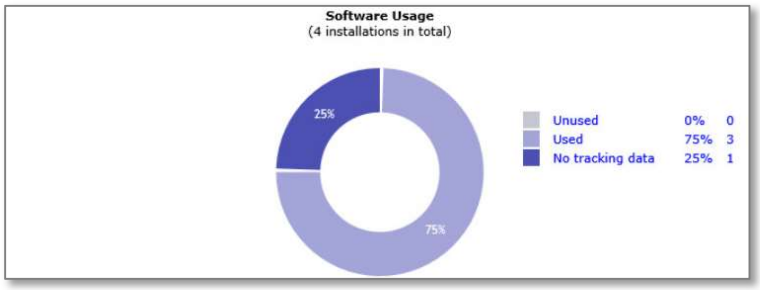
In this scenario, we will perform the following actions required to show this Device based license:

1. Switch to the **SMP** Virtual Machine
2. Open the **Symantec Management Console** by clicking the icon on the Desktop.
3. From the **SMP** computer desktop, double-click the **Symantec Management Console** icon.
4. From the console's menu, select **Manage > Software**
5. On the Left Pane, under **Favorites**, Select the **SAM Lab** filter

6. In the Middle Pane, Select the **Microsoft Visio Professional 2016** Software Product in the list. The Software Product Summary appears on the right pane.

Note: As a prerequisite the Ide**ntity, The Meter/Track Usage and Delivery** options of the **Software Product** would have been configured already – and is out of scope for this Lab exercise.

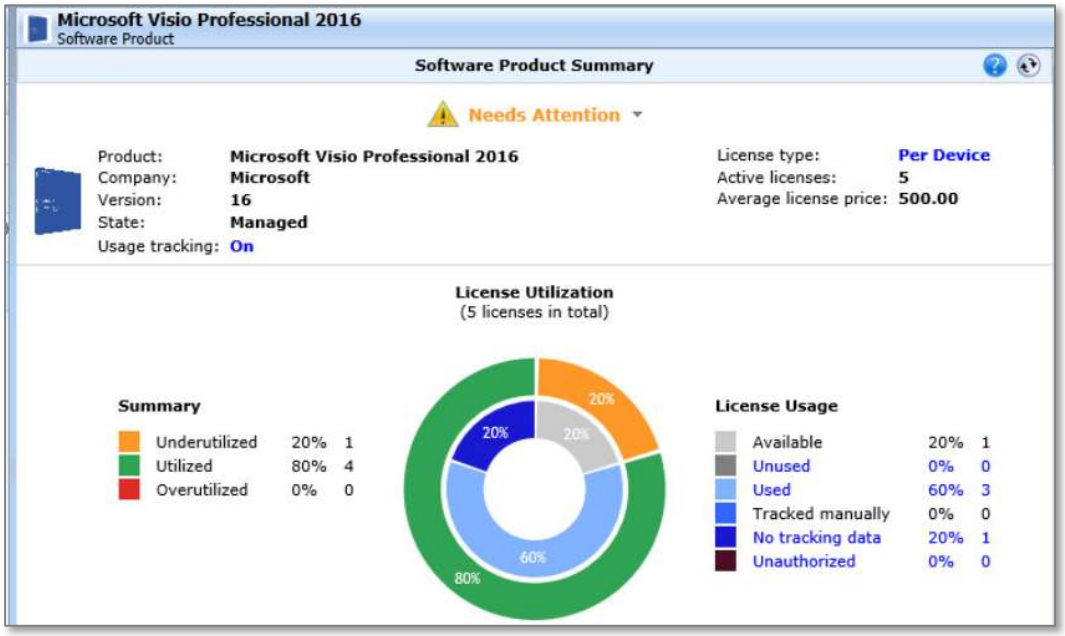
7. Notice that it only shows the License Use summary information as the Licensing data has not been entered.



8. We will now enter the **Software Licensing** information with the following information:
    a. Click on the "***Click to Add License***" link under License Type: area. The Software Product view opens to the Licensing Tab.
    b. Make sure the Licensable Product check box is enabled
    c. Click the **+Add License** icon. The create software license page appears.
    d. Under **Name**, type **– License** at the end of the currently entered name. This helps to distinguish the object as a license (**Microsoft Visio Professional 2016 - License)**
    e. Under the Purchases section, notice that there is a purchase automatically entered and named with "- Purchase #1" on the end of it with basic information
    f. Select the **Quantity** field, enter **5**
    g. Select the Total Cost field and enter **2500**
9. We will now enter the **License Rule** for this software license:
    a. Click on the "***New Rule***" link under License Rule: The **Edit License Rule** page appears.
    b. Under **Name**, type **Microsoft Visio Professional 2016 – License Rule.** This helps to distinguish the object as a license rule.
    c. Under License Type: select ***Per Device***
    d. Press OK on the **Edit License Rule** page
10. Press **OK** on the **Create Software License** page
11. Press **OK** on the **Software Product** page to complete the process

Observing the Results

You can now see that the evaluation has been completed and we can focus on the following items:



1. There is no indication of an **Unauthorized** or **Overutilized** state of the software product.
2. The summary indicates that it is in a “Needs Attention” state and that is due to the Underutilized count of 1
3. Notice that 4 licenses are consumed because a license unit is calculated as any computer that has the software installed. There are 4 Distinct Software Installations in this case BRIANNOTEBOOK, Win7-1, Win7 and Win8 - regardless of use or application metering data.
4. The resultant compliance calculation is 5 owned licenses minus 4 consumed licenses = 1 underutilized licenses
5. This summary also shows the License Usage statistics in the inner ring of the graph or on the left side.

Scenario Two: Device Based License Tracking with a Device Filter

In this scenario, we will demonstrate the act of tracking device based licenses using the following criteria:

- Software to Track: **Microsoft Visio Professional 2016**
- Installed on **4** Computers
- Detected Use on **3/4** Computers
- Have Purchased 5 Named *DEVICE* Licenses
- Must Define Authorized Devices
  - WIN7-1 and WIN8 are assigned in a filter.

- Need to see the current state

Preparing Device Based License with Device Filter Results

In this scenario, we will perform some of the following actions to show this Device based license with Device Filter comparison:

1. The **Software Product** has been created
2. The **Meter/Track Usage** option is already enabled
3. A **Computer Filter** needs to be created that includes Authorized Devices. To create the Filter:
    a. From the console's menu, select **Manage > Computers**
    b. On the Left Pane, in the Filters section, Right Click on the **Custom Filters** folder, and select **New > Software Filter**
    c. Name the filter **Authorized MS Visio Pro 2016 Devices**
    d. In the middle pane, select the **Add Filter Criteria** dropdown and type:

    `Win7-1|Win8` (uses the Pipe Symbol)

    e. Select **Win7-1** and **Win8** and press the > icon to bring them to the selected list

    f. Press the **Save Filter** Icon to save the filter
4. **A Software License** should be configured with the following information. In this case, we will use the existing one we created to demonstrate this scenario:
    a. From the console's menu, select **Manage > Software**
    b. On the Left Pane, under **Favorites**, Select the **SAM Lab** filter
    c. In the Middle Pane, Select the **Microsoft Visio Professional 2016** Software Product in the list. The Software Product Summary appears on the right pane.
    d. Click on the "**Per Device**" link under License Type: area. The Software Product view opens to the Licensing Tab.

e. Select the **Microsoft Visio Professional 2016 – License** in the Licenses List at the bottom and press the **Edit** icon (pencil). The Edit Software license page appears.

f. Click on the "**Microsoft Visio Professional 2016 – License Rule**" link under License Rule: The **Edit License Rule** page appears.

g. Select the Click to select link under the Authorized Devices: field. The Edit License Rule page appears.

h. Type Authorized in the search field and select the **Authorized MS Visio Pro 2016 Devices** Filter and press OK.

i. Press **OK**

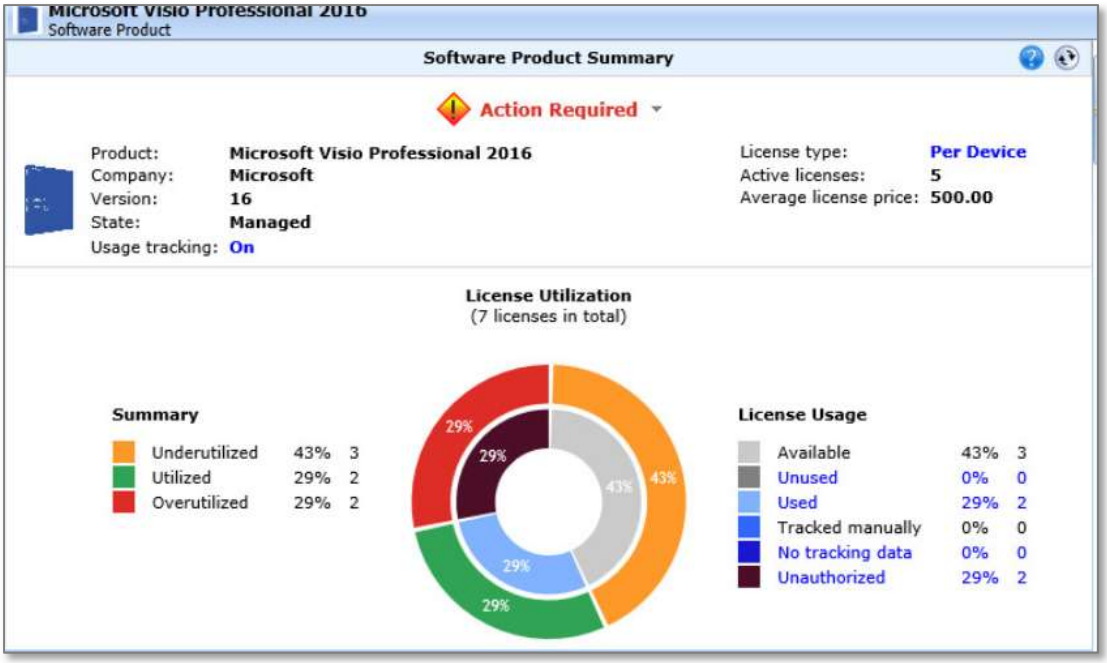
j. Press **Yes** to confirm the change to the rule.

k. Press **OK** on the software license page

l. Press **OK** on the software product page

Observe the Results

You can now see that the evaluation has been completed and we would focus on the following items:



1. There is an indication of an **Unauthorized** or **Overutilized** state of the software product as BRIANNOTEBOOK and WIN7 are not part of the Authorized Device Filter that was selected in the license rule.
2. The summary now indicates that it is in an "Attention Required" state and that is due to the Overutilized and Unauthorized states that exist. It also takes into account the 3 underutilized licenses. Click on "Attention Required" to see the reasons.

3. Notice that only 2 licenses are consumed because a license unit is calculated as any computer that has the software installed **AND** is included in the Computer Filter. There are 4 Distinct Software Installations and in this case Win7-1, Win8, BRIANNOTEBOOK and Win7, where 2 are consumed and 2 are considered overutilized.
4. The resultant compliance calculation is 5 owned licenses minus 2 consumed licenses = 3 underutilized licenses (with 2 of them requiring investigation or reclamation.)
5. This summary also shows the License Usage statistics in the inner ring of the graph or on the right side

Note: This scenario can also be modified to not just be used for Named Devices, but can also utilize a filter created from static or dynamic results. In this case, you can create a filter that is based on items like geographical locations, cost centers, departments, etc. that can be considered for 'site' or 'scoped' licensing models.

Note: There is also a comprehensive video on Device Based Licensing that can be viewed on YouTube: https://www.youtube.com/watch?v=1TWH8UfVT6Y

Lab 4: Analyzing Device Based License Models

Scenario One: User Based License Tracking

In this scenario, we will demonstrate the act of tracking User based licenses using the following criteria:

- Software to Track: **Microsoft Project Professional 2016**
- Installed on 3 Computers
- Detected Use on 3/3 Computers
- 4 Users have been using Project
- Users can have it installed on any number of endpoints
- Have Purchased 5 ***USER*** Licenses
- Need to see the current state

Preparing the Software Product for User Based License Calculation Results

In this scenario, we will perform the following actions in order to show this User based license calculation:

1. Switch to the **SMP** Virtual Machine
2. From the console's menu, select **Manage > Software**
3. On the Left Pane, under **Favorites**, Select the **SAM Lab** filter

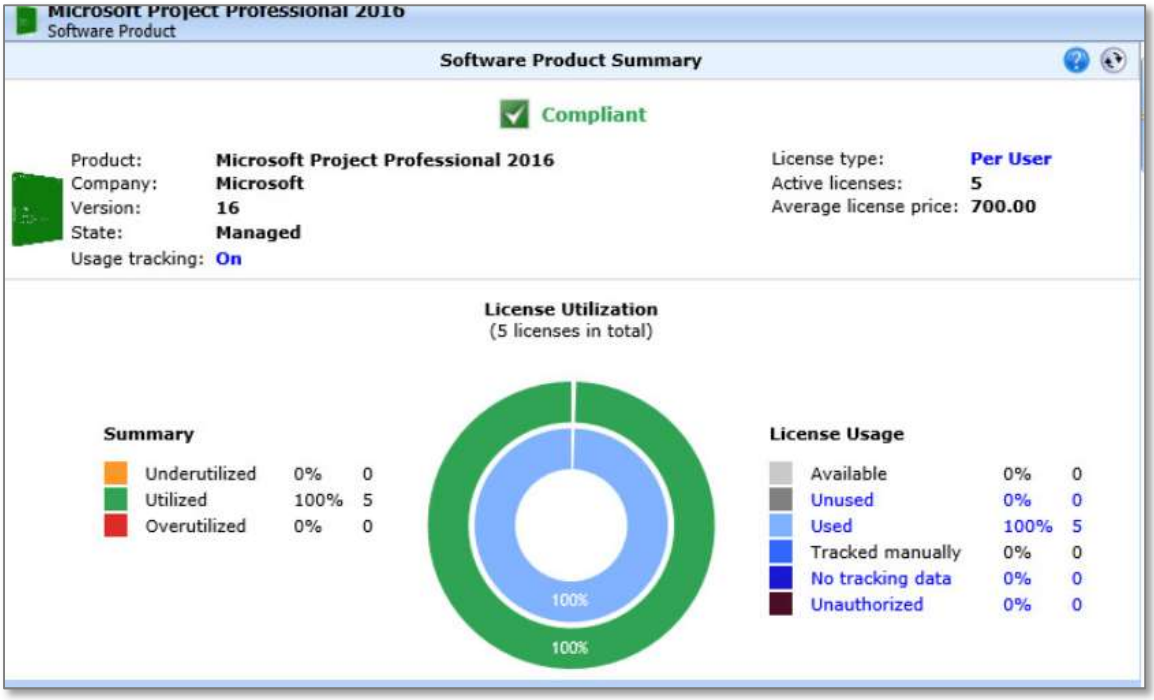
4. In the Middle Pane, Select the **Microsoft Project Professional 2016** Software Product in the list. The Software Product Summary appears on the right pane.

Note: As a prerequisite the **Identity, The Meter/Track Usage and Delivery** options of the **Software Product** would have been configured already – and is out of scope for this Lab exercise.

5. Notice that it only shows the License Use summary information as the Licensing data has not been entered.
6. We will now enter the **Software Licensing** information with the following information:
    a. Click on the "***Click to Add License***" link under License Type: area. The Software Product view opens to the Licensing Tab.
    b. Make sure the **Licensable Product** check box is enabled
    c. Click the **+Add License** icon. The create software license page appears.
    d. Under **Name**, type **– License** at the end of the currently entered name. This helps to distinguish the object as a license (**Microsoft Project Professional 2016 - License)**
    e. Under the **Purchases** section, notice that there is a purchase automatically entered and named with "- Purchase #1" on the end of it with basic information
    f. Select the **Quantity** field, enter **5**
    g. Select the Total Cost field and enter **3500**
7. We will now enter the **License Rule** for this software license:
    a. Click on the "***New Rule***" link under License Rule: The **Edit License Rule** page appears.
    b. Under **Name**, type **Microsoft Project Professional 2016 – License Rule.** This helps to distinguish the object as a license rule.
    c. Under License Type: select ***Per User***
    d. Deselect the In**stallations Per User** box, it should change to an infinity symbol. This indicates that the software can be installed on any number of computers.
    e. Press **OK** on the **Edit License Rule** page
8. Press **OK** on the **Create Software License** page
9. Press **OK** on the **Software Product** page to complete the process

Observe the Results

You can now see that the evaluation has been completed and we would focus on the following items:



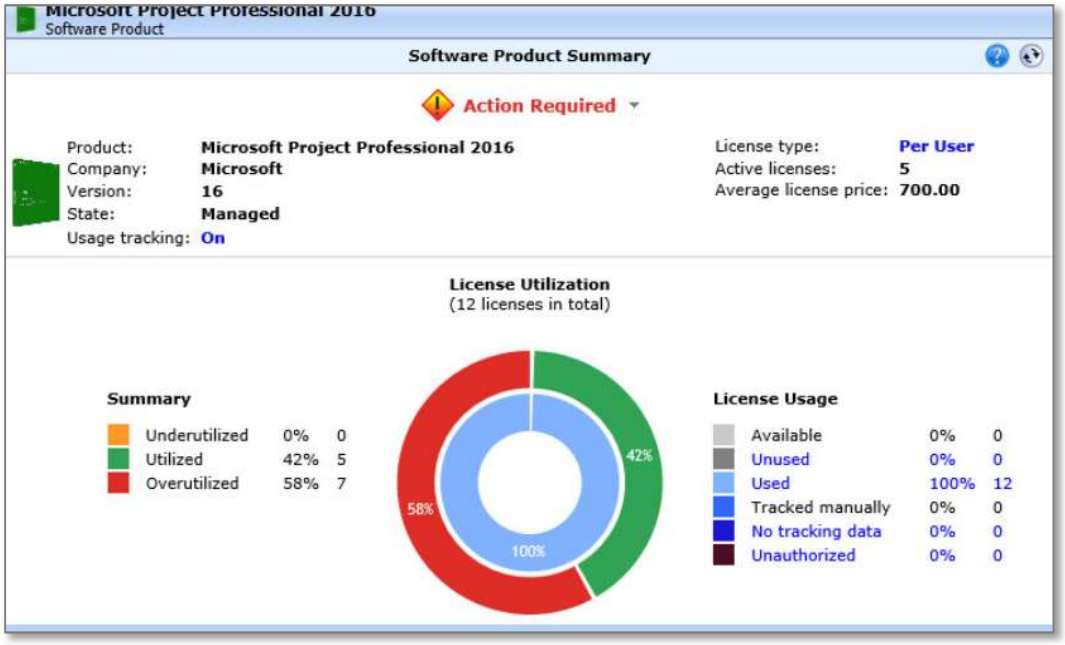
1. Notice that 5 licenses are consumed because a license unit is calculated as any distinct **User** that has executed the software installed. In the Computers with Software Installed list on the bottom, sort the User column and you will notice that there are 5 Distinct Users of this software regardless of the number of computers it is executed on.
2. The resultant compliance calculation is 5 owned licenses minus 5 consumed licenses = 0 underutilized licenses (with none of them requiring investigation or reclamation.)
3. This summary also shows the License Usage statistics in the inner ring of the graph or on the right side that indicates that 4 licenses are Used and 1 is Available
4. We will now change the "**Installations per User**" setting to '1' in the Software License Rule and observe the results.
    a. Click on the "***Per User***" link under License Type: area. The Software Product view opens to the Licensing Tab.
    b. Select the **Microsoft Project Professional 2016 – License** item on the list at the bottom and press the Edit icon (pencil)
    c. Click on the **Microsoft Project Professional 2016 – License Rule** link under License Rule: The **Edit License Rule** page appears.
    d. Under the **Installations Per User** field value, change it from **2147483647** to **1**. This indicates that the software can be installed on only one computer per user.
    e. Press **OK** on the Edit License Rule page

f. Press **Yes** to confirm the changes

g. Press **OK** on the **Edit Software License** page

h. Press **OK** on the **Software Product** page to complete the process

5. Notice that 5 licenses are consumed because a license unit is calculated as any distinct **User** that has executed the software on a distinct computer and it is 5 because there are only 5 active licenses. There are 4 Distinct Users of this software, however, some users have used the software on multiple computers. For example, end_user1 executed the software on both Win7-1 and Win8 and Win7 so this counts as 3 licenses consumed in this case.



6. The resultant compliance calculation is 5 owned licenses minus 12 consumed licenses = 7 overutilized licenses (with 7 of them requiring investigation or reclamation.)

7. This summary also shows the License Usage statistics in the inner ring of the graph or on the right side that indicates that 12 licenses are Used and no licenses are Available

Scenario Two: User Based License Tracking with User Filtering

In this scenario, we will demonstrate the act of tracking User based licenses with a User Filter using the following criteria:

- Software to Track: **Microsoft Project Professional 2016**
- Installed on 3 Computers
- Detected Use on 3/3 Computers
- Users can have it installed on any number of endpoints
- Have Purchased 5 ***NAMED USER*** Licenses

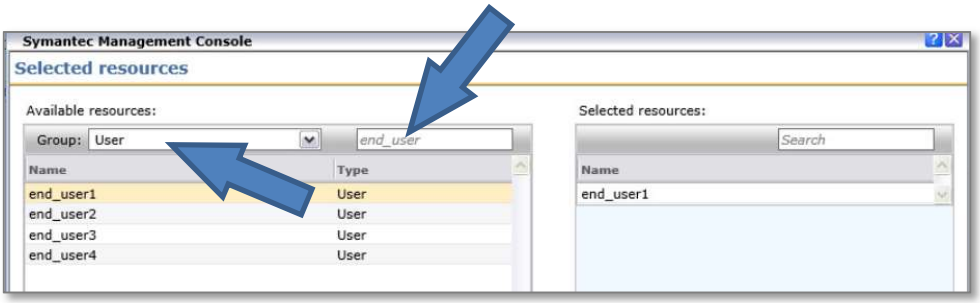
- Must Define Authorized Users
  - **end_user1** is the **only** Authorized User
- Need to see the resultant state

Preparing the Software Product for User Based License with Filter Calculation

In this scenario, we will perform the following actions to show this Filtered User based license calculations:

1. The **Software Product** has been created
2. The **Meter/Track Usage** option is already enabled
3. A **Computer Filter** needs to be created that includes Authorized Devices. To create the Filter:
   a. From the console's menu, select **Manage > Filters**
   b. On the Left Pane, in the **Filters** section, Right Click on the **Custom Filters** folder, and select **New > Software Filter**
   c. Change the "**New Filter**" name to **Authorized MS Project Pro 2016 Users**
   d. Expand the **Filter Definition** section

   e. Under Explicit Inclusions, select the **"No Resources Found"** link
   f. Select User in the Group drop down
   g. Type **end_user** in the search field
   h. Select **end_user1** in the list
   i. Press the **>** button to bring it over to the Selected resources list
   j. Press **OK**



   k. Press **Save Changes** on the Filter page

l. You should see end_user1 in the filter list. If you don't, check to see that the user was selected or press the Update Membership to see if it appears.

4. **A Software License** should be configured with the following information. In this case, we will use the existing one we created to demonstrate this scenario:

   a. From the console's menu, select **Manage > Software**

   b. On the Left Pane, under **Favorites**, Select the **SAM Lab** filter

   c. In the Middle Pane, Select the **Microsoft Project Professional 2016** Software Product in the list. The Software Product Summary appears on the right pane.

   d. Click on the "**Per User**" link under License Type: area. The Software Product view opens to the Licensing Tab.

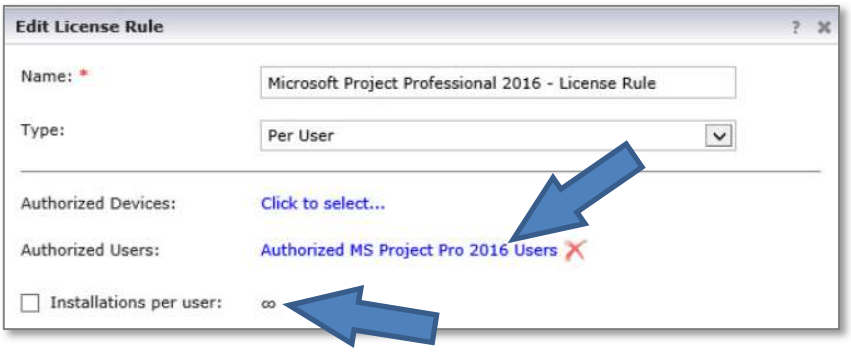
   e. Select the **Microsoft Project Professional 2016 – License** in the Licenses List at the bottom and press the **Edit** icon (pencil). The Edit Software license page appears.

   f. Click on the "**Microsoft Project Professional 2016 – License Rule**" link under License Rule: The **Edit License Rule** page appears.

   g. Select the ***Click to select*** link under the **Authorized Devices: field**. The Edit License Rule page appears.

   h. Type Authorized in the search field and select the **Authorized MS Project Pro 2016 Users** Filter and press OK.

   i. Deselect the **Installations per user** box.



   j. Press **OK**

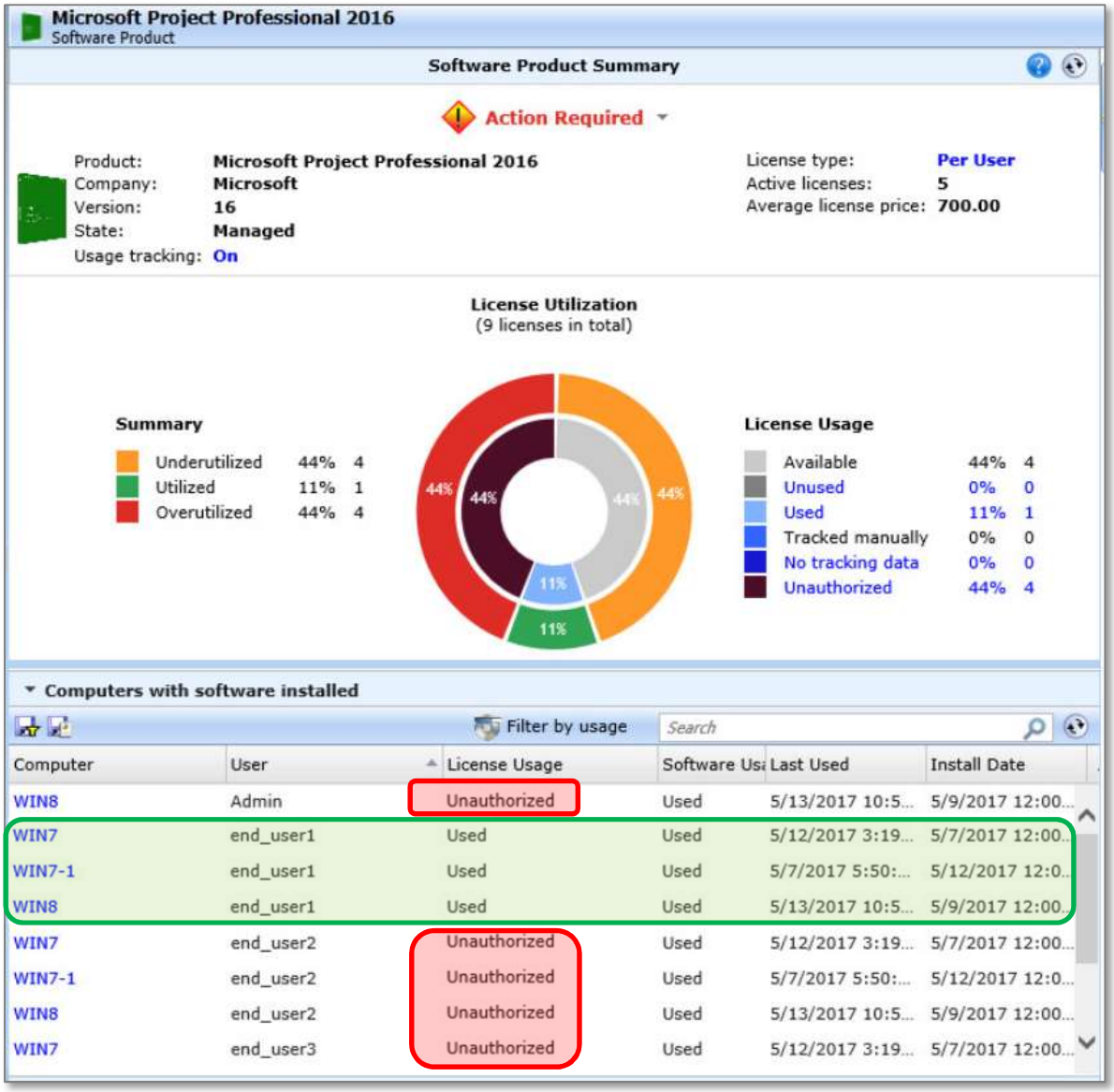
   k. Press **Yes** to confirm the change to the rule.

   l. Press **OK** on the software license page

   m. Press **OK** on the software product page

Observe the Results

You can now see that the evaluation has been completed and we would focus on the following items:



1. Notice that 1 license is consumed because a license unit is calculated as any **Users included in the User Filter** that have executed the software installed on ***any*** computer. There is 1 Filtered User that executed the software, regardless of the number of computers it was executed on.
2. Any software executions from users that were not included in the User Filter are considered **Overutilized** or in the case of license usage considered **Unauthorized**. There are 4 Users that used the software that do not belong to the authorized filter.
3. The resultant compliance calculation is 5 owned licenses minus 1 consumed licenses = 4 underutilized licenses (with one of them requiring investigation or reclamation.)

4. This summary also shows the License Usage statistics in the inner ring of the graph or on the right side that indicates that 1 license is used, 4 are Available and 1 is unauthorized.

Note: You can also add a **Device Filter** to this **License Rule** to further define the calculation – it is out of scope for this lab exercise in an effort to save time. There is a comprehensive video on User Based Licensing that can be viewed on YouTube: https://www.youtube.com/watch?v=gOv3kGl_7bA

Lab 5: Analyzing Hardware Based License Models

Scenario One: Processor Based License Tracking

In this scenario, we will demonstrate the act of tracking Hardware based licenses using the following criteria:

- **Software to Track:** Microsoft SQL Server 2012 Standard
- Installed on 5 Devices
- Usage is Implied by Installation
- Processor/Core gathered by Inventory
- Have Purchased 5 ***Processor*** Licenses
- Establish Authorized Servers
  - SMP and WIN2012 are assigned licenses
- Need to see the resultant state
- Processor Inventory:
  - **SMP** 6 Processors
  - **WIN2012** 1 Processor
  - **WIN8** 1 Processor
  - **WIN7** 1 Processor
  - **WIN7-1** 1 Processor

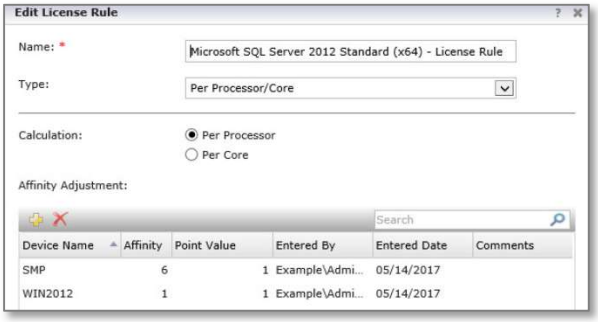
Preparing the Software Product for Processor Based License Calculation Results

In this scenario, we will have performed the following actions through automated or manual means to show this Processor based license comparison:

1. Switch to the **SMP** Virtual Machine
2. From the console's menu, select **Manage > Software**
3. On the Left Pane, under **Favorites**, Select the **SAM Lab** filter
4. In the Middle Pane, Select the **Microsoft SQL Server 2012 Standard (x64)** Software Product in the list. The Software Product Summary appears on the right pane.

Note: As a prerequisite, the **Identity and Delivery** options of the **Software Product** would have been configured already – and is out of scope for this Lab exercise. *The Meter/Track Usage configuration does not apply to Hardware based licensing as Use is implied by its installation.*

5. Notice that it only shows the License Use summary information as the Licensing data has not been entered.
6. We will now enter the **Software Licensing** information with the following information:
    a. Click on the "***Click to Add License***" link under License Type: area. The Software Product view opens to the Licensing Tab.
    b. Make sure the **Licensable Product** check box is enabled
    c. Click the **+Add License** icon. The create software license page appears.
    d. Under **Name**, type **– License** at the end of the currently entered name. This helps to distinguish the object as a license (**Microsoft SQL Server 2012 Standard (x64) - License)**
    e. Under the **Purchases** section, notice that there is a purchase automatically entered and named with "- Purchase #1" on the end of it with basic information
    f. Select the **Quantity** field, enter **5**
    g. Select the Total Cost field and enter **58000**
7. We will now enter the **License Rule** for this software license:
    a. Click on the "***New Rule***" link under License Rule: The **Edit License Rule** page appears.
    b. Under **Name**, type **Microsoft SQL Server 2012 Standard (x64) – License Rule.** This helps to distinguish the object as a license rule.
    c. Under License Type: select ***Per Processor/Core***
    d. Under the Calculation: section, select the **Processor** radio button.
    e. Under the Affinity Adjustment table, Press the **+** symbol (Add Device). The Add Device page appears.
    f. Select SMP and Win2012 and press OK. You will notice that it returned 6 Processors for SMP and 1 for WIN2012.

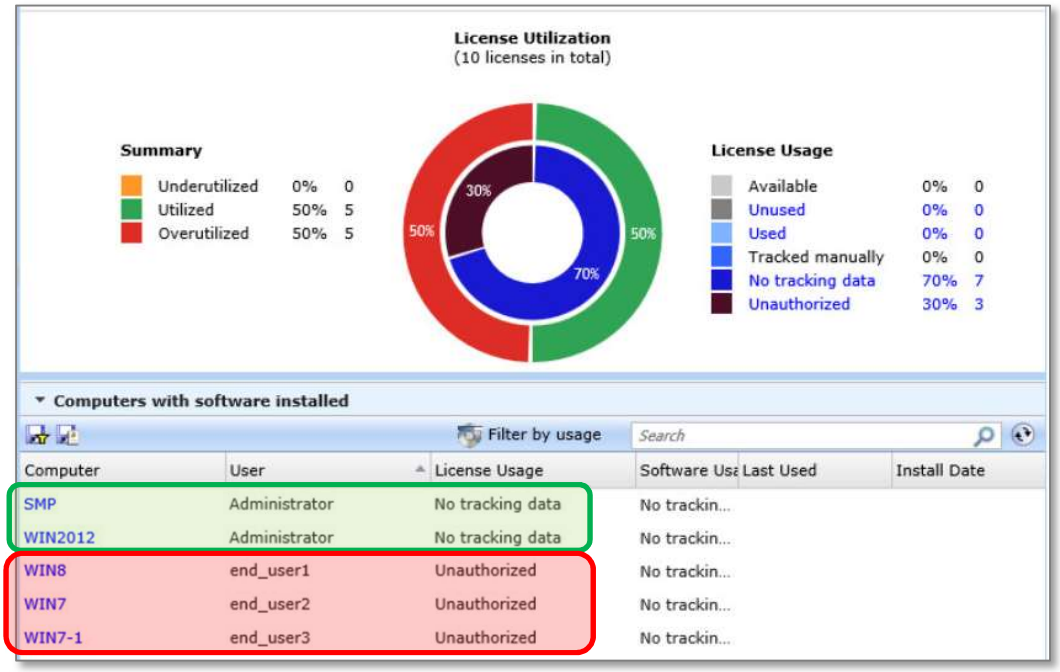


g. Press **OK** on the **Edit License Rule** page

8. Press **OK** on the **Create Software License** page
9. Press **OK** on the **Software Product** page to complete the process

Observe the Results

You can now see that the evaluation has been completed and we would focus on the following items:



1. Notice that in this case any Devices that were not included in the Affinity Adjustment table are considered **Overutilized** or in the case of license usage considered **Unauthorized**. In this case 5 are overutilized which accounts for: 5 active licenses – 6 processors in SMP, 1 Processor in WIN2012, has a single processor is indicated.
2. Notice that 5 license are consumed because SMP (6 Processor) and WIN2012 (1 Processor) are included in the Affinity Adjustment table and there are only 5 active licenses. At this point we are already at a deficiency of 2 licenses (5 Active minus 7 Consumed).
3. Subtracting the other 3 processors from WIN8, WIN7 and WIN7-1 and you get a total of 5 licenses requiring investigation or reclamation.

4. This summary also shows the License Usage statistics in the inner ring of the graph or on the right side that indicates that 3 licenses are unauthorized.

Note: The **Core Based License** model would be very similar with the calculation being based on the number of cores in each the Device. In the effort to save time in this lab, we will continue with the affinity adjustment exercise. For more information, there is a video available on YouTube that provides many examples of Hardware based License models at: https://www.youtube.com/watch?v=pgquvEEHT9M&t=15s

Scenario Two: Hardware License Tracking with Affinity Adjustment

In this scenario, we will demonstrate the act of tracking Hardware based licenses using the following criteria:

- **Software to Track:** Microsoft SQL Server 2012 Standard
- Installed on 5 Servers
- Usage is Implied by Installation
- Processor/Core gathered by Inventory
- Have Purchased 5 ***Processor*** Licenses
- Established Authorized Servers
  - SMP and WIN2012 are assigned licenses
- SQL Server Affinity is known
  - SMP (3/6 Processors) and WIN2012 (All)
- Need to see the resultant state

Preparing the Software Product for Hardware License Tracking with Affinity Calculation

In this scenario, the Administrator knows that SMP has 6 Processors, but the Affinity configuration for SQL Server is only using 3 Processors. This means that the Affinity must be changed to reflect this change and to provide an accurate Processor based license calculation:

1. We will now modify the **Software License** and **License Rule** for this software license:
    a. From the console's menu, select **Manage > Software**
    b. On the Left Pane, under **Favorites**, Select the **SAM Lab** filter
    c. In the Middle Pane, Select the **Microsoft SQL Server 2012 Standard (x64)** Software Product in the list. The Software Product Summary appears on the right pane.
    d. Click on the "***Per Processor/Core***" link under License Type: area. The Software Product view opens to the Licensing Tab.
    e. Under the **License list,** select the **Microsoft SQL Server 2012 Standard (x64) – License** and press the **Edit** icon (pencil)
    f. Click on the "**Microsoft SQL Server 2012 Standard (x64) – License Rule**" link under License Rule: The **Edit License Rule** page appears.
    g. Under the Affinity Adjustment table, below the Affinity column, change the value of SMP Processors from **6** to **3** and type Affinity Adjusted in the Comments column.

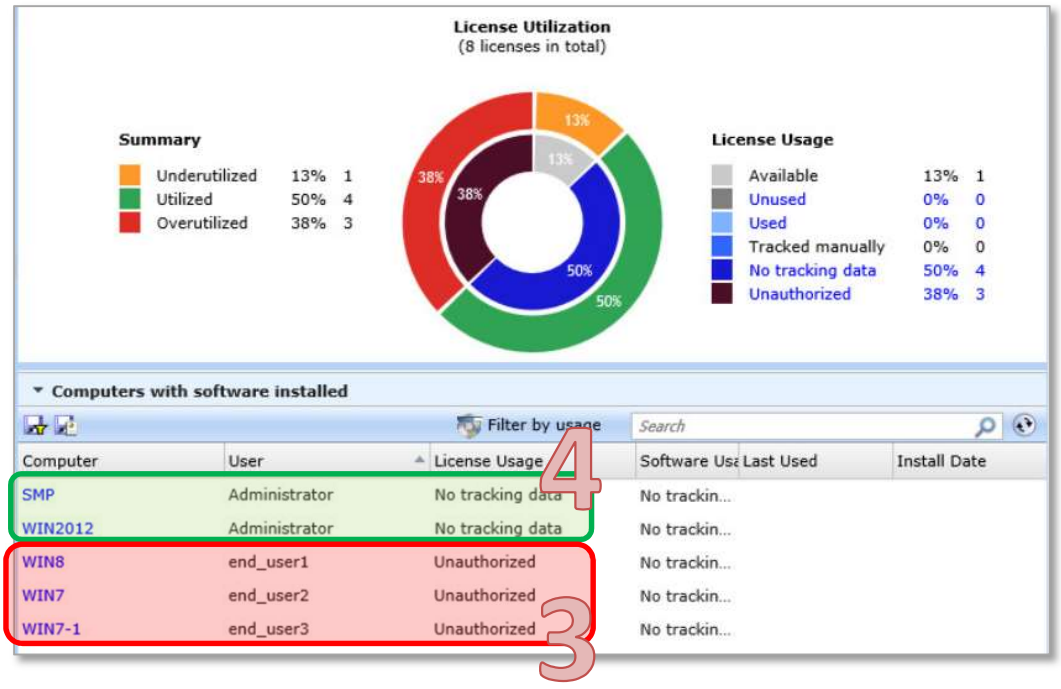
h. Press **OK** on the **Edit License Rule** page

i. Press **OK** on the **Edit Software License** page

j. Press **OK** on the **Software Product** page to complete the process

Observe the Results

You can now see that the evaluation has been completed and we would focus on the following items:

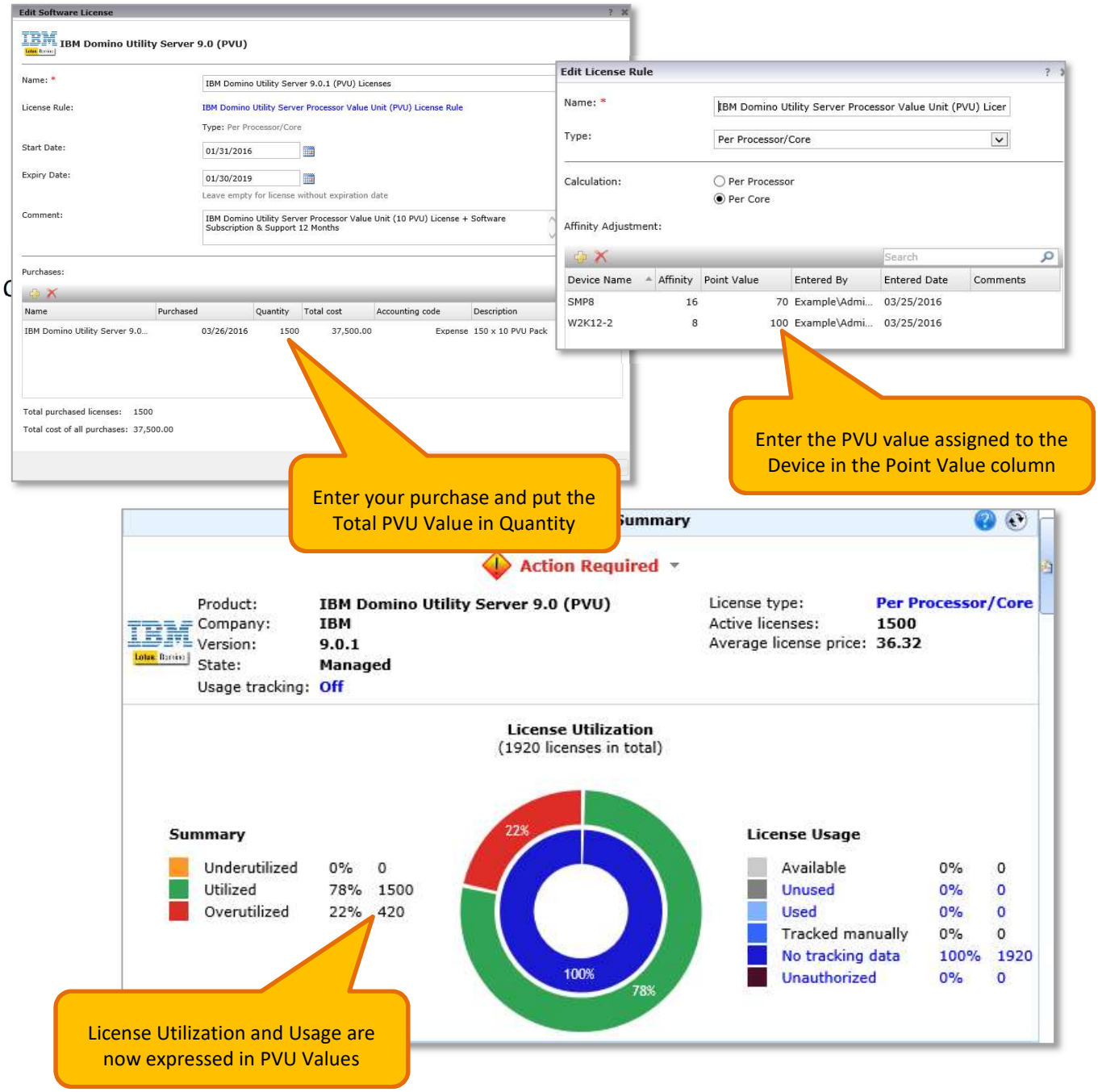
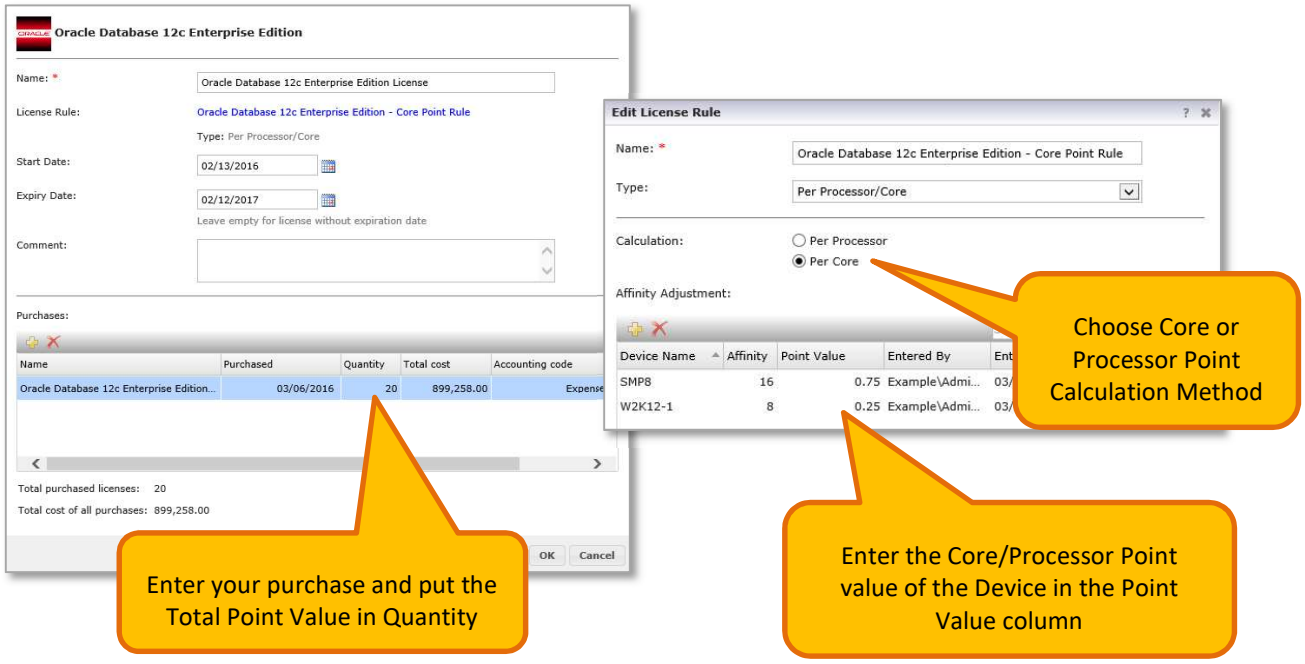
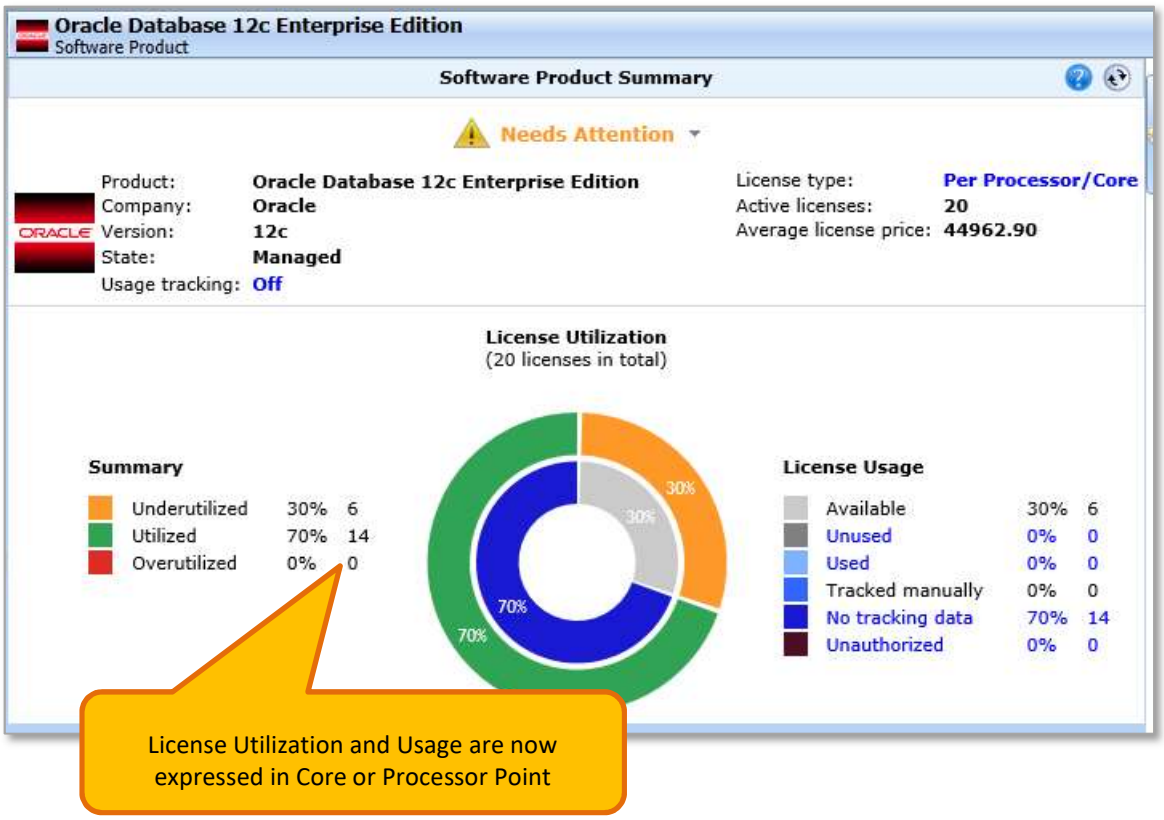


1. Notice that in this case any Devices that were not included in the Affinity Adjustment table are considered **Overutilized**. In this case WIN8, WIN7 and WIN7-1 which each has 1 processor for a total of 3 Overutilized and Unauthorized licenses.
2. Notice that only 4 licenses are consumed this is because WIN2012 and SMP are included in the Affinity Adjustment table and SMP has 6 Processors with an affinity of 3 and WIN2012 has 1 Processor with an affinity of 1 for a total of 4 consumed processor licenses.
3. The resultant compliance calculation is 5 owned licenses minus 4 consumed processor licenses = 1 underutilized processor licenses (with 3 of them requiring investigation or reclamation.) This is a case where at least one processor license could be repurposed.
4. This summary also shows the License Usage statistics even though they are not considered in the case of Hardware license scenarios. In the inner ring of the graph indicates that 1 is Available and 3 are unauthorized.

APPENDIX A: Other Uses for Hardware Based Licenses

There are many more applicable scenarios to the Hardware License Model. For instance, you can track Processor Value Unit (PVU) licenses or Oracle Core Point and Processor Point licenses by utilizing the same methods observed in this lab exercise and utilizing the Affinity and Point values placed on the Devices in the Affinity Adjustment Table.

Processor Value Unit Calculation Example:



Oracle Core Point/Processor Point Calculation Example: