SCOMathon workshop week Tuesday session.

Reporting, Alert Tuning and SCOM Auditing by Bob Cornelissen

This document contains 6 exercises. This is more than in the workshop. It is because the last two exercises require additional software or will only work if you have the latest SCOM version. First of all, we will discuss the minimal requirements for the first 4 exercises. All items will be shown in demos during the workshop.

Requirements:

A SCOM management group of versions 2012 or higher. Because we are not necessarily making changes to the environment you could run these even in a production environment. Although we prefer a lab or test environment for SCOM to play with.

For exercise 3 + 4 you will need the tools **Override Explorer and MPViewer and Override Creator**. Go to this page SCOM Tools - Kevin Holman's Blog and download the Override Explorer and Override creator tools. MP Viewer is also there, but we will use an updated version from a link to a version with added functionality which I like! These tools should run against your SCOM version as well.

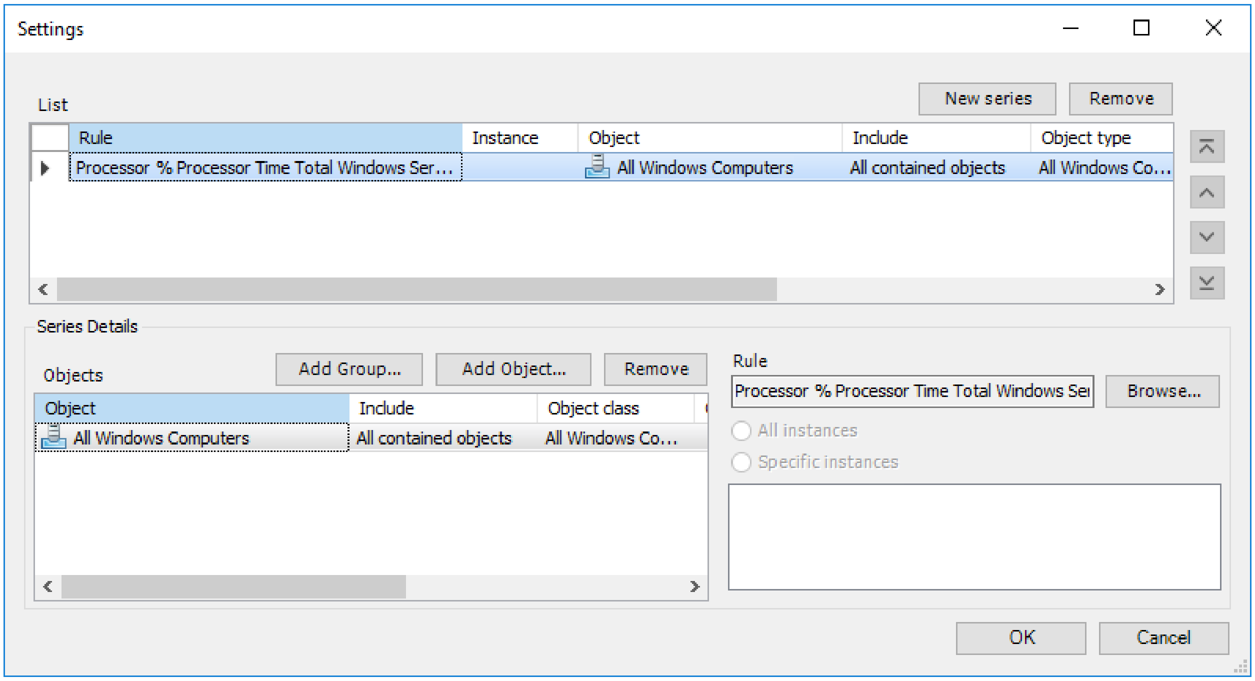
The following are optional exercises, and we will not be pausing the workshop for those, but you can do them afterwards if you have these prerequisites. You can see them in demo.

For optional exercise 5 you will need Cookdown Easy Tune: Easy Tune — Cookdown . You can get the free version from there and play around with it. It will install in a SCOM management group and can be used with a limited number of override packs.

For optional exercise 6 you will need to have AT LEAST **SCOM 2019 with UR2**, because only in this version with update rollup you will find the SCOM auditing features and reports.

Exercise 1 – Performance Detail report

- Within the **Operations Manager Console**, browse to the **Reporting Pane**.
- In the **Microsoft Generic Report Library** folder, open the report named **Performance Detail.**
- On the left-hand side of the parameters screen change the **From** field to **Yesterday**.
- On the right-hand side near the top click the **Change** button. This opens another screen with 3 sections.
- Above the top section click **New series**.
- Now in the bottom-left section click the **Add Group** button.
- Type **Windows Computers** and click the **Search** button
- In the middle select the **All Windows Computers** group and click the **Add** button.
- The group will be visible in the bottom selected objects area. Click **OK**.
- In the bottom-right section click the **Browse** button.
- In the Rule Name box type **Processor time** and click the **Search** button.
- You might see multiple there, and from the Management Pack column you can see **Windows 2### Operating System**, and the Object column would say **Processor Information**. Select one of those where you know you have multiple servers of that version in your environment. I selected the Windows 2016 and higher counter. Click **OK**.



Rule	Instance	Object	Include	Object type
Processor % Processor Time Total Windows Ser...		All Windows Computers	All contained objects	All Windows Co...

Object	Include	Object class
All Windows Computers	All contained objects	All Windows Co...

Rule: Processor % Processor Time Total Windows Ser

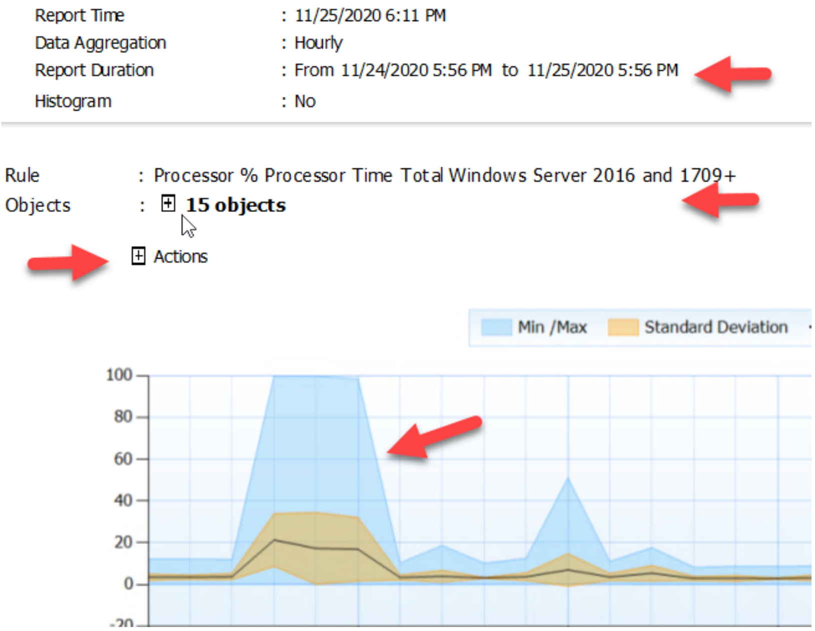
○ All instances

○ Specific instances

- If the result looks like the above, click the **OK** button at the bottom.
- Now you have selected parameters for the report, Run the report by using the **Run button** in the top menu marked with a green play button.

The resulting report should show you a graph with a black line for the average, a blue area containing the highest and lowest numbers registered for that hour, and a yellow area for the standard deviation. **Check the graph** to see if the blue area has areas where it is spread widely from the average line. If it is, that means at least 1 of your servers has been busier than the average servers during that period.

Above the graph you will find the report data, such as the time the report ran and the duration. Also, there you will find the name of the Rule which collected this data. Important to note here is the **number of Objects**. This should be the number of servers with the operating systems connected to the collection rule, in your SCOM management group. Make sure it is more than 1. In my case it is 15 in a small demo. Also notice there is a small + sign with the word Actions there right above the graph.



Report Time : 11/25/2020 6:11 PM
Data Aggregation : Hourly
Report Duration : From 11/24/2020 5:56 PM to 11/25/2020 5:56 PM
Histogram : No

Rule : Processor % Processor Time Total Windows Server 2016 and 1709+
Objects : ⊞ **15 objects**

⊞ Actions

- Click the **+ sign** next to the **Actions** word above your graph.
- A box opens with some links. Click the **Performance for every object** link.

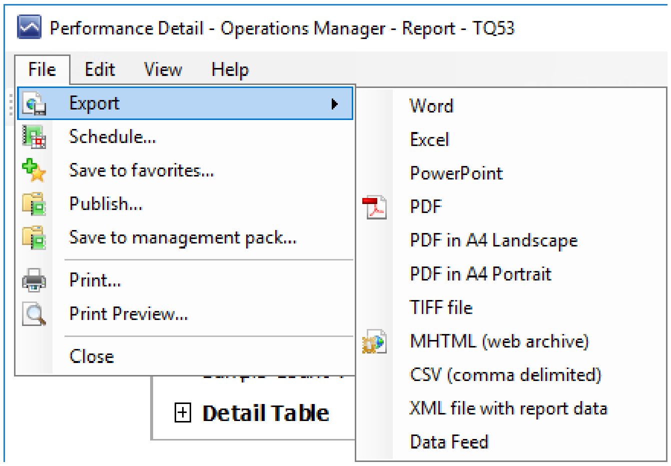
This opens a child report or sub report with the same graph, but for every object (server) separately. Since I had 15 servers in my set for the first report, this now contains 15 graphs. 1 for each server.

Above every graph is the name of that objects (in this case the server name).

Scroll through all the graphs and see if you can find a server with a higher CPU usage. Assuming you found on in the first graph, like my example above. Keep your eye on the Y-axis for every graph!!! The Y-axis adjusts to the registered peak CPU usage. One graph may go from 0-100% and the other from 0-5%.

Now let’s export this report.

- In the top menu click File – Export and check out the possibilities.



- Select a **PDF format** to export to.
- Wait for it to render and for a popup asking for a file name.
- **Select a folder** where to save it and **give it a name**.
- Click **Save**
- In the top menu bars of the report there is a **blue arrow** pointing to the left. It is the Back to parent report button. Click that.
- While back in the original report go to the top menu and click **File**
- Notice the options to Schedule or Publish or Save to Management Pack listed there.
- **Close** the report.

End of exercise

Exercise 2 – Data Volume by management pack report

- Within the **Operations Manager Console**, browse to the **Reporting Pane**.
- In the **System Center Core Monitoring Reports** folder, open the report named **Data Volume by Management Pack.**
- Run the report with the following parameters:
    - **From**: Yesterday
    - **To**: Today
    - **Show Top**: 30
- Sort the **Perf Count** column to get the highest numbers on top. In most cases the top few rows are based on performance counter numbers anyway.
- Write down which management packs are generating the top 3 most performance counter entries.
- Click the highest number in the **Perf Count** column. This opens a drill-down report for only performance counter entries for that one management pack.
- In the drill-down report, examine the performance counters that are responsible for the majority of collected performance data.

Think about this: Do you need this counter? And if so, would the data be less useful if you decrease the collection frequency, to reduce the amount of data? Doubling the rule collection interval halves the number next to the counter!

You will see the exact **name of the Rule** which is collecting this data. You could copy this name to a notepad and later go to the SCOM console Authoring pane and find the Rules section and search by the name of the rule. Once you find it you could override the specific rule. As you will notice this method is a one-by-one process and might take a while, but it will work.

This time let's view some similar information regarding collected events.

- Hit the **blue back button** in the top menu of the report.
- Now, sort the **Event Count** column to show the highest numbers on top. Often these are coming from the Windows Operating System, ADFS and AD DC packs.
- Click the **highest number** in the Event Count column.
- In the resulting drill-down report you can see the rule collecting the events. If you scroll down, you can see if certain computers/objects have much higher numbers of events than others.

Is there a specific Windows Computer responsible for most of the events? Perhaps certain Windows services keep crashing and restarting every minute. Maybe someone forgot to disable extensive logging after a short period of troubleshooting. Keep in mind that all this data is being piled up in both the OperationsManager and OperationsManagerDW databases for as long as the retention reaches.

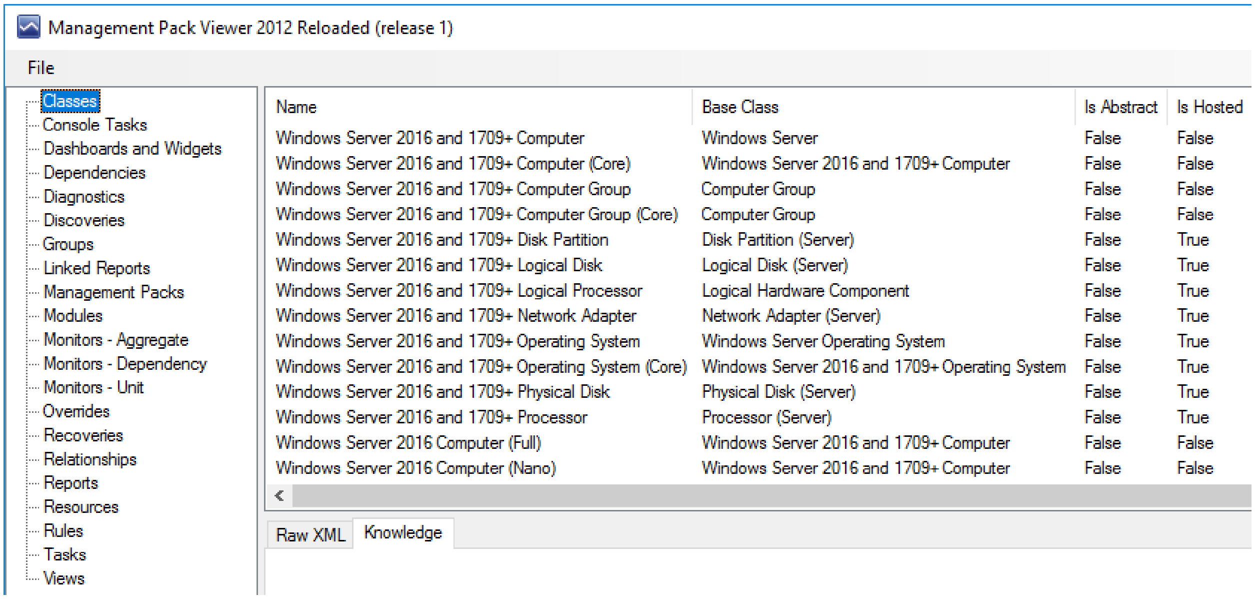
- Hit the **blue back button**, followed by opening the **Parameters** pane (third button in top menu, or click View -Parameters)
- This time, de-select the **Performance** and **Events** data types, and run the report again.
- Review **Discovery Data**, **Alert Count** and **State Changes** in a way similar to how we examined Performance and Event data.

End of exercise

Exercise 3 – MP Viewer

For this exercise we will have a look at MP Viewer from this link.

- Start the **MP Viewer** executable.
- Click **File** – **Load Management Pack**. Two options here, to load a pack from a file or from management group. Select **Management Group**.
- Enter the **Server name**. If your account has SCOM access you can click **Connect**. Otherwise use your SCOM admin credentials and click **Connect**.
- **Select** any **management pack** or a few at the same time and click **OK** at the bottom. I selected Microsoft.Windows.Server.2016 both the discovery and monitoring packs and an overrides pack I had created.



Name	Base Class	Is Abstract	Is Hosted
Windows Server 2016 and 1709+ Computer	Windows Server	False	False
Windows Server 2016 and 1709+ Computer (Core)	Windows Server 2016 and 1709+ Computer	False	False
Windows Server 2016 and 1709+ Computer Group	Computer Group	False	False
Windows Server 2016 and 1709+ Computer Group (Core)	Computer Group	False	False
Windows Server 2016 and 1709+ Disk Partition	Disk Partition (Server)	False	True
Windows Server 2016 and 1709+ Logical Disk	Logical Disk (Server)	False	True
Windows Server 2016 and 1709+ Logical Processor	Logical Hardware Component	False	True
Windows Server 2016 and 1709+ Network Adapter	Network Adapter (Server)	False	True
Windows Server 2016 and 1709+ Operating System	Windows Server Operating System	False	True
Windows Server 2016 and 1709+ Operating System (Core)	Windows Server 2016 and 1709+ Operating System	False	True
Windows Server 2016 and 1709+ Physical Disk	Physical Disk (Server)	False	True
Windows Server 2016 and 1709+ Processor	Processor (Server)	False	True
Windows Server 2016 Computer (Full)	Windows Server 2016 and 1709+ Computer	False	False
Windows Server 2016 Computer (Nano)	Windows Server 2016 and 1709+ Computer	False	False

- On the left-hand side menu go through the different types of management pack data.
- Explore Classes, Discoveries, Monitors – Unit, Overrides, Rules, Tasks and Views

In the Monitors – Unit, you will find the columns Category with definitions like PerformanceHealth and AvailabilityHealth. Note that the Enabled column shows if these monitors are enabled by default or not. Note the GenerateAlert column as well. If you select a monitor, you can explore the bottom part of the screen with it’s Knowledge and Raw XML tabs. For example, in the XML of a PerformanceHealth monitor you can see the Frequency entry listing the interval this monitor runs at in seconds.

In the Rules part, have a look at the Category again and note several PerformanceCollection rules. See if they are enabled by default. Scroll to the right to see in which management pack they are (in the case you selected multiple management packs when starting the tool).

- Go to the top menu and click **File** – **Save to Excel**.
- Select a **folder** and give the exported file a **name** and click **Save**.
- Go to the folder you selected and **open** the xml file you saved with **Excel**.
- Note the tabs at the bottom of the screen for each type of management pack data.

- Go to the **Monitors – Unit** tab at the bottom and look at the contents. Note by the column headers if a monitor is enabled and if it generates an alert
- Close Excel and close MP Viewer.

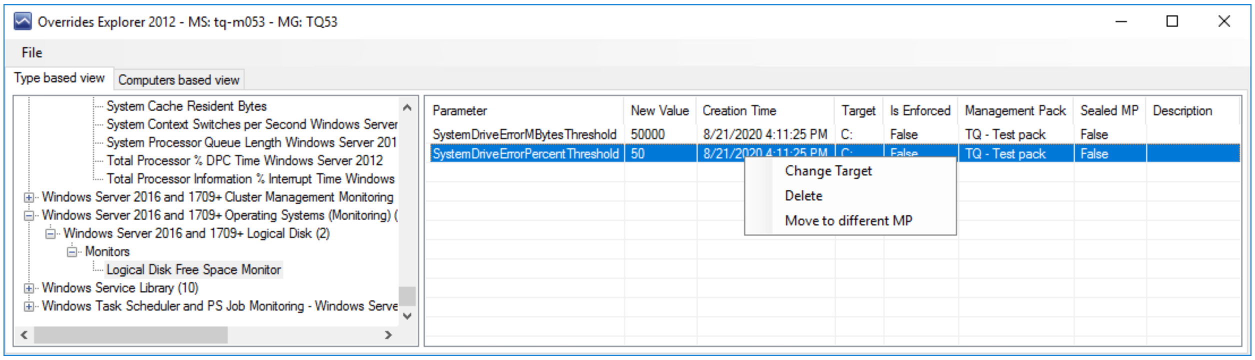
Exercise 4 – Override Explorer and Override Creator

For this exercise we will have a look at Override Explorer from this link and Override Creator from this link.

Override Explorer

- Start the override explorer tool
- From the menu click **File** – **Connect**
- Type the name of your **management server** and click **Connect**
- On the left-hand side there is a list of Types and using the **+ symbols** you can expand into some of them to see what overrides exist for those types. Usually for Windows Server operating system or SQL related types you will find some overrides.

Note the overrides and what information you can see on the right-hand side. For example, you can see the Management pack name. Some overrides are created in the sealed management packs. Click through until you find some overrides which are in an unsealed overrides pack.



Overrides Explorer 2012 - MS: tq-m053 - MG: TQ53

System Cache Resident Bytes
System Context Switches per Second Windows Server
System Processor Queue Length Windows Server 201
Total Processor % DPC Time Windows Server 2012
Total Processor Information % Interrupt Time Windows
Windows Server 2016 and 1709+ Cluster Management Monitoring
Windows Server 2016 and 1709+ Operating Systems (Monitoring) (
Windows Server 2016 and 1709+ Logical Disk (2)
Monitors
Logical Disk Free Space Monitor
Windows Service Library (10)
Windows Task Scheduler and PS Job Monitoring - Windows Serve

Parameter	New Value	Creation Time	Target	Is Enforced	Management Pack	Sealed MP	Description
SystemDriveErrorMBytesThreshold	50000	8/21/2020 4:11:25 PM	C:	False	TQ - Test pack	False	
SystemDriveErrorPercentThreshold	50	8/21/2020 4:11:25 PM	C:	False	TQ - Test pack	False	

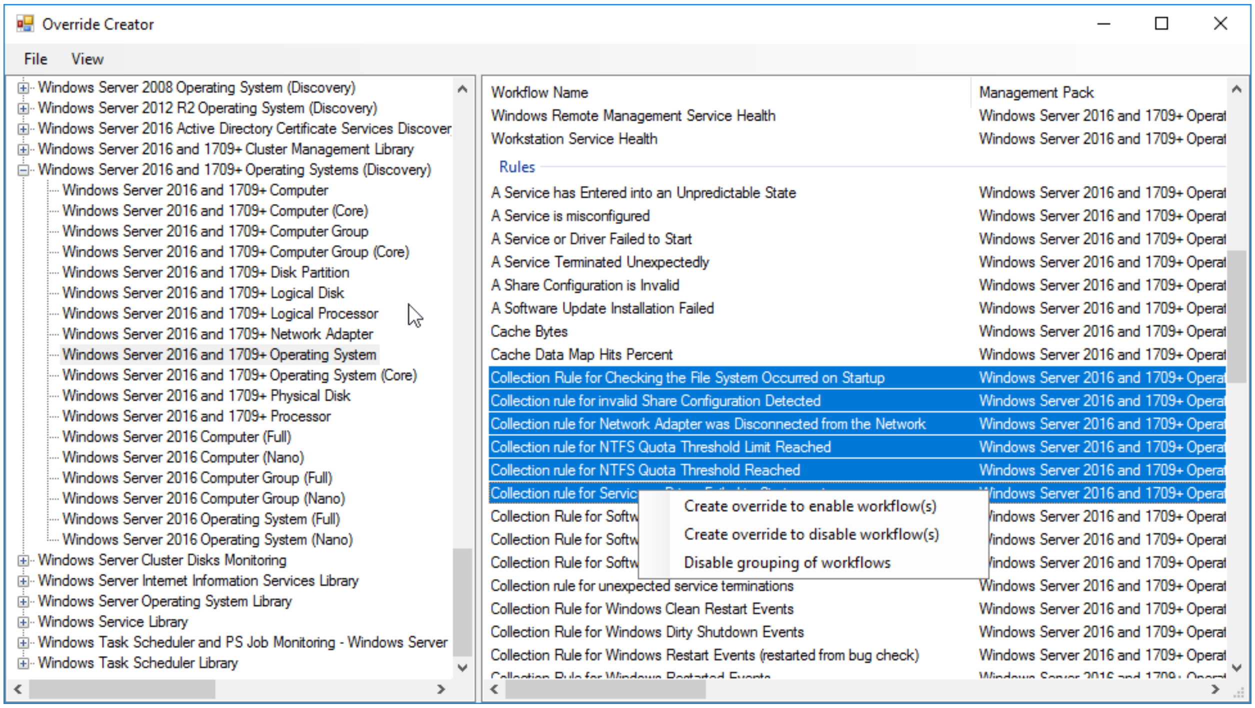
In the picture above you see 2 overrides for the Windows Server 2016 Operating System type related to Logical Disk. They are in an overrides pack called TQ-TestPack, which does not conform to our naming standards. **Right-click** such an override and **see** the options. I could remove the override from here or move it to a different management pack.

- In override explorer go to the top menu and click **File – Export to Excel**.
- Select a **folder** and give the file a **name** and click **Save**.
- Open the **xml** file in Excel
- Sort or filter by management pack and you can find the overrides set in the custom override packs used.
- Close Excel and Override Explorer.

Override Creator

This tool is meant to provide quick bulk overriding of workflows (monitors and rules) in SCOM.

- Start **Override Creator**
- Enter the name of your **management server** and click **Connect**
- Scroll down the list on the left-hand side.
- Let's select **Windows Server 2016 and 1709+ Operating System**.
- **Expand** the list entry for Windows Server 2016 and 1709+ Operating System
- On the right, there is a list of Monitors followed by a list of **Rules**.
- In the rules section find some rules with names like **Collection rule for**…
- **Multi-select a few** and **right-click** to get an options menu.

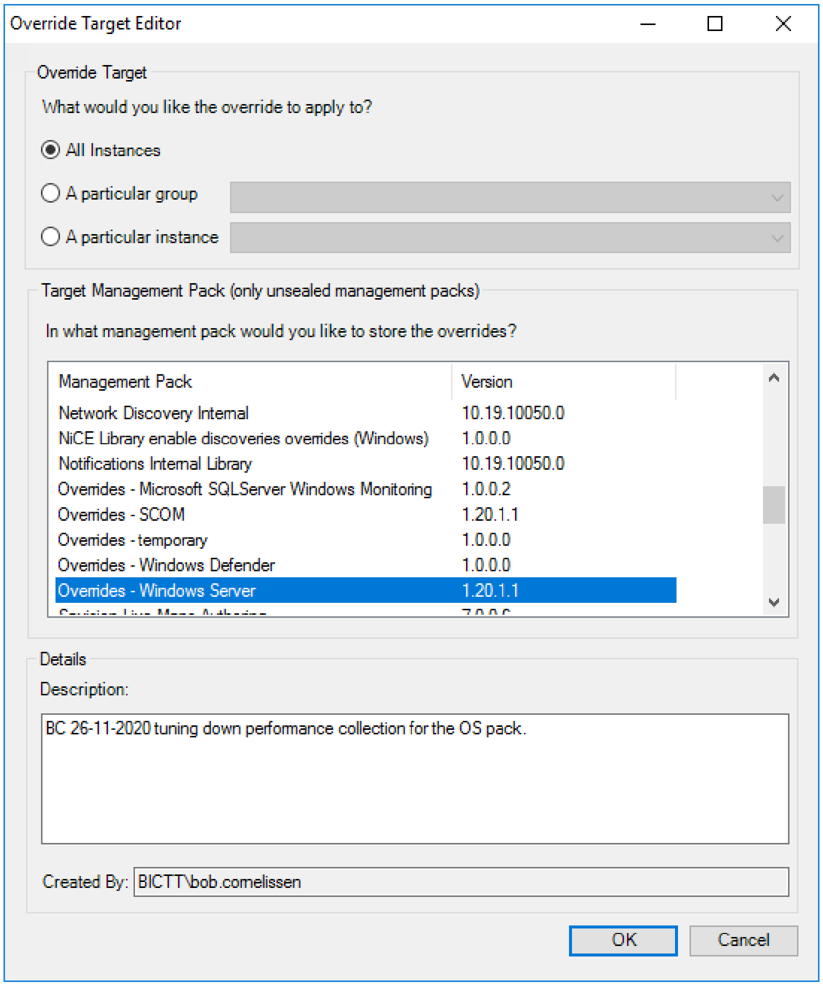

Override Creator
File
View
Create override to enable workflow(s)
Create override to disable workflow(s)
Disable grouping of workflows

Windows Server 2008 Operating System (Discovery)
Windows Server 2012 R2 Operating System (Discovery)
Windows Server 2016 Active Directory Certificate Services Discover
Windows Server 2016 and 1709+ Cluster Management Library
Windows Server 2016 and 1709+ Operating Systems (Discovery)
- Windows Server 2016 and 1709+ Computer
- Windows Server 2016 and 1709+ Computer (Core)
- Windows Server 2016 and 1709+ Computer Group
- Windows Server 2016 and 1709+ Computer Group (Core)
- Windows Server 2016 and 1709+ Disk Partition
- Windows Server 2016 and 1709+ Logical Disk
- Windows Server 2016 and 1709+ Logical Processor
- Windows Server 2016 and 1709+ Network Adapter
- Windows Server 2016 and 1709+ Operating System
- Windows Server 2016 and 1709+ Operating System (Core)
- Windows Server 2016 and 1709+ Physical Disk
- Windows Server 2016 and 1709+ Processor
- Windows Server 2016 Computer (Full)
- Windows Server 2016 Computer (Nano)
- Windows Server 2016 Computer Group (Full)
- Windows Server 2016 Computer Group (Nano)
- Windows Server 2016 Operating System (Full)
- Windows Server 2016 Operating System (Nano)

Windows Server Cluster Disks Monitoring
Windows Server Internet Information Services Library
Windows Server Operating System Library
Windows Service Library
Windows Task Scheduler and PS Job Monitoring - Windows Server
Windows Task Scheduler Library

Workflow Name	Management Pack
Windows Remote Management Service Health	Windows Server 2016 and 1709+ Operat
Workstation Service Health	Windows Server 2016 and 1709+ Operat
Rules	
A Service has Entered into an Unpredictable State	Windows Server 2016 and 1709+ Operat
A Service is misconfigured	Windows Server 2016 and 1709+ Operat
A Service or Driver Failed to Start	Windows Server 2016 and 1709+ Operat
A Service Terminated Unexpectedly	Windows Server 2016 and 1709+ Operat
A Share Configuration is Invalid	Windows Server 2016 and 1709+ Operat
A Software Update Installation Failed	Windows Server 2016 and 1709+ Operat
Cache Bytes	Windows Server 2016 and 1709+ Operat
Cache Data Map Hits Percent	Windows Server 2016 and 1709+ Operat
Collection Rule for Checking the File System Occurred on Startup	Windows Server 2016 and 1709+ Operat
Collection rule for invalid Share Configuration Detected	Windows Server 2016 and 1709+ Operat
Collection rule for Network Adapter was Disconnected from the Network	Windows Server 2016 and 1709+ Operat
Collection rule for NTFS Quota Threshold Limit Reached	Windows Server 2016 and 1709+ Operat
Collection rule for NTFS Quota Threshold Reached	Windows Server 2016 and 1709+ Operat
Collection rule for Servic	Windows Server 2016 and 1709+ Operat
Collection Rule for Softw	indows Server 2016 and 1709+ Operat
Collection Rule for Softw	indows Server 2016 and 1709+ Operat
Collection Rule for Softw	indows Server 2016 and 1709+ Operat
Collection rule for unexpected service terminations	Windows Server 2016 and 1709+ Operat
Collection Rule for Windows Clean Restart Events	Windows Server 2016 and 1709+ Operat
Collection Rule for Windows Dirty Shutdown Events	Windows Server 2016 and 1709+ Operat
Collection Rule for Windows Restart Events (restarted from bug check)	Windows Server 2016 and 1709+ Operat
Collection Rule for Windows Restarted Events	Windows Server 2016 and 1709+ Operat

- Select the **Create override to disable workflow(s).**
- **Explore** the wizard in the popup.



Override Target

What would you like the override to apply to?

● All Instances

○ A particular group

○ A particular instance

Target Management Pack (only unsealed management packs)

In what management pack would you like to store the overrides?

Management Pack	Version
Network Discovery Internal	10.19.10050.0
NiCE Library enable discoveries overrides (Windows)	1.0.0.0
Notifications Internal Library	10.19.10050.0
Overrides - Microsoft SQLServer Windows Monitoring	1.0.0.2
Overrides - SCOM	1.20.1.1
Overrides - temporary	1.0.0.0
Overrides - Windows Defender	1.0.0.0
Overrides - Windows Server	1.20.1.1

Details

Description:

BC 26-11-2020 tuning down performance collection for the OS pack.

Created By: BICTT\bob.cornelissen

Note that it is possible to override this for all targeted object or a specific group or instance.
Next there is an area to select which unsealed management pack to save these overrides in (the management pack needs to have been created first!).
And at the bottom there is a possibility to provide a description.

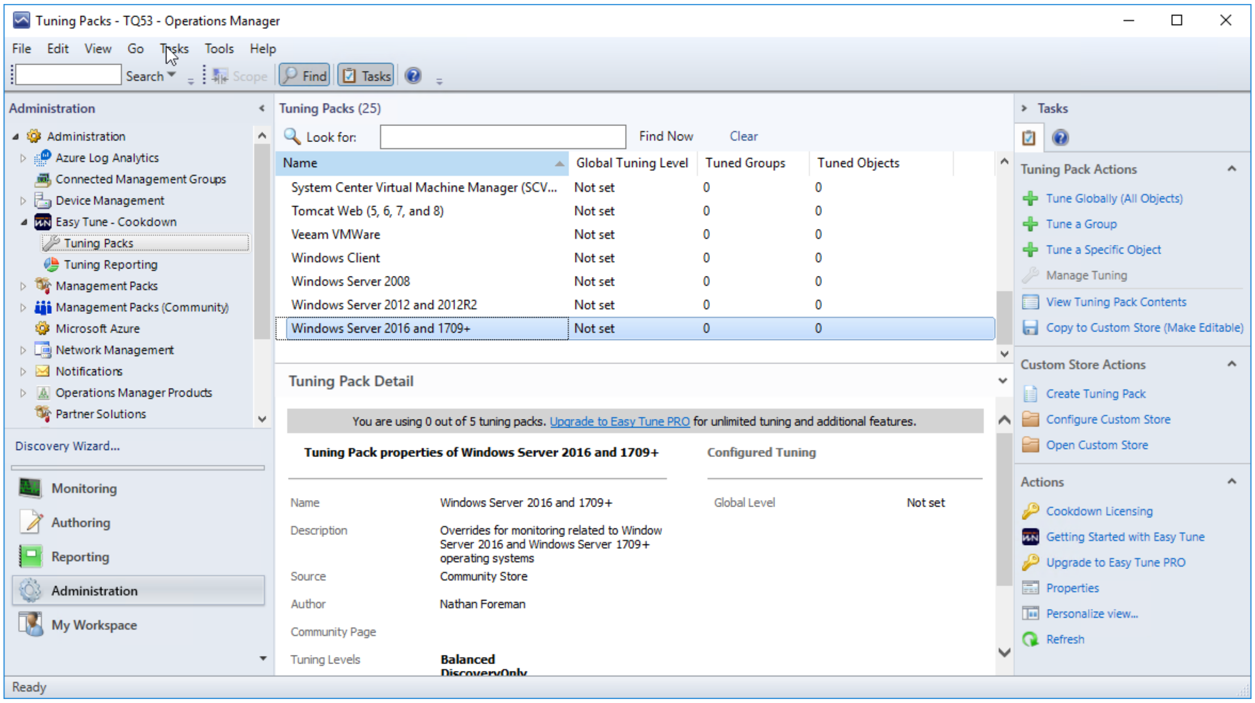
- Click **Cancel**
- Close the Override Creator.

End of exercise

Exercise 5 – Easy Tune

This exercise requires EasyTune from Cookdown (can use the free edition) and a SCOM management group. EasyTune must have been downloaded and installed for this exercise. If you are applying custom override sets it is advised to do this in a test/lab environment. We will be creating a custom pack though for some of this, which can be removed easily and will target at an empty group, so should be no real risk. In order to see the community store EasyTune will need internet access from this console.

- Open the SCOM console and go to the **Administration** section.
- Go to Management Packs and **Create a new management pack**
- Use your naming convention. As example I used "**TQ Custom – SCOMathon**" with version **1.20.12.1** and a description. Click **Create**.
- Go to the SCOM **Authoring pane** and navigate to **Groups**.
- Create a **New Group**.
- Call it "**SCOMathon servers**" and give it a description and make sure to select the management pack you just created as destination.
- Click **next next next Create** without adding anything to the group. This way nothing can be impacted when we target this group for overrides.
- Go to the SCOM **Administration pane** and find "**Easy Tune – Cookdown**" in the list on the left and go into **Tuning Packs**.



Name	Global Tuning Level	Tuned Groups	Tuned Objects
System Center Virtual Machine Manager (SCV...	Not set	0	0
Tomcat Web (5, 6, 7, and 8)	Not set	0	0
Veeam VMWare	Not set	0	0
Windows Client	Not set	0	0
Windows Server 2008	Not set	0	0
Windows Server 2012 and 2012R2	Not set	0	0
Windows Server 2016 and 1709+	Not set	0	0

Tuning Pack Detail

You are using 0 out of 5 tuning packs. Upgrade to Easy Tune PRO for unlimited tuning and additional features.

Tuning Pack properties of Windows Server 2016 and 1709+

Name	Windows Server 2016 and 1709+
Description	Overrides for monitoring related to Window Server 2016 and Windows Server 1709+ operating systems
Source	Community Store
Author	Nathan Foreman
Community Page	
Tuning Levels	**Balanced** **DiscoveryOnly**

Configured Tuning

Global Level	Not set

- On the right-hand side click the **Configure Custom Store**.
- **Select a file path**. This can be for the exercise a local path. Otherwise create a network-based UNC share. If you already configured one you can ignore this step.
- Select a path and click **Save**.

- Click the **Close** button

Check that you see the community store items as in the picture above. In order to get this list Easy Tune pulls these items off a GitHub repo on the internet side.

- Select the community tuning pack called "**Microsoft SQL Server (version agnostic)**".
- To the right click the task **Copy to Custom Store (Make Editable)**.
- This will popup your custom store location and show a **CSV file** of the same pack.
- Open the CSV file belonging to the SQL Server pack in **Excel**.

Look at the columns available. DisplayName should point to what it is. The OverrideParameter is which part of a rule or monitor or discovery we are changing. The DefaultValue shows what the original pack comes with. Next there are a few custom columns for each tuning level. In this case Performance, Production, QA and Test. Creating additional customizations can be done by adding a column before the Notes column. Let's leave this as it is right now.

- **Close Excel**.
- **Throw away the csv file** for now.
- Back in the SCOM console select the same tuning pack in the list "**Microsoft SQL Server (version agnostic)**".
- Look in the details pane below. You will see some details, including name of pack and author and the custom tuning levels (in bold).
- Click the **link** to the community page.
- Scroll down that GitHub page and see the **descriptions** for the custom monitoring levels.
- Close the website and return to SCOM.
- In the right-hand side tasks pane click the **Tune a Group** option.
- At the **Select a Group**, click the **Browse** button.
- Type **SCOMathon** and search for the custom group we created earlier.
- **Select** that group and click **OK**.
- Click **Next**
- Select a **tuning level**. We will select **Test** for now.
- Scroll through the view below to see that there is a listing of overrides etc.
- Click **Next**.
- Click **Use a Schedule**.
- See that in this case you can use a default Business hours kind of monitoring scheme, but this name and times can be adjusted.
- **Un-select** the Use a Schedule and click **Next**.
- The next screen gives us the opportunity to either create a new management pack automatically (this will use a custom naming convention pointing back to the tuned pack and settings). Or the possibility to Choose an existing pack.
- Let's Cancel the wizard by clicking **Cancel**.
- Back in SCOM Administration pane you can cleanup by going to Management Packs and removing the pack created for this exercise.

End of exercise

Exercise 6 – SCOM Auditing

This exercise will only work in a SCOM management group at version **SCOM 2019 UR2** or higher! At the time of this workshop this is the highest version and update rollup available.

- Within the **Operations Manager Console**, browse to the **Reporting Pane**.
- In the **Microsoft Generic Report Library** folder, open the report named **Management Pack History.**
- On the left-hand side of the parameters screen check the **From** field that it says **Today -7 days**.
- Run the report by using the **Run button** at the top of the report.

Check if the report shows any activity for the last 7 days. If not, you can go back to the parameters field and change the From date to something longer ago.

Notice that a change to a management pack generally means a delete of the pack and an install of the pack at the same time.

- Close this report and go back into the reporting pane
- Open the Management Pack Objects report
- In the parameters area change the From field to a few days ago. For example, Previous Week – Monday.
- Run the report

See if there are any changed reported on. If not, you can change the From field again to a longer period.

Check the actions done and who made the changes.

- Close the report and go back to the reporting pane.
- Select the Overrides Tracking report and open it.
- Change the From field to at least a few days. In my quiet demo environment I selected Previous Month – First Day.
- Run the report

See if there are any overrides defined in the selected period.

Check the name of the management pack, what got changed (rule or monitor or..), what the changes values are and when they got changed and who changed them.

- Close the report.

End of exercise