Citrix SCOM Management Pack 3.9 for XenApp and XenDesktop

Jan 09, 2017
Use Citrix SCOM Management Pack for XenApp and XenDesktop to monitor and manage XenApp and XenDesktop infrastructure with the Microsoft System Center Operations Manager (SCOM).

With Citrix SCOM Management Pack for XenApp and XenDesktop, you can:

- Improve the XenApp and XenDesktop infrastructure availability and health
  The virtual application and desktop infrastructure availability is checked with rigorous connectivity probing and active service checks. It is important that users are able to connect to their virtual desktops and applications. This is a process that involves many Delivery Controller components (such as Broker Service or Machine Creation Services).

- Gain insight into the XenApp and XenDesktop performance and usage information
  It is critical to know how users are using the virtual infrastructure delivering desktops and applications in order to be able to tune it accordingly. With Citrix SCOM Management Pack for XenApp and XenDesktop you will get more insight into which users are logging in to the virtual desktops and applications (identify slow logons and logon bursts), how many users are connecting to the Sites, if the infrastructure is able to handle all user requests accordingly, for example by maintaining the size of the idle pool defined by the desktop group power management policy, by ensuring enough resources for delivery of applications and desktops defined by the load management policy, and so on. Another aspect is the end-user resource usage (what is the resource usage for each user connection/session) and virtual infrastructure resource usage (what is the resource usage of my server OS machines). Detailed machine and session performance information helps in managing your infrastructure and enables better planning and decision making.

Citrix SCOM Management Pack for XenApp and XenDesktop fully integrates the topology, health, and performance data into SCOM.

It provides centralized monitoring in SCOM and covers the following key scenarios:

- Are Delivery Controller instances up and running?
- Is the infrastructure (for example, brokers, machine creation services, and so on) on the Site level operational?
- Do users have issues connecting to the virtual desktops and applications (for example, delivery group limit/capacity is reached, desktop OS or server OS machines cannot register, other infrastructure issues are present)?
- What is the availability of published applications?
- Are there any events that indicate a problem with the infrastructure?
- Have any performance thresholds been violated?
- What is my server OS machine performance?
- What is the user session resource usage on server OS or desktop OS machines?
- Are there any user logons with lengthy duration? Which logon phases are causing the delay?

**Important:** To collect machine and session performance data, the product’s Machine Agent must be installed and configured in addition to its main agent (referred to simply as Agent). For a general overview of the machine and session monitoring concepts, see Machine and session performance monitoring.

Architecture
The following diagram shows how Citrix SCOM Management Pack for XenApp and XenDesktop connects with the SCOM management platform and the XenApp and XenDesktop infrastructure.
What's new

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Citrix SCOM Management Pack for XenApp and XenDesktop version 3.9 introduces the following features:

- **Documentation in HTML format.** The documentation for the Citrix SCOM Management Pack for XenApp and XenDesktop 3.9 is available in HTML format. To access the documentation of earlier versions, see Citrix SCOM Management Pack for XenApp and XenDesktop.


- **Citrix MP Analytics Service.** Citrix SCOM Management Pack for XenApp and XenDesktop uses Citrix MP Analytics Service to track and report product usage. The analytics service captures anonymous information regarding the overall usage of all Citrix SCOM Management Packs on the SCOM management server. For instructions on changing this setting after installation, see Reconfiguring Citrix SCOM MP Analytics.

- **New reports on Delivery Group and Site availability.** Citrix SCOM Management Pack for XenApp and XenDesktop introduces new reports for monitoring availability of individual Delivery Groups and Sites. You can access the reports from Citrix Management Pack for XenApp and XenDesktop Reports. The reports are as follows:
  - **Delivery Group - Availability:** This report shows the availability of the selected Delivery Group in the XenApp and XenDesktop Site during the selected report duration. A Delivery group is available if it contains at least one machine that can provide a published resource (application or desktop).
  - **Site - Infrastructure Availability:** This report shows the availability of the XenApp and XenDesktop Site infrastructure during the selected report duration. The Site is available when the important Citrix Services are operational at Site level and all the configured Hypervisor connections are available.


- **New monitor on number of available machines in the Server OS Delivery Group.** Citrix SCOM Management Pack for XenApp and XenDesktop introduces a new monitor, % of Available Machines. It shows the number of available servers in Server OS Delivery Group. Available servers are machines that are running, registered with the Delivery Controller, and have a Load Evaluator Index less than 100%.


- **Improved CPU utilization.** Citrix SCOM Management Pack Agent for XenApp and XenDesktop is improved to reduce CPU utilization considerably. For details, see Performance Overview.

Known issues

The following is a list of known issues in this product version:

- **Issue ID:** SCOM-1176
Symptom: The Citrix SCOM Management Pack Agent for XenApp and XenDesktop might not get upgraded during an upgrade invoked either locally on the XenApp and XenDesktop server or remotely from the SCOM Operations console. The upgrade procedure initially removes the Citrix SCOM Management Pack Agent for XenApp and XenDesktop Service. However, the previously installed agent package is not replaced and the earlier program version remains registered with the operating system.

Action: Repeat the upgrade procedure.

• **Issue ID:** SCOM-513
  **Symptom:** It may take up to 24 hours for the Citrix SCOM Management Pack Agent for XenApp and XenDesktop instances to detect renewal of an expired Platinum license in the XenApp and XenDesktop Site.
  **Action:** After such license renewal, to restore licensing coverage of XenApp and XenDesktop on Delivery Controllers (agent-managed computers) immediately, do the following:
  1. On a Delivery Controller, stop the *Citrix MPXAXD Agent* service by using an operating system tool.
  2. From the *db* subfolder of the Agent’s data files folder(*%ProgramData%\Citrix\XenDesktop MP Agent* by default), remove the *agent-license-info.json* file.
  3. Start the *Citrix MPXAXD Agent* service again.
  4. Repeat steps 1 to 3 on each additional Delivery Controller.

• **Issue ID:** SCOM-502
  **Symptom:** In the SCOM Operations console, when you attempt to run the *Start Citrix Director* task on a XenApp and XenDesktop alert that is not a session performance or logon alert, the invocation fails and SCOM reports the following error:
  *Citrix Director URL not configured. Please configure the Citrix Director URL by using XenDesktop MP Configuration tool.*
  **Action:** None. The error message is incorrect, so you can safely ignore it. You can run the *Start Citrix Director* task only on session performance alerts and logon alerts.

• **Issue ID:** SCOM-430
  **Symptom:** After upgrading the product from version 3.6 or 3.5, the *%ProgramData%\Comtrade* folder is left on the local system. This issue occurs on the SCOM management server, on the Delivery Controllers (agent-managed), as well as on the proxy nodes.
  **Action:** Manually remove the residuary folder by using an operating system tool.

• **Issue ID:** SCOM-143
  **Symptom:** In the SCOM Operations console, the *ApplicationExcludeRegExtPattern* and *ApplicationIncludeRegExtPattern* parameters of application discoveries (*Application Discovery (n of 5)*) are ignored. You therefore cannot exclude applications from the discovery process or include them into it.
  **Action:** None. There is no workaround available.

• **Issue ID:** SCOM-86 (6297)
  **Symptom:** After Citrix SCOM Management Pack for XenApp and XenDesktop (both its server-side and agent-side parts) is installed and configured on the computer for the first time (without being upgraded from an earlier product version), and a valid XenApp and XenDesktop Platinum license cannot be retrieved, no license-related alerts are sent. Such alerts therefore cannot be monitored in the Monitoring view of the SCOM operations console.
  **Action:** None. There is no workaround available.

• **Issue ID:** SCOM-78 (6204)
  **Symptom:** The *Check Requirements and Configuration for Citrix MPXAXD Agent SCOM* task and the *Support /user <UserName>/domain <DomainName>/checkreq* command both report an error with accessing the Windows
PowerShell interface. Inspection of the password of the effective XenApp and XenDesktop monitoring account reveals non-ASCII characters in it.

**Action:** Change the password of the problematic monitoring account so that it only contains ASCII characters.

- **Issue ID:** SCOM-77 (6194)
  **Symptom:** In the output of the *Check Requirements and Configuration for Citrix MPXAXD Agent* task in the SCOM Operations console, site names that contain non-ASCII characters are not displayed correctly. For example, Spanish characters çñ appear as ¢¬ in the name of a XenApp and XenDesktop Site. No other symptoms exist.
  **Action:** None. Apart from the visual glitch, the functionality of the product is not affected in any way. You can therefore safely ignore the issue.

- **Issue ID:** SCOM-210 (5380)
  **Symptom:** While a workflow is running, error messages (31551 and 31552) are logged into the Operations Manager event log on the management server. They contain the following description: 
  *Failed to store data in the Data Warehouse...*
  This error occurs when the Default action account in SCOM does not have write permission on the data warehouse database and none of the XenDesktop controllers is discovered as *Site Data Collector*. This may happen when:
  - The Site Data Collector object switches from one XenDesktop Delivery Controller to another.
  - Collector object switches from one XenDesktop Delivery Controller to another.
  - None of XenDesktop Delivery Controllers is operational.

  This issue occurs only with some of the workflows, for example, *Comtrade.Citrix.XenDesktop.EndUser.Reports.PublishConnectionsLogonsDW.Rule* or *Comtrade.Citrix.XenDesktop.EndUser.Reports.PublishApplicationInstanceDW.Rule*.
  **Action:** Ensure that at least one Delivery Controller is active at all times.

- **Issue ID:** SCOM-211 (5163)
  **Symptom:** The *Delivery Group - Logon Details (Troubleshooting)* report does not function if the *Use business hours* option is selected.
  **Action:** Clear the *Use business hours* option.

- **Issue ID:** SCOM-212 (5162)
  **Symptom:** When launching Citrix Director by using the *Start Citrix Director* task in the Operations Manager Console for user logon or session alerts, Citrix Director is not opened for the users context if the user is *anonymous*. Anonymous users were introduced in XenApp and XenDesktop 7.6.
  **Action:** None. There is no workaround available.

- **Issue ID:** SCOM-213 (5161)
  **Symptom:** The XenApp and XenDesktop 7.6 configuration with space characters in Site names is not supported. This is due to a recognized issue in the Citrix Monitoring Service with this kind of configuration. For more information, see the following webpage on the Citrix Support Knowledge Center website: [http://support.citrix.com/article/CTX200325](http://support.citrix.com/article/CTX200325).
  **Action:** None. There is no workaround available.

**Fixed issues**

The following issue has been fixed in product version 3.9:
Restarting the Citrix SCOM Management Pack Agent for XenApp and XenDesktop while Citrix License Server is unavailable causes the agent to appear licensed though it is not functioning fully. The agent presents the data collected when the License Server was last running. The complete functionality of the agent is restored once the License Server is available.

[SCOM-942]

Licensing

Licensing of Citrix SCOM Management Pack for XenApp and XenDesktop depends on licensing of the monitored product, XenApp and XenDesktop. For Citrix SCOM Management Pack for XenApp and XenDesktop to operate properly and remain fully functional, its licensing must be covered. During installation or upgrade, no further actions are necessary on either the SCOM management server or the computers that host the product’s Agent and Machine Agent instances.

Covered licensing means that the following conditions are fulfilled:

- The XenApp and XenDesktop Site that you plan to monitor uses a Platinum license within either maintenance program Subscription Advantage, Software Maintenance.
- Subscription Advantage Date (of the Platinum license) falls after the Subscription Advantage Eligibility date that is embedded into binary files of the current version of Citrix SCOM Management Pack for XenApp and XenDesktop. For instructions on how to check this, see Install and Configure. In Citrix product documentation, Subscription Advantage Eligibility date may also be referred to as product burn-in date.

Important: The Subscription Advantage Eligibility date of this product release is 2016.1117.

Example: If the Subscription Advantage Date of your Platinum license for XenApp and XenDesktop is 2016.0531 (meaning 31 May 2016), and the Subscription Advantage Eligibility date of Citrix SCOM Management Pack for XenApp and XenDesktop is 2016.0518 (meaning 18 May 2016), the product remains fully functional after 31 May 2016, provided your XenApp and XenDesktop license remains valid (unexpired). If you upgrade to a later version of Citrix SCOM Management Pack for XenApp and XenDesktop whose Subscription Advantage Eligibility date is, for example, 2016.0710 (meaning 10 July 2016), Citrix SCOM Management Pack for XenApp and XenDesktop stops gathering and reporting new data (topology updates, incoming alerts, newly discovered objects).

Upgrading

Note: Product versions earlier than 3.6 were released under the name Comtrade Management Pack for Citrix XenApp and XenDesktop.

Upgrade is available for the following versions: 3.8, 3.7, 3.6, 3.5. During the upgrade process, the included management packs of an earlier product version are automatically upgraded; their prior removal is not required. Your management pack customization is preserved.

Caution:

- Before upgrading from an earlier product version, ensure that licensing of this version of Citrix SCOM Management Pack for XenApp and XenDesktop is covered. For instructions on how to verify licensing coverage, see Preparing for Installation in Install and Configure.
- Upgrading to an unlicensed version of Citrix SCOM Management Pack for XenApp and XenDesktop results in ceased
process of gathering and reporting new data. The data already collected is preserved and remains available to SCOM. If this occurs, downgrading to the earlier (licensed) product version requires a complete uninstallation of the new product version (including removal of the included management packs from SCOM), followed by reinstallation of the earlier product version. The management pack removal from SCOM deletes all the operational data (alerts, events, performance data) while the reinstallation ensures continued availability of data in the SCOM data warehouse (reports).

For upgrade instructions, see Upgrade in Install and Configure.
System requirements

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Before installing Citrix SCOM Management Pack for XenApp and XenDesktop, make sure that your environment meets the requirements listed in this topic.

Hardware requirements
Computers that will host Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop must meet the following minimum hardware requirements:

- One physical CPU with two cores (for physical systems), two virtual CPUs (for virtual systems); CPU clock speed of 2.3 GHz
- 4 GB of RAM (excluding the paging file size)
- 1 GB of free local storage space

For more information on the Machine Agent, see Install and Configure.

Software requirements
Citrix SCOM Management Pack for XenApp and XenDesktop requires a supported version of the following products that it integrates with:

- Citrix XenApp and XenDesktop
- Microsoft System Center Operations Manager

Additionally, Citrix SCOM Management Pack for XenApp and XenDesktop requires a supported version of Citrix Licensing in the XenApp and XenDesktop Site where it is deployed.

Citrix SCOM Management Pack for XenApp and XenDesktop is compatible with the following Citrix XenApp and XenDesktop versions:

<table>
<thead>
<tr>
<th>Product version (Delivery Controller)</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix XenApp and XenDesktop 7.12</td>
<td>✔</td>
</tr>
<tr>
<td>Citrix XenApp and XenDesktop 7.11</td>
<td>✔</td>
</tr>
<tr>
<td>Citrix XenApp and XenDesktop 7.9</td>
<td>✔</td>
</tr>
<tr>
<td>Citrix XenApp and XenDesktop 7.8</td>
<td>✔</td>
</tr>
<tr>
<td>Citrix XenApp and XenDesktop 7.7</td>
<td>✔</td>
</tr>
<tr>
<td>Citrix XenApp and XenDesktop 7.6 LTSR</td>
<td>✔</td>
</tr>
</tbody>
</table>
This entry covers the following configurations: 7.6, 7.6 + FP1 (Feature Pack 1), 7.6 + FP2, 7.6 + FP3.

<table>
<thead>
<tr>
<th>Product version (Citrix Director)</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>versions included with the supported Delivery Controller versions</td>
<td>✔</td>
</tr>
</tbody>
</table>

Citrix SCOM Management Pack for XenApp and XenDesktop can be deployed in environments where any of the following versions of Citrix Licensing is used:

<table>
<thead>
<tr>
<th>Product version</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix Licensing 11.14 or later</td>
<td>✔</td>
</tr>
</tbody>
</table>

Citrix SCOM Management Pack for XenApp and XenDesktop is compatible with the following SCOM versions:

<table>
<thead>
<tr>
<th>Microsoft System Center Operations Manager version</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft System Center Operations Manager 2016</td>
<td>✔</td>
</tr>
<tr>
<td>Microsoft System Center Operations Manager 2012 R2</td>
<td>✔</td>
</tr>
<tr>
<td>Microsoft System Center Operations Manager 2012¹</td>
<td>✔</td>
</tr>
</tbody>
</table>

¹ This entry covers the following configurations: base release, base release + SP1 (Service Pack 1).

**Agent operating systems**

Citrix SCOM Management Pack Agent for XenApp and XenDesktop is compatible with all operating systems that are
supported by Delivery Controller of Citrix XenApp and XenDesktop.

Machine Agent operating systems

Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop is compatible with the following operating systems:

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Windows Server 2016</td>
<td>✔</td>
</tr>
<tr>
<td>Microsoft Windows Server 2012 R2</td>
<td>✔</td>
</tr>
<tr>
<td>Microsoft Windows Server 2012</td>
<td>✔</td>
</tr>
</tbody>
</table>

The product can be deployed and operates correctly in environments with regional setting configured to use any of the following languages:

<table>
<thead>
<tr>
<th>Language</th>
<th>Language code</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>en</td>
<td>✔</td>
</tr>
<tr>
<td>Spanish</td>
<td>es</td>
<td>✔</td>
</tr>
</tbody>
</table>
Performance overview

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Generally speaking, Citrix SCOM Management Pack for XenApp and XenDesktop consists of three parts:

- The part installed on the SCOM management server (mandatory)
- Citrix SCOM Management Pack Agent for XenApp and XenDesktop (mandatory)
- Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop (optional)

The SCOM management server-side part

This part is a collection of management packs include discoveries, monitors, rules, tasks, and reports. From the compute and memory perspective, this part does not significantly add to the basic resource requirements of SCOM management server itself. It is not resource-intensive in terms of storage requirements of the SCOM reporting data warehouse database. For these reasons, there are no special considerations related to the SCOM management-server part when monitoring larger Citrix XenApp and XenDesktop environments.

Citrix SCOM Management Pack Agent for XenApp and XenDesktop

Performance and resource consumption of Citrix SCOM Management Pack Agent for XenApp and XenDesktop primarily depend on the size of your XenApp and XenDesktop environment, specifically on the number of resources within each Site. Furthermore, they are influenced by the load on the Delivery Controller instances. In contrast, the number of Sites in your XenApp and XenDesktop environment has no influence on the performance and resource consumption.

For scaling up Citrix SCOM Management Pack Agent for XenApp and XenDesktop, hardware of the hosting Delivery Controller must be reconfigured. The Agent cannot be scaled out.

Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop

The product's Machine Agent can be scaled up without the need of altering XenApp and XenDesktop deployment, as no XenApp and XenDesktop component is installed on its proxy node. Machine Agent can also be scaled out; you can achieve this by installing multiple instances on multiple proxy nodes and configuring it such that each Machine Agent instance handles only a subset of all Delivery Controller instances.

Configuration specifications

All figures in this document are valid for environments that:

- Are monitored with the specified product version of Citrix SCOM Management Pack for XenApp and XenDesktop
- Match the documented configuration specifications for XenApp and XenDesktop and SCOM
- Use the default configuration of management packs in terms of which rules and monitors are enabled (this applies to management packs included in Citrix SCOM Management Pack for XenApp and XenDesktop and management packs bundled with SCOM)
- Use the default configuration of SCOM management server and SCOM agents, without fine-tuning or any special adjustments

Factors such as different hardware specifications and condition of your environment may cause divergence of your observed values from the documented values.
Validated Citrix SCOM Management Pack for XenApp and XenDesktop version

Validation of Citrix SCOM Management Pack for XenApp and XenDesktop was performed with the product version listed in the following table.

<table>
<thead>
<tr>
<th>Product</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix SCOM Management Pack for XenApp and XenDesktop</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Citrix XenApp and XenDesktop configuration specification

With this configuration, the Site database server is deployed outside the Delivery Controller computer.

<table>
<thead>
<tr>
<th>Computer: Delivery Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification item</td>
</tr>
<tr>
<td>Compute</td>
</tr>
<tr>
<td>Memory</td>
</tr>
<tr>
<td>Software version</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computer: Site database server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification item</td>
</tr>
<tr>
<td>Compute</td>
</tr>
<tr>
<td>Memory</td>
</tr>
<tr>
<td>Software version</td>
</tr>
</tbody>
</table>

Microsoft System Center Operations Manager configuration specification

With this configuration, the SCOM database and data warehouse server is deployed outside the SCOM management server computer.
### Computer: SCOM management server

<table>
<thead>
<tr>
<th>Specification item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compute</td>
<td>four virtual CPUs; CPU clock speed of 2.67 GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>16 GB of RAM</td>
</tr>
<tr>
<td>Software version</td>
<td>Microsoft System Center Operations Manager 2012 R2</td>
</tr>
</tbody>
</table>

### Computer: SCOM database and data warehouse server

<table>
<thead>
<tr>
<th>Specification item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compute</td>
<td>four virtual CPUs; CPU clock speed of 2.67 GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>16 GB of RAM</td>
</tr>
<tr>
<td>Software version</td>
<td>Microsoft SQL Server 2014 R2</td>
</tr>
</tbody>
</table>

### Monitoring ability

The following table does not list the extreme limits; it lists the maximum values at which the Citrix SCOM Management Pack for XenApp and XenDesktop was successfully validated.

#### Maximum number of monitored items (per Site)

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery groups</td>
<td>60</td>
</tr>
<tr>
<td>Server OS machines</td>
<td>600</td>
</tr>
<tr>
<td>Server OS machines in a delivery group</td>
<td>200</td>
</tr>
<tr>
<td>Desktop OS machines</td>
<td>7,050</td>
</tr>
<tr>
<td>Applications</td>
<td>1,000</td>
</tr>
</tbody>
</table>
Concurrent sessions | 13,930

Average resource consumption

Resource consumption was measured in a XenApp and XenDesktop Site with four Delivery Controller instances. Measurement was made on the Delivery Controller where Citrix SCOM Management Pack Agent for XenApp and XenDesktop did most data processing. Measuring spanned a period of 1.5 days. Windows Performance Monitor was used as the measuring tool.

**Important:** In XenApp and XenDesktop deployments with multiple Delivery Controller instances, the majority of data processing is performed by a single instance of Citrix SCOM Management Pack Agent for XenApp and XenDesktop (on one Delivery Controller).

**Average consumption on a Delivery Controller (for 7,650 VDIs)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPXAXDAgent CPU usage</td>
<td>3.42%</td>
</tr>
<tr>
<td>HealthService CPU usage</td>
<td>0.5%</td>
</tr>
<tr>
<td>MPXAXDAgent memory usage</td>
<td>2,728 MB</td>
</tr>
<tr>
<td>HealthService memory usage</td>
<td>147 MB</td>
</tr>
</tbody>
</table>

1 CPU usage is calculated based on the % Processor Time counter and the number of processor cores or virtual CPUs.

Number of published applications has negligible effect on the CPU usage of the MPXAXDAgent service.

The following figure shows changes in CPU usage of MPXAXDAgent and HealthService after these services had been started for the first time. Values are taken from the first part of the entire measurement time period, when initial high data inflow loaded compute resource substantially. Measurement was made in validation set 2 (VS2; see figure for memory usage).
The following figure shows typical patterns of changes in CPU usage of MPXAXDAgent and HealthService through major part of the measurement time period, after the initial high load had already subsided. Measurement was made in validation set 2 (VS2; see figure for memory usage).
As the figure above shows, bursts of high CPU usage of **MPXAXDAgent** occurred every five minutes, while spikes of high CPU usage of **HealthService** were twice that rare.

Additional tests (made in different validation sets, not depicted) also confirmed that adding VDI sessions (server OS sessions, desktop OS sessions) has no significant impact on the CPU usage of Citrix SCOM Management Pack Agent for XenApp and XenDesktop. Such additions also do not influence the CPU usage of the SCOM agent (Operations Manager Agent, Microsoft Monitoring Agent).

The following figure shows the memory usage of **MPXAXDAgent** and **HealthService** through time, measured in two different validation sets (VS1, VS2).
As the figure above shows, on the Delivery Controller there should be approximately 3.6 GB of physical memory available for the joint needs of the MPXAXDAgent and HealthService services.
Install and configure

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This topic contains instructions to install and configure the Citrix SCOM Management Pack for XenApp and XenDesktop. Perform all procedures in the documented order of precedence. Optional procedures are appropriately marked. Also covered are the instructions to uninstall and upgrade the product.

Preparing for the installation

Before installing the Citrix SCOM Management Pack for XenApp and XenDesktop, make sure the following general prerequisites are fulfilled:

- Your environment meets the hardware and software requirements.
  For hardware, software requirements and/or other requirements, see System Requirements.
- Licensing of Citrix SCOM Management Pack for XenApp and XenDesktop is covered. The licensing is covered when all conditions listed in Licensing are fulfilled.

To check if Subscription Advantage Date of the XenApp and XenDesktop Platinum license falls after the Subscription Advantage Eligibility date of Citrix SCOM Management Pack for XenApp and XenDesktop (one of the licensing conditions), do the following:

1. Take note of the Subscription Advantage Eligibility date of the current product release. For information, see Licensing.
2. Launch Citrix Studio.
3. In the left pane of Citrix Studio, expand Citrix Studio (<SiteName>) > Configuration, and then click Licensing.
4. In the Licensing Overview pane, under Licenses, search for the lines that have either value in the Product column: Citrix XenApp Platinum, Citrix XenDesktop Platinum.
5. For each matching line from step 4, check if its Subscription Advantage Date value is bigger than the date (Subscription Advantage Eligibility date) from step 1.
6. If at least one value is bigger, the license Subscription Advantage period covers the current version of Citrix SCOM Management Pack for XenApp and XenDesktop.

- A computer is chosen on which a SCOM management server resides and where the server side of Citrix SCOM Management Pack for XenApp and XenDesktop will be installed. This computer is referred to as SCOM management server.
- SCOM agent is installed on all the computers that host XenApp and XenDesktop Delivery Controllers, and these computers are configured as agent-managed computers in the SCOM management group.
- The Action Account of SCOM agent has administrative privileges on all XenApp and XenDesktop Delivery Controllers.
- A domain user account is chosen that you will use for remote monitoring of server OS machines and desktop OS machines. For multiple XenApp and XenDesktop Sites, you might need to use different accounts. This depends on the domain configuration.

**Tip:** Citrix recommends that you create a new, dedicated user account for exclusive use for the above-mentioned purposes.

The user account must have the following properties:

- It has administrative privileges in all XenApp and XenDesktop Delivery Controllers and all server OS machines within the
Site.

- It has the **Read Only Administrator** role (or a role with higher privileges) assigned in XenApp and XenDesktop with the scope set to **All**.

The following image shows the creation of an administrator account in Citrix Studio.

![Create Administrator](image)

The following image shows the editing of an administrator account in Citrix Studio.

![Edit Administrator](image)
This user account is referred to as `<MPXAXDAgentAccount>` in the remainder of this document.

- Windows Remote Management 2.0 (WinRM 2.0) is enabled on all server OS machines. To enable WinRM on the local computer, open a Command Prompt window and run the `winrm quickconfig` command.
- WinRM 2.0 is correctly configured. For instructions on how to verify that the WinRM 2.0 configuration is correct, see `Verifying WinRM communication`.

For Citrix SCOM MP Analytics Service to transmit anonymous usage data, make sure that the SCOM management server has internet access.

For XenApp and XenDesktop machine and session performance monitoring, make sure the following additional prerequisites are fulfilled as well:

- Computers are chosen where Citrix SCOM Management Pack for XenApp and XenDesktop Machine Agent will be installed. These computers are referred to as Citrix SCOM Management Pack for XenApp and XenDesktop proxy nodes (proxy nodes). The proxy nodes must meet minimum hardware requirements and must be running a supported operating system.

**Important**: For information on how to properly designate the proxy nodes and plan their configuration, see `Machine and session performance monitoring`.

- SCOM agent is installed on all the proxy nodes.
- The `<MPXAXDAgentAccount>` user account has administrative privileges in the desktop OS machines and on the proxy nodes.
- Windows Remote Management 2.0 (WinRM 2.0) is enabled on all desktop OS machines.
- Receiving Windows PowerShell remote commands is enabled on all the computers that host XenApp and XenDesktop Delivery Controllers. For more information, see the `Enable-PSRemoting` (for Windows Server 2012 R2) or `Enable-PSRemoting` (for Windows Server 2012) webpage on the Microsoft TechNet website.
- Firewall is configured as required by WinRM: on desktop OS machine as well as on the Delivery Controllers, incoming traffic is enabled on the TCP port that WinRM is using. By default, WinRM is configured to use port 5985.

## Installing the product on the SCOM management server

The server-side part of Citrix SCOM Management Pack for XenApp and XenDesktop must be installed on the SCOM management server.

To install Citrix SCOM Management Pack for XenApp and XenDesktop on the SCOM management server, do the following:

1. Log on to the management server. Use a user account that has local administrative privileges and SCOM administrative privileges.
2. In Windows Explorer, locate the `Citrix_SCOM_Management_Pack_for_XenAppXenDesktop_<Version>.exe` file (where `<Version>` is the current software version), and double-click it to invoke the installation process. Wait for the Setup Wizard to appear.
3. In the Welcome page of the Setup Wizard, click **Next**.
4. In the View Relevant Product Configuration page, click Next.
5. In the License Agreement page of the Setup Wizard, read the end user license agreement carefully. If you accept the terms of the agreement, click Next.

   Proceed as follows:
   - To install the product to the default folder listed in the Setup Wizard, no special actions are required.
   - To install the product to a different folder, follow the substeps:
     1. Click Change.
     2. In the Browse For Folder dialog box, browse to a desired installation folder, select it, and click OK.

7. In the Configure Post-Install Actions page of the Setup Wizard, decide whether the Setup Wizard should automatically import the included management packs into SCOM and whether it should initially enable Analytics Service.
- Decide about the management pack import:
  - To let the Setup Wizard import the management packs, select the **Automatically import the Management Pack** option. Citrix recommends this choice.
  - To import the management packs into SCOM manually at a later time, leave the **Automatically import the Management Pack** option unselected. For instructions about how to import or reimport the management packs, see [Manually importing included management packs into SCOM](#).
  - To enable the Analytics Service to start transmitting usage statistics after the product is installed, select the **Enable the product to send anonymous usage statistics to Citrix** option.

8. Click **Install**. The Setup Wizard displays the Installing the product page and starts copying the installation files.

9. After the installation completes, the installation completion page is displayed. Click **Next**.

10. In the Executing post-install actions page, attend the import process (if chosen earlier) and the installation of Citrix SCOM MP Analytics.

11. In the post-installation completion page, review the actions log, and click **Finish** to close the Setup Wizard.
Configuring the XenApp and XenDesktop monitoring accounts and profile in SCOM

To configure Run As accounts and the associated Run As profile in SCOM, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the Administration view, in the left pane, expand Run As Configuration, and then click Accounts.
3. In the Tasks pane, expand Actions, and then click Create Run As Account.
4. In the Create Run As Account Wizard window, click Next.
5. In the General Properties page, in the Run As account type drop-down menu, leave the default selection (Windows).
6. In the Display name text box, type a name that the SCOM Operations console will use to refer to the monitoring account. Click Next.
7. In the Credentials page, type user name, password, and domain of the <MPXAXDAgentAccount> user account in the respective text boxes. Click Next.
8. In the Distribution Security page, select a distribution security option. Citrix recommends that you select the More secure option. In this case, you must subsequently edit the Run As account configuration so that its Selected Computers list includes the XenApp and XenDesktop Delivery Controllers.
9. Click Create to save the configuration data of the new account, then click Close to close the Create run As Account Wizard window.
10. If you are configuring SCOM for multiple-site monitoring, repeat steps 3 to 9 for each XenApp and XenDesktop Site, each time specifying display name and credentials of the appropriate user account.
11. In the Administration view, in the left pane, expand Run As Configuration, and then click Profiles.
12. In the results pane, in the Name column, double-click Citrix XenApp and XenDesktop Monitoring Account.
13. In the Run As Profile Wizard window, click Next and then click Next again.
14. In the Run As Accounts page, click Add.
15. In the Add a Run as Account dialog box, from the Run As account drop-down list, select the display name of the Run As account.
16. Depending on whether you plan to monitor multiple XenApp and XenDesktop Sites and/or your security requirements, proceed as follows:
   1. For monitoring multiple-site environments or for increased security, select the A selected class, group, or object option (more secure). Then follow the steps:
      1. Click Select and then select Object.
      2. In the Object Search dialog box, from the Look for drop-down list, select Windows Computer and then click Search.
      3. In the Available items list, select the XenApp and XenDesktop Delivery Controller, and then click Add.
      4. Click OK to close the dialog box.
   2. For monitoring single-Site environments and for ordinary security, select the All targeted objects option (less secure).
17. Click OK to close the Add a Run As Account dialog box.
18. If you are configuring SCOM for multiple-site monitoring, repeat steps 14 to 17 for each XenApp and XenDesktop Site, each time using the appropriate Run As account.
19. Click **Save** to save the changes.
20. Click **Close** to close the Run As Profile Wizard window.
21. If you selected the **More secure** option in step 8, distribute the Run As accounts to the appropriate agent-managed computers: for each chosen account, do the following:
   a. In the Administration view, double-click the user account.
   b. In the Run As Account Properties dialog box, click the **Distribution** tab.
   c. Click **Add**.
   d. In the Computer Search dialog box, search for and add the computers. Click **OK**.
   e. In the Run As Account Properties dialog box, click **Apply** and then click **OK**.

After saving the updated Run As profile, it may take some time for the updated configuration to become active on the targets. The required time depends on the state of the SCOM agent (HealthService) instances and overall load on the SCOM infrastructure.

**Configuring access to the shared folder for agent installation**

**Note:** Steps of this procedure must be followed only once on a SCOM management server. In case you have previously installed and configured any of the following Citrix Management Pack products on the same computer, you may not need to repeat the steps:

- Provisioning Services Management Pack
- ShareFile Management Pack
- StoreFront Management Pack
- Web Interface Management Pack
- XenApp Management Pack
- XenMobile Management Pack

To configure access to the shared folder for agent installation, do the following:

1. Log on to the SCOM management server. Use a user account that has local administrative privileges.
2. Choose a local user account (local to the computer with the shared folder) or a domain user account that will have access to the shared folder, for the purpose of agent deployment and configuration.
   **Tip:** Citrix recommends creating a new, dedicated user account that you will use only for deployment of the Citrix SCOM Management Pack for XenApp and XenDesktop agent to managed computers.
3. Using an operating system administrative tool, add the user account to the **CitrixMPShareUsers** user group.
4. Launch the SCOM Operations console and connect to the management server.
5. In the **Administration** view, in the left pane, expand **Run As Configuration**, and then click **Accounts**.
6. In the Tasks pane, expand **Actions**, and then click **Create Run As Account**.

7. In the Create Run As Account Wizard window, click **Next**.

8. In the **Run As account type** drop-down menu, leave the default selection (**Windows**).

9. In the **Display name** text box, type a name that the SCOM Operations console will use to refer to the newly created SCOM user account. Click **Next**.

10. In the **User name** text box, type the user name of the operating system user account that you chose in step 2.
11. In the **Password** and **Confirm password** text boxes, type the valid password of the operating system user account.
12. In the **Domain** text box, update the value if needed. Click **Next**.
13. Depending on the effective security policy in your SCOM environment, select either the **Less secure** or **More secure** option.

Note: Selecting More secure requires manual steps to be performed in SCOM for each newly added managed computer.

14. Click **Create**.
15. After the message about successful account creation appears, click **Close**.
16. In the left pane, under Run As Configuration, click **Profiles**.
17. In the Profiles list, double-click **Citrix Management Pack Network Share Account**.
18. In the Run As Profile Wizard window, in the Introductory page, click **Next**. In the General Properties page, click **Next**.

19. In the Run As Accounts page, click **Add**.

20. In the Add a Run As Account dialog box, in the Run as account list, select the newly created SCOM user account.

21. Select the **A selected class, group, or object** option.

22. Click **Select** and then select **Class**.

23. In the Class Search dialog box, in the **Filter by (optional)** text box, type `Windows Computers`

24. Click **Search**.

25. In the Available items list, select **All Windows Computers**.
26. Click **OK** to close the Class Search dialog box.
27. Click **OK** to close the Add a Run As Account dialog box.
28. Click **Save** to update the profile. This may take a while.
29. Click **Close** to close the Run As Profile Wizard window.

Verifying the installation on the SCOM management server

To verify that the Citrix SCOM Management Pack for XenApp and XenDesktop installation on the management server is correct, do the following:

1. Log on to the management server.
2. Go to **Start > Control Panel** and click **Programs and Features** (actions of this step may differ on operating systems earlier than Windows Server 2016).
3. Check for the presence of the following entry in the Name column:
   
   Citrix SCOM Management Pack for XenApp and XenDesktop

4. To check if the **CitrixMPShare** shared folder is correctly configured, open a Command Prompt window and run the following commands in sequence (their outputs in case of success are also shown):

   ```
   ```
`net share | findstr -i CitrixMPShare`

CitrixMPShare

`%ProgramData%\Citrix\CitrixMPShare`

`net use \<ManagementServerHostName>\CitrixMPShare`

`/USER: <DomainName>\<UserName>`

The command completed successfully

`dir \<ManagementServerHostName>\CitrixMPShare`

`<FolderContents>`

In these instances, `%ProgramData%` refers to the actual value of this operating system variable.
<ManagementServerHostName> is the name of the SCOM management server. <DomainName> is the domain or computer name and <UserName> is the name of the user account that you chose in step 2 of the procedure documented in Configuring access to the shared folder for agent installation. <FolderContents> is the list of the contents of the CitrixMSPshare folder.

The shared folder is vital for installation of the Citrix SCOM Management Pack Agent for XenApp and XenDesktop and deployment of its configuration to the managed computers.

5. Launch the SCOM Operations console.
6. In the Monitoring view, expand the items in the left pane until they match the following figures (combined).
7. In the **Administration** view, expand **Administration > Management Packs** and click **Installed Management Packs** (the navigation pane structure may differ in SCOM versions earlier than 2016).

8. Verify the following management pack versions are listed in the results pane:

<table>
<thead>
<tr>
<th>Management Pack</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix Management Pack for XenApp and XenDesktop</td>
<td>3.9.49.0</td>
</tr>
<tr>
<td>Citrix Management Pack for XenApp and XenDesktop (EndUser)</td>
<td>3.9.49.0</td>
</tr>
<tr>
<td>Citrix Management Pack for XenApp and XenDesktop (EndUser) Reports</td>
<td>3.9.49.0</td>
</tr>
<tr>
<td>Citrix Management Pack for XenApp and XenDesktop Reports</td>
<td>3.9.49.0</td>
</tr>
<tr>
<td>Citrix Management Pack Library</td>
<td>1.0.17.0</td>
</tr>
</tbody>
</table>

**Configuring SCOM agent to act as proxy on Delivery Controllers**

SCOM agent on each computer where XenApp and XenDesktop Delivery Controller is installed must be configured to act as
a proxy agent. This configuration enables the agent to relay or forward information from or about other computers and network devices to the SCOM management server.

To configure the SCOM agent instances to act as proxy agents, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the **Administration** view, expand **Device Management**, and then click **Agent Managed**.
3. For each XenApp and XenDesktop (Delivery Controller) computer, follow the steps:
   1. Right-click the host name, and select **Properties**.
   2. Click the **Security** tab.
   3. Select the **Allow this agent to act as proxy and discover managed objects on other computers** option.
   4. Click **OK**.

### Configuring Citrix Director URL

To enable opening Citrix Director in the user context from session alerts using the *Start Citrix Director* alert task, the URL of the Citrix Director web interface must be configured for each monitored Site.

To configure a Citrix Director URL, do the following:

1. Log on to the management server. Use a user account that has local administrative privileges.
2. Go to **Start > All apps > Citrix** (actions of this step may differ on operating systems earlier than Windows Server 2016).
3. Click **XenApp and XenDesktop MP Configuration**.
4. In the Citrix Management Pack Configuration window, in the Director URL tab, click **Add**.
5. In the Add Director URL dialog box, type the following data in the respective text boxes:
   - Name of the Site
   - URL of the Citrix Director instance that is connected to and monitors this Site
6. Click **OK**.
7. Repeat steps 4 to 6 for each additional XenApp and XenDesktop Site you want to monitor.

8. **Optional** To modify the configuration data of an entry, click **Modify**. In the Modify Director URL dialog box, modify the data as required, and then click **OK**.

9. **Optional** To remove a Citrix Director URL configuration, click **Remove** and then click **Yes**.

10. Click **OK** to apply the configuration changes and close the window.

**Note:** If you change a Citrix Director URL for the Site in which Citrix SCOM Management Pack Agent for XenApp and XenDesktop or Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop is already installed on the Delivery Controllers, you must run the *Update Configuration on Citrix MPXAXD Agent* or *Update Configuration on Citrix MPXAXD Machine Agent* task.

## Installing the product on the Delivery Controllers

On the XenApp and XenDesktop Delivery Controllers, only Citrix SCOM Management Pack Agent for XenApp and XenDesktop must be installed.

To install Citrix SCOM Management Pack Agent for XenApp and XenDesktop on a Delivery Controller, do the following:

1. Launch the SCOM Operations console and connect to the management server.

2. In the **Monitoring** view, in the left pane, expand **Citrix Library**, and then click **XenApp/XenDesktop Delivery Controller Computers**.

3. In the XenApp/XenDesktop Delivery Controllers pane, select a Delivery Controller from the XenApp/XenDesktop Delivery Controllers list.

4. In the Tasks pane, expand **MPXAXD Delivery Controller Computer Role Tasks**, and then click **Install Citrix MPXAXD Agent**.

5. In the Run Task - Install Citrix MPXAXD Agent dialog box, adjust the task parameters as follows:
   - **UpgradeAgent**: This option, when set to *true*, causes uninstallation of the existing Citrix SCOM Management Pack Agent for XenApp and XenDesktop from the agent-managed computer before the current version is installed. Before such uninstallation, SCOM agent must be put into maintenance mode.
     Default value: *false*
   - **IgnorePrereqCheck**: You may not alter this option.
     Default value: *false*
   - **AgentInstallationSource**: This option defines location of the Management Pack agent installation package and its configuration files. Specify the value according to relationship between the agent-managed computer and the SCOM management server:
     - If SCOM agent on the agent-managed computer reports only to the management server where Citrix SCOM Management Pack for XenApp and XenDesktop is installed, leave the value empty. The location is then automatically determined based on data retrieved from the agent-managed computer. In most cases, the retrieved location host name matches the host name of the management server where the installation task is invoked.
     - If the agent-managed computer is managed by some other management server or the computer hosts a multi-homed SCOM agent instance, specify the host name of the management server where Citrix SCOM Management Pack for XenApp and XenDesktop is installed.
     - If the agent-managed computer does not have access to the *CitrixMPShare* shared folder on the management server, specify the alternative location of the Management Pack agent installation package and its agent configuration files in the UNC format. A prerequisite is that these files are copied from the *CitrixMPShare* shared folder to a location the agent-managed computer has access to.
Default value: (empty)

- **AgentInstallationDestination**: This option defines the Management Pack agent's program installation directory on the agent-managed computer. If no value is specified, the Management Pack agent is installed to the %ProgramFiles%\Citrix\XenDesktop MP Agent directory.
  Default value: (empty)

6. Click **Run** to invoke the installation process.
7. Observe the output the task generates. If the task reports no errors, the installation on the agent-managed computer is correct.

The task initially performs a prerequisite check. If any of the installation prerequisites are not fulfilled, the process is interrupted before the actual installation begins. In this case, invoke the **Check Installation Prerequisites for Citrix MPXAXD Agent task** to pinpoint the problematic prerequisite.

**Tip**: The Agent installation task can be run for multiple selected Delivery Controllers.

## Configuring Citrix SCOM Management Pack for XenApp and XenDesktop for monitoring VDA services on server OS machines

**Important**: This section is applicable only if WinRM is configured to use non-default ports.

The Citrix SCOM Management Pack Agent for XenApp and XenDesktop monitors VDA services on the server OS machines remotely and it therefore connects to the server OS machines by using WinRM. By default, Citrix SCOM Management Pack Agent for XenApp and XenDesktop uses the default WinRM port (5985), and it does not utilize SSL. However, if this configuration changes on the server OS machines, you may need to manually update Windows Registry on the Citrix SCOM Management Pack Agent for XenApp and XenDesktop computer. Add or change the following values in the **HKEY_LOCAL_MACHINE\SOFTWARE\Comtrade\XenDesktop MP Agent** registry key:

- **WinRMPort** (string value): port number that WinRM uses
- **WinRMUseSSL** (string value): yes, no, true, or false

In case the listed values do not exist or are empty, Citrix SCOM Management Pack Agent for XenApp and XenDesktop follows its default behavior.

## Verifying the installation and configuration on the Delivery Controllers

To verify that the XenApp and XenDesktop Management Pack installation and configuration on a Delivery Controller are correct, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the **Monitoring** view, in the left pane, expand **Citrix Library**, and click **XenApp/XenDesktop Delivery Controller Computers**.

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3. In the XenApp and XenDesktop Delivery Controller Computers pane, select a Delivery Controller from the XenApp and XenDesktop Delivery Controllers list.

4. In the Tasks pane, expand **Actions**, and then click **Check Requirements and Configuration for Citrix MPXAXD Agent**.

5. Observe the output the task generates. If all checks are denoted successful, the installation and configuration on the Delivery Controller are correct.

## Installing the product on the proxy nodes

**Important**: Perform this procedure only if you plan to monitor performance of server OS machines, server OS sessions, or desktop OS sessions in your XenApp and XenDesktop environment.

For machine or session performance monitoring, Citrix SCOM Management Pack Agent for XenApp and XenDesktop must be installed on the proxy nodes.

To install Citrix SCOM Management Pack Agent for XenApp and XenDesktop on a proxy node, do the following:

1. Log on to the proxy node. Use a user account that has local administrative privileges.

2. Copy the `MPXAXDMachineAgent.exe`, `Support.exe` and `Support.exe.config` files from the `<ManagementServeHostName>\CitrixMPShare\XenDesktop Machine MP` shared folder to a location on the proxy node.

3. Run the following command to check if the prerequisites for machine agent installation are fulfilled:

   ```
   Support /checkprereq
   ```

4. If all prerequisites are denoted as fulfilled, run the following command to invoke the Machine Agent installation process:

   ```
   MPXAXDMachineAgent
   ```


5. Follow instructions of the Setup Wizard. During the process:

   - In the Agent Service Account page, type the literal string of the `<MPXAXDAgentAccount>` user account into the corresponding text box.
   - In the Delivery Controllers page, specify the Delivery Controllers that should be monitored by this proxy node.
Configuring Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop

**Important:** Perform this procedure only if you have installed the product’s Machine Agent on the proxy nodes.

If WinRM is configured to use a non-default port (a port different from 5985) on your desktop OS machines, you must specify a port that will be used for VDI monitoring. To do this, update the Port value in the following keys in Windows Registry:

- For OS machines:
  
  ```
  HKEY_LOCAL_MACHINE\SOFTWARE\Comtrade\XenDesktop MP Machine Agent\WinRMProtocols
  ```

- For Delivery Controllers:
  
  ```
  HKEY_LOCAL_MACHINE\SOFTWARE\Comtrade\XenDesktop MP Machine Agent\ControllerWinRMProtocol
  ```

**Important:** Perform this procedure only if you have installed the product’s Machine Agent on the proxy nodes.

After the installation, the Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop computers are discovered in the Monitoring view of the SCOM Operations console as *XenApp/XenDesktop Machine Monitoring Proxy Computess* inside *Citrix Library*. To check if Machine Agent is fully operational, execute the *Check Requirements and Configuration for Citrix XAXD Machine Agent* task.

**Important:** Perform this procedure only if you have installed the product’s Machine Agent on the proxy nodes.

Citrix SCOM Management Pack Machine Agent for XenApp and XenDesktop communicates with Delivery Controllers and server OS machines by using WinRM protocol and Kerberos authentication. The following checks help you determine if WinRM is correctly configured.

- **Proxy nodes:**
  
  On the proxy node, to check if Kerberos authentication on the WinRM client is enabled, run the following command:

  ```
  winrm get winrm/config/Client
  ```

  Inspect the command output. If the value of the *Kerberos* parameter in the *Auth* group is not *true*, run the following command:
winrm set winrm/config/client/auth @{Kerberos="true"}

- **Server OS machines or desktop OS machines:**
  On the proxy node, to verify if WinRM client on the computer can access the OS machine, log on by using the `<MPXAXDAgentAccount>` user account, and run the following command:

```
winrm identify -r:http://<OSmachineHostName>:5985 -auth:Kerberos
```

In case of success, the command output should be similar to the following:

```
IdentifyResponse


ProductVendor = Microsoft Corporation

ProductVersion = OS: 6.1.7600 SP: 0.0 Stack: 2.0
```

In case of failure, proceed as follows:

- If the command reports the *Access denied* error, it indicates that the `<MPXAXDAgentAccount>` user account does not have administrative privileges on the OS machine. Reconfigure the user account accordingly.
- On the OS machine, run the following command to check Kerberos authentication is enabled for WinRM:

```
winrm get winrm/config/Service
```

Inspect the command output. If the value of the *Kerberos* parameter in the *Auth* group is not *true*, run the following
command:

```
winrm set winrm/config/service/auth @{Kerberos="true"}
```

- **Delivery Controllers:**
  On the proxy node, log on by using the `<MPXAXDAgentAccount>` user account, and run the following command:

```
winrm identify -r:http://<DeliveryControllerHostName>:5985
-auth:Kerberos
```

In case of success, the command output should be similar to the following:

```
IdentifyResponse
ProductVendor = Microsoft Corporation
ProductVersion = OS: 6.1.7600 SP: 0.0 Stack: 2.0
```

In case of failure, proceed as follows:

- If the command reports the *Access denied* error, it indicates that the `<MPXAXDAgentAccount>` user account does not have administrative privileges on the Delivery Controller. Reconfigure the user account accordingly.
- On the Delivery Controller, run the following command to check *Kerberos* authentication is enabled for WinRM:
Inspect the command output. If the value of the Kerberos parameter in the Auth group is not true, run the following command:

```
winrm set winrm/config/service/auth @{Kerberos="true"}
```

Transmission of product usage data using the Citrix SCOM MP Analytics Service can be reconfigured anytime.

**Note:** Reconfiguring the Citrix SCOM MP Analytics Service affects the collection of data for all Citrix SCOM Management Pack products that are installed on the same SCOM management server.

To reconfigure the analytics service, do the following:

1. Log on to the management server. Use a user account that has local administrative privileges.
2. Go to Start > All apps > Citrix (actions of this step may differ on operating systems earlier than Windows Server 2016).
3. Click Citrix SCOM MP Analytics Service Configuration.
4. In the Citrix SCOM MP Analytics Service Configuration window, select or clear the Enable the product to send anonymous usage statistics to Citrix option.
5. Click Close to apply configuration changes and close the window.

## Uninstallation

This section contains instructions that you must follow to effectively uninstall Citrix SCOM Management Pack for XenApp and XenDesktop. Perform all procedures in the documented order of precedence. Optional procedures are appropriately marked.

### Uninstalling the product from the Delivery Controllers

To uninstall XenApp/XenDesktop Management Pack Agent from a Delivery Controller (an agent-managed computer), do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the Monitoring view, expand Citrix Library, and then click XenApp/XenDesktop Delivery Controller Computers.
4. In the Tasks pane, expand Actions, and then click Uninstall Citrix MPXAXD Agent.
5. In the Run Task - Uninstall Citrix MPXAXD Agent dialog box, click Run to invoke the uninstallation process.
6. Repeat steps 3 to 5 for each additional Delivery Controller.

**Tip:** The Agent uninstallation task can be run for multiple selected Delivery Controllers.

**Uninstalling the product from the proxy nodes**

**Important:** Perform this procedure only if there is the product's Machine Agent is installed on the proxy nodes.

To determine which computers are the proxy nodes, do the following:

1. Launch the SCOM Operations console and connect to the management server.

To uninstall Citrix SCOM Management Pack Agent for XenApp and XenDesktop from a proxy node (an agent-managed computer), do the following:

1. Log on to the proxy node. Use a user account that has local administrative privileges.
2. Make sure no product folders or files are in use by any user.
3. Go to Start > Control Panel and click Programs and Features (actions of this step may differ on operating systems earlier than Windows Server 2016).
5. In the Programs and Features dialog box, click Yes to confirm uninstallation.

**Removing dependent management packs (customizations)**

**Important:** Perform this procedure only if you have customized the management packs included in the product.

To remove the customizations that you made to the management packs included in Citrix SCOM Management Pack for XenApp and XenDesktop, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the Administration view, expand Administration > Management Packs and click Installed Management Packs (the navigation pane structure may differ in SCOM versions earlier than 2016).
3. In the results pane, locate the management packs that depend on the management packs included in Citrix SCOM Management Pack Agent for XenApp and XenDesktop.
4. For each such dependent management pack (except for Microsoft.SystemCenter.SecureReferenceOverride), follow the steps:
   1. Right-click it and then click Delete.
   2. On the message stating that deleting the management pack might affect the scoping of some user roles, click Yes.

**Removing included management packs**

To remove the management packs included in Citrix SCOM Management Pack for XenApp and XenDesktop, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the Administration view, expand Administration > Management Packs and click Installed Management Packs.
3. Remove references to the included management packs from the `Microsoft.SystemCenter.SecureReferenceOverride` management pack. To do this, perform the following steps:
   1. Identify which included management packs are referenced. In the Administration > Management Packs context of the SCOM Operations console, right-click `Microsoft.SystemCenter.SecureReferenceOverride` and select Properties. In the dialog box, click the Dependencies tab.
   2. For each such referenced management pack, find out its ID. Right-click the referenced management pack. In the dialog box, take note of the value in the ID text box on the General tab.
   4. Make a copy of the file you exported the management pack to.
   5. Edit the originally exported file: use the IDs to find and remove all dependencies to the management packs from the Manifest > References context (the Reference elements) and the Monitoring > Overrides context (the SecureReferenceOverride elements), and then save the changes.
   6. For better tracking, increase the management pack version by adjusting the value of the Version element within the Identity element.
4. In the results pane, right-click Citrix Management Pack for XenApp and Xen Desktop (EndUser) Reports, and then select Delete.
5. On the message stating that deleting the management pack might affect the scoping of some user roles, click Yes.
6. Repeat steps 4 and 5 with the following management packs (in the presented order of precedence):
7. Check if other Citrix SCOM Management Pack products are installed on the management server. If none of them is installed, repeat steps 4 and 5 with Citrix Management Pack Library.

Uninstalling the product from the SCOM management server

To uninstall Citrix SCOM Management Pack for XenApp and Xen Desktop from the SCOM management server, do the following:

1. Log on to the management server. Use a user account that has local administrative privileges and SCOM administrative privileges.
2. Make sure no product folders or files are in use by any user.
3. Go to Start > Control Panel and click Programs and Features (actions of this step may differ on operating systems earlier than Windows Server 2016).
5. In the Welcome page of the Setup Wizard, click Uninstall.
6. In the Uninstalling the product page, the Setup Wizard reports the uninstallation progress.
7. In the Completion page of the Setup Wizard, click Finish.
8. Delete the `%ProgramData%\Citrix\CitrixMPShare\XenDesktop Machine MP` and `%ProgramData%\Citrix\CitrixMPShare\XenDesktop MP` folders.
   Caution: This action permanently deletes the Agent configuration data. You will be unable to reuse it at a later time.
9. Check if other Citrix SCOM Management Pack products are installed on the management server. If none of them is installed, follow the steps:
   1. Stop sharing the `CitrixMPShare` shared folder.
2. Delete the %ProgramData%\Citrix\CitrixMPShare folder.
3. Using an operating system administrative tool, delete the local CitrixMPShareUsers user group.

Uninstalling Citrix SCOM MP Analytics from the SCOM management server

Note: Uninstalling the Citrix SCOM MP Analytics Service stops collection of analytics data from all Citrix Management Pack products installed on the system.

To uninstall Citrix SCOM MP Analytics from the SCOM management server, do the following:

1. Log on to the management server. Use a user account that has local administrative privileges.
2. Make sure no product folders or files are in use by any user.
3. Go to Start > Control Panel and click Programs and Features (actions of this step may differ on operating systems earlier than Windows Server 2016).
4. Right-click Citrix SCOM MP Analytics and select Uninstall.
5. In the Programs and Features dialog box, click Yes to confirm uninstallation.

Upgrade

Upgrade from version 3.5

To upgrade Citrix SCOM Management Pack for XenApp and XenDesktop from version 3.5, do the following:

1. Prepare your environment for installation of the new product version. For instructions, see Preparing for the installation.
2. Install the product (its server-side part) on the SCOM management server. For instructions, see Installing the product on the SCOM management server. The installation process upgrades the product and preserves local configuration data.
3. Verify the installation of the product (its server-side part) on the SCOM management server. For instructions, see Verifying the installation on the SCOM management server.
4. On the SCOM management server, copy the mpxaxd_config.dat file from the %ProgramData%\ComTrade\MPShare\XenDesktop MP directory to the %ProgramData%\Citrix\CitrixMPShare\XenDesktop MP directory.
5. On the SCOM management server, move the mpxaxd_config.dat file from the %ProgramData%\ComTrade\MPShare\XenDesktop Machine MP directory to the %ProgramData%\Citrix\CitrixMPShare\XenDesktop Machine MP directory.
6. Configure access to the shared folder for agent installation. For instructions, see Configuring access to the shared folder for agent installation.
7. Install the product (one agent-side part) on the Delivery Controllers. For instructions, see Installing the product on the Delivery Controller.

Important: In the Run Task - Install Citrix MPXAXD Agent dialog box, set the UpgradeAgent task parameter to the true value.
8. Verify the installation and configuration of the product (one agent-side part) on the Delivery Controllers. For instructions, see Verifying the installation and configuration on the Delivery Controllers.

9. (this step is applicable only when installed Machine Agent is part of the deployment of your earlier product version) Install the product (the other agent-side part) on the proxy nodes. For instructions, see Installing the product on the proxy nodes. The installation process upgrades the product and preserves local configuration data.

10. (this step is applicable only when installed Machine Agent is part of the deployment of your earlier product version) Verify the installation and configuration of the product (the other agent-side part) on the proxy nodes. For instructions, see Verifying the installation and configuration on the proxy nodes.

Upgrade from version other than 3.5

To upgrade Citrix SCOM Management Pack for XenApp and XenDesktop from versions other than 3.5, do the following:

1. Prepare your environment for installation of the new product version. For instructions, see Preparing for the installation.

2. Install the product (its server-side part) on the SCOM management server. For instructions, see Installing the product on the SCOM management server.

   Note: The installation process upgrades the product and preserves local configuration data.

3. Verify the installation of the product (its server-side part) on the SCOM management server. For instructions, see Verifying the installation on the SCOM management server.
4. Install the product (one agent-side part) on the Delivery Controllers. For instructions, see Installing the product on the Delivery Controllers.

**Important:** In the Run Task - Install Citrix MPXAXD Agent dialog box, set the **UpgradeAgent** task parameter to the *true* value.

8. Verify the installation and configuration of the product (one agent-side part) on the Delivery Controllers. For instructions, see Verifying the installation and configuration on the Delivery Controllers.

9. (this step is applicable only when installed Machine Agent is part of the deployment of your earlier product version)

Install the product (the other agent-side part) on the proxy nodes. For instructions, see Installing the product on the proxy nodes.

**Note:** The installation process upgrades the product and preserves local configuration data.

10. (this step is applicable only when installed Machine Agent is part of the deployment of your earlier product version)

Verify the installation and configuration of the product (the other agent-side part) on the proxy nodes. For instructions, see Verifying the installation and configuration on the proxy nodes.
Optional configuration

Some monitors and rules have default thresholds that might need additional tuning to suit your environment. You should evaluate monitors and rules to determine whether the default thresholds are appropriate for your environment. If a default threshold is not appropriate for your environment, you should adjust the threshold by overriding it.

Adding optional SLA dashboards

For this purpose, you must import the optional Citrix Management Pack for XenApp and XenDesktop SLA Dashboards management pack into SCOM. It provides service level objectives (SLA and SLO objects) for XenApp and XenDesktop environment monitoring.

Management pack dependencies

The Citrix Management Pack for XenApp and XenDesktop SLA Dashboards management pack has the following dependencies:

- Citrix-specific management packs:
  - Citrix Management Pack for XenApp and XenDesktop
  - Citrix Management Pack for XenApp and XenDesktop (EndUser)
- Default management packs:
  - Health Library
  - Microsoft.SystemCenter.Visualization.Library
  - Microsoft.SystemCenter.Visualization.ServiceLevelComponents
  - System Library

Software requirements


Importing the management pack
For instructions on how to import the unsealed management pack, see Manualy importing included management packs into SCOM. The management pack is located in the %ProgramFiles%\Citrix\XenDesktop MP folder in the Comtrade.XenApp.And.XenDesktop.SLADashboards.xml file.

Citrix Management Pack for XenApp and XenDesktop SLA Dashboards is an example of how SCOM 2012 SLA dashboards can be used together with the Citrix SCOM Management Pack for XenApp and XenDesktop which collects all the information needed to create useful and personalized service level objectives for your environment. This sample management pack includes the following pre-set definitions for service level objectives:

- Desktop OS Delivery Group SLOs:
  - Availability > 99.000 %
  - Max User Logon Duration < 50 seconds
  - Max Desktop OS Random Delivery Group Usage (%) < 90 %
- Server OS Delivery Group SLOs:
  - Availability > 99.000 %
  - Max User Logon Duration < 30 seconds
  - Min Load Available (%) > 10 %
- Site SLOs:
  - Availability > 99.000 %
  - Max Number of Concurrent Users < 300
  - Max Number of Active Sessions < 500
  - Max Logon Duration < 40 seconds

In real world scenarios, you would create different service level tracking rules for each Site and delivery group in your organization. You may also want to include other parameters for setting the service level objectives.

Note: The management pack also provides two service level views which report on service level objectives defined in service level tracking rules. For a complete list available monitors and performance collection rules that can be used to set service level objectives, see Citrix SCOM Management Pack for XenApp and XenDesktop Reference Guide, available from Tuning thresholds for monitors and rules.

Configure dashboards with default SLAs

Once the management pack is imported, locate the views in the Monitoring view in the SCOM Operations console as seen in the following figure.
The Delivery Group SLA Dashboard and Site SLA Dashboard views are not configured by default, so you must select one or more service level tracking rules for each of the views.

## Delivery Group SLA Dashboard

To configure the Delivery Group SLA Dashboard view, do the following:

1. Launch the SCOM Operations console.
2. In the Monitoring view, in the left pane, expand Citrix XenApp and XenDesktop > Dashboards, and then click Delivery Group SLA Dashboard.
3. In the upper right corner of the dashboard view, click the settings icon and then select Configure.
4. In the Update Configuration wizard window, click Next.
5. In the Scope page, click **Add**.

6. In the Add SLA dialog box, in the Service Level column, select **Desktop OS Group Health** and click **Add**.
7. Repeat step 6 for Server OS Delivery Group Health.
8. Click **OK** to close the dialog box.
9. In the Scope page, adjust the time interval for the SLA.

10. Click **Finish** to close the wizard.
Once the view is refreshed, it shows the delivery group service level objective report for the time period selected, as shown in the figure that follows.

**Site SLA Dashboard**

To configure the Site SLA Dashboard view, do the following:

1. Launch the SCOM Operations console.
2. In the Monitoring view, in the left pane, expand **Citrix XenApp and XenDesktop** > **Dashboards**, and then click **Site SLA Dashboard**.
3. In the upper right corner of the dashboard view, click the settings icon and then select **Configure**.
4. In the Update Configuration wizard window, click Next.
5. In the Scope page, click Add.
6. In the Add SLA dialog box, in the Service Level column, select Site Health and click Add.
7. Click OK to close the dialog box.
8. In the Scope page, adjust the time interval for the SLA.
9. Click Finish to close the wizard.

Custom SLAs

Citrix Management Pack for XenApp and XenDesktop SLA Dashboards also includes some general service level target rules that may be used as an example. To make the SLA dashboards useful in practice, you must create your own SLAs that are tailored to your needs.

Following the steps below, a new SLA for a Site named "Boston" will be created, and it will check whether we are crossing maximum allowed number of concurrent users, since we only have 1,000 concurrent licenses available.

Perform the following:

1. Launch the SCOM Operations console.
2. In the Authoring view, expand Authoring > Management Pack Objects.
3. Right-click Service Level Tracking and then select Create.
4. In the Service Level Tracking wizard, type a display name in the Name text box.
   In our example, type Boston Site SLA.
5. Click **Next**.
6. In the Objects to Track page, click **Select**.
7. In the Select a Target Class dialog box, from the **Search result filter** drop-down list, select **All**.
8. In the Target column, select **XAXD Site** and then click **OK** to close the dialog box.
9. In the Objects to Track page, from the **Select destination management pack** drop-down list, select a custom management pack where this SLA will be stored. If no such management pack exists, create a new one.
10. Click **Next**.
11. In the Service Level Objectives page, click **Add** and select **Collection rule SLO**.
12. In the Service Level Objective (Collection Rule) dialog box, type a display name in the **Service level objective name** text box.
   In our example, type *Maximum Concurrent Users*.
13. Under Targeted class, click **Select**. In the dialog box, in the Target column, select *XAXD Site Data Collector* and then click **OK** to close the dialog box.
14. Under Performance collection rule, click **Select**. In the dialog box, in the Name column, click **Number of Concurrent Users (Performance DB DW)** and then click **OK** to close the dialog box.
15. Under Aggregation method, click **Max**.
   In our example, we do not want more users at any time.
16. From the Service level objective goal drop-down list, select **Less Than** and then type **1000** in the text box.
17. Click **OK** to close the Service Level Objective (Collection Rule) dialog box.

18. In the Service Level Tracking wizard window, click **Next**.

19. In the Summary page, click **Finish**.

Once the new SLA is created, you can use it in the SLA dashboards as explained in [Configure dashboards with default SLAs](#).

You can use the procedure in this section to create personalized SLAs for sites, delivery groups, or any other object that the Citrix SCOM Management Pack for XenApp and XenDesktop discovers. For a complete list of performance rules and availability monitors that can be used to configure service level objectives, see [*Citrix SCOM Management Pack for XenApp and XenDesktop Reference Guide*](#), available from [Tuning thresholds for monitors and rules](#).

### Key monitoring scenarios

Before any desktop or application can be brokered by XenApp and XenDesktop, Virtual Delivery Agent (VDA) installed on the desktop or server machine has to register with one of the Delivery Controllers in a XenApp and XenDesktop Site. This is done each time a machine is started. If the machine is not registered correctly, it cannot be used. Thus, these situations may have a big impact on the number of available machines in a delivery group.

There are many causes why a registration may fail, including no VDA being installed on a desktop or server machine, DNS problems, firewall configuration, time synchronization, and so on.

Citrix SCOM Management Pack for XenApp and XenDesktop monitors via the *Failed Registrations in Delivery Group* monitor if a certain machine in a delivery group could not register itself with the XenDesktop broker. If a failed registration is detected, the corresponding delivery group health status changes to *Warning* and an alert is generated and displayed in the *Alerts* view and in the *Failed Registrations* view in *Machines* folder. Both views also contain alerts for each failed registration.
of a machine, with details on a machine name, a delivery group name, and a Site name. Additional details may also be found in the Event view, where all Citrix-related Windows events are logged.

Failed registrations are monitored only for the powered-managed virtual machines and not for managed physical machines.

Machine and session monitoring functionality enables an insight into performance of server OS machines, server OS sessions, and desktop OS sessions. You have the possibility to receive alerts when a specific machine or session metric crosses a threshold, and you can generate reports.

**Note:** Alerts based on performance thresholds are generated only when the product’s Machine Agent is installed and configured.

The following reports are available:

- **Server OS Machine Performance:** This report shows server performance for selected server OS machines. Displayed metrics:
  - CPU utilization
  - Physical and virtual memory utilization
  - Citrix Load Index
  - Number of sessions
  - Virtual memory page fault rate
  - Disk metrics (read, write, and I/O operation rates, latency)
  - Network traffic
  - Average session latency
  - Average session ICA round-trip time (RTT)

  This report is available only when Machine Agent is installed and configured.

- **User - Desktop/Application Activity:** This report shows application/desktop usage for selected user. With session monitoring you can also see session performance data for the duration of connection. Displayed metrics:
  - CPU utilization
  - Physical and virtual memory utilization
  - Virtual memory page fault rate
  - Session network traffic
  - Average session latency
  - Average session ICA round-trip time (RTT)
  - For desktop OS sessions, the report displays the following additional metrics:
    - Disk metrics (read, write, and I/O operation rates, latency)
    - Machine network traffic

  Performance metrics of this report are available only when Machine Agent is installed and configured.

When Citrix SCOM Management Pack Agent for XenApp and XenDesktop is installed on one or more computers, referred to as proxy nodes, machine and session performance data can be collected. Data is collected remotely by using Windows Remote Management (WinRM). Machine Agent first communicates with a XenApp and XenDesktop Delivery Controller to get a list of the registered machines. It then utilizes WinRM to collect performance data from the machines.
Proxies use WinRM with Kerberos authentication to communicate with machines and Delivery Controllers. All WinRM communication is done in the context of an account that is configured for the Citrix MPXAXD Machine Agent service on the proxy node. For this communication to work all machines (server OS and desktop OS) must have WinRM 2.0 installed and enabled (default TCP port: 5985, enabled Kerberos authentication).

In advanced scenarios, you can use different accounts for WinRM communication for different machines. In the XenDesktop MP Configuration tool, you can specify machine hostname mask and account pairs. For any machine matching specific machine hostname mask, the corresponding user account is used for WinRM communication. For machines without matching hostname mask, the Citrix MPXAXD Machine Agent service user account is used.

Each instance of Citrix SCOM Management Pack Agent for XenApp and XenDesktop (each proxy node) can be configured to monitor machines for one or more Delivery Controller instances. However, every Delivery Controller can be monitored by no more than one Machine Agent instance.

**Important:** In a multi-Site environment, if a Machine Agent instance monitors multiple Delivery Controllers, these Controllers must belong to the same XenApp and XenDesktop Site.

Possible Machine Agent configurations (deployments) therefore are:

- One Machine Agent for all Delivery Controller instances (within a Site)
- One Machine Agent per Delivery Controller
One Machine Agent per subset of Delivery Controller instances (within a Site)

The deployments are depicted in the following figures:

Best practice is to configure Machine Agents (on proxy nodes) to monitor performance of no more than 2,000 concurrently running server OS or desktop OS machines. In environments where the number of machines registered with each Delivery Controller is smaller, you can configure one proxy node to handle multiple Delivery Controller instances. As a general rule configuration with one proxy node per Delivery Controller is appropriate for any type of XenApp and XenDesktop environment.

For examples of proper Machine Agent deployment for Sites with different number of concurrently running machines, see the following figures.
Database sizing

Size of the Operations Manager database depends on the size of the XenApp and XenDesktop environment. Citrix SCOM Management Pack for XenApp and XenDesktop installs additional datasets to Operations Manager data warehouse database. It provides better, more comprehensive as well as more optimized data collection and data processing for better XenApp and XenDesktop architecture and end-user analysis, planning, and troubleshooting.

The maximum database space consumption for a few sample environments with default database grooming is presented in the table that follows.
### Important

In large environments with numerous concurrent sessions, increasing the retention interval may have significant impact on the SCOM data warehouse database.

Citrix SCOM Management Pack for XenApp and XenDesktop consists of two custom datasets: Machine dataset and Session dataset. Each dataset provides tables for performance data and tables for stale or discovery data. Grooming for tables is specified in number of days and the default values are provided in table that follows.

#### Machine dataset grooming

<table>
<thead>
<tr>
<th>Machine dataset</th>
<th>Performance Raw</th>
<th>Performance Hourly</th>
<th>Performance Daily</th>
<th>Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working hours: 8x5</td>
<td>57 / 443 / 500</td>
<td>98 / 1405 / 1503</td>
<td>295 / 6956 / 7215</td>
<td>9,999</td>
</tr>
<tr>
<td>Working hours: 24x7</td>
<td>57 / 1031 / 1088</td>
<td>98 / 3756 / 3854</td>
<td>295 / 18705 / 19000</td>
<td></td>
</tr>
</tbody>
</table>
Session dataset grooming

<table>
<thead>
<tr>
<th>Session dataset</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Raw</td>
<td>10</td>
</tr>
<tr>
<td>Performance Hourly</td>
<td>400</td>
</tr>
<tr>
<td>Performance Daily</td>
<td>400</td>
</tr>
<tr>
<td>Sessions</td>
<td>400</td>
</tr>
<tr>
<td>Connections</td>
<td>400</td>
</tr>
<tr>
<td>Logons</td>
<td>400</td>
</tr>
<tr>
<td>Application Instances</td>
<td>400</td>
</tr>
<tr>
<td>Applications</td>
<td>9,999</td>
</tr>
</tbody>
</table>

To change grooming settings, do the following:

1. Open SQL Server Management Studio and connect to the data warehouse database.
2. In the Object Explorer pane, expand Databases, expand OperationsManagerDW database, and then expand Tables.
3. Right-click dbo.Dataset and then select Open Table.
4. Make a note of DatasetID GUID values for rows with DatasetDefaultName equal to each of the following values:
   - MPXAXD Machine DataSet
   - MPXAXD Session DataSet
5. In the Object Explorer pane, right-click dbo.StandardDatasetAggregation and then select Open Table.
6. In the DatasetID column, locate the dataset GUID noted in step 4.
7. Locate the MaxDataAgeDays column and edit the value to set the grooming interval.
8. Repeat steps 6 and 7 for the other GUID value.

Manually importing included management packs into SCOM

For general instructions about how to import management packs into SCOM, see the How to Import an Operations Manager Management Pack webpage on the Microsoft TechNet website.

To import the sealed Citrix SCOM Management Pack for XenApp and XenDesktop manually, do the following:

1. Log on to the management server.
2. Launch the SCOM Operations console.
3. In the Administration view, click **Management Packs**.
4. In the Tasks pane, expand **Actions**, and then click **Import Management Packs**.
5. In the Import Management Packs dialog box, click **Add**, and then select **Add from disk**.
6. In the Online Catalog Connection dialog box, click **No**.
7. In the Select Management Packs to import dialog box, browse to the folder that contains the following management pack files, select those files, and then click **Open**.
   - *Comtrade.Citrix.Library.mp*
   - *Comtrade.Citrix.XenApp.And.XenDesktop.mp*
8. Click **Install**.

### Customizing sealed management packs

Customization of the sealed management packs that XenApp and XenDesktop Management Pack provides is similar to the default SCOM management pack customization. For details, see the Microsoft TechNet website:

- For general information about customization of management packs, see the [Customizing Management Packs](#) webpage.
- For instructions on how to customize a management pack, see the [Create a New Management Pack for Customizations](#) webpage.