

# Citrix SCOM Management Pack 1.2 for License Server

Aug 14, 2017

Citrix SCOM Management Pack for License Server is an availability and performance management solution that extends end-to-end service monitoring capabilities of Microsoft System Center Operations Manager (SCOM) to include the Citrix Licensing infrastructure.

Citrix SCOM Management Pack for License Server allows you to:

- Improve Licensing infrastructure availability and health. Licensing availability is being checked with continuous TCP port probing and active license server services checks, as well as health checks of the Citrix vendor daemon process.
- Gain deeper insight into the license server performance and License usage information
- Know what the amount of product licenses is and the ratio of license usage. With Citrix SCOM Management Pack for License Server, you are notified when the license is about to expire or when the license usage is growing too fast. License server's critical processes are measured for high CPU usage and high memory consumption.

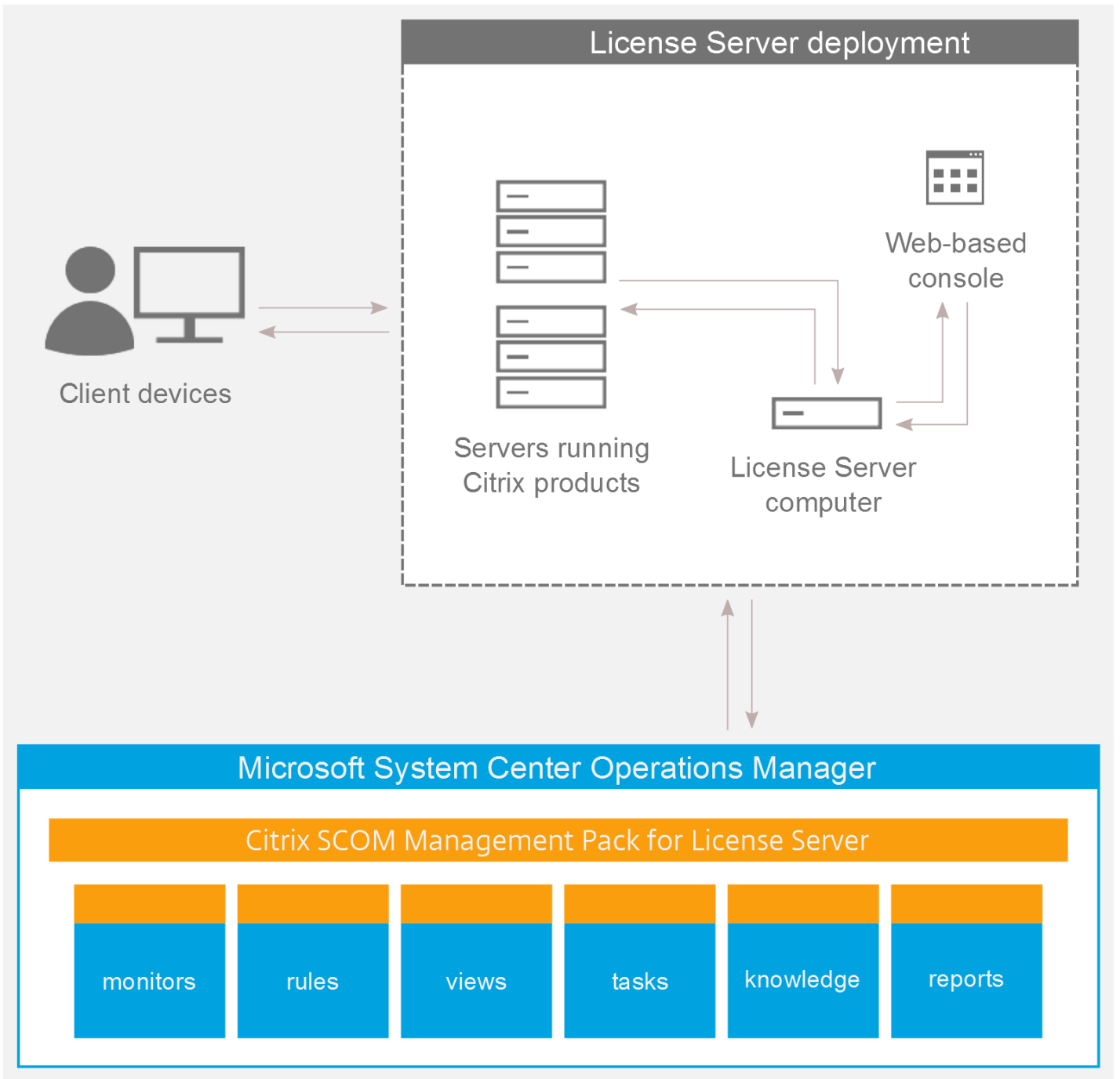
Citrix SCOM Management Pack for License Server introduces a couple of license usage reports. These provide you with an overview of product license usage over time. There are also trending reports that help you plan your licensing resources.

Citrix SCOM Management Pack for License Server fully integrates the topology, health, and performance data into SCOM. It provides centralized monitoring in SCOM and covers the following key scenarios:

- Is the license server up and running?
- Is the Licensing infrastructure (that is, the Citrix Licensing, Citrix Web Services for Licensing, and other related Windows services) operational?
- Are the Citrix Licensing and Citrix Web Services for Licensing responsive for Citrix Products?
- Are the product licenses about to expire?
- Is the Subscription Advantage membership about to expire?
- Has license usage reached or exceeded the configured thresholds?
- Are there any events that indicate a problem with license server?
- How well the license server processes are performing?
- Have any performance thresholds been violated?

## Architecture

The following diagram shows how the Citrix SCOM Management Pack for License Server connects the SCOM management platform and the Licensing infrastructure. The following figure depicts a high-level view of the Citrix SCOM Management Pack for License Server architecture:



# What's new

Aug 14, 2017

Citrix SCOM Management Pack 1.2 for License Server introduces the following new or enhanced features:

- **Support for Citrix Licensing 11.14.1.** Citrix SCOM Management Pack for License Server is tested and verified to support the build of Citrix Licensing Server version 11.14.1 that is released with Citrix XenApp and XenDesktop version 7.15 LTSR.
- This release also includes fixes for improved product quality.

## Upgrading

**Note:** Earlier product versions were released under the name Comtrade Management Pack for Citrix License Server.

Upgrade is available for version 1.0. During the upgrade process, included management packs of the earlier product version are automatically upgraded; their prior removal is not required.

For upgrade instructions, see [Upgrading](#) in Install and Configure.

# System requirements

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Before installing Citrix SCOM Management Pack for License Server, make sure that your environment meets the requirements listed in this section.

## Software requirements

Citrix SCOM Management Pack for License Server requires a supported version of the following products that it integrates with:

- Citrix Licensing
- Microsoft System Center Operations Manager

## Supported versions of Citrix Licensing

Citrix SCOM Management Pack for License Server is compatible with the following Citrix Licensing versions:

Product version	Supported
Citrix Licensing 11.14.1	✓
Citrix Licensing 11.14	✓
Citrix Licensing 11.13	✓
Citrix Licensing 11.12	✓
Citrix Licensing 11.11	✓
Citrix Licensing 11.10	✓
Citrix Licensing 11.9	✓
Citrix Licensing 11.6	✓
Citrix Licensing 11.5	✓

## Supported versions of SCOM

Citrix SCOM Management Pack for License Server is compatible with the following SCOM versions:

Microsoft System Center Operations Manager version	Supported
Microsoft System Center Operations Manager 2016	✓
Microsoft System Center Operations Manager 2012 R2	✓
Microsoft System Center Operations Manager 2012 <sup>1</sup>	✓

<sup>1</sup>This entry covers both the RTM version and the RTM version updated with Service Pack 1 (SP1).

## Language support

Citrix SCOM Management Pack for License Server can be deployed and operates correctly in environments with the following languages and locale settings:

Language	Locale identifier	Supported
English	en	✓
Spanish	es	✓

# Install and configure

Aug 14, 2017

This article contains instructions that you must follow to install and configure Citrix SCOM Management Pack for License Server. Perform all procedures in the documented order of precedence.

Before installing Citrix SCOM Management Pack for License Server, make sure the following prerequisites are fulfilled:

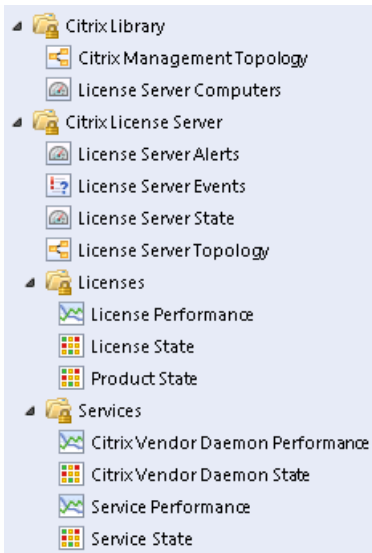
- Your environment meets the software requirements. For software requirements, see [System Requirements](#).
- A SCOM management group is chosen for License Server monitoring. The computer that hosts the SCOM management server of this management group is referred to as SCOM management server.
- SCOM agent is installed on all the computers that host Licensing, and these computers are configured as agent-managed computers in the SCOM management group.
- The Citrix SCOM Management Pack for License Server files (files with the \*.mp file extension) are extracted from the installation archive. The archive file name is *Citrix\_SCOM\_Management\_Pack\_for\_LicenseServer\_<Version>.zip* (where <Version> is the current software version).

Installation of Citrix SCOM Management Pack for License Server consists of importing the included management packs into SCOM. To import the management packs, 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 Tasks pane, expand **Actions**, and then click **Import Management Packs**.
4. In the Import Management Packs dialog box, click **Add**, and then select **Add from disk**.
5. In the Online Catalog Connection, click **No**.
6. 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.LicenseServer.mp*
  - *ComTrade.Citrix.LicenseServer.Reports.mp*
7. Click **Install**.

To verify that the Citrix SCOM Management Pack for License Server installation is correct, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the **Monitoring** view, expand the items in the left pane until they match the following figure:



3. 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).

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

Citrix Management Pack for License Server	1.2.3.0
Citrix Management Pack for License Server Reports	1.2.3.0
Citrix Management Pack Library	1.0.38.0

SCOM agent on each computer where Licensing 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 License Server, 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**.

## Uninstalling the product

This section contains instructions that you must follow to effectively uninstall Citrix SCOM Management Pack for License

Server. Perform all procedures in the documented order of precedence.

**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 License Server, 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 for License Server.
4. For each such dependent management pack:
  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**.

To remove the management packs included in Citrix SCOM Management Pack for License Server, 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, right-click **Citrix Management Pack for License Server Reports**, and then select **Delete**.
4. On the message stating that deleting the management pack might affect the scoping of some user roles, click **Yes**.
5. Repeat steps 3 and 4 with Citrix Management Pack for License Server.
6. Check if other Citrix SCOM Management Pack products are installed on the management server. If none of them is installed, repeat steps 3 and 4 with **Citrix Management Pack Library**.

## Upgrading

To upgrade Citrix SCOM Management Pack for License Server from the earlier version, do the following:

1. Prepare your environment for installation of the new product version. For instructions, see [Prepare for installation](#).
2. Install the product. For instructions, see [Install and Configure](#).
3. Verify the installation. For instructions, see [Verifying the installation](#).



# Optimize

Aug 14, 2017

## Monitoring License Server components

The following table lists the object types that Citrix SCOM Management Pack for License Server discovers in the monitored environment.

Object type	Description
Citrix vendor daemon	A process that is responsible for core operations of Citrix License Server.
License	A Citrix license file, which can be of one of the following types: User/Device, Concurrent user, Concurrent system, Named user license.
License Server	A system that allows licenses to be shared across the network. It stores and manages Citrix license files.
License server TCP Probe	TCP ports on the license server host: vendor daemon port, license server manager port, and console web server port.
Product	A group of license files for a Citrix product, such as XenDesktop or XenApp.
Service	A Windows service that is part of Citrix License Server.

See the [Reference Guide](#) for a complete list of monitors and rules available in Citrix SCOM Management Pack for License Server.

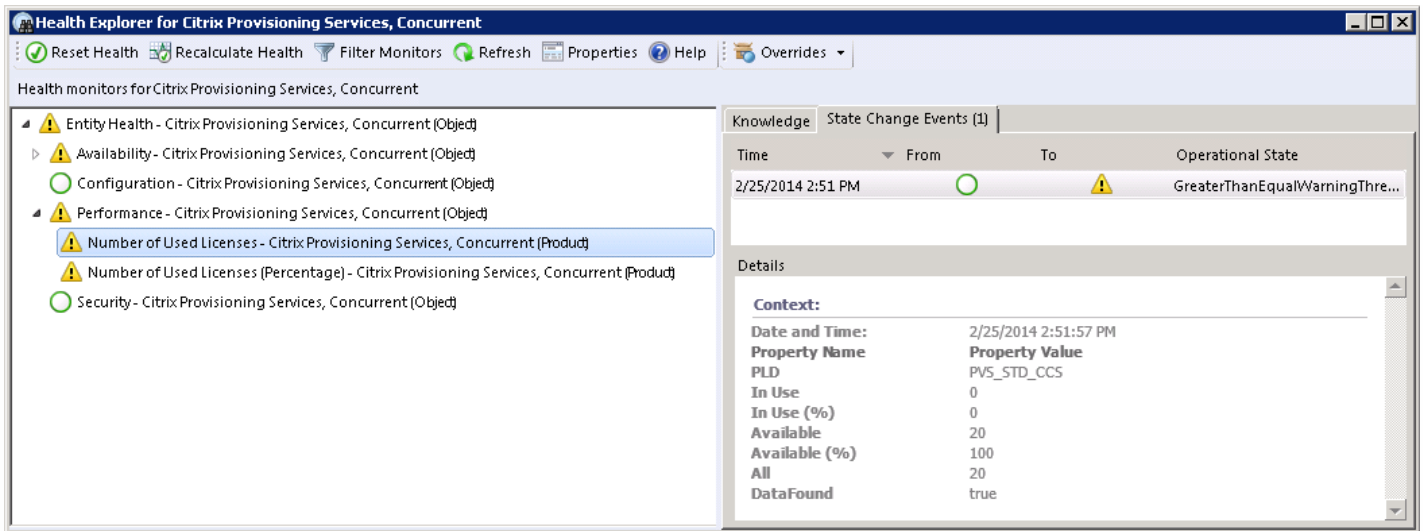
## Product license usage

After a user connects to a computer running a Citrix product, the product requests a license from the license server and license gets checked out. License can be checked out to a user, device, session, server, or appliance, depending on the licensing model for a particular product.

Users can eventually run out of available licenses. Citrix SCOM Management Pack for License Server handles this situation in various ways.

## Monitors

- *Number of used licenses*: This monitor checks if the number of used licenses has exceeded the threshold value. The Warning and Critical thresholds can be configured.
- *Number of used licenses (Percentage)*: This monitor checks whether the percentage of used licenses has exceeded the threshold value. The Warning and Critical thresholds can be configured.



## Performance collection rules

Citrix SCOM Management Pack for License Server provides the following rules that collect metrics for a license:

- *Number of All Licenses Performance DB DW*: This rule collects the number of all licenses for a Citrix product.
- *Number of Used Licenses Performance DB DW*: This rule collects the number of used licenses for a Citrix product.
- *Number of Used Licenses (Percentage) Performance DB DW*: This rule collects the percentage of used licenses
- *Number of Available Licenses Performance DB DW*: This rule collects the number of available licenses.

Values are displayed in the License Performance view.

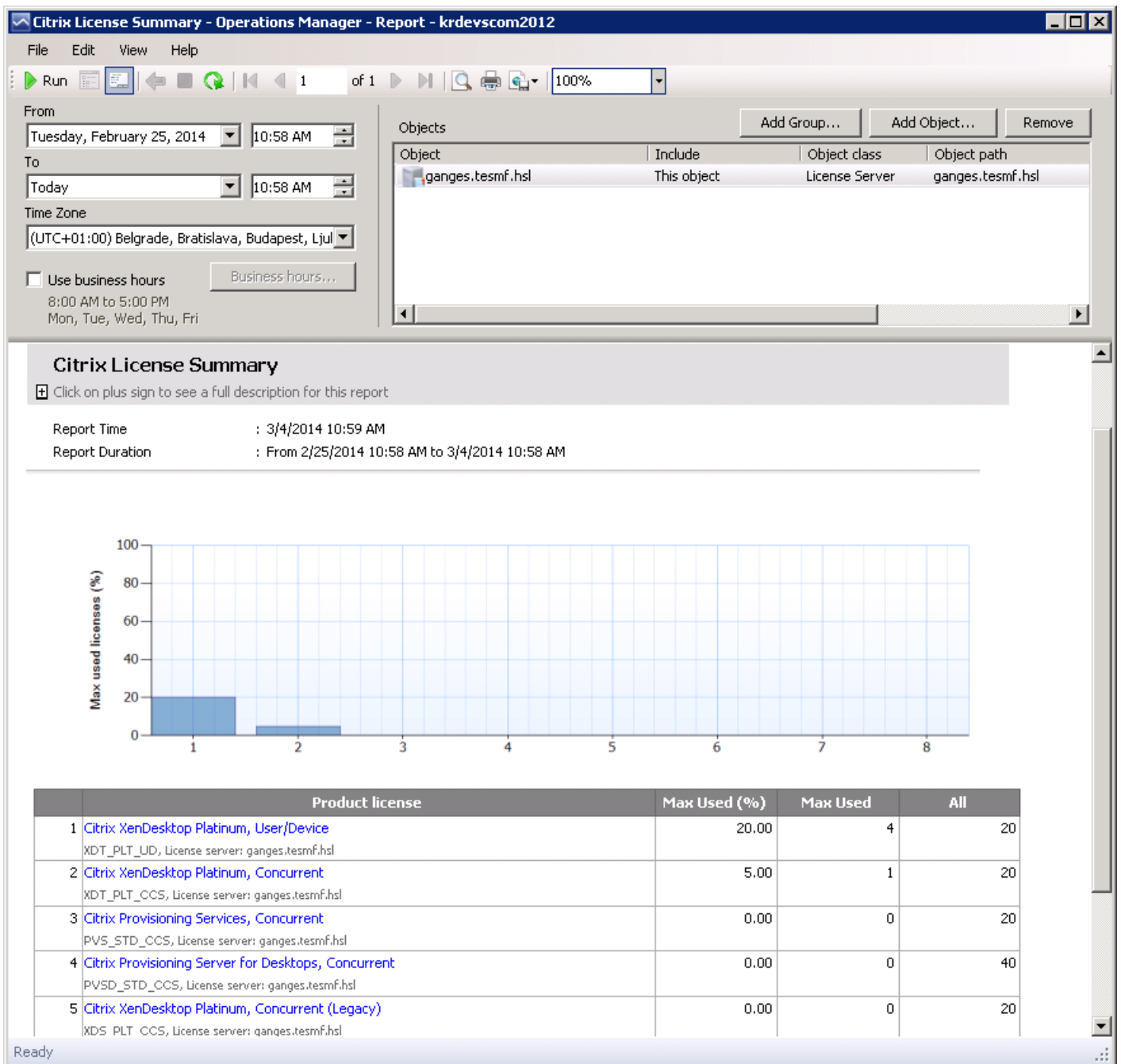
## Reports

With the Citrix SCOM Management Pack for License Server reports, administrators have an overview of license usage on Citrix license servers. Reports show summarized data as well as details for the amount of licenses and the license usage for each Citrix product.

Citrix SCOM Management Pack for License Server provides the following reports:

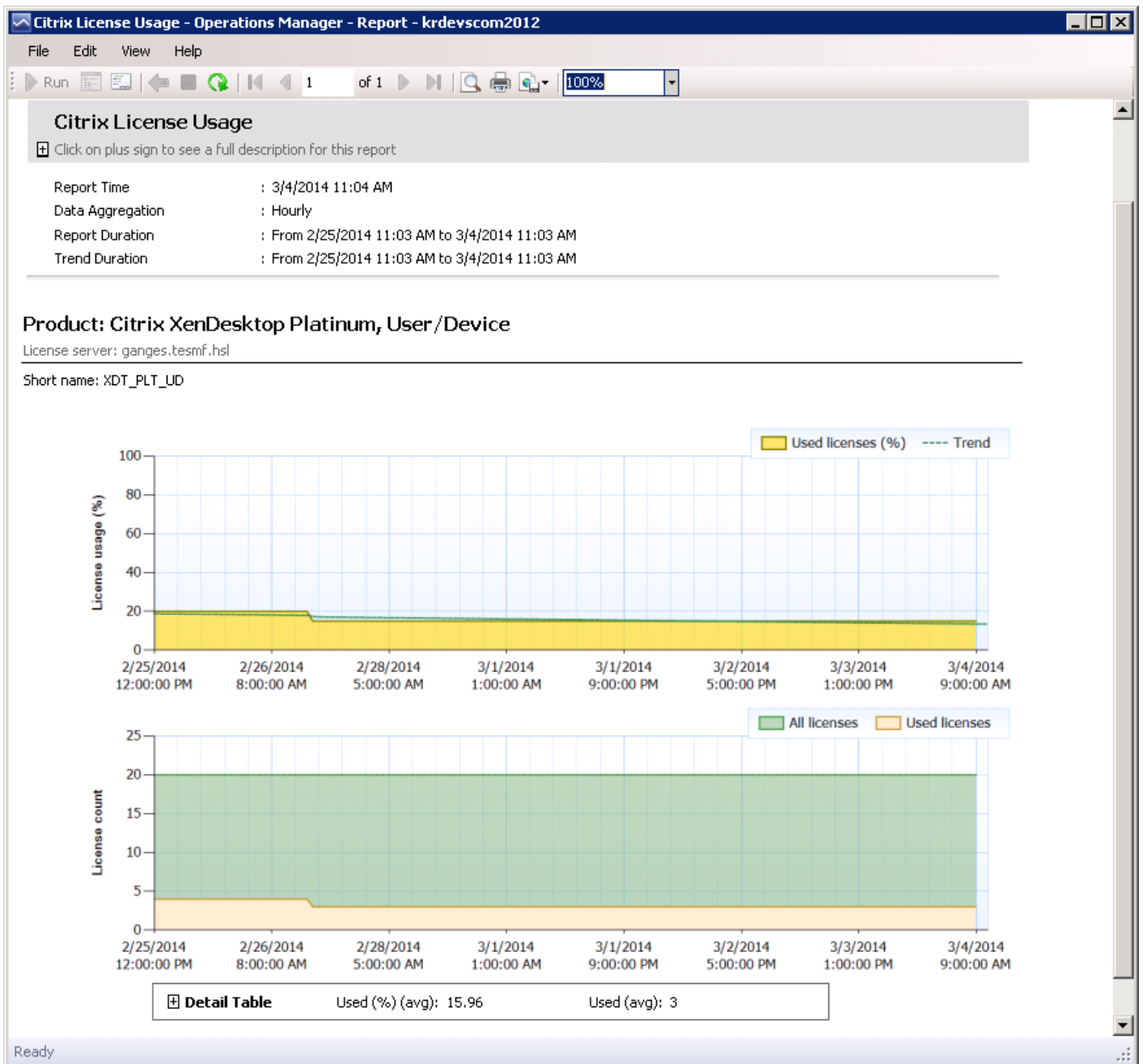
- *Citrix License Summary*: This report shows product license usage summary for the selected time range. The following values are displayed:
  - Percentage of used licenses (maximum value)
  - Number of used licenses (maximum value)
  - Number of all licenses

**Figure:** Citrix License Summary report



- *Citrix License Usage*: This report shows license usage for each installed Citrix product for the selected time range. The following values are displayed:
  - Percentage of used licenses (maximum value in aggregation period) with a trend line
  - Number of used licenses (maximum value in aggregation period)
  - Number of all licenses

Figure: Citrix License Usage report



## License expiration monitoring

Citrix licenses can have a limited lifetime. After a license expires, it can no longer be checked out and users are unable to use the product. Citrix SCOM Management Pack for License Server provides a monitor that alerts administrators if a license is about to expire soon or if it has already expired.

## Citrix Subscription Advantage membership expiration monitoring

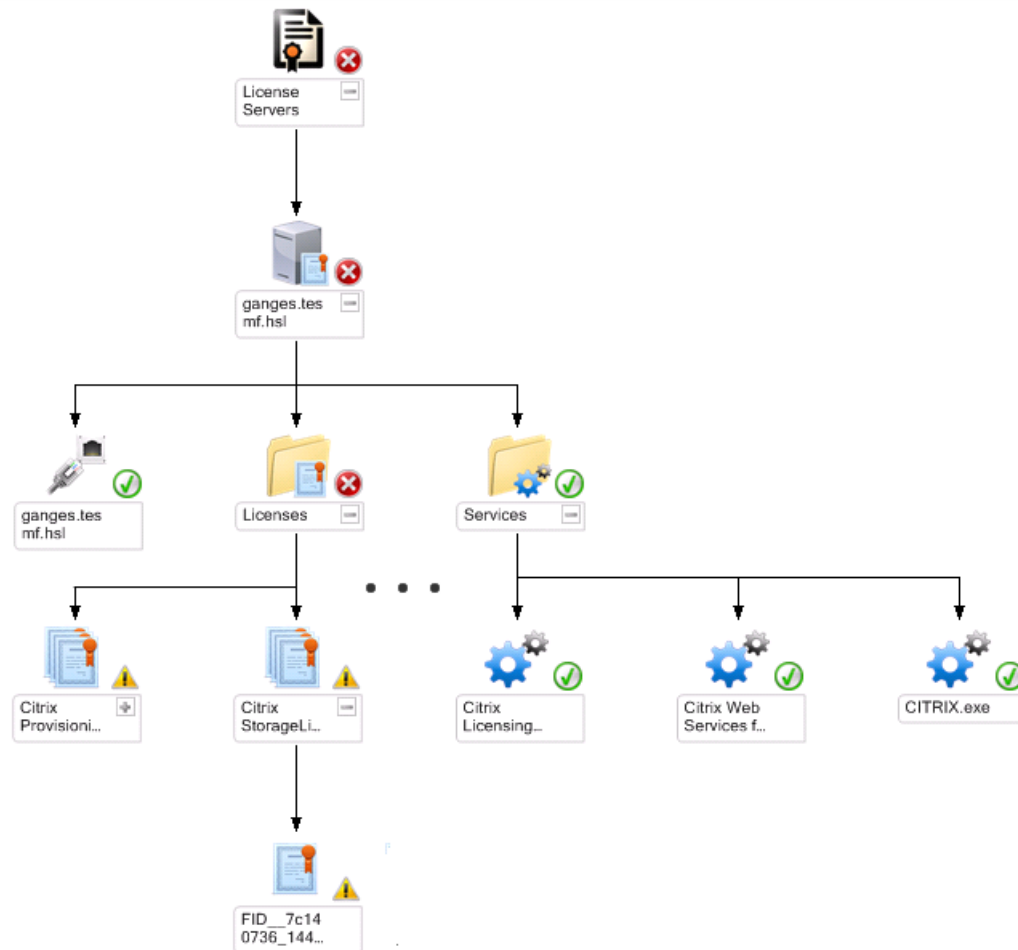
When purchasing a new Citrix product, your purchase includes a one-year membership in a Citrix Subscription Advantage. This membership entitles you to, among other benefits, any product updates, including major and minor releases, released during your membership period.

Citrix SCOM Management Pack for License Server provides a monitor that alerts administrators if Subscription Advantage Membership is about to expire soon or has already expired.

### License Server infrastructure health

Citrix SCOM Management Pack for License Server allows you to monitor the crucial services and processes of a Citrix License Server instance and analyze the CPU performance and memory consumption on its host system.

**Figure:** License Server topology



The following Windows services of License Server are monitored:

- Citrix Licensing
- Citrix Licensing Config Service (the service is present only in specific Citrix Licensing versions)
- Citrix Licensing Support Service
- Citrix Licensing WMI
- Citrix Web Services for Licensing

Besides service monitoring, Citrix SCOM Management Pack for License Server checks the health of the Citrix vendor daemon process. Citrix vendor daemon is responsible for the core operations of License Server, such as tracking how many licenses are checked out and who uses them. The vendor daemon can manage all of your Citrix license files and is fully backward compatible with any license files you have.

## License Server TCP port probing

The Citrix License Server installation configures communication channels through several ports:

- Console Web server port: Web server uses the HTTP or HTTPS TCP/IP port for communication with clients connecting to the License Administration Console.
- License server manager port: This port is used by the license server manager, which handles the initial communication between the products, starts the vendor daemon, and relays check out and check in requests to the vendor daemon.
- Vendor daemon port: This port is used by the Citrix vendor daemon, which is responsible for the core operations of the license server, including license allocation.

Citrix SCOM Management Pack for License Server executes TCP port probes on license server from SCOM server perspective for each configured TCP port. Monitors alert the following states:

- Connection Refused
- Connection Timeout
- DNS Resolution Failure
- Host Unreachable

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 baseline the relevant performance counters, and then adjust the threshold by overriding them.

For a complete list of monitors and rules, see the *Citrix SCOM Management Pack for License Server Reference Guide*, which you can find in the [Key Monitoring Scenarios](#) section.

## Tuning thresholds for performance monitors and rules

Similar to customizing the default SCOM management pack, you can customize the sealed management packs that Citrix SCOM Management Pack for License Server provides. 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.

# Performance overview

Aug 14, 2017

The Citrix SCOM Management Pack for License Server consists of the SCOM Management Pack imported into the SCOM server (the server-side). The Citrix SCOM Management Pack for License Server does not have an agent part. The management pack (the server-side) includes collections of discoveries, monitors, rules, and tasks for Citrix License Server. This part does not add to the basic resource requirements (CPU and memory) of the SCOM management server.

## Configuration specifications

All performance numbers in this document are valid for environments that:

- are monitored with the specified product version of Citrix SCOM Management Pack for License Server
- match the documented configuration specification for License Server 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 Management Pack for License Server and management packs bundled with SCOM)
- use the default configuration of SCOM management servers and SCOM agents, without fine-tuning or making any special adjustments

**Note:** Factors such as different hardware specifications and the conditions of your environment might cause discrepancies between the values you observe and the ones documented here.

### Validated Citrix SCOM Management Pack for License Server version

The product version of Citrix SCOM Management Pack for License Server listed in the following table was validated:

Product	Version
Citrix SCOM Management Pack for License Server	1.1.20944

### Citrix License Server configuration specification

Specification item	Value
Software version	11.14.0.1 build 20104

### Microsoft System Center Operations Manager configuration specification

With this configuration, the SCOM database and data warehouse servers are deployed outside the SCOM management server on a different machine.

Computer: SCOM management server	
Specification item	Value

Compute	Four virtual CPUs; CPU clock speed of 2.67 GHz
Memory	8 GB of RAM
Software version	Microsoft System Center Operations Manager 2012 R2

Computer: SCOM database and operation management server	
Specification item	Value
Compute	Four virtual CPUs; CPU clock speed of 2.67 GHz
Memory	8 GB of RAM
Software version	Microsoft SQL Server 2014

Computer: SCOM database and data warehouse server	
Specification item	Value
Compute	Four virtual CPUs; CPU clock speed of 2.67 GHz
Memory	8 GB of RAM
Software version	Microsoft SQL Server 2014

## Monitoring ability

The following table lists the lab setup in which Citrix SCOM Management Pack for License Server was successfully validated with the specified License Server and SCOM configurations. The table indicates the number of objects monitored in the specified configuration.

Citrix SCOM Management Pack for License Server monitors License Servers and license files	
---	--



Configuration on monitored License Servers <sup>1</sup>	Data Set 1
No of License Servers	2
No of product servers checking out licenses	1,000
No of max concurrent licenses checkout	100,000
No of max U/D licenses checkouts	500,000

<sup>1</sup> This table lists configurations that are set on License Servers. Data Set 1 explains the number of configured objects.

## Resource consumption

The resource consumption of the product was measured on the defined validation set. Windows Performance Monitor was used to measure the monitoring impact (CPU and memory) on the monitored systems.

### Average computer and memory consumption of the agents

The average computer and memory consumption of the agents was measured over a 24-hour period. Based on the measurement results, the average percentage of processor time and average memory usage of the *HealthService* and *MonitoringHost* services were determined.

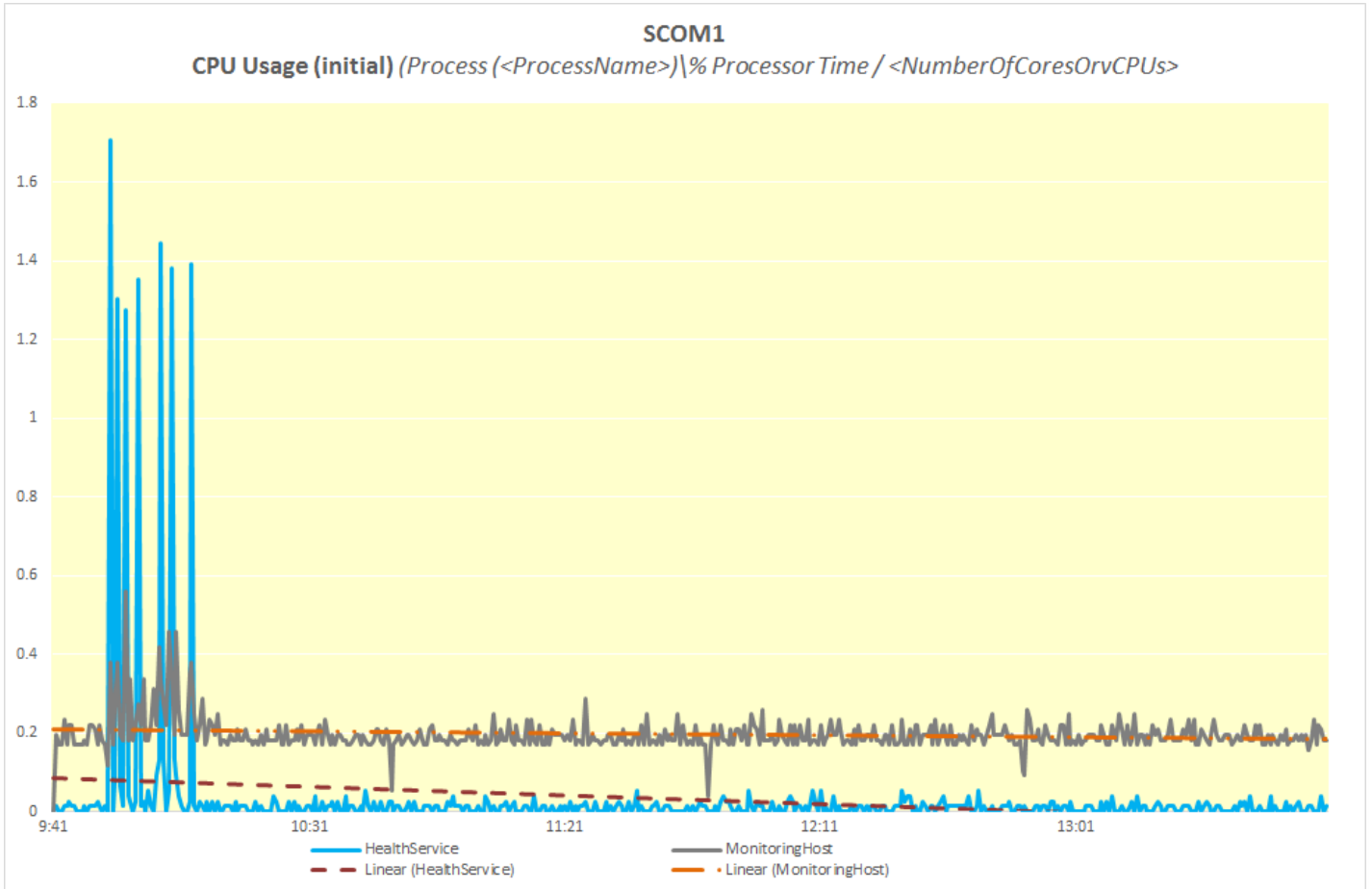
### Average consumption on SCOM servers and License servers

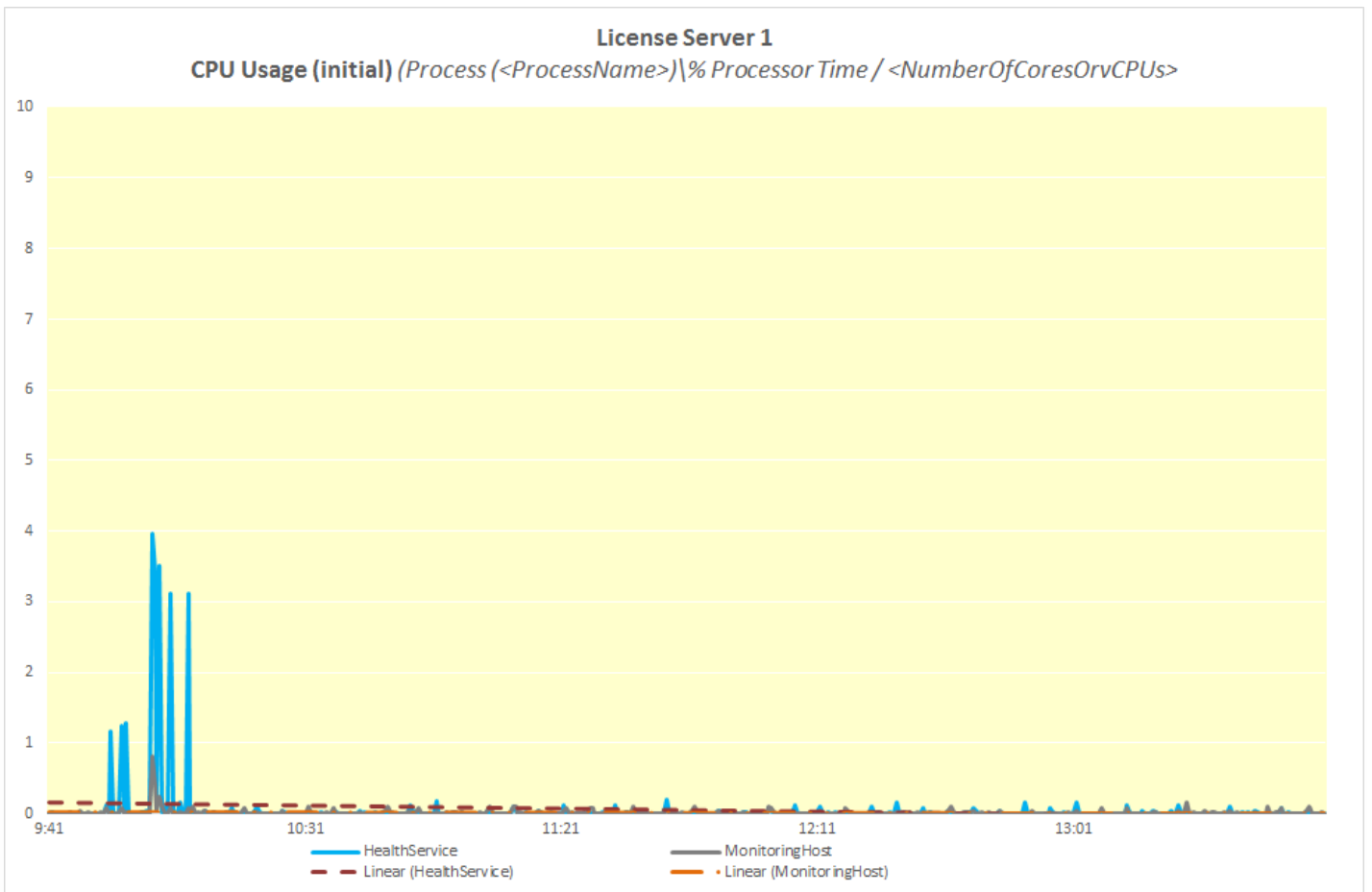
Citrix SCOM Management Pack for License Server Data Set 1	SCOM Server 1	SCOM Server 2	License Server 1	License Server 2
HealthService percentage of processor time (per CPU) <sup>2</sup>	0.02%	0.02%	0.02%	0.02%
MonitoringHost percentage of processor time (per CPU) <sup>2</sup>	0.2%	0.2%	0.01%	0.02%
HealthService memory usage	283 MB	281 MB	17 MB	18 MB
MonitoringHost memory usage	413 MB	353 MB	15 MB	15 MB

<sup>2</sup> CPU usage is calculated as the quotient of the *% Processor Time* counter and the number of processor cores or virtual CPUs.

The following figures show changes in CPU usage of *HealthService* and *MonitoringHost* after these services were started for the first time. Values taken from the first part of the entire measurement time period (first four hours) show no significant load on the resources.

**Figure** Percentage of processor time used by *HealthService* and *MonitoringHost* over time, measured for the validation set on SCOM Server 1 and License Server 1. The readings were similar on SCOM Server 2 and License Server 2.



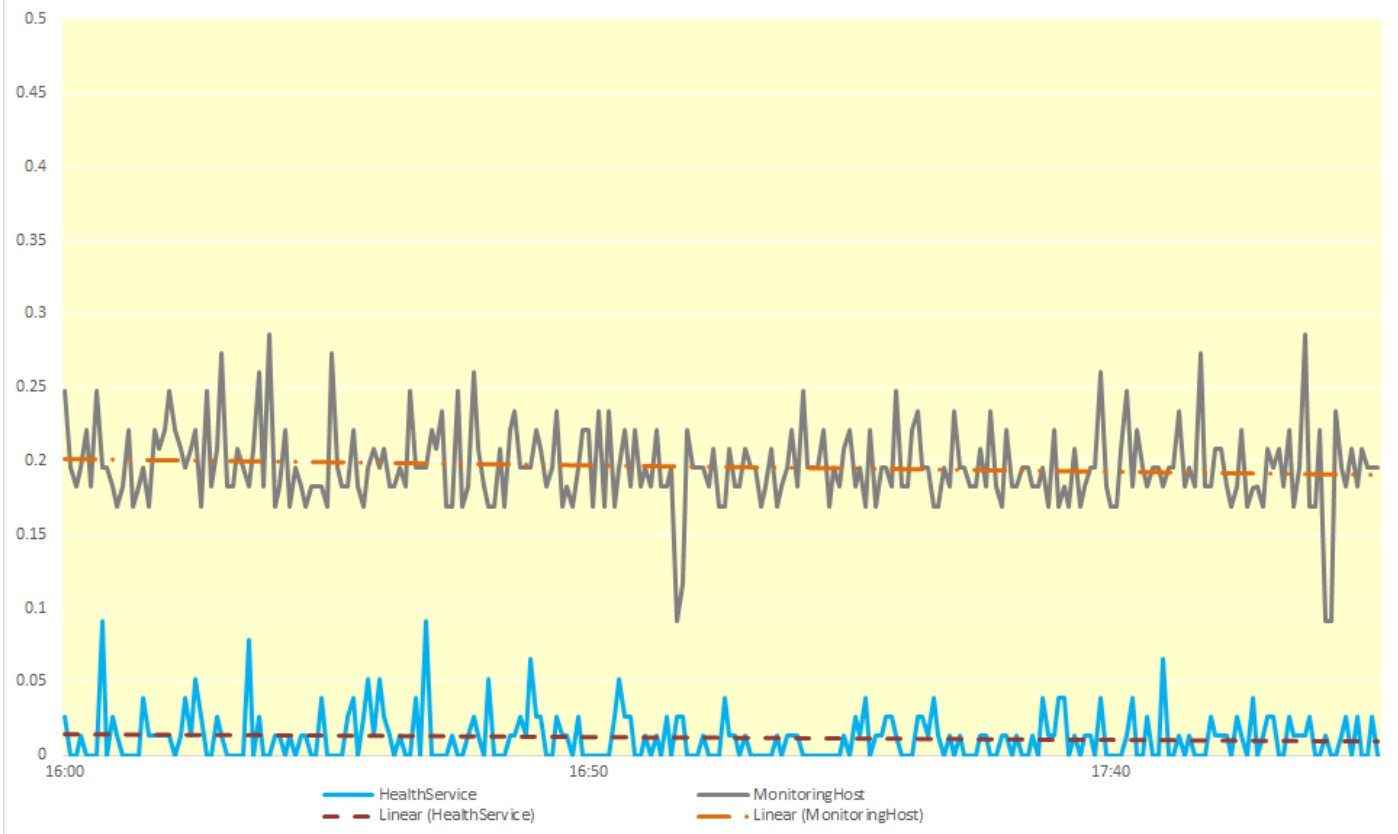


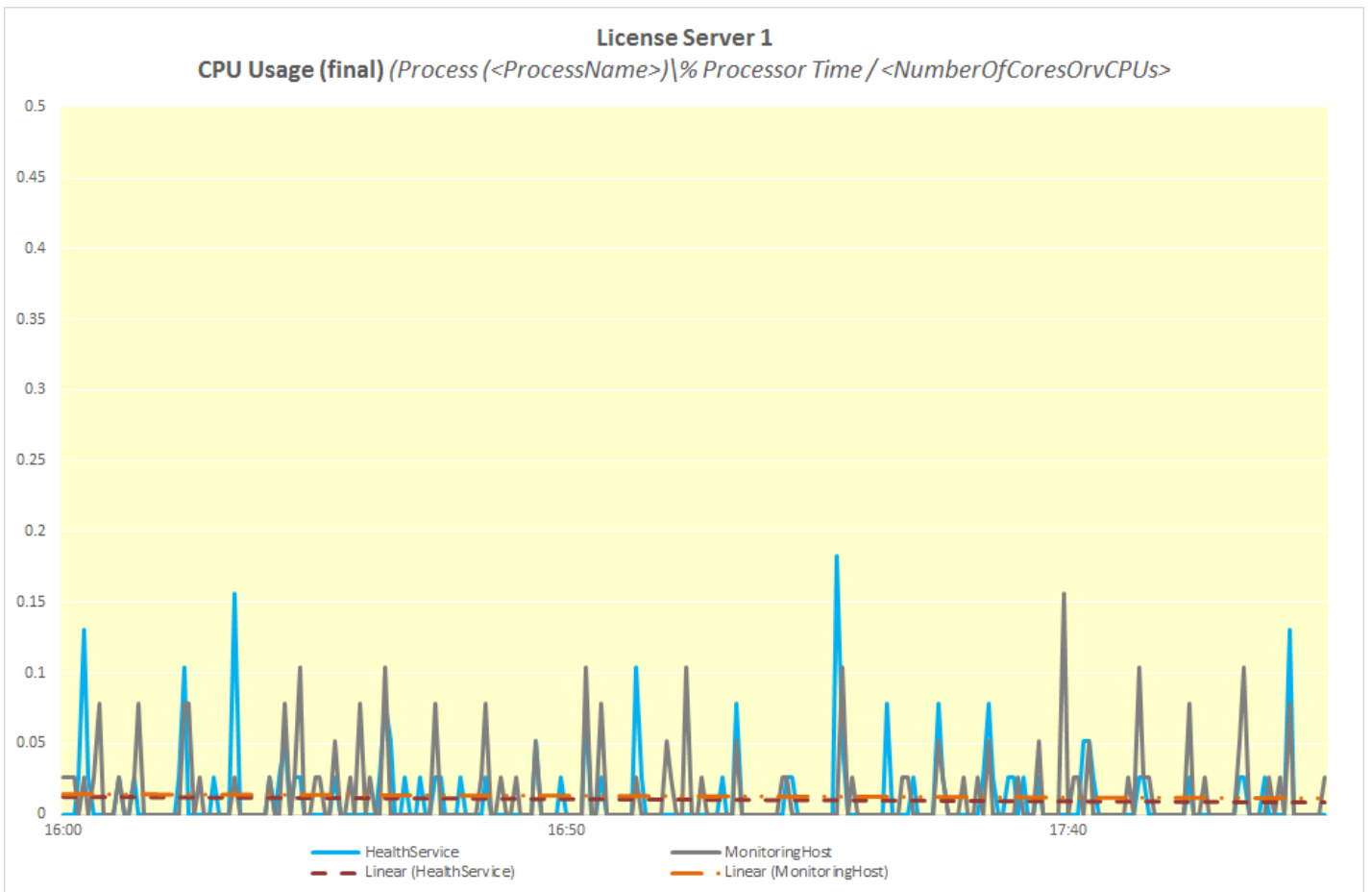
The following figures show typical patterns of changes in the CPU usage of *HealthService* and *MonitoringHost* during a major part of the measurement time period after the initial high load had subsided.

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### SCOM1

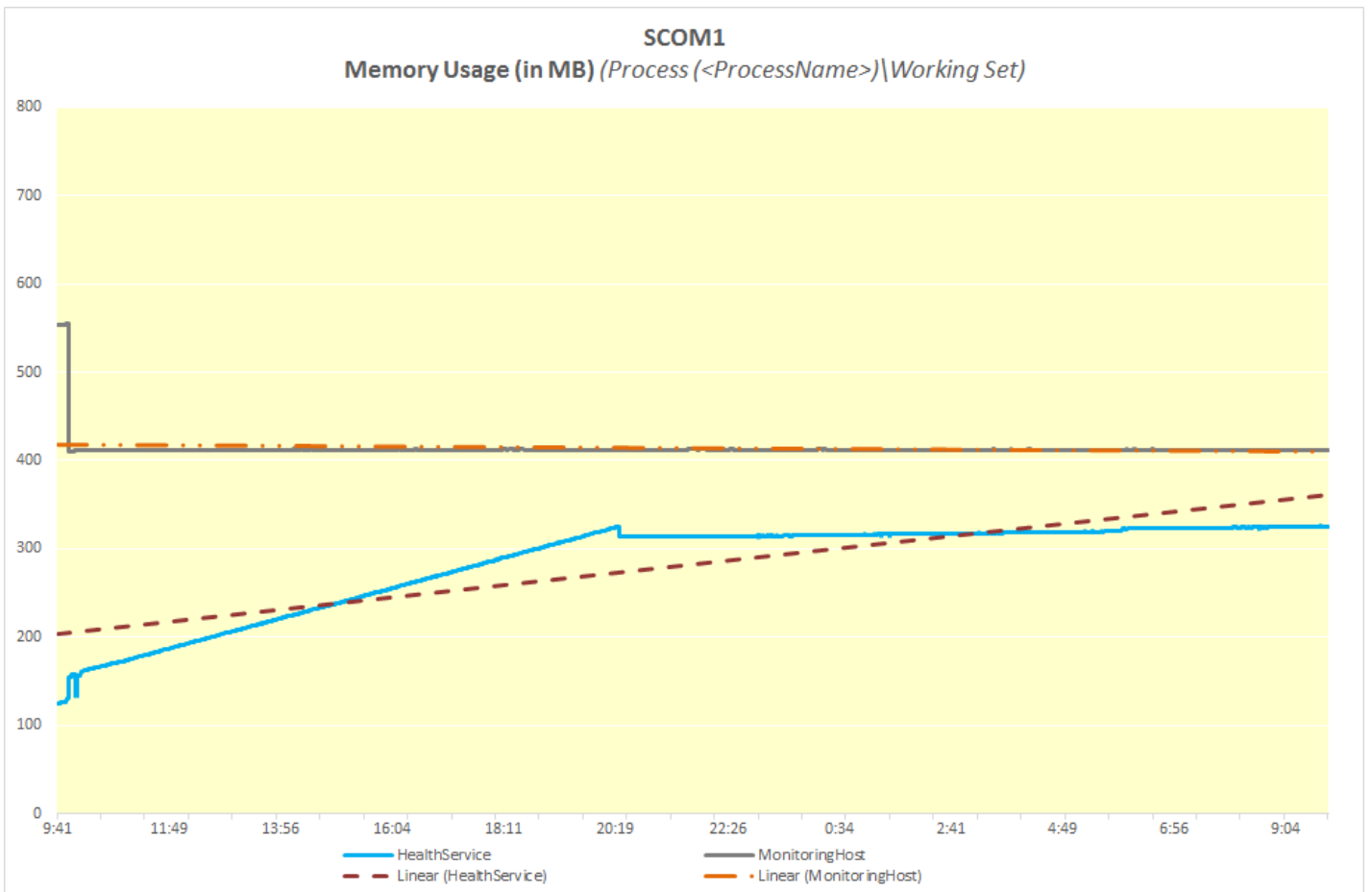
CPU Usage (final) (Process (<ProcessName>)\% Processor Time / <NumberOfCoresOrvCPUs>



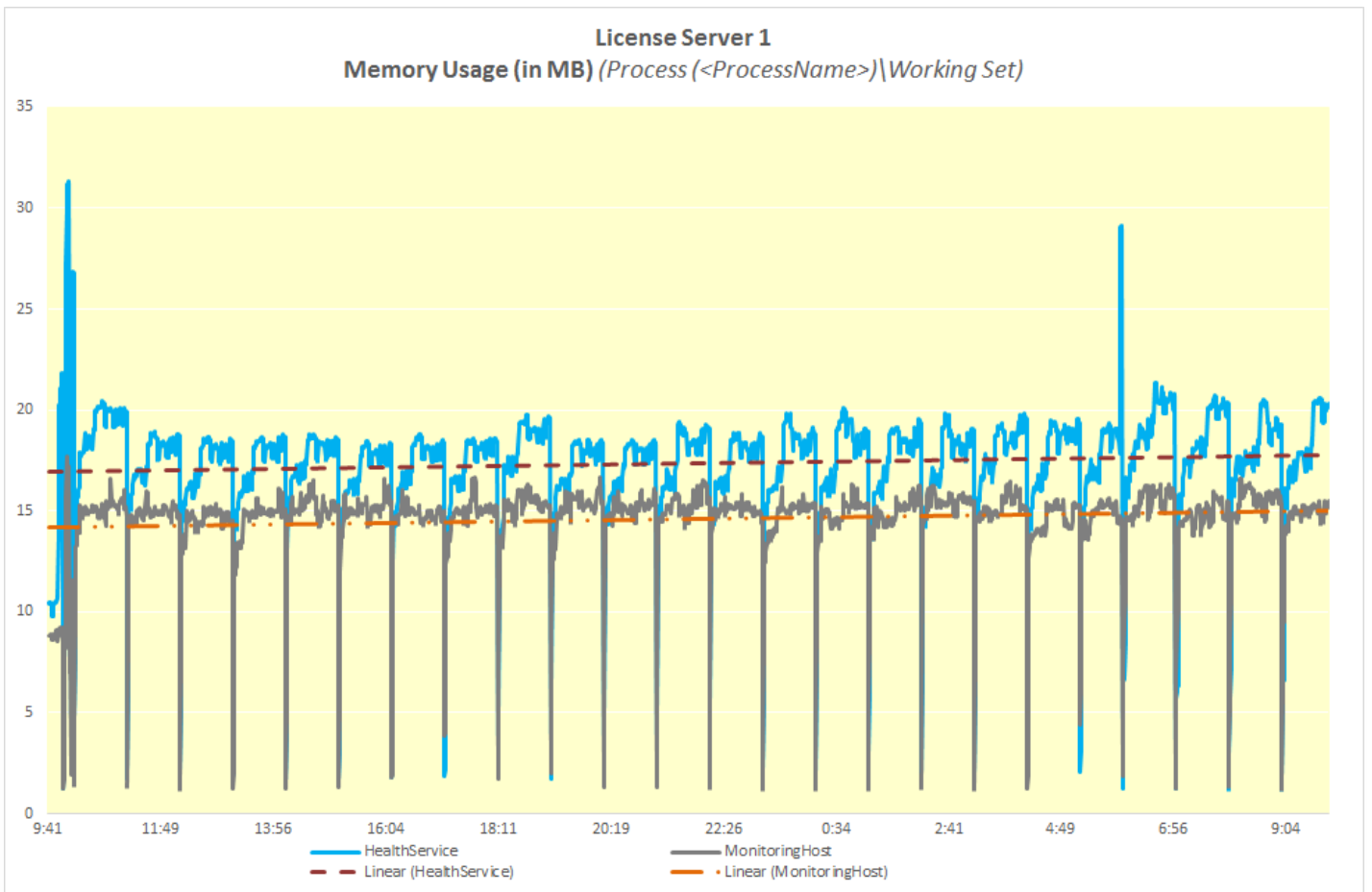


After completion of the initial discovery cycle, the CPU usage is steady.

The following figures show memory usage of *HealthService* and *MonitoringHost* over a 24-hour time period, measured with the validation set on SCOM Server 1 and License Server 1.



The figures show that for effective monitoring the SCOM management servers must contain at least 900 MB of physical memory, with 150 MB dedicated for the memory requirements of *HealthService* and *MonitoringHost*.



The figures show that for effective monitoring, the License Server must contain at least 50 MB of physical memory for the memory requirements of *HealthService* and *MonitoringHost*.

# Citrix SCOM Management Pack 1.1 for License Server

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Citrix SCOM Management Pack for License Server allows you to:

- Improve Licensing infrastructure availability and health. Licensing availability is being checked with continuous TCP port probing and active license server services checks, as well as health checks of the Citrix vendor daemon process.
- Gain deeper insight into the license server performance and License usage information
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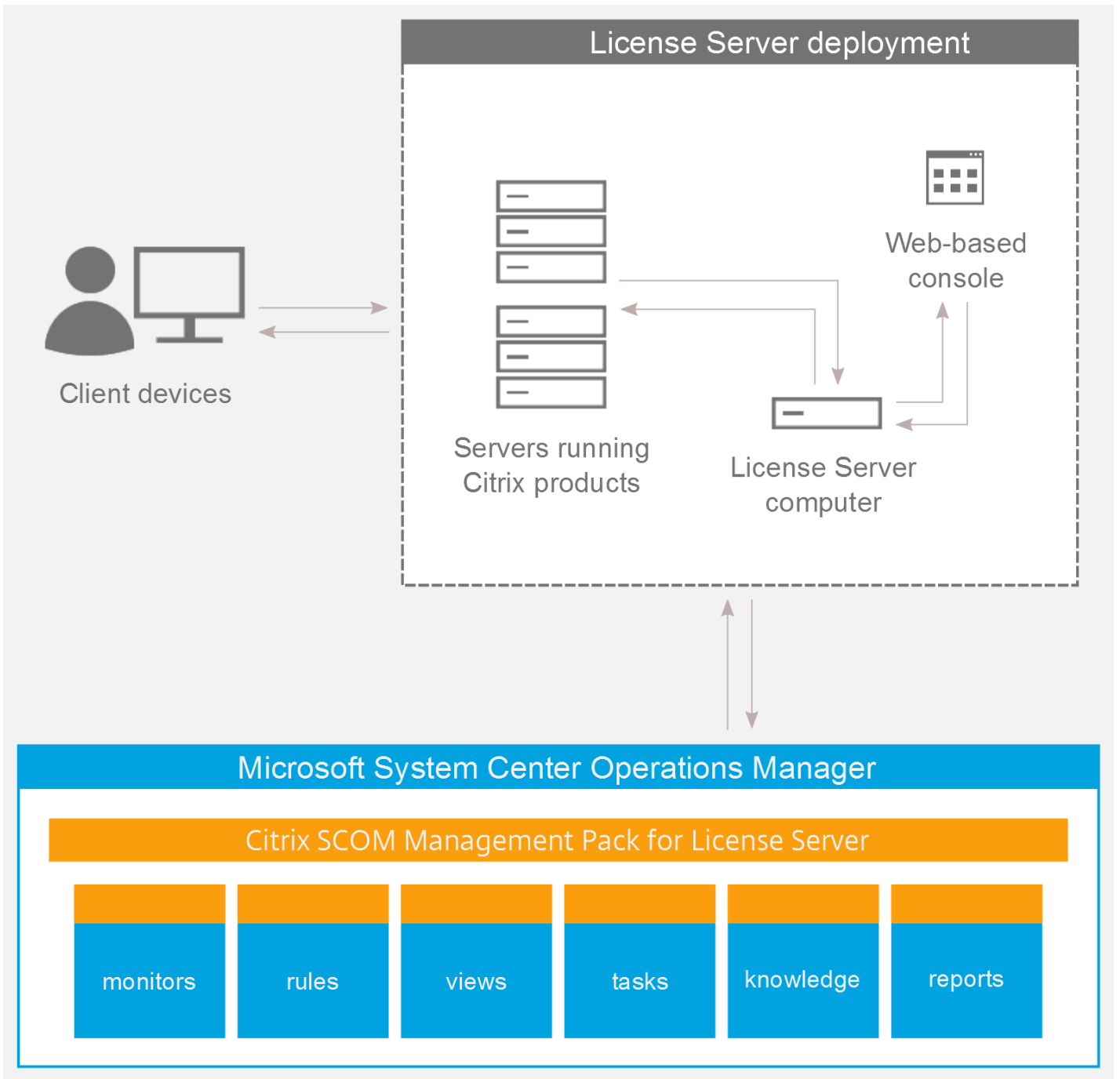
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## Architecture

The following diagram shows how the Citrix SCOM Management Pack for License Server connects the SCOM management platform and the Licensing infrastructure. The following figure depicts a high-level view of the Citrix SCOM Management Pack for License Server architecture:





# What's new

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Citrix SCOM Management Pack 1.1 for License Server introduces the following new or enhanced features:

- **Documentation in HTML format.** The documentation for the Citrix SCOM Management Pack 1.1 for License Server is available in HTML format.
- **Support for Microsoft System Center Operations Manager 2016.** Citrix SCOM Management Pack for License Server supports Microsoft System Center Operations Manager 2016.
- **Support for Citrix Licensing 11.14.1.** Citrix SCOM Management Pack for License Server supports Citrix Licensing Server version 11.14.1.

## Known issues

There are no known issues in this product version.

## Fixed issues

There are no fixed issues in this product version.

## Upgrading

**Note:** Earlier product versions were released under the name Comtrade Management Pack for Citrix License Server.

Upgrade is available for version 1.0. During the upgrade process, included management packs of the earlier product version are automatically upgraded; their prior removal is not required.

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Citrix SCOM Management Pack for License Server is compatible with the following SCOM versions:

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## Language support

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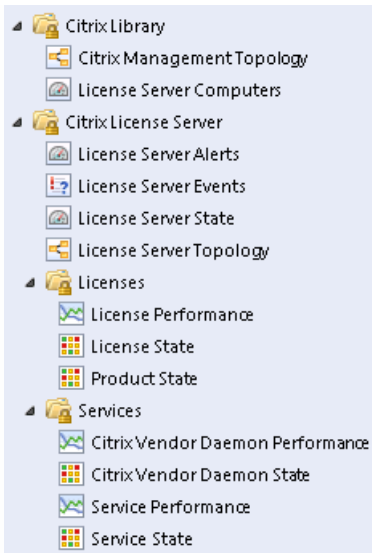
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- SCOM agent is installed on all the computers that host Licensing, and these computers are configured as agent-managed computers in the SCOM management group.
- The Citrix SCOM Management Pack for License Server files (files with the \*.mp file extension) are extracted from the installation archive. The archive file name is *Citrix\_SCOM\_Management\_Pack\_for\_LicenseServer\_<Version>.zip* (where <Version> is the current software version).

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5. In the Online Catalog Connection, click **No**.
6. 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.LicenseServer.mp*
  - *ComTrade.Citrix.LicenseServer.Reports.mp*
7. Click **Install**.

To verify that the Citrix SCOM Management Pack for License Server installation is correct, do the following:

1. Launch the SCOM Operations console and connect to the management server.
2. In the **Monitoring** view, expand the items in the left pane until they match the following figure:



3. 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).

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

Citrix Management Pack for License Server	1.1.20944.0
Citrix Management Pack for License Server Reports	1.1.20944.0
Citrix Management Pack Library	1.0.7.0

SCOM agent on each computer where Licensing 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 License Server, 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**.

## Uninstalling the product

This section contains instructions that you must follow to effectively uninstall Citrix SCOM Management Pack for License

Server. Perform all procedures in the documented order of precedence.

**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 License Server, 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 for License Server.
4. For each such dependent management pack:
  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**.

To remove the management packs included in Citrix SCOM Management Pack for License Server, 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, right-click **Citrix Management Pack for License Server Reports**, and then select **Delete**.
4. On the message stating that deleting the management pack might affect the scoping of some user roles, click **Yes**.
5. Repeat steps 3 and 4 with Citrix Management Pack for License Server.
6. Check if other Citrix SCOM Management Pack products are installed on the management server. If none of them is installed, repeat steps 3 and 4 with **Citrix Management Pack Library**.

## Upgrading

To upgrade Citrix SCOM Management Pack for License Server from the earlier version, do the following:

1. Prepare your environment for installation of the new product version. For instructions, see [Prepare for installation](#).
2. Install the product. For instructions, see [Install and Configure](#).
3. Verify the installation. For instructions, see [Verifying the installation](#).

# Optimize

Aug 14, 2017

## Monitoring License Server components

The following table lists the object types that Citrix SCOM Management Pack for License Server discovers in the monitored environment.

Object type	Description
Citrix vendor daemon	A process that is responsible for core operations of Citrix License Server.
License	A Citrix license file, which can be of one of the following types: User/Device, Concurrent user, Concurrent system, Named user license.
License Server	A system that allows licenses to be shared across the network. It stores and manages Citrix license files.
License server TCP Probe	TCP ports on the license server host: vendor daemon port, license server manager port, and console web server port.
Product	A group of license files for a Citrix product, such as XenDesktop or XenApp.
Service	A Windows service that is part of Citrix License Server.

### [Citrix SCOM Management Pack for License Server Reference Guide](#)

A complete list of monitors and rules available in Citrix SCOM Management Pack for License Server.

## Product license usage

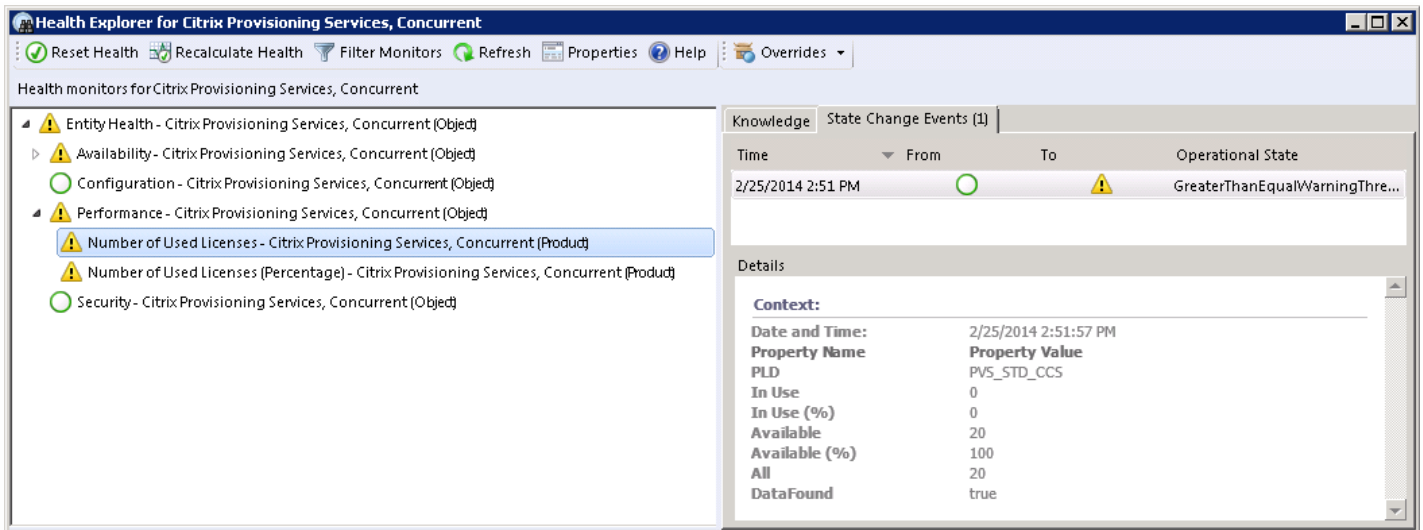
After a user connects to a computer running a Citrix product, the product requests a license from the license server and license gets checked out. License can be checked out to a user, device, session, server, or appliance, depending on the licensing model for a particular product.

Users can eventually run out of available licenses. Citrix SCOM Management Pack for License Server handles this situation in various ways.

## Monitors

- *Number of used licenses*: This monitor checks if the number of used licenses has exceeded the threshold value. The Warning and Critical thresholds can be configured.
- *Number of used licenses (Percentage)*: This monitor checks whether the percentage of used licenses has exceeded the threshold value. The Warning and Critical thresholds can be configured.





## Performance collection rules

Citrix SCOM Management Pack for License Server provides the following rules that collect metrics for a license:

- *Number of All Licenses Performance DB DW*: This rule collects the number of all licenses for a Citrix product.
- *Number of Used Licenses Performance DB DW*: This rule collects the number of used licenses for a Citrix product.
- *Number of Used Licenses (Percentage) Performance DB DW*: This rule collects the percentage of used licenses
- *Number of Available Licenses Performance DB DW*: This rule collects the number of available licenses.

Values are displayed in the License Performance view.

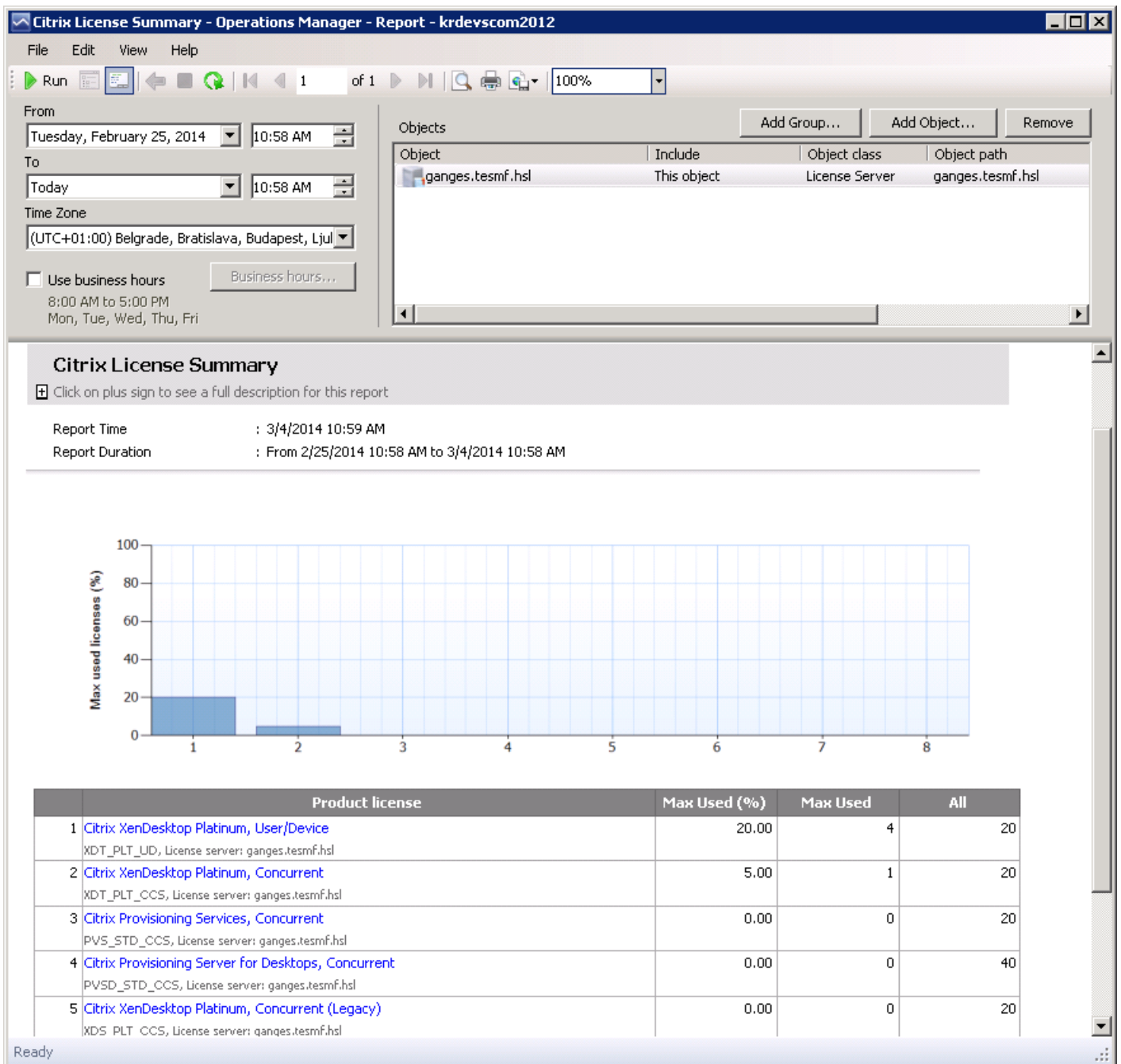
## Reports

With the Citrix SCOM Management Pack for License Server reports, administrators have an overview of license usage on Citrix license servers. Reports show summarized data as well as details for the amount of licenses and the license usage for each Citrix product.

Citrix SCOM Management Pack for License Server provides the following reports:

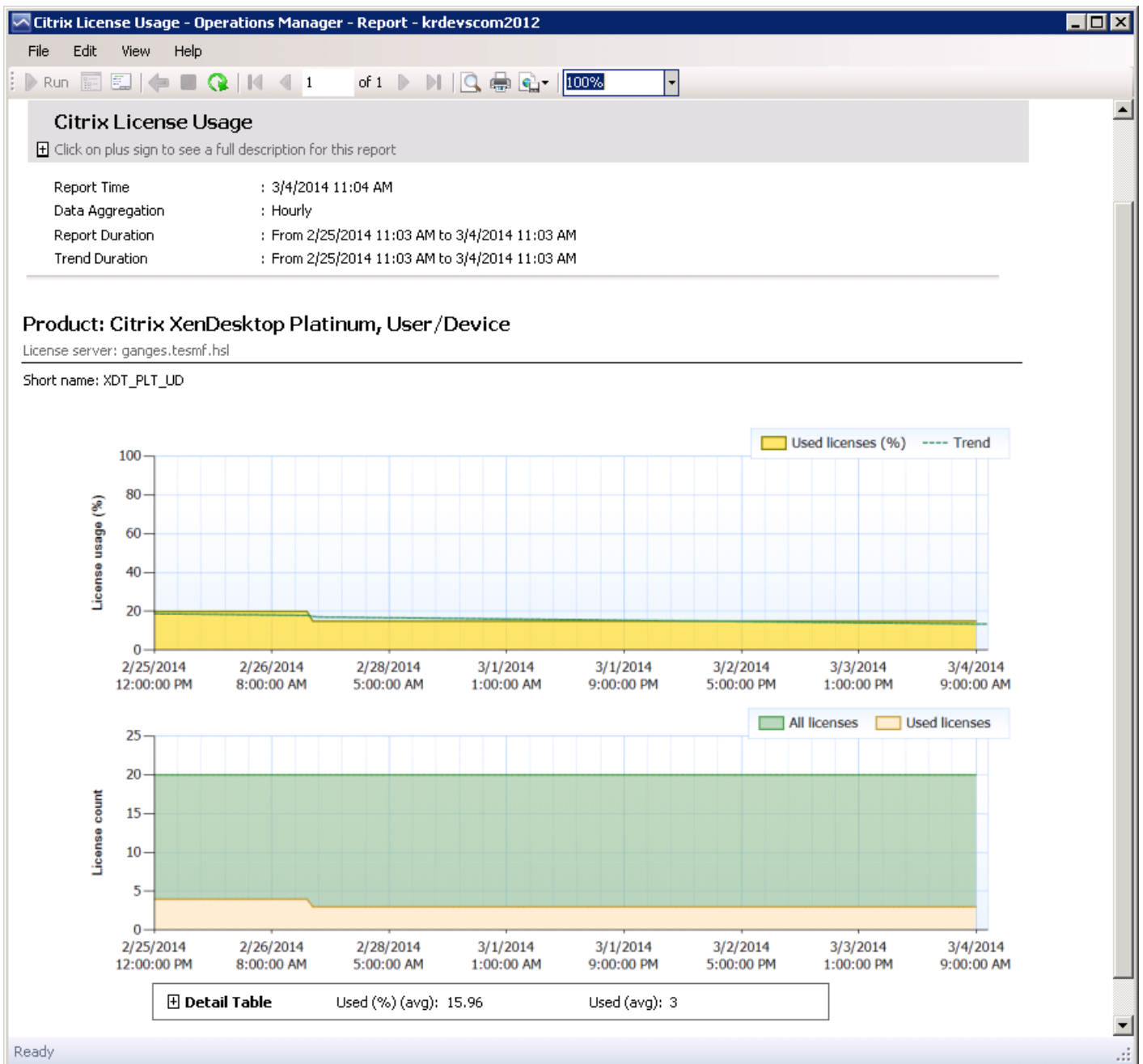
- *Citrix License Summary*: This report shows product license usage summary for the selected time range. The following values are displayed:
  - Percentage of used licenses (maximum value)
  - Number of used licenses (maximum value)
  - Number of all licenses

**Figure:** Citrix License Summary report



- *Citrix License Usage*: This report shows license usage for each installed Citrix product for the selected time range. The following values are displayed:
  - Percentage of used licenses (maximum value in aggregation period) with a trend line
  - Number of used licenses (maximum value in aggregation period)
  - Number of all licenses

Figure: Citrix License Usage report



## License expiration monitoring

Citrix licenses can have a limited lifetime. After a license expires, it can no longer be checked out and users are unable to use the product. Citrix SCOM Management Pack for License Server provides a monitor that alerts administrators if a license is about to expire soon or if it has already expired.

## Citrix Subscription Advantage membership expiration monitoring

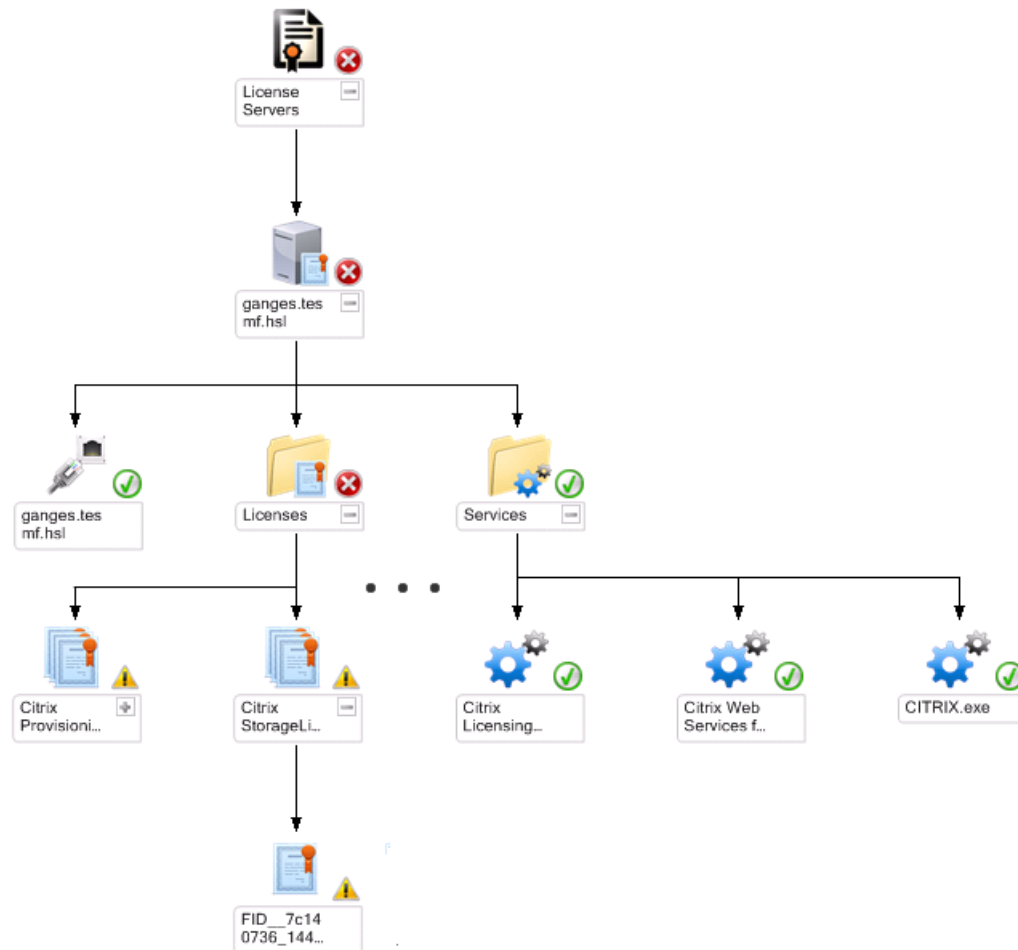
When purchasing a new Citrix product, your purchase includes a one-year membership in a Citrix Subscription Advantage. This membership entitles you to, among other benefits, any product updates, including major and minor releases, released during your membership period.

Citrix SCOM Management Pack for License Server provides a monitor that alerts administrators if Subscription Advantage Membership is about to expire soon or has already expired.

### License Server infrastructure health

Citrix SCOM Management Pack for License Server allows you to monitor the crucial services and processes of a Citrix License Server instance and analyze the CPU performance and memory consumption on its host system.

**Figure:** License Server topology



The following Windows services of License Server are monitored:

- Citrix Licensing
- Citrix Licensing Config Service (the service is present only in specific Citrix Licensing versions)
- Citrix Licensing Support Service
- Citrix Licensing WMI
- Citrix Web Services for Licensing

Besides service monitoring, Citrix SCOM Management Pack for License Server checks the health of the Citrix vendor daemon process. Citrix vendor daemon is responsible for the core operations of License Server, such as tracking how many licenses are checked out and who uses them. The vendor daemon can manage all of your Citrix license files and is fully backward compatible with any license files you have.

## License Server TCP port probing

The Citrix License Server installation configures communication channels through several ports:

- Console Web server port: Web server uses the HTTP or HTTPS TCP/IP port for communication with clients connecting to the License Administration Console.
- License server manager port: This port is used by the license server manager, which handles the initial communication between the products, starts the vendor daemon, and relays check out and check in requests to the vendor daemon.
- Vendor daemon port: This port is used by the Citrix vendor daemon, which is responsible for the core operations of the license server, including license allocation.

Citrix SCOM Management Pack for License Server executes TCP port probes on license server from SCOM server perspective for each configured TCP port. Monitors alert the following states:

- Connection Refused
- Connection Timeout
- DNS Resolution Failure
- Host Unreachable

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 baseline the relevant performance counters, and then adjust the threshold by overriding them.

For a complete list of monitors and rules, see the *Citrix SCOM Management Pack for License Server Reference Guide*, which you can find in the [Key Monitoring Scenarios](#) section.

## Tuning thresholds for performance monitors and rules

Similar to customizing the default SCOM management pack, you can customize the sealed management packs that Citrix SCOM Management Pack for License Server provides. 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.