Install and upgrade Qlik Sense

Qlik Sense®
3.2

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1   Introducing the Qlik Sense installation guide

This documentation provides information on how to install, manage, and uninstall Qlik Sense. You can use the user interface, which is launched when opening the Qlik Sense setup file, or the command line interface to perform installation or maintenance of Qlik Sense.

Management of Qlik Sense includes upgrading the installation, when a major release version becomes available, updating the installation with service releases, repairing, and uninstalling Qlik Sense.

2   Before you install

Before you install, make sure that you:

- Check that your environment fulfills the system requirements.

> ℹ️ *.NET will be installed as part of the installation, if not previously installed. If there is an older installed version of .NET, it will be updated.*

See: *System requirements for Qlik Sense (page 8)*

- Understand the Qlik Sense architecture and the different node types. You also need to decide which storage model to use, Synchronized persistence or Shared persistence.

- If you have selected to install a shared persistence deployment, there are some limitations you need to consider.
- Understand the way Qlik Sense uses certificates for security. The certificates are installed by default.
- Set up the user account(s) that will be used to run the Qlik Sense services on the node you are installing.

> ⚠️ *Choose the user account with care as the only way to change the account later on is to re-install Qlik Sense.*

For security reasons, it is recommended to use a dedicated service account (that is, a user account defined with the minimum privileges necessary and used only by the Qlik Sense services).

> ℹ️ *As the certificates used for internal communication in Qlik Sense are generated during the first initialization of the Qlik Sense services, it is important to set up the user account before starting the installation.*
> *The certificates can be replaced with third-party certificates after the installation, if needed.*
>
> *See: How Qlik Sense uses HTTPS and certificates (page 36)*

See: *System requirements for Qlik Sense (page 8)*

- Ensure that the ports (especially ports 80 and 443) required by Qlik Sense are available.
- Select a superuser password for the Qlik Sense repository database. The superuser is created during the installation for administering the database. Save the password for future use, as it is needed when upgrading Qlik Sense.
- Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.

- If you intend to install Qlik Sense on a server that is not connected to the internet, you must download and install the .NET framework. It can be downloaded using the link below.

  ➥ http://go.microsoft.com/fwlink/?LinkId=397708

  See: *System requirements for Qlik Sense (page 8)*

- If you intend to run Qlik Sense services as a user without administrator privileges, there are some additional configuration steps.
  Running Qlik Sense services as a user without local Administrator privileges (page 15)

- Have your Qlik Sense license key available.

- Download the Qlik Sense installer.

  See: *Downloading the Qlik Sense setup file (page 12)*

> *Remember that after you install and start Qlik Sense, you will need access to any data that you plan to use. You will also need to know how you want users to connect to your installation. For example, if this is a test installation, you may want to create a Windows user to serve as the test user, or set up the installation so that any user in the same Windows domain has access to Qlik Sense.*

2.1   System requirements for Qlik Sense

This section lists the requirements that must be fulfilled by the target system in order to successfully install and run Qlik Sense.

Platforms	- Microsoft Windows Server 2008 R2 - Microsoft Windows Server 2012 - Microsoft Windows Server 2012 R2 - Microsoft Windows Server 2016 For development and testing purposes only: - Microsoft Windows 7 (64-bit version only) - Microsoft Windows 8.1 (64-bit version only) - Microsoft Windows 10 (64-bit version only) > *These operating systems are supported by Qlik Sense. Third-party software may require service packs to be installed.*
Processors (CPUs)	Multi-core x64 compatible processors We recommend that you use at least 4 cores per node in a Qlik Analytics Platform deployment.

Memory	8 GB minimum (depending on data volumes, more may be required) Qlik Sense is an in-memory analysis technology. The memory requirements for the Qlik Sense products are directly related to the amount of data being analyzed.
Disk space	1.5 GB total required to install
Storage	• Local disks • SAN storage mounted to Windows as a logical local drive ⓘ *NAS is not supported.*
Security	• Microsoft Active Directory • Microsoft Windows Integrated Authentication • Third-party security
WebSockets	Web browsers and infrastructure components (such as proxies and routers) must support WebSockets.
.NET framework	4.5.2
Repository database	PostgreSQL (included) PostgreSQL, often referred to as Postgres, is an open source object-relational database management system. It is released under the PostgreSQL License, which is a free/open source software license.
Internet protocol	• IPv4 • IPv6 • Dual stack (IPv4 and IPv6)
Network	The configured hostname must resolve to an IP address on the host machine.

Qlik Management Console (QMC), supported browsers	Microsoft Windows 7, Windows 8.1: ● Microsoft Internet Explorer 11 ● Google Chrome ● Mozilla Firefox (requires hardware acceleration, not supported in virtual environments) Microsoft Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, 2016: ● Microsoft Internet Explorer 11 (not supported on Windows Server 2012) ● Google Chrome ● Mozilla Firefox (requires hardware acceleration, not supported in virtual environments) Microsoft Windows 10: ● Microsoft Internet Explorer 11 ● Microsoft Edge ● Google Chrome ● Mozilla Firefox (requires hardware acceleration, not supported in virtual environments) Apple Mac OS X 10.11 and 10.12: ● Apple Safari ● Google Chrome ● Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)
QMC, minimum screen resolution	Desktops, laptops, and Apple Mac: 1024x768 No mobile or small screen support.
QlikView compatibility	It is not possible to install Qlik Sense on a machine with QlikView Server already installed.

2.2   Supported browsers

Qlik Sense is designed to work on the platform and web browser combinations described in this section.

Qlik Sense Cloud is designed to work on web browsers listed in this section.

Qlik Management Console (QMC)

Microsoft Windows 7, 8.1

● Microsoft Internet Explorer 11
● Google Chrome

- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Microsoft Windows Server 2008 R2, 2012, 2012 R2, 2016

- Microsoft Internet Explorer 11 (not supported on Windows Server 2012)
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Microsoft Windows 10

- Microsoft Internet Explorer 11
- Microsoft Edge
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Apple Mac OS X 10.11 and 10.12

- Apple Safari
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

> *Minimum screen resolution for desktops, laptops, and Apple Mac is 1024x768. The QMC does not support tablets or iPads.*

Qlik Sense (the hub)

Microsoft Windows 7

- Microsoft Internet Explorer 11
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Microsoft Windows 8.1

- Microsoft Internet Explorer 11
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Microsoft Windows 10

- Microsoft Edge
- Microsoft Internet Explorer 11
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Apple Mac OS X 10.11 and 10.12

- Apple Safari
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments).

Microsoft Windows Server 2008 R2

- Microsoft Internet Explorer 11
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Microsoft Windows Server 2012

- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

Microsoft Windows Server 2012 R2, 2016

- Microsoft Internet Explorer 11
- Google Chrome
- Mozilla Firefox (requires hardware acceleration, not supported in virtual environments)

iOS

iPad 3rd Generation and above or iPhone 5 and above with latest iOS (script editing is not supported on tablet devices):

- Apple Safari

Android

Version 4.4.4, 5.1.1, 6.0 and 7.0 (script editing is not supported on tablet devices):

- Google Chrome

Windows Phone 8.1

- Microsoft Internet Explorer 11

Windows 10 phone

- Microsoft Edge

Minimum screen resolution for desktops, laptops and tablets: 1024x768; for small screens: 320x568.

2.3   Downloading the Qlik Sense setup file

The *Qlik_Sense_setup.exe* and *Qlik_Sense_update.exe* files are obtained from:

www.qlik.com

Log on with a registered customer or partner account, select **Services > Customer Downloads** and then select the **Qlik Sense** tab. Select the required file and save it to a folder on your computer.

2.4 What is included in a Qlik Sense installation

This topic describes all items that are included in a typical Qlik Sense installation.

Desktop items and Start menu items

After having installed Qlik Sense, two shortcuts will be available from the desktop as well as from the **Start** button (**Start > All Programs**):

- Shortcut to Qlik Sense hub

  The hub is the starting point when you run Qlik Sense. It is where you find all the Qlik Sense apps you have access rights to use.

- Shortcut to Qlik Management Console

  The Qlik Management Console (QMC) is a web-based application for configuring and administering your Qlik Sense site.

Features and services

The Qlik Sense Repository Service (QRS) is always included in a Qlik Sense installation. Other features are selected during the setup process. All features have their executable files installed to *%ProgramFiles%\Qlik*.

Repository database

In a default Qlik Sense installation, a Qlik Sense Repository Database (QRD) service is created specifically for use by the Qlik Sense Repository Service (QRS). The QRS connects to the QRD to read and write data in the repository database. A PostgreSQL database is used by default.

The QRD spawns the *PostgreSQL* executable that is located in *%ProgramFiles%\Qlik\Sense\Repository\PostgreSQL\[VersionNumber]\bin*.

Examples, apps and logs

There are some example files included in the Qlik Sense installation. These are installed to *%ProgramData%\Qlik\Examples*. For example, a number of extension code examples are installed to the *Extensions* sub-folder.

The default Qlik Sense installation comes with two example apps that you can use. They are installed to *%ProgramData%\Qlik\Sense\Repository\DefaultApps*, and you can also access them directly through the QMC:

- *License Monitor.qvf*
- *Operations Monitor.qvf*

Logs for the installed features are found in *%ProgramData%\Qlik\Sense\Log*. Installation logs are found in the *temp* folder which can be accessed with the environment variable *%temp%*.

Finding help

If you need help deploying, administering, working with or extending Qlik Sense, the Qlik Sense online help portal is the first place you should visit. It contains help topics about all aspects of Qlik Sense as well as basic tutorials.

➡️ To access the Qlik Sense online help portal, point your browser to this URL: *help.qlik.com*

2.5 Before you install a shared persistence deployment

Before you install a shared persistence deployment, there are some limitations you need to consider. In addition to these limitations, see also known issues listed in the release notes.

Geographical deployments

Shared persistence does not support geographical deployments, as Qlik Sense servers need to be located in the same local network as the database and the file share

Capacity and performance

Shared persistence supports up to a maximum of 8 machines. In addition to the number of nodes, there are other factors that will contribute to total capacity:

- workload
- hardware speed
- network speed

For example, if the disk speed of the file share and the central node is too slow, you may expect low performance during some operations, such as importing or duplicating apps.

We recommend scalability testing and engaging with Qlik consulting services for large deployments.

DMZ deployments

All machines in a site, including machines without an engine, require access to both the database and file share. In DMZ deployments this may require opening additional ports, or taking an alternative approach, compared to a DMZ deployment with synchronized persistence,

Central node dependencies

The central node is responsible for handling a number of vital operations in the site. When the central node is put offline, those operations are prevented from running, including:

- master scheduler, responsible for triggering reloads
- allowing new users to obtain a license
- using extension objects

2.6   Running Qlik Sense services as a user without local Administrator privileges

It is possible to run Qlik Sense as a user without local Administrator privileges. You need to follow the procedure described in this topic when installing a node that should be used with a service account without Administrator privileges, but there are also a few other procedures where you need to perform additional configuration steps.

- Changing proxy listener ports
- Restoring certificates
- Redistributing certificates
- Installing 3rd party proxy SSL certificates
- Changing service user

Installing a new site

This section describes how to install a new site using a service user account without local Administrator privileges.

Installing a central node

You can install a central node with a service user without local Administrator privileges using the regular installation procedures.

Installing a rim node

Follow this procedure to install a rim node with a service user without local Administrator privileges.

Do the following:

1. Install Qlik Sense and select to install a rim node. In the **Ready to install** screen. Qlik Sense services will not be started when the installation has completed.
2. Start the Qlik Sense Repository Database.
3. Run "`Repository.exe -bootstrap`" as administrator from an elevated command prompt. The bootstrap process will terminate once the node has been registered in the next step.
4. Register the rim node in QMC on the central node, and wait for the bootstrap process to terminate.
5. Start all Qlik Sense services.

Configure an existing site to use a service user account without local Administrator privileges

This section describes how to configure an existing site running Qlik Sense 3.1 SR2 or later to use a service user account without local Administrator privileges.

Configuring a central node

Follow this procedure to configure a central node to use a service user account without local Administrator privileges.

Do the following:

1. Stop all services except Qlik Sense Repository Database.
2. Create the group Qlik Sense Service Users in **Computer Management** > **System Tools** > **Local Users and Groups** > **Groups**.
3. Create a dedicated service user account which is a member of the following groups:
    Performance Monitor Users
    Qlik Sense Service Users
4. Set full access to the *C:\ProgramData\Qlik\Sense* folder for the Qlik Sense Service Users group. Make sure that permissions are inherited and replaced on sub folders.
5. Run "`Proxy.exe -bootstrap`" as administrator from an elevated command prompt.
6. Run "`Scheduler.exe -bootstrap`" as administrator from an elevated command prompt.
7. Run "`Repository.exe -bootstrap -iscentral`" as administrator from an elevated command prompt.
8. Change the **Log On** credentials for the Qlik Sense Repository Database service from **Local System** to the service user account you created.
9. Start all Qlik Sense services.

Configuring a rim node

Follow this procedure to configure a rim node to use a service user account without local Administrator privileges.

Do the following:

1. Stop all services except Qlik Sense Repository Database.
2. Create the group Qlik Sense Service Users in **Computer Management** > **System Tools** > **Local Users and Groups** > **Groups**.
3. Create a dedicated service user account which is a member of the following groups:
    Performance Monitor Users
    Qlik Sense Service Users
4. Set full access to the *C:\ProgramData\Qlik\Sense* folder for the Qlik Sense Service Users group. Make sure that permissions are inherited and replaced on sub folders.
5. Change the **Log On** credentials for the Qlik Sense Repository Database service from **Local System** to the service user account you created.
6. Run "`Proxy.exe -bootstrap`" as administrator from an elevated command prompt.
7. Run "`Scheduler.exe -bootstrap`" as administrator from an elevated command prompt.
8. Run "`Repository.exe -bootstrap`" as administrator from an elevated command prompt.
9. Start all Qlik Sense services.

3   Installing Qlik Sense with synchronized persistence

Before you start the installation, make sure that you have made all preparations needed.

See: *Before you install (page 7)*

This section describes how to install Qlik Sense using the synchronized persistence storage model.

See: [Architecture](#)

The installation procedure is as follows:

1. Install the Qlik Sense software:

    -   Full install: This installs all program features/services to a default location, for both a central node and a rim node. This installation option is recommended for single node installation and for rim nodes where all services/features shall be included.
        See: *Full installation with synchronized persistence (page 18)*

    -   Custom install: This installation type allows you to select the installation location for both a central node and a rim node. It also allows you to select which type of rim node to install. This installation option is recommended for advanced users and for nodes where not all features/services shall be included.
        See: *Custom installation with synchronized persistence (page 21)*

    If you experience problems during the installation, consult the troubleshooting section.

    See: *Troubleshooting an installation (page 60)*

2. Perform an initial setup after the installation.
    See: *Setup after installation (page 35)*

    For a quick setup, the following steps are the only ones needed:

    a. Activate the license in the Qlik Management Console (QMC). This will make you the root administrator for the Qlik Sense site.
    b. Allocate user access to yourself.
        See: *Assigning licenses to users (page 35)*

    c. For a rim node, you must also go to the central node and identify the rim node.
3. Open your first app:

    a. On the QMC start page, under **GOVERNANCE**, click **Monitoring apps**.
        The Qlik Sense hub is opened, displaying the **Monitoring apps** stream.
    b. Click one of the apps to open it. Click one of the sheets to open it.

You have successfully installed Qlik Sense and opened your first app.

3.1   Full installation with synchronized persistence

A full installation installs all program components into default locations. This installation type is recommended for single node installation (a single server installation) and for central or rim nodes that will run all Qlik Sense services that use the default installation locations.

Before you start the installation, make sure that you have made all preparations needed.

See: *Before you install (page 7)*

Single server installation

These instructions are for a single server installation only.

Do the following:

1. Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.
2. Start the installation program (*Qlik_Sense_setup.exe*). On the first screen, select **Synchronized persistence**. Then you select **Full Installation**, and accept the license agreement. Click **Next**.
3. In the **Repository Role** screen for the Qlik Sense Repository Service (QRS), select **Central**.
4. In the **Repository Database Superuser Password** screen, enter a password for the Qlik Sense repository database superuser. Confirm the password and click **Next**.
   It is possible, but not recommended, to proceed without creating a password.
5. In the **Service Credentials** screen, select whether to use a dedicated service account to run the Qlik Sense services.
   - To use a dedicated service account, select the checkbox and enter the **Username** and **Password** for that Windows account. You must have a password for this user account type.
   - To use the local system user account, leave the checkbox cleared. You can use this user account type without a password.

   If the user is member of a domain, enter the service account as *<domain>\<username>*.

   > *If a dedicated service account is not available at the time of installation, you can install Qlik Sense without starting the services at the end of the installation and change the account later.*

6. In the **Host Name** screen, accept the default name (the name of this computer), if available, enter the address manually or select one of the pre-defined addresses in the list. Click **Next**.
7. In the **Ready to install** screen, select whether you want the installation to create desktop shortcuts and whether you want to automatically start the Qlik Sense services when the installation has completed.

> *If you selected local system as user account type in the **Service Credentials** screen, but wish to use a dedicated service account to run the Qlik Sense services, clear the **Start the Qlik Sense services when the setup is complete** checkbox.*

Then click **Install**.

8. If necessary, click **Yes** in the **User Account Control** box.

> *If a warning dialog appears during the installation, correct the problem before continuing. If an error dialog appears, rectify the error before re-attempting the installation.*

When the installation is complete, the installation summary can be displayed by selecting **Installation Summary**.

Click **Finish** to close the Installation dialog.

If you selected not to start the Qlik Sense services at the end of the setup because you wish to use a dedicated service account instead of the local system user account, you need to change the user account for the services.

See: *Changing the user account used for the Qlik Sense services (page 34)*

> *If the installation did not complete successfully, the **Installation Failed** screen is displayed. For more detailed information, see the installation log located in your **temp** folder.*

You have now successfully installed Qlik Sense on your computer.

After the installation, you need to perform an initial setup. For a quick setup, the following steps are the only ones needed:

1. Activate the license in the Qlik Management Console (QMC). This will make you the root administrator for the Qlik Sense site.
2. Allocate user access to yourself.

Rim or central node with all services in a multi-node installation with synchronized persistence

These instructions are for the installation of a central node in a multi-node installation or a rim node that will run all services. To install nodes that will run selected services, use the custom installation. The central node should be installed first followed by the required rim nodes.

Do the following:

1. Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.

2. Start the installation program (*Qlik_Sense_setup.exe*). On the first screen, select **Synchronized persistence**. Then you select **Full Installation**, and accept the license agreement. Click **Next**.

3. In the **Repository Role** screen for the Qlik Sense Repository Service (QRS), choose whether to install a **Central** or a **Rim** node in your deployment.

4. In the **Repository Database Superuser Password** screen, enter a password for the Qlik Sense repository database superuser. Confirm the password and click **Next**.
    It is possible, but not recommended, to proceed without creating a password.

5. In the **Service Credentials** screen, select whether to use a dedicated service account to run the Qlik Sense services.

    - To use a dedicated service account, select the checkbox and enter the **Username** and **Password** for that Windows account. You must have a password for this user account type.

    - To use the local system user account, leave the checkbox cleared. You can use this user account type without a password.

    If the user is member of a domain, enter the service account as *<domain>\<username>*.

    > *If a dedicated service account is not available at the time of installation, you can install Qlik Sense without starting the services at the end of the installation and change the account later.*

    If **Rim** was selected, the **Ready to install** screen is displayed. If you selected **Central**, you will be prompted for the host name.

6. In the **Host Name** screen, accept the default name (the name of this computer), if available, enter the address manually or select one of the pre-defined addresses in the list. Click **Next**.
    The central node uses certificates to communicate with the other servers securely. Specify the name of your machine in the same format that other machines will use to connect to it. This address (host name) will later be used for exporting certificates to other nodes.

7. In the **Ready to install** screen, select whether you want to automatically start the Qlik Sense services when the installation has completed:

    - **Central**: Select whether you want the installation to create desktop shortcuts and whether you want to automatically start the Qlik Sense services when the installation has completed.

    - **Rim**: Select if you want to automatically start the Qlik Sense services when the installation has completed.
      If you selected a service user that does not have administrator privileges, do not start the services. You also need to make sure to perform the final step in this procedure, registering the node, restarting the services.

    > *If you selected local system as user account type in the **Service Credentials** screen, but wish to use a dedicated service account to run the Qlik Sense services, clear the **Start the Qlik Sense services when the setup is complete** checkbox.*

    Then click **Install**.

8. If necessary, click **Yes** in the **User Account Control** box.

> *If a warning dialog appears during the installation, correct the problem before continuing. If an error dialog appears, rectify the error before re-attempting the installation.*

When the installation is complete, the installation summary can be displayed by selecting **Installation Summary**.

Click **Finish** to close the Installation dialog.

If you selected not to start the Qlik Sense services at the end of the setup because you wish to use a dedicated service account instead of the local system user account, you need to change the user account for the services.

See: *Changing the user account used for the Qlik Sense services (page 34)*

> *If the installation did not complete successfully, the **Installation Failed** screen is displayed. For more detailed information, see the installation log located in your **temp** folder.*

9. If you are installing a rim node and selected a service user that does not have administrator privileges, you need to follow this procedure:
    1. Start Repository.exe with -bootstrap flag from an elevated command prompt.
    2. Register the rim node on the central node.
    3. Start all services on the rim node from the **Service Manager**.

You have now successfully installed a node of a Qlik Sense deployment on your computer.

After the installation, you need to perform an initial setup. For a quick setup, the following steps are the only ones needed:

1. Activate the license in the Qlik Management Console (QMC). This will make you the root administrator for the Qlik Sense site.
2. Allocate user access to yourself.

3.2   Custom installation with synchronized persistence

Custom installation allows you to select the installation locations for Qlik Sense and is only recommended for advanced users. If you are installing a rim node, the custom installation allows you to select which type of Qlik Sense node to install. For multi-node installations the central node should be installed first followed by the required rim nodes.

Before you start the installation, make sure that you have made all preparations needed.

See: *Before you install (page 7)*

Do the following:

1. Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.

2. Start the installation program (*Qlik_Sense_setup.exe*), select **Custom Installation**, and accept the license agreement. Click **Next**.

3. Select a role for the Qlik Sense Repository Service (QRS).

   Click **Central** if you want to install as a central node or click **Rim** if you want to install as a rim node.

   - **Central** selected (default):
     - You are installing a single node configuration
       or
     - your installation is considered to be the master in a multi-machine setup. The master has direct access to the central repository database. The master QRS synchronizes the central repository database with the local repository databases so that they all contain the same information. All the Qlik Sense services are installed.
   - **Rim** selected: A local QRS instance in a multi-machine setup. The QRS instance on a rim node only has access to the local repository database on the server where it is running. Select which Qlik Sense rim node type to install:
     - **Complete**: A complete node containing all the Qlik Sense services.
     - **Proxy**: A node managing Qlik Sense authentication, session handling and load balancing. The QRS and Qlik Sense Proxy Service (QPS) are installed.
     - **Engine**: A node providing the analytical power of Qlik Sense to the client. The QRS and Qlik Sense Engine Service (QES) are installed.
     - **Proxy & Engine**: A combined node containing both the QPS and QES.
     - **Scheduler**: A node managing scheduled reloads of Qlik Sense apps and other types of reload triggering. The QRS, Qlik Sense Scheduler Service (QSS), and QES are installed.

       In order to perform reloads the QSS requires the QES to be running on the same node.

4. Define the Qlik Sense **Installation location** either by entering the installation location, or click ⬜ to browse for the location, or leave it to be installed at the predefined location. Click **Next**.

   If an invalid installation path is defined, **UNC paths are not allowed** is displayed.

   > ⓘ *You cannot install onto a mapped network location.*

   > ⓘ *Only the following characters can be used in the installation path: a-z, A-Z, and 0-9*

5. In the **Repository Database Superuser Password** screen, enter a password for the Qlik Sense repository database superuser. Confirm the password and click **Next**.
   It is possible, but not recommended, to proceed without creating a password.

   If the database superuser password has already been created, you are asked to enter the password.

6. In the **Service Credentials** screen, select whether to use a dedicated service account to run the Qlik Sense services.

- To use a dedicated service account, select the checkbox and enter the **Username** and **Password** for that Windows account. You must have a password for this user account type.
- To use the local system user account, leave the checkbox cleared. You can use this user account type without a password.

If the user is member of a domain, enter the service account as *<domain>\<username>*.

> *If a dedicated service account is not available at the time of installation, you can install Qlik Sense without starting the services at the end of the installation and change the account later.*

If **Rim** was selected, the **Ready to install** screen is displayed. If **Central** was selected, the **Host Name** screen is displayed.

7. In the **Host Name** screen, accept the default name (the name of this computer), if available, enter the address manually or select one of the pre-defined addresses in the list. Click **Next**.
The central node uses certificates to communicate with the other servers securely. Specify the name of your machine in the same format that other machines will use to connect to it. This address (host name) will later be used for exporting certificates to other nodes.

8. In the **Ready to install** screen, select whether you want to automatically start the Qlik Sense services when the installation has completed:
    - **Central**: Select whether you want the installation to create desktop shortcuts and whether you want to automatically start the Qlik Sense services when the installation has completed.
    - **Rim**: Select if you want to automatically start the Qlik Sense services when the installation has completed.
    If you selected a service user that does not have administrator privileges, do not start the services. You also need to make sure to perform the final step in this procedure, registering the node, before restarting the services.

> *If you selected local system as user account type in the **Service Credentials** screen, but wish to use a dedicated service account to run the Qlik Sense services, clear the **Start the Qlik Sense services when the setup is complete** checkbox.*

Then click **Install**.

9. If necessary, click **Yes** in the **User Account Control** box.

> *If a warning dialog appears during the installation, correct the problem before continuing. If an error dialog appears, rectify the error before re-attempting the installation.*

When the installation is complete, the installation summary can be displayed by selecting **Installation Summary**.

Click **Finish** to close the Installation dialog.

If you selected not to start the Qlik Sense services at the end of the setup because you wish to use a dedicated service account instead of the local system user account, you need to change the user account for the services.

See: *Changing the user account used for the Qlik Sense services (page 34)*

> *If the installation did not complete successfully, the **Installation Failed** screen is displayed. For more detailed information, see the installation log located in your **temp** folder.*

10. If you are installing a rim node and selected a service user that does not have administrator privileges, you need to follow this procedure:
     1. Start Repository.exe with -bootstrap flag from an elevated command prompt.
     2. Register the rim node on the central node.
     3. Start all services on the rim node from the **Service Manager**.

You have now successfully installed Qlik Sense on your computer.

After the installation, you need to perform an initial setup. For a quick setup, the following steps are the only ones needed:

1. Activate the license in the Qlik Management Console (QMC). This will make you the root administrator for the Qlik Sense site.
2. Allocate user access to yourself.

3   Installing Qlik Sense with shared persistence

You can deploy a multi-node site with shared persistence. This means that nodes share a single repository database and a network folder for the application files. You can either share the central node repository and application storage, or setup dedicated machines for repository and application storage.

Before you start the installation, make sure that you have made all preparations needed.

See: *Before you install (page 7)*

If you already have a repository database on the machine from a previous installation of Qlik Sense, this database will be used in the shared persistence deployment. If you do not want to use this database, you need to remove the database before installing Qlik Sense with shared persistence.

You also need to consider security and availability of the shared persistence deployment.

3.3   Preparing shared folders for files

The files that are persisted in a Qlik Sense deployment must be available to all nodes. They can be stored on any of the nodes in the cluster, or on a separate server.

For either type of shared persistence deployment, do the following on the server that you want to use to store shared content:

1. Create a folder for all file content to be shared, for example, *c:\QlikShare*.
2. Create a Windows share for this folder and set read/write access to this share for the service account that is used to run the Qlik Sense services.

This file share should now be accessible from all machines as *\\<servername>\QlikShare*.

> *We recommend that you enable SMB encryption for the file share to protect data from manipulation or tampering. If you use SMB 3.0 encryption on the file share, all nodes in the cluster need to run Windows 2012. More information about enabling SMB 3 encryption in Windows 2012 Server is available on*
> https://blogs.technet.microsoft.com/filecab/2012/05/03/smb-3-security-enhancements-in-windows-server-2012/*.*

3.4   Creating a new cluster with a local database

These instructions describe how you install a node and create a new cluster with a new local database installed on the node. The database and storage share will be shared with other nodes in the cluster.

Do the following:

1. Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.

2. Start the installation program (*Qlik_Sense_setup.exe*).

3. Select **Shared persistence**, and accept the license agreement. Click **Next**.

4. Select **Create cluster**.

5. Select **Install a local database** and enter the following settings:

   - **Database host name** - this will be the address to the database.
   - **Database port** - this is the port that the local database will listen for connections on.
   - **Database user** - this user will be created in the local database, and set as owner of the database.
   - **Database password** and **Confirm password** - .enter a password for the database user that is created.

   Click **Next**.

6. You need to configure the Postgres database installed by Qlik Sense to listen to database connections from other nodes in the deployment.

   > *If you do not configure the database service listener during the installation, you can perform the configuration manually after the installation is complete, but the shared persistence deployment will not work until the database service listener is configured.*

   Select **Configure database service listener** and enter the following settings:

   - **Listen addresses** - add the addresses that the database service should listen to.
     You can supply a comma separated list of IPv4 or IPv6 addresses, or *0.0.0.0* (for all IPv4 addresses), *::* (for all IPv4 addresses) or * (for all addresses).
   - **IP range** - add a subnet specification that covers the IP addresses of all nodes in your site. Either add one row for each node, using /32 as suffix for each address, or add a subnet that covers all addresses using, for example, /24 as suffix. To allow all servers to access the repository database, use 0.0.0.0/0.

     > *If you do not know which addresses to add, check with your system administrator.*

7. Select where to store data and resources that should be accessible from all nodes in the cluster in **Shared persistence storage**.
   The easiest option is to set the **Root folder**. This should be a network share in the form *share**path*.
   Sub folders for **Apps**, **Archived logs**, **Custom data**, and **Static content** will be created automatically.
   You can also edit the separate folder paths individually if you want to separate the storage in different file shares, or use individual folder names.
   Click **Next**.

8. Define the Qlik Sense **Installation location** either by entering the installation location, or click ⬁ to browse for the location, or leave it to be installed at the predefined location. The default is: *%ProgramFiles%\Qlik\Sense*. Click **Next**.

9. Enter the password of the repository database superuser. Click **Next**.

10. In the **Service Credentials** screen, enter the **Username** and **Password** for the dedicated service account to run the Qlik Sense services.

11. In the **Host Name** screen, accept the default name (the name of this computer), if available, enter the address manually or select one of the pre-defined addresses in the list. Click **Next**.

12. In the **Ready to install** screen, select whether you want the installation to create desktop shortcuts and whether you want to automatically start the Qlik Sense services when the installation has completed.
    Then click **Install**.

You have now successfully installed a Qlik Sense node with a local database and created a new cluster.

If you did not configure the database service listener, you need to perform this manually. After the configuration, you need to restart the database service.

After the installation, you need to perform an initial setup. For a quick setup, the following steps are the only ones needed:

1. Activate the license in the Qlik Management Console (QMC). This will make you the root administrator for the Qlik Sense site.

2. Allocate user access to yourself.

3.5   Creating a new cluster and connecting to a database on a dedicated machine

These instructions describe how you install a node and create a new cluster connecting to an existing database running on a dedicated machine. The database and storage share will be shared with other nodes in the cluster. Before installing Qlik Sense, you need to prepare the database server.

Preparing the database server

You need to prepare the database server to be able to connect to Qlik Sense. This involves installing PostgreSQL and creating a database, and configuring the database.

Installing PostgreSQL and creating a database

Do the following:

1. Install PostgreSQL version 9.3.14, which can be obtained from https://www.postgresql.org/. It is important that you specify port 4432 during installation.

2. Create a new PostgreSQL login role and assign a password.

3. Create a new database named *QSR* and set the login role created in the previous step as owner.

The database is now created. Note down the name and password of the login role, as you will need them during Qlik Sense installation.

Configuring PostgreSQL for shared persistence

You need to configure the PostgreSQL database to listen to requests from the rim nodes to allow database access to the rim nodes. The configuration files are located in *%ProgramFiles%\PostgreSQL\9.3\data* if you used the default installation path when installing PostgreSQL.

Do the following:

1. Copy the file *postgresql.conf* to another folder and open it in a text editor.
    a. Uncomment the *listen_addresses* line and change it to `listen_addresses = '*'`.
    b. Set the maximum number of database connections to 100 x number of nodes in the Qlik Sense, with the *max_connections* setting, for example, `max_connections = 200 # this example is for a site with 2 nodes`.
    c. Save the *postgresql.conf* file and copy it to replace the existing file.
2. Copy the file *pg_hba.conf* to another folder and open it in a text editor.
    a. Locate the following line:
       `host    all             all             127.0.0.1/32            md5`
       This line determines which servers can access the server that the repository database runs on. The default setting, 127.0.0.1/32, only allows localhost to access the database.
    b. Replace `127.0.0.1/32` with a subnet specification that covers the IP addresses of all nodes in your site. Either add one row for each node, using `/32` as suffix for each address, or add a subnet that covers all addresses using, for example, `/24` as suffix. To allow all servers to access the repository database, use `0.0.0.0/0`.
    c. Save the *pg_hba.conf* file and copy it to replace the existing file.

The database server is now prepared to be used with Qlik Sense .

Installing Qlik Sense and creating a new cluster

The following steps are performed on the machine that is the primary node of the Qlik Sense cluster.

Do the following:

1. Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.
2. Start the installation program (*Qlik_Sense_setup.exe*). On the first screen, select **Shared persistence**, and accept the license agreement. Click **Next**.
3. Select **Create cluster**.
4. Make sure that **Install a local database** is not selected, and enter the following settings:
    - **Database host name** - the address to the database server.
    - **Database port** - this is the port that the database listens for connections on.
    - **Database user** - this is the name of the login role you created in PostgreSQL.
    - **Database password** and **Confirm password** - this is the password of the database user.

Click **Next**.

5. State where to store data and resources that should be accessible from all nodes in the cluster in **Root folder**. This should be a network share in the form \\share\path. Sub folders for apps, archived logs, custom data, and static content will be created automatically, but you can also edit the separate folder paths individually.
Click **Next**.

6. Define the Qlik Sense **Installation location** either by entering the installation location, or click ☐ to browse for the location, or leave it to be installed at the predefined location. The default is: *%ProgramFiles%\Qlik\Sense*. Click **Next**.

7. In the **Service Credentials** screen, enter the **Username** and **Password** for the dedicated service account to run the Qlik Sense services.

8. In the **Host Name** screen, accept the default name (the name of this computer), if available, enter the address manually or select one of the pre-defined addresses in the list. Click **Next**.

9. In the **Ready to install** screen, select whether you want the installation to create desktop shortcuts and whether you want to automatically start the Qlik Sense services when the installation has completed.
Then click **Install**.

You have now successfully installed a Qlik Sense node that connects to an existing database and created a new cluster.

After the installation, you need to perform an initial setup. For a quick setup, the following steps are the only ones needed:

1. Activate the license in the Qlik Management Console (QMC). This will make you the root administrator for the Qlik Sense site.

2. Allocate user access to yourself.

3.6 Joining an existing cluster

These instructions describe how you install a node that connects to an existing cluster,

Do the following:

1. Log on with Administrator rights using an account that has an actual password defined (that is, not a blank password) on operating systems with User Account Control (UAC) disabled.

2. Start the installation program (*Qlik_Sense_setup.exe*). On the first screen, select **Shared persistence**, and accept the license agreement. Click **Next**.

3. Select **Join cluster**.

4. Enter the following settings:

   - **Database host name** - the address to the database server.
   - **Database port** -this is the port that the database listens for connections on.
   - **Database user**
   - **Database password** and **Confirm password**.

Click **Next**.

5. State where data and resources are stored. These should be the same paths that were specified when the cluster was created.
Click **Next**.

6. Define the Qlik Sense **Installation location** either by entering the installation location, or click ☐ to browse for the location, or leave it to be installed at the predefined location. The default is: *%ProgramFiles%\Qlik\Sense*. Click **Next**.

7. In the **Service Credentials** screen, enter the **Username** and **Password** for the dedicated service account to run the Qlik Sense services.

8. In the **Host Name** screen, accept the default name (the name of this computer), if available, enter the address manually or select one of the pre-defined addresses in the list. Click **Next**.

9. In the **Ready to install** screen, select whether you want the installation to create desktop shortcuts and whether you want to automatically start the Qlik Sense services when the installation has completed.
Then click **Install**.

You have now successfully installed a Qlik Sense node that connects to an existing cluster.

3.7   Security and availability in a shared persistence deployment

In shared persistence deployments the network traffic between the servers, the database and the file share is not encrypted by default after an installation. You may also need to consider setting up replication of the database to handle cases where the central database fails.

Maintaining database password integrity

Here are some guidelines to maintain password integrity in a Qlik Sense shared persistence deployment.

- It is important that you disable the **Store password option** for your user in PostgreSQL. If this option is enabled, the password is stored in a file, and incoming connections without a password will be able to connect to the database.

- Change password by executing this query in the PostgreSQL database:
  ALTER USER {User} PASSWORD 'newPassword'
  Do not change password in the PostgreSQL user interface for the same reasons as above.

- Use md5 hashing.

- Do not set your password to PASSWORD '', that is, an empty string, since this is not handled well in PostgreSQL.

Database traffic encryption

Qlik Sense supports database traffic encryption using SSL, but you need to perform some manual configuration to setup SSL and MD5 password protection in a shared persistence deployment:

Do the following:

1. Edit the following values in *postgresql.conf*:
   ```
   listen_addresses = '*'
   port = 4432
   ssl = on
   ssl_cert_file = 'server.pem'
   ssl_key_file = 'server_key.pem'
   #ssl_ca_file = ''
   #ssl_crl_file = ''
   ```

2. Add the following lines in pg_hba.conf
   ```
   hostssl    all              all              all               md5
   ```

3. Remove any other lines starting with `hostssl` or `host` in *pg_hba.conf*.

4. Copy *server.pem*, and *server_key.pem* from
   %PROGRAMDATA%\Qlik\Sense\Repository\Exported Certificates\.Local Certificates to
   %PROGRAMDATA%\Qlik\Sense\Repository\PostgreSQL\9.3.

5. Use the ConnectionString editor to make the following setting in *repository.exe.config* on the central
   node and all rim nodes that belong to the cluster. *ConnectionStringEditor.exe* is located in
   %ProgramFiles%\Qlik\Sense\Repository\Util\ConnectionStringEditor. You need to run the
   executable as Administrator.
   Add '`Ssl Mode=Require;`' to the connection string:
   ```
   <add name="QSR" connectionString="User ID=qliksenserepository;Password='randompass'; Ssl
   Mode=Require;Host=fullhostname.com;Port=4432;Database=QSR;Pooling=true;Min Pool Size=0;Max
   Pool Size=90;Connection Lifetime=3600;Unicode=true;"providerName="Devart.Data.PostgreSql"/>
   ```

6. Start all Qlik Sense services and verify that everything works.

7. Verify the authentication using the pgAdmin tool in PostgreSQL:
   Users postgres and qliksenserepository must enter a valid password to connect.

Database replication and failover

This section describes how to set up database replication and failover in a shared persistence environment.
Additionally, the file storage content will also need to be replicated. To fail over to a standby node in case the
central database or node is lost, one or more standby databases can be configured for streaming replication
from the database on the primary node.

When editing text files related to the Qlik Sense installation, do the following:

1. Copy the file to another location on the server.
2. Edit the file and save the changes.
3. Copy the updated file back to its original location.

Setting up replication to standby nodes for failover

The instructions in this section describe how to set up asynchronous streaming replication to one or more
standby nodes. Before starting, ensure that the environment is configured and running, and install
PostgreSQL on a standby machine.

> *The paths in the instructions are adapted to a default PostgreSQL installation used as database on a dedicated machine. If you are using a PostgreSQL database installed by Qlik Sense you need to adapt the paths used, as the database is installed in %ProgramData%\Qlik\Sense\Repository\PostgreSQL\<version>\.*

Configure the primary database server

On the primary database server, do the following:

1. Open the file *%ProgramFiles%\PostgreSQL\9.3\data\postgresql.conf*
   Locate and set the following settings
   ```
   wal_level = hot_standby
   max_wal_senders = 3
   checkpoint_segments = 8
   wal_keep_segments = 8
   hot_standby = on
   ```

2. Create a user account that can be used for replication. To do so from a command prompt, run the following command. Adjust the hostname as needed, and specify a suitable password. You may be prompted for a password, this is the password that was specified during installation.
   ```
   "C:\Program Files\PostgreSQL\9.3\bin\psql.exe" -h <machinename> -p 4432 -W -c "CREATE USER replicator REPLICATION LOGIN ENCRYPTED PASSWORD 'secretpassword';"
   ```

3. Open the file *%ProgramFiles%\PostgreSQL\9.3\data\pg_hba.conf*.
   At the bottom of the file add:
   ```
   host    replication    replicator        0.0.0.0/0md5
   ```
   You can restrict the subnet access further, if required.

4. Restart the PostgreSQL service.

Configure the standby database server

On the standby PostgreSQL database server, do the following:

1. Stop the Postgres service.

2. Delete all content from *%ProgramFiles%\PostgreSQL\9.3\data*.

3. From the command line run the following command adjusted to use the name of the primary server:
   ```
   "C:\Program Files\PostgreSQL\9.3\bin\pg_basebackup" -h <primaryServer> -D "C:\Program Files\PostgreSQL\9.3\data" -U replicator -v -P -p 4432 -W
   ```
   You can ignore any warnings about copying files manually.

4. In a text editor, create a file called *recovery.conf* and place it in *%ProgramFiles%\PostgreSQL\9.3\data*.

5. Open recovery.conf and add the following text, adjusting the hostname and port:
   ```
   standby_mode = 'on'
   primary_conninfo = 'host=< primaryServer > port=4432 user=replicator password=secretpassword'
   trigger_file = 'failover'
   recovery_target_timeline = 'latest'
   ```

6. Start the PostgreSQL service.

You should now be able to connect to the database and view the data being streamed over from the primary node in read only mode.

Manual database failover

If the database on primary node is lost, a standby node needs to take over.

Do the following:

1. On the standby node that is to become the new primary node, create a file called *failover* in the folder
   %ProgramFiles%\PostgreSQL\9.3\data

   > The failover file should have no file extension.

   The file triggers PostgreSQL to cease recovery and enter read/write mode. PostgreSQL also changes
   the name of the file *recovery.conf* to *recovery.done* to reflect the transition.

2. On each node, change the repository database connection string to point to the hostname or IP
   address of the new database node. As the connection string is encrypted in the config file, you need to
   use the ConnectionString editor, supplied by Qlik, to decrypt the string, edit it, and write back an
   encrypted string.

   a. Open the ConnectionString editor, *ConnectionStringEditor.exe* which is located in
      %ProgramFiles%\Qlik\Sense\Repository\Util\ConnectionStringEditor. You need to run the
      executable as Administrator.

   b. Open the file *%Program Files%\Qlik\Sense\Repository\Repository.exe* in the
      ConnectionString editor.
      The decrypted database connection string is displayed.

   c. Replace the value for **Host** with the hostname or IP address of the new database node.

   d. Save the changes to the file.

3 Changing the user account used for the Qlik Sense services

If you selected local system as user account type in the **Service credentials** screen and cleared the **Start the Qlik Sense services when the setup is complete** checkbox in the **Ready to install** screen, you can change the setup so that a dedicated service account is used to run the services instead of the local system account.

See: *Before you install (page 7)*

Do the following:

1. Create a dedicated service account.
2. If the service account user does not have administrator privileges, you need to add the user to the following groups in **Computer Management** > **System Tools** > **Local Users and Groups** > **Groups**.
   - Qlik Sense Service Users
   - Performance Monitor Users
3. Open the **Control Panel** and then select **System and Security**>**Administrative Tools**>**Services**.
4. Proceed as follows for each Qlik Sense service in the list:
   a. Right-click the service and select **Properties**.
   b. Select the **Log On** tab and then **This account**.
   c. Enter the credentials for the dedicated service account and click **OK**.

   The services are as follows: Qlik Sense Repository Service, Qlik Sense Proxy Service, Qlik Sense Engine Service, Qlik Sense Scheduler Service, Qlik Sense Printing Service, and Qlik Sense Service Dispatcher

   > ⓘ *Depending on your setup some of the services may not be available.*

5. Assign **Full control** permission for the dedicated service account to the folder *%ProgramData%\Qlik\Sense*.
6. Start the Qlik Sense Service Dispatcher, and then the Qlik Sense Repository Service (QRS).
7. Start the rest of the Qlik Sense services.

4   Setup after installation

This section guides you through the process of setting up your Qlik Sense site, including procedures for managing the licenses and user access.

After you have installed Qlik Sense, the next step is to add a license to make the server operational.

See the following sections in the *Manage Qlik Sense sites* guide:

- Managing license and tokens

After that you can configure the server to fit with your organization's particular needs. Below are the common items most deployments will need to configure.

4.1   Connecting Qlik Sense to your user directory

Qlik Sense has a range of methods for authenticating users. Windows authentication is the default method.

When a user connects to Qlik Sense for the first time a user record is created to identify that user. Once this record is created, the administrator can track the user's activity and assign her a license and permissions.

Administrators can also connect to a user directory (for example, Active Directory or LDAP) to obtain further information about that user (such as user groups). The user information can be fetched in advance and then kept in sync with the user directory. This is optional but recommended since it will provide you with the best management experience.

See the following sections in the *Manage Qlik Sense sites* guide:

- Setting up a user directory connector and schedule by task
- Managing users

4.2   Assigning licenses to users

Users need a license to open an app. Qlik Sense offers a token-based system that allows the administrator to assign the most suitable license type to each user. Licenses can be allocated on an individual basis or automatically by using rules to define who is allowed to obtain a license, for example, all users in a specific department.

See the following sections in the *Manage Qlik Sense sites* guide:

- Managing license and tokens
- Allocating user access
- Creating new login access

4.3   Configuring the monitoring apps

All installations of Qlik Sense (single node and multi-node) require configuration of the monitoring apps for them to work properly.

See the following sections in the *Monitor Qlik Sense sites* guide:

- Configuring the monitoring apps

4.4   How Qlik Sense uses HTTPS and certificates

Qlik Sense deploys securely by default when it is installed. It uses self-sign certificates to ensure that data is transferred to users in a secure way. When users access the system they by default receive a warning that the certificate used by the site is not trusted. The user can then accept the certificate and proceed to use Qlik Sense securely.

There are two options to prevent the warning; one is to use a trusted certificate from either a trusted provider or an internal corporate source. The other option is to run the site using HTTP only. Both options are available as settings on the Qlik Sense Proxy Service (QPS).

Regardless of which option you choose, the services in Qlik Sense always use encryption when communicating.

See the following sections in the *Manage Qlik Sense sites* guide:

- Changing proxy certificate
- Editing proxies

4.5   Creating and opening apps

To create and open apps on the server users must browse to the Qlik Sense hub using their web browser. The hub lists two areas: **Work** contains the apps belonging to the user who has logged in, and **Streams** contains the other apps the user has access to. After the installation the administrators see two built-in monitoring apps, while all other users do not see any apps. Click on an existing app to open it. To create a new app, click **Create new app**.

4.6   Disabling search indexing (only multi-node)

In a multi-node environment, you need to disable the QMC engine setting **Create search index during reload** (in the **Advanced** properties section), if the reload node is not the node on which the user performs searches. If you do not disable this option, an index is created when you reload, which consumes time and disk space to no advantage.

See: Manage Qlik Sense sites: Editing an engine

See: Script syntax and chart functions: CreateSearchIndexOnReload

See the following section in the *Manage Qlik Sense sites* guide: Editing an engine

4.7   Working with streams, apps and publishing

A stream is a way to group together apps that have similar permissions. Once an app has been created, an administrator can publish it to a stream. The app then becomes visible to users who have access to that stream. Apps, streams and publishing are managed in the Qlik Management Console (QMC).

See the following sections in the *Manage Qlik Sense sites* guide:

- Managing streams
- Managing apps
- Publishing app

See also:

❑   The following section in the *Manage Qlik Sense sites* guide: Managing nodes and services

5 Upgrading Qlik Sense

The upgrade option is available when Qlik Sense has been previously installed and a major release (version x.x) of the software is available for installation. When upgrading, the previous version is completely replaced by the new version.

5.1 Direct upgrade path alternatives

This table shows the available direct upgrade paths that are available regarding the persistence model, shared or synchronized persistence. If the upgrade path is not available (N/A), you need to uninstall Qlik Sense and then reinstall the new version to perform an upgrade.

Original deployment version	Persistence model	Upgrade to shared persistence	Upgrade to synchronized persistence
Qlik Sense 3.1 SR1 or earlier	Shared	N/A	N/A
	Synchronized	N/A	Yes
Qlik Sense 3.1 SR2 or later	Shared	Yes	N/A
	Synchronized	Yes, on central node	Yes

5.2 General upgrade preparations

Before you start upgrading Qlik Sense, there are a few preparations:

- Consult *System requirements for Qlik Sense (page 8)* before proceeding with the upgrade process.
- Download the *Qlik_Sense_setup.exe* file from the download site.
- On Operating Systems with User Account Control (UAC) disabled, make sure you have logged on with Administrator rights using an account that has an actual password defined, that is, not a blank password.

Backing up

It is recommended that you back up the Qlik Sense site before performing an upgrade.
If Qlik Sense is installed on a Virtual Machine (VM) it may be sufficient to take a snapshot of the machine before performing an upgrade.

See: Backing up and restoring in *Plan Qlik Sense deployments*.

5.3 Migrating your apps

When you upgrade Qlik Sense all existing apps need to be migrated to ensure compatibility between the versions. This happens automatically when the system starts the first time after the upgrade.

If the migration step fails for one or more apps, these apps will not be available in the **Hub** after the upgrade. Apps that are not migrated are indicated in the **Apps** section of Qlik Management Console, where you can also perform a manual migration.

5.4   Upgrading a multi-node site

In a multi-node site, all nodes need to run the same version of Qlik Sense and the same persistence model (shared or synchronized) to be able to communicate with each other. It is recommended to perform the upgrade with all nodes offline, starting with the central node.

> *When upgrading a rim node, ensure that you use the same log-in account as was used for the initial installation of that node. Failure to do so means that the central node will not find the certificates installed on the node and you will need to perform a clean installation of the node.*

> *When upgrading a multi-node site, you need to disable the QMC engine setting **Create search index during reload** (in the **Advanced** properties section), if the reload node is not the node on which the user performs searches. If you do not disable this option, an index is created when you reload, which consumes time and disk space to no advantage.*

5.5   Upgrading a site with shared persistence

Do the following:

1. Take all Qlik Sense nodes offline, that is, stop the Qlik Sense services.
2. Upgrade the central node and start the Qlik Sense services. During the upgrade you will be asked for service user and repository database passwords.
3. Check that all apps have been migrated successfully. If migration has failed for one or more apps, resolve the issues before continuing.
4. Upgrade and start the remaining nodes one by one.

5.6   Upgrading a site with synchronized persistence

Do the following:

1. Take all Qlik Sense nodes offline, that is, stop the Qlik Sense services.
2. Upgrade the central node, selecting **Upgrade with Synchronized Persistence** in the first installer dialog, and start the Qlik Sense services.
3. Check that all apps have been migrated successfully on the central node. If migration has failed for one or more apps, resolve the issues before continuing.
4. Upgrade, start, and synchronize the remaining nodes one by one.

5.7   Upgrading a site with synchronized persistence and converting to shared persistence

When upgrading a central node from synchronized persistence to shared persistence, the existing repository database is shared with all nodes. If you want to setup a dedicated database machine, you need to perform a new installation.

Preparations when upgrading from synchronized persistence to shared persistence

You can upgrade from synchronized persistence to shared persistence provided that the existing deployment is running Qlik Sense version 3.1 SR2 or later. You need to create and prepare the file share to use as shared storage.

Creating the file share

The files that are persisted in a Qlik Sense deployment must be available to all nodes. They can be stored on any of the nodes in the cluster, or on a separate server.

For either type of shared persistence deployment, do the following on the server that you want to use to store shared content:

1. Create a folder for all file content to be shared, for example, *c:\QlikShare*.
2. Create a Windows share for this folder and set read/write access to this share for the service account that is used to run the Qlik Sense services.

This file share should now be accessible from all machines as *\\<servername>\QlikShare*.

> *We recommend that you enable SMB encryption for the file share to protect data from manipulation or tampering. If you use SMB 3.0 encryption on the file share, all nodes in the cluster need to run Windows 2012. More information about enabling SMB 3 encryption in Windows 2012 Server is available on*
> https://blogs.technet.microsoft.com/filecab/2012/05/03/smb-3-security-enhancements-in-windows-server-2012/.

Preparing the file share

1. Create the following sub-folders in the file share:
   - *Apps*
   - *StaticContent*
   - *ArchivedLogs*
   - *CustomData*
2. Copy your files to the file share. You need to copy the following content:

Content	Copy from	To subfolder
Apps	*%ProgramData%\Qlik\Sense\Apps*	*Apps*
Custom data	*%ProgramData%\Qlik\Custom Data*	*CustomData*
Connectors	*%ProgramFiles%\Common Files\Qlik\Custom Data*	*CustomData*
Logs (optional)	*%ProgramData%\Qlik\Sense\Repository\Archived Logs*	*ArchivedLogs*
Static content	*%ProgramData%\Qlik\Sense\Repository\AppContent* *%ProgramData%\Qlik\Sense\Repository\Content* *%ProgramData%\Qlik\Sense\Repository\DefaultContent* *%ProgramData%\Qlik\Sense\Repository\Extensions* *%ProgramData%\Qlik\Sense\Repository\DefaultApps*	*StaticContent*

Database user and password

When you are installing the rim nodes, you need to know the database user and password that the database service uses when connecting to the repository database. If you don't have it at hand, you can extract it on the central node. As the connection string is encrypted in the config file, you need to use the connection string editor, supplied by Qlik, to decrypt the string.

1. Open the connection string editor, *ConnectionStringEditor.exe* which is located in *%ProgramFiles%\Qlik\Sense\Repository\Util\ConnectionStringEditor*. You need to run the executable as Administrator.
2. Open the file *%Program Files%\Qlik\Sense\Repository\Repository.exe* in the connection string editor. The decrypted database connection string is displayed.
3. Note down the database user name and the password string.

The password string you extracted is not the actual password, it is encrypted, but you can paste this string into the database password dialog when installing the rim nodes. The password string may contain escape characters used in XML/HDF5, such as:

- quote (") "
- apostrophe (') '
- ampersand (&) &
- less than (<) <
- greater than (>) >

If this is the case, it is important to make sure that you replace the escaped characters with the actual characters when pasting the password in the installer dialog.

Example:

The extracted password string I^!?0&163j needs to be changed to I^!?0&163j.

Performing the upgrade

Do the following:

1. Make sure that all nodes are synchronized, and take all Qlik Sense nodes offline, that is, stop the Qlik Sense services.

2. Upgrade the central node, selecting the **Upgrade with Shared Persistence** in the first installer dialog.

   - In the **Shared persistence storage** dialog, select the file share folders you have prepared.

   - Make sure that you perform the configuration in the **Database service listener** dialog.
     Listen addresses - add the addresses that the database service should listen to. You can supply a comma separated list of IPv4 or IPv6 addresses, or *0.0.0.0* (for all IPv4 addresses), *::* (for all IPv4 addresses) or *** (for all addresses).
     IP range - add a subnet specification that covers the IP addresses of all nodes in your site. Either add one row for each node, using /32 as suffix for each address, or add a subnet that covers all addresses using, for example, /24 as suffix. To allow all servers to access the repository database, use 0.0.0.0/0.

3. Start the Qlik Sense services.

4. Check that all apps have been migrated successfully on the central node. If migration has failed for one or more apps, resolve the issues before continuing.

5. Install Qlik Sense with shared persistence on the remaining nodes one by one, joining the existing cluster that was created when you upgraded the central node.

6   Updating Qlik Sense

The update option is available when Qlik Sense has been previously installed and a service release (version x.x.x) of the software is available for installation. A service release primarily includes software updates and fixes which are then applied to the existing version. Check the download site for available updates.

> *Updates are installed without the need to remove earlier updates or the major release (x.0) itself.*

As well as installing an update, updates can be uninstalled:

- **UPDATE** applies the software updates and fixes to the installed version of Qlik Sense. For example, Qlik Sense version 2.0 would be updated to version 2.0.1.
- **UNINSTALL** removes individual updates from the installed version of Qlik Sense. Updates must be uninstalled sequentially, that is, the latest update must be uninstalled first. It is not possible to uninstall an earlier update without removing the later updates. The apps and database used with service release versions can still be used with the related major release version (backwards compatible).

6.1   Updating prerequisites

Before you start updating Qlik Sense, there are a few requirements to consider:

- The Qlik Sense major release that is referenced by the update must have been installed.
- Download the *Qlik_Sense_update.exe* file from the download site.
  See: *Downloading the Qlik Sense setup file (page 12)*

- On operating systems with User Account Control (UAC) disabled, make sure you have logged on with Administrator rights using an account that has an actual password defined (not a blank password).

6.2   Updating a multi-node site

In a multi-node site, all nodes need to run the same version of Qlik Sense to be able to synchronize with each other. It is recommended to perform the update with all nodes offline, starting with the central node.

> *When updating a rim node, ensure that you use the same log-in account as was used for the initial installation of that node. Failure to do so means that the central node will not find the certificates installed on the node and you will need to perform a clean installation of the node.*

Do the following:

1. Take all Qlik Sense nodes offline, that is, stop the Qlik Sense services.
2. Update the central node and start the Qlik Sense services.
3. Update, start, and synchronize the remaining nodes one by one.

The same procedure should be followed when uninstalling updates.

For information on repairing and modifying the installation after updates have been applied see also:

- Repairing Qlik Sense

6.3   Performing an update

A service release is provided to update Qlik Sense from one version to another, for example, version 2.0.1 to 2.0.2. When applied, each update will be visible under **Installed Updates** (*Control Panel > Programs > Installed Updates*).

Each new update contains all the previous updates to the installed version of Qlik Sense.

Make sure that you have located and/or obtained the update file, Qlik_Sense_update.exe, before starting the update procedure.

Do the following:

1. Double-click on the update file to start the update.

    The **Welcome** screen is displayed.

2. Click **Update**.
    - If UAC is enabled, the **User Account Control** dialog is displayed.
    - If UAC is disabled, the update starts.

3. Click **Yes** to start the update.

    This is only applicable if UAC is enabled.

    The update starts.

4. When the installation has completed the **Update Summary** is displayed.
    Click **Finish** to close the **Update Summary**.

    *If the update did not complete successfully, the **Update Failed** screen is displayed and the Qlik Sense version will remain the same as before trying to apply the update. For more detailed information, see the installation log located in your **temp** folder accessed with environment variable %temp%.*

You have now successfully updated to a newer version of Qlik Sense. The update is visible under **Installed Updates** (*Control Panel > Programs > Installed Updates*).

6.4   Uninstalling an update

When uninstalling an update, the updated version of Qlik Sense will be reverted back to the previously installed service or major release version of Qlik Sense. Updates must be uninstalled sequentially, that is, the latest update must be uninstalled first. It is not possible to uninstall an earlier update without removing the later updates.

If you want to completely uninstall Qlik Sense, refer to *Uninstalling Qlik Sense (page 48)* instead.

Do the following:

1. To start uninstalling an update, open the **Control Panel** and select **Programs**. Then select **View installed updates**. All the installed updates are shown in the list.

2. Select the most recent Qlik Sense update from the list of updates and click **Uninstall**.

   The **Qlik Sense Ready to Remove Update** screen is displayed.

   > ⓘ   *You can also perform this action by double-clicking the update file.*

3. Click **Uninstall**.

4. The progress of the uninstall process is displayed. When finished the **Update uninstall summary** screen is displayed to confirm that the update has been uninstalled successfully.

5. Click **Finish**.

You have now successfully uninstalled your Qlik Sense update. You must repeat the procedure to uninstall further updates.

7   Maintaining Qlik Sense

After installing Qlik Sense you can perform a number of maintenance tasks from the **Programs and Features** option on the **Control Panel**. This includes repairing and uninstalling Qlik Sense.

The version of Qlik Sense installed can be found in the list of programs shown in the **Uninstall or change a program** view of **Programs and Features**.
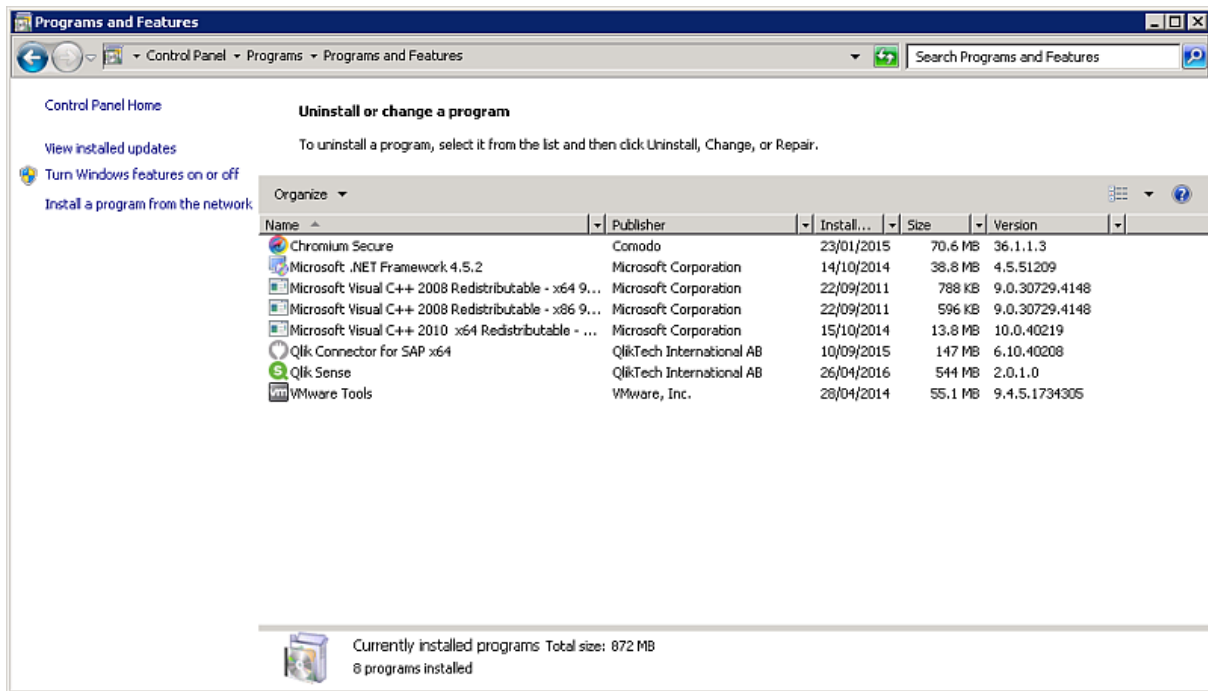
When updates are distributed and applied, they can be maintained from the **Installed Updates** option on the **Control Panel**.
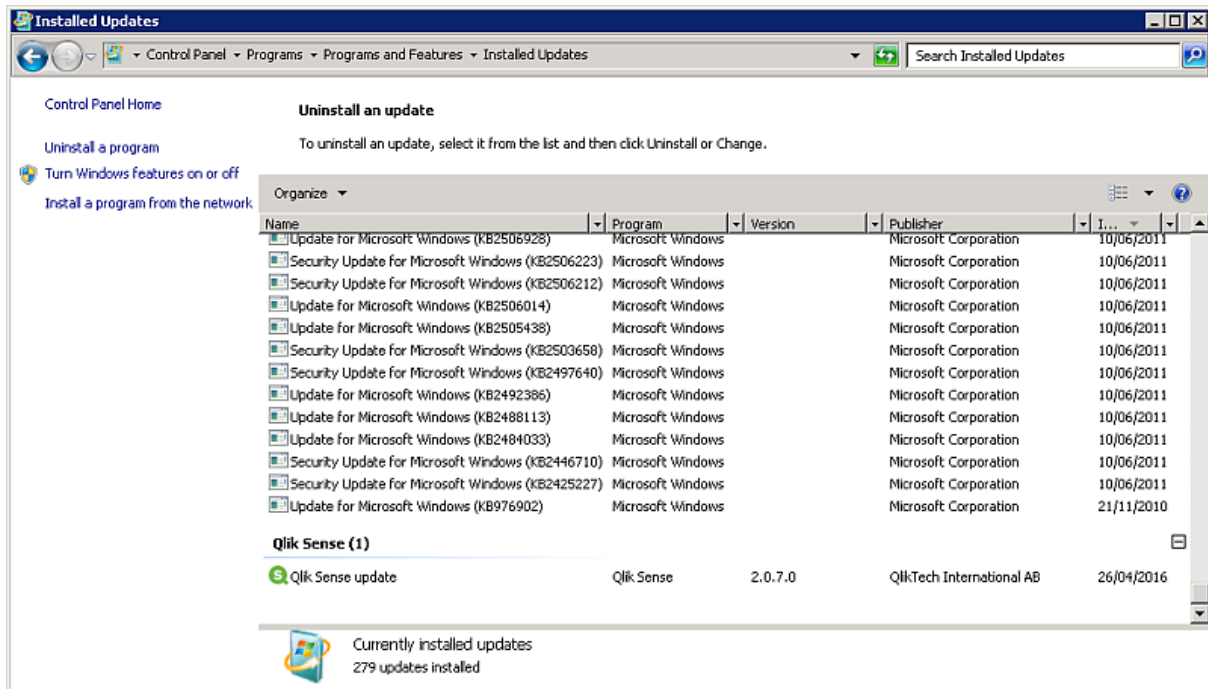
The screenshots show that the installed baseline version of Qlik Sense is, in this case, 2.0.1.0, but that it has been updated with service release 2.0.7.0.

> *Uninstalling the baseline version will also uninstall the updates applied to it.*

7.1   Repairing an installation

The **Repair** option restores all missing files, shortcuts and registry values without any credentials being changed.

> *If an update has been applied to Qlik Sense since installation, the Repair option also repairs the update.*

Do the following:

1. To start repairing the installation, open the **Control Panel** and select **Uninstall a program**. Then select **Qlik Sense** from the list of programs and click **Change**.

    The **Qlik Sense Setup maintenance** screen is displayed.

    > *You can also perform this action by double-clicking the Qlik_Sense_setup.exe file. In that case, you must use the correct version of the setup file when repairing your Qlik Sense installation, that is, the same version used when installing Qlik Sense.*

2. Click **Repair**.
   The **Ready to repair** screen is displayed.

3. Click **Repair**.

   - If UAC is enabled, the **User Account Control** screen is displayed.
   - If UAC is disabled, the repair process starts.

4. Click **Yes** to start repairing your Qlik Sense installation.

   > *This is only applicable if UAC is enabled.*

   The progress is displayed.

   When finished, click **Repair Summary** to confirm that Qlik Sense has been restored successfully. Click **Back**.

5. Click **Finish**.

You have now successfully repaired your Qlik Sense installation.

7.2   Uninstalling Qlik Sense

> *If any updates have been applied to Qlik Sense since installation, the Uninstall option will also remove all the updates.*

Do the following:

1. To start uninstalling, open the **Control Panel** and select **Uninstall a program**. Then select **Qlik Sense** from the list of programs and click **Uninstall**.

   A confirmation screen is displayed asking if you are sure that you want to uninstall Qlik Sense from your computer. Select the **Remove Qlik Sense certificates and data folders** checkbox if you want to remove all files from the machine ready for a new configuration.

   > *If the machine is a central node in a Qlik Sense site, there may be rim nodes on other machines that require access to the central node to function properly.*

   > *You can also uninstall Qlik Sense by double-clicking the Qlik_Sense_setup.exe file and then selecting Uninstall from the Maintenance screen. In that case, you must use the correct version of the setup file when uninstalling your Qlik Sense installation, that is, the same version used when installing Qlik Sense.*

2. Click **Uninstall** to start uninstalling Qlik Sense.
   If User Account Control (UAC) is disabled, the uninstall starts.
   If UAC is enabled, the **User Account Control** dialog is displayed.

Click **Yes** to start the uninstall.

The progress of the uninstall process is displayed. When finished the uninstall dialog confirms that Qlik Sense has been uninstalled successfully.

3. Click **Finish**.

You have now uninstalled Qlik Sense.

8 Installing Qlik Sense in silent mode

ℹ️ *The operations described below should only be performed by advanced users.*

This section describes the unattended silent operations that can be performed. All setup options that are available in the user interface of the installer can be performed with silent operations.

ℹ️ *The silent feature names are case sensitive. For example this command will not start the installation:* `-s -a engine`. *The correct command is:* `-s -a Engine`.

When using silent mode, it is a good practice to check the exit code, which should be 0 if the operation was successful, and also to check the log files regardless of exit codes since useful information, such as warnings and detection of earlier versions, can be found in the logs.

A list of all exit codes can be found in *Troubleshooting an installation (page 60)*.

8.1 Silent installation

When running a silent installation, Qlik Sense is installed with no dialogs at all. This means all features, properties and user selections have to be known before performing a silent installation. All setup options that are available in the user interface of the installer can be performed with silent operations.

Performing a silent installation

Do the following:

1. Select **Start > All Programs > Accessories > Command Prompt**.
   The **Command Prompt** window is displayed.
2. In the **Command Prompt** window, navigate to the folder containing the *Qlik_Sense_setup.exe* file.
3. Enter *Qlik_Sense_setup.exe* followed by the silent installation syntax preferred.

ℹ️ *Note that elevation will take place if run from an unelevated process and the UAC is on.*

Syntax

```
Qlik_Sense_setup.exe [-silent] {-log "path\filename"} {layout="path"}
{rimnode=1|0} {rimnodetype="NodeTypeName"} {desktopshortcut=1|0}
{skipstartservices=1|0} {installdir="path"}
{userwithdomain="domain\user"} {userpassword="password}
{dbpassword="password"} {hostname="www.hosturlofyourmachine.com"}
{sharedpersistenceconfig="configfilepath"} {skipvalidation=1|0}
```

`Qlik_Sense_setup.exe -?` or `-h`	Brings up the on-screen silent setup help.

Commands

-silent (or -s)		Command line-driven setup without UI (mandatory).
-log (or -l)	[log file name with path]	Log file directory and log file name.
		The user must have access to this directory.
-layout	[destination directory]	Extracts files (including *.msi* files) to the destination directory.
		This argument should not be combined with other command line arguments.

Arguments

Arguments are separated by space and presented in the form [Argument]="[Value]". The double quotes can normally be omitted but may be needed, for example, when a path contains spaces.

The default values are the same as those used in the setup user interface.

rimnode	`1|0`	Determines the Repository role.
rimnodetype	`Complete|Proxy|Engine|ProxyEngine|Scheduler`	Installs all the features required for the rim node type selected.
desktopshortcut	`1|0` (defaults to 1 on clean installs)	Installs desktop shortcuts.
skipstartservices	`1|0` (defaults to 0 on clean installs, otherwise the current state.)	To skip starting services after the installation has finished.
installdir	[path to custom install directory]	Need only be defined if the default install directory will not be used (*%ProgramFiles%\Qlik\ Sense*).
userwithdomain	[domain\username]	The username used to run the Qlik Sense services.

userpassword	[password]	The password of the user used to run the services.
dbpassword	[password]	Password for the database superuser that creates the user that runs the database.
hostname	[address of the central node]	The central node uses certificates to communicate securely with other servers. Leave blank to use default.
sharedpersistencec onfig (or spc)	[path to configuration file including the filename]	Activates setup of shared persistence as storage method. All settings for shared persistence must be in the configuration file referenced here.
		See: *Shared persistence configuration file syntax (page 53)*
skipvalidation	1|0	To skip validation of the password provided for service user.

Example 1:

```
Qlik_Sense_setup.exe -s rimnode=1 rimnodetype=Scheduler
```

Example 2:

```
Qlik_Sense_setup.exe -s userwithdomain=mydomain\myUser password=myPassword
```

Example 3:

```
Qlik_Sense_setup.exe -s -l "c:\mylogpath" installdir="c:\mycustompath"
dbpassword=mydbpassword rimnode=1
```

Shared persistence configuration file syntax

If you want to use shared persistence as storage model, this is activated by using the sharedpersistenceconfig argument, that also points to a configuration file containing the settings to use in the installation.

Example:

```
Qlik_Sense_setup.exe -s spc="\\configpath\spc.cfg"
```

The configuration file is in XML format. You need to create the file according to the example described here.

```
<?xml version="1.0"?>
<SharedPersistenceConfiguration xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
   <DbUserName>username</DbUserName>
   <DbUserPassword>password</DbUserPassword>
   <DbHost>ip/hostname</DbHost>
   <DbPort>4432</DbPort>
   <RootDir>\\server\share</RootDir>
   <StaticContentRootDir>\\server\share\StaticContent</StaticContentRootDir>
   <CustomDataRootDir>\\server\share\CustomData</CustomDataRootDir>
   <ArchivedLogsDir>\\server\share\ArchivedLogs</ArchivedLogsDir>
   <AppsDir>\\server\share\Apps</AppsDir>
   <CreateCluster>true</CreateCluster>
   <InstallLocalDb>false</InstallLocalDb>
   <ConfigureDbListener>true</ConfigureDbListener>
   <ListenAddresses>*</ListenAddresses>
   <IpRange>0.0.0.0/0</IpRange>
   <!--<JoinCluster>true</JoinCluster>-->
</SharedPersistenceConfiguration>
```

Configuration file syntax

Setting	Description
DbUserName	User name of the repository database user.
DbUserPassword	Password of the repository database user.
DbHost	Hostname of the machine running the repository database.
DbPort	Port used to communicate with the repository database.
RootDir	Root directory for the share to use as content storage. We recommend that you keep the content in sub-directories to this folder, but this can be overridden in the StaticContentRootDir, CustomDataRootDir and ArchivedLogsDir settings.
AppsDir	Directory to store apps in.
StaticContentRootDir	Root directory for all static content of the site.
CustomDataRootDir	Root directory for all custom data of the site, for example, custom connectors.

Setting	Description
ArchivedLogsDir	Directory to save archived log files in.
CreateCluster JoinCluster	Set CreateCluster to True if you want to create a new cluster, or set JoinCluster to True if you want to join an existing cluster. You can only use one of these settings in the configuration file. The other setting needs to be removed, or commented out like `<!--<JoinCluster>true</JoinCluster>-->`.
InstallLocalDb	Set to True if you want to install a local PostgreSQL database on the node when you create a new cluster. This setting can only be used together with the CreateCluster setting.
ConfigureDbListener	Set to True if you want to configure the PostgreSQL database installed by Qlik Sense to listen to database connections from other nodes. You need to configure the ListenAddresses and IpRange settings.
ListenAddresses	Addresses that the database service should listen to. You can supply a comma separated list of IPv4 or IPv6 addresses, or *0.0.0.0* (for all IPv4 addresses), *::* (for all IPv4 addresses) or *** (for all addresses).
IpRange	Subnet specification that covers the IP addresses of all nodes in your site. Either add one row for each node, using /32 as suffix for each address, or add a subnet that covers all addresses using, for example, /24 as suffix. To allow all servers to access the repository database, use 0.0.0.0/0.

Deprecated command line arguments

The use of the following command line arguments is no longer recommended.

`-rimnodetype` (or `-rnt`)	Installs all the features required for the rim node type selected. The node type can be any one of: `Complete`, `Proxy`, `Engine`, `Scheduler`.
`-addfeatures` (or `-a`)	Install the named features. Can be all or any of: `Engine`, `Proxy`, `Scheduler`, `PostgreSQL` *The silent feature names are case sensitive. For example this command will not start the installation:* `-s -a engine`. *The correct command is:* `-s -a Engine`. `-a Engine Scheduler` *will also install mandatory features, such as repository.*

-removefeatures or -r	Removes the named features
-syncnode	If you want to run the repository as a sync node. Default is central.
-desktopshortcut	To add a desktop shortcut.
- skipstartservices	To skip starting services after the installation has finished.
-installdir (or -i)	Path to custom install directory. Need only be defined if the default install directory will not be used (*%ProgramFiles%\Qlik\Sense*).
-dbpassword (or - dbp)	Password for the Repository database superuser that creates the user that runs the database.

> ⚠ *Use carefully! The actual password will be visible in the log file. To mitigate this limitation please remove the installation log files after installation.*

-hostname	Host name of the central node.
-userwithdomain (or -u)	Dictates the account that runs the services: `Domain\User`
-password (or -p)	Password for the account that runs the services.

> ⚠ *Use carefully! The actual password will be visible in the log file. To mitigate this limitation please remove the installation log files after installation.*

-cleanup	When the uninstall has completed, the Qlik Sense certificates and any file in the *ProgramData\Qlik\Sense* folder will be deleted

8.2   Silent repair

You can silently repair the current Qlik Sense installation. All setup options that are available in the user interface of the installer can be performed with silent operations.

Performing a silent repair

Do the following:

1. Select **Start > All Programs > Accessories > Command Prompt**.
   The **Command Prompt** window is displayed.

2. In the **Command Prompt** window, navigate to the folder containing the *Qlik_Sense_setup.exe* file.

3. Enter *Qlik_Sense_setup.exe* followed by the silent installation syntax preferred.

Syntax

```
Qlik_Sense_setup.exe [-silent] [-repair] {-log "path\filename"}
```

```
Qlik_Sense_setup.exe -?
```
or `-h`   Brings up the on-screen silent setup help.

Commands

-silent (or -   Trigger the silent mode (mandatory).
s)

-repair   Repair the product silently.

-log (or -l)   Log file directory and log file name.

> *The user must have access to this directory.*

If this option is not defined, the log file will be stored with the default name in the default location.

Example:

This example shows how to silently repair the Qlik Sense installation.

```
Qlik_Sense_setup.exe -s -repair
```

8.3   Silent upgrade

You can silently upgrade the current Qlik Sense installation. All setup options that are available in the user interface of the installer can be performed with silent operations.

Performing a silent upgrade

Do the following:

1. Select **Start > All Programs > Accessories > Command Prompt**.
   The **Command Prompt** window is displayed.
2. In the **Command Prompt** window, navigate to the folder containing the *Qlik_Sense_setup.exe* file.
3. Enter *Qlik_Sense_setup.exe* followed by the silent installation syntax preferred.

> *Note that elevation will take place if run from an unelevated process and the UAC is on.*

Syntax

```
Qlik_Sense_setup.exe [-silent] {-log "path\filename"}
{desktopshortcut=1|0} {skipstartservices=1|0} {installdir="path"}
{userpassword="password"} {dbpassword="password"}
```

`Qlik_Sense_setup.exe -?` or `-h`	Brings up the on-screen silent setup help.

Commands

`-silent` (or `-s`)		Command line-driven setup without UI.(mandatory).
`-log` (or `-l`)	[log file name with path]	Log file directory and log file name.

> *The user must have access to this directory.*

Arguments

Arguments are separated by space and presented in the form [Argument]="[Value]". The double quotes can normally be omitted but may be needed, for example, when a path contains spaces.

The default values are the same as those used in the setup user interface.

desktopshortcut	1|0 (defaults to 1 on clean installs)	Installs desktop shortcuts.
skipstartservices	1|0 (defaults to 0 on clean installs, otherwise the current state.)	To skip starting services after the installation has finished.
installdir	[path to custom install directory]	Need only be defined if the default install directory will not be used (*%ProgramFiles%\Qlik\Sense*).
userpassword	[password]	The password of the user used to run the services.
dbpassword	[password]	Password for the database superuser that creates the user that runs the database.

The default values are the same as those used in the setup user interface.

Example: Upgrading the installation

This example shows how to silently upgrade an installation and add desktop shortcuts.

```
Qlik_Sense_setup.exe -s desktopshortcut=1
```

Deprecated command line arguments

For a list of the command line arguments that are no longer recommended, see Silent installation.

8.4 Silent uninstall

You can silently uninstall the current Qlik Sense installation. All setup options that are available in the user interface of the installer can be performed with silent operations.

Performing a silent uninstall

Do the following:

1. Select **Start > All Programs > Accessories > Command Prompt**.
   The **Command Prompt** window is displayed.
2. In the **Command Prompt** window, navigate to the folder containing the *Qlik_Sense_setup.exe* file.
3. Enter *Qlik_Sense_setup.exe* followed by the silent installation syntax preferred.

> **i** *Note that elevation will take place if run from an unelevated process and the UAC is on.*

Syntax

```
Qlik_Sense_setup.exe [-silent] [-uninstall] {-log "path\filename"} {-
cleanup} {-userpassword}
```

Commands

-silent (or -s)		Command line-driven setup without UI (mandatory).
-uninstall		Uninstalls the product.
-log (or -l)	[log file name with path]	Log file directory and log file name.

> **i** *The user must have access to this directory.*

Arguments

Arguments are separated by space and presented in the form [Argument]="[Value]". The double quotes can normally be omitted but may be needed, for example, when a path contains spaces.

The default values are the same as those used in the setup user interface.

cleanup	1|0	When the uninstall has completed, the Qlik Sense certificates and any file in the *ProgramData\Qlik\Sense* folder will be deleted.

| **userpassword** | [password] | The password of the user used to run the services. |
| | | Only required if the cleanup argument is used and the services account is different to the local system user account. |

Example:

This example shows how to silently uninstall Qlik Sense and remove all files.

```
Qlik_Sense_setup.exe -s -uninstall cleanup=1
```

Deprecated command line arguments

For a list of the command line arguments that are no longer recommended, see Silent installation.

9 Troubleshooting an installation

This section describes problems that can occur related to installation of Qlik Sense. The possible causes are described and you are presented with actions to solve the problems.

9.1 Cannot access the hub or the QMC directly after installation

Possible cause

The Qlik Sense services are started automatically delayed. This means it can take a while for them all to start after the installation.

Proposed action

Check that the services have started and that the ports are available.

Do the following:

1. Open the Task Manager in Windows and check that all Qlik Sense services have started.
2. Check that the ports needed by Qlik Sense are available.
   See: Plan Qlik Sense deployments

9.2 One or more Qlik Sense services did not start after installation

Possible cause

The Qlik Sense Repository Service (QRS) cannot start if there is no repository database, and if the QRS is not running, none of the other Qlik Sense services can start.

The services are started automatically delayed. This means it can take a while for them all to start after the installation.

Proposed action

Restart the service, check the user account, restart the server, or check the logs.

Do the following:

1. Stop the service and start it again.
   You can also try changing the **Start Type** of the failing service from **Automatic** to **Automatic (Delayed Start)** in the Task Manager in Windows.

2. Check that the user that runs the Qlik Sense services is member of the Local Administrators group.

   If you are using a domain administrator account, check that there is no problem related to the User Account Control (UAC).

3. Restart the server on which Qlik Sense is running.

4. Check the log files for the service to see if there is any information regarding why the service has not started.

   The log files are available in the *%ProgramData%\Qlik\Sense\Log\<Service>* folder.

5. Set the ServicesPipeTimeout setting in the Registry Editor in Windows to 120000 milliseconds (that is, two minutes). This is needed to give the Qlik Sense Repository Service (QRS) enough time to start. [Microsoft Knowledge Base: 884495](#)

   > ⚠ *Serious problems might occur if you modify the registry incorrectly by using the Registry Editor or by using another method. Make sure that you can recover if the changes lead to problems.*

6. If the actions above cannot remedy the problem, you need to uninstall and reinstall Qlik Sense.

9.3   Anti-virus software scanning affects the performance of Qlik Sense

Possible cause

Anti-virus software scanning can have an effect on the performance of Qlik Sense.

Proposed action

Configure the anti-virus software scanning so that it does not interfere with Qlik Sense. Make sure that regular scans and live/real-time scans are turned off for the following locations:

- *%ProgramData%\Qlik*
- Any additional folder path configured for storing QVF files
- All executables under *%ProgramFiles%\Qlik\Sense*

9.4   Exit codes

Exit codes can be particularly useful when using the silent mode operations. The exit code can be viewed in the command prompt window by using the following command:

Echo %errorlevel%

The following table contains a complete list of the exit codes.

Code	Description
0	Success
-1	General fatal error
-2	Command line parsing error
-3	Not implemented error
-4	Downgrade
-5	Malformed bundle XML
-6	Install condition not met
-7	Unknown upgrade scenario
-8	Pending reboot must be applied first
-9	Patch run with no baseline installed
-10	Disallowed setup process running
-11	Unsupported minor upgrade error
-12	Invalid policy
-13	User validation failed
-14	Database superuser password validation error
-15	Not supported error
-16	Host name from certificate retrieval error
-17	Inconsistent upgrade
-18	General silent workflow error
-19	OS bitness not supported
-20	OS too old
-21	OS type not supported
-22	Patch is superseded
-23	General MSI Error
-24	Disabled services exist
-1335	CAB is corrupt
-1601	Disk space
-1602	User exit
-1923	Cannot install service
-7777	Unknown dark process exception

9.5   Rim node loses connection to the central node

Possible cause

The Windows setting **"System cryptography: Force strong key protection for user keys stored on the computer"** is enabled. This setting is not supported by Qlik Sense.

Proposed action

Disable **"System cryptography: Force strong key protection for user keys stored on the computer"**.