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Deployment and Upgrade Guide Overview

Updated: 2024-04-29

This book provides guidance on deploying and upgrading Uyuni Server and Proxy. It is split into the following sections:
Chapter 1. Requirements

Describes hardware, software, and networking requirements before you begin.
Chapter 2. Deployment

Describes tasks for deploying Uyuni as a container and initial setup.
Chapter 3. Upgrade and Migration

Describes upgrade and migration of Uyuni
Chapter 4. Public Cloud

You can also deploy Uyuni to a public cloud instance.

For more information on using Uyuni on a public cloud, see Specialized-guides › Public-cloud-guide.
Chapter 5. Requirements

5.1. Requirements

The following tables specify the minimum server and proxy requirements.

5.1.1. Server Requirements

Table 1. Server Requirements for x86-64 Architecture

<table>
<thead>
<tr>
<th>Software and Hardware</th>
<th>Details</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>openSUSE Leap 15.5</td>
<td>Clean installation, up-to-date</td>
<td>openSUSE Leap 15.5</td>
</tr>
<tr>
<td>CPU</td>
<td>-</td>
<td>Minimum 4 dedicated 64-bit CPU cores (x86-64)</td>
</tr>
<tr>
<td>RAM</td>
<td>Test or Base Installation</td>
<td>Minimum 16 GB</td>
</tr>
<tr>
<td></td>
<td>Production Server</td>
<td>Minimum 32 GB</td>
</tr>
<tr>
<td>Disk Space</td>
<td>/ (root directory)</td>
<td>Minimum 40 GB</td>
</tr>
<tr>
<td></td>
<td>/var/lib/pgsql</td>
<td>Minimum 50 GB</td>
</tr>
<tr>
<td></td>
<td>/var/spacewalk</td>
<td>Minimum storage required: 100 GB (this will be verified by the implemented check)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* 50 GB for each SUSE product and Package Hub</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* 360 GB for each Red Hat product</td>
</tr>
<tr>
<td></td>
<td>/var/cache</td>
<td>Minimum 10 GB. Add 100 MB per SUSE product, 1 GB per Red Hat or other product. Double the space if the server is an ISS Master.</td>
</tr>
<tr>
<td></td>
<td>Swap space</td>
<td>3 GB</td>
</tr>
</tbody>
</table>

5.1.2. Proxy Requirements

Table 2. Proxy Requirements

<table>
<thead>
<tr>
<th>Software and Hardware</th>
<th>Details</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>openSUSE Leap 15.5</td>
<td>Clean installation, up-to-date</td>
<td>openSUSE Leap 15.5</td>
</tr>
</tbody>
</table>
## 5.2. Network Requirements

This section details the networking and port requirements for Uyuni.

### 5.2.1. Fully Qualified Domain Name (FQDN)

The Uyuni server must resolve its FQDN correctly. If the FQDN cannot be resolved, it can cause serious problems in a number of different components.


### 5.2.2. Hostname and IP Address

To ensure that the Uyuni domain name can be resolved by its clients, both server and client machines must be connected to a working DNS server. You also need to ensure that reverse lookups are correctly configured.

5.2.3. Offline Deployment

If you are on an internal network and do not have access to SUSE Customer Center, you can use an Installation-and-upgrade › Container-deployment.

In a production environment, the Uyuni Server and clients should always use a firewall. For a comprehensive list of the required ports, see Installation-and-upgrade › Ports.

For more information on disconnected setup and port configuration, see Administration › Disconnected-setup.

5.2.4. Ports

This section contains a comprehensive list of ports that are used for various communications within Uyuni.

You will not need to open all of these ports. Some ports only need to be opened if you are using the service that requires them.

5.2.4.1. External Inbound Server Ports

External inbound ports must be opened to configure a firewall on the Uyuni Server to protect the server from unauthorized access.

Opening these ports allows external network traffic to access the Uyuni Server.

Table 3. External Port Requirements for Uyuni Server

<table>
<thead>
<tr>
<th>Port number</th>
<th>Protocol</th>
<th>Used By</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>TCP/UDP</td>
<td></td>
<td>Required for ssh-push and ssh-push-tunnel contact methods.</td>
</tr>
<tr>
<td>67</td>
<td>TCP/UDP</td>
<td>DHCP</td>
<td>Required only if clients are requesting IP addresses from the server.</td>
</tr>
<tr>
<td>69</td>
<td>TCP/UDP</td>
<td>TFTP</td>
<td>Required if server is used as a PXE server for automated client installation.</td>
</tr>
<tr>
<td>80</td>
<td>TCP</td>
<td>HTTP</td>
<td>Required temporarily for some bootstrap repositories and automated installations.</td>
</tr>
<tr>
<td>443</td>
<td>TCP</td>
<td>HTTPS</td>
<td>Serves the Web UI, client, and server and proxy (tftpsync) requests.</td>
</tr>
<tr>
<td>4505</td>
<td>TCP</td>
<td>salt</td>
<td>Required to accept communication requests from clients. The client initiates the connection, and it stays open to receive commands from the Salt master.</td>
</tr>
</tbody>
</table>
### 5.2.4.2. External Outbound Server Ports

External outbound ports must be opened to configure a firewall on the Uyuni Server to restrict what the server can access.

Opening these ports allows network traffic from the Uyuni Server to communicate with external services.

*Table 4. External Port Requirements for Uyuni Server*

<table>
<thead>
<tr>
<th>Port number</th>
<th>Protocol</th>
<th>Used By</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>TCP</td>
<td>HTTP</td>
<td>Required for SUSE Customer Center. Port 80 is not used to serve the Web UI.</td>
</tr>
<tr>
<td>443</td>
<td>TCP</td>
<td>HTTPS</td>
<td>Required for SUSE Customer Center.</td>
</tr>
<tr>
<td>25151</td>
<td>TCP</td>
<td>Cobbler</td>
<td></td>
</tr>
</tbody>
</table>

### 5.2.4.3. Internal Server Ports

Internal port are used internally by the Uyuni Server. Internal ports are only accessible from localhost.

In most cases, you will not need to adjust these ports.

*Table 5. Internal Port Requirements for Uyuni Server*

<table>
<thead>
<tr>
<th>Port number</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2828</td>
<td>Satellite-search API, used by the RHN application in Tomcat and Taskomatic.</td>
</tr>
<tr>
<td>2829</td>
<td>Taskomatic API, used by the RHN application in Tomcat.</td>
</tr>
<tr>
<td>8005</td>
<td>Tomcat shutdown port.</td>
</tr>
<tr>
<td>8009</td>
<td>Tomcat to Apache HTTPD (AJP).</td>
</tr>
<tr>
<td>8080</td>
<td>Tomcat to Apache HTTPD (HTTP).</td>
</tr>
<tr>
<td>9080</td>
<td>Salt-API, used by the RHN application in Tomcat and Taskomatic.</td>
</tr>
<tr>
<td>32000</td>
<td>Port for a TCP connection to the Java Virtual Machine (JVM) that runs Taskomatic and satellite-search.</td>
</tr>
</tbody>
</table>
Port 32768 and higher are used as ephemeral ports. These are most often used to receive TCP connections. When a TCP connection request is received, the sender will choose one of these ephemeral port numbers to match the destination port.

You can use this command to find out which ports are ephemeral ports:

```
cat /proc/sys/net/ipv4/ip_local_port_range
```

5.2.4.4. External Inbound Proxy Ports

External inbound ports must be opened to configure a firewall on the Uyuni Proxy to protect the proxy from unauthorized access.

Opening these ports allows external network traffic to access the Uyuni proxy.

Table 6. External Port Requirements for Uyuni Proxy

<table>
<thead>
<tr>
<th>Port number</th>
<th>Protocol</th>
<th>Used By</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td></td>
<td></td>
<td>Required for ssh-push and ssh-push-tunnel contact methods. Clients connected to the proxy initiate check in on the server and hop through to clients.</td>
</tr>
<tr>
<td>67</td>
<td>TCP/UDP</td>
<td>DHCP</td>
<td>Required only if clients are requesting IP addresses from the server.</td>
</tr>
<tr>
<td>69</td>
<td>TCP/UDP</td>
<td>TFTP</td>
<td>Required if the server is used as a PXE server for automated client installation.</td>
</tr>
<tr>
<td>443</td>
<td>TCP</td>
<td>HTTPS</td>
<td>Web UI, client, and server and proxy (tftpsync) requests.</td>
</tr>
<tr>
<td>4505</td>
<td>TCP</td>
<td>salt</td>
<td>Required to accept communication requests from clients. The client initiates the connection, and it stays open to receive commands from the Salt master.</td>
</tr>
<tr>
<td>4506</td>
<td>TCP</td>
<td>salt</td>
<td>Required to accept communication requests from clients. The client initiates the connection, and it stays open to report results back to the Salt master.</td>
</tr>
</tbody>
</table>

5.2.4.5. External Outbound Proxy Ports

External outbound ports must be opened to configure a firewall on the Uyuni Proxy to restrict what the proxy can access.

Opening these ports allows network traffic from the Uyuni Proxy to communicate with external services.

Table 7. External Port Requirements for Uyuni Proxy
### 5.2.4.6. External Client Ports

External client ports must be opened to configure a firewall between the Uyuni Server and its clients.

In most cases, you will not need to adjust these ports.

#### Table 8. External Port Requirements for Uyuni Clients

<table>
<thead>
<tr>
<th>Port number</th>
<th>Direction</th>
<th>Protocol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Inbound</td>
<td>SSH</td>
<td>Required for ssh-push and ssh-push-tunnel contact methods.</td>
</tr>
<tr>
<td>80</td>
<td>Outbound</td>
<td>TCP</td>
<td>Used to reach the server or proxy.</td>
</tr>
<tr>
<td>9090</td>
<td>Outbound</td>
<td>TCP</td>
<td>Required for Prometheus user interface.</td>
</tr>
<tr>
<td>9093</td>
<td>Outbound</td>
<td>TCP</td>
<td>Required for Prometheus alert manager.</td>
</tr>
<tr>
<td>9100</td>
<td>Outbound</td>
<td>TCP</td>
<td>Required for Prometheus node exporter.</td>
</tr>
<tr>
<td>9117</td>
<td>Outbound</td>
<td>TCP</td>
<td>Required for Prometheus Apache exporter.</td>
</tr>
<tr>
<td>9187</td>
<td>Outbound</td>
<td>TCP</td>
<td>Required for Prometheus PostgreSQL.</td>
</tr>
</tbody>
</table>

### 5.2.4.7. Required URLs

There are some URLs that Uyuni must be able to access to register clients and perform updates. In most cases, allowing access to these URLs is sufficient:

- scc.suse.com
- updates.suse.com

If you are using non-SUSE clients you might also need to allow access to other servers that provide specific packages for those operating systems. For example, if you have Ubuntu clients, you will need to be able to access the Ubuntu server.

For more information about troubleshooting firewall access for non-SUSE clients, see [Administration › Troubleshooting](#).

### 5.3. Public Cloud Requirements

This section provides the requirements for installing Uyuni on public cloud infrastructure. We have tested
these instructions on Amazon EC2, Google Compute Engine, and Microsoft Azure, but they should work on other providers as well, with some variation.

Before you begin, here are some considerations:

- The Uyuni setup procedure performs a forward-confirmed reverse DNS lookup. This must succeed in order for the setup procedure to complete and for Uyuni to operate as expected. It is important to perform hostname and IP configuration before you set up Uyuni.
- Uyuni Server and Proxy instances need to run in a network configuration that provides you control over DNS entries, but cannot be accessed from the internet at large.
- Within this network configuration DNS resolution must be provided: `hostname -f` must return the fully qualified domain name (FQDN).
- DNS resolution is also important for connecting clients.
- DNS is dependent on the cloud framework you choose. Refer to the cloud provider documentation for detailed instructions.
- We recommend that you locate software repositories, the server database, and the proxy squid cache on an external virtual disk. This prevents data loss if the instance is unexpectedly terminated. This section includes instructions for setting up an external virtual disk.

### 5.3.1. Network Requirements

When you use Uyuni on a public cloud, you must use a restricted network. We recommend using a VPC private subnet with an appropriate firewall setting. Only machines in your specified IP ranges must be able to access the instance.

Running Uyuni on the public cloud means implementing robust security measures. It is essential to limit, filter, monitor, and audit access to the instance. SUSE strongly advises against a globally accessible Uyuni instance that lacks adequate perimeter security.

To access the Uyuni Web UI, allow HTTPS when configuring the network access controls. This allows you to access the Uyuni Web UI.

In EC2 and Azure, create a new security group, and add inbound and outbound rules for HTTPS. In GCE, check the Allow HTTPS traffic box under the Firewall section.

### 5.3.2. Prepare Storage Volumes

We recommend that the repositories and the database for Uyuni are stored on separate storage devices from the root volume. This will help to avoid data loss and possibly increase performance.

The Uyuni container utilizes default storage locations. These locations should be configured prior to deployment for custom storage. For more information see **Installation-and-upgrade › Container-management**
Do not use logical volume management (LVM) for public cloud installations.

The size of the disk for repositories storage is dependent on the number of distributions and channels you intend to manage with Uyuni. When you attach the virtual disks, they will appear in your instance as Unix device nodes. The names of the device nodes will vary depending on your provider, and the instance type selected.

Ensure the root volume of the Uyuni Server is 100 GB or larger. Add an additional storage disk of 500 GB or more, and choose SSD storage if you can. The cloud images for Uyuni Server use a script to assign this separate volume when your instance is launched.

When you launch your instance, you can log in to the Uyuni Server and use this command to find all available storage devices:

```
hwinfo --disk | grep -E "Device File:"
```

If you are not sure which device to choose, use the `lsblk` command to see the name and size of each device. Choose the name that matches with the size of the virtual disk you are looking for.

You can set up the external disk with the `suma-storage` command. This creates an XFS partition mounted at `/manager_storage` and uses it as the location for the database and repositories:

```
/usr/bin/suma-storage <devicename>
```
Chapter 6. Installation and Deployment

6.1. Server

6.1.1. Deploy

6.1.1.1. Deploy on openSUSE Leap Micro 5.5

6.1.1.1.1. Deployment preparations

In this section, you will gain expertise in setting up and deploying a Uyuni Server. The process encompasses the installation of Podman, Uyuni container utilities, deployment, and then initiating interaction with the container through mgrctl.

This section assumes you have already configured an openSUSE Leap Micro 5.5 host server, whether it is running on a physical machine or within a virtual environment.

6.1.1.1.2. Container Host general requirements

For general requirements, see Installation-and-upgrade › General-requirements.

An openSUSE Leap Micro 5.5 server should be installed from installation media. This procedure is described below.

6.1.1.1.3. Container Host Requirements

For CPU, RAM, and storage requirements, see Installation-and-upgrade › Hardware-requirements.

To guarantee that clients can resolve the FQDN domain name, both the containerized server and the host machines must be linked to a functional DNS server. Additionally, it is essential to ensure correct configuration of reverse lookups.

6.1.1.1.4. Update the host

6.1.1.1.5. Installing Uyuni tools for use with containers

Procedure: Installing Uyuni Tools on openSUSE Leap Micro 5.5

1. On your local host open a terminal window or start up a virtual machine running openSUSE Leap Micro 5.5.
2. Login.
3. Enter the transactional-update shell:
4. Add the following repository to your openSUSE Leap Micro 5.5 server:

   ```
   zypper ar https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/openSUSE_Leap_Micro_5.5/systemsmanagement:Uyuni:Stable:ContainerUtils.repo
   ```

5. Refresh the repository list and accept the key:

   ```
   zypper ref
   ```

6. Install the container tools:

   ```
   zypper in mgradm mgrctl mgradm-bash-completion mgrctl-bash-completion netavark
   ```

7. Exit the transactional shell:

   ```
   transactional update # exit
   ```

8. Reboot the host.

For more information on the Uyuni Container Utilities, see Uyuni Container Utilities.

### 6.1.1.1.6. Deploying an Uyuni container with Podman

**mgradm overview**

Uyuni is deployed as a container using the `mgradm` tool. There are two methods of deploying a Uyuni server as a container. In this section we will focus on basic container deployment.

For information on using a custom configuration file to deploy, see Installation-and-upgrade › Container-management.

For additional information, you can explore further by running `mgradm --help` from the command line.

**Procedure: Deploying an Uyuni container with Podman**

1. From the terminal run the following command as the sudo user or as root.

   ```
   sudo mgradm install podman
   ```
You must deploy the container as sudo or root. The following error will be displayed at the terminal if you miss this step.

```
INF Setting up uyuni network
9:58AM INF Enabling system service
9:58AM FTL Failed to open /etc/systemd/system/uyuni-server.service for writing error="open /etc/systemd/system/uyuni-server.service: permission denied"
```

2. Wait for deployment to complete.

3. Open a browser and proceed to your servers FQDN.

In this section you learned how to deploy an Uyuni Server container.

**Persistent volumes**

Many users will want to specify locations for their persistent volumes.

If you are just testing out Uyuni you do not need to specify these volumes. `mgradm` will setup the correct volumes by default.

Specifying volume locations will generally be used for larger production deployments.

By default `podman` stores its volumes in `/var/lib/containers/storage/volumes/`.

You can provide custom storage for the volumes by mounting disks on this path or the expected volume path inside it such as: `/var/lib/containers/storage/volumes/var-spacewalk`. This is especially important for the database and package mirrors.

For a list of all persistent volumes in the container, see `Installation-and-upgrade › Container-management`.

6.1.1.2. Uyuni Offline Deployment

6.1.2. Install the Server (Legacy)

6.1.2.1. Install Uyuni Server with openSUSE

Uyuni Server can be installed on openSUSE.

For requirements, see `Installation-and-upgrade › Uyuni-install-requirements`.

For more information about the latest version and updates of openSUSE Leap, see `https://doc.opensuse.org/release-notes/`. 
6.1.2.1.1 Install Uyuni on openSUSE Leap

Procedure: Installing openSUSE Leap with Uyuni

1. As the base system, install openSUSE Leap with all available service packs and package updates applied.

2. Configure a resolvable fully qualified domain name (FQDN) with `yast > System > Network Settings > Hostname/DNS`.

3. Set variables to use to create repository as `root`:

   ```
   repo=repositories/systemsmanagement:
   repo=${repo}Uyuni:/Stable/images/repo/Uyuni-Server-POOL-x86_64-Media1/
   ```

4. Add the repository for installing the Uyuni Server software as `root`:

   ```
   zypper ar https://download.opensuse.org/$repo uyuni-server-stable
   ```

5. Refresh metadata from the repositories as `root`:

   ```
   zypper ref
   ```

6. Install the pattern for the Uyuni Server as `root`:

   ```
   zypper in patterns-uyuni_server
   ```

7. Reboot.

   - For more information about the stable version of Uyuni, see https://www.uyuni-project.org/pages/stable-version.html.
   - For more information about the development version of Uyuni, see https://www.uyuni-project.org/pages/devel-version.html.

When the installation is complete, you can continue with Uyuni setup. For more information, see *Installation-and-upgrade > Uyuni-server-setup*.

6.1.3 Setup

6.1.3.1 Uyuni Server Setup

This section covers Uyuni Server setup, using these procedures:

- Start Uyuni setup with YaST
- Create the main administration account with the Uyuni Web UI
- Name your base organization and add login credentials
6.1.3.1.1. Set up Uyuni with YaST (Legacy)

This section will guide you through Uyuni setup procedures.

Procedure: Uyuni Setup

1. Log in to the Uyuni Server and start YaST.
2. In YaST, navigate to Network Services > Uyuni Setup to begin the setup.
3. From the introduction screen select Uyuni Setup > Set up Uyuni from scratch and click [Next] to continue.
4. Enter an email address to receive status notifications and click [Next] to continue. Uyuni can sometimes send a large volume of notification emails. You can disable email notifications in the Web UI after setup, if you need to.
5. Enter your certificate information and a password. Passwords must be at least seven characters in length, and must not contain spaces, single or double quotation marks (‘ or ”), exclamation marks (!), or dollar signs ($). Always store your passwords in a secure location.

   ! You must have the certificate password to set up the Uyuni Proxy.

6. Click [Next] to continue.
7. From the Uyuni Setup > Database Settings screen, enter a database user and password and click [Next] to continue. Passwords must be at least seven characters in length, and must not contain spaces, single or double quotation marks (‘ or ”), exclamation marks (!), or dollar signs ($). Always store your passwords in a secure location.
8. Click [Next] to continue.
9. Click [Yes] to run setup when prompted.
10. When setup is complete, click [Next] to continue. You will see the address of the Uyuni Web UI.
11. Click [Finish] to complete Uyuni setup.

6.1.3.1.2. Create the Main Administration Account

This section covers how to create your organization’s main administration account for Uyuni.

In container-based deployments, the administration account is established as part of the deployment process, rendering this step useful exclusively to legacy installations.
The main administration account has the highest authority within Uyuni. Ensure you keep access information for this account secure.

We recommend that you create lower level administration accounts for organizations and groups. Do not share the main administration access details.

Newer browser versions can block web access to the Uyuni Server FQDN because of HSTS.

Installing the CA certificate from the \pub\ directory via HTTP and importing it to the browser will allow access to the server.

1. On the server, go to http://<server>.example.com/pub/RHN-ORG-TRUSTED-SSL-CERT.
2. Import the certificate file. In the browser settings (for Firefox), open Privacy & Security > Certificates > View Certificates, and import the file.

Procedure: Setting Up the Main Administration Account

1. In your web browser, enter the address for the Uyuni Web UI. This address was provided after you completed setup. For more information, see installation-and-upgrade:uyuni-server-setup.pdf.
2. Log in to the Web UI, navigate to the Create Organization > Organization Name field, and enter your organization name.
3. In the Create Organization > Desired Login and Create Organization > Desired Password fields, enter your username and password.
4. Fill in the Account Information fields including an email for system notifications.
5. Click [Create Organization] to finish creating your administration account.

When you have completed the Uyuni Web UI setup, you are taken to the Home > Overview page.

6.1.3.1.3. Optional: Synchronizing Products from SUSE Customer Center

SUSE Customer Center (SCC) maintains a collection of repositories which contain packages, software and updates for all supported enterprise client systems. These repositories are organized into channels each of which provide software specific to a distribution, release, and architecture. After synchronizing with SCC, clients can receive updates, be organized into groups, and assigned to specific product software channels.

This section covers synchronizing with SCC from the Web UI and adding your first client channel.

For Uyuni, synchronizing products from SUSE Customer Center is optional.

Before you can synchronize software repositories with SCC, you will need to enter organization credentials in Uyuni. The organization credentials give you access to the SUSE product downloads. You
will find your organization credentials in https://scc.suse.com/organizations.

Enter your organization credentials in the Uyuni Web UI:

**Procedure: Entering Organization Credentials**

1. In the SUSE Manager Web UI, navigate to **Main Menu › Admin › Setup Wizard**.
2. In the **Setup Wizard** page, navigate to the **[Organization Credentials]** tab.
3. Click **[Add a new credential]**.
4. Enter a username and password, and click **[Save]**.

A check mark icon is shown when the credentials are confirmed. When you have successfully entered the new credentials, you can synchronize with SUSE Customer Center.

**Procedure: Synchronizing with SUSE Customer Center**

1. In the Uyuni Web UI, navigate to **Admin › Setup Wizard**.
2. From the **Setup Wizard** page select the **[SUSE Products]** tab. Wait a moment for the products list to populate. If you previously registered with SUSE Customer Center a list of products will populate the table. This table lists architecture, channels, and status information. For more information, see **Reference › Admin**.
3. If your SUSE Linux Enterprise client is based on x86_64 architecture scroll down the page and select the check box for this channel now.

- Add channels to Uyuni by selecting the check box to the left of each channel. Click the arrow symbol to the left of the description to unfold a product and list available modules.

- Click [Add Products] to start product synchronization.

After adding the channel, Uyuni will schedule the channel to be synchronized. This can take a long time as Uyuni will copy channel software sources from the SUSE repositories located at SUSE Customer Center to local /var/spacewalk/ directory of your server.
In some environments, transparent huge pages provided by the kernel can slow down PostgreSQL workloads significantly.

To disable transparent huge pages, set the `transparent_hugepage` kernel parameter to `never`. You will also need to open the `/etc/default/grub` file and add or edit the line `GRUB_CMDLINE_LINUX_DEFAULT`. For example:

```
GRUB_CMDLINE_LINUX_DEFAULT="resume=/dev/sda1 splash=silent quiet showopts elevator=none transparent_hugepage=never"
```

To write the new configuration run `grub2-mkconfig -o /boot/grub2/grub.cfg`.

Monitor the channel synchronization process in real-time by viewing channel log files located in the directory `/var/log/rhn/reposync`:

```
tail -f /var/log/rhn/reposync/<CHANNEL_NAME>.log
```

When the channel synchronization process is complete, you can continue with client registration. For more instructions, see `Client-configuration › Registration-overview`.

### 6.1.3.2. Setup Wizard

When you have completed your Uyuni installation, you can use the setup wizard to complete the last few steps. Here you can configure your organization credentials, and SUSE products.

You can access the setup wizard directly by navigating to `Admin › Setup Wizard`.

#### 6.1.3.2.1. Configure Organization Credentials

Your SUSE Customer Center account is associated with the administration account of your organization. You can share your SUSE Customer Center access with other users within your organization. Navigate to the Organization Credentials tab to grant users within your organization access to your SUSE Customer Center account.

Click `[Add a new credential]`, enter the username and password of the user to grant access to, and click `[Save]`. A new credential card is shown for the user you have granted access to. Use these buttons on the card to edit or revoke access:

- Check credential validation status (green tick or red cross icon). To re-check the credential with SCC, click the icon.
- Set the primary credentials for inter-server synchronization (yellow star icon).
• List the subscriptions related to a certain credential (list icon).
• Edit the credential (pencil icon).
• Delete the credential (trash can icon).

6.1.3.2. Configure Products

Your SUSE subscription entitles you to access a range of products. Navigate to the Products tab to browse the products available to you and synchronize Uyuni with SUSE Customer Center.

Filters help you search for products by description or architecture.

The list is organized by product name showing products on top which have a subscription. Freely available products appear at the end of the list. For each product, you can see the architecture it can be used on. Click the arrow next to the product name to see associated channels and extensions. Click the [Channels] icon to see the complete list of channels associated with each product.

For products based on SUSE Linux Enterprise 15 and above, you can choose to only synchronize required packages, or to also include recommended products. Toggle the [include recommended] switch on to synchronize all products, and toggle the switch off to synchronize only required products.

You can further refine which products you want to synchronize by selecting or deselecting individual product.

When you have completed your selection, click [Add products], and click [Refresh] to schedule the synchronization.

Synchronization progress for each product is shown in a progress bar next to the product name. Depending on the products you have chosen, synchronization can take up to several hours. New products will be available for you to use in Uyuni when synchronization is complete.

If your synchronization fails, it could be because of a third party GPG key or your company firewall blocking access to the download server. Please check the notification details for the error. For more information about troubleshooting product synchronization, see Administration › Troubleshooting.

6.1.3.3. Web Interface Setup

To use the Uyuni Web UI, navigate to your Uyuni URL in a browser. Sign in to the Web UI using your Uyuni Administration account.

While you are using the Web UI, click the icon to access the documentation for that section.

The first time you sign in to the Web UI, complete the setup wizard to set your user preferences. You can access the setup wizard at any time by navigating to Admin › Setup Wizard.

After the initial setup is complete, signing in will take you the Home › Overview section. This section contains summary panes that provide important information about your systems.
The Tasks pane provides shortcuts to the most common Web UI tasks.

The Inactive Systems pane shows any clients that have stopped checking in to the Uyuni Server. You will need to check these clients.

The Most Critical Systems pane shows any clients that require software updates. Click the name of a client in the list to be taken to the Systems › System Details section for that client. From this page, you can apply any required updates.

The Recently Scheduled Actions pane shows all recent actions that have been run, and their status. Click the label of an action to see more detail.

The Relevant Security Patches pane shows all available security patches that need to be applied to your clients. It is critical that you apply security patches as soon as possible to keep your clients secure.

The System Groups pane shows any system groups you have created, and if the clients in those groups are fully updated.

The Recently Registered Systems pane shows all clients registered in the past thirty days. Click the name of a client in the list to be taken to the Systems › System Details section for that client.

6.1.3.3.1. Web Interface Navigation

The Uyuni Web UI uses some standard elements to help you navigate. While you are using the Web UI, click the icon to access the documentation for that section.

Top Navigation Bar

The top navigation bar gives access to system-wide functions.

Notifications

The notification bell icon displays the number of unread notification messages in a circle. Click the notification icon to go to Home › Notification Messages.

Search

Click the search magnifying glass icon to open the search box. You can search for systems (clients), packages, patches, or documentation. Click [Search] to go to the relevant Advanced Search page, and see your search results.

Systems Selected

The systems selected icon displays the number of currently selected systems in a circle. Click the systems selected icon to go to Systems › System Set Manager › Overview. Click the eraser icon to unselect all systems. For more information about the system set manager, see Client-configuration › System-set-manager.
User Account

The user account icon is displayed with the name of the currently signed-in user. Click the user account icon to go to Home > User Account > My Account.

Organization

The organization icon is displayed with the name of the currently active organization. Click the organization icon to go to Home > My Organization > Configuration.

Preferences

Click the cogs icon to go to Home > My Preferences.

Sign Out

Click the exit icon to sign out the current user and return to the sign in screen.

If you add a distribution, newly synchronize channels, or register a system to the Uyuni Server, it can take several minutes for it to be indexed and appear in search results. If you need to force a rebuild of the search index, use this command at the command prompt:

```
rhn-search cleanindex
```

Left Navigation Bar

The left navigation bar is the main menu to the Uyuni Web UI.

Expand

If you click the icon or the down-arrow of a menu entry, it expands this part of the menu tree without actually loading a page.

Collapse

To collapse an open part of the menu system, click the up-arrow of a menu entry.

Autoload

If you click the name of a menu entry, the first available page of that menu entry will get loaded and displayed automatically.

Search

Enter a search string in the Search page field to find an entry of the menu tree. Available menu entries depend on the roles of the user.
Only Uyuni Administrators can access these sections:

- Images
- Users
- Admin

**Tables**

Many sections present information in tables. You can navigate through most tables by clicking the back and next arrows above and below the right side of the table. Change the default number of items shown on each page by navigating to Home › My Preferences.

You can filter the content in most tables using the search bar at the top of the table. Sort table entries by clicking on the column header you want to sort by. Click the column header again to reverse the sort.

**Patch Alert Icons**

Patches are represented by three main icons, depending on the type of patch. Icons are coloured either green, yellow, or red, depending on the severity.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔄</td>
<td>The shield icon is a security alert. A red shield is the highest priority security alert.</td>
</tr>
<tr>
<td>🐞</td>
<td>The bug icon is a bug fix alert.</td>
</tr>
<tr>
<td>🡃</td>
<td>The squares icon is an enhancement alert.</td>
</tr>
</tbody>
</table>

Some additional icons are used to give extra information:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔄</td>
<td>The circling arrows icon indicates that applying a patch will require a reboot.</td>
</tr>
<tr>
<td>🗑️</td>
<td>The archive box icon indicates that a patch will have an effect on package management.</td>
</tr>
</tbody>
</table>

**Interface Customization**

By default, the Uyuni Web UI uses the theme appropriate to the product you have installed. You can change the theme to reflect the Uyuni or SUSE Manager colors. The SUSE Manager theme also has a dark option available. To change the theme using the Web UI, navigate to Home › My Preferences and locate the Style Theme section.
Request Timeout Value

As you are using the Web UI, you are sending requests to the Uyuni Server. In some cases, these requests can take a long time, or fail completely. By default, requests will time out after 30 seconds, and a message is displayed in the Web UI with a link to try sending the request again.

You can configure the default timeout value in the `etc/rhn/rhn.conf` configuration file, by adjusting the `web.spa.timeout` parameter. Restart the tomcat service after you change this parameter. Changing this setting to a higher number could be useful if you have a slow internet connection, or regularly perform actions on many clients at once.

6.1.3.4. Public Cloud Setup

Uyuni Server needs to be registered with SUSE Customer Center to receive updates before you can sign in.

You must have set up the storage devices before you run the YaST Uyuni setup procedure. For more information, see Installation-and-upgrade › Pubcloud-requirements.

Follow the cloud providers instructions to SSH into the instance.

6.1.3.4.1. Activate the Public Cloud Module

To use Uyuni on a public cloud instance, you need to activate the public cloud module.

Procedure: Activating the Public Cloud Module

1. On the Uyuni Server, open the YaST management tool, and navigate to Software › Software Repositories.
2. Click [Add] and select Extensions and Modules from Registration Server.
3. In the Available extensions field, select Public Cloud Module.

If you prefer to use the command line, you can add the module with this command:

```
SUSEConnect -p sle-module-public-cloud/{sles-version}.{sp-version-number}/x86_64
```

When the installation procedure has finished, you can check that you have all the required modules. At the command prompt, enter:

```
SUSEConnect --status-text
```

For Uyuni Server on a public cloud, the expected modules are:
6.1.3.4.2. Complete Setup in the Web UI

Open the Uyuni Web UI with a web browser, using an address like this:

https://<public_IP>

Sign in to the Uyuni Web UI with the administrator account. The username and password varies depending on your provider.

Table 9. Default Administrator Account Details

<table>
<thead>
<tr>
<th>Provider</th>
<th>Default Username</th>
<th>Default Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon EC2</td>
<td>admin</td>
<td>&lt;instance-ID&gt;</td>
</tr>
<tr>
<td>Google Compute Engine</td>
<td>admin</td>
<td>&lt;instance-ID&gt;</td>
</tr>
<tr>
<td>Microsoft Azure</td>
<td>admin</td>
<td>&lt;instance-name&gt;-suma</td>
</tr>
</tbody>
</table>

You can retrieve the instance name or ID from the public cloud instance web console, or from the command prompt:

Amazon EC2:

```
ec2metadata --instance-id
```

Google Compute Engine:

```
gcemetadata --query instance --id
```

Microsoft Azure:

```
azuremetadata --compute --name
```

When you sign in to the administrator account for the first time, you are given an automatically generated organization name. Change this by navigating to Admin > Organizations, and editing the organization name.
When you have signed in to the administrator account for the first time, change the default password to protect your account.

For more information about setting up your Uyuni Server, see Installation-and-upgrade > Server-setup.

6.1.3.4.3. Adding Products and Starting Repositories Synchronization

Use the Uyuni Web UI to add the required software products, and schedule a repository synchronization. The best way to do this is to navigate to Admin > Setup Wizard and follow the prompts.

For more information about the setup wizard, see Installation-and-upgrade > Setup-wizard.

If you are intending to register Ubuntu or Red Hat Enterprise Linux clients, you need to set up custom repositories and channels. For more information, see the relevant section in Client-configuration > Registration-overview.

To synchronize your channels, navigate to Software > Manage > Channels. Click each channel you created, navigate to the Repositories > Sync tab, and click [Sync Now]. You can also schedule synchronization from this screen.

Before bootstrapping a client, make sure all the selected channels for that product are synchronized.

Synchronization can sometimes take several hours, in particular for openSUSE, SLES ES, and RHEL channels.

When you have your Uyuni Server set up, you are ready to start registering clients. For more information about registering clients on a public cloud, see Client-configuration > Clients-pubcloud.

6.1.3.5. Connect PAYG Instance

In the three major public cloud providers (AWS, GCP and Azure), SUSE:

- provides customized PAYG product images for SLES, SLES for SAP, etc.
- operates per-region RMT Servers mirroring repositories for products available as PAYG

This document describes how to connect existing PAYG instance to Uyuni server, and gives basic information about credentials collection from the instance. The goal of this connection is to extract authentication data so the Uyuni Server can connect to a cloud RMT host. Then the Uyuni Server has access to products on the RMT host that are not already available with the SUSE Customer Center organization credentials.

Before using the PAYG feature ensure:

- The PAYG instance is launched from the correct SUSE product image (for example, SLES, SLES for SAP, or SLE HPC) to allow access to the desired repositories
• Uyuni Server has connectivity to the PAYG instance (ideally in the same region) either directly or via a bastion

• A basic SUSE Customer Center account is required. Enter your valid SUSE Customer Center credentials in Admin › Setup Wizard › Organization Credentials. This account is required for accessing the Uyuni client tools for bootstrapping regardless of PAYG instances.

• If you bootstrap the PAYG instance to SUSE Manager, SUSE Manager will disable its PAYG repositories then add repositories from where it mirrored the data from the RMT server. The final result will be PAYG instances acquiring the same repositories from the RMT servers but through the SUSE Manager server itself. Of course repositories can still be setup primarily from SCC.

6.1.3.5.1. Connecting PAYG Instance

Procedure: Connecting new PAYG Instance

1. In the Uyuni Web UI, navigate to Admin › Setup Wizard › PAYG, and click [Add PAYG].
2. Start with the page section PAYG connection Description.
3. In the Description field, add the description.
4. Move to the page section Instance SSH connection data.
5. In the Host field, enter the instance DNS or IP address to connect from Uyuni.
6. In the SSH Port field, enter the port number or use default value 22.
7. In the User field, enter the username as specified in the cloud.
8. In the Password field, enter the password.
9. In the SSH Private Key field, enter the instance key.
10. In the SSH Private Key Passphrase field, enter the key passphrase.

⚠️ Authentication keys must always be in PEM format.

If you are not connecting directly to the instance, but via SSH bastion, proceed with Procedure: Adding SSH Bastion Connection Data.

Otherwise, continue with Procedure: Finishing PAYG Connecting.

Procedure: Adding SSH Bastion Connection Data

1. Navigate to the page section Bastion SSH connection data.
2. In the Host field, enter the bastion hostname.
3. In the SSH Port field, enter the bastion port number.
4. In the User field, enter the bastion username.
5. In the Password field, enter the bastion password.
6. In the SSH Private Key field, enter the bastion key.
7. In the SSH Private Key Passphrase field, enter the bastion key passphrase.
Complete the setup process with Procedure: Finishing PAYG Connecting.

**Procedure: Finishing PAYG Connecting**

1. To complete adding new PAYG connection data, click **Create**.
2. Return to PAYG connection data Details page. The updated connection status is displayed on the top section named **Information**.
3. Connection status is shown in Admin > Setup Wizard > Pay-as-you-go screen too.
4. If the authentication data for the instance are correct, the column **Status** shows "Credentials successfully updated."

If the invalid data are entered at any point, the newly created instance is shown in Admin > Setup Wizard > PAYG, with column **Status** displaying error message.

As soon as the authentication data is available on the server, the list of available products is updated.

Available products are all versions of the same product family and architecture as the one installed in the PAYG instance. For example, if the instance has the SLES 15 SP1 product installed, SLES 15 SP2, SLES 15 SP3, SLES 15 SP4 and SLES 15 SP5 are automatically shown in Admin > Setup Wizard > Products.

Once the products are shown as available, the user can add a product to Uyuni by selecting the checkbox next to the product name and clicking **Add product**.

After the success message you can verify the newly added channels in the Web UI, by navigating to Software > Channel List > All.

To monitor the syncing progress of each channel, check the log files in the /var/log/rhn/reposync directory on the Uyuni Server.

If a product is provided by both the PAYG instance and one of the SUSE Customer Center subscriptions, it will appear only once in the products list.

When the channels belonging to that product are synced, the data might still come from the SCC subscription, and not from the Pay-As-You-Go instance.

**Deleting the Instance Connection Data**

The following procedure describes how to delete SSH connection data of the instance.

**Procedure: Deleting Connection Data to Instance**

1. Open Admin > Setup Wizard > PAYG.
2. Find the instance on the list of existing instances.
3. Click on the instance details.
4. Select [Delete] and confirm your selection.

5. You are returned to the list of instances. The one that was just deleted is no longer shown.

6.1.3.5.2. Instance Credential Collect Status

Uyuni server uses credentials collected from the instance to connect to the RMT server and to download the packages using reposync. These credentials are refreshed every 10 minutes by taskomatic using the defined SSH connection data. Connection to RMT server always uses the last known authentication credentials collected from the PAYG instance.

The status of the PAYG instance credentials collect is shown in the column Status or on the instance details page. When the instance is unreachable, the credential update process will fail and the credentials will become invalid after the second failed refresh. Synchronization of channels will fail when the credentials are invalid. To avoid this keep the connected instances running.

PAYG instance remains connected to Uyuni server unless SSH connection data is explicitly deleted. To delete the SSH connection data to the instance, use Procedure: Deleting Connection Data to Instance.

PAYG instance may not be accessible from the Uyuni server at all times.

- If the instance exists, but is stopped, the last known credentials will be used to try to connect to the instance. How long the credentials remain valid depends on the cloud provider.
- If the instance no longer exists, but is still registered with SUMA, its credentials are no longer valid and the authentication will fail. The error message is shown in the column Status.

The error message only indicates that the instance is not available. Further diagnostics about the status of the instance needs to be done on the cloud provider.

Any of the following actions or changes in the PAYG instance will lead to credentials failing: * removing zypper credentials files * removing the imported certificates * removing cloud-specific entries from /etc/hosts

6.1.3.5.3. Registering PAYG System as a Client

You can register a PAYG instance from where you harvest the credentials as a Salt client. The instance needs to have a valid cloud connection registered, otherwise it will not have access to channels. If the user removes the cloud packages, the credentials harvesting may stop working.

First set up the PAYG instance to collect authentication data, so it can synchronize the channels.

The rest of the process is the same as for any non-public-cloud client and consists of synchronizing channels, automatic bootstrap script creation, activation key creation and starting the registration.

For more about registering clients, see Client-configuration › Registration-overview.
6.1.3.4. Troubleshooting

Checking the credentials

- If the script fails to collect the credentials, it should provide a proper error message in the logs and in the Web UI.
- If the credentials are not working, `reposync` should show the proper error.

Using `registercloudguest`

- Refreshing or changing the `registercloudguest` connection to the public cloud update infrastructure should not interfere with the credentials usage.
- Running `registercloudguest --clean` will cause problems if no new cloud connection is registered with the cloud guest command.

6.1.4. Migration

6.1.4.1. Migrating the Uyuni server to a containerized environment

To migrate a regular Uyuni server to a container, a new machine is required.

- ≈ It is not possible to perform an in-place migration.

The original server is referred to as the source server, while the newly set-up machine is designated as the destination server.

The migration procedure currently does not include any hostname renaming functionality. Consequently, the fully qualified domain name (FQDN) on the new server will remain identical to that on the source server. Therefore, following migration, it will be necessary to manually adjust the DNS records to point to the new server.

Procedure: Initial preparation

1. Stop the source server:

   `spacewalk-service stop`

2. Stop the source services:

   `systemctl stop postgresql`

Procedure: Preparing the SSH connection

1. The SSH configuration and agent should be ready on the host for a passwordless connection to the source server.
To establish a passwordless connection, the migration script relies on an SSH agent running on the server. If one isn't active yet, initiate it by running `eval $(ssh-agent)`. Then, add the SSH key to the running agent with `ssh-add /path/to/the/private/key`. You'll be prompted to enter the password for the private key during this process.

2. The migration script only uses the source server fully qualified domain name in the SSH command.

3. This means that every other configuration required to connect needs to be defined in the ~/.ssh/config file.

6.1.4.1.1. Prepare for Kubernetes

Before executing the migration command with `mgradm migrate`, it's essential to predefine **Persistent Volumes**, especially considering that the migration job initiates the container from scratch. Please consult the installation section for comprehensive guidance on preparing these volumes.

See: [Installation-and-upgrade › Container-management](#)

6.1.4.1.2. Migrating

Execute the following command to install a new Uyuni server, replacing `<Uyuni.source.fqdn>` with the appropriate FQDN of the source server:

```
mgradm migrate podman <{productname}.source.fqdn>
```

or

```
mgradm migrate kubernetes <{productname}.source.fqdn>
```

6.2. Proxy

6.2.1. Deploy

6.2.1.1. Containerized Uyuni Proxy Setup

Once container host for Uyuni Proxy containers is prepared, setup of containers require few additional steps to finish configuration.

1. Generate Uyuni Proxy configuration archive file
2. Transfer configuration archive to the container host prepared in installation step and extract it
3. Start the proxy services with `mgrpxy`
6.2.1.1. Create and generate Uyuni Proxy configuration

Configuration of Uyuni Proxy is generated by Uyuni Server and this configuration generation is required to be done for each containerized proxy. There are two ways how to generate Uyuni configuration: use the Web UI or the `spacecmd` command.

**Procedure: Generating Of Container Services Configuration using Web UI**

1. In the Web UI, navigate to `Systems > Proxy Configuration` and fill the required data:
2. In the **Proxy FQDN** field type fully qualified domain name for the proxy.
3. In the **Parent FQDN** field type fully qualified domain name for the Uyuni Server or another Uyuni Proxy.
4. In the **Proxy SSH port** field type SSH port on which SSH service is listening on Uyuni Proxy. Recommended is to keep default 8022.
5. In the **Max Squid cache size [MB]** field type maximal allowed size for Squid cache. Typically this should be at most 60% of available storage for the containers.
6. In the **SSL certificate** selection list choose if new server certificate should be generated for Uyuni Proxy or an existing one should be used. You can consider generated certificates as Uyuni builtin (self signed) certificates.

   Depending on the choice then provide either path to signing CA certificate to generate a new certificate or path to an existing certificate and its key to be used as proxy certificate.

   The CA certificates generated on the server are stored in the `/root/ssl-build` directory.

   For more information about existing or custom certificates and the concept of corporate and intermediate certificates, see `Administration > Ssl-certs-imported`.

7. Click **[Generate]** to register new proxy FQDN in Uyuni Server and generate configuration archive with details for container host.
8. After a few moments you are presented with file to download. Save this file locally.
## Procedure: Generating Of Container Services Configuration using spacecmd command

1. In the console run following command:

   ```bash
   spacecmd proxy_container_config_generate_cert -- <proxy_fqdn> <parent_fqdn> <squid_max_cache> <admin_email>
   ```

2. Answer questions presented by script, namely Uyuni credentials and CA password.

   This will generate file `config.tar.gz` with configuration for the Uyuni Proxy containers.

   For more information about `spacecmd` container proxy generation, see [Reference › Spacecmd](#).

If a Proxy FQDN is used to generate Uyuni Proxy container configuration that is not a registered minion, a new system entry will appear in system list. This new entry will be shown under previously entered Proxy FQDN value and will be of Foreign system type.

### 6.2.1.1.2. Transfer Uyuni Proxy configuration

Both `spacecmd` command and Web UI ways generate a configuration archive. This archive needs to be made available on container host.

Transfer this generated archive to the container host.
For installation instructions to use the archive to get the proxy containers, see Installation-and-upgrade › Container-deployment.

6.2.1.1.3. Start Uyuni Proxy containers

Container can now be started with the `mgrpxy` command:

**Listing 1. Procedure: Start Uyuni Proxy containers**

```
mgrpxy start uyuni-proxy-pod
```

Check if all containers started up as expected by calling

```
podman ps
```

Five Uyuni Proxy containers should be present:

- proxy-salt-broker
- proxy-httpd
- proxy-tftpd
- proxy-squid
- proxy-ssh

And should be part of `proxy-pod` container pod.

6.2.1.2. Install containerized Uyuni Proxy

Only openSUSE Leap 15.3 and newer are supported to be used as container host for Uyuni Proxy containers.

6.2.1.2.1. Container host requirements

**Table 10. Proxy Container host hardware requirements**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Details</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Minimum 2 dedicated 64-bit CPU cores</td>
<td></td>
</tr>
<tr>
<td>RAM</td>
<td>Test Server</td>
<td>Minimum 2 GB</td>
</tr>
<tr>
<td></td>
<td>Production Server</td>
<td>Minimum 8 GB</td>
</tr>
<tr>
<td>Disk Space</td>
<td></td>
<td>Minimum 100 GB</td>
</tr>
</tbody>
</table>

**Table 11. Proxy Container host software requirements**
6.2. Proxy

<table>
<thead>
<tr>
<th>Software</th>
<th>Details</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Method</td>
<td>Salt</td>
<td>Host must be configured as a Salt client</td>
</tr>
</tbody>
</table>

To ensure that domain name of the Uyuni Server can be resolved by the clients:
* Both container proxy and client machines must be connected to a DNS server
* Reverse lookup must work

6.2.1.2.2. Install container services on the host system

Container host to be used as a base for Uyuni Proxy containers needs to be first registered as a client to the Uyuni Server.

For more information about registering client to the Uyuni Server, see Client-configuration › Registration-overview.

Uyuni Proxy containers are using podman and systemd to run and manage all proxy containers.

First step is to install the mgrpxy utility provided by the package of the same name.

The mgrpxy package is available in the container utils repository: pick the one matching the distribution in: https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/.

To install them run:

```markdown
zypper in helm mgrpxy
```

Procedure: Installation of container utility tool mgrpxy for Uyuni Proxy

1. Assign Containers Module software channel to the container host in the Uyuni. For more information about assigning software channels to the system, see Administration › Channel-management.
2. Log in as root on the container host.
3. Manually install mgrpxy package:

```markdown
zypper install mgrpxy
```

6.2.1.2.3. Install Uyuni Proxy containers

Uyuni Proxy containers require some volumes to be mounted for long term storage. Those volumes are automatically created by podman and can be listed using the podman volume ls command. By default, podman stores the files of the volumes in /var/lib/containers/storage/volumes. The volumes are named:
• uyuni-proxy-squid-cache
• uyuni-proxy-rhn-cache
• uyuni-proxy-tftpboot

To override default volume settings, create the volumes prior to the first start of the pod using the `podman volume create` command.

To install the systemd service starting the Uyuni proxy, run the `mgrpxy install podman /path/to/config.tar.gz` command.

It is possible to add custom arguments passed to podman container pod with the one or more `--podman-arg` parameters to the install command.

It is possible to modify the tag to use for container images with the `--tag=latest` parameter to the install command.

⚠️ Changing the containers images and version parameters is dangerous and can cause a non-functional system.

**Using a custom container image for a service**

By default, the Uyuni Proxy suite is set to use the same image version and registry path for each of its services. However, it is possible to override the default values for a specific service using the install parameters ending with `-tag` and `-image`.

For example, use it like this:

```
mgrpxy install podman --httpd-tag 0.1.0 --httpd-image registry.opensuse.org/uyuni/proxy-httpd /path/to/config.tar.gz
```

It adjusts the configuration file for the httpd service, where `registry.opensuse.org/uyuni/proxy-httpd` is the image to use and `0.1.0` is the version tag, before restarting it.

To reset the values to defaults, run the install command again without those parameters:

```
mgrpxy install podman /path/to/config.tar.gz
```

This command first resets the configuration of all services to the global defaults and then reloads it.

**6.2.1.2.4. Allow network access for provided services on container host firewall**

Uyuni Proxy containers work as so called node-port service. This means proxy container pod shares container host network TCP and UDP port space. For this reason container host firewall must be configured to accept incoming traffic on ports used by Uyuni Proxy containers. Those ports are:
• 69/UDP - TFTP
• 80/TCP - HTTP
• 443/TCP - HTTPS
• 4505/TCP - Salt
• 4506/TCP - Salt
• 8022/TCP - SSH

Continue with setting up the installed Uyuni Proxy as a containers at [Installation-and-upgrade ↪ Container-deployment](Installation-and-upgrade › Container-deployment).

### 6.2.1.3. Containerized Proxy Deployment Using Internal Registry

It is possible to deploy containerized images in an environment without an internet connection. In such case, the images can be copied from SUSE registry to an internal registry, or saved to a tar file.

#### 6.2.1.3.1. Image Copying from SUSE Registry to Internal Registry

Machines must have access to [registry.suse.com](registry.suse.com).

**Procedure: Deploying Proxy from an Internal Image Registry**

1. On a machine with access to registry.suse.com install skopeo:

   ```bash
   zypper in skopeo
   
   *This can be Uyuni Server.*
   
   2. Copy images between registries:

   ```bash
   for image in httpd salt-broker squid ssh tftpd; do
docker://<your_server>/registry.suse.com/suse/manager/4.3/proxy-$image
   done
   skopeo copy docker://k8s.gcr.io/pause:latest
docker://<your_server>/k8s.gcr.io/pause:latest
   
   *For every skopeo command add --dest-tls-verify=false if the registry is not secured.*
   
   3. If the registry is unsecured, for example not configured with SSL, add the registry domain to the section registries.insecure on the containerized proxy virtual machine by editing:

   `/etc/containers/registries.conf`
4. Before starting the pod, point the Podman where to get the pause image from on the internal registry:

```
echo -e '[engine]\ninfra_image = 
"<your_server>/pause:latest"'>>/etc/containers/containers.conf
```

5. To start using the images from the internal registry please adapt the NAMESPACE value in file /etc/sysconfig/uyuni-proxy-systemd-services.config.

For the k3s deployment, add `--set repository=<your_server>` to the helm install command line.

### 6.2.1.3.2. Air-gapped Solution for Podman

This example illustrates deployment of containerized image on a machine with no access to internet.

**Procedure: Deploying Air-gapped Proxy**

1. Before starting the pod, point the Podman where to get the pause image from on the internal registry:

```
echo -e '[engine]\ninfra_image = 
"<your_server>/pause:latest"'>>/etc/containers/containers.conf
```

This command does not work on SLE 15 SP3 and earlier container hosts.

2. On a machine with internet access run:

```
for image in httpd salt-broker squid ssh tftpd; do
    podman pull registry.suse.com/suse/manager/4.3/proxy-$image
done
podman pull k8s.gcr.io/pause

podman save -m -o proxy-images.tar \
    k8s.gcr.io/pause \ 
    registry.suse.com/suse/manager/4.3/proxy-httpd \ 
    registry.suse.com/suse/manager/4.3/proxy-salt-broker \ 
    registry.suse.com/suse/manager/4.3/proxy-squid \ 
    registry.suse.com/suse/manager/4.3/proxy-ssh \ 
    registry.suse.com/suse/manager/4.3/proxy-tftpd
```

For the k3s deployment, add `--set repository=<your_server>` to the helm install command line.

3. Transfer the `proxy-images.tar` to the air-gapped proxy.

4. To make images available to be started when needed, run the command:
6.2.1.4. Install Containerized Uyuni Proxy on k3s

6.2.1.4.1. Installing k3s

On the container host machine, install k3s (replace <K3S_HOST_FQDN> with the FQDN of your k3s host):

```bash
podman load -i proxy-images.tar
```

6.2.1.4.2. Installing tools

The installation requires the mgrpxy and helm packages.

The mgrpxy package is available in the container utils repository: pick the one matching the distribution in: [https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/](https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/).

To install them run:

```bash
zypper in helm mgrpxy
```

6.2.1.4.3. Deploying the Uyuni proxy helm chart

To configure the storage of the volumes to be used by the Uyuni Proxy pod, define persistent volumes for the following claims. If you do not customize the storage configuration, k3s will automatically create the storage volumes for you.

The persistent volume claims are named:

- squid-cache-pv-claim
- /package-cache-pv-claim
- /tftp-boot-pv-claim

Create the configuration for the Uyuni Proxy as documented in [Installation-and-upgrade > Container-deployment](https://kubernetes.io/docs/concepts/storage/persistent-volumes/). Copy the configuration.tar.gz file and then install:

```bash
mgrpxy install kubernetes /path/to/config.tar.gz
```

For more information see [https://kubernetes.io/docs/concepts/storage/persistent-volumes/](https://kubernetes.io/docs/concepts/storage/persistent-volumes/) (kubernetes) or [https://rancher.com/docs/k3s/latest/en/storage/](https://rancher.com/docs/k3s/latest/en/storage/) (k3s) documentation.
6.2.2. Install the Proxy

6.2.2.1. Install Uyuni Proxy with openSUSE Leap

Uyuni Proxy can be installed on openSUSE Leap 15.5.

Procedure: Installing openSUSE Leap with Uyuni Proxy

1. Install openSUSE Leap and apply all package updates available.

2. Configure a resolvable fully qualified domain name (FQDN) with `yast` > `System` > `Network Settings` > `Hostname/DNS`.

3. Add the repository with the Uyuni Proxy software. As `root` enter:

   ```
   repo=repositories/systemsmanagement:/
   repo=${repo}Uyuni:/Stable/images/repo/Uyuni-Proxy-POOL-x86_64-Media1/
   zypper ar https://download.opensuse.org/$repo uyuni-proxy-stable
   ```

4. Refresh metadata from the repositories. As `root` enter:

   ```
   zypper ref
   ```

5. Install the pattern for the Uyuni Proxy: As `root` enter:

   ```
   zypper in patterns-uyuni_proxy
   ```

6. Reboot the Uyuni Proxy.

   ◦ For more information about the stable version of Uyuni, see https://www.uyuni-project.org/pages/stable-version.html.

   ◦ For more information about the development version of Uyuni, see https://www.uyuni-project.org/pages/devel-version.html.

When the installation is complete, you can continue with Uyuni setup. For more information, see `Installation-and-upgrade` > `Uyuni-proxy-registration`.

6.2.3. Setup

6.2.3.1. Uyuni Proxy Registration

Proxy systems are registered as clients using bootstrap script or Web UI.

This procedure describes software channel setup and registering the installed proxy as the Uyuni client, using an activation key.

Procedure: Registering the Proxy
1. On the Uyuni Server, create openSUSE Leap and the Uyuni Proxy channels with the `spacewalk-common-channels` command. `spacewalk-common-channels` is part of the `spacewalk-utils` package:

```
spacewalk-common-channels \
opensuse_leap15_5 \
opensuse_leap15_5-non-oss \
opensuse_leap15_5-non-oss-updates \
opensuse_leap15_5-updates \
opensuse_leap15_5-backports-updates \
opensuse_leap15_5-sle-updates \
uyuni-proxy-stable-leap-155
```

Instead of `uyuni-proxy-stable-leap-155` you can also try `uyuni-proxy-devel-leap` which is the current development version.

Before you can select the correct child channels while creating the activation key, ensure you have properly synchronized the openSUSE Leap channel with all the needed child channels and the Uyuni Proxy channel.

2. Create an activation key with openSUSE Leap as a base channel and the other channels as child channels. For more information about activation keys, see `Client-configuration › Activation-keys`.

3. Create a bootstrap script for the proxy, and adjust it. Add the GPG key to the `ORG_GPG_KEY=` parameter.

4. Bootstrap the client using the script. For more information, see `Client-configuration › Registration-bootstrap`.

5. Navigate to `Salt › Keys` and accept the key. When the key is accepted, the new proxy will show in `Systems › Overview` in the Recently Registered Systems section.

6. Alternatively, in the Uyuni Web UI, navigate to `System › Bootstrapping`.

7. Navigate to `System Details › Software › Software Channels`, and check that the proxy channel is selected.

For setting up a registered Uyuni Proxy, see `uyuni-proxy-setup.pdf`.

### 6.2.3.2. Uyuni Proxy Setup

Uyuni Proxy requires additional configuration.

#### 6.2.3.2.1. Install the `uyuni_proxy` pattern

Check that the Proxy pattern is installed correctly. This step is part of `Installation-and-upgrade › Install-proxy-uyuni`. To verify a successful installation, on the server select the `pattern_uyuni_proxy` package for installation.

The salt-broker service will be automatically started after installation is complete. This service forwards
Salt interactions to the Uyuni Server.

**Proxy Chains**

It is possible to arrange proxies in a chain. In such a case, the upstream proxy is named **parent**.

Make sure the TCP ports 4505 and 4506 are open on the proxy. The proxy must be able to reach the Uyuni Server or a parent proxy on these ports.

**6.2.3.2.2. Copy Server Certificate and Key**

The proxy will share some SSL information with the Uyuni Server. Copy the certificate and its key from the Uyuni Server or the parent proxy.

As root, enter the following commands on the proxy using your Uyuni Server or parent Proxy (named PARENT):

```
mkdir -m 700 /root/ssl-build
cd /root/ssl-build
scp root@PARENT:/root/ssl-build/RHN-ORG-PRIVATE-SSL-KEY .
scp root@PARENT:/root/ssl-build/RHN-ORG-TRUSTED-SSL-CERT .
scp root@PARENT:/root/ssl-build/rhn-ca-openssl.cnf .
```

To keep the security chain intact, the Uyuni Proxy functionality requires the SSL certificate to be signed by the same CA as the Uyuni Server certificate. Using certificates signed by different CAs for proxies and server is not supported.

**6.2.3.2.3. Run configure-proxy.sh**

The `configure-proxy.sh` script finalizes the setup of your Uyuni Proxy.

Execute the interactive `configure-proxy.sh` script. Pressing **Enter** without further input will make the script use the default values provided between brackets []. Here is some information about the requested settings:

**Uyuni Parent**

The Uyuni parent can be either another proxy or the Uyuni Server.

**HTTP Proxy**

A HTTP proxy enables your Uyuni proxy to access the Web. This is needed if direct access to the Web is prohibited by a firewall.

**Traceback Email**

An email address where to report problems.
Use SSL
For safety reasons, press Y.

Do You Want to Import Existing Certificates?
Answer N. This ensures using the new certificates that were copied previously from the Uyuni server.

Organization
The next questions are about the characteristics to use for the SSL certificate of the proxy. The organization might be the same organization that was used on the server, unless of course your proxy is not in the same organization as your main server.

Organization Unit
The default value here is the proxy’s hostname.

City
Further information attached to the proxy’s certificate.

State
Further information attached to the proxy’s certificate.

Country Code
In the country code field, enter the country code set during the Uyuni installation. For example, if your proxy is in the US and your Uyuni is in DE, enter DE for the proxy.

The country code must be two upper case letters. For a complete list of country codes, see https://www.iso.org/obp/ui/#search.

Cname Aliases (Separated by Space)
Use this if your proxy can be accessed through various DNS CNAME aliases. Otherwise it can be left empty.

CA Password
Enter the password that was used for the certificate of your Uyuni Server.

Do You Want to Use an Existing SSH Key for Proxying SSH-Push Salt Minion?
Use this option if you want to reuse a SSH key that was used for SSH-Push Salt clients on the server.

If parts are missing, such as CA key and public certificate, the script prints commands that you must execute to integrate the needed files. When the mandatory files are copied, run configure-proxy.sh again. If you receive an HTTP error during script execution, run the script again.

configure-proxy.sh activates services required by Uyuni Proxy, such as squid, apache2, salt-broker, and jabberd.

To check the status of the proxy system and its clients, click the proxy system’s details page on the
6.2.3.2.4. Enable PXE Boot

Synchronize Profiles and System Information

To enable PXE boot through a proxy, additional software must be installed and configured on both the Uyuni Proxy and the Uyuni Server.

1. On the Uyuni Proxy, install the `susemanager-tftpsync-recv` package:
   
   ```bash
   zypper in susemanager-tftpsync-recv
   ```

2. On the Uyuni Proxy, run the `configure-tftpsync.sh` setup script and enter the requested information:
   
   ```bash
   configure-tftpsync.sh
   ```

   You need to provide the hostname and IP address of the Uyuni Server and the proxy. You also need to enter the path to the tftpboot directory on the proxy.

3. On the Uyuni Server, install `susemanager-tftpsync`:
   
   ```bash
   zypper in susemanager-tftpsync
   ```

4. On the Uyuni Server, run `configure-tftpsync.sh`. This creates the configuration, and uploads it to the Uyuni Proxy:
   
   ```bash
   configure-tftpsync.sh FQDN_of_Proxy
   ```

5. Start an initial synchronization on the Uyuni Server:
   
   ```bash
   cobbler sync
   ```

   It can also be done after a change within Cobbler that needs to be synchronized immediately. Otherwise Cobbler synchronization will run automatically when needed. For more information about PXE booting, see Client-configuration › Autoinst-pxeboot.

Configure DHCP for PXE through Proxy

Uyuni uses Cobbler for client provisioning. PXE (tftp) is installed and activated by default. Clients must be able to find the PXE boot on the Uyuni Proxy using DHCP. Use this DHCP configuration for the zone
which contains the clients to be provisioned:

```plaintext
next-server: <IP_Address_of_Proxy>
filename: "pxelinux.0"
```

6.2.3.2.5. Replace the Uyuni Proxy

A proxy does not contain any information about the clients that are connected to it. Therefore, a proxy can be replaced by a new one at any time. The replacement proxy must have the same name and IP address as its predecessor.

Shut down the old proxy, and leave it installed while you prepare the replacement. Create a reactivation key for this system and then register the new proxy using the reactivation key. If you do not use the reactivation key, you will need to re-register all the clients against the new proxy.

The reactivation key is only needed if you do not want to lose the history of the machine. If you do not use a reactivation key, the replacement proxy will become a "new" one with a new ID.

Procedure: Replacing a Proxy and Keeping the Clients Registered

1. Before starting the actual migration procedure, save the data from the old proxy, if needed. Consider copying important or manually created data to a central place that can also be accessed by the new proxy.

2. Shut down the proxy.

3. Deploy a new Uyuni Proxy.

4. In the Uyuni Web UI, select the newly installed Uyuni Proxy, and delete it from the systems list.

5. In the Web UI, create a reactivation key for the old proxy system: On the System Details tab of the old proxy click Reactivation. Click Generate New Key, and make a note of the new key, as you will need it later. For more information about reactivation keys, see Reference › Systems.

6. OPTIONAL: After the installation of the new proxy, you might also need to:
   - Copy the centrally saved data to the new proxy system
   - Install any other needed software
   - Set up TFTP synchronization if the proxy is used for autoinstallation

During the installation of the proxy, clients will not be able to reach the Uyuni Server. After you have deleted a proxy, the systems list can be temporarily incorrect. All clients that were previously connected to the proxy will show as being directly connected to the server instead. After the first successful operation on a client, such as execution of a remote command or installation of a package or patch, this information will automatically be corrected. This may take some hours.
Chapter 7. Upgrade

Updated: 2024-04-29

Uyuni has three main components, all of which need regular updates. This guide covers updating the Uyuni Server, Proxy, and clients, as well as some underlying components, such as the database.

It is possible to automate some of the upgrades, but others need to be performed manually.

This guide is not intended to be read cover to cover. Instead, navigate to the component you want to upgrade, then identify the versions you are upgrading from and to.

Uyuni uses an YYYY.MM versioning schema suitable for rolling releases.

If you are upgrading the Uyuni Server, see Installation-and-upgrade › Server-intro-uyuni.

If you are upgrading the Uyuni Proxy, see Installation-and-upgrade › Proxy-intro.

If you are upgrading clients, see Client-configuration › Client-upgrades.

7.1. Upgrade the Server

Uyuni uses a rolling release versioning schema. Check the release notes for information about which upgrade strategy to use to upgrade to the next version:

Minor Upgrades

You can consider minor upgrades as regular upgrades. For more information, see Installation-and-upgrade › Server-minor-upgrade-uyuni.

Major Upgrades

You can consider major upgrades as special upgrades. In this case components such as the base operating system, Salt, or the PostgreSQL database will be upgraded. For more information, see Installation-and-upgrade › Server-major-upgrade-uyuni.

Server - Minor Upgrade

Several times a year, the Uyuni team releases minor upgrades of the Uyuni Server. These updates address bug fixes and feature improvements, and sometimes include new features.

Some additional manual steps might be required, and this information is only available in the release notes. For more information about such a major upgrade, see Installation-and-upgrade › Server-major-upgrade-uyuni.

For information about your upgrade, see the release notes at https://www.uyuni-project.org/pages/stable-version.html.

Performing a minor upgrade is similar to installing operating system package updates.

Procedure: Updating Packages on the Uyuni Server

By default, several update repositories are configured and enabled for the Uyuni Server. New and updated packages become available automatically.

It is recommended you make a backup of the server before upgrading. For more information about backing up Uyuni, see Administration › Backup-restore.

1. On the Uyuni Server, at the command prompt, as root, stop the spacewalk services:

   spacewalk-service stop

2. Refresh software repositories:

   zypper ref

3. Update new packages: (Repeat this if prompted by zypper)

   zypper up

Uyuni is different from SUSE Manager in this step. SUSE Manager uses zypper patch, but Uyuni requires zypper up.

+  

1. If zypper reports that the Uyuni package will not be upgraded, run the command manually:
zypper install Uyuni-Server-release

2. Restart the spacewalk services:

spacewalk-service start

Reboot the server if a patch update recommends rebooting.

- By default, zypper refreshes the repository every ten minutes (see repo.refresh.delay in /etc/zypp/zypp.conf). If autorefresh is disabled, run zypper ref to refresh all repositories.

- Starting with Uyuni 2020.04 spacewalk-schema-upgrade is not needed anymore.

- The schema upgrade is run automatically when the spacewalk service is started with spacewalk-service start.

- Services affected by a package update are not automatically restarted after an update. You need to restart these services manually to avoid potential failures. Use zypper ps to check for applications that are using old code and require restarting.

.1. Server - Major Upgrade

When Uyuni core components are upgraded to new major versions, you need to perform a major upgrade on the Uyuni Server. This is the case if a version upgrade of PostgreSQL, Salt, or openSUSE Leap is needed. openSUSE Leap is the underlying base operating system (OS).

- Some additional manual steps might be required, and this information is only available in the release notes. For important extra information about your upgrade, see the release notes at:


- You will not be able to fix issues that arise during the migration. Ensure you have created a backup before you start the migration. For more information about backing up Uyuni, see Administration › Backup-restore. If you are running Uyuni Server on a virtual machine, we recommend that you create a snapshot before you start.
Before the upgrade, ensure that storage requirements are met. For more information, see uyuni-install-requirements.pdf. The migration procedure can fill the root partition if there is not enough space available due to the service pack migration and the download of new software packages. It is the same for the /var/lib/pgsql when upgrading PostgreSQL. It takes a copy of the old database, thus be sure to have at least enough space available to cope with a copy of the database.

The server-migrator.sh script migrates Uyuni Server to the latest version. It also upgrades the underlying operating system to version 15.5. The script is part of the susemanager package.

**Procedure: Migrating the Uyuni Server**

1. Before running the server-migrator.sh script, check whether the most recent version of the susemanager package is installed:

   ```bash
   zypper ref
   zypper up susemanager
   ```

2. Run the `/usr/lib/susemanager/bin/server-migrator.sh` script to upgrade the base OS and Uyuni Server.

   After the migration is complete, manually reboot the Uyuni Server:

### .2. Proxy

#### .2.1. Upgrade the Proxy

Uyuni Proxies are managed in the same way as clients.

Before you perform any proxy update, schedule a maintenance window. The clients registered to Uyuni through the proxy will not be able to connect to Uyuni while the update is in progress. For more information about maintenance windows, see Administration › Maintenance-windows.

The upgrade procedure to 2024.05 can either be a major or a minor upgrade. For more information, see the Uyuni 2024.05 release notes.

**Major Upgrade**

See Installation-and-upgrade › Proxy-uyuni.

**Minor Upgrade**

.2.2. Proxy - Major Upgrade

Before you perform any proxy update, schedule a maintenance window. The clients registered to Uyuni through the proxy will not be able to connect to Uyuni while the update is in progress. For more information about maintenance windows, see Administration › Maintenance-windows.

Major proxy upgrades include a version upgrade of the operating system. For more information, see the Uyuni 2024.05 release notes.

.2.2.1. Preparation for the Upgrade

Procedure: Adding openSUSE Leap 15.5 Software Channels at the Command Prompt

1. At the command prompt on the Uyuni Server, as root, use the spacewalk-common-channels command to add the appropriate channels:

   ```bash
   spacewalk-common-channels opensuse_leap15_5 \
   opensuse_leap15_5-non-oss \
   opensuse_leap15_5-non-oss-updates \
   opensuse_leap15_5-updates \
   opensuse_leap15_5-backports-updates \
   opensuse_leap15_5-sle-updates \
   uyuni-proxy-stable-leap-155
   ```

2. Fully synchronize all channels with spacewalk-repo-sync.

.2.2.2. Upgrade the Proxy

To upgrade a proxy you first stop the proxy service, then you replace the software repositories and update the software, and finally you restart the proxy service.

Procedure: Updating the Uyuni Proxy

1. On the Uyuni Proxy, stop the proxy service:

   ```bash
   spacewalk-proxy stop
   ```

2. In the Uyuni Server Web UI, navigate to Systems › Proxy and click the name of the proxy.

3. Click Software › Software Channels, and as the base channel select the openSUSE Leap 15.5 channel that is listed in the Customs Channels list.

4. In the Child Channels pane, select the 15.5 child channels.

5. Click [Next], and Confirm Software Channel Change with [Confirm].

6. Click Details › Remote Command, add zypper --non-interactive dup --allow -vendor-change --replacefiles to the script field, and click [Schedule].

7. Wait until the remote command is executed.

8. On the Uyuni Proxy, start the proxy service:
If you need to update many proxies, you can create an action chain of this command sequence on the Uyuni Server. You can use the action chain to perform updates on multiple proxies at the same time.

### 2.3. Proxy - Minor Upgrade

Before you perform any proxy update, schedule a maintenance window. The clients registered to Uyuni through the proxy will not be able to connect to Uyuni while the update is in progress. For more information about maintenance windows, see [Administration › Maintenance-windows](#).

Minor proxy upgrades do not include a version upgrade of the operating system. For more information, see the Uyuni 2024.05 release notes.

#### 2.3.1. Upgrade the Proxy

To update a proxy you first stop the proxy service, then update the software and finally restart the proxy service.

**Procedure: Updating the Uyuni Proxy**

1. On the Uyuni Proxy, stop the proxy service:

   spacewalk-proxy stop

2. In the Uyuni Server Web UI, navigate to Systems › Proxy and click the name of the proxy.

3. Select all the packages to be updated on the proxy, and then apply the selection.

4. On the Uyuni Proxy, start the proxy service:

   spacewalk-proxy start

If you need to update many proxies, you can create an action chain of this command sequence on the Uyuni Server. You can use the action chain to perform updates on multiple proxies at the same time.

### 3. Upgrade the Database

To successfully perform a major Uyuni update, you might need to upgrade the underlying database.

To upgrade to the latest PostgreSQL, see [Installation-and-upgrade › Db-migration-xy](#).

This table shows the PostgreSQL version required for each version of Uyuni and openSUSE:

**Table 12. PostgreSQL Versions**
### 3.1. Database Migration to Latest Version

This section covers upgrading the PostgreSQL database to the latest version. If you are already using PostgreSQL 14 or deployed Uyuni as a container, you do not need to perform this migration.

If you want to upgrade to the latest Uyuni version, you must be using PostgreSQL version 13, 14, or 16 depending on the underlying operating system:

- If you are running openSUSE Leap 15.3, use PostgreSQL 13.
- If you are running openSUSE Leap 15.4, use PostgreSQL 14.
- If you are running openSUSE Leap 15.5, use PostgreSQL 14.
- If you are running Uyuni as a container (2024.03 or later), you use PostgreSQL supplied with the container (version 16).

If Uyuni runs as a container, the database is stored in a persistent volume.

#### 3.1.1. Prepare to Upgrade

Before you begin the upgrade, prepare your existing Uyuni Server and create a database backup.

PostgreSQL stores data at `/var/lib/pgsql/data/`.

**Procedure: Preparing to Upgrade**

1. Check the active PostgreSQL version:

   ```bash
cat /var/lib/pgsql/data/postgresql.conf
```

2. Check the active smdba version:

   ```bash
cat /etc/rubygems/active_version
```

   PostgreSQL 14 requires `smdba` version 1.7.6 or later.
3. Perform a database backup. For more information on backing up, see Administration › Backup-restore.

.3.1.2. Upgrade PostgreSQL

Always create a database backup before performing a migration.

PostgreSQL upgrades can be performed in two ways: a regular upgrade, or a fast upgrade:

A regular upgrade creates a complete copy of the database, so you need double the existing database size of space available. Regular upgrades can take a considerable amount of time, depending on the size of the database and the speed of the storage system.

A fast upgrade only takes a few minutes, and uses almost no additional disk space. However, if a fast upgrade fails, you must restore the database from the backup. A fast upgrade reduces the risk of running out of disk space, but increases the risk of data lose when a backup does not exist or cannot be replayed. A regular upgrade will copy the database files instead of creating hard links between the files.

PostgreSQL stores data at /var/lib/pgsql/data/.

Before running the DB upgrade make sure that the PostgreSQL user exists on the system. The /etc/passwd entry should look as follows:

```
postgres:x:26:26:PostgreSQL Server:/var/lib/pgsql:/bin/bash
```

Procedure: Performing a Regular Upgrade

1. Perform a database backup. For more information on backing up, see Administration › Backup-restore.

2. Start the upgrade. Run the script:

   ```
   /usr/lib/susemanager/bin/pg-migrate-x-to-y.sh
   ```

3. When the upgrade has successfully completed, you can safely delete the old database directory and reclaim lost disk space. The old directory, for example, is renamed to /var/lib/pgsql/data-pg14 or /var/lib/pgsql/data-pg12, depending on the version you started from.

The pg-migrate-x-to-y.sh script performs these operations:

- Stop spacewalk services
- Shut down the running database
- Check if the latest PostgreSQL is installed and install it if necessary
• Switch from previous version of PostgreSQL to the latest as the new default
• Initiate the database migration
• Create a PostgreSQL configuration file tuned for use by Uyuni
• Start the database and spacewalk services

If the upgrade fails, the migration script will attempt to restore the database to its original state.

Procedure: Performing a Fast PostgreSQL Upgrade

1. Perform a database backup. Without a verified database backup, you must not initiate a fast upgrade. For more information on backing up, see Administration › Backup-restore.
2. Start the upgrade. Run the script.

   ```
   /usr/lib/susemanager/bin/pg-migrate-x-to-y.sh -f
   ```

3. When the upgrade has successfully completed, you can safely delete the old database directory and reclaim lost disk space. The old directory is renamed to `/var/lib/pgsql/data-pg14` or `/var/lib/pgsql/data-pg12`, depending on the version you started from.

.4. Upgrade the Clients

Clients use the versioning system of their underlying operating system. For clients using SUSE operating systems, you can perform upgrades within the Uyuni Web UI.

For more information about upgrading clients, see Client-configuration › Client-upgrades.
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