



U Y U N I

Uyuni 2025.07

Installation and Upgrade Guide

July 31 2025



Chapter 1. Preface

Installation, Deployment and Upgrade
Uyuni 2025.07

This guide provides comprehensive, step-by-step instructions for deploying, upgrading, and managing Uyuni Server and Proxy.

It is organized into the following sections:

- **Requirements:** Outlines the essential hardware, software, and networking prerequisites to ensure a smooth setup.
- **Deployment and Installation:** Guides you through deploying Uyuni as a container and completing the initial configuration.
- **Upgrade and Migration:** Details the process for upgrading and migrating Uyuni while minimizing downtime.
- **Basic Server Management:** Covers fundamental server operations, helping you get started with Uyuni efficiently.

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Contents

1. Preface	1
2. Requirements	4
2.1. General Requirements	4
2.1.1. Server Requirements	4
2.1.2. Proxy Requirements	4
2.2. Network Requirements	5
2.2.1. Fully Qualified Domain Name (FQDN)	5
2.2.2. Hostname and IP Address	6
2.2.3. Reenable router advertisements	6
2.2.4. Deployment behind HTTP or HTTPS OSI level 7 proxy	6
2.2.5. Air-gapped Deployment	7
2.2.6. Required Network Ports	7
2.3. Public Cloud Requirements	13
2.3.1. Network Requirements	14
2.3.2. Prepare Storage Volumes	14
3. Deployment and Installation	16
3.1. Install Uyuni Server	16
3.1.1. Uyuni Server Deployment on openSUSE Leap Micro 6.1	16
3.1.2. Uyuni Server Air-gapped Deployment	19
3.2. Install Uyuni Proxy	20
3.2.1. Containerized Uyuni Proxy Setup	20
3.2.2. Uyuni Proxy Deployment on openSUSE Leap Micro 6.1	23
3.2.3. Proxy conversion from client	29
3.2.4. Uyuni Proxy Deployment on K3s	32
4. Upgrade and Migration	34
4.1. Server	34
4.1.1. Legacy Uyuni Server Migration to Container	34
4.1.2. Uyuni Server Upgrade	38
4.2. Proxy	39
4.2.1. Legacy Proxy Migration to Container	39
4.2.2. Uyuni Proxy Upgrade	43
4.3. Clients	43
4.3.1. Upgrade Clients	43
5. Basic Server and Proxy Management	45
5.1. Custom YAML Configuration and Deployment with <code>mgradm</code>	45
5.2. Starting and Stopping Containers	46
5.3. Containers used by Uyuni	46
5.4. Persistent Container Volumes	47
5.4.1. Server	47
5.4.2. Proxy	49
5.5. Understanding <code>mgr-storage-server</code> and <code>mgr-storage-proxy</code>	49
5.5.1. What these tools do	50
5.5.2. What these tools do not do	50
5.5.3. Post-installation storage management	50
5.5.4. When to use, or not use	51
5.5.5. Summary	51

Chapter 2. Requirements

2.1. General Requirements

The following tables specify the minimum server and proxy requirements.



■ Do not use NFS for storage because it does not support SELinux file labeling.

2.1.1. Server Requirements

Table 1. Server Requirements for x86-64 Architecture

Software and Hardware	Details	Recommendation
openSUSE Leap Micro 6.1	Clean installation, up-to-date	openSUSE Leap Micro 6.1
CPU	-	Minimum 4 dedicated 64-bit CPU cores (x86-64)
RAM	Test or Base Installation	Minimum 16 GB
	Production Server	Minimum 32 GB
Disk Space	/ (root directory)	Minimum 40 GB
	/var/lib/pgsql	Minimum 50 GB
	/var/spacewalk	Minimum storage required: 100 GB (this will be verified by the implemented check) * 50 GB for each SUSE product and Package Hub * 360 GB for each Red Hat product
	/var/cache	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.
	Swap space	3 GB

2.1.2. Proxy Requirements

Table 2. Proxy Requirements

Software and Hardware	Details	Recommendation
openSUSE Leap Micro 6.1	Clean installation, up-to-date	openSUSE Leap Micro 6.1
CPU		Minimum 2 dedicated 64-bit CPU cores
RAM	Test Server	Minimum 2 GB
	Production Server	Minimum 8 GB
Disk Space	/ (root directory)	Minimum 40 GB
	/srv	Minimum 100 GB
	/var/cache (Squid)	Minimum 100 GB

Uyuni Proxy caches packages in the `/var/cache/` directory. If there is not enough space available in `/var/cache/`, the proxy will remove old, unused packages and replace them with newer packages.

As a result of this behavior:

- The larger `/var/cache/` directory is on the proxy, the less traffic there will be between it and the Uyuni Server.
- By making the `/var/cache/` directory on the proxy the same size as `/var/spacewalk/` on the Uyuni Server, you avoid a large amount of traffic after the first synchronization.
- The `/var/cache/` directory can be small on the Uyuni Server compared to the proxy. For a guide to size estimation, see the [\[server-hardware-requirements\]](#) section.

2.2. Network Requirements

This section details the networking and port requirements for Uyuni.

IP forwarding will be enabled by containerized installation. This means Uyuni Server and Proxies will behave as a router. This behavior is done by podman directly. Podman containers do not run if IP forwarding is disabled.



Consider achieving network isolation of the Uyuni environment according to your policies.

For more information, see <https://www.suse.com/support/kb/doc/?id=000020166>.

2.2.1. 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.

For more information about configuring the hostname and DNS, see <https://documentation.suse.com/sles/15-SP6/html/SLES-all/cha-network.html#sec-network-yast-change-host>.

2.2.2. 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.

For more information about setting up a DNS server, see <https://documentation.suse.com/sles/15-SP6/html/SLES-all/cha-dns.html>.

2.2.3. Reenable router advertisements

When the Uyuni is installed using `mgradm install podman` or `mgrpxy install podman`, it sets up Podman which enables IPv4 and IPv6 forwarding. This is needed for communication from the outside of the container.

However, if your system previously had `/proc/sys/net/ipv6/conf/eth0/accept_ra` set to `1`, it will stop using router advertisements. As a result, the routes are no longer obtained via router advertisements and the default IPv6 route is missing.

To recover correct functioning of the IPv6 routing, follow the procedure:

Procedure: Reenabling router advertisements

1. Create a file in `/etc/sysctl.d`, for example `99-ipv6-ras.conf`.
2. Add the following parameter and value to the file:

```
net.ipv6.conf.eth0.accept_ra = 2
```

3. Reboot.

2.2.4. Deployment behind HTTP or HTTPS OSI level 7 proxy

Some environments enforce internet access through a HTTP or HTTPS proxy. This could be a Squid server or similar. To allow the Uyuni Server internet access in such configuration, you need to configure the following.

Procedure: Configuring HTTP or HTTPS OSI level 7 proxy

1. For operating system internet access, modify `/etc/sysconfig/proxy` according to your needs:

```
PROXY_ENABLED="no"
HTTP_PROXY=""
HTTPS_PROXY=""
NO_PROXY="localhost, 127.0.0.1"
```

2. For Podman container internet access, modify `/etc/systemd/system/uyuni-server.service.d/custom.conf` according to your needs. For example, set:

```
[Service]
Environment=TZ=Europe/Berlin
Environment="PODMAN_EXTRA_ARGS="
Environment="https_proxy=user:password@http://192.168.10.1:3128"
```

3. For Java application internet access, modify `/etc/rhn/rhn.conf` according to your needs. On the container host, execute `mgrctl term` to open a command line inside the server container:

- a. Modify `/etc/rhn/rhn.conf` according to your needs. For example, set:

```
# Use proxy FQDN, or FQDN:port
server.satellite.http_proxy =
server.satellite.http_proxy_username =
server.satellite.http_proxy_password =
# no_proxy is a comma seperated list
server.satellite.no_proxy =
```

4. On the container host, restart the server to enforce the new configuration:

```
systemctl restart uyuni-server.service
```

2.2.5. Air-gapped 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:network-requirements.pdf](#).

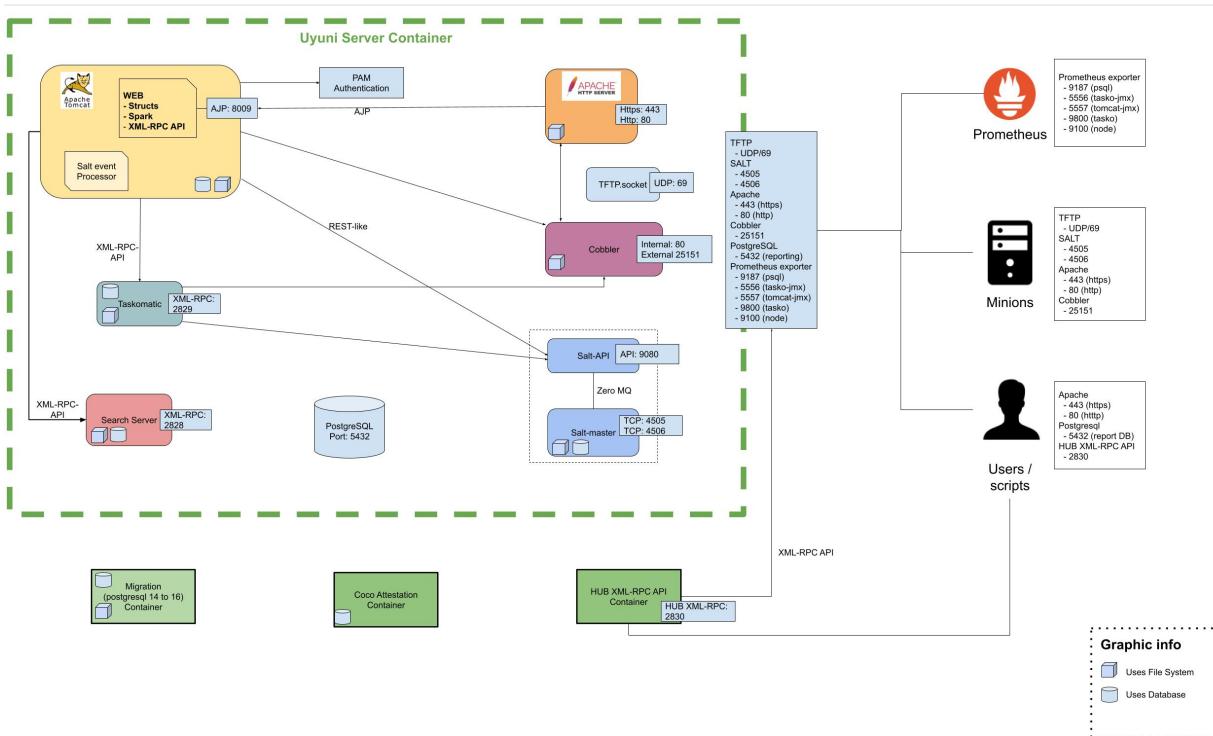
2.2.6. Required Network Ports

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

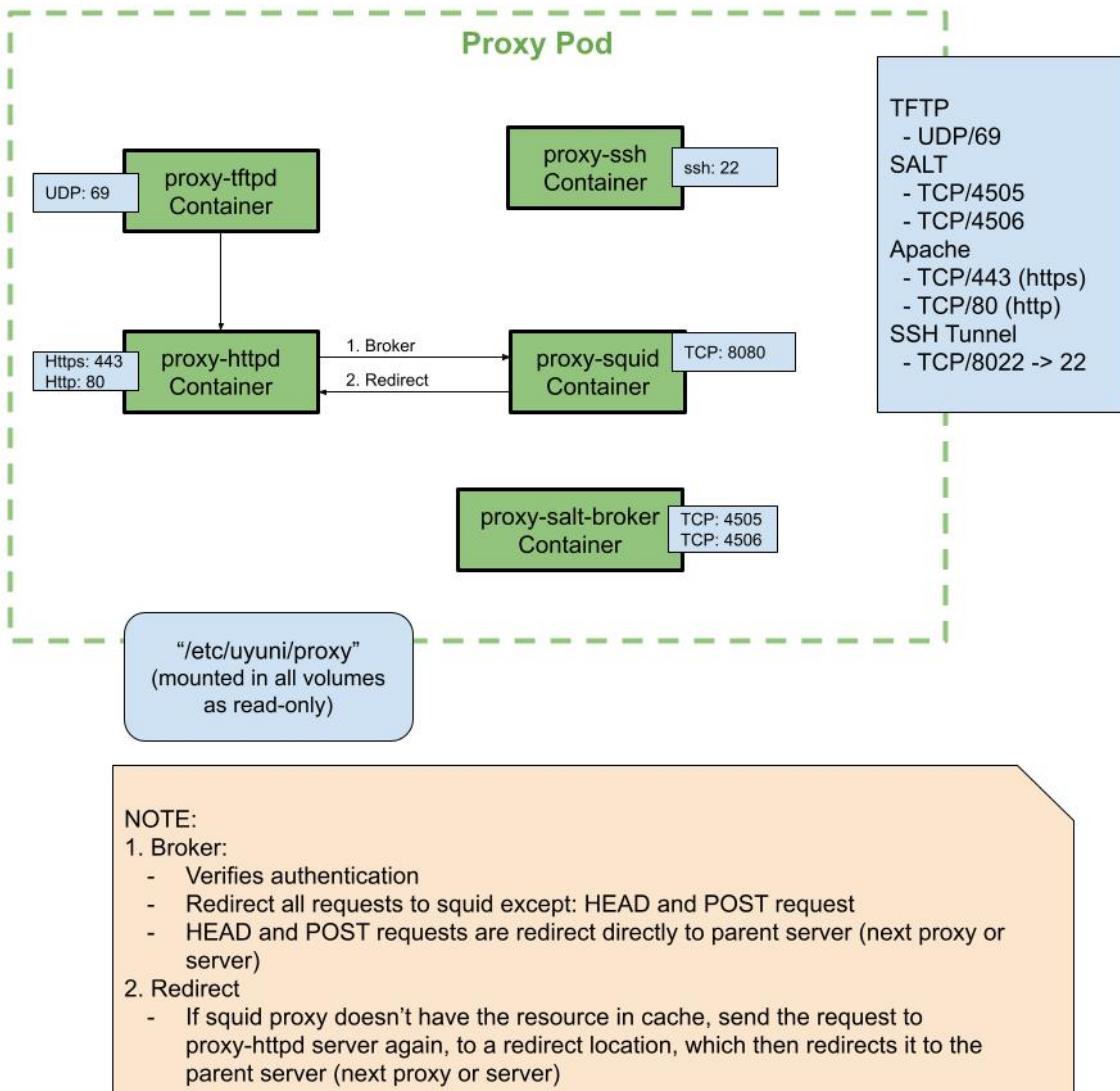
You will not need to open all of these ports. Some ports only need to be opened if you are using the service that requires them.

2.2.6.1. Overview

2.2.6.1.1. Server



2.2.6.1.2. Proxy



2.2.6.2. 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

Port number	Protocol	Used By	Notes
67	TCP/UDP	DHCP	Required only if clients are requesting IP addresses from the server.
69	TCP/UDP	TFTP	Required if server is used as a PXE server for automated client installation.

Port number	Protocol	Used By	Notes
80	TCP	HTTP	Required temporarily for some bootstrap repositories and automated installations.
443	TCP	HTTPS	Serves the Web UI, client, and server and proxy (tfpsync) requests.
4505	TCP	salt	Required to accept communication requests from clients. The client initiates the connection, and it stays open to receive commands from the Salt master.
4506	TCP	salt	Required to accept communication requests from clients. The client initiates the connection, and it stays open to report results back to the Salt master.
5556	TCP	Prometheus	Required for scraping Taskomatic JMX metrics.
5557	TCP	Prometheus	Required for scraping Tomcat JMX metrics.
9100	TCP	Prometheus	Required for scraping Node exporter metrics.
9187	TCP	Prometheus	Required for scraping PostgreSQL metrics.
9800	TCP	Prometheus	Required for scraping Taskomatic metrics.
25151	TCP	Cobbler	

2.2.6.3. 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

Port number	Protocol	Used By	Notes
80	TCP	HTTP	Required for SUSE Customer Center. Port 80 is not used to serve the Web UI.
443	TCP	HTTPS	Required for SUSE Customer Center.
25151	TCP	Cobbler	

2.2.6.4. Internal Server Ports

Internal ports 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

Port number	Notes
2828	Satellite-search API, used by the RHN application in Tomcat and Taskomatic.
2829	Taskomatic API, used by the RHN application in Tomcat.
8005	Tomcat shutdown port.
8009	Tomcat to Apache HTTPD (AJP).
8080	Tomcat to Apache HTTPD (HTTP).
9080	Salt-API, used by the RHN application in Tomcat and Taskomatic.
25151	Cobbler's XMLRPC API
32000	Port for a TCP connection to the Java Virtual Machine (JVM) that runs Taskomatic and satellite-search.

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
```

2.2.6.5. 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

Port number	Protocol	Used By	Notes
22			Only required if the user wants to manage the proxy host with Salt SSH.
67	TCP/UDP	DHCP	Required only if clients are requesting IP addresses from the server.
69	TCP/UDP	TFTP	Required if the server is used as a PXE server for automated client installation.

Port number	Protocol	Used By	Notes
443	TCP	HTTPS	Web UI, client, and server and proxy (tftpsync) requests.
4505	TCP	salt	Required to accept communication requests from clients. The client initiates the connection, and it stays open to receive commands from the Salt master.
4506	TCP	salt	Required to accept communication requests from clients. The client initiates the connection, and it stays open to report results back to the Salt master.
8022			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.

2.2.6.6. 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

Port number	Protocol	Used By	Notes
80			Used to reach the server.
443	TCP	HTTPS	Required for SUSE Customer Center.
4505	TCP	Salt	Required to connect to Salt master either directly or via proxy.
4506	TCP	Salt	Required to connect to Salt master either directly or via proxy.

2.2.6.7. 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

Port number	Direction	Protocol	Notes
22	Inbound	SSH	Required for ssh-push and ssh-push-tunnel contact methods.
80	Outbound		Used to reach the server or proxy.
443	Outbound		Used to reach the server or proxy.
4505	Outbound	TCP	Required to connect to Salt master either directly or via proxy.
4506	Outbound	TCP	Required to connect to Salt master either directly or via proxy.
9090	Outbound	TCP	Required for Prometheus user interface.
9093	Outbound	TCP	Required for Prometheus alert manager.
9100	Outbound	TCP	Required for Prometheus node exporter.
9117	Outbound	TCP	Required for Prometheus Apache exporter.
9187	Outbound	TCP	Required for Prometheus PostgreSQL.

2.2.6.8. 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
- installer-updates.suse.com
- registry.suse.com
- registry-storage.suse.com

You can find additional details on whitelisting the specified URLs and their associated IP addresses in this article: [Accessing SUSE Customer Center and SUSE registry behind a firewall and/or through a proxy](#).

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](#).

2.3. 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.

2.3.1. 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.

2.3.2. 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 **mgr-storage-server** command. This creates an XFS partition mounted at **/manager_storage** and uses it as the location for the database and repositories:

```
/usr/bin/mgr-storage-server <devicename>
```

Chapter 3. Deployment and Installation

3.1. Install Uyuni Server

There are various scenarios to deploy a Uyuni Server.

3.1.1. Uyuni Server Deployment on openSUSE Leap Micro 6.1

3.1.1.1. 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 6.1 host server, whether it is running on a physical machine or within a virtual environment.
- <https://download.opensuse.org/distribution/leap-micro/>

3.1.1.2. Container Host General Requirements

For general requirements, see **Installation-and-upgrade > General-requirements**.

An openSUSE Leap Micro 6.1 server should be installed from installation media.

<https://download.opensuse.org/distribution/leap-micro/>

This procedure is described below.

3.1.1.3. 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.

3.1.1.4. Installing Uyuni Tools For Use With Containers

Procedure: Installing Uyuni Tools on openSUSE Leap Micro 6.1

1. On your local host open a terminal window or start up a virtual machine running openSUSE Leap Micro 6.1.
2. Log in.

3. Enter the **transactional-update shell**:

```
transactional-update shell
```

4. Add the following repository to your openSUSE Leap Micro 6.1 server:

```
zypper ar  
https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable/images/repo/  
Uyuni-Server-POOL-$(arch)-Media1/ uyuni-server-stable
```

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 uyuni-storage-  
setup-server
```

7. Exit the transactional shell:

```
transactional update # exit
```

8. Reboot the host.

For more information on the Uyuni Container Utilities, see [Uyuni Container Utilities](#).

3.1.1.5. Configure Custom Persistent Storage

This step is optional. However, if custom persistent storage is required for your infrastructure, use the **mgr-storage-server** tool.

- For more information, see **mgr-storage-server --help**. This tool simplifies creating the container storage and database volumes.

Use the command in the following manner:

```
mgr-storage-server <storage-disk-device> [<database-disk-device>]
```

For example:

```
mgr-storage-server /dev/nvme1n1 /dev/nvme2n1
```



This command will create the persistent storage volumes at **/var/lib/containers/storage/volumes**.

For more information, see **Installation-and-upgrade > Container-management**.

3.1.1.6. Deploying an Uyuni Container With Podman

3.1.1.6.1. **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.



Uyuni server hosts that are hardened for security may restrict execution of files from the **/tmp** folder. In such cases, as a workaround, export the **TMPDIR** environment variable to another existing path before running **mgradm**. For example:

```
export TMPDIR=/path/to/other/tmp
```

In Uyuni updates, tools will be changed to make this workaround unnecessary.

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.

3.1.1.6.2. 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**
- **Administration > Troubleshooting**

3.1.2. Uyuni Server Air-gapped Deployment

3.1.2.1. What is Air-gapped Deployment?

Air-gapped deployment refers to the setup and operation of any networked system that is physically isolated from insecure networks, especially the internet. This type of deployment is commonly used in high-security environments such as military installations, financial systems, critical infrastructure, and anywhere sensitive data is handled and must be protected from external threats.

You can easily deploy container images using `Podman`, `Docker`, or `Skopeo` on a machine with internet access.

Procedure

1. Pull the desired image, then save the image as a `tar` archive. For example:

Listing 1. Podman

```
podman pull registry.opensuse.org/uyuni/server:latest
podman save --output server.tar registry.opensuse.org/uyuni/server:latest
```

Listing 2. Docker

```
docker pull registry.opensuse.org/uyuni/server:latest
docker save --output server.tar registry.opensuse.org/uyuni/server:latest
```

Listing 3. Skopeo

```
skopeo copy docker://registry.opensuse.org/uyuni/server:latest docker-
```

```
archive:server.tar:registry.opensuse.org/uyuni/server:latest
```

- Transfer the resulting **server-image.tar** to the Server container host and load it using the following command:

Listing 4. Load the server image

```
podman load -i server.tar
```

3.1.2.1.1. Deploy Uyuni on openSUSE Leap Micro

Uyuni also provides all the needed container images in RPM packages that can be installed on the system.



- User should make the needed RPM available on the internal network. That can be done by using a second Uyuni Server or any kind of mirror.

Procedure: Install Uyuni on openSUSE Leap Micro in Air-gapped

- Install openSUSE Leap Micro.
 - Update the system.
 - Install tools packages and image packages (replace \$ARCH\$ with the correct architecture):
- ```
transactional-update pkg install mgradm* mgrctl* uyuni-server*-image*
```
- Reboot.
  - Deploy Uyuni with **mgradm**. In an Air-gapped environment you may want to use the option **--pullPolicy Never**.

For more detailed information about installing Uyuni Server on openSUSE Leap Micro, see [Server Deployment](#).

To upgrade Uyuni Server, users should upgrade all packages in the system and follow the procedures defined in [Server Upgrade](#).

## 3.2. Install Uyuni Proxy

There are various scenarios to deploy a Uyuni Proxy. All these scenarios presume you have already successfully deployed a Uyuni 2025.07 Server.

### 3.2.1. Containerized Uyuni Proxy Setup

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

*Procedure*

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`

### 3.2.1.1. Generate Proxy Configuration

The configuration archive of the Uyuni Proxy is generated by the Uyuni Server. Each additional Proxy requires its own configuration archive.



- For Podman deployment, the container host for the Uyuni Proxy must be registered as a client to the Uyuni Server prior to generating this proxy configuration.

If a proxy FQDN is used to generate a proxy container configuration that is not a registered client (as in the Kubernetes use case), 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.

#### 3.2.1.1.1. Generate the Proxy Configuration with Web UI

*Procedure: Generating a Proxy Container 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. Recommended is to use at most 80% of available storage for the containers.



- 2 GB represents the default proxy squid cache size. This will need to be adjusted for your environment.

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 by the server are stored in the `/var/lib/containers/storage/volumes/root/_data/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 a new proxy FQDN in the Uyuni Server and generate a configuration archive (**config.tar.gz**) containing details for the container host.
8. After a few moments you are presented with file to download. Save this file locally.

### 3.2.1.1.2. Generate Proxy Configuration With **spacecmd** and Self-Signed Certificate

You can generate a Proxy configuration using **spacecmd**.

*Procedure: Generating Proxy Configuration with spacecmd and Self-Signed Certificate*

1. SSH into your container host.
2. Execute the following command replacing the Server and Proxy FQDN:

```
mgrctl exec -ti 'spacecmd proxy_container_config_generate_cert -- dev-pxy.example.com dev-srv.example.com 2048 email@example.com -o /tmp/config.tar.gz'
```

3. Copy the generated configuration from the server container:

```
mgrctl cp server:/tmp/config.tar.gz .
```

### 3.2.1.1.3. Generate Proxy Configuration With **spacecmd** and Custom Certificate

You can generate a Proxy configuration using **spacecmd** for a custom certificates rather than the default self-signed certificates.

*Procedure: Generating Proxy Configuration with spacecmd and Custom Certificate*

1. SSH into your Server container host.
2. Execute the following command replacing the Server and Proxy FQDN:

```
for f in ca.crt proxy.crt proxy.key; do
 mgrctl cp $f server:/tmp/$f
done
mgrctl exec -ti 'spacecmd proxy_container_config -- -p 8022 pxy.example.com
srv.example.com 2048 email@example.com /tmp/ca.crt /tmp/proxy.crt /tmp/proxy.key -o
/tmp/config.tar.gz'
```

3. Copy the generated configuration from the server container:

```
mgrctl cp server:/tmp/config.tar.gz .
```

### 3.2.1.2. Transfer Uyuni Proxy Configuration

Both **spacecmd** command and generating via Web UI ways create a configuration archive. This archive needs to be made available on container host. Transfer this generated archive to the container host.

### 3.2.1.3. Start Uyuni Proxy Containers

Container can be started with the `mgrpxy` command.

*Procedure: Start Uyuni Proxy Containers*

1. Run command:

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

2. Check if all containers started up as expected by calling:

```
podman ps
```

Five Uyuni Proxy containers should be present and should be part of `proxy-pod` container pod.

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

### 3.2.2. Uyuni Proxy Deployment on openSUSE Leap Micro 6.1

This guide outlines the deployment process for the Uyuni 2025.07 Proxy. This guide presumes you have already successfully deployed a Uyuni 2025.07 Server. To successfully deploy, you will perform the following actions:

*Checklist: Proxy Deployment*

1. Review hardware requirements.
2. Install openSUSE Leap Micro 6.1 on a bare-metal machine.
3. Bootstrap the Proxy as a Salt minion.
4. Generate a Proxy configuration.
5. Transfer the Proxy configuration from Server to Proxy
6. Use the Proxy configuration to register the Salt minion as a Proxy with Uyuni.

 *Supported operating system for the Proxy Container Host*

The supported operating system for the container host is openSUSE Leap Micro 6.1.

**Container host**

A container host is a server equipped with a container engine like Podman,

which lets it manage and deploy containers. These containers hold applications and their essential parts, such as libraries, but not a full operating system, making them lightweight. This setup ensures applications run the same way in different environments. The container host supplies the necessary resources such as CPU, memory, and storage for these containers.

### 3.2.2.1. Hardware Requirements for the Proxy

This table shows the hardware requirements for deploying Uyuni Proxy.

*Table 9. Proxy Hardware Requirements*

| Hardware   | Details                             | Recommendation                                                                                                                                            |
|------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU        | x86-64, ARM                         | Minimum 2 dedicated 64-bit CPU cores                                                                                                                      |
| RAM        | Minimum                             | 2 GB                                                                                                                                                      |
|            | Recommended                         | 8 GB                                                                                                                                                      |
| Disk Space | / (root directory)                  | Minimum 40 GB                                                                                                                                             |
|            | /var/lib/containers/storage/volumes | Minimum 100 GB, Storage requirements should be calculated for the number of ISO distribution images, containers, and bootstrap repositories you will use. |

### 3.2.2.2. Container Host General Requirements

For general requirements, see **Installation-and-upgrade > General-requirements**.

An openSUSE Leap Micro 6.1 server should be installed from installation media. This procedure is described below.

### 3.2.2.3. 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.

### 3.2.2.4. Installing Uyuni Tools for Use With Containers

*Procedure: Installing Uyuni Tools on openSUSE Leap Micro 6.1*

1. On your local host open a terminal window or start up a virtual machine running openSUSE Leap Micro 6.1.
2. Log in.
3. Enter the **transactional-update shell**:

```
transactional-update shell
```

4. Add the following repository to your openSUSE Leap Micro 6.1 server:

```
zypper ar
https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable/images/repo/
Uyuni-Proxy-POOL-$(arch)-Media1/ uyuni-proxy-stable
```

5. Refresh the repository list and accept the key:

```
zypper ref
```

6. Install the container tools:

```
zypper in mgrpxy mgrpxy-bash-completion uyuni-storage-setup-proxy
```



Alternatively you may install **mgrpxy-zsh-completion** or **mgrpxy-fish-completion**.

7. Exit the transactional shell:

```
transactional update # exit
```

8. Reboot the host.

For more information on the Uyuni Container Utilities, see [Uyuni Container Utilities](#).

#### 3.2.2.5. Configure Custom Persistent Storage

This step is optional. However, if custom persistent storage is required for your infrastructure, use the **mgr-storage-proxy** tool.

- For more information, see **mgr-storage-proxy --help**. This tool simplifies creating the container storage and Squid cache volumes.

Use the command in the following manner:

```
mgr-storage-proxy <storage-disk-device>
```

For example:

```
mgr-storage-proxy /dev/nvme1n1
```

This command will create the persistent storage volumes at **/var/lib/containers/storage/volumes**.



For more information, see

- [Installation-and-upgrade > Container-management](#)
- [Administration > Troubleshooting](#)

### 3.2.2.6. Bootstrap the Proxy Host as a Minion

*Task: Bootstrap the Proxy Host*

1. Select **Systems > Bootstrapping**.
2. Fill in the fields for your Proxy host.
3. Select the Activation key created in the previous step from the dropdown.
4. Click **+ Bootstrap**.
5. Wait for the Bootstrap process to complete successfully. Check the **Salt** menu and confirm the Salt minion key is listed and accepted.
6. Reboot the Proxy host.
7. Select the host from the **System** list and trigger a second reboot after all events are finished to conclude the onboarding.

*Task: Update the Proxy Host*

1. Select the host from the **Systems** list and apply all patches to update it.
2. Reboot the Proxy host.

### 3.2.2.7. Generate the Proxy Configuration

The configuration archive of the Uyuni Proxy is generated by the Uyuni Server. Each additional Proxy requires its own configuration archive.



The container host for the Uyuni Proxy must be registered as a salt minion to the Uyuni Server prior to generating this Proxy configuration.

You will perform the following tasks:

*Procedure:*

1. Generate a Proxy configuration file.
2. Transfer the configuration to the Proxy.
3. Start the Proxy with the `mgrpxy` command.

*Task: Generating a Proxy Container 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 `/var/lib/containers/storage/volumes/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.

### 3.2.2.8. Transfer the Proxy Configuration

The Web UI generates a configuration archive. This archive needs to be made available on the Proxy container host.

*Task: Copy the Proxy configuration*

1. Copy the files from the Server container to the Server host OS:

```
mgrctl cp server:/root/config.tar.gz .
```

2. Next copy the files from the Server host OS to the Proxy host:

```
scp config.tar.gz <proxy-FQDN>:/root
```

3. Install the Proxy with:

```
mgrpxy install podman config.tar.gz
```

### 3.2.2.9. Start the Uyuni 2025.07 Proxy

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

*Task: Start and Check Proxy Status*

1. Start the Proxy by calling:

```
mgrpxy start
```

2. Check container status by calling:

```
mgrpxy status
```

Five Uyuni Proxy containers should be present and should be part of the **proxy-pod** container pod:

- proxy-salt-broker
- proxy-htpd
- proxy-tftpd
- proxy-squid
- proxy-ssh

#### 3.2.2.9.1. 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-htpd /path/to/config.tar.gz
```

It adjusts the configuration file for the httpd service, where **registry.opensuse.org/uyuni/proxy-htpds** 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.

### 3.2.3. Proxy conversion from client

#### 3.2.3.1. Overview

This chapter describes how to convert a client system into a Uyuni Proxy using the Web UI.

It assumes that the proxy host system has already been bootstrapped and subscribed to the base operating system channel.

For information about client onboarding, see [Client-configuration > Registration-overview](#).

#### 3.2.3.2. Requirements

Before starting the conversion, ensure the following requirements are fulfilled.

##### 3.2.3.2.1. Client Must Be

- Already onboarded in Uyuni
- Reachable via the network

#### 3.2.3.3. Preparation

Before proceeding with the proxy conversion, make sure the following preparations are completed to avoid interruptions during the conversion process.

##### 3.2.3.3.1. SSL Certificates

Valid SSL certificates are required to secure communication between the proxy and other components.

You need:

- The public certificate of the Certificate Authority (CA) that signed the certificate on the Uyuni server
- A certificate for the proxy.
- The corresponding private key for the proxy certificate.



If your CA uses an intermediate certificate chain, you must include all intermediate certificates as well.

If you are not using third party certificates, you can generate them using the [rhn-ssl-tool](#) inside the Uyuni container.

***Generate a proxy certificate***

1. On the Uyuni server host, run:

```
mgrctl exec -ti -- rhn-ssl-tool --gen-server \
--set-hostname=<PROXY-FQDN> \
--dir="/root/ssl-build"
```

For more information about other parameters, see **Administration > Ssl-certs-selfsigned**.

2. Transfer the certificates to Uyuni server host

```
mgrctl cp server:/root/ssl-build/<PROXY-FQDN>/server.crt /root/proxycert.pem
mgrctl cp server:/root/ssl-build/<PROXY-FQDN>/server.key /root/proxykey.pem
mgrctl cp server:/root/ssl-build/RHN-ORG-TRUSTED-SSL-CERT /root/rootca.pem
```

 To confirm the exact folder where the certificates and key files were generated, you can list the directories with:

```
mgrctl exec -ti -- ls -ltd /root/ssl-build/*/
```

3. Transfer the certificates from Uyuni server host

```
scp <UYUNI-FQDN>:/root/proxycert.pem ./
scp <UYUNI-FQDN>:/root/proxykey.pem ./
scp <UYUNI-FQDN>:/root/rootca.pem ./
```

***3.2.3.3.2. Packages Preparation*****Install `mgrpxy`**

The `mgrpxy` tool must be installed from a repository matching your system. Choose the appropriate repository from:

<https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/>

*Listing 5. Example (for openSUSE Leap Micro 5.5):*

```
zypper ar
https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/o
penSUSE_Leap_Micro_5.5/ uyuni-containerutils
zypper ref
zypper in mgrpxy
```

**Install Container Images**

It is recommended to deploy the container images as RPM packages. Please ensure the following packages are installed on the client:

```
zypper ar
https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable/containerfile/
uyuni-proxy-images
zypper ref
zypper in uyuni-proxy-httpd-image \
 uyuni-proxy-salt-broker-image \
 uyuni-proxy-squid-image \
 uyuni-proxy-ssh-image \
 uyuni-proxy-tftpd-image
```

For details on air-gapped deployment, see [Installation-and-upgrade > Container-deployment](#)

On transactional servers, wrap the above commands in a transactional-update shell session to ensure atomicity and persistence:



```
transactional-update shell
(run zypper commands here)
exit
```

This ensures changes are applied correctly in the transactional environment.

#### 3.2.3.4. Setup Proxy Client

1. Navigate to the client's [Overview](#) page.
2. Click button [Convert to Proxy](#).

Confirm you were redirected to the proxy configuration form.

This page can be accessed later from the [Details > Proxy > Configuration](#) tab.

3. In the Web UI, navigate to [Proxy > Configuration](#) and fill in the required data:

*Procedure: Configuring the Proxy*

- a. In the **Parent FQDN** field, type the fully qualified domain name for the parent server or proxy.
- b. In the **Proxy SSH port** field, type the SSH port on which the SSH service is listening on the Uyuni Proxy. It is recommended to keep the default: 8022.
- c. In the **Max Squid cache size** field, type the maximum allowed size for the Squid cache, in Gigabytes.
- d. In the **Proxy admin email** field, type the administrator's email address.
- e. In the **Certificates** section, provide the certificates for the Uyuni Proxy, obtained in the preparation step.
- f. In the **Source** section, select one of the two options: **RPM** or **Registry**.
  - The **RPM** option is recommended for air-gapped or restricted environments.
  - The **Registry** option can be used if connectivity to the container image registry is

available.

If selected, you will be prompted to choose between two sub-options: **Simple** or **Advanced**.

- If **Simple** is selected, provide values in the **Registry URL** and **Containers Tag** fields.
  - For **Registry URL** use: `registry.opensuse.org/uyuni`.
  - Select the tag from the drop-down list.
- If **Advanced** is selected, an additional section of the form is shown:
  - For each individual container URL field, use the registry: `registry.opensuse.org/uyuni` followed by the corresponding suffix, for example, `proxy-httdp` or `salt-broker`.
  - Select the tag from the drop-down list.

4. Once all fields are filled, click **Apply** to apply the configuration and schedule the proxy installation task.

### 3.2.3.5. Verify Proxy Activation

Check the client's event history to confirm task success.

(Optional) Access the proxy's HTTP endpoint to validate it shows a welcome page.

## 3.2.4. Uyuni Proxy Deployment on K3s

### 3.2.4.1. Installing K3s

On the container host machine, install **K3s** (replace `<K3S_HOST_FQDN>` with the FQDN of your K3s host):

```
curl -sfL https://get.k3s.io | INSTALL_K3S_EXEC="--tls-san=<K3S_HOST_FQDN>" sh -
```

### 3.2.4.2. Installing Tools

The installation requires the `mgrpxy` and `helm` packages.

Install Helm by using the installer script:

```
curl -fsSL -o get_helm.sh https://raw.githubusercontent.com/helm/helm/main/scripts/get-helm-3
chmod 700 get_helm.sh
./get_helm.sh
```

For more information, see <https://helm.sh/docs/intro/install/#from-script>.

The `mgrp` package is available in the container utils repository. Pick the one matching the distribution in: <https://download.opensuse.org/repositories/systemsmanagement:/Uyuni:/Stable:/ContainerUtils/>.

#### Procedure

1. To install package on Leap Micro run:

```
transactional-update pkg install mgrp
```

2. Reboot.

#### 3.2.4.3. 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**. Copy the configuration `tar.gz` file and then install:

```
mgrp install kubernetes /path/to/config.tar.gz
```

For more information see:

- <https://kubernetes.io/docs/concepts/storage/persistent-volumes/> (Kubernetes)
- <https://rancher.com/docs/k3s/latest/en/storage/> (K3s) documentation

# Chapter 4. Upgrade and Migration

## 4.1. Server

### 4.1.1. Legacy Uyuni Server Migration to Container

To migrate a legacy Uyuni Server to a container, a new machine is required.

In the context of this migration, the legacy Uyuni Server (RPM installation) is sometimes also called *old server*.

#### 4.1.1.1. Requirements and Considerations

##### 4.1.1.1.1. Hostnames

Neither in-place migration is not possible nor allows the migration procedure currently any hostname renaming functionality.

Thus the fully qualified domain name (FQDN) on the new server will remain identical to that on the legacy server.



- After migration, it is necessary to update the DHCP and DNS records to point to the new server.
- For more information, see [Finalize migration](#).

#### 4.1.1.2. GPG Keys

- Self trusted GPG keys are not migrated.
- GPG keys that are trusted in the RPM database only are not migrated. Thus synchronizing channels with `spacewalk-repo-sync` can fail.
- The administrator must migrate these keys manually from the legacy Uyuni installation to the container host after the actual server migration.

##### *Procedure: Manual Migration of the GPG Keys to New Server*

1. Copy the keys from the legacy Uyuni server to the container host of the new server.
2. Later, add each key to the migrated server with the command `mgradm gpg add <PATH_TO_KEY_FILE>`.

##### 4.1.1.2.1. Initial Preparation on the Legacy Server

The migration can take a very long time depending on the amount of data that needs to be replicated. To reduce downtime it is possible to run the migration multiple times in a process of *initial replication*, *re-replication*, or *final replication and switch over* while all the services on the legacy server can stay up and running.

Only during the final migration the processes on the legacy server need to be stopped.

For all non-final replications add the parameter **--prepare** to prevent the automatic stopping the services on the legacy server. For example:

```
mgradm migrate podman <oldserver.fqdn> --prepare
```

*Procedure: Initial Preparation on the Legacy Server*

1. Stop the Uyuni services:

```
spacewalk-service stop
```

2. Stop the PostgreSQL service:

```
systemctl stop postgresql
```

#### 4.1.1.2.2. SSH Connection Preparation

*Procedure: Preparing the SSH connection*

1. Ensure that for **root** an SSH key exists on the new 2025.07 server. If a key does not exist, create it with the command:

```
ssh-keygen -t rsa
```

2. The SSH configuration and agent should be ready on the new server host for a connection to the legacy server that does not prompt for a password.

```
eval $(ssh-agent); ssh-add
```



To establish a connection without prompting for a password, the migration script relies on an SSH agent running on the new server. If the agent is not active yet, initiate it by running **eval \$(ssh-agent)**. Then add the SSH key to the running agent with **ssh-add** followed by the path to the private key. You will be prompted to enter the password for the private key during this process.

3. Copy the public SSH key to the legacy Uyuni Server (**<oldserver.fqdn>**) with **ssh-copy-id**. Replace **<oldserver.fqdn>** with the FQDN of the legacy server:

```
ssh-copy-id <oldserver.fqdn>
```

The SSH key will be copied into the legacy server's **~/.ssh/authorized\_keys** file. For more

information, see the `ssh-copy-id` manpage.

- Establish an SSH connection from the new server to the legacy Uyuni Server to check that no password is needed. Also there must not be any problem with the host fingerprint. In case of trouble, remove old fingerprints from the `~/.ssh/known_hosts` file. Then try again. The fingerprint will be stored in the local `~/.ssh/known_hosts` file.

#### 4.1.1.2.3. Perform the Migration

When planning your migration from a legacy Uyuni to a containerized Uyuni, ensure that your target instance meets or exceeds the specifications of the legacy setup. This includes, but is not limited to, memory (RAM), CPU Cores, Storage, and Network Bandwidth.

 Uyuni server hosts that are hardened for security may restrict execution of files from the `/tmp` folder. In such cases, as a workaround, export the `TMPDIR` environment variable to another existing path before running `mgradm`. For example:

```
export TMPDIR=/path/to/other/tmp
```

In Uyuni updates, tools will be changed to make this workaround unnecessary.

### Configure Custom Persistent Storage

Configuring persistent storage is optional, but it is the only way to avoid serious trouble with container full disk conditions. It is highly recommended to configure custom persistent storage with the `mgr-storage-server` tool.

For more information, see `mgr-storage-server --help`. This tool simplifies creating the container storage and database volumes.

Use the command in the following manner:

```
mgr-storage-server <storage-disk-device> [<database-disk-device>]
```



Devices must not have any filesystem. The command aborts if a filesystem exists on the storage device.

For example:

```
mgr-storage-server /dev/nvme1n1 /dev/nvme2n1
```



This command will create the persistent storage volumes at `/var/lib/containers/storage/volumes`.

For more information, see

- **Installation-and-upgrade > Container-management**
- **Administration > Troubleshooting**

## Perform the Migration

1. Execute the following command to install a new Uyuni server. Replace `<oldserver.fqdn>` with the FQDN of the legacy server:

```
mgradm migrate podman <oldserver.fqdn>
```

2. Migrate trusted SSL CA certificates.

### Migration of the Certificates

Trusted SSL CA certificates that were installed as part of an RPM and stored on a legacy Uyuni in the `/usr/share/pki/trust/anchors/` directory will not be migrated. Because SUSE does not install RPM packages in the container, the administrator must migrate these certificate files manually from the legacy installation after migration:

*Procedure: Migrating the Certificates*

1. Copy the file from the legacy server to the new server. For example, as `/local/ca.file`.
2. Copy the file into the container with the command:

```
mgrctl cp /local/ca.file server:/etc/pki/trust/anchors/
```

### Finalize migration



After successfully running the `mgradm migrate` command, the Salt setup on all clients will still point to the legacy server.

To redirect them to the new 2025.07 server, it is required to rename the new server at the infrastructure level (DHCP and DNS) to use the same FQDN and IP address as the legacy server.



If something goes wrong with the migration it is possible to restart the old system. As root, restart PostgreSQL and the spacewalk services with the following commands:

```
service postgresql start
spacewalk-service start
```

#### 4.1.1.3. Kubernetes Preparations

Before executing the migration with `mgradm migrate` command, it is essential to predefine **Persistent Volumes**, especially considering that the migration job initiates the container from scratch.

For more information, see the installation section on preparing these volumes in **Installation-and-upgrade > Container-management**.

#### 4.1.1.4. Migrating

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

```
mgradm migrate podman <oldserver.fqdn>
```

or

```
mgradm migrate kubernetes <oldserver.fqdn>
```



After successfully running the `mgradm migrate` command, the Salt setup on all clients will still point to the legacy server. To redirect them to the new server, it is required to rename the new server at the infrastructure level (DHCP and DNS) to use the same FQDN and IP address as the legacy server.

#### 4.1.2. Uyuni Server Upgrade

Before running the upgrade command, it is recommended to update the host operating system. Updating the host operating system will also result in the update of the Uyuni tooling such as the `mgradm` tool.

##### *Procedure: Upgrading Uyuni Server*

1. Refresh software repositories with `zypper`:

```
zypper ref
```

2. Apply available updates with `transactional-update`:

```
transactional-update
```

3. If updates were applied, `reboot`.
4. The Uyuni Server container can be updated using the following command:

```
mgradm upgrade podman
```

This command will bring the status of the container up-to-date and restart the server.



#### *Upgrading to specific version*

If you do not specify the tag parameter, it will default to upgrading to the most recent version. To upgrade to a specific version, provide the tag parameter with the desired image tag.

For more information on the upgrade command and its parameters, use the following command:

```
mgradm upgrade podman -h
```

For air-gapped installations, first upgrade the container RPM packages, then run the `mgradm` command.

#### 4.1.2.1. Database Backup Volume

Server migration or upgrade with `mgradm migration` or `mgradm upgrade` can create a volume with the database backup.

When the PostgreSQL database version is increased, the old database must be stored in a separate location before running the upgrade. For this purpose `mgradm` dynamically creates the volume `var-pgsql-backup`. When the migration or upgrade is done and the user has validated that the new system is working as expected, this volume can be removed safely.

## 4.2. Proxy

### 4.2.1. Legacy Proxy Migration to Container

The containerized proxy now is managed by a set of systemd services. For managing the containerized proxy, use the `mgrpxy` tool.

This section will help you migrate from the legacy `systemd` proxy using the `mgrpxy` tool.



An in-place migration from previous releases of Uyuni to 2025.07 will remain unsupported due to the HostOS change from openSUSE Leap to openSUSE Leap Micro.

The traditional contact protocol is no longer supported in Uyuni 2025.07 and later. Before migrating from previous Uyuni releases to 2025.07, any existing traditional clients including the traditional proxies must be migrated to Salt.

#### 4.2.1.1. Migrate From Legacy to Containerized Proxy With Systemd

##### 4.2.1.1.1. Generate Proxy Configuration

*Procedure: Generate the Proxy Configuration*

1. Log in to the Uyuni Server Web UI.
2. Select **Systems > Proxy Configuration** from the left navigation.
3. Enter your Proxy FQDN. Use the same FQDN as the original proxy host.
4. Enter your Server FQDN.
5. Enter the Proxy port number. *We recommend using the default port of 8022.*
6. Certificate and private key are located on the Server container host in **/var/lib/containers/storage/volumes/root/\_data/ssl-build/**.
  - RHN-ORG-TRUSTED-SSL-CERT
  - RHN-ORG-PRIVATE-SSL-KEY
7. Copy the certificate and key to your machine with:

```
scp root@uyuni-server-example.com:/root/ssl-build/RHN-ORG-PRIVATE-SSL-KEY .
scp root@uyuni-server-example.com:/root/ssl-build/RHN-ORG-TRUSTED-SSL-CERT .
```

8. Select **Choose File** and browse your local machine for the certificate.
9. Select **Choose File** and brose your local machine for the private key.
10. Enter the CA password.
11. Click **Generate**.

#### 4.2.1.1.2. Transfer Proxy Configuration to New Host

*Procedure: Transferring the Proxy Configuration*

1. From the Server transfer the generated tar.gz file containing the proxy configuration to the new Proxy host:

```
scp config.tar.gz <uyuni-proxy-FQDN>:/root/
```

2. Disable the legacy proxy prior to executing the next step:

```
spacewalk-proxy stop
```

3. Deploy the new Proxy with:

```
systemctl start uyuni-proxy-pod
```

4. Enable the new Proxy with:

```
systemctl enable --now uyuni-proxy-pod
```

- 
5. Run `podman ps` to verify all the containers are present and running:

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

#### 4.2.1.2. Migrate Uyuni Proxy to Uyuni 2025.07 Containerized Proxy

*Procedure: Migrate Uyuni Containerized Proxy to Uyuni 2025.07 New Containerized Proxy*

1. Boot your new machine and begin installation of openSUSE Leap Micro 6.1.
2. Complete the installation.
3. Update the system:

```
transactional-update --continue
```

4. Install `mgrpxy` and optionally, `mgrpxy-bash-completion`:

```
transactional-update pkg install mgrpxy mgrpxy-bash-completion
```

5. Reboot.
6. Copy your `tar.gz` proxy configuration to the host.

#### 4.2.1.3. Install Packages Using the Web UI

The `mgrpxy` and `mgrpxy-bash-completion` packages can also be installed via the web UI after the minion has been bootstrapped and registered with the Server.

*Procedure: Installing Packages Using the Web UI*

1. After installation, ensure that the SLE Micro 6.1 parent channel and Proxy child channels are added and synchronized from the **Admin > Setup Wizard → Products** page.
2. In the Web UI, go to **Systems > Activation Keys** and create an activation key linked for the synchronized SLE Micro 6.1 channel.
3. Bootstrap your system as a minion using the **Systems > Bootstrapping** page.
4. Once the new machine is onboarded and displayed in the systems list, select the system and navigate to the **System Details > Install Package** page.
5. Install the packages `mgrpxy` and `mgrpxy-bash-completion`.
6. Reboot the system.

#### 4.2.1.4. Generate Proxy Config With `spacecmd` and Self-Signed Certificate

You can generate a Proxy configuration using spacecmd.

*Procedure: Generate Proxy Config With **spacecmd** and Self-Signed Certificate*

1. SSH into your container host.
2. Execute the following command replacing the Server and Proxy FQDN:

```
mgrctl exec -ti 'spacecmd proxy_container_config_generate_cert -- dev-pxy.example.com dev-srv.example.com 2048 email@example.com -o /tmp/config.tar.gz'
```

3. Copy the generated config to the Proxy:

```
mgrctl cp server:/tmp/config.tar.gz .
```

4. Deploy the Proxy with:

```
mgrproxy install podman config.tar.gz
```

#### 4.2.1.5. Generate Proxy Config With **spacecmd** and Custom Certificate

You can generate Proxy configuration using **spacecmd** for a custom certificates rather than default self-signed certificates.



- 2 GB represents the default proxy squid cache size. This will need to be adjusted for your environment.

*Procedure: Generate Proxy Config With **spacecmd** and Custom Certificate*

1. SSH into your Server container host.
2. Execute the following command replacing the Server and Proxy FQDN:

```
for f in ca.crt proxy.crt proxy.key; do
 mgrctl cp $f server:/tmp/$f
done
mgrctl exec -ti 'spacecmd proxy_container_config -- -p 8022 pxy.example.com
srv.example.com 2048 email@example.com /tmp/ca.crt /tmp/proxy.crt /tmp/proxy.key -o
/tmp/config.tar.gz'
```

3. Copy the generated config to the Proxy:

```
mgrctl cp server:/tmp/config.tar.gz .
```

4. Deploy the Proxy with:

```
mgrpxy install podman config.tar.gz
```

## 4.2.2. Uyuni Proxy Upgrade

Before running the upgrade command, it is recommended to update the host operating system. Updating the host operating system will also result in the update of the Uyuni tooling such as the `mgrpxy` tool.

*Procedure: Upgrading Uyuni Proxy*

1. Refresh software repositories with `zypper`:

```
zypper ref
```

2. Apply available updates with `transactional-update`:

```
transactional-update
```

3. If updates were applied, `reboot`.

4. The Uyuni Proxy containers running on `podman` can be updated using the following command:

```
mgrpxy upgrade podman
```

Or, those running on a Kubernetes cluster can update using:

```
mgrpxy upgrade kubernetes
```



If you do not specify the tag parameter when upgrading to specific version, it will default to upgrading to the most recent version. To upgrade to a specific version, provide the tag parameter with the desired image tag.



We highly recommend using the same tag for all proxy containers to ensure consistency under normal circumstances.

For air-gapped installations, first upgrade the container RPM packages, then run the `mgrpxy upgrade podman` command.

## 4.3. Clients

### 4.3.1. Upgrade 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](#).

# Chapter 5. Basic Server and Proxy Management

## 5.1. Custom YAML Configuration and Deployment with **mgradm**

You have the option to create a custom **mgradm.yaml** file, which the **mgradm** tool can utilize during deployment.



**mgradm** will prompt for basic variables if they are not provided using command line parameters or the **mgradm.yaml** configuration file.

For security, **using command line parameters to specify passwords should be avoided**. Use a configuration file with proper permissions instead.

*Procedure: Deploying the Uyuni Container with Podman Using a Custom Configuration File*

1. Prepare a configuration file named **mgradm.yaml** similar to the following example:

```
Database password. Randomly generated by default
db:
 password: MySuperSecretDBPass

Password for the CA certificate
ssl:
 password: MySuperSecretSSLPASSWORD

Your SUSE Customer Center credentials
scc:
 user: ccUsername
 password: ccPassword

Organization name
organization: YourOrganization

Email address sending the notifications
emailFrom: notifications@example.com

Administrators account details
admin:
 password: MySuperSecretAdminPass
 login: LoginName
 firstName: Admin
 lastName: Admin
 email: email@example.com
```

2. From the terminal, as root, run the following command. Entering your server's FQDN is optional.

```
mgradm -c mgradm.yaml install podman <FQDN>
```



You must deploy the container as sudo or root. The following error will be displayed on 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"
```

3. Wait for deployment to complete.
4. Open a browser and proceed to your server's FQDN or IP address.

## 5.2. Starting and Stopping Containers

The Uyuni 2025.07 Server container can be restarted, started, and stopped using the following commands:

To **restart** the Uyuni 2025.07 Server execute the following command:

```
mgradm restart
5:23PM INF Welcome to mgradm
5:23PM INF Executing command: restart
```

To **start** the server execute the following command:

```
mgradm start
5:21PM INF Welcome to mgradm
5:21PM INF Executing command: start
```

To **stop** the server execute the following command:

```
mgradm stop
5:21PM INF Welcome to mgradm
5:21PM INF Executing command: stop
```

## 5.3. Containers used by Uyuni

Below is a list of containers used by Uyuni 2025.07.

*Table 10. Server Containers*

| Container Name           | Description                             |
|--------------------------|-----------------------------------------|
| uyuni-server             | Main product container                  |
| uyuni-db                 | Database container for the product      |
| uyuni-hub-xmlrpc         | XML-RPC gateway for Hub deployment      |
| uyuni-server-attestation | Server COCO attestation                 |
| uyuni-saline             | Saline container for Salt observability |

| Container Name         | Description                |
|------------------------|----------------------------|
| uyuni-server-migration | Migration helper container |

*Table 11. Proxy Containers*

| Container Name          | Description                                          |
|-------------------------|------------------------------------------------------|
| uyuni-proxy-htpd        | Main proxy container handling all HTTP communication |
| uyuni-proxy-squid       | Squid cache                                          |
| uyuni-proxy-salt-broker | Salt forwarder                                       |
| uyuni-proxy-ssh         | SSH forwarder                                        |
| uyuni-proxy-tftpd       | TFTPD to HTTP translator and forwarder               |

## 5.4. Persistent Container Volumes

Modifications performed within containers are not retained. Any alterations made outside of persistent volumes will be discarded. Below is a list of persistent volumes for Uyuni 2025.07.

To customize the default volume locations, ensure you create the necessary volumes before launching the pod for the first time, utilizing the `podman volume create` command.



- Ensure that this table aligns precisely with the volumes mapping outlined in both the Helm chart and the systemctl services definitions.

### 5.4.1. Server

The following volumes are stored under the **Podman** default storage location on the server.

*Table 12. Persistent Volumes: Podman Default Storage*

| Volume Name    | Volume Directory                     |
|----------------|--------------------------------------|
| Podman Storage | /var/lib/containers/storage/volumes/ |

*Table 13. Persistent Volumes: root*

| Volume Name | Volume Directory |
|-------------|------------------|
| root        | /root            |

*Table 14. Persistent Volumes: var*

| Volume Name             | Volume Directory                   |
|-------------------------|------------------------------------|
| <b>var-cobbler</b>      | <code>/var/lib/cobbler</code>      |
| <b>var-salt</b>         | <code>/var/lib/salt</code>         |
| <b>var-pgsql</b>        | <code>/var/lib/pgsql</code>        |
| <b>var-pgsql-backup</b> | <code>/var/lib/pgsql-backup</code> |
| <b>var-cache</b>        | <code>/var/cache</code>            |
| <b>var-spacewalk</b>    | <code>/var/spacewalk</code>        |
| <b>var-log</b>          | <code>/var/log</code>              |

*Table 15. Persistent Volumes: srv/*

| Volume Name                | Volume Directory                   |
|----------------------------|------------------------------------|
| <b>srv-salt</b>            | <code>/srv/salt</code>             |
| <b>srv-www</b>             | <code>/srv/www/</code>             |
| <b>srv-tftpboot</b>        | <code>/srv/tftpboot</code>         |
| <b>srv-formulametadata</b> | <code>/srv/formula_metadata</code> |
| <b>srv-pillar</b>          | <code>/srv/pillar</code>           |
| <b>srv-susemanager</b>     | <code>/srv/susemanager</code>      |
| <b>srv-spacewalk</b>       | <code>/srv/spacewalk</code>        |

*Table 16. Persistent Volumes: etc/*

| Volume Name                | Volume Directory                                         |
|----------------------------|----------------------------------------------------------|
| <b>etc-apache2</b>         | <code>/etc/apache2</code>                                |
| <b>etc-rhn</b>             | <code>/etc/rhn</code>                                    |
| <b>etc-systemd-multi</b>   | <code>/etc/systemd/system/multi-user.target.wants</code> |
| <b>etc-systemd-sockets</b> | <code>/etc/systemd/system/sockets.target.wants</code>    |
| <b>etc-salt</b>            | <code>/etc/salt</code>                                   |
| <b>etc-sssd</b>            | <code>/etc/sssd</code>                                   |

| Volume Name                | Volume Directory                    |
|----------------------------|-------------------------------------|
| <code>etc-tomcat</code>    | <code>/etc/tomcat</code>            |
| <code>etc-cobbler</code>   | <code>/etc/cobbler</code>           |
| <code>etc-sysconfig</code> | <code>/etc/sysconfig</code>         |
| <code>etc-tls</code>       | <code>/etc/pki/tls</code>           |
| <code>etc-postfix</code>   | <code>/etc/postfix</code>           |
| <code>ca-cert</code>       | <code>/etc/pki/trust/anchors</code> |

## 5.4.2. Proxy

The following volumes are stored under the **Podman** default storage location on the proxy.

*Table 17. Persistent Volumes: Podman Default Storage*

| Volume Name                 | Volume Directory                                  |
|-----------------------------|---------------------------------------------------|
| <code>Podman Storage</code> | <code>/var/lib/containers/storage/volumes/</code> |

*Table 18. Persistent Volumes: srv/*

| Volume Name                       | Volume Directory           |
|-----------------------------------|----------------------------|
| <code>uyuni-proxy-tftpboot</code> | <code>/srv/tftpboot</code> |

*Table 19. Persistent Volumes: var/*

| Volume Name                          | Volume Directory              |
|--------------------------------------|-------------------------------|
| <code>uyuni-proxy-rhn-cache</code>   | <code>/var/cache/rhn</code>   |
| <code>uyuni-proxy-squid-cache</code> | <code>/var/cache/squid</code> |

## 5.5. Understanding `mgr-storage-server` and `mgr-storage-proxy`

`mgr-storage-server` and `mgr-storage-proxy` are helper scripts provided with Uyuni.

They are designed to configure storage for Uyuni Server and Proxy.

The scripts take disk devices as arguments. `mgr-storage-proxy` requires a single argument for the storage disk device. `mgr-storage-server` requires a storage disk device and can optionally accept a second argument for a dedicated database disk device. While both normal and database storage can reside on the same disk, it is advisable to place the database on a dedicated, high-performance disk to ensure better performance and easier management.

### 5.5.1. What these tools do

Both **mgr-storage-server** and **mgr-storage-proxy** perform standard storage setup operations:

- Validate the provided storage devices.
- Ensure that devices are empty and suitable for use.
- Create XFS filesystems on the specified devices.
- Mount the devices temporarily for data migration.
- Move the relevant storage directories to the new devices.
- Create entries in `/etc/fstab` so that the storage mounts automatically on boot.
- Remount the devices at their final locations.

*Table 20. Additional tool-specific behavior*

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>mgr-storage-server</b> | <ul style="list-style-type: none"> <li>• Optionally supports a separate device for database storage.</li> <li>• Stops SUSE Manager services during migration, restarts them afterward.</li> <li>• Moves Podman volumes directory <code>/var/lib/containers/storage/volumes</code> to the prepared storage, and optionally <code>/var/lib/containers/storage/volumes/var-pgsql</code> to the prepared database storage.</li> </ul> |
| <b>mgr-storage-proxy</b>  | <ul style="list-style-type: none"> <li>• Focuses only on proxy storage (no database storage support).</li> <li>• Stops and restarts the proxy service during migration.</li> <li>• Moves podman volumes directory <code>/var/lib/containers/storage/volumes</code> to the prepared storage.</li> </ul>                                                                                                                            |



- Both tools automate standard Linux storage operations. There is no hidden or custom logic beyond what a Linux administrator would do manually.

### 5.5.2. What these tools do **not** do

- They do **not** create or manage LVM volumes.
- They do **not** configure RAID or complex storage topologies.
- They do **not** prevent you from managing storage using normal Linux tools after setup.
- They do **not** provide dynamic resizing or expansion capabilities — these must be handled using standard Linux storage tools.

### 5.5.3. Post-installation storage management

Once storage has been configured, you can safely manage it using standard Linux commands.

### 5.5.3.1. Examples

*Listing 6. Example 1: Extending storage if using LVM*

```
lvextend -L +10G /dev/your_vg/your_lv
xfs_growfs /var/lib/containers/storage/volumes
```

*Example 2: Migrating to a larger disk*

1. Add and format the new disk.
2. Mount it temporarily.
3. Use `rsync` to copy data.
4. Update `/etc/fstab`.
5. Remount at the correct location.

### 5.5.4. When to use, or not use



Always take a backup before making changes to your storage setup.

- Use these tools **only** during initial storage setup or when migrating to new storage where the tool is expected to handle data migration and update `/etc/fstab`.
- Do **not** rerun these scripts for resizing or expanding storage. Use standard Linux tools (e.g., `lvextend`, `xfs_growfs`) for such operations.

### 5.5.5. Summary

**mgr-storage-server** and **mgr-storage-proxy** help automate the initial persistent storage setup for Uyuni components using standard Linux storage practices. They do not limit or interfere with standard storage management afterward.

After setup, continue managing your storage using familiar Linux tools.



A full database volume can cause significant issues with system operation. As disk usage notifications have not yet been adapted for containerized environments, users are encouraged to monitor the disk space used by Podman volumes themselves, either through tools such as Grafana, Prometheus, or any other preferred method. Pay particular attention to the var-pgsql volume, located under `/var/lib/containers/storage/volumes/`.

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