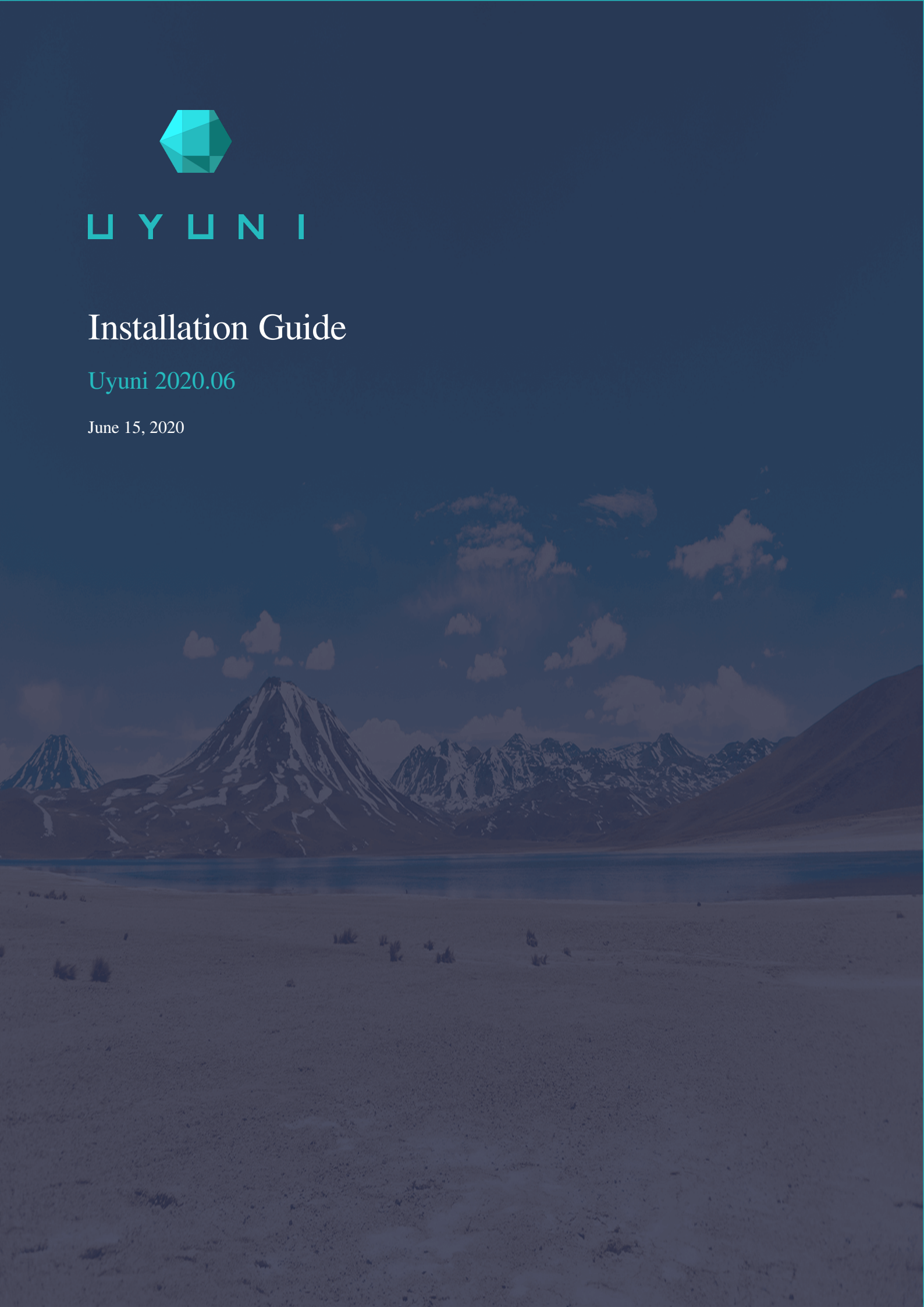

Installation Guide

Uyuni 2020.06

June 15, 2020

Table of Contents

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Introduction

Publication Date: 2020-06-15

This book provides guidance on installing Uyuni.

Installing Uyuni

From SLES 15 SP1, SUSE Manager Server and Proxy are available as base products, and can be installed with the SLES Unified Installer. This is the default method of installation.

General Requirements

Before you begin installation, ensure that you have:

- Current SUSE Customer Center organization credentials
- Access to installation media
- Environment meets the hardware and networking requirements

This section contains more information on each of these requirements.

For a complete list of supported clients and features, see **[Client-configuration › Supported-features ›]**.

Uyuni 2020.06 is based on SLES 15 SP2 as the host operating system. Uyuni comes with a maintenance lifecycle of two years. For more information, see https://www.suse.com/lifecycle/.

Long Term Service Pack Support (LTSS) for 15 cannot be added to Uyuni. It is also not possible to use SLES for SAP as a base for Uyuni to increase the lifecycle of the underlying operating system.

Obtain Your SUSE Customer Center Credentials

Create an account with SUSE Customer Center before installation of SUSE Linux Enterprise Server and Uyuni.

Procedure: Obtaining Your SCC Organization Credentials

1. Navigate to https://scc.suse.com/login in your Web browser.
2. Log in to your SCC account, or follow the prompts to create a new account.
3. If you have not yet done so, click **[Connect to an Organization]** and type or search for your organization.
4. Click **[Manage my Organizations]** and select your organization from the list by clicking on the organization name.
5. Click the **[Organization]** tab, and then select the **[Organization Credentials]** tab.
6. Record your login information for use during Uyuni setup.

Depending on your organization's setup, you might also need to activate your subscription, using the **[Activate Subscriptions]** menu.

Obtain the Unified Installer

SUSE Manager Server and Proxy can be installed with the SUSE Linux Enterprise Unified Installer.

You only require a valid registration code for Uyuni. You do not require a separate code for SLES 15 SP2.

If not already done, download the SUSE Linux Enterprise Unified Installer from https://download.suse.com/index.jsp. Direct link to SUSE Linux Enterprise 15 SP2, required to install SUSE Manager 4.1: https://download.suse.com/index.jsp?product_id=&search=Search&families=22609&version=68287. For a later version or a different architecture, such as IBM Z, select the respective item. With the Unified Installer you can install many SLE-based base products such as SLES, SLES for SAP Applications, or SUSE Manager.

Supported Browsers for the SUSE Manager Web UI

In order to use the Web UI to manage your SUSE Manager environment, you will need to ensure you are running an up to date web browser.

SUSE Manager is supported on:

- Latest Firefox browser shipped with SUSE Linux Enterprise Server
- Latest Chrome browser on all operating systems
- Latest Edge browser shipped with Windows

Windows Internet Explorer is not supported. The Uyuni Web UI will not render correctly under Windows Internet Explorer.

Partition Permissions

When you create disk partitions for the Uyuni Server and Proxy, ensure you set the permissions correctly.

For `/var/lib/pgsql`:

- Owner: Read, Write, Execute
- Group: Read, Execute
- User: None

For `/var/spacewalk`:

- Owner: Read, Write, Execute
- Group: Read, Write, Execute
- User: Read, Execute

Check the permissions with this command:

```
ls -l /var/lib/pgsql /var/spacewalk
```

The output should look like this:

```
drwxr-x--- 1 postgres postgres /var/lib/pgsql
drwxrwxr-x 1 wwwrun   www      /var/spacewalk
```

If required, change the permissions with these commands:

```
chmod 750 /var/lib/pgsql
chmod 775 /var/spacewalk
```

And owners with:

```
chown postgres:postgres /var/lib/pgsql
chown wwwrun:www /var/spacewalk
```

Hardware Requirements

This table outlines hardware and software requirements for the Uyuni Server and Proxy, on x86_64 and IBM Power PC architecture.

For IBM Z hardware requirements, see **[Installation › Install-ibmz ›]**.

For SUSE Manager for Retail hardware requirements, see **[Retail › Retail-requirements ›]**.

Server Hardware Requirements

Table 1. Server Hardware Requirements for x86_64 Architecture

Hardware	Recommended
CPU	Minimum 4 dedicated 64-bit CPU cores
RAM:	*Test Server* Minimum 8 GB
	Base Installation Minimum 16 GB
	Production Server Minimum 32 GB
Disk Space:	`/` *(root)* Minimum 24 GB
	`/var/lib/pgsql` Minimum 50 GB
	`/var/spacewalk` Minimum 50 GB per SUSE product and 360 GB per Red Hat product
	`/var/cache` In accordance to products to be synchronized: 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

Table 2. Server Hardware Requirements for IBM POWER8 or POWER9 Architecture

Hardware	Recommended
CPU	Minimum 4 dedicated cores
RAM:	*Test Server* Minimum 8 GB
	Base Installation Minimum 16 GB
	Production Server Minimum 32 GB
Disk Space:	`/` Minimum 100 GB
	`/var/lib/pgsql` Minimum 50 GB
	`/var/spacewalk` Minimum 50 GB per SUSE product and 360 GB per Red Hat product
	`/var/cache` In accordance to products to be synchronized: 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

Proxy Hardware Requirements

Table 3. Proxy Hardware Requirements

Hardware	Recommended
CPU	Minimum 2 dedicated 64-bit CPU cores
RAM:	*Test Server* Minimum 2 GB
	Production Server Minimum 8 GB
Disk Space:	`/` *(root)* Minimum 24 GB
	`/srv` Minimum 100 GB
	`/var/cache` *(Squid)* Recommended: minimum 100 GB

Uyuni Server stores packages in the `/var/spacewalk/` directory. Repository synchronization fails if this directory runs out of disk space. You can estimate how much space the `/var/spacewalk/` directory requires based on the number and type of clients and repositories you plan to mirror.

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 Uyuni Proxy, the less traffic there will be between it and the Uyuni Server.

- By making the `/var/cache/` directory on the Uyuni Proxy the same size as `/var/spacewalk/` in 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 Uyuni Proxy. See estimation hints in the Server Hardware Requirements section.

Network Requirements

This section details the networking and port requirements for Uyuni.

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-SP1/html/SLES-all/cha-network.html#sec-network-yast-change-host.

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-SP1/html/SLES-all/cha-dns.html.

Using a Proxy When Installing from SUSE Linux Enterprise Media

If you are on an internal network and do not have access to SUSE Customer Center, you can set up and use a proxy during installation.

For more information about configuring a proxy for access to SUSE Customer Center during a SUSE Linux Enterprise installation, see https://documentation.suse.com/sles/15-SP1/html/SLES-all/cha-boot-parameters.html#sec-boot-parameters-advanced-proxy.

The hostname of Uyuni must not contain uppercase letters as this may cause *jabberd* to fail. Choose the hostname of your Uyuni server carefully. Although changing the server name is possible, it is a complex process and unsupported.

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

For more information on disconnected setup and port configuration, see administration:disconnected-setup.pdf.

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.

This image shows the main ports used in Uyuni:

[ports diagram] | *ports_diagram.png*

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 4. 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.
80	TCP	HTTP	Required temporarily for some bootstrap repositories and automated installations. Port 80 is not used to serve the Web UI.
443	TCP	HTTPS	Web UI, client, and proxy 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.

Port number	Protocol	Used By	Notes
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.
5222	TCP	osad	Required to push OSAD actions to clients.
5269	TCP	jabberd	Required to push actions to and from a proxy.
25151	TCP	Cobbler	

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 5. External Port Requirements for Uyuni Server

Port number	Protocol	Used By	Notes Port 80 is not used to serve the Web UI.
80	TCP	HTTP	Required for SUSE Customer Center.
443	TCP	HTTPS	Required for SUSE Customer Center.
5269	TCP	jabberd	Required to push actions to and from a proxy.
25151	TCP	Cobbler	

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 6. 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.
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
```

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 7. External Port Requirements for Uyuni Proxy

Port number	Protocol	Used By	Notes
22			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.
67	TCP/UDP	DHCP	Required only if clients are requesting IP addresses from the server.

Port number	Protocol	Used By	Notes
69	TCP/UDP	TFTP	Required if the server is used as a PXE server for automated client installation.
443	TCP	HTTPS	Web UI, client, and proxy 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.
5222	TCP		Required to push OSAD actions to clients.
5269	TCP		Required to push actions to and from the server.

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 8. 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.
5269	TCP		Required to push actions to and from the server.

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 9. 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.
5222	Outbound	TCP	Required to push OSAD actions to the server or 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.

Supported Client Systems

Supported operating systems for traditional and Salt clients are listed in this table.

In this table, ✔ indicates that clients running the operating system are supported by SUSE, and ✘ indicates that it is not supported. Fields marked as ? are under consideration, and may or may not be supported at a later date.

Supported Versions and SP Levels

Client operating system versions and SP levels must be under general support (normal or LTSS) to be supported with Uyuni. For details on supported product versions, see https://www.suse.com/lifecycle.

Table 10. Supported Client Systems

Operating System	Architecture	Traditional Clients	Salt Clients
SUSE Linux Enterprise 15	x86_64, POWER, IBM Z, ARM	✔	✔
SUSE Linux Enterprise 12	x86_64, POWER, IBM Z, ARM	✔	✔
SUSE Linux Enterprise 11	x86, x86_64, Itanium, IBM POWER, IBM Z	✔	✔
SUSE Linux Enterprise Server-ES 8	x86_64	✔	✔
SUSE Linux Enterprise Server-ES 7	x86_64	✔	✔
SUSE Linux Enterprise Server-ES 6	x86_64	✔	✔
SUSE Linux Enterprise Server for SAP	x86_64, POWER	✔	✔
Red Hat Enterprise Linux 8	x86_64	?	?
Red Hat Enterprise Linux 7	x86_64	✔	✔
Red Hat Enterprise Linux 6	x86, x86_64	✔	✔
CentOS 8	x86, x86_64	?	?
CentOS 7	x86, x86_64	?	?
CentOS 6	x86, x86_64	?	?
openSUSE Leap 15.1	x86_64	✘	✔
Ubuntu 20.04	x86_64	✘	✔
Ubuntu 18.04	x86_64	✘	✔
Ubuntu 16.04	x86_64	✘	✔

When you are setting up your client hardware, you need to ensure you have enough for the operating system and for the workload you want to perform on the client, with these additions for Uyuni:

Table 11. Client Additional Hardware Requirements

Hardware	Additional Size Required
RAM	512 MB
Disk Space:	200 MB

Public Cloud Requirements

You can run Uyuni Server on a public cloud instance from a third-party provider such as Amazon EC2, or Microsoft Azure.

This section details the requirements for using Uyuni on a public cloud instance.

Public clouds provide Uyuni under a Bring Your Own Subscription (BYOS) model. This means that you must register instances with the SUSE Customer Center. For more information about registering Uyuni with SUSE Customer Center, see **[Installation › General-requirements ›]**.

Depending on the public cloud framework you are using, you can locate the Uyuni images by searching for the keywords `suse`, `manager`, `proxy`, or `BYOS`.

Instance Requirements

Select a public cloud instance type that meets the hardware requirements in **[Installation › Hardware-requirements ›]**.

Before you begin, here are some other 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.

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.

When you run Uyuni on public clouds, you must apply security measures to limit access to the instance. A world-accessible Uyuni instance violates the terms of the Uyuni EULA, and is not supported by SUSE.

To access the Uyuni Web UI, allow HTTPS when configuring the network access controls.

Separate Storage Volumes

We recommend that the repositories and the database for Uyuni are stored on separate storage devices. This will help to avoid data loss in cases when the Uyuni instance is terminated. You must set up the storage devices before you run the YaST Uyuni setup procedure.

Provision two disk devices in the public cloud environment, according the cloud provider's documentation. The size of the disk for repositories storage is dependent on the number of distributions and channels you intend to manage with Uyuni. For recommended minimum sizes for the database volume (`/var/lig/pgsql`) and channel volume (`/var/lib/spacewalk`), see **[Installation › Hardware-requirements ›]**.

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.

On your Uyuni Server, use this command to find all available storage devices:

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

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.

Use the `suma-storage` command with the device names to set up the external disks as the locations for the database and repositories:

```
suma-storage <channel_devicename> [<database_devicename>]
```

The external storage volumes are set up as XFS partitions mounted at `/manager_storage` and `/pgsql_storage`.

It is possible to use the same storage device for both channel data and database. This is not recommended, as growing channel repositories might fill up the storage, which poses a risk to database integrity. Using separate storage devices may also increase performance. If you want to use a single storage device, run `suma-storage` with a single device name parameter.

If you are installing a proxy, the `suma-storage` command only takes a single device name parameter and will set up the external storage location as the Squid cache.

Installation

Installing Uyuni 2020.06 Server

SUSE Manager is a SUSE product within the SUSE Linux Enterprise product family. This section describes how to install SUSE Manager Server from the SUSE Linux Enterprise installation media. For this topic we assume that you have already registered your SUSE Manager product with SUSE Customer Center and have obtained a registration code.

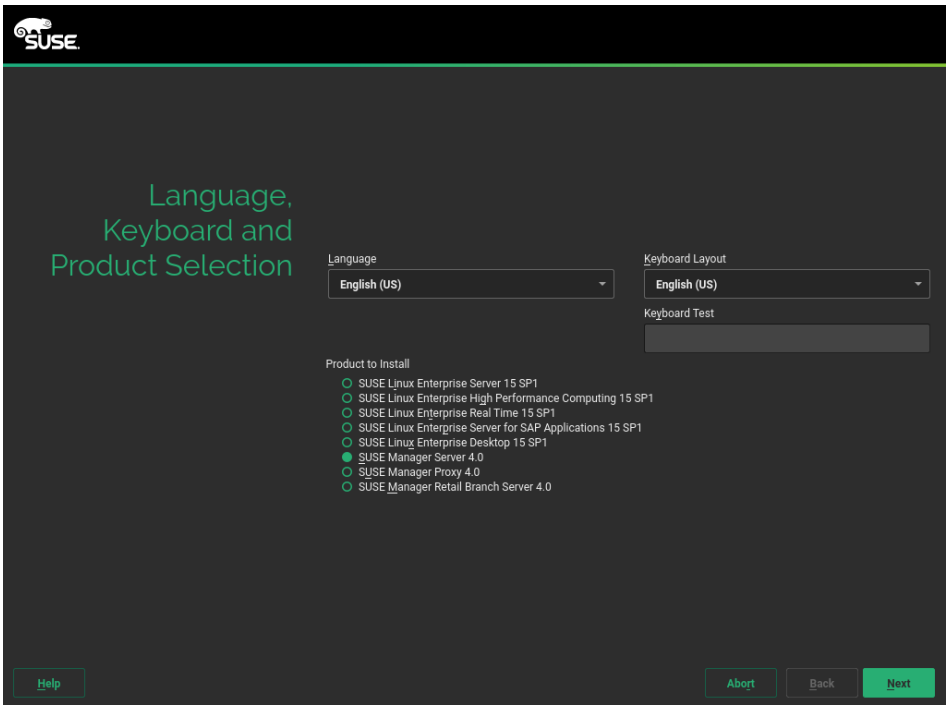
For information on registering with SUSE Customer Center, retrieving your organization credentials from SUSE Customer Center, or obtaining installation media, see general-requirements.pdf.

To change a SUSE Linux Enterprise Server 15 SP2 into a SUSE Manager 2020.06, follow the instructions at **[Installation › Install-vm ›]**.

Before installing SUSE Manager, ensure your physical or virtual machine has enough disk space and RAM by checking the requirements at Hardware.

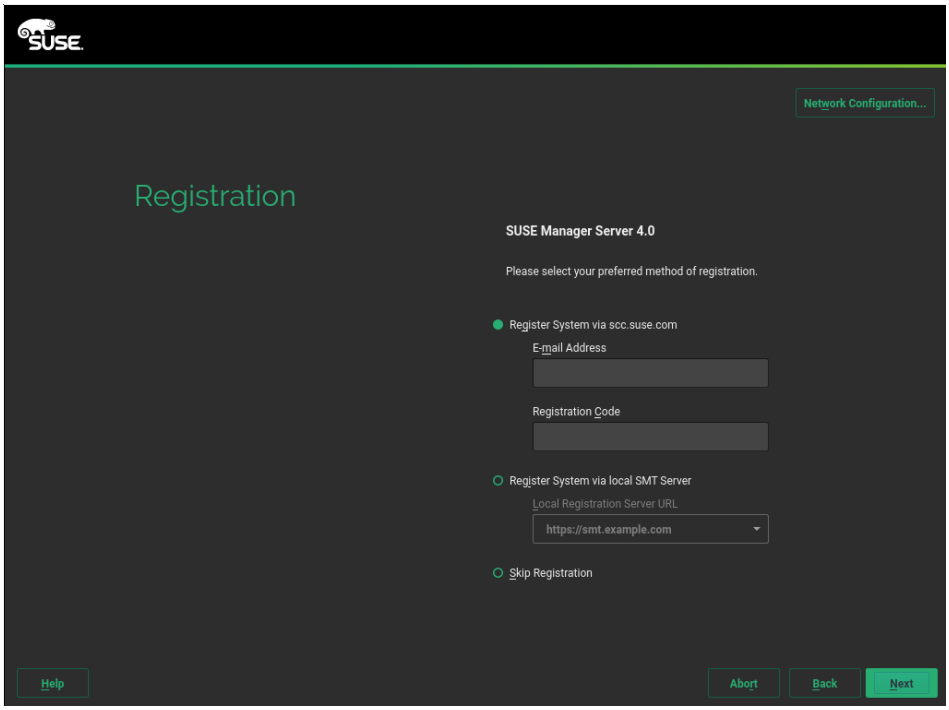
Procedure: Installing SUSE Manager Server from a DVD Image

1. Boot your system with the Unified Installer. If booting fails you might need to adjust the boot order in the BIOS.
2. When prompted, select `Installation`.

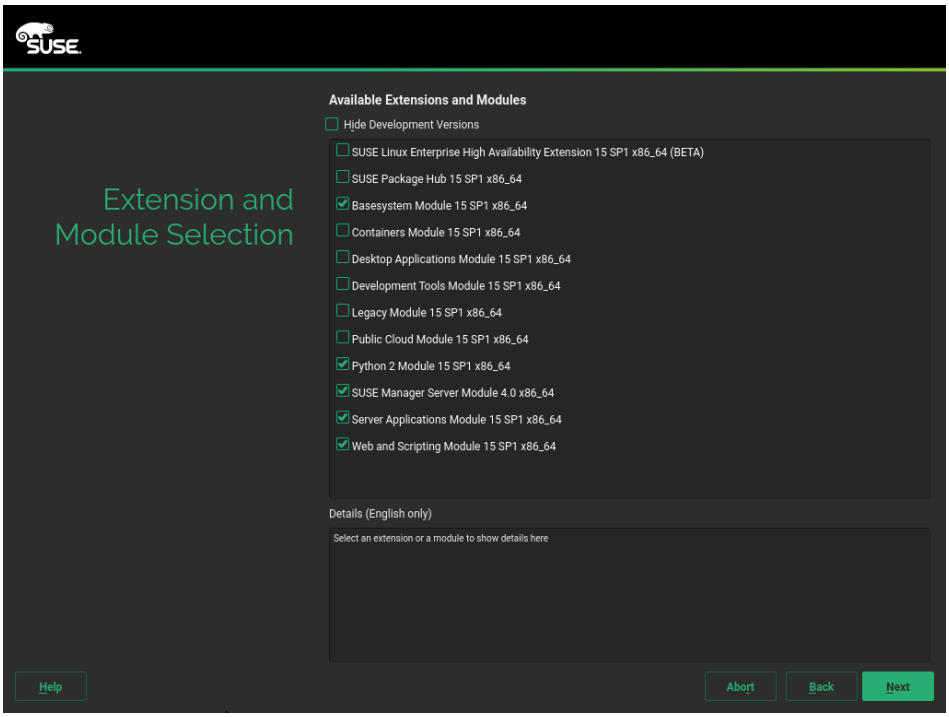


3. In the `Language, Keyboard and Product Selection` screen, check the `SUSE Manager Server` checkbox, and click **[Next]**.

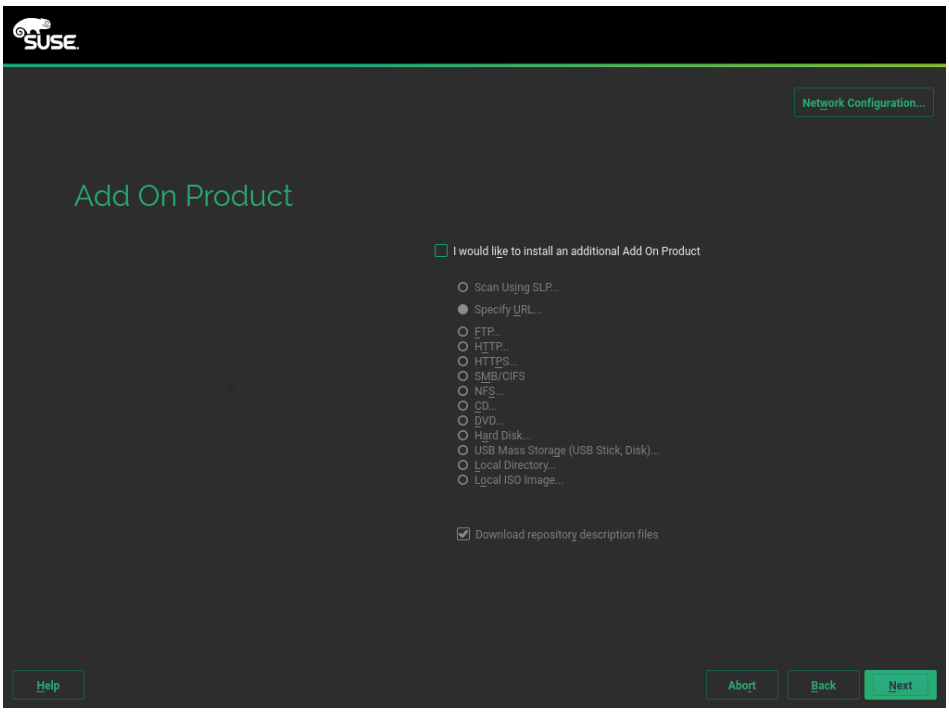
4. Read and agree to the End User Licence Agreement, and click [**Next**].



5. In the `Registration` screen, check the `Register System via scc.suse.com` checkbox, enter your SUSE Customer Center credentials, and click [**Next**].



6. In the `Extension and Module Selection` screen, select additional extensions or modules you require, and click [**Next**]. Mandatory modules are pre-selected and you cannot disable them.



7. OPTIONAL: In the `Add On Product` screen, select any additional or add-on products you require, and click **[Next]**. We do not recommend that you run any other workloads on Uyuni. Only use add-ons that you absolutely require, such as driver repositories from your hardware vendor.
8. In the `System Role` screen, check the `SUSE Manager Server` checkbox, and click **[Next]**.
9. In the `Suggested Partitioning` screen, either accept the default values, or use the **[Guided Setup]** or **[Expert Partitioner]** options to customize your partitioning model, and click **[Next]**.
10. In the `Clock and Time Zone` screen, enter your region and timezone, and click **[Next]**.
11. In the `Local Users` screen, create a new user, and click **[Next]**.
12. In the `System Administrator "root"` screen, create the "root" user, and click **[Next]**.
13. Review the settings on the `Installation Settings` screen.

Graphical Desktop Environment

The default Uyuni server installation does not enable a graphical desktop environment. If you want to run setup tools such as YaST with a graphical interface local on the Uyuni server, click `Software` and select the `X Window System` pattern.

On the `Installation Settings` screen click **[Install]**.

When the installation procedure has finished, you can check that you have all the required modules by using the `SUSEConnect --status-text` command at a command prompt. For SUSE Manager Server, the expected modules are:

- SUSE Linux Enterprise Server Basesystem Module

- Python 2 Module
- Server Applications Module
- Web and Scripting Module
- SUSE Manager Server Module

Uyuni 2020.06 Proxy

SUSE Manager Proxy is a SUSE product within the SUSE Linux Enterprise product family. This section describes how to install SUSE Manager Proxy from SUSE Linux Enterprise installation media. It assumes you have already registered the SUSE Manager Proxy product with the SUSE Customer Center and have a registration code.

For information on registering with SUSE Customer Center, retrieving your organization credentials from SUSE Customer Center, or obtaining installation media, see general-requirements.pdf.

If you want to install SUSE Manager Proxy on a virtual machine, ensure your virtual machine has enough disk space and RAM by checking the requirements at hardware-requirements.pdf.

Uyuni 2020.06 Proxy is a Uyuni add-on that caches software packages on an internal, central server. The proxy caches patch updates from SUSE or custom RPMs generated by third-party organizations. A proxy allows you to use bandwidth more effectively because client systems connect to the proxy for updates, and the Uyuni server is no longer required to handle all client requests. A SUSE Manager Proxy can serve both Traditional and Salt clients. The proxy also supports transparent custom package deployment.

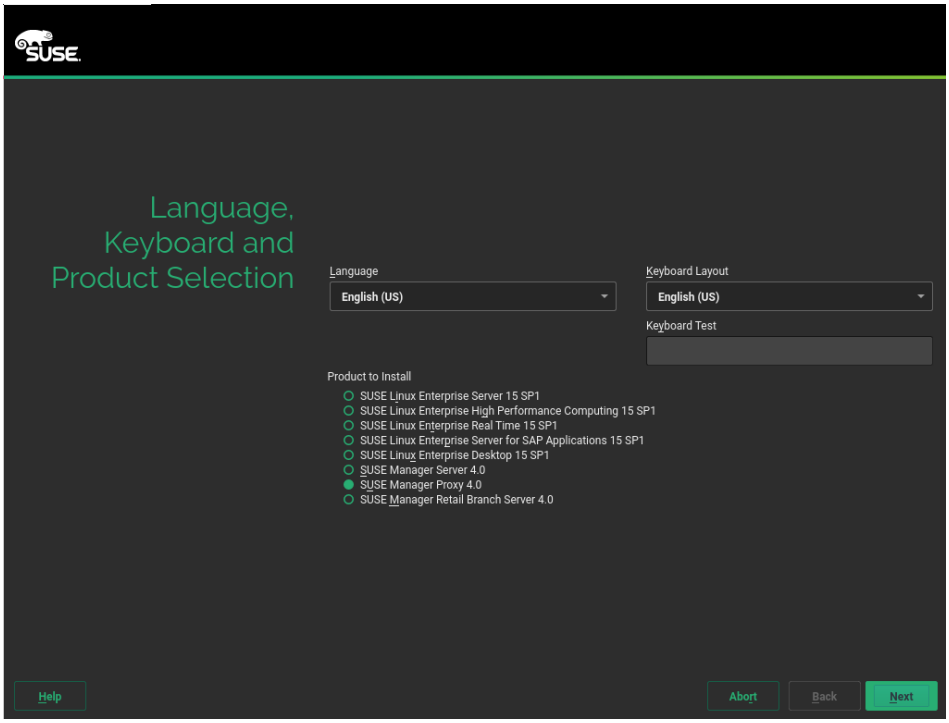
Uyuni Proxy is an open source (GPLv2) solution that provides the following features:

- Cache software packages within a Squid proxy.
- Client systems see the SUSE Manager Proxy as a Uyuni server instance.
- The SUSE Manager Proxy is registered as a client system with the Uyuni server.

The primary goal of a SUSE Manager Proxy is to improve Uyuni performance by reducing bandwidth requirements and accelerating response time.

Procedure: Installing SUSE Manager Proxy from with the Unified Installer

1. To boot the Unified Installer from the installation image, you might need to adjust the boot order in the BIOS.
2. When prompted, select `Installation`.
3. In the `Language, Keyboard and Product Selection` screen, check the `SUSE Manager Proxy` checkbox, and click **[Next]**.



4. Read and agree to the End User Licence Agreement, and click **[Next]**.
5. In the `Registration` screen, check the `Register System via scc.suse.com` checkbox, enter your SUSE Customer Center credentials, and click **[Next]**.
6. In the `Available Extensions and Modules` screen, select any extensions or modules you require, and click **[Next]**. `Basesystem`, `SUSE Manager Proxy`, and `Server Applications` are pre-selected and mandatory for a Uyuni Proxy installation. OPTIONAL: In the following `Add On Product` screen, select any additional or add-on products you require, and click **[Next]**.
7. In the `System Role` screen, check the `SUSE Manager Proxy` checkbox, and click **[Next]**.
8. In the `Suggested Partitioning` screen, accept the default values, or use the **[Guided Setup]** or **[Expert Practitioner]** options to customize your partitioning model, and click **[Next]**.
9. In the `Clock and Time Zone` screen, enter your region and timezone, and click **[Next]**.
10. In the `Local Users` screen, create a new user, and click **[Next]**.
11. Review the settings on the `Installation Settings` screen, and then click **[Install]**.

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 Proxy, the expected modules are:

- SUSE Linux Enterprise Server Basesystem Module
- Server Applications Module

- SUSE Manager Proxy Module

Continue with registering the installed Uyuni Proxy as a Uyuni client: proxy-registration.pdf.

Install SUSE Manager in a Virtual Machine Environment with JeOS

Virtual Machine Manager (virt-manager) Settings

This chapter provides the required (KVM) settings for installation of SUSE Linux Enterprise Just Enough Operating System (JeOS) as the base for Uyuni. A kernel virtual machine (KVM) combined with Virtual Machine Manager (*virt-manager*) will be used as a sandbox for this installation.

Enter the following settings when creating a new virtual machine using **virt-manager**.

This table specifies the minimum requirements. These are suitable for a quick test installation, such as a server with one client. If you want to use a production environment, review the requirements listed in hardware-requirements.pdf.

In the following table replace *version* with the actual product version string. Find the JeOS image at https://download.suse.com/.

KVM Settings	
Installation Method	Import Existing Disk Image
OS:	Linux
Version:	SLES_version_-JeOS-for-kvm-and-xen.x86_64-GM.qcow2
Memory:	8192 MB
CPU's:	4
Storage Format:	*.qcow2* 24 GB (Default) JeOS Root Partition
Virtual Disks:	
VirtIO Disk 2	101 GB for `/var/spacewalk`
VirtIO Disk 3	50 GB for `/var/lib/pgsql`
VirtIO Disk 4	4 GB for swap
Name:	test-setup
Network	Bridge *br0*

SUSE Linux Enterprise Virtualization Guide

For more information on virtualization, see https://documentation.suse.com/sles/15-SP1/html/SLES-all/book-virt.html.

JeOS KVM Settings

Create three additional virtual disks required for the Uyuni storage partitions.

Procedure: Creating the Required Partitions with KVM

1. Create a new virtual machine using the downloaded JeOS KVM image and select `Import existing disk image`.
2. Configure RAM and number of CPUs (at least 8 GB RAM and 4 CPUs).
3. Name your KVM machine and select the `Customize configuration before install` check box.
4. Click **[Add Hardware]** to create three new virtual disks with these specifications. These disks will be partitioned and mounted in Procedure: Preparing JeOS for Uyuni Installation.

Storage size values are the absolute minimum—only suitable for a small test or demo installation. Especially `/var/spacewalk/` may quickly need more space. Also consider to create a separate partition for `/srv` where Kiwi images are stored.

VirtIO Storage Disks	Name	Sizing
VirtIO Disk 2	spacewalk	101 GB
VirtIO Disk 3	pgsql	50 GB
VirtIO Disk 4	swap	4 GB

5. Click **[Begin Installation]** to boot the new VM from the JeOS image.

Follow the prompts to complete the basic JeOS installation, until the process is complete and the command prompt waits for input.

During the basic installation prompts you are asked to enter the root password. In the next message box click **[Confirm root Password]**.

Preparing JeOS for SUSE Manager

Procedure: Preparing JeOS for Uyuni Installation

1. Log in as `root`.
2. Uninstall the `sles-release` package:

```
rpm -e --nodeps sles-release
```

3. Register Uyuni with SCC (for example, replace `<productnumber>` with `2020.06` and `<architecture>` with `x86_64`):

```
SUSEConnect -e<EMAIL_ADDRESS> -r<SUSE_MANAGER_CODE> \
  -p SUSE-Manager-Server/<productnumber>/<architecture>
```

4. Add Uyuni repositories:

```
SUSEConnect -p sle-module-basesystem/15.2/x86_64
SUSEConnect -p sle-module-python2/15.2/x86_64
SUSEConnect -p sle-module-server-applications/15.2/x86_64
SUSEConnect -p sle-module-web-scripting/15.2/x86_64
SUSEConnect -p sle-module-suse-manager-server/<productnumber>/x86_64
```

JeOS is configured to install only required packages. To get all features working you should allow to install also recommended packages. In `/etc/zypp/zypp.conf` change:

```
solver.onlyRequires = true
```

To:

```
solver.onlyRequires = false
```

5. Install yast2-storage-ng with all required dependencies (approx. 40 packages, 30 MB when installed). This basic administration package is required for preparing storage partitions:

```
zypper in yast2-storage-ng
```

6. Partition and mount the virtual disks at the following locations using YaST Partitioner (`yast2 disk`).

Storage size values are the absolute minimum. They are suitable only for a small test or demonstration installation, such as a server with one client. Especially `/var/spacewalk/` may quickly need more space. Also consider to create a separate partition for `/srv` where Kiwi images are stored.

VirtIO Storage Disks	Name	Storage Size	File System Type
VirtIO Disk 2	`/var/spacewalk`	101 GB	XFS
VirtIO Disk 3	`/var/lib/pgsql`	50 GB	XFS
VirtIO Disk 4	`swap`	4 GB	swap

1. Exit the partitioner and install the Uyuni pattern (approximately 730 packages, using 1.4 GB of disk space when installed):

```
zypper in -t pattern suma_server
```

2. Reboot.

For proceeding with Uyuni setup, see **[Installation › Server-setup › SUSE Manager Setup]**.

Install Uyuni Proxy from packages

To install Uyuni Proxy, you will need to start by installing SUSE Linux Enterprise Server media. This section covers the KVM settings required to perform a SUSE Linux Enterprise Server installation as the base for Uyuni Proxy. In this section, we use a KVM and a virtual machine manager as a sandbox for the installation.

SLES KVM Requirements

Use these settings to create a new virtual machine with `virt-manager` (replace `<version>` with the actual version string):

KVM Settings for SLES	**Installation Method:**
Local install media (ISO image or CDROM)	OS:
Linux	Version:
`SLE-<version>-Server-x86_64-GM-DVD1.iso`	Memory:
Test Server Minumum 2 GB	
Production Server Minimum 8 GB	CPUs:
2	Storage Format:
ISO 3 GB	Disk Space:
230 GB split between	
`/` *(root)* Minimum 24 GB	
(Virtual Disk 1) `/srv` Minimum 100 GB	
(Virtual Disk 2) `/var/cache` *(Squid)* Minimum 100 GB	Name:
example-proxy	Network

SLES KVM Settings

This section covers the Uyuni Proxy installation, using the full installation media with KVM and `virt-manager`. Before you begin, you will need to have created an account with SUSE Customer Center, and downloaded the SUSE Linux Enterprise Server installation media.

Procedure: Preparing for SLES Installation

1. In the Virtual Machine Manager tool (`virt-manager`), click **File › New Virtual Machine**.
2. Click **[Local install media (ISO image or CDROM)]**.
3. In the `Create a new virtual machine` dialog, click **[Browse]** and locate the full SLES image you downloaded from your SCC account.
4. Configure your machine with at least 2 GB RAM and a minimum of 2 CPUs.
5. Create a storage device with a minimum of 230 GB storage space for the installation. During the SLES installation this disk should be partitioned into the following partitions:

Disk Space Requirements
100 GB XFS partition (or dedicated virtual disk) for `/srv/`
100 GB XFS partition (or dedicated virtual disk) for `/var/cache/`

   The remaining storage space will be used by the operating system for the root partition.

6. Click **[Finish]** to save the installation settings and begin the installation.

For more information on installing SUSE Linux Enterprise Server, see https://documentation.suse.com/sles/15-SP1/html/SLES-all/art-sle-installquick.html.

Change SLES for SUSE Manager Proxy

Procedure: Changing SLES for Uyuni Proxy Installation

1. Log in as `root`.
2. Uninstall the `sles-release` package:

```
rpm -e --nodeps sles-release
```

3. Register Uyuni Proxy with SCC (for example, replace `<productversion>` with `2020.06` and `<architecture>` with `x86_64`):

```
SUSEConnect -e<EMAIL_ADDRESS> -r<SUSE_MANAGER_PROXY_CODE> \
  -p SUSE-Manager-Proxy/<productversion>/<architecture>
```

4. Add Uyuni repositories:

```
SUSEConnect -p sle-module-basesystem/15.2/x86_64
SUSEConnect -p sle-module-server-applications/15.2/x86_64
SUSEConnect -p sle-module-suse-manager-proxy/4.1/x86_64
```

5. Check that you have allowed installing recommended packages. Check the settings in

`/etc/zypp/zypp.conf`:

```
solver.onlyRequires = false
```

6. Install the Uyuni Proxy pattern:

```
zypper in -t pattern suma_proxy
```

7. Reboot.

Continue with registering the installed Uyuni Proxy as a Uyuni client: proxy-registration.pdf.

Installing on IBM Z

This section is intended for z/VM systems programmers responsible for operating the IBM Z mainframes. It assumes that you are a z/VM systems programmer trained on IBM Z operating protocols, and steps you through installing Uyuni onto an existing mainframe system. This section does not cover the variety of hardware configuration profiles available on IBM Z, but provides a foundational overview of the procedure and requirements necessary for a successful Uyuni Server deployment on IBM Z.

This section describes how to install SUSE Manager Server using SUSE Linux Enterprise installation media. You must have already registered your SUSE Manager product with SUSE Customer Center, and have obtained a registration code.

For information on registering with SUSE Customer Center, retrieving your organization credentials from SUSE Customer Center, or obtaining installation media, see general-requirements.pdf.

System Requirements

Before you begin, check that your environment meets the base system requirements.

Compatible IBM Z Systems:

- IBM zEnterprise System z196
- IBM zEnterprise System z114
- IBM zEnterprise EC12
- IBM zEnterprise EC12
- IBM zEnterprise BC12
- IBM z13
- LinuxOne Rockhopper
- LinuxOne Emperor

Table 12. Hardware Requirements

Hardware	Recommended
CPU	Minimum 4 dedicated 64-bit CPU cores
RAM:	Test Server: Minimum 3 GB RAM and 2 GB Swap space
	Base Installation: Minimum 16 GB
	Production Server: Minimum 32 GB
Disk Space:	Root Partition: Minimum 100 GB
	`/var/lib/pgsql`: Minimum 50 GB
	`/var/spacewalk`: Minimum 50 GB per SUSE product and 360 GB per Red Hat product

Memory should be split across available RAM, VDISK, and swap to suit your environment. On a production system the ratio of physical memory to VDISK will need to be evaluated based on the number of clients you will be installing.

You will require an additional disk for database storage. This should be an `zFCP` or `DASD` device as these are preferred for use with `HYPERPAV`. The database storage disk should have:

- At least 50 GB for `/var/lib/pgsql`
- At least 50 GB for each SUSE product in `/var/spacewalk`
- At least 360 GB for each Red Hat product in `/var/spacewalk`

You will need to ensure you have sufficient disk storage for Uyuni before running `yast2 susemanager_setup`. By default, the Uyuni file system, including the embedded database and patch directories, reside within the root directory. While adjustments are possible when installation is complete, it is important that you specify and monitor these adjustments closely. For information on storage management and reclaiming disk space, see the troubleshooting section in the Uyuni Administration Guide.

If your Uyuni runs out of disk space, this can have a severe impact on its database and file structure. A full recovery is only possible with a previous backup or a new Uyuni installation. SUSE technical services will not be able to provide support for systems suffering from low disk space conditions.

Network Requirements:

- OSA Express Ethernet (including Fast and Gigabit Ethernet)
- HiperSockets or Guest LAN
- 10 GBE, VSWITCH
- RDMA over Converged Ethernet (RoCE)

These interfaces are still included but no longer supported:

- CTC or virtual CTC
- IP network interface for IUCV

The z/VM guest you want to run Uyuni from will require a static IP address and hostname before you begin, as these cannot easily be changed after initial installation. The hostname should contain less than eight characters and must not contain any upper case letters.

Media Requirements:

For media requirements, see [installation:general-requirements].

Install Uyuni on IBM Z

This section covers the installation of Uyuni as a product of the SUSE Linux Enterprise family. For general information about deploying a product on IBM Z hardware, see https://documentation.suse.com/sles/15-SP1/html/SLES-all/cha-zseries.html.

Procedure: Installing SUSE Manager Server from a DVD Image

1. Boot your system with the Unified Installer. If booting fails you might need to adjust the boot order in the BIOS.
2. When prompted, select `Installation`.

Then continue as described in **[Installation › Install-server-unified ›]**.

To finalize the Uyuni installation see **[Installation › Server-setup ›]**.

Setting Up

SUSE Manager 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
- Synchronize the SUSE Linux Enterprise product channel from SUSE Customer Center

Uyuni is part of the SUSE Linux Enterprise product family and thus compatible with the software shipped with SUSE Linux Enterprise Server.

Uyuni is a complex system, and therefore installing third party software is not allowed. Installing monitoring software provided by a third party vendor is allowed only if you do not exchange basic libraries such as SSL, cryptographic software, and similar tools. As part of providing product support, SUSE reserves the right to ask to remove any third party software (and associated configuration changes) and then to reproduce the problem on a clean system.

Do not register a Uyuni Server to itself. The Uyuni Server must be managed individually.

Set up Uyuni with YaST

This section will guide you through Uyuni setup procedures.

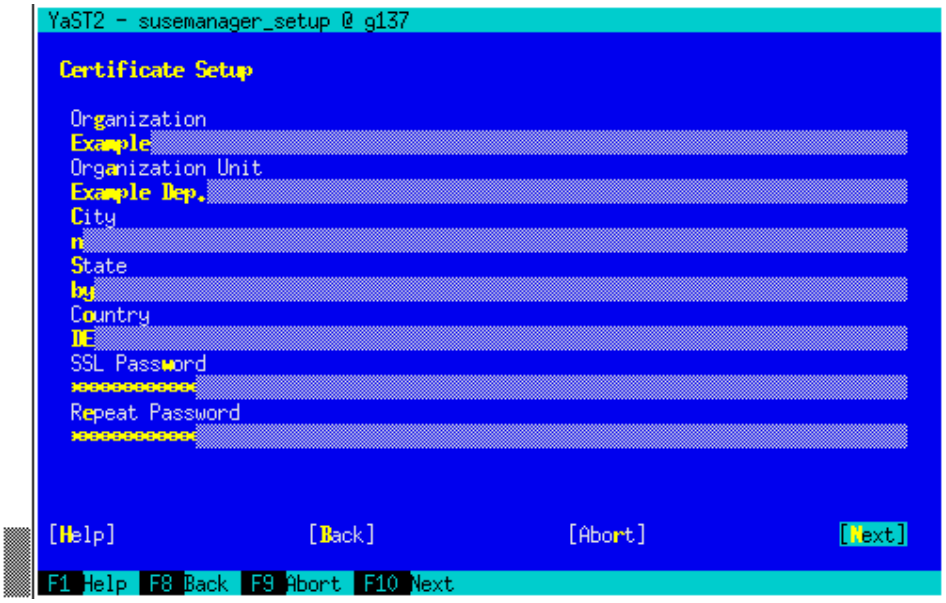
Procedure: Uyuni Setup

1. On the Uyuni Server, at the command line, use the `yast2 susemanager_setup` command to begin setup.
2. From the introduction screen select **SUSE Manager Setup › Setup SUSE Manager from scratch** and click **[Next]** to continue.
3. 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.
4. Enter your certificate information and a password. Passwords must be at 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.

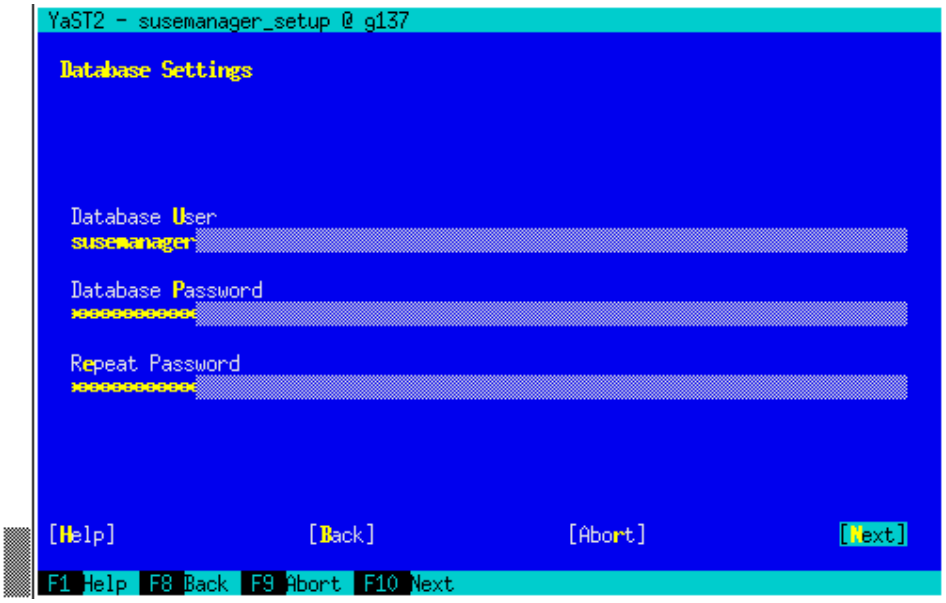
Certificate Password

Without this password it will not be possible to set up a Uyuni Proxy Server.

5. Click **[Next]** to continue.



6. From the **SUSE Manager Setup › Database Settings** screen, enter a database user and password and click **[Next]** to continue. Passwords must be at 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.



7. Click **[Next]** to continue.
8. Click **[Yes]** to run setup when prompted.
9. When setup is complete, click **[Next]** to continue. You will see the address of the Uyuni Web UI.
10. Click **[Finish]** to complete Uyuni setup.

Creating the Main Administration Account

This section will walk you through creating your organization's main administration account for Uyuni.

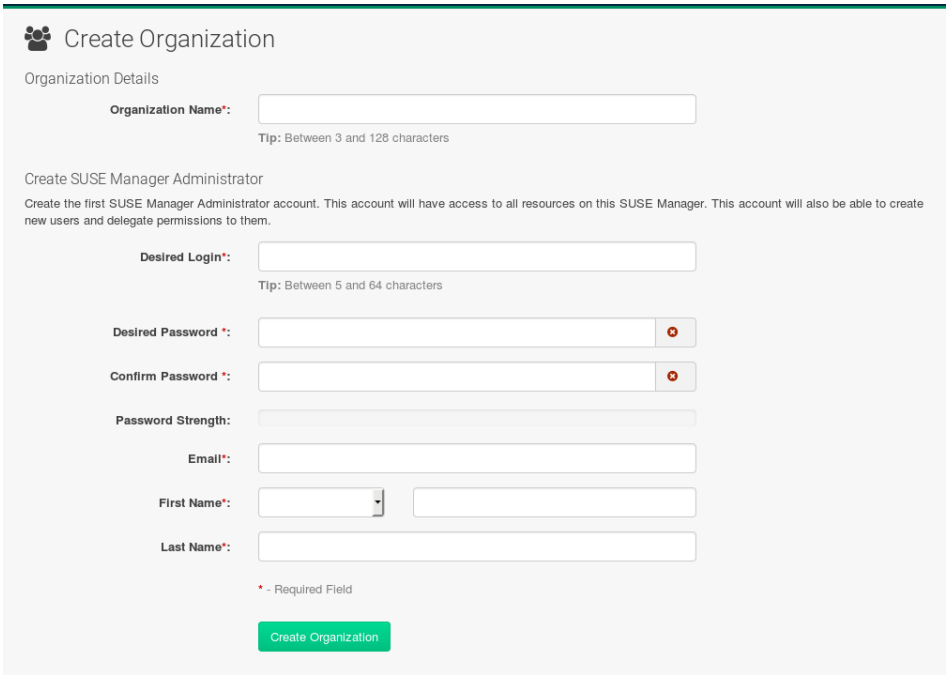
Admin and User Accounts

The main administration account is the *highest authority account* within Uyuni and therefore account access information should be stored in a secure location.

For security it is recommended that the main administrator creates *low level admin accounts* designated for administration of organizations and individual groups.

Procedure: Setting Up the Main Administration Account

1. In the browser, enter the address provided after completing setup. With this address you open the Uyuni Web UI.
2. In 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.



You are now presented with the Uyuni **Home › Overview** page.

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 may receive updates, and 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.

Before you can synchronize software repositories with SCC, you will need to enter organization credentials in SUSE Manager. In previous versions, so-called mirror credentials were used instead. The organization credentials give you access to the SUSE product downloads. You will find your organization credentials in https://scc.suse.com/organization.

Enter your organization credentials in the SUSE Manager Web UI:

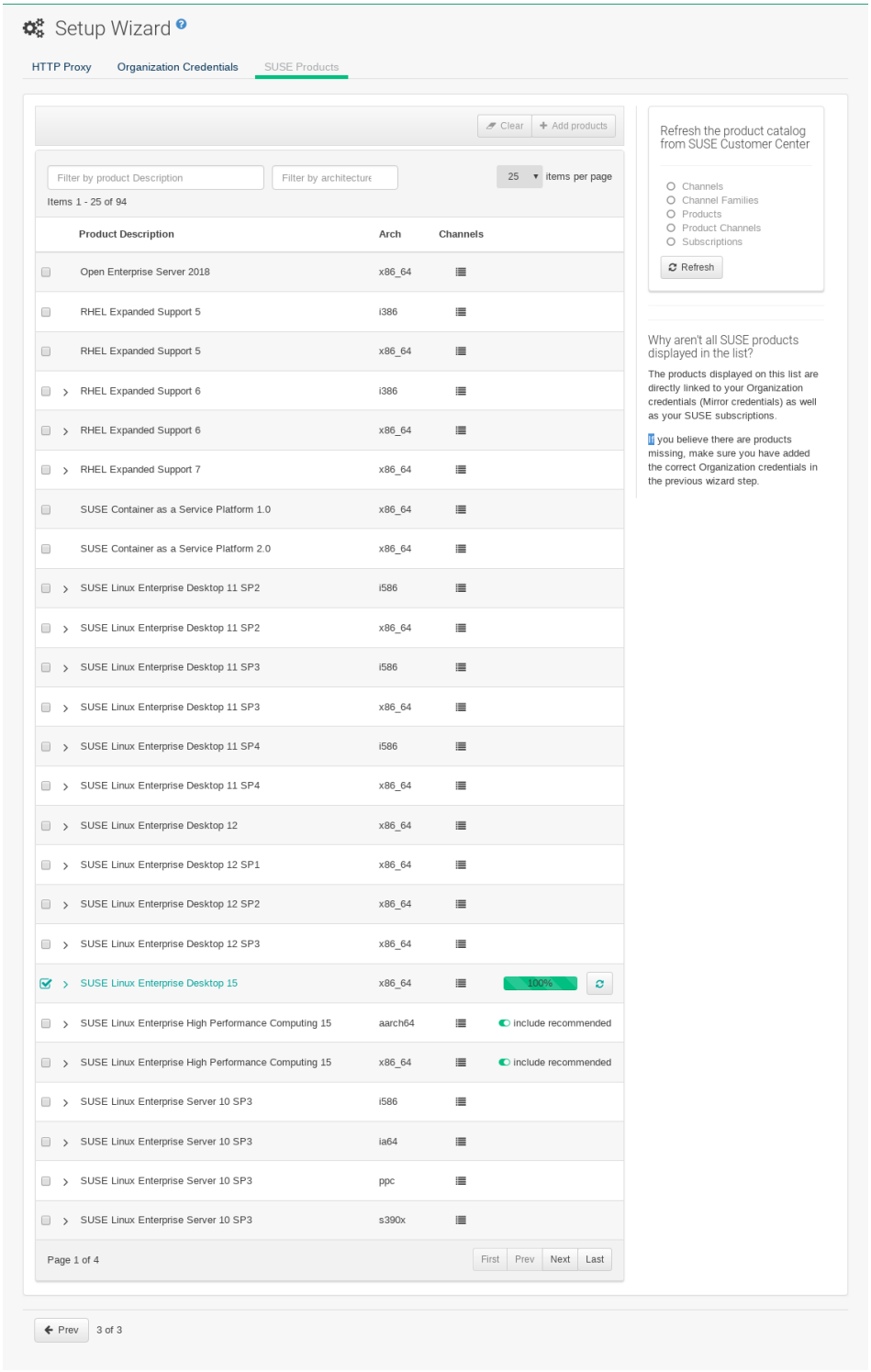
Procedure: Entering Organization Credentials

1. In the SUSE Manager Web UI, select **Admin › Setup Wizard**.
2. From the `Setup Wizard` page select the **[Organization Credentials]** tab.
3. Click **[Add a new credential]**.
4. In the dialog, enter `Username` and `Password`, and confirm with **[Save]**.

When the credentials are confirmed with a check-mark icon, proceed with Procedure: Synchronizing with SUSE Customer Center.

Procedure: Synchronizing with SUSE Customer Center

1. In the 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 › Wizard]**.



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.

PostgreSQL and Transparent Huge Pages

In some environments, *Transparent Huge Pages* provided by the kernel may slow down PostgreSQL workloads significantly.

To disable *Transparant Huge Pages* set the `transparent_hugepage` kernel parameter to `never`. This has to be changed in `/etc/default/grub` and added to the line `GRUB_CMDLINE_LINUX_DEFAULT`, for example:

```
GRUB_CMDLINE_LINUX_DEFAULT="resume=/dev/sda1 splash=silent quiet
showopts elevator=noop 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 ›]**.

SUSE Manager Proxy Registration

Uyuni Proxy systems are registered as traditional clients or as Salt clients using a bootstrap script. Migrating a traditionally registered Proxy system to a Salt Proxy system is not possible. Re-install the Proxy if you want to switch to Salt.

This procedure describes software channel setup and registering the installed Uyuni Proxy with an activation key as a Uyuni client.

When choosing a username or password for your Uyuni Proxy, ensure it does not contain an `@` or `:` character. These characters are reserved.

Before you can select the correct child channels while creating the activation key, ensure you have completely downloaded the Uyuni Proxy 4 channel and all the recommended and mandatory SUSE Linux Enterprise 15 SP1 channels.

Procedure: Registering the Proxy

1. Create an activation key based on the `SLE-Product-SUSE-Manager-Proxy-4.0-Pool` base channel. For more information about activation keys, see **[Client-configuration › Clients-and-**

activation-keys ›].

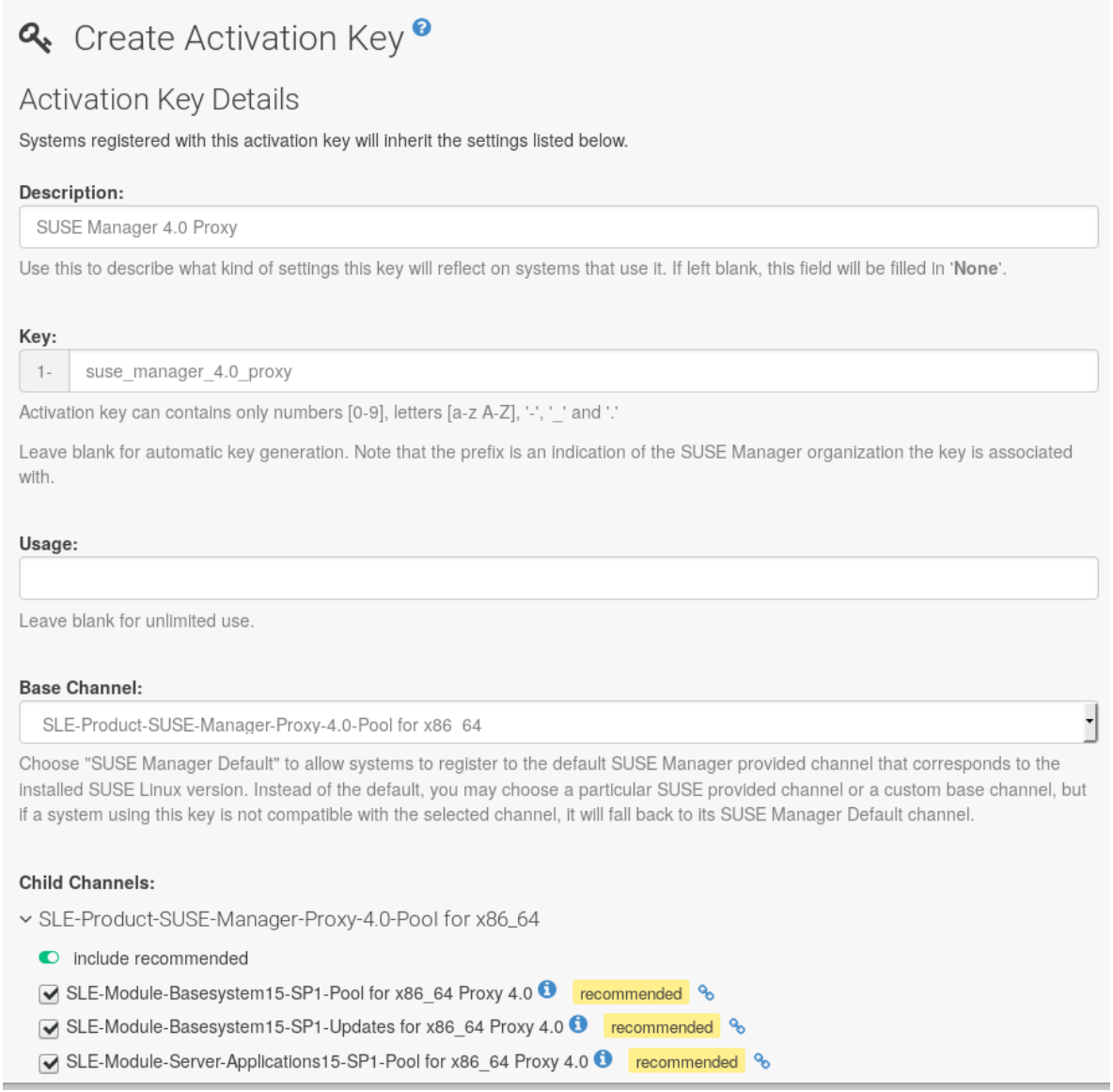


Figure 1. Proxy Activation Key

2. From the `Child Channels` listing select the recommended channels by clicking the `include recommended` icon:
    - SLE-Module-Basesystem15-SP2-Pool
    - SLE-Module-Basesystem15-SP2-Updates
    - SLE-Module-Server-Applications15-SP2-Pool
    - SLE-Module-Server-Applications15-SP2-Updates
    - SLE-Module-SUSE-Manager-Proxy-4.1-Pool
    - SLE-Module-SUSE-Manager-Proxy-4.1-Updates

    The `SLE-Product-SUSE-Manager-Proxy-4.1-Updates` channel is mandatory.

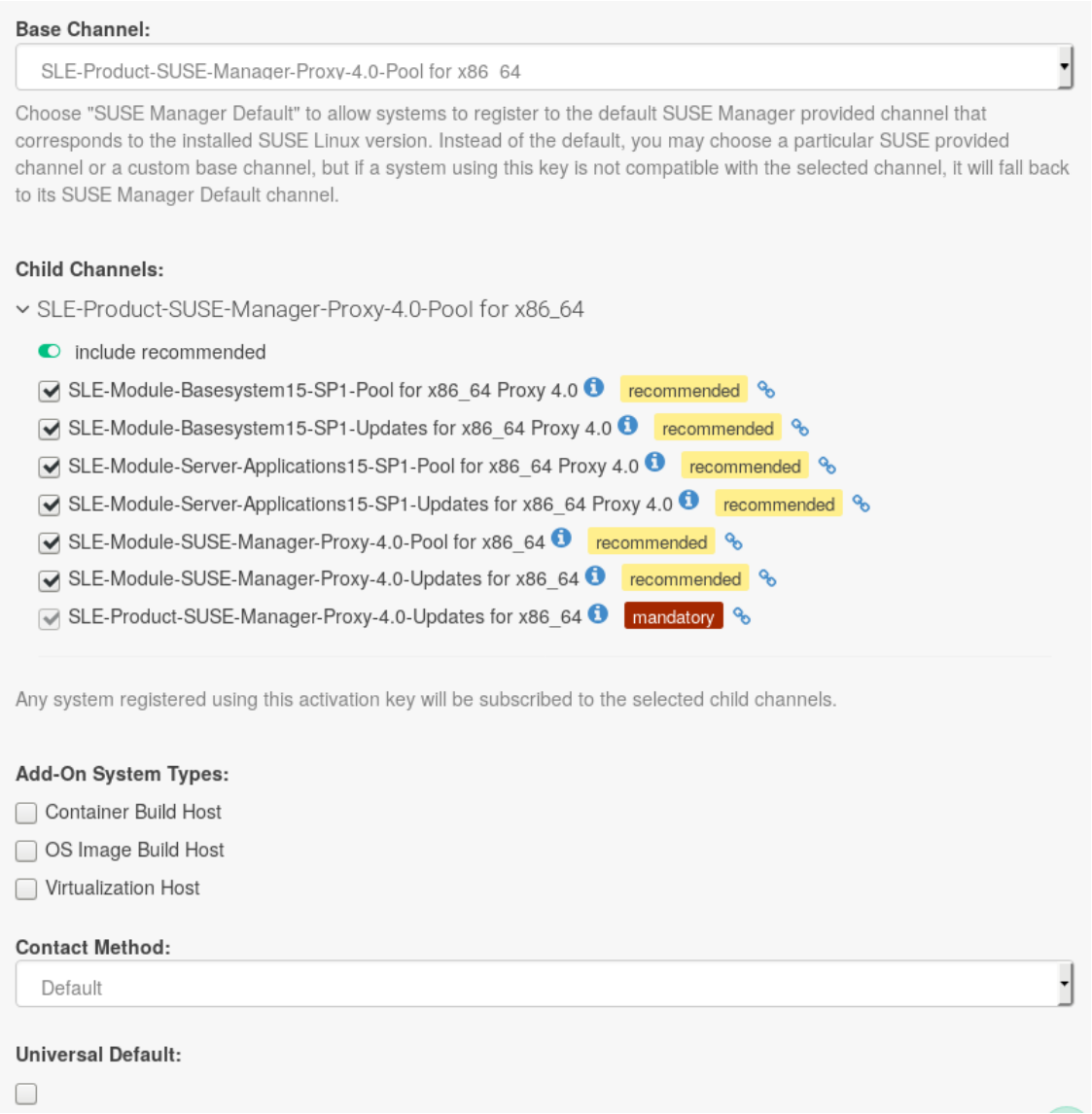


Figure 2. Base and Child Proxy Channel

1. Create the SUSE Manager Tools Repository for bootstrapping, see **[Client-configuration › Bootstrap-repository ›]**.
2. Modify a bootstrap script for the proxy if needed. If you want to run the proxy on a traditional client (system type `Management`) uncheck `Bootstrap using Salt`. Using Salt is the default. For more information about bootstrap scripts, see **[Client-configuration › Registration-bootstrap ›]**.

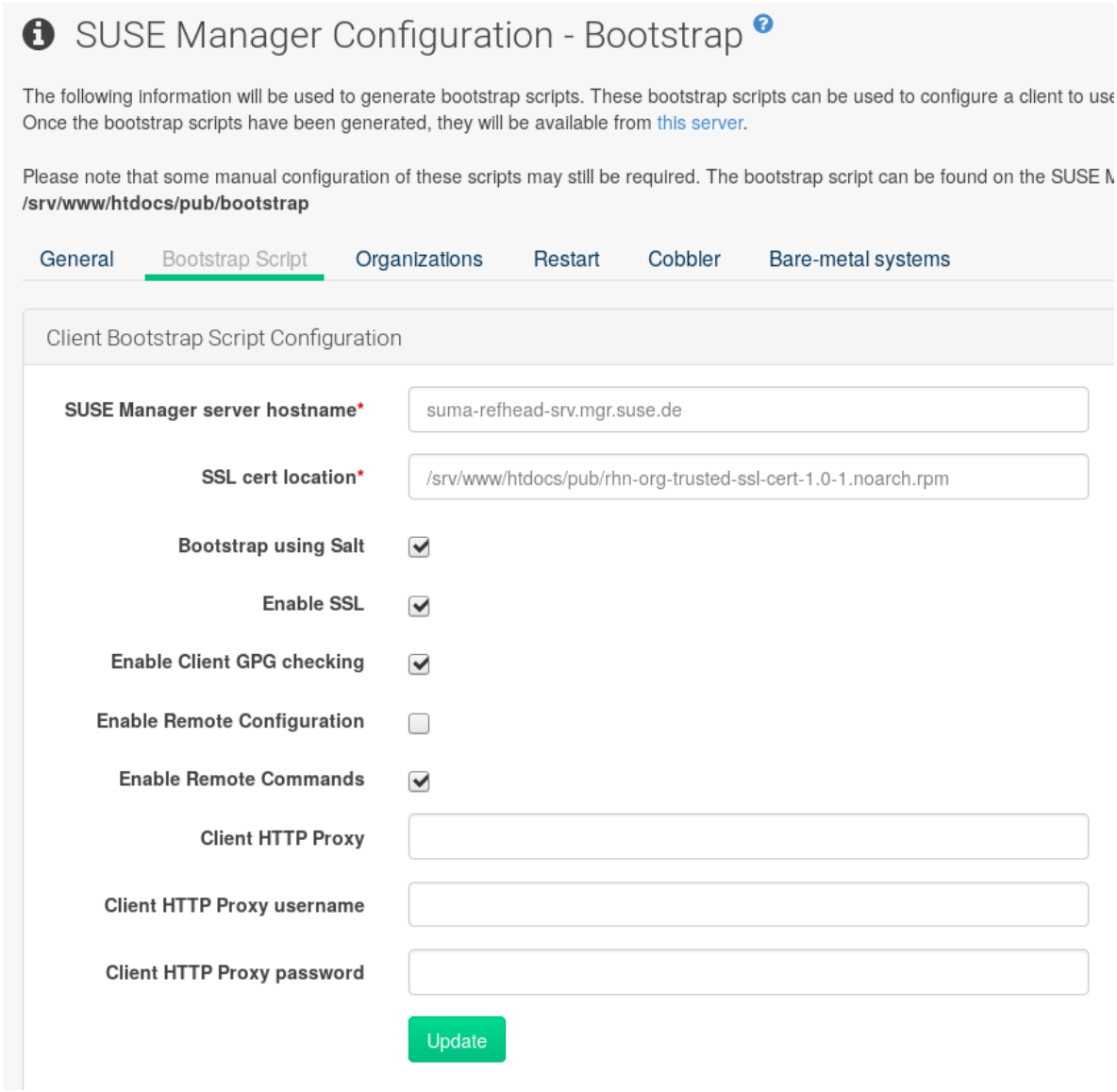


Figure 3. Modifying Bootstrap Script

3. Bootstrap the client with the bootstrap script.
4. For Salt clients, accept the key on the **Salt › Keys** page by checking the appropriate checkbox. When accepted, it will appear in the **Systems › Overview**.
5. Navigate to **System Details › Software › Software Channels**, and check that the four proxy channels (`Pool` and `Updates` for `SLE-PRODUCT` and `SLE-MODULE`) plus the recommended channels are selected. `SLE-PRODUCT-Pool` must be the base channel and the others are child channels.

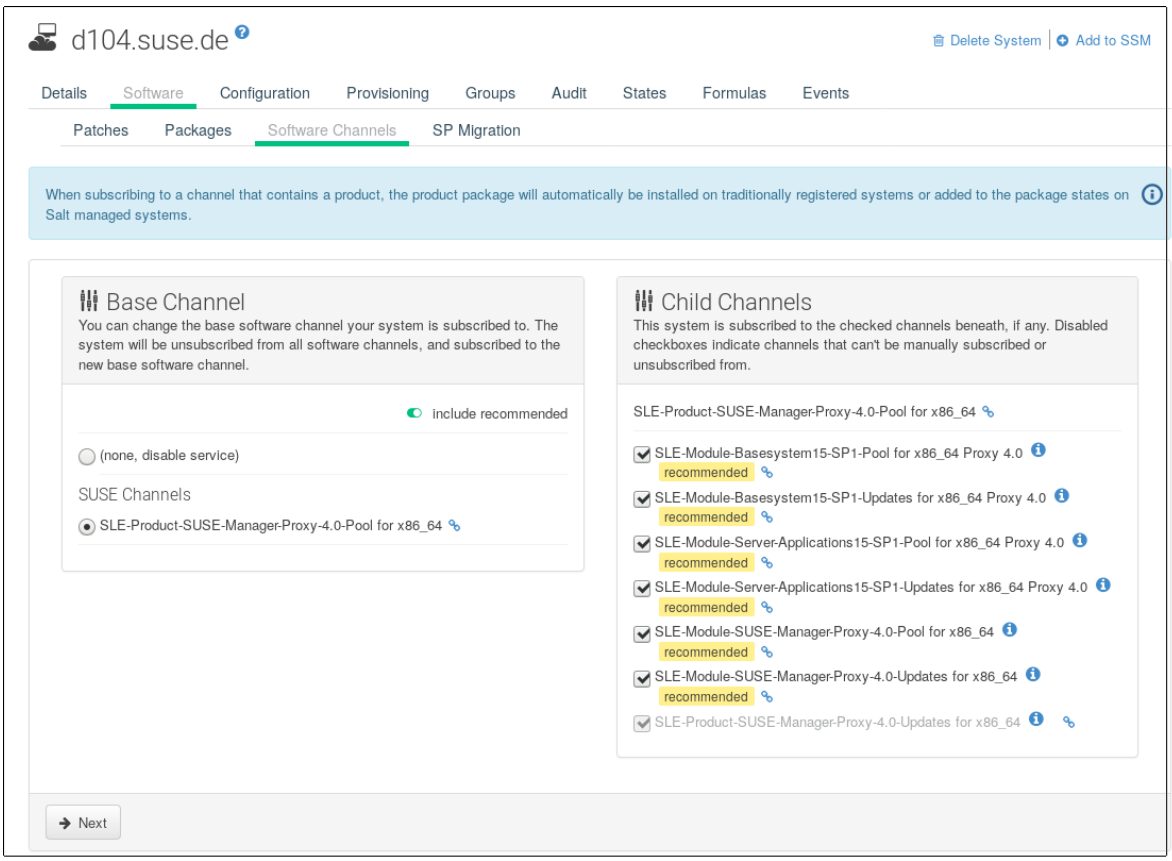


Figure 4. Proxy Channels

Continue with setting up the registered Uyuni Proxy: proxy-setup.pdf.

SUSE Manager Proxy Setup

Uyuni Proxy requires additional configuration.

Proxy Chains

It is possible to arrange Salt 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.

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.

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

A Uyuni parent can be either another proxy or a 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.

Create and Populate Configuration Channel rhn_proxy_config_1000010001?

Accept default `Y`.

SUSE Manager Username

Use same user name and password as on the Uyuni 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 Web UI (**Systems** › **Proxy**, then the system name). `Connection` and `Proxy` subtabs display various status information.

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:

```
zypper in susemanager-tftpsync-recv
```

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

```
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`:

```
zypper in susemanager-tftpsync
```

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

```
configure-tftpsync.sh FQDN_of_Proxy
```

2. Start an initial synchronization on the Uyuni Server:

```
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 Cobbler, see **[Client-configuration › Cobbler › Cobbler]**.

Configure DHCP for PXE through Uyuni 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 that contains the clients to be provisioned:

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

Replace a 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, but 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. Install a new Uyuni Proxy. For installation instructions, see Proxy Installation.
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 › Reactivation Keys]**.
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 a 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.

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.

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**.

Overview Legend

Click the eye icon to see commonly used icons for the currently active section of the Web UI.

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 › Using-ssm ›]**.

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 with a 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.

The shield icon is a security alert. A red shield is the highest priority security alert.

The bug icon is a bug fix alert.

· The squares icon is an enhancement alert.

Some additional icons are used to give extra information:

The circling arrows icon indicates that applying a patch will require a reboot.

The archive box icon indicates that a patch will have an effect on package management.

Public Cloud Setup

Public Cloud providers pre-install Uyuni, so you do not need to perform any installation steps. However, Uyuni Server needs to be registered with SUSE Customer Center to receive updates before you can log in.

For detailed instructions on registering Uyuni to SUSE Customer Center, see **[Installation › Server-setup ›]**.

When you have registered, all SUSE Linux Enterprise modules will be activated. You will also 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/15.1/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:

- SUSE Linux Enterprise Server Basesystem Module
- Python 2 Module
- Server Applications Module
- Web and Scripting Module
- SUSE Manager Server Module
- Public Cloud Module

Account Credentials

An administrator account is created by default. The username and password varies depending on your provider.

Table 13. Default Administrator Account Details

Provider	Default Username	Default Password
Amazon EC2	`admin`	`<instance-ID>`
Google Compute Engine	`admin`	`<instance-ID>`
Microsoft Azure	`admin`	`<instance-name>`-suma

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 --instance-name
```

When you have logged in to the administrator account for the first time, change the default password to protect your account.

Setup Wizard

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

The setup wizard is displayed by default when you log in the Uyuni Web UI for the first time. You can access the setup wizard directly by navigating to **Admin › Setup Wizard**.

Configure the HTTP Proxy

Uyuni can connect to the SUSE Customer Center (SCC) or other remote servers using a proxy. Navigate to the `HTTP Proxy` tab to configure the proxy.

You will need to provide the hostname of the proxy. Use the syntax `<hostname>:<port>`. For example: `<example.com>:8080`.

You can disable use of the proxy by clearing the fields.

When choosing a username or password for your Uyuni Proxy, ensure it does not contain an `@` or `:` character. These characters are reserved.

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).

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. 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. For more information about troubleshooting prodsuct synchronization, see **[Administration › Tshoot-sync ›]**.