Installation Guide

SUSE Manager 4.0

November 13, 2019

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Introduction

This book provides guidance on installing SUSE Manager.

Installing SUSE Manager

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.

Requirements

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.pdf.

> ! SUSE Manager 4.0 is based on SLES 15 SP1 as the host operating system. SUSE Manager 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 SUSE Manager. It is also not possible to use SLES for SAP as a base for SUSE Manager 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 SUSE Manager.

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 SUSE Manager 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 SUSE Manager. You do not require a separate code for SLES 15 SP1.

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 SP1, required to install SUSE Manager 4.0: https://download.suse.com/index.jsp?product_id=&search=Search& families=22609&version=68287. 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 SLES

- Latest Chrome browser on all operating systems

- Latest Edge browser shipped with Windows

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

Partition Permissions

When you create disk partitions for the SUSE Manager 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 SUSE Manager Server and Proxy, on x86_64 and IBM Power PC architecture.

For IBM Z hardware requirements, see installation:install-ibmz.pdf.

For SUSE Manager for Retail hardware requirements, see retail:retail-requirements.pdf.

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
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
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)* Minimum 100 GB

Network Requirements

This section details the networking and port requirements for SUSE Manager.

Fully Qualified Domain Name (FQDN)

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

In a production environment, the SUSE Manager Server and clients should always use a firewall. For a comprehensive list of the required ports, see installation:ports.pdf.

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

Required Network Ports

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

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 SUSE Manager:

[ports diagram] | *ports_diagram.png*

In this section:

- External inbound port: a port to be opened on the SUSE Manager Server or Proxy

- External outbound port: a destination port that the SUSE Manager Server or Proxy can use to open connections

- Internal port: a port only used internally, that is only accessible from `localhost`.

External Server Ports

Table 4. External Port Requirements for SUSE Manager Server

Port number	Direction	Protocol	Used By	Notes
67	Inbound	TCP/UDP	DHCP	Required only if clients are requesting IP addresses from the server.
69	Inbound	TCP/UDP	TFTP	Required if server is used as a PXE server for automated client installation.
80	Inbound	TCP	HTTP	Required temporarily for some bootstrap repositories and automated installations. Port 80 is not used to serve the Web UI.
80	Outbound	TCP	HTTP	Required for SUSE Customer Center.
443	Inbound	TCP	HTTPS	Web UI, client, and proxy requests.
443	Outbound	TCP	HTTPS	Required for SUSE Customer Center.
4505	Inbound	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	Inbound	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.

Port number	Direction	Protocol	Used By	Notes
5222	Inbound	TCP	osad	Required to push OSAD actions to clients.
5269	Inbound/Outbound	TCP	jabberd	Required to push actions to and from a proxy.
8050	Inbound	TCP	websockify	Required to access the graphical console of virtual machines with the Web UI.
25151		TCP	Cobbler	

Internal Server Ports

Table 5. Internal Port Requirements for SUSE Manager 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.
6868	Auditlog-keeper to database.
6888	Auditlog-keeper 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 Proxy Ports

Table 6. External Port Requirements for SUSE Manager Proxy

Port number	Direction	Protocol	Used By	Notes
22	Inbound			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	Inbound	TCP/UDP	DHCP	Required only if clients are requesting IP addresses from the server.
69	Inbound	TCP/UDP	TFTP	Required if the server is used as a PXE server for automated client installation.
80	Outbound			Used to reach the server.
443	Inbound	TCP	HTTPS	Web UI, client, and proxy requests.
443	Outbound	TCP	HTTPS	Required for SUSE Customer Center.
4505	Inbound	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	Direction	Protocol	Used By	Notes
4506	Inbound	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	Inbound	TCP		Required to push OSAD actions to clients.
5269	Inbound/Outbound	TCP		Required to push actions to and from the server.

External Client Ports

Table 7. External Port Requirements for SUSE Manager 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.

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 SUSE Manager. For details on supported product versions, see https://www.suse.com/lifecycle.

Table 8. 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 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 7	x86, x86_64	?	?
CentOS 6	x86, x86_64	?	?
openSUSE Leap 15.1	x86_64	✘	✔
Ubuntu 16.04	x86_64	✘	✔
Ubuntu 18.04	x86_64	✘	✔

Public Cloud Requirements

You can run SUSE Manager 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 SUSE Manager on a public cloud instance.

> Public clouds provide SUSE Manager 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 SUSE Manager with SUSE Customer Center, see installation:general-requirements.pdf.

Depending on the public cloud framework you are using, you can locate the SUSE Manager 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.pdf.

Before you begin, here are some other considerations:

- The SUSE Manager setup procedure performs a forward-confirmed reverse DNS lookup. This must succeed in order for the setup procedure to complete and for SUSE Manager to operate as expected. It is important to perform hostname and IP configuration before you set up SUSE Manager.

- SUSE Manager 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 SUSE Manager 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.

> ⚠️ A world-accessible SUSE Manager instance violates the terms of the SUSE Manager EULA, and is not supported by SUSE.

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

Separate Storage Volumes

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

Provision a disk device in the public cloud environment, according the cloud provider's documentation. The size of the disk is dependent on the number of distributions and channels you intend to manage with SUSE Manager. We recommend at least 25 GB for each distribution, and each channel. For more information on disk sizes, see SUSE Manager sizing examples.

When you attached the virtual disk, it will appear in your instance as a Unix device node. The name of the device node will vary depending on your provider, and the instance type selected.

On your SUSE Manager Server, 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.

Use the `suma-storage` command with the device name to set up the external disk as the location for the database and repositories:

```
/usr/bin/suma-storage <devicename>
```

The external storage will be set up as an XFS partition mounted at `/manager_storage`.

If you are installing a proxy, the `suma-storage` command will also move the Squid cache to the external storage location.

Installation

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) 15 as the base for SUSE Manager. 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**.

> **ℹ** 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*

> **ℹ** *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 SUSE Manager 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 SUSE Manager Installation.

> **ℹ** 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 SUSE Manager Installation

1. Log in as `root`.

2. Uninstall the `sles-release` package:

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

3. Register SUSE Manager with SCC (for example, replace `<productnumber>` with `4.0` and `<architecture>` with `x86_64`):

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

4. Add SUSE Manager repositories:

```
SUSEConnect -p sle-module-basesystem/15.1/x86_64
SUSEConnect -p sle-module-python2/15.1/x86_64
SUSEConnect -p sle-module-server-applications/15.1/x86_64
SUSEConnect -p sle-module-web-scripting/15.1/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 SUSE Manager pattern (approximately 730 packages, using 1.4 GB of disk space when installed):

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

2. Reboot.

For proceeding with SUSE Manager setup, see SUSE Manager Setup.

Installing SUSE Manager Server

This chapter provides the required KVM settings for installation of SUSE Linux Enterprise Server media as the base for SUSE Manager. A kernel virtual machine KVM combined with Virtual Machine Manager (`virt-manager`) will be used as a sandbox for this installation.

SLES KVM Requirements

Enter the following settings when creating a new virtual machine using `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-[replaceable]`version`-Server-x86_64 -GM-DVD1.iso`	Memory:
4096 MB	CPUs:
2	Storage Format:
ISO 3 GB	Disk Space:
234 GB split between 4 GB swap and 130 GB mounted at `/var/spacewalk/`	
(Virtual Disk 1) and 50 GB mounted at `/var/lib/pgsql`	
(Virtual Disk 2). The rest for the root partition (100 GB+).	Name:
example-server	Network

SLES KVM Settings

This section provides guidance on installation of SUSE Manager utilizing the full installation media with KVM and `virt-manager`. This section assumes you have previously setup an account with SCC and downloaded the SLES full installation media.

Procedure: Preparing for SLES Installation

1. In `virt-manager` select **File › New Virtual Machine**.

2. Select **[Local install media (ISO image or CDROM)]**.

3. Ensure **[Use ISO Image]** is selected then click **[Browse]** and locate the full SLES image you downloaded from your SCC account.

4. Configure your machine with at least 4096 MB RAM and a minimum of 2 CPUs.

5. Create a storage device with a minimum of 234 GB storage space for the installation. During the partitioning setup of the SLES installation this disk should be partitioned into the following disks:

Disk Space Requirements
4 GB Swap space
130 GB XFS partition (or dedicated virtual disk) for `/var/spacewalk/`
50 GB XFS partition (or dedicated virtual disk) for `/var/lib/pgsql/`

6. The remaining storage space will be used by the operating system for the root partition. Select **[Finish]** to begin the installation.

Installation of SUSE Linux Enterprise Server will begin. For more information on completing an installation of SUSE Linux Enterprise Server, see: https://documentation.suse.com/sles/15-SP1/html/ SLES-all/art-sle-installquick.html.
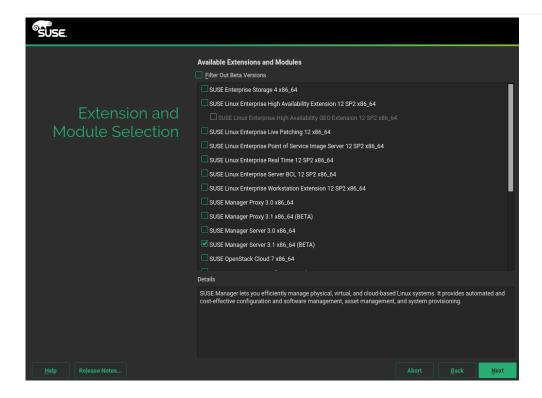
Selecting the SUSE Manager Extension

1. During SUSE Linux Enterprise Server installation, you will be presented with the `Extension and Module Selection` screen.

> **ℹ** This screen will not be shown if you have skipped the registration step at the beginning of the installation process. Ensure you have registered with SUSE and logged in.

2. Select the SUSE Manager Extension and then click the **[Next]** button.

3. Complete the SUSE Linux Enterprise Server installation.

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 SUSE Manager 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 SUSE Manager Server deployment on IBM Z.

System Requirements

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

The base system for SUSE Manager 4.0 is SLES 15 SP1.

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 9. 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 SUSE Manager before running `yast2 susemanager_setup`. By default, the SUSE Manager 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 SUSE Manager Administration Guide.

> ⚠️ If your SUSE Manager 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 SUSE Manager 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 SUSE Manager 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:

SUSE Linux Enterprise 15 SP1 Installation Media for IBM Z is available from https://www.suse.com/products/server/download/

Installing SUSE Manager on IBM Z

This section covers the installation of SUSE Manager 4.0 as an extension to SUSE Linux Enterprise Server 15 SP1.

For more information on deploying SLES 15 SP1 on your hardware, see https://documentation.suse.com/sles/15-SP1/html/SLES-all/cha-zseries.html.

1. Install SUSE Linux Enterprise Server 15 SP1 from the installation media, and select SUSE Manager as an extension.

2. If you have not already done so, set up any additional storage required for `/var/spacewalk` and `/var/lib/pgsql` and swap space using the YaST partitioner tool. This must be set up before you continue with installation.

3. Perform a YaST online update and reboot the system.

4. Run SUSE Manager setup to finalize the SUSE Manager installation:

```
yast2 susemanager_setup
```

Setting Up

SUSE Manager Server Setup

This section covers SUSE Manager Server setup, using these procedures:

- Start SUSE Manager setup with YaST

- Create the main administration account with the SUSE Manager Web UI

- Name your base organization and add login credentials

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

> *Third Party Software*
>
> SUSE Manager is part of the SUSE Linux Enterprise 4.0 product family and thus compatible with the software shipped with SUSE Linux Enterprise Server.
>
> SUSE Manager 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.

Set up SUSE Manager with YaST

This section will guide you through SUSE Manager setup procedures.
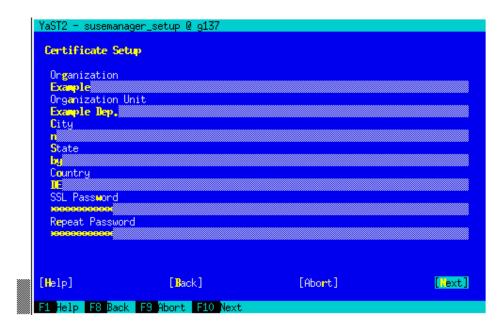
Procedure: SUSE Manager Setup

1. Log in to the SUSE Manager Server and type `yast2 susemanager_setup` to begin the setup.

   1. From the introduction screen select **SUSE Manager Setup › Setup SUSE Manager from scratch** and click `[Next]` to continue.

   2. Enter an email address to receive status notifications and click `[Next]` to continue. SUSE Manager can sometimes send a large volume of notification emails. You can disable email notifications in the Web UI after setup, if you need to.

   3. 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 SUSE Manager Proxy Server.

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

5. 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.

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

7. Click **[Yes]** to run setup when prompted.

8. When setup is complete, click **[Next]** to continue. You will see the address of the SUSE Manager Web UI.

9. Click **[Finish]** to complete SUSE Manager setup.

Creating the Main Administration Account

This section will walk you through creating your organization's main administration account for SUSE Manager.
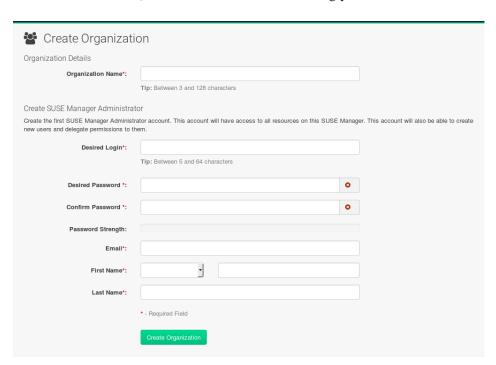
> **Admin and User Accounts**
>
> The main administration account is the *highest authority account* within SUSE Manager and therefore account access information should be stored in a secure location.
>
> For security it is recommended that the main administrator creates *low level admin accounts* designated 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 SUSE Manager 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 SUSE Manager **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.

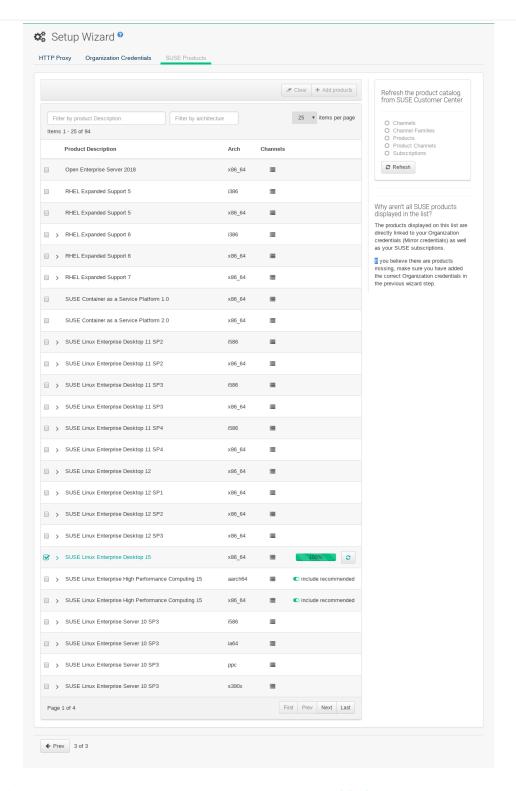Enter your organization credentials in the SUSE Manager Web UI:

Procedure: Entering Organization Credentials

1. In the SUSE Manager Web UI, select **Main Menu › 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 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 SUSE Manager 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, SUSE Manager will schedule the channel to be synchronized. This can take a long time as SUSE Manager 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.pdf.

SUSE Manager Proxy Registration

SUSE Manager 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 SUSE Manager Proxy with an activation key as a SUSE Manager client.

> *Downloading Channels*
>
> Before you can select the correct child channels while creating the activation key, ensure you have completely downloaded the SUSE Manager 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 Creating Activation Key.
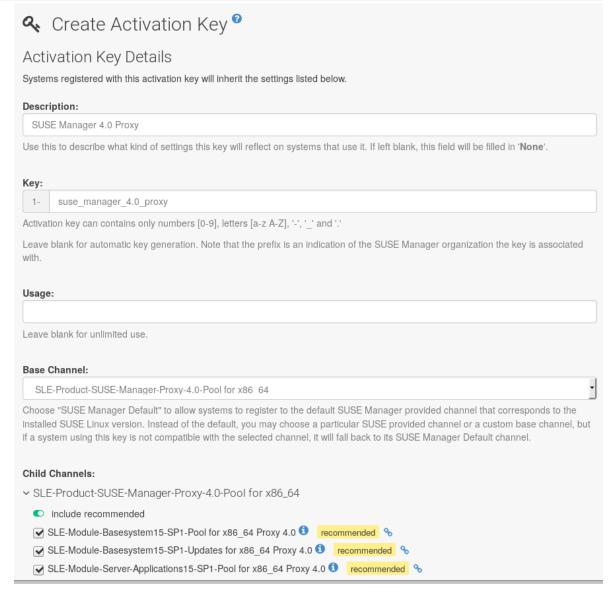
Figure 1. Proxy Activation Key

2. From the `Child Channels` listing select the recommended channels by clicking the `include recommended` icon:

   ◦ SLE-Module-Basesystem15-SP1-Pool

   ◦ SLE-Module-Basesystem15-SP1-Updates

   ◦ SLE-Module-Server-Applications15-SP1-Pool

   ◦ SLE-Module-Server-Applications15-SP1-Updates

   ◦ SLE-Module-SUSE-Manager-Proxy-4.0-Pool

   ◦ SLE-Module-SUSE-Manager-Proxy-4.0-Updates

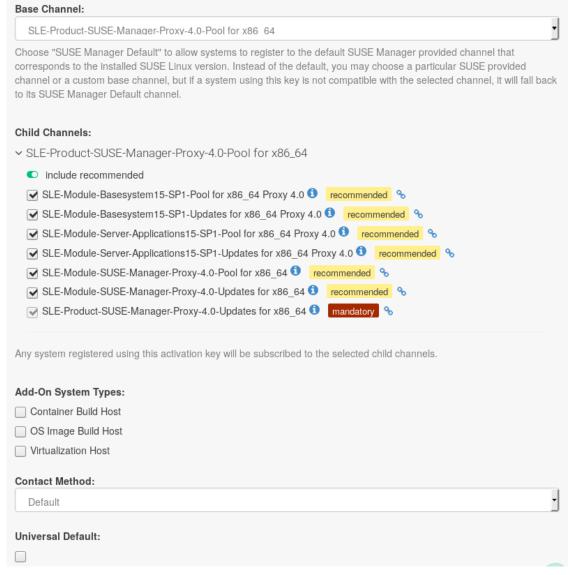   The `SLE-Product-SUSE-Manager-Proxy-4.0-Updates` channel is mandatory.

Figure 2. Base and Child Proxy Channel

3. 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.pdf.
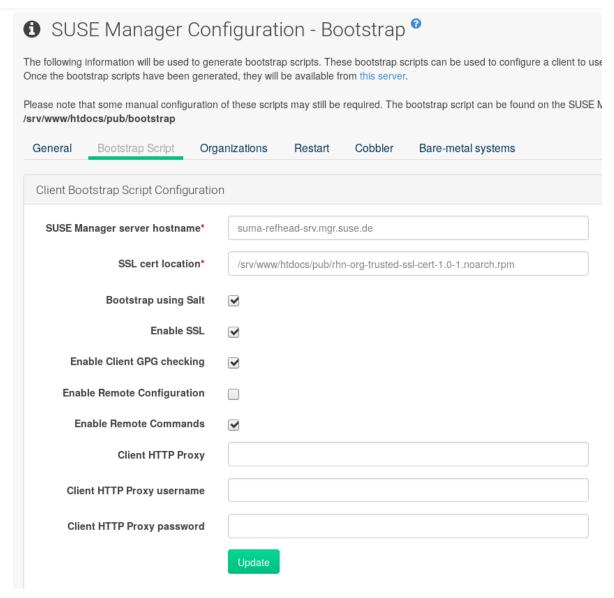
Figure 3. Modifying Bootstrap Script

4. Create the SUSE Manager Tools Repository for bootstrapping, see Create Tools Repository.

5. Bootstrap the client with the bootstrap script. For more information, see client-configuration:registration-bootstrap.pdf.

6. 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**.

7. 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.
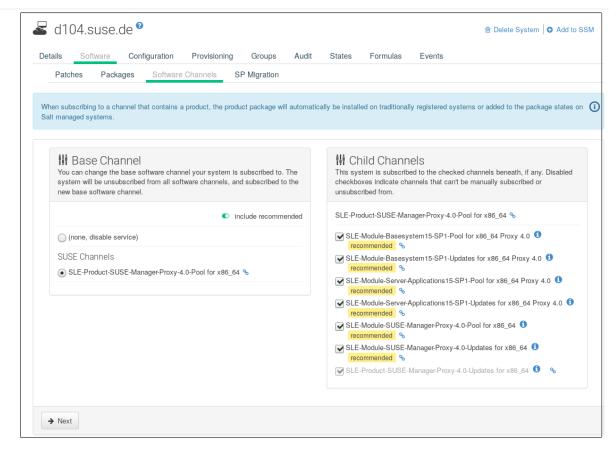
Figure 4. Proxy Channels

Continue with setting up the registered SUSE Manager: proxy-setup.pdf.

SUSE Manager Proxy Setup

SUSE Manager Proxy requires additional configuration.

> ℹ️ *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 SUSE Manager Server or a parent proxy on these ports.

Copy Server Certificate and Key

The proxy will share some SSL information with the SUSE Manager Server. Copy the certificate and its key from the SUSE Manager 4 Server or the parent proxy.

As root, enter the following commands on the proxy using your SUSE Manager 4 Server or parent Proxy 4 (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 SUSE Manager Proxy functionality requires the SSL certificate to be signed by the same CA as the SUSE Manager Server certificate. Using certificates signed by different CAs for proxies and server is not supported.

Run `configure-proxy.sh`

The `configure-proxy.sh` script will finalize the setup of your SUSE Manager Proxy.

Now 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:

SUSE Manager Parent

A SUSE Manager parent can be either another proxy or a SUSE Manager Server.

HTTP Proxy

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

Proxy Version to Activate

Normally, the correct value (3.0, 3.1, 3.2, or 4.0) should be offered as a default.

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 SUSE Manager 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 SUSE Manager installation. For example, if your proxy is in the US and your SUSE Manager 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 SUSE Manager 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 SUSE Manager 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 SUSE Manager 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 SUSE Manager Proxy and the SUSE Manager Server.

1. On the SUSE Manager Proxy install susemanager-tftpsync-recv:

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

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

   ```
   configure-tftpsync.sh
   ```

   It asks for hostname and IP address of the SUSE Manager Server and of the proxy itself. Additionally, it asks for the tftpboot directory on the proxy.

3. On the SUSE Manager Server, install `susemanager-tftpsync`:

   ```
   zypper in susemanager-tftpsync
   ```

1. On the SUSE Manager Server, run `configure-tftpsync.sh` to configure the upload to the SUSE Manager Proxy:

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

2. To start an initial synchronization on the SUSE Manager Server run:

   ```
   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 Cobbler.

Configure DHCP for PXE through SUSE Manager Proxy

SUSE Manager is using Cobbler to provide provisioning. PXE (tftp) is installed and activated by default. To enable systems to find the PXE boot on the SUSE Manager Proxy add the following to the DHCP configuration for the zone containing the systems to be provisioned:

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

Replace a SUSE Manager Proxy

A SUSE Manager Proxy is dumb in that it does not contain any information about the clients that are connected to it. A SUSE Manager Proxy can therefore be replaced by a new one. Naturally, the replacement proxy must have the same name and IP address as its predecessor.

In order to replace a SUSE Manager Proxy and keeping the clients registered to the proxy leave the old proxy in SUSE Manager. 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.

Procedure: Replacing a SUSE Manager 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 data to a central place that can also be accessed by the new proxy.

2. Shut down the proxy.

3. Install a new SUSE Manager Proxy 4.0, following Proxy Installation.

4. In the SUSE Manager Web UI select the newly installed SUSE Manager 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`. Then click `Generate New Key`, and remember it (write it on a piece of paper or copy it to the clipboard). For more information about reactivation keys, see Reactivation Keys.

6. After the installation of the new proxy, perform the following actions (if needed):

   ◦ Copy the centrally saved data to the new proxy system.

   ◦ Install any other needed software.

   ◦ If the proxy is also used for autoinstallation, do not forget to setup TFTP synchronization.

   > **!** *Proxy Installation and Client Connections*
   >
   > During the installation of the proxy, clients will not be able to reach the SUSE Manager Server. After a SUSE Manager Proxy system has been deleted from the systems list, all clients connected to this proxy will be (incorrectly) listed as `directly connected` to the SUSE Manager Server. 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.

Public Cloud Setup

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

For detailed instructions on registering SUSE Manager to SUSE Customer Center, see installation:server-setup.pdf.

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 SUSE Manager 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 SUSE Manager 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 10. 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.