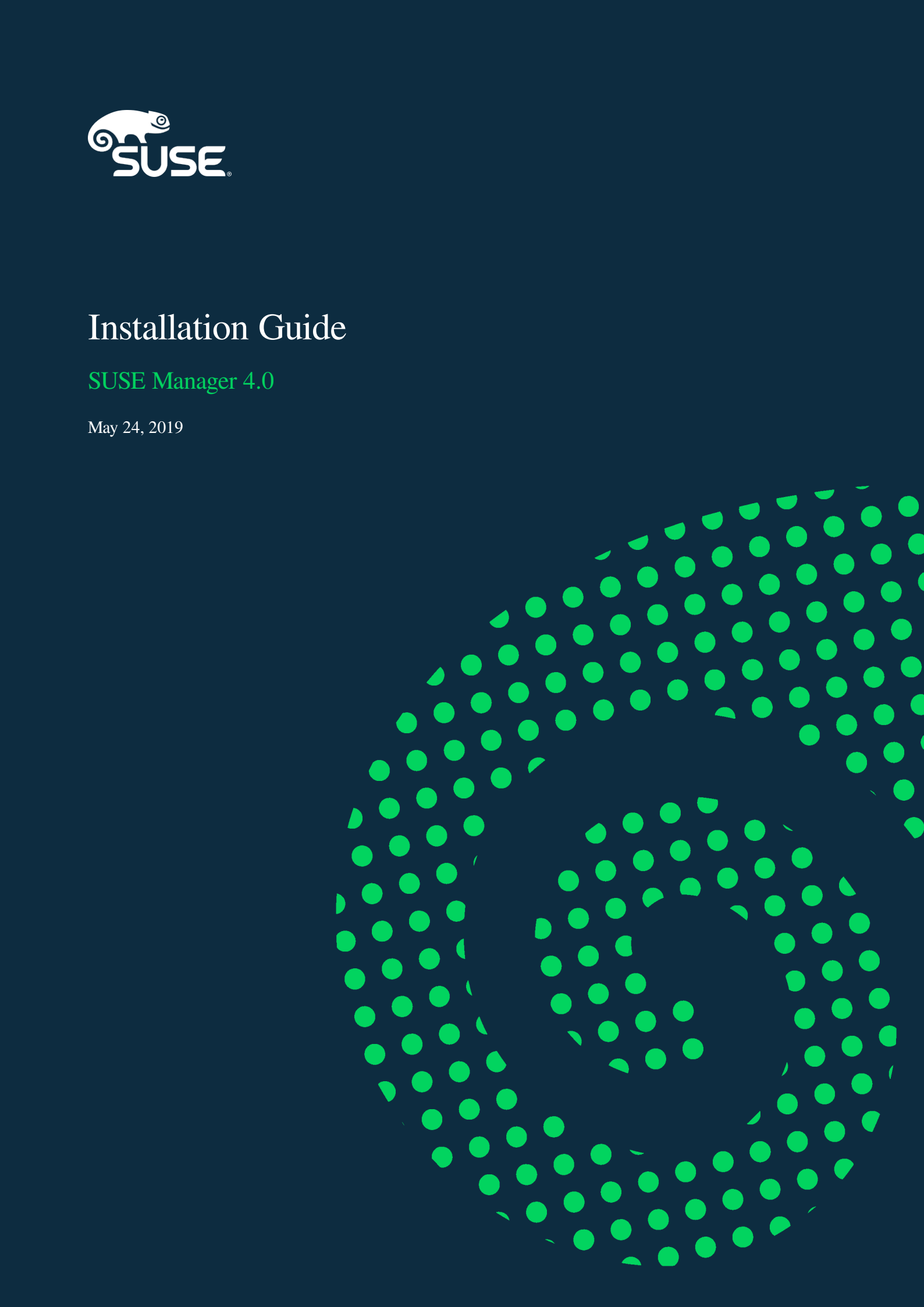


Installation Guide

SUSE Manager 4.0

May 24, 2019

Table of Contents

DRAFT

GNU Free Documentation License

Copyright © 2000, 2001, 2002 Free Software Foundation, Inc. 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA. Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

0. PREAMBLE

The purpose of this License is to make a manual, textbook, or other functional and useful document "free" in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or noncommercially. Secondarily, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of "copyleft", which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The "Document", below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as "you". You accept the license if you copy, modify or distribute the work in a way requiring permission under copyright law.

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document’s overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections

then there are none.

The "Cover Texts" are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A "Transparent" copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML, PostScript or PDF designed for human modification. Examples of transparent image formats include PNG, XCF and JPG. Opaque formats include proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML, PostScript or PDF produced by some word processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work’s title, preceding the beginning of the body of the text.

A section "Entitled XYZ" means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in another language. (Here XYZ stands for a specific section name mentioned below, such as "Acknowledgements", "Dedications", "Endorsements", or "History".) To "Preserve the Title" of such a section when you modify the Document means that it remains a section "Entitled XYZ" according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.

B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.

C. State on the Title page the name of the publisher of the Modified Version, as the publisher.

D. Preserve all the copyright notices of the Document.

E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.

F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.

G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.

H. Include an unaltered copy of this License.

I. Preserve the section Entitled "History", Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section Entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.

J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.

K. For any section Entitled "Acknowledgements" or "Dedications", Preserve the Title of the section, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.

L. Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.

M. Delete any section Entitled "Endorsements". Such a section may not be included in the Modified Version.

N. Do not retitle any existing section to be Entitled "Endorsements" or to conflict in title with any Invariant Section.

O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version's license notice. These titles must be distinct from any other section titles.

You may add a section Entitled "Endorsements", provided it contains nothing but endorsements of your Modified Version by various parties—for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

5. COMBINING DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled "History" in the various original documents, forming one section Entitled "History"; likewise combine any sections Entitled "Acknowledgements", and any sections Entitled "Dedications". You must delete all sections Entitled "Endorsements".

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, is called an "aggregate" if the copyright resulting from the compilation is not used to limit the legal rights of the compilation’s users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document’s Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled "Acknowledgements", "Dedications", or "History", the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided for under this License. Any other attempt to copy, modify, sublicense or distribute the Document is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See http://www.gnu.org/copyleft/.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation.

ADDENDUM: How to use this License for your documents

```
Copyright (c) YEAR YOUR NAME.
   Permission is granted to copy, distribute and/or modify this document
   under the terms of the GNU Free Documentation License, Version 1.2
   or any later version published by the Free Software Foundation;
   with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts.
   A copy of the license is included in the section entitled{ldquo}GNU
   Free Documentation License{rdquo}.
```

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts, replace the “ with…Texts.” line with this:

```
with the Invariant Sections being LIST THEIR TITLES, with the
   Front-Cover Texts being LIST, and with the Back-Cover Texts being LIST.
```

If you have Invariant Sections without Cover Texts, or some other combination of the three, merge those two alternatives to suit the situation.

If your document contains nontrivial examples of program code, we recommend releasing these examples in parallel under your choice of free software license, such as the GNU General Public License, to permit their use in free software.

DRAFT

Introduction

SUSE Manager provides absolute control over your Linux environment. System administrators often have tens, hundreds, or even thousands of client machines they need to look after, all of which require ongoing maintenance, updates, and lifecycle management. SUSE Manager allows you to manage all your Linux clients in one place, with one easy-to-understand dashboard.

SUSE Manager can be integrated with your network infrastructure in multiple ways, and most tasks can be automated, with reports issued so you always know the status of your client machines. Because SUSE Manager allows you to manage large numbers of systems and automatically keep them up to date, it helps to improve overall security, and provides extensive asset management and provisioning capability.

SUSE Manager can be used in conjunction with Red Hat Satellite Server and offers seamless management of both SUSE Linux Enterprise and Red Hat Enterprise Linux client systems.

Installing SUSE Manager

All versions of SUSE Manager can be installed from SUSE Manager installation media. Before you begin the installation, you will require an operating system installed on your hardware.

This book guides you through installing the JeOS operating system in a virtual machine, before performing the SUSE Manager Server and Proxy installations.

DRAFT

Requirements

General Requirements

Before you begin your installation, check that your environment meets these requirements:

- Current SUSE Customer Center organization credentials
- Access to installation media
- Your environment meets the hardware and networking requirements
- You understand the supported client operating systems

This section contains more information on each of these requirements.

SUSE Manager 4.0 is based on SLES 15 SP1 as the host operating system. SUSE Manager comes with a dedicated support period. 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 for a longer lifecycle.

Obtaining your SUSE Customer Center Credentials

You will need to create an account with SUSE Customer Center before you install SUSE Linux Enterprise Server and SUSE Manager. To obtain your SUSE Customer Center credentials:

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.

Obtaining Installation Media

From SLES 15 SP1, SUSE Manager Server and Proxy is available as a base product, and can be installed with the SLES Unified Installer.

Download SLES 15 SP1 or higher from SUSE Linux Enterprise Server - Media Download

Hardware Requirements

This table outlines hardware and software requirements on x86_64 and IBM Power PC architecture. For installation on IBM Z, see * xref:advanced_topics_suma3_zsystems.adoc#at-zsystems[{productname} and {zseries}]

Table 1. 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) The default JeOS root partition size of 24 GB is sufficient for this guide*
	`/var/lib/pgsql` Minimum 50 GB
	`/var/spacewalk` Minimum 50 GB per SUSE product and 360 GB per Red Hat product

Table 2. 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

Hardware	Recommended
	`/var/lib/pgsql` Minimum 50 GB
	`/var/spacewalk` Minimum 50 GB per SUSE product and 360 GB per Red Hat product

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 or cookies will not work properly on the WebUI.

For more information about configuring the hostname and DNS, see SUSE Linux Enterprise Server Documentation - Configuring Host Name and DNS

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.

For more information about setting up a DNS server, see SUSE Linux Enterprise Server Documentation - The Domain Name System

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 SUSE Linux Enterprise Server Documentation - Using a Proxy During Installation

Naming Your Server

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, SUSE Manager server and its clients should always use a firewall. This table gives an overview of required ports, to be used when you are setting up your firewall rules.

Table 3. Required Server Ports

Port	Protocol	Description
22	TCP	SSH
67	UDP	DHCP

Port	Protocol	Description
69	UDP	TFTP, used to support PXE services
80	TCP	HTTP, used in some bootstrap cases

Port	Protocol	Description
123	UDP	NTP time service
443	TCP	HTTPS, used for Web UI, client, Proxy server, and API traffic

Port	Protocol	Description
4505	TCP	Salt, used by the Salt-master to accept communication requests from minions
4506	TCP	Salt, used by the Salt-master to accept communication requests from minions

Port	Protocol	Description
5222	TCP	XMPP client, used for communications with the `osad` daemon on traditional client systems
5269	TCP	XMPP server, used for pushing actions to SUSE Manager Proxy

For more information on disconnected setup and port configuration, see:

- Disconnected Setup]
- xref:advanced_topics_ports.adoc#at-ports[Firewall Ports]

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.

Table 4. Supported Client Systems

Operating System	Architecture	Traditional Clients	Salt Clients
SUSE Linux Enterprise 15	x86_64, POWER, IBM Z, ARM	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
SUSE Linux Enterprise 12	x86_64, POWER, IBM Z, ARM	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
SUSE Linux Enterprise 11	x86, x86_64, Itanium, IBM POWER, IBM Z	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
SUSE Linux Enterprise Server-ES 7	x86_64	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
SUSE Linux Enterprise Server-ES 6	x86_64	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
Red Hat Enterprise Linux 8	x86_64	?	?

Operating System	Architecture	Traditional Clients	Salt Clients
Red Hat Enterprise Linux 7	x86_64	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
Red Hat Enterprise Linux 6	x86, x86_64	✔	✔

Operating System	Architecture	Traditional Clients	Salt Clients
CentOS 7	x86, x86_64	?	?

Operating System	Architecture	Traditional Clients	Salt Clients
CentOS 6	x86, x86_64	?	?

Operating System	Architecture	Traditional Clients	Salt Clients
{opensuse} Leap 15.1	x86_64	✗	✓

Operating System	Architecture	Traditional Clients	Salt Clients
Ubuntu 16.04	x86_64	✗	✓

Operating System	Architecture	Traditional Clients	Salt Clients
Ubuntu 18.04	x86_64	✗	✓

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.

Installation

Installing the virtual machine environment

Virtual Machine Manager (virt-manager) Settings

This chapter provides the required (KVM) settings for installation of SUSE Linux Enterprise Just Enough Operating System (JeOS) 12 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 your first installation.

SUSEVirtualization Guide

For more information on virtualization, see: SUSE Linux Enterprise Virtualization Guide

Enter the following settings when creating a new virtual machine using **virt-manager**. In the following table replace *version* with the actual product version string.

DRAFT

KVM Settings	
Installation Method	Import Existing Disk Image

KVM Settings	
OS:	Linux

KVM Settings	
Version:	SLES_version_-JeOS-for-kvm-and-xen.x86_64-GM.qcow2

KVM Settings	
Memory:	4096 MB

KVM Settings	
CPU’s:	2

KVM Settings	
Storage Format:	*.qcow2* 24 GB (Default) JeOS Root Partition

KVM Settings	
Virtual Disks:	

KVM Settings	
VirtIO Disk 2	101 GB for `/var/spacewalk`

KVM Settings	
VirtIO Disk 3	50 GB for `/var/lib/pgsql`

KVM Settings	
VirtIO Disk 4	4 GB for swap

KVM Settings	
Name:	test-setup

KVM Settings	
Network	Bridge *br0*

SUSE Virtualization Guide

For more information on virtualization, see: SUSE Linux Enterprise Virtualization Guide

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 4 GB RAM and 2 CPUs).
3. Name your KVM machine and select the **Customize configuration before install** check box.
4. Select the **[Add Hardware]** button and create three new virtual disks with the following specifications. These disks will be partitioned and mounted in Procedure: Preparing JeOS for SUSE Manager Installation.

VirtIO Storage Disks	Name	Sizing
VirtIO Disk 2	spacewalk	101 GB

VirtIO Storage Disks	Name	Sizing
VirtIO Disk 3	pgsql	50 GB

VirtIO Storage Disks	Name	Sizing
VirtIO Disk 4	swap	4 GB

5. Click **Begin Installation** and your new VM will boot from the JeOS image.

Proceed through the basic JeOS installation prompts until you reach the command line.

Root Password

During the basic installation prompts you are asked to enter the root password. Select a strong password and then in the next message box **[Confirm root Password]**.

Preparing JeOS for SUSE Manager

Procedure: Preparing JeOS for SUSE Manager Installation

1. Register with SCC:

```
SUSEConnect -e<EMAIL_ADDRESS> -r<SUSE_MANAGER_CODE>
```

2. Add SUSE Manager repositories:

```
SUSEConnect -p SUSE-Manager-Server/<productnumber>/x86_64 -r<SUSE_MANAGER_CODE>
```

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

```
zypper in -t package yast2-storage
```

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

DRAFT

VirtIO Storage Disks	Name	Storage Size	File System Type
VirtIO Disk 2	`/var/spacewalk`	101 GB	XFS

VirtIO Storage Disks	Name	Storage Size	File System Type
VirtIO Disk 3	`/var/lib/pgsql`	50 GB	XFS

VirtIO Storage Disks	Name	Storage Size	File System Type
VirtIO Disk 4	`swap`	4 GB	swap

5. If you are still using an older version than SUSE Manager 3.2 check `/etc/fstab` for correctness as follows (*updated tools shipped with recent SPs will no longer require human intervention.*): Remove or comment out this mount point entry for `/var/lib/pgsql/` in the `/etc/fstab` file:

```
/var/lib/pgsql btrfs subvol=@/var/lib/pgsql 0 0
```

Remove `pgsql` *from the fstab Configuration File*

If you do not remove the `/var/lib/pgsql/` line from fstab the first time you shut down the server you will lose your database because of duplicated entries in the fstab file.

6. Exit the partitioner and install the SUSE Manager pattern:

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

For proceeding with SUSE Manager setup, see **[Installation › Server-setup › 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:

KVM Settings for SLES	Installation Method:
Linux	Version:

KVM Settings for SLES	Installation Method:
SLE-[replaceable]version-Server-x86_64-GM-DVD1.iso	Memory:

KVM Settings for SLES	Installation Method:
4096 MB	CPUs:

KVM Settings for SLES	Installation Method:
2	Storage Format:

KVM Settings for SLES	Installation Method:
ISO 3 GB	Disk Space:

KVM Settings for SLES	Installation Method:
234 GB split between 4 GB swap and 130 GB mounted at `/var/spacewalk/`	

KVM Settings for SLES	Installation Method:
(Virtual Disk 1) and 50 GB mounted at `/var/lib/pgsql`	

KVM Settings for SLES	Installation Method:
(Virtual Disk 2). The rest for the root partition (100 GB+).	Name:

KVM Settings for SLES	Installation Method:
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:

DRAFT

Disk Space Requirements

4 GB Swap space

Disk Space Requirements

130 GB XFS partition (or dedicated virtual disk) for `/var/spacewalk/`

Disk Space Requirements

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.

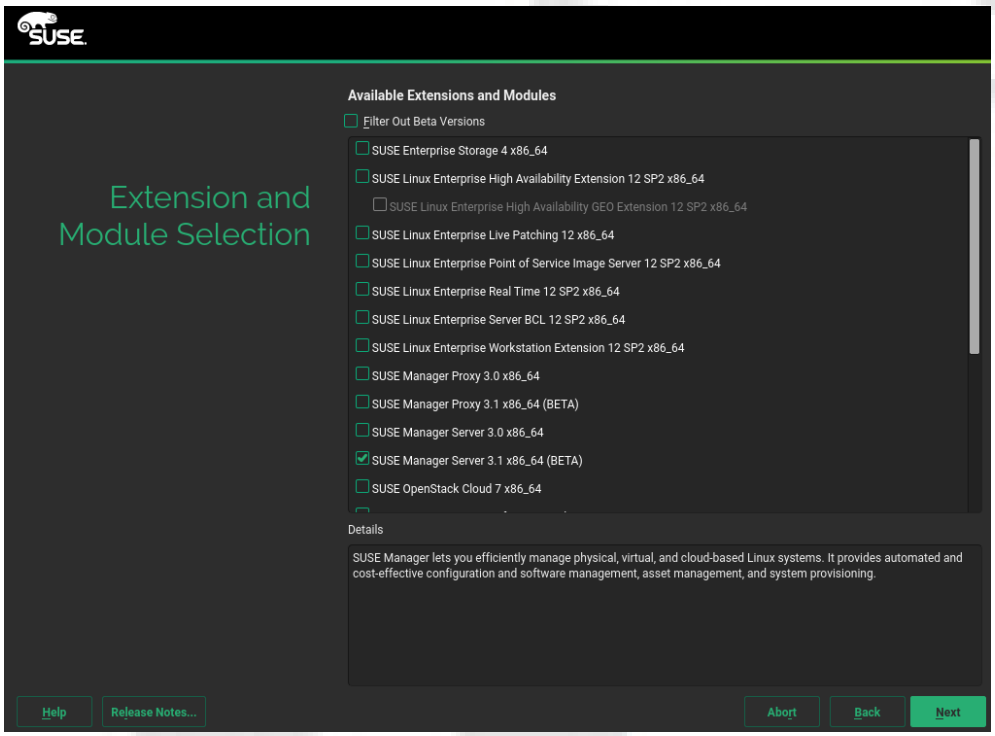
Installation of SUSE Linux Enterprise Server will begin. For more information on completing an installation of SUSE Linux Enterprise Server, see: SUSE Linux Enterprise Installation Quickstart.

Selecting the SUSE Manager Extension

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

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.



SUSE Manager 4.0 Proxy

Watch this space …

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 5. Hardware Requirements

DRAFT

DRAFT

Hardware	Recommended
CPU	Minimum 4 dedicated 64-bit CPU cores

Hardware	Recommended
RAM:	Test Server: Minimum 3 GB RAM and 2 GB Swap space

Hardware	Recommended
	Base Installation: Minimum 16 GB

Hardware	Recommended
	Production Server: Minimum 32 GB

Hardware	Recommended
Disk Space:	Root Partition: Minimum 100 GB

Hardware	Recommended
	`/var/lib/pgsql`: Minimum 50 GB

Hardware	Recommended
	`/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 susemanagersetup`. 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.

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://www.suse.com/documentation/sles-15/book_sle_deployment/data/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:

```
{prompt.root}yast2 susemanagersetup
```

DRAFT

Setting Up

SUSE Manager Setup

This section covers SUSE Manager setup. You will perform the following procedures:

- Start SUSE Manager setup via YaST or command line
- Create the main administration account with the SUSE Manager Web UI
- Name your base organization and add login credentials
- Sync the SUSE Linux Enterprise product channel from SUSE Customer Center

Third Party Software

SUSE Manager is an extension of SUSE Linux Enterprise Server and compatible with the software shipped with SUSE Linux Enterprise Server.

SUSE Manager is a complex system, and therefore installing third party 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. In case of emergency, 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.

This section will guide you through SUSE Manager setup procedures.

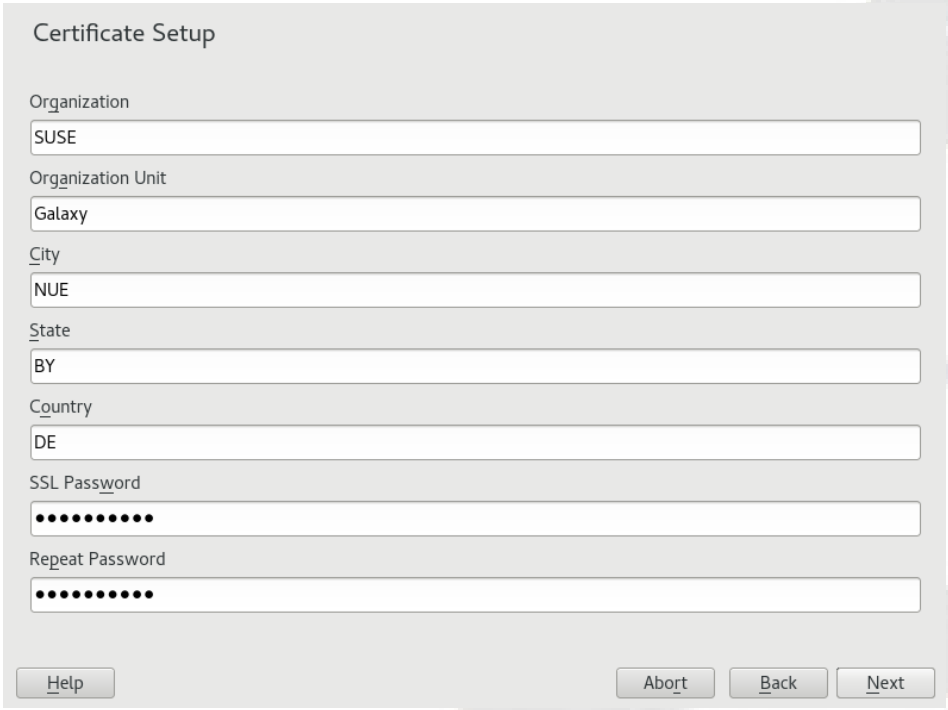
Procedure: SUSE Manager Setup

1. Login to the SUSE Manager server desktop and perform one of the following actions to begin setup:
   - Select **Applications › System Tools › YaST › SUSE Manager Setup**.
   - Open a terminal as root and type `yast2 susemanager_setup` 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. Note that 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.
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.

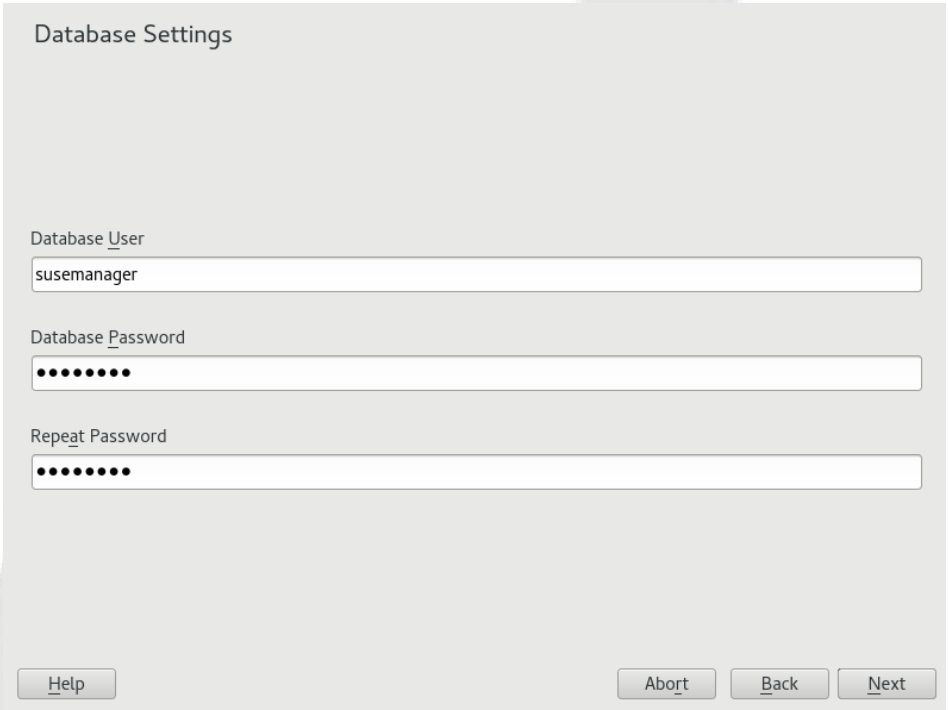
Certificate Password

Without this password it will not be possible to set up a SUSE Manager 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. Once setup has completed, click **[Next]** to continue. You will see the address of the SUSE Manager Web UI.
10. Click **[Finish]** to complete SUSE Manager setup.

In the next section you will create the administrator's account and synchronize with SUSE Customer Center.

Creating the Main Administration Account

This section will walk you through creating your organizations main administration account for SUSE Manager.

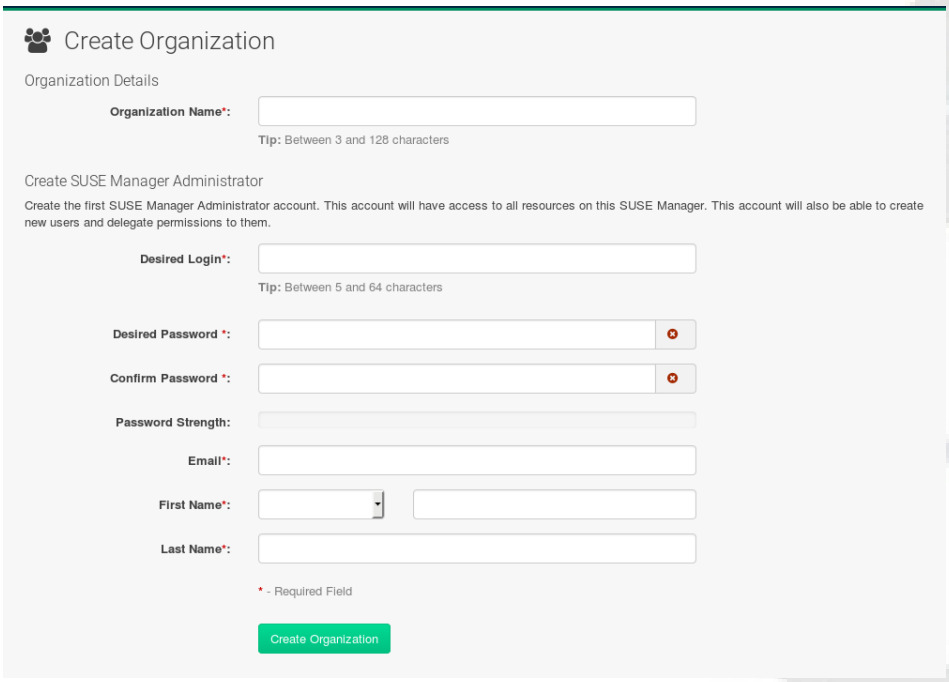
Admin and User Accounts

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: Setup the Main Administration Account

1. In the browser, enter the address provided after completing setup and open the SUSE Manager Web UI.
2. Add your organization name to the **Create Organization › Organization Name** field.
3. Add your username and password to the **Create Organization › Desired Login** and **Create Organization › Desired Password** fields.
4. Fill in the Account Information fields including an email for system notifications.
5. Select **Create Organization** to finish creating your administration account.



You should now be presented with the SUSE Manager Front Page. In the next section you will prepare the server for connecting the first client.

Syncing 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.

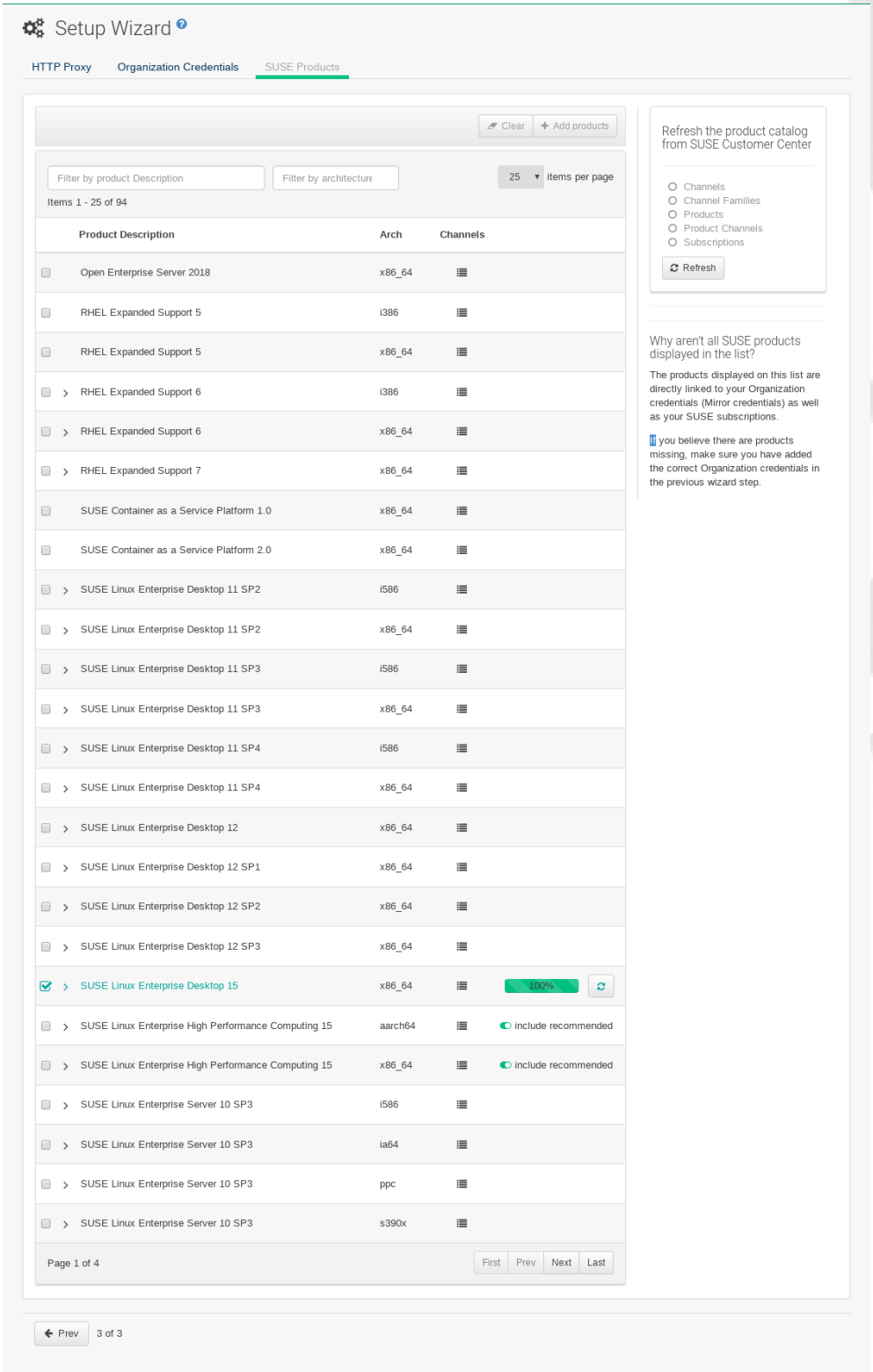
This section covers synchronizing with SCC from the Web UI and adding your first client channel.

Procedure: Synchronizing with SUSE Customer Center

1. From the SUSE Manager Web UI start page select **Admin › Setup Wizard**.
2. From the **Main Menu › Admin › 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:

xref:FILENAME.adoc#vle.webui.admin.wizard.products[]

+



+

1. Since 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.

- Start product synchronization by clicking the **[Add Products]** button.

After adding the channel SUSE Manager will schedule the channel to be copied. 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`. To update the grub2 during boot run `grub2-install /dev/sda`.

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

```
tailf /var/log/rhn/reposync/<CHANNEL_NAME>.log
```

After the channel sync process has completed proceed to:

```
pass:c[xref:FILENAME.adoc#preparing.and.registering.clients[]]
```

SUSE Manager Proxy Setup

SUSE Manager Proxy requires additional configuration in order to make it useful.

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 proxie’s TCP ports `4505` and `4506` are open and that the proxy can reach the SUSE Manager server (or another upstream proxy) on these ports.

Copy Server Certificate and Key

The proxy will share some SSL information with the SUSE Manager server, so the next step is to copy the certificate and its key from the SUSE Manager server or the upstream proxy.

As root, enter the following commands on the proxy using your SUSE Manager server or chained proxy named `PARENT`:

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

Known Limitation

The SUSE Manager Proxy functionality is only supported if the SSL certificate was signed by the same CA as the SUSE Manager Server certificate. Using certificates signed by different CAs for Proxies and Server is not supported.

Running `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 server 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. Beware the country code must be made of two upper case letters. For further information on country codes, refer to the online list of alpha-2 codes.

Country Code

As the country code enter the country code set during the SUSE Manager installation. For example, if your proxy is in US and your SUSE Manager in DE, you must enter `DE` for the proxy.

Cname Aliases (Separated by Space)

Use this if your proxy server 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 Minions?

Use this option if you want to reuse a SSH key that was used for SSH-Push Salt minions 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.

Activate advertising proxy via SLP?

SLP stands for Service Location Protocol.

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, re-run `configure-proxy.sh`. Also restart the script if a HTTP error was met during script execution.

`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 (**Main Menu** › **Systems** › **Proxy**, then the system name). `Connection` and `Proxy` subtabs display the respective status information.

Enabling PXE Boot via SUSE Manager Proxy

Synchronizing Profiles and System Information

To enable PXE boot via a proxy server, additional software must be installed and configured on both the SUSE Manager server and the SUSE Manager Proxy server.

1. On the SUSE Manager server install susemanager-tftpsync :

```
zypper in susemanager-tftpsync
```

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

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

3. 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.

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

```
configure-tftpsync.sh FQDN_of_Proxy_Server
```

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

```
cobbler sync
```

   Also can also be done after each a change within Cobbler that needs to be synchronized immediately. Otherwise Cobbler synchronization will also run automatically when needed. For more information about Cobbler, see xref:FILENAME.adoc#advanced.topics.cobbler[].

Configuring DHCP for PXE via 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 server add the following to the DHCP configuration for the zone containing the systems to be provisioned:

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

Replacing a SUSE Manager Proxy

A SUSE Manager Proxy is `dumb` in the sense 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-registered 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 server:
    - Copy the scripts that are still needed.
    - Copy the activation keys from the previous server. Of course, it is always better to re-create the keys.
2. Shutdown the server.
3. Install a new SUSE Manager 4.0 Proxy, see xref:FILENAME.adoc#at.manager.proxy.inst-and-clients[].
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 xref:FILENAME.adoc#s5-sm-system-details-react[].
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 a few hours.

DRAFT