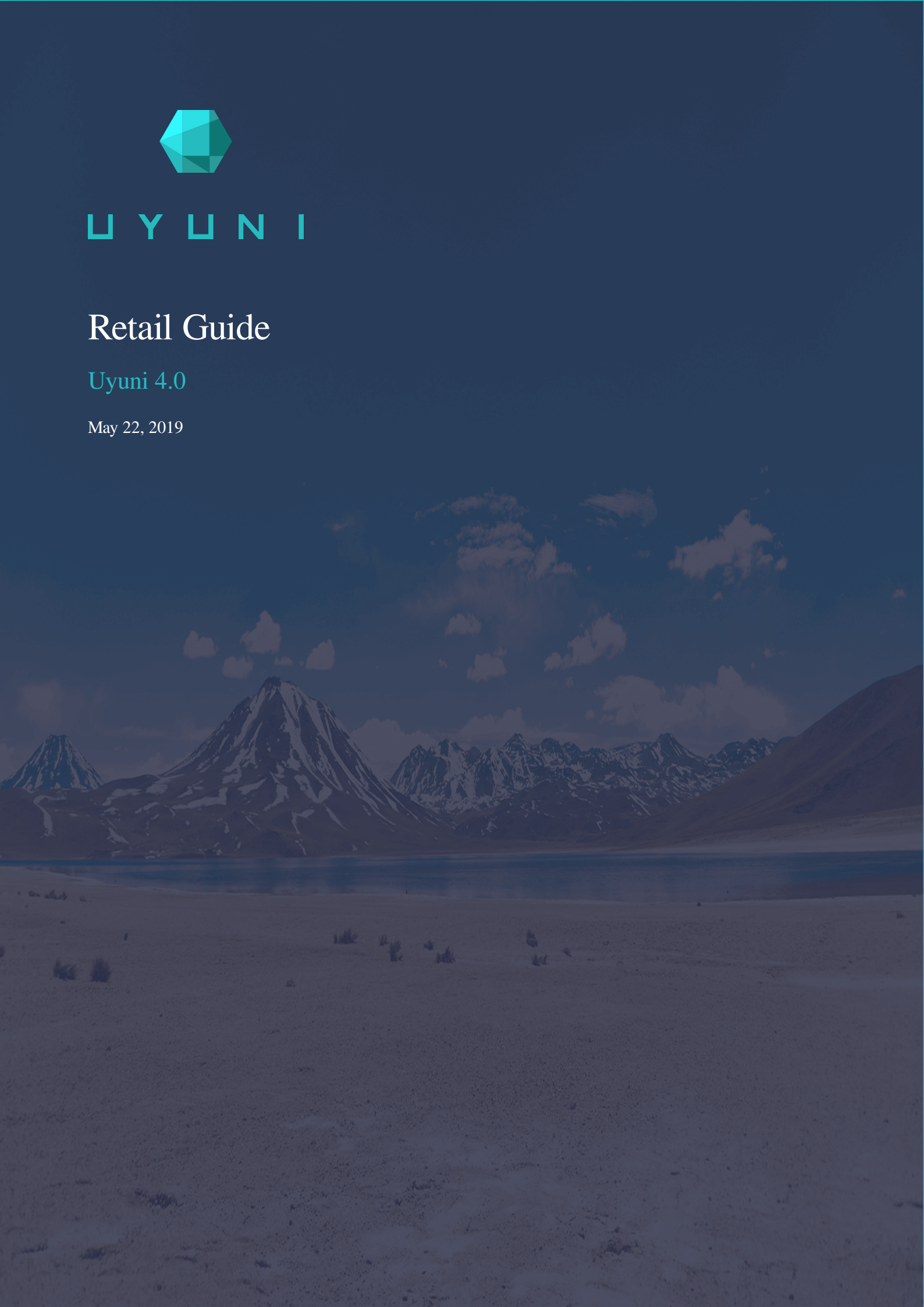

Retail Guide

Uyuni 4.0

May 22, 2019

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Retail Guide

What is SUSE Manager for Retail?

SUSE Manager for Retail 4.0 is an open source infrastructure management solution, optimized and tailored specifically for the retail industry. It uses the same technology as SUSE Manager, but is customized to address the needs of retail organizations.

SUSE Manager for Retail is designed for use in retail situations where customers can use point-of-service terminals to purchase or exchange goods, take part in promotions, or collect loyalty points. In addition to retail installations, it can also be used for novel purposes, such as maintaining student computers in an educational environment, or self-service kiosks in banks or hospitals.

SUSE Manager for Retail is intended for use in installations that include servers, workstations, point-of-service terminals, and other devices. It allows administrators to install, configure, and update the software on their servers, and manage the deployment and provisioning of point-of-service machines.

Migrating configuration from SUSE Linux Enterprise Point of Service to SUSE Manager for Retail is a technology preview and will be enhanced in future releases of SUSE Manager.

About this book

This document provides an overview of SUSE Manager for Retail, and guides you through initial installation and setup. It should be read in conjunction with the SUSE Manager documentation suite, available from https://www.suse.com/documentation/suse-manager-3/

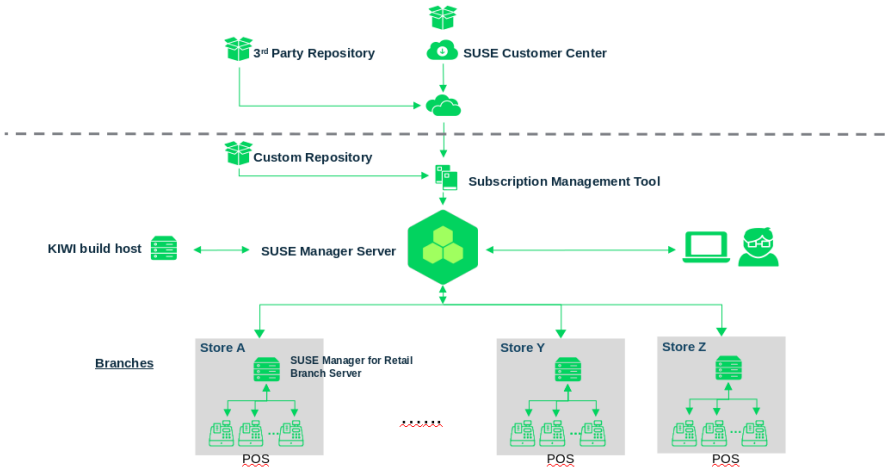
For more information about managing your SUSE Manager for Retail environment, or to find out where to get help, see https://www.suse.com/documentation/suse-manager-for-retail-3-2/retail-getting-started/retail.chap.next.html

Components

Components

SUSE Manager for Retail uses a layered architecture:

- The first layer contains the SUSE Manager server and one or more build hosts.
- The second layer contains one or more branch servers to provide local network and boot services.
- The final layer contains any number of deployed point-of-service terminals.



SUSE Manager Server

The SUSE Manager server contains information about infrastructure, network topology, and everything required to automate image deployment and perform day-to-day operations on branches and terminals. This can include database entries of registered systems, Salt pillar data for images, image assignments, partitioning, network setup, network services, and more.

Build Hosts

Build hosts can be arbitrary servers or virtual machines. They are used to securely build operating system images. Build hosts should be based on SUSE Linux Enterprise Server 12 SP3.

Branch Server

Branch servers should be physically located close to point-of-service terminals, such as in an individual store or branch office. We recommend you have a fast network connection between the branch server and its terminals. Branch servers provide services for PXE boot, and act as an image cache, Salt broker, and proxy for software components (RPM packages). The branch server can also manage local networking, and provide DHCP and DNS services.

The branch server can operate in several different network configurations:

- The branch server has a dedicated network interface card and terminals use an isolated internal branch network. In this configuration, the branch server manages the internal network and provides DHCP, DNS, PXE, FTP, and TFTP services.
- The branch server shares a network with the terminals, and provides a connection to the SUSE Manager server. In this configuration, the branch server is not required to manage a network (DHCP and DNS services), but acts as a PXE boot server and provides FTP and TFTP services.

For more information on SUSE Manager for Retail Branch servers, see documentation on SUSE Manager Proxy servers.

Point-of-Service Terminals

Point-of-Service (PoS) terminals can come in many different formats, such as point-of-sale terminals, kiosks, digital scales, self-service systems, and reverse-vending systems. Every terminal, however, is provided by a vendor, who set basic information about the device in the firmware. SUSE Manager for Retail accesses this vendor information to determine how best to work with the terminal in use.

In most cases, different terminals will require a different operating system (OS) image to ensure they work correctly. For example, an information kiosk has a high-resolution touchscreen, where a cashier terminal might only have a very basic display. While both of these terminals require similar processing and network functionality, they will require different OS images to ensure that the different display mechanisms work correctly.

The minimum memory requirement is 1024 MB for hosts that need to run OS images built with Kiwi (PXE booted or not)

Hardware Requirements for PoS Terminals: . At least 1 GB of RAM. For more information, see the documentation of the underlying system (in this case: SUSE Linux Enterprise Server 12). . Enough disk space depending on the image size.

For more information on SUSE Manager for Retail PoS terminals, see documentation on SUSE Manager Salt clients.

Fitting it all together

SUSE Manager for Retail uses the same technology as SUSE Manager, but is customized to address the needs of retail organizations.

Hardware types

Because every environment is different, and can contain many different configurations of many different terminals, SUSE Manager for Retail uses hardware types to simplify device management.

Hardware types allow you to group devices according to manufacturer and device name, so that all devices of a particular type can be managed as one.

Salt formulas

SUSE Manager for Retail uses Salt formulas to help simplify configuration. Formulas are pre-written Salt states, that are used to configure your installation.

You can use formulas to apply configuration patterns to your hardware groups. SUSE Manager for Retail uses the Saltboot formula, which defines partitioning and OS images for terminals.

You can use default settings for formulas, or edit them to make them more specific to your environment.

Formulas are discussed in more detail in this guide, at Formulas Chapter.

System groups

SUSE Manager for Retail uses system groups to organize the various devices in your environment.

Each branch requires a system group, containing a single branch server, and the PoS terminals associated with that server. Each system group is identified with a Branch ID, which is used in formulas and scripts to automatically update the entire group.

Installation

SUSE Manager for Retail can be installed in various ways depending on individual needs.

For the initial package installation, we recommend using the SLES Unified Installer, however it is also possible to install manually from packages. Both methods are described in this manual.

Requirements

Before you install SUSE Manager for Retail, ensure your environment meets the minimum requirements. This section lists the requirements for your SUSE Manager for Retail installation. These requirements are in addition to the SUSE Manager requirements listed at https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-getting-started/html/book.suma.getting-started/quickstart.chapt.overview.requirements.html#quickstart.sect.prereq

SUSE Manager for Retail is only supported on x86_64 architecture.

Table 1. Hardware Requirements for SUSE Manager server

Hardware	Recommended
CPU	Multi-core 64-bit CPU
RAM:	*Test Server* Minimum 8 GB
	Base Installation Minimum 16 GB

Hardware	Recommended
	Production Server Minimum 32 GB
Disk Space:	`/` *(root)* 100 GB
	`/var/lib/pgsql` Minimum 50 GB
	`/srv/` 50 GB (Minimum 2 GB per OS image)
	`/var/spacewalk` Minimum 50 GB per SUSE product and 360 GB per Red Hat product

Table 2. Hardware requirements for build host

Hardware	Recommended
CPU	Multi-core 64-bit CPU

RAM:	4 GB
Disk Space:	/ *(root)* 50 GB

Table 3. Hardware requirements for branch server

Hardware	Recommended
CPU	Multi-core 64-bit CPU
RAM:	8 GB

Disk Space:	/ *(root)* 100 GB (Minimum 50 GB per SUSE product and 2 GB per OS image)

Network Requirements

- The SUSE Manager server requires a reliable and fast WAN connection
- The branch server requires a reliable WAN connection, to reach the SUSE Manager server
- If you are using a shared network, ensure that DHCP requests are filtered before reaching the rest of your shared network
- If you are using a dedicated network, the branch server requires at least two network interfaces: one connected to the WAN with reachable SUSE Manager server, and one connected to the internal branch LAN.
- Terminals require a LAN connection to the branch server network.

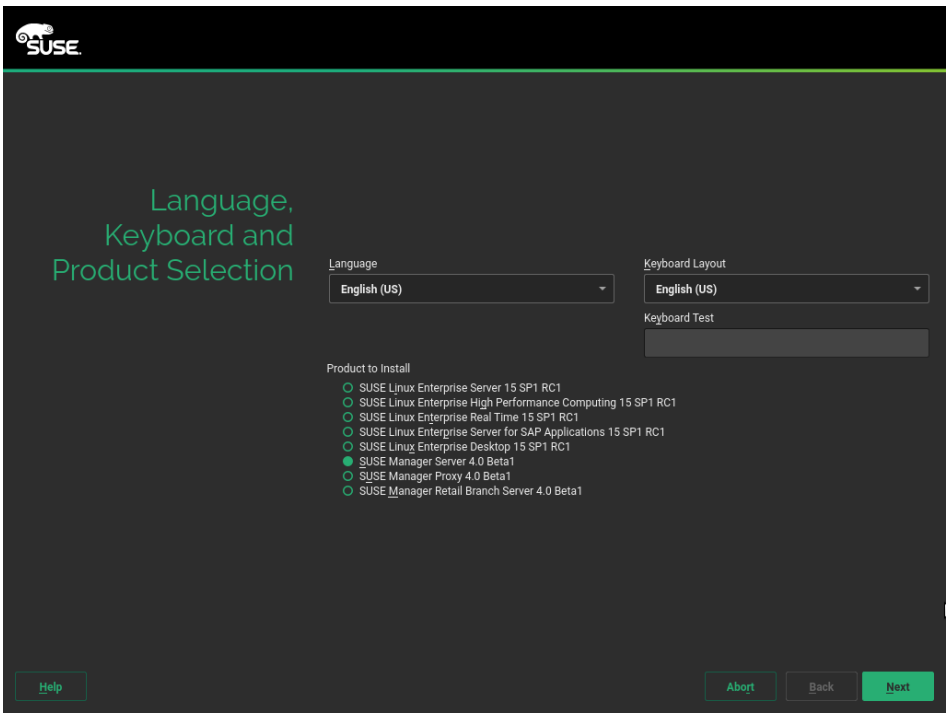
Installing with the Unified Installer

SUSE Manager for Retail is a SUSE base product from version 4.0. This section describes how to install SUSE Manager for Retail from SUSE Linux Enterprise Server installation media. It assumes you have already registered the SUSE Manager product with the SUSE Customer Center and have a registration code.

For information on registering with SUSE Customer Center, or obtaining installation media, see Requirements.

Procedure: Installing SUSE Manager Server from a DVD image

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



4. Read and agree to the End User Licence Agreement, and click **[Next]**.
5. In the `Registration` screen, check the `Register System via scc.suse.com` checkbox, enter your SUSE Customer Center credentials, and click **[Next]**.
6. OPTIONAL: In the `Add On Product` screen, select any additional or add-on products you require, and click **[Next]**.
7. In the `System Role` screen, check the `SUSE Manager Retail Server` checkbox, and click **[Next]**.
8. In the `Suggested Partitioning` screen, accept the default values, or use the **[Guided Setup]** or **[Expert Partitioner]** options to customize your partitioning model, and click **[Next]**.
9. In the `Clock and Time Zone` screen, enter your region and timezone, and click **[Next]**.
10. In the `Local Users` screen, create a new user, and click **[Next]**.
11. In the `System Administrator "root"` screen, create the "root" user, and click **[Next]**.
12. Review the settings on the `Installation Settings` screen, and then click **[Install]**.

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

- SUSE Linux Enterprise Server Basesystem Module
- Python 2 Module
- Server Applications Module
- SUSE Manager Proxy Module

- SUSE Manager Retail Branch Server Module

Installing from Packages

If you have chosen not to use the Unified Installer, you can install SUSE Manager for Retail manually instead.

Install the SUSE Manager server

For instructions to install SUSE Manager, see the https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-getting-started/html/book.suma.getting-started/quickstart.chapt.overview.requirements.html#quickstart.sect.introduction

Do Not Enable PXE Boot

Do not enable PXE boot functionality on the SUSE Manager Proxy during initial setup. This functionality will be installed later, after the initial setup.

Configure the SUSE Manager server

It is important that all required SUSE channels are available on your system and synchronized in order for SUSE Manager for Retail to operate correctly. For more information on channel management, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-advanced-topics/html/book.suma.advanced.topics/suse.mgr.command.line.tools.html#syncing.suse.mgr.repositories.scc

Channels required for SUSE Manager for Retail functionality:

```
- SLES 12 SP3 (SP4 in the future) as a base
  - SLES Pool
    - SLES Update
- SUSE Manager 3.2 Tools
  - SUSE Manager 3.2 Tools Pool
    - SUSE Manager 3.2 Tools Update
- SUSE Manager 3.2 Proxy
  - SUSE Manager 3.2 Proxy Pool
    - SUSE Manager 3.2 Proxy Update
- SUSE Manager 3.2 Proxy for Retail
  - SUSE Manager 3.2 Proxy for Retail Pool
    - SUSE Manager 3.2 Proxy for Retail Update
```

After you have synchronized the required SUSE channels, create channels for any custom software. Channels are used to provide custom software for OS image building. For more information on software channels, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-reference/html/book.suma.reference.manual/ref.webui.channels.html

Install the SUSE Manager for Retail pattern on the SUSE Manager server

Procedure: Installing the SUSE Manager for Retail pattern on the SUSE Manager server

1. Install the `SUSE Manager for Retail` pattern on the SUSE Manager server:

```
zypper in -t pattern suma_retail
```

2. Check that you have these packages installed and available, after installing SUSE Manager and SUSE Manager for Retail pattern:
    - bind-formula
    - branch-network-formula
    - dhcpd-formula
    - image-sync-formula
    - pxe-formula
    - saltboot-formula
    - susemanager-retail-tools
    - tftpd-formula
    - vsftpd-formula

    Install any missing packages with `zypper`:

    ```
    zypper install package_name
    ```

3. Synchronize the salt filesystem and salt modules:

```
salt-run fileserver.update
salt '*' saltutil.sync_all
```

4. Restart the salt master service to pick up the changes:

```
systemctl restart salt-master
```

For more information about formulas, see Formulas.

Setting up

When you have installed the SUSE Manager for Retail packages, you need to set up your environment by following these steps:

1. Install the build host and register it to SUSE Manager
2. Configure the build host
3. Create required system group

Branch server installation steps:

1. Install the branch server and register it to SUSE Manager
2. Assign and configure branch server formulas
3. Synchronize images to the branch servers

Each procedure is detailed in this section.

Install the build host and register it to SUSE Manager

Your build host should be a Salt minion, running SUSE Linux Enterprise Server 12 SP3. For instructions to install Salt minion see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-getting-started/html/book.suma.getting-started/preparing.and.registering.clients.html

The build host must be a Salt minion. Do not install the build host as a traditionally managed client.

Configure the build host

The build host must be set as an OS Image build host in the SUSE Manager Web UI, and highstate applied.

Procedure: Configuring the build host

1. In the SUSE Manager Web UI, navigate to **Systems › Overview**. Locate the system to be made a build host, and click on its name.
2. In the `System Properties` window, click **[Edit These Properties]**.
3. In the `Edit System Details` window, ensure the `OS Image Build Host` option is checked, and click **[Update Properties]** to save your changes.
4. Select the `States` tab, and navigate to the `Highstate` window.
5. In the `States` tab, click **[Apply Highstate]**.

Check that the build host has these packages installed after you have run Highstate:

- kiwi
- kiwi-desc-saltboot

If any package is missing, make sure the `SUSE Manager 3.2 Tools` repository is available on the build host and install any missing packages manually using `zypper install`.

Create required system groups

SUSE Manager for Retail requires system groups for terminals and servers. Manually create these system groups during installation:

- TERMINALS
- SERVERS

Additionally, you will need to create a system group for each branch server, and each terminal hardware type in your environment.

You can create system groups using the SUSE Manager Web UI. Navigate to **Systems › System Groups** and click on **[Create System Group]**.

For more information about system groups, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-reference/html/book.suma.reference.manual/ref.webui.systems.systems.html#ref.webui.systems.systemgroups

Install the branch server and register it to SUSE Manager

Your branch server should be installed as a default Salt-based client ("minion"), running SUSE Manager Proxy 3.2.

Do not install the branch server as a traditionally managed client.

For instructions to install Salt-based proxy minions and register them to SUSE Manager, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-advanced-topics/html/book.suma.advanced.topics/advanced.topics.proxy.quickstart.html

The activation key should have the following channels:

```
- SLES 12 SP3 (SP4 in the future) as a base
  - SLES Pool
    - SLES Update
- SUSE Manager 3.2 Tools
  - SUSE Manager 3.2 Tools Pool
    - SUSE Manager 3.2 Tools Update
- SUSE Manager 3.2 Proxy
  - SUSE Manager 3.2 Proxy Pool
    - SUSE Manager 3.2 Proxy Update
- SUSE Manager 3.2 Proxy for Retail
  - SUSE Manager 3.2 Proxy for Retail Pool
    - SUSE Manager 3.2 Proxy for Retail Update
```

For mass deployments, see Branch Server Mass Configuration.

When you are installing the branch server with a dedicated internal network, check that you are using the same fully qualified domain name (FQDN) on both the external and internal branch networks. If the FQDN does not match on both networks, the branch server will not be recognized as a proxy server.

Assign and configure branch server formulas

Before you configure the branch server, ensure you have decided on networking topology, and know the Salt ID of the branch server.

The branch server can be configured automatically using the `retail_branch_init` command, as shown in this section. If you prefer to manually configure the branch server, you can do so using formulas. For more information about formulas, see Formulas.

Procedure: Configuring branch server formulas using helper script

1. Branch server configuration is performed using the `retail_branch_init` command:

   ```
   retail_branch_init <branch_server_salt_id>
   ```

   This command will configure branch server formulas with recommended values. You can use the `retail_branch_init --help` command for additional options.

2. Verify that your changes have been configured correctly by checking the SUSE Manager Web UI branch server system formulas.
3. Apply highstate on the branch server. You can do this through the Web UI, or by running this command:

   ```
   salt <branch_server_salt_id> state.apply
   ```

Synchronize images to the branch servers

The OS image you use on the SUSE Manager server must be synchronized for use on the branch server. You can do this with the Salt `image-sync` tool.

Procedure: Synchronize images with branch server

1. On the SUSE Manager server, run this command:

   ```
   salt <branch_server_salt_id> state.apply image-sync
   ```

2. The image details will be transferred to `/srv/saltboot` on the branch server.

Formulas

Formulas are pre-written Salt states, that are used to configure your SUSE Manager for Retail installation.

This section lists the primary formulas shipped with SUSE Manager for Retail and their configuration options.

All the formulas in this section must be accurately configured for your SUSE Manager for Retail installation to function correctly. If you are unsure of the correct formula configuration details, run the `retail_branch_init` command before you begin to create the recommended formula configuration. You can then manually edit the formulas as required.

State and formula name collisions

If a formula uses the same name as an existing Salt state, the two names will collide, and could result in the formula being used instead of the state. Always check the names of states and formulas to avoid name collisions.

Most formulas can be updated using the SUSE Manager Web UI. Once you have made changes to your formula, ensure you apply the highstate to propagate your changes to the appropriate services.

Bind Formula

The Bind formula is used to configure the Domain Name System (DNS) on the branch server. POS terminals will use the DNS on the branch server for name resolution of saltboot specific hostnames.

When you are configuring the bind formula for a branch server with a dedicated internal network, check that you are using the same fully qualified domain name (FQDN) on both the external and internal branch networks. If the FQDN does not match on both networks, the branch server will not be recognized as a proxy server.

The following procedure outlines a standard configuration with two zones. Adjust it to suit your own environment.

Zone 1 is a regular domain zone. Its main purpose is to resolve saltboot hostnames such as TFTP, FTP, or Salt. It can also resolve the terminal names if configured.

Zone 2 is the reverse zone of Zone 1. Its main purpose is to resolve IP addresses back to hostnames. Zone 2 is primarily needed for the correct determination of the FQDNs of the branch.

Procedure: Configuring Bind with Two Zones

1. Check the `Bind` formula, click `Save`, and navigate to the **Formulas › Bind** tab
2. In the `Config` section, select `Include Forwarders`.
3. In the `Configured Zones` section, use these parameters for Zone 1:
    - In the `Name` field, enter the domain name of your branch network (for example: `branch1.example.com`).
    - In the `Type` field, select `master`.
4. Click `Add item` to add a second zone, and set these parameters for Zone 2:
    - In the `Name` field, use the reverse zone for the configured IP range (for example: `com.example.branch1`).
    - In the `Type` field, select `master`
5. In the `Available Zones` section, use these parameters for Zone 1:
    - In the `Name` field, enter the domain name of your branch network (for example: `branch1.example.org`).

- In the File field, type the name of your configuration file.

6. In the Start of Authority (SOA) section, use these parameters for Zone 1:
   - In the Nameserver (NS) field, use the FQDN of the branch server (for example: branchserver.branch1.example.org).
   - In the Contact field, use the email address for the domain administrator.
   - Keep all other fields as their default values.
7. In the Records section, in subsection A, use these parameters to set up an A record for Zone 1:
   - In the Hostname field, use the hostname of the branch server (for example: branchserver).
   - In the IP field, use the IP address of the branch server (for example, 192.168.1.5).
8. In the Records section, subsection NS, use these parameters to set up an NS record for Zone 1:
   - In the input box, use the hostname of the branch server (for example: branchserver).
9. In the Records section, subsection CNAME, use these parameters to set up CNAME records for Zone 1:
   - In the Key field, enter tftp, and in the Value field, type the hostname of the branch server (for example: branchserver).
   - Click Add Item. In the Key field, enter ftp, and in the Value field, type the hostname of the branch server.
   - Click Add Item. In the Key field, enter dns, and in the Value field, type the hostname of the branch server.
   - Click Add Item. In the Key field, enter dhcp, and in the Value field, type the hostname of the branch server.
   - Click Add Item. In the Key field, enter salt, and in the Value field, type the FQDN of the branch server (for example: branchserver.branch1.example.org).
10. Set up Zone 2 using the same parameters as for Zone 1, but ensure you use the reverse details:
    - The same SOA section as Zone 1.
    - Empty A and CNAME records.
    - Additionally, configure in Zone 2:
      - Generate Reverse field by the network IP address set in branch server network formula (for example, 192.168.1.5/24).
      - For Zones should specify the domain name of your branch network (for example, branch1.example.org).
11. Click **[Save Formula]** to save your configuration.
12. Apply the highstate.

Reverse name resolution on terminals might not work for networks that are inside one of these IPv4 private address ranges:

- `10.0.0.0/8`
- `172.16.0.0/12`
- `192.168.0.0/16`

If you encounter this problem, go to the `Options` section of the Bind formula, and click **[Add item]**: * In the `Options` field, enter `empty-zones-enable`. * In the `Value` field, select `No`.

Branch Network Formula

The branch network formula is used to configure the networking services required by the branch server, including DHCP, DNS, TFTP, PXE, and FTP.

The branch server can be configured to use networking in many different ways. The most common ways provide either a dedicated or shared LAN for terminals.

Set up a branch server with a dedicated LAN

In this configuration, the branch server requires at least two network interfaces: one acts as a WAN to communicate with the SUSE Manager server, and the other one acts as an isolated LAN to communicate with terminals.

This configuration allows for the branch server to provide DHCP, DNS, TFTP, PXE and FTP services to terminals, which are configured through SUSE Manager for Retail formulas in the SUSE Manager Web UI.

Procedure: Setting up a branch server with a dedicated LAN

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the `Formulas` tab.
2. In the `Branch Network` section, set these parameters:
    - Keep `Dedicated NIC` checked
    - In the `NIC` field, enter the name of the network device that is connected to the internal LAN.
    - In the `IP` field, enter the static IP address to be assigned to the branch server on the internal LAN.
    - In the `Netmask` field, enter the network mask of the internal LAN.
3. Check `Enable Route` if you want the branch server to route traffic from internal LAN to WAN.
    - Check `Enable NAT` if you want the branch server to convert addresses from internal LAN to WAN.

- Select the `bind` DNS forwarder mode.
- Check DNS forwarder fallback if you want to rely on an external DNS if the branch DNS fails.
- Specify the working directory, and the directory owner and group.

4. Click **[Save]** to save your changes.
5. Apply the highstate.

Set up a branch server with a shared network

In this configuration, the branch server has only one network interface card, which is used to connect to the SUSE Manager server as well as the terminals.

This configuration allows for the branch server to provide DNS, TFTP, PXE and FTP services to terminals, which are configured through SUSE Manager for Retail formulas in the SUSE Manager Web UI. Optionally, the branch server can also provide DHCP services in this configuration.

If DHCP services are not provided by the branch server, ensure that your external DHCP configuration is set correctly:

- The `next-server` option must point to the branch server for PXE boot to work
- The `filename` option must correctly identify the network boot program (by default, this is `/boot/pxelinux`)
- The `domain-name-servers` option must point to the branch server for correct host name resolution

Procedure: Setting up a branch server with a shared network

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the `Formulas` tab.
2. In the `Branch Network` section, set these parameters:
   - Keep `Dedicated NIC` unchecked
   - Select which services to enable on the branch server's firewall. Ensure you include DNS, TFTP and FTP services.
   - Select the `bind` DNS forwarder mode.
   - Check DNS forwarder fallback if you want to rely on an external DNS if the branch DNS fails.
   - Specify the working directory, and the directory owner and group.
3. Click **[Save]** to save your changes.
4. Apply the highstate.

DHCPd Formula

The DHCPd formula is used to configure the DHCP service on the branch server.

Procedure: Configuring DHCP

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the Formulas tab.
2. Check the `Dhcpd` formula, and click **[Save]**.
3. Navigate to the **Formulas › Dhcpd** tab, and set these parameters:
    - In the `Domain Name` field, enter the domain name for the branch server (for example: `branch1.example.com`).
    - In the `Domain Name Server` field, enter either the IP address or resolvable FQDN of the branch DNS server (for example: `192.168.1.5`).
    - In the `Listen Interfaces` field, enter the name of the network interface used to connect to the local branch network (for example: `eth1`).
4. Navigate to the `Network Configuration (subnet)` section, and use these parameters for Network1:
    - In the `Network IP` field, enter the IP address of the branch server network (for example: `192.168.1.0`).
    - In the `Netmask` field, enter the network mask of the branch server network (for example: `255.255.255.0`).
    - In the `Domain Name` field, enter the domain name for the branch server network (for example: `branch1.example.com`).
5. In the `Dynamic IP Range` section, use these parameters to configure the IP range to be served by the DHCP service:
    - In the first input box, set the lower bound of the IP range (for example: `192.168.1.51`).
    - In the second input box, set the upper bound of the IP range (for example: `192.168.1.151`).
6. In the `Broadcast Address` field, enter the broadcast IP address for the branch network (for example: `192.168.1.255`).
7. In the `Routers` field, enter the IP address to be used by routers in the branch server network (for example: `192.168.1.5`).
8. In the `Next Server` field, enter the hostname or IP address of the branch server (for example: `192.168.1.5`).
9. In the `Filename` field, keep the default value of `/boot/pxelinux.0`.
10. Click **[Save Formula]** to save your configuration
11. Apply the highstate.

Image Synchronization Formula

The Image Synchronization formula is used to configure when OS images are synchronized to the branch server, and to specify which images to synchronize.

If this formula is not enabled, synchronization must be started manually, and all images will be synchronized.

Procedure: Configuring Image Synchronization

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the Formulas tab.
2. Check the `Image Synchronize` formula, and click **[Save]**.
3. Navigate to the **Formulas › Image Synchronize** tab, and set these parameters:
    - Check the `Include Image Synchronization in Highstate` field to have image synchronization occur every time highstate is applied. This ensures that you do not have to perform image synchronization manually, however it requires a high bandwidth environment.
    - In the `Synchronize only the listed images` field, click **[Add item]** to add the images you want to have synchronized automatically. Alternatively, you can leave this list blank to have all images synchronized.
4. Click **[Save Formula]** to save your configuration.
5. Apply the highstate.

PXE Formula

The PXE formula is used to configure PXE booting on the branch server.

Procedure: Configuring PXE booting

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the `Formulas` tab.
2. Select the `Pxe` formula, and click `Save`.
3. Navigate to the **Formulas › Pxe** tab, and set these parameters:
    - In the `Kernel filename` field, keep the default value.
    - In the `Initrd filename` field, keep the default value.
    - In the `Kernel command line parameters` field, keep the default value. For more information about possible values, see Kernel Command Line Parameters.
    - In the `PXE root directory` field, enter the path to the saltboot directory (for example, `/srv/saltboot`).
    - In the `Branch id` field, type a name to use as a branch identifier (for example: `Branch0001`). Use only alphanumeric characters for the branch identifier.

4. Click `Save Formula` to save your configuration
5. Apply the highstate.

Kernel Command Line Parameters

Saltboot supports common kernel parameters and saltboot-specific kernel parameters. All the parameters can be entered in the `Kernel Command Line Parameters` field of the PXE formula.

`kiwidebug=1`

Do Not Use in Production

Do not use this parameter in a production environment as it creates a major security hole. This parameter should be used only in a development environment for debug purposes.

+

Starts a shell on tty2 during boot and enables debug log level in Salt.

`MASTER`

Overrides auto-detection of the Salt master. For example:

```
MASTER=myproxy.domain.com
```

`SALT_TIMEOUT`

Overrides the local boot fallback timeout if the Salt master does not apply the saltboot state within this timeout (default: 60 seconds). For example:

```
SALT_TIMEOUT=300
```

`DISABLE_HOSTNAME_ID`

If the terminal has a hostname assigned by DHCP, it is by default used as a minion ID. Setting this option to `1` disables this mechanism, and SMBios information will be used as a minion ID.

`DISABLE_UNIQUE_SUFFIX`

Setting this option to `1` disables adding random generated suffix to terminal minion ID.

If you set this parameter make sure your terminal has either a unique hostname provided by DHCP and DNS, or the terminal hardware comes with a unique serial number stored in its SMBios memory. Otherwise there is a risk of terminal minion ID duplicity, and bootstrapping the minion will fail.

The following parameters (`MINION_ID_PREFIX`, `salt_device`, `root`) are usually autoconfigured and should be used only in specific conditions such as debugging or development:

`MINION_ID_PREFIX`

Branch ID set in the PXE formula form.

`salt_device`

Device that contains the Salt configuration.

`root`

Device that contains the already deployed root filesystem. Used for falling back to local boot.

Saltboot Formula

The Saltboot formula is used to configure disk images and partitioning for the selected hardware type.

Saltboot formula is meant to be used as a group formula. Enable and configure saltboot formula for hardware type groups.

Procedure: Configuring the hardware type group with saltboot

1. Open the details page for your new hardware type group, and navigate to the `Formulas` tab.
2. Select the `saltboot-formula` and click **[Save]**.
3. Navigate to the new **Formulas › Saltboot** tab.
4. In the `Disk 1` section, set these parameters:
    - In the `Disk symbolic ID` field, enter a custom name for the disk (for example, `disk1`).
    - In the `Device type` field, select `DISK`.
    - In the `Disk device` field, select the device that corresponds to the device name on the target machine (for example, `/dev/sda`).
    - In the `RAID level` field, leave it empty.
    - In the `Disk Label` field, select `gpt`.
5. In the `Partition` section, set these parameters for `Partition 1`:
    - In the `Partition symbolic ID` field, enter a custom name for the partition (for example, `p1`).
    - In the `Partition size` field, specify a size for the partition in Mebibytes (MiB).
    - In the `Device mount point` field, select a location to mount the partition (for example, `/data`).
    - In the `Filesystem format` field, select your preferred format (for example, `xfs`).
    - In the `OS Image to deploy` field, leave it empty.
    - In the `Partition encryption password` field, enter a password if you want to encrypt the partition.

- In the `Partition flags` field, leave it empty.

6. In the `Partition` section, set these parameters for `Partition 2`:
   - In the `Partition symbolic ID` field, enter a custom name for the partition (for example, `p2`).
   - In the `Partition size` field, specify a size for the partition in Mebibytes (MiB).
   - In the `Device mount point` field, leave it empty.
   - In the `Filesystem format` field, select `swap`.
   - In the `OS Image to deploy` field, leave it empty.
   - In the `Partition encryption password` field, enter a password if you want to encrypt the partition.
   - In the `Partition flags` field, select `swap`.
7. In the `Partition` section, set these parameters for `Partition 3`:
   - In the `Partition symbolic ID` field, enter a custom name for the partition (for example, `p3`).
   - In the `Partition size` field, leave it empty. This will ensure the partition uses up all remaining space.
   - In the `Device mount point` field, select `/`.
   - In the `Filesystem format` field, leave it empty.
   - In the `OS Image to deploy` field, enter the name of the image to deploy.
   - In the `Image version` field, leave it empty. This will ensure you use the latest available version.
   - In the `Partition encryption password` field, enter a password if you want to encrypt the partition.
   - In the `Partition flags` field, leave it empty.
8. Click **[Save Formula]** to save your formula.

TFTPd Formula

The TFTPd formula is used to configure the TFTP service on the branch server.

Procedure: Configuring TFTP

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the `Formulas` tab.
2. Select the `Tftpd` formula, and click **[Save]**.
3. Navigate to the **Formulas › Tftpd** tab, and set these parameters:

- In the `Internal Network Address` field, enter the IP address of the branch server (for example: `192.168.1.5`).
- In the `TFTP Base Directory` field, enter the path to the saltboot directory (for example, `/srv/saltboot`).
- In the `Run TFTP Under User` field, enter `saltboot`.

4. Click **[Save Formula]** to save your configuration.
5. Apply the highstate.

VsFTPd Formula

The VsFTPd formula is used to configure the FTP service on the branch server.

Procedure: Configuring VsFTPd

1. In the SUSE Manager Web UI, open the details page for the branch server, and navigate to the `Formulas` tab.
2. Select the `Vsftpd` formula, and click **[Save]**.
3. Navigate to the **Formulas › Vsftpd** tab, and set these parameters:
   - In the `FTP server directory` field, enter `/srv/saltboot`.
   - In the `Internal Network Address` field, enter the IP address of the branch server (for example: `192.168.1.5`).
   - All other fields can retain their default values.
4. Click **[Save Formula]** to save your configuration.
5. Apply the highstate.

Administration

Administration

This sections contains notes on administering your SUSE Manager for Retail installation. For general administration tasks, see the SUSE Manager documentation at https://www.suse.com/documentation/suse-manager-3/

Branch server mass configuration

Branch servers are configured individually using formulas. If you are working in an environment with many branch servers, you might find it easier to configure the terminals automatically with a pre-defined configuration file, rather than configuring each branch server individually.

Configure multiple branch servers

This procedure requires the `python-susemanager-retail` package, which is provided with SUSE Manager for Retail. Install the `python-susemanager-retail` package on the SUSE Manager server.

Procedure: Configuring multiple branch servers

1. Create a YAML file describing the infrastructure you intend to install. An example YAML file is at the end of this chapter, for you to reference.
2. On a clean SUSE Manager installation, import the YAML file you have created:

   ```
   retail_yaml --from-yaml filename.yaml
   ```

   You can use the `retail_yaml --help` command for additional options.

If you need to change your configuration, you can edit the YAML file at any time, and use the `retail_yaml --from-yaml` command to upload the new configuration.

Use the empty profiles together with activation keys to onboard all the systems of your infrastructure. Use an activation key to assign the channels listed in Configuring Server.

Deploying terminals

For hardware requirements, see Point-of-Service Terminals.

Before terminals can be deployed, ensure you have prepared a saltboot based OS image. For how to build OS images, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-advanced-topics/html/book.suma.advanced.topics/at.images.html#at.images.kiwi.

Each terminal requires a specific hardware type, which contains information about the product name and terminal manufacturer. However, the SUSE Manager database does not have this information to begin with. In order to tell SUSE Manager what image to deploy on each terminal, you can set hardware type groups. After you have created your new hardware type group, you can apply the `saltboot-formula` to the group and configure it for your environment.

After you have registered new terminals, always check the SUSE Manager Web UI to ensure your terminal has connected successfully to the branch server, and you have not connected directly to the SUSE Manager server by mistake.

Create a Hardware Type group

Hardware types allow you to group devices according to manufacturer and device name, so that all devices of a particular type can be managed as one.

You will need to create appropriate hardware types in your system.

Empty profiles can be assigned to a hardware type group either before or after registration. If an empty

profile is not assigned to a hardware type group before registration, it will be assigned to group that best matches the product information available to it.

For this procedure, you will require the system manufacturer name and product name for your terminal.

Procedure: Creating a Hardware Type group

1. Determine the hardware type group name. Prefix the name with `HWTYPE:`, followed by the system manufacturer name and product name, separated by a hyphen. For example:

```
HWTYPE:POSVendor-Terminal1
```

Only use colons (`:`), hyphens (`-`) or underscores (`_`) in hardware type group names. Spaces and other non-alphanumeric characters will be removed when the name is processed.

2. In the SUSE Manager Web UI, navigate to **Main Navigation › Systems › System Groups**, and click the **[Create Group]** button.
3. In the `Create System Group` dialog, create a new system group, using the hardware type group name you created earlier.

Power on your point-of-service terminals. The branch server will bootstrap the terminals according to the data you have provided.

Terminal Names

In the SUSE Manager Web UI, terminals have a standard naming format which allows you to match the physical device with its record. By default, the name uses this format:

```
BranchName.Manufacturer-ProductName-SerialNumber-MachineID
```

For example:

```
B002.TOSHIBA-6140100-41BA03X-c643
```

You can adjust this behavior by toggling the `DISABLE_HOSTNAME_ID` and `DISABLE_UNIQUE_SUFFIX` parameters in the PXE formula settings. For more information about the PXE formula, see PXE Formula.

Terminal mass configuration

If you are working in an environment with many terminals, you might find it easier to configure the terminals automatically with a pre-defined configuration file, rather than configuring each terminal individually.

In order to do this, you will need to have your infrastructure planned out ahead of time, including the IP addresses, hostnames, and domain names of branch servers and terminals. You will also require the hardware (MAC) addresses of each terminal.

The settings specified in the configuration file cannot always be successfully applied. In cases where there is a conflict, SUSE Manager will ignore the request in the file. This is especially important when designating hostnames. You should always check the details have been applied as expected after using this configuration method.

Configure multiple terminals

Procedure: Configuring multiple terminals

1. Create a YAML file describing the infrastructure you intend to install, specifying the hardware address for each terminal. An example YAML file is at the end of this chapter, for you to reference.
2. On a clean SUSE Manager installation, import the YAML file you have created:

   ```
   retail_yaml --from-yaml filename.yaml
   ```

   You can use the `retail_yaml --help` command for additional options.
3. In the SUSE Manager Web UI, check that your systems are listed and displaying correctly, and the formulas you require are available.
4. Create activation keys for each of your branch servers, connect them using bootstrap, and configure them as proxy servers. For further information on these steps, see the SUSE Manager documentation.
5. Apply highstate to apply your configuration changes. In the `States` tab, click **[Apply Highstate]**.
6. Connect your terminals according to your infrastructure plan.

If you need to change your configuration, you can edit the YAML file at any time, and use the `retail_yaml --from-yaml` command to upload the new configuration.

If you have a current configuration that you would like to export to a YAML file, use:

```
retail_yaml --to-yaml filename.yaml
```

This can be a good way to create a basic mass configuration file. However it is important to check the file before using it, as some mandatory configuration entries will be missing.

When you are designing your configuration and creating the YAML file, ensure the branch server ID matches the fully qualified hostname, and the Salt ID. If these do not match, the bootstrap script could fail.

Example YAML file for mass configuration

You can use the `retail_yaml` command to import configuration parameters from a pre-prepared YAML file. This section contains a commented example YAML file for you to reference.

Listing 1. Example: YAML mass terminal configuration file

```
branches:
# there are 2 possible setups: with / without dedicated NIC
#
# with dedicated NIC
  branchserver1.branch1.cz:     # salt ID of branch server
    branch_prefix: branch1      # optional, default guessed from salt id
    server_name: branchserver1  # optional, default guessed from salt id
    server_domain: branch1.cz   # optional, default guessed from salt id
    nic: eth1                   # nic used for connecting terminals, default taken from hw
info in SUMA
    dedicated_nic: true         # set to true if the terminals are on separate network
    salt_cname: branchserver1.branch1.cz      # hostname of salt master / broker for
terminals, mandatory
    configure_firewall: true    # modify firewall configuration
    branch_ip: 192.168.2.1      # default for dedicated NIC: 192.168.1.1
    netmask: 255.255.255.0      # default for dedicated NIC: 255.255.255.0
    dyn_range:                  # default for dedicated NIC: 192.168.1.10 - 192.168.1.250
        - 192.168.2.10
        - 192.168.2.250
# without dedicated NIC
# the DHCP formula is not used, DHCP is typically provided by a router
# the network parameters can be autodetected if the machine is already connected to SUSE
Manager
  branchserver2.branch2.cz:     # salt ID of branch server
    branch_prefix: branch2      # optional, default guessed from salt id
    server_name: branchserver2  # optional, default guessed from salt id
    server_domain: branch2.cz   # optional, default guessed from salt id
    salt_cname: branchserver2.branch1.cz      # FQDN of salt master / broker for terminals,
mandatory
    branch_ip: 192.168.2.1      # optional, default taken from SUMA data if the machine is
registered
    netmask: 255.255.255.0      # optional, default taken from SUMA data if the machine is
registered
    exclude_formulas:           # optional, do not configure listed formulas
      - dhcp                    # without dedicated NIC the dhcp service is typically
provided by a router
    hwAddress: 11:22:33:44:55:66 # optional, required to connect pre-configured entry with
particular machine
                                 # during onboarding
    terminals:                      # configuration of static terminal entries
      hostname1:                    # hostname
        hwAddress: aa:aa:aa:bb:bb:bb # required as unique id of a terminal
        IP: 192.168.2.50            # required for static dhcp and dns entry
        saltboot:                   # optional, alternative 1: configure terminal-specific
pillar data
          partitioning:             # partitioning pillar as described in saltboot
documentation
            disk1:
              device: /dev/sda
              disklabel: msdos
              partitions:
                p1:
                  flags: swap
                  format: swap
                  size_MiB: 2000.0
                p2:
                  image: POS_Image_JeOS6
                  mountpoint: /
```

```
            type: DISK
      hostname2:                    # hostname
        hwAddress: aa:aa:aa:bb:bb:cc # required as unique id of a terminal
        IP: 192.168.2.51            # required for static dhcp and dns entry
        hwtype: IBMCORPORATION-4838910 # optional, alternative 2: assign the terminal to
hwtype group
        # if neither of hwtype nor saltboot is specified, a group is assigned according to
hwtype
        # reported by bios on the first boot
hwtypes:
  IBMCORPORATION-4838910:      # HWTYPE string (manufacturer-model) as returned by bios
    description: 4838-910       # freetext description
    saltboot:
      partitioning:             # partitioning pillar as described in saltboot documentation
        disk1:
          device: /dev/sda
          disklabel: msdos
          partitions:
            p1:
              flags: swap
              format: swap
              size_MiB: 1000.0
            p2:
              image: POS_Image_JeOS6
              mountpoint: /
          type: DISK
  TOSHIBA-6140100:
    description: HWTYPE:TOSHIBA-6140100
    saltboot:
      partitioning:
        disk1:
          device: /dev/sda
          disklabel: msdos
          partitions:
            p1:
              flags: swap
              format: swap
              size_MiB: 1000.0
            p2:
              image: POS_Image_JeOS6
              mountpoint: /
          type: DISK
```

Delta Images

If you have very large images that you need to synchronize to the branch server, you can use delta images to save network bandwidth. A delta image contains only the differences between two regular images. If there are only a few changes between two images, the delta image can be very small. Synchronizing a delta image to the branch consumes less network bandwidth but it requires some extra hardware resources on the branch server to rebuild the installable image.

Building Delta Images

The `retail_create_delta` tool creates a delta image on the Uyuni server. The tool uses `xdelta3` internally.

Use the name and the version strings of the target and the source image as parameters to the command. The format of the parameters must be `<NAME>-<VERSION>` and they must correspond to the image names and versions available in the pillar. For example, if the pillar contains:

```
images:
  POS_Image_JeOS6:
    6.0.0:
      ...
    6.0.1:
      ...
  POS_Image_Graphical6:
    6.0.0:
      ...
```

Then the `retail_create_delta` command is:

```
retail_create_delta POS_Image_JeOS6-6.0.1 POS_Image_JeOS6-6.0.0
```

This command will generate the delta image between version 6.0.0 and version 6.0.1. The resulting delta file is saved in `/srv/www/os-images` and the corresponding SUSE Linux Enterprise Server file in `/srv/susemanager/pillar_data/images/`.

Tuning Delta Generation

Performance tuning is possible with the `-B <VALUE>` option, which is passed to `xdelta3`. With higher values you achieve smaller deltas at the cost of higher memory requirements. For more information, see the `xdelta3` documentation (`man xdelta3`).

Image Synchronizing to the Branch Server

When an image is synchronized to the branch server, the `image-sync-formula` first checks whether the source image is available on the branch server. If the source image is available, the delta will be downloaded to save network bandwidth.

What next?

What next?

This document covers only a sub-section of information about your SUSE Manager for Retail installation. If you need further information or support, try one of these options.

More documentation

For SUSE Manager documentation, visit https://www.suse.com/documentation/suse-manager-3/

For legacy SUSE Linux Enterprise Point of Service documentation, visit https://www.suse.com/documentation/slepos11/index.html Note, however, that SUSE Manager for Retail documentation supersedes this information.

Support

For personalized support, log in to your SUSE Customer Center account here: https://scc.suse.com/login

For assistance with planning and installing your SUSE Manager for Retail environment, contact the SUSE Consulting team.

Retail Migration

What is SUSE Manager for Retail?

SUSE Manager for Retail 4.0 is an open source infrastructure management solution, optimized and tailored specifically for the retail industry. It uses the same technology as SUSE Manager, but is customized to address the needs of retail organizations.

SUSE Manager for Retail is designed for use in retail situations where customers can use point-of-service terminals to purchase or exchange goods, take part in promotions, or collect loyalty points. In addition to retail installations, it can also be used for novel purposes, such as maintaining student computers in an educational environment, or self-service kiosks in banks or hospitals.

SUSE Manager for Retail is intended for use in installations that include servers, workstations, point-of-service terminals, and other devices. It allows administrators to install, configure, and update the software on their servers, and manage the deployment and provisioning of point-of-service machines.

About this book

This document provides instructions for migrating SUSE Linux Enterprise Point of Service 11 or SUSE Manager for Retail 3.1 to SUSE Manager for Retail 4.0.

It should be read in conjunction with the SUSE Manager for Retail documentation suite, available from https://www.suse.com/documentation/suse-manager-for-retail/.

Prepare to Migrate

Before you Begin

This book is intended to guide you through migration your SUSE Linux Enterprise Point of Service or older SUSE Manager for Retail installation, to the newest version of SUSE Manager for Retail.

Migrating configuration from SUSE Linux Enterprise Point of Service to SUSE Manager for Retail is a technology preview and will be enhanced in future releases of SUSE Manager.

The book is divided into scenarios. Pick the scenario that best suits your environment, and follow the instructions in that chapter to migrate your installation.

Ensure your existing installation is fully updated, and that you have performed a backup, before you begin your migration.

Migration Scenarios

This document contains several different migration scenarios. Ensure you pick the most appropriate migration scenario for your environment.

If you are migrating from SUSE Linux Enterprise Point of Service 11 to SUSE Manager for Retail, and you do not have a SUSE Manager installation, see SLEPOS to new SUSE Manager.

If you are migrating from SUSE Linux Enterprise Point of Service 11 to SUSE Manager for Retail, and you already have a SUSE Manager installation that you want to use, see SLEPOS to Independent SUSE Manager.

Migrating from SUSE Linux Enterprise Point of Service

SUSE Linux Enterprise Point of Service cannot be upgraded directly to SUSE Manager for Retail, so the migration process requires you to perform some manual configuration. To assist you in the migration, as much information as possible about the existing hardware configuration and network infrastructure is recorded and then prepared and used for rebuilding the new SUSE Manager for Retail installation.

In some cases, this will require a lengthy downtime to perform the migration. If you are not able to manage downtime, you can install new servers and run them in parallel to the existing ones while you perform the migration. This is especially relevant for large installations.

It is possible to run a SLEPOS Admin server and a SUSE Manager server in parallel, as branches that have been migrated will run on the SUSE Manager server, while those which have not yet been migrated can continue to run on the Admin server. This includes all operations, such as adding new terminals, or building and deploying new images.

However, if you run network services (especially DHCP) on the branch servers, you will not be able to run both old and new branch servers in parallel on the same branch, because they can conflict with each other. This can result in multiple terminals having the same IP address, or terminals randomly assigned to different branch servers. If you need to migrate in this environment, and you want to configure a new Branch server while the branch is still running on old infrastructure, make sure that the new Branch server is not connected to the network with the terminals.

If your branch server does not provide DHCP services, you can configure the new one in parallel and, when you are ready, change the configuration of your DHCP server from the old to the new branch server.

SUSE Linux Enterprise Point of Service 11 to SUSE Manager for Retail

Migration from SUSE Linux Enterprise Point of Service 11 to SUSE Manager for Retail

This section describes migrating from an existing SUSE Linux Enterprise Point of Service 11 installation, to a new SUSE Manager installation. You can perform this migration all at once by creating a data dump in a single file, then moving it to the new server; see Migration with Complete Data Dump. Alternatively,

you can perform the migration in stages by creating a data dump for each branch, and moving them to the new server one by one; see Migration with Branch by Branch Data Dump. Importing and deploying the converted data can also be done in one step, or multiple steps, depending on your environment.

Migration with Complete Data Dump

In this procedure, you create a single data dump in an XML file, convert it to YAML, and migrate it to the new infrastructure all at once.

1. Install a SUSE Manager server 4.0 (with the Retail pattern). For more information, see https://www.suse.com/documentation/suse-manager-for-retail-3-2/retail-getting-started/retail.chap.install.html.
2. On the SLEPOS Admin server export all the data stored in LDAP to an XML file. Run this command as an administrator:

   ```
   posAdmin --export --type xml --file dumpfile.xml
   ```

   The resulting `dumpfile.xml` file will contain global information, with parts about images, hardware and its partitioning, and the description of the branch servers with networking data, services, and attached terminals.

3. Move the XML file to the newly created SUSE Manager server, and convert it to YAML:

   ```
   retail_migration dumpfile.xml retail.yml
   ```

4. Review the generated YAML file (`retail.yml`) and adjust it as necessary. Consider `HWTYPE` group naming and image name and version changes in the partitioning data. Group names must not exceed the 56 character limit. You can shorten the names as needed, and the image names must match the images in SUSE Manager. The `--save-mapping` option can help you with this task.

   Also check whether there are duplicate MAC addresses of the terminals in the generated YAML file. Choose which entry you want to keep. If there are duplicate MAC addresses, importing the YAML file will fail.

   SUSE Linux Enterprise Point of Service images will not be migrated. You must rebuild the images using the OS image building functionality. For more information about building images, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-advanced-topics/html/book.suma.advanced.topics/at.images.html#at.images.kiwi.

5. Import the complete data (YAML) with:

   ```
   retail_yaml --from-yaml retail.yml
   ```

You can see statistical data while importing. Then check the results in the Web UI. In **Main Menu › Systems › Systems › All**, find empty profiles, and in **Main Menu › Systems › Groups**, the groups for the hardware configuration, the branches, servers, and terminals.

To finalize the branch server migration, you must install the branch server machines as Salt-based minions and bootstrap them as proxies. For more information about proxy installation, see Installing and Registering. For more information about using an activation key to assign the required channels, see Configuring Server. After onboarded to SUSE Manager, the branch servers machines are connected with the empty profiles (by FQDN), and so they will get the Retail configuration.

After all the branches are migrated, shutdown and remove the old SLEPOS Admin Server.

Migration with Branch by Branch Data Dump

In this procedure, you migrate the SLEPOS infrastructure and the branches one by one, first exporting and then importing.

1. Install a SUSE Manager server 4.0 (with the Retail pattern). For more information, see https://www.suse.com/documentation/suse-manager-for-retail-3-2/retail-getting-started/retail.chap.install.html.
2. On every branch server:

   ```
   posAdmin --export --type xml --file dumpfile.xml
   ```

   These dumps will contain only the LDAP data of the branch, and any global data.
3. Similarily, you can export the LDAP data of every branch if you run the command on the Admin server with the branch credentials explicitly specified:

   ```
   posAdmin --export --type xml --file dumpfile.xml --user $branch_dn \
       --password $password
   ```

   For background information about SLEPOS branch server configuration, see https://www.suse.com/documentation/slepos11/book_slepos/data/cha_slepos_branchserv.html.
4. Review the generated YAML file (`retail.yml`) and adjust it as necessary. Consider `HWTYPE` group naming and image name and version changes in the partitioning data. You can shorten the names as needed, and the image names must match the images in SUSE Manager. The `--save-mapping` option can help you with this task.

   Check whether there are duplicate MAC addresses of the terminals in the generated YAML file. Choose which entry you want to keep. As long as there are duplicate MAC addresses, SUSE Manager will refuse importing the YAML file.

SUSE Linux Enterprise Point of Service images will not be migrated. You must rebuild the images using the OS image building functionality. For more information about building images, see https://www.suse.com/documentation/suse-manager-3/3.2/susemanager-advanced-topics/html/book.suma.advanced.topics/at.images.html#at.images.kiwi.

The data can be imported branch by branch. For each branch perform the following steps:

1. Run the import command for one branch after the other:

```
retail_yaml --from-yaml retail.yml --branch <branch_name>
```

   Repeat the command for every branch.

2. To finalize each branch server migration, you must install the branch server machine as a Salt-based minion and bootstrap it as a proxy. For more information about proxy installation, see Installing and Registering. For more information about using an activation key to assign the required channels, see Configuring Server. After onboarded to SUSE Manager for Retail, the branch server machine is connected with the empty profile (by FQDN), and so it will get the Retail configuration.
3. Apply Highstate on the branch server; this will happen automatically if `Configuration File Deployment` is enabled.
4. Boot the terminals of the branch.

After all the branches are migrated, shut down and remove the old SLEPOS Admin Server.

Converting XML to YAML

When you perform a migration using one of the methods in this chapter, one of the steps takes the XML data dump file from SUSE Linux Enterprise Point of Service, and converts it to a YAML file for SUSE Manager for Retail. The tool that performs this conversion has additional features, which are outlined in this section.

To validate the XML file before conversion, and print any errors:

```
retail_migration dumpfile.xml
```

To write a mapping file called `map.yml`:

```
retail_migration dumpfile.xml  --save-mapping map.yml
```

The mapping file contains two dictionaries: . `images`, which maps old SUSE Linux Enterprise Point of Service images to new images built in SUSE Manager. . `groups`, which maps legacy SUSE Linux Enterprise Point of Service `scCashRegister` objects to SUSE Manager `HWTYPE` groups. Group names

must not exceed the 56 character limit.

The mapping file should be edited as required for your environment.

To perform a conversion using a mapping file:

```
retail_migration dumpfile.xml  retail.yml --mapping map.yml
```

If you are performing a branch-by-branch migration, the resulting `retail.yml` file will contain a new version of SUSE Linux Enterprise Point of Service LDAP data. If you want to preserve any global changes in your SUSE Manager for Retail settings, remove the `global` hardware types from the resulting `retail.yml` file before importing it. Alternatively, you can import `retail.yml` using this command to import only the new systems and groups defined in the file, and leave any existing configuration settings untouched:

```
retail_yaml --only-new
```