



SUSE Multi-Linux Manager 5.1

# Reference Guide

---

# Chapter 1. Preface

Reference

SUSE Multi-Linux Manager 5.1

This document is divided into several sections:

- **Web UI Reference:** Organized to mirror the structure of the SUSE Multi-Linux Manager Web UI, this section allows you to quickly find relevant information while navigating the interface.
- **spacecmd Reference:** A comprehensive guide to the `spacecmd` command-line interface. It includes an **alphabetized list** of all available commands along with their correct usage.
- **Command Line Tools:** An overview of the various **command-line utilities** available in SUSE Multi-Linux Manager, helping you streamline administrative tasks.

**Publication Date:** 2025-12-12

Copyright © 2011–2025 SUSE LLC and contributors. All rights reserved. Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.2 or (at your option) version 1.3; with the Invariant Section being this copyright notice and license. A copy of the license version 1.2 is included in the section entitled **Legal › License**.

---

For SUSE trademarks, see <https://www.suse.com/company/legal/> . All third-party trademarks are the property of their respective owners. Trademark symbols (®, ™ etc.) denote trademarks of SUSE and its affiliates. Asterisks (\*) denote third-party trademarks. All information found in this book has been compiled with utmost attention to detail. However, this does not guarantee complete accuracy. Neither SUSE LLC, its affiliates, the authors nor the translators shall be held liable for possible errors or the consequences thereof.

---

# Contents

1. Preface .....	1
2. WebUI Reference .....	16
2.1. Home Menu	16
2.1.1. Home Overview	16
2.1.2. Notification Messages	16
2.1.3. User Account Menu	16
2.1.4. My Preferences	18
2.1.5. My Organization	18
2.2. Systems Menu	20
2.2.1. Systems List	21
2.2.2. System Groups	23
2.2.3. System Set Manager	23
2.2.4. Bootstrapping	27
2.2.5. Proxy Configuration	28
2.2.6. Advanced Search	29
2.2.7. Activation Keys	29
2.2.8. Stored Profiles	29
2.2.9. Custom System Information	30
2.2.10. Autoinstallation Menu	30
2.2.11. Virtual Host Managers	32
2.3. System Details	32
2.3.1. Overview	33
2.3.2. Software	38
2.3.3. Configuration	41
2.3.4. Provisioning	42
2.3.5. Groups	43
2.3.6. Audit	44
2.3.7. States	45
2.3.8. Formulas	46
2.3.9. Ansible	46
2.3.10. Events	48
2.3.11. Proxy	48
2.4. Salt Menu	48
2.4.1. Keys	48
2.4.2. Remote Commands	49
2.4.3. Formula Catalog	49
2.5. Images Menu	49
2.5.1. Image List	50
2.5.2. Images Build	50
2.5.3. Images Profiles	51
2.5.4. Images Stores	51
2.6. Patches Menu	51
2.6.1. Patch Details	51
2.6.2. Patch List	53
2.6.3. Advanced Search for Patches	54
2.6.4. Manage Patches	54

2.6.5. Clone Patches	55
2.7. Software Menu	55
2.7.1. Channel Details	55
2.7.2. Channel List Menu	57
2.7.3. Package Search	58
2.7.4. Manage Menu	59
2.7.5. Distribution Channel Mapping	60
2.8. Content Lifecycle Management Menu	60
2.8.1. Projects	60
2.8.2. Filters	61
2.9. Audit Menu	61
2.9.1. CVE Audit	61
2.9.2. Subscription Matching	62
2.9.3. OpenSCAP Menu	65
2.10. Configuration Menu	66
2.10.1. Configuration Overview	67
2.10.2. Channels	68
2.10.3. Files	70
2.10.4. Systems Menu	72
2.11. Schedule Menu	73
2.11.1. Pending Actions	73
2.11.2. Recurring Actions	74
2.11.3. Completed Actions	74
2.11.4. Failed Actions	75
2.11.5. Archived Actions	76
2.11.6. Action Chains	76
2.11.7. Maintenance Windows	76
2.12. Users Menu	76
2.12.1. User Details	76
2.12.2. User List	78
2.12.3. System Group Configuration	79
2.13. Admin Menu	79
2.13.1. Setup Wizard	79
2.13.2. Organizations	81
2.13.3. Users	81
2.13.4. PAYG	82
2.13.5. Manager Configuration	82
2.13.6. Task Schedules	85
2.13.7. Task Engine Status	85
2.13.8. Show Tomcat Logs	86
2.14. Help Menu	86
2.14.1. Documentation	86
2.14.2. Release Notes	86
2.14.3. API Menu	86
<b>3. spacecmd Reference</b> .....	<b>88</b>
3.1. Configuring spacecmd	88
3.1.1. Setup spacecmd credentials	88
3.1.2. spacecmd quiet mode	89
3.1.3. spacecmd help	89

3.2. help	90
3.3. history	93
3.4. Troubleshooting spacecmd	93
3.4.1. Creating a distribution where spacecmd sets localhost instead of FQDN	93
3.4.2. spacecmd not accepting commands or options	94
3.4.3. spacecmd caching problems	94
3.5. spacecmd Functions	94
3.5.1. activationkey	94
3.5.2. api	100
3.5.3. clear	101
3.5.4. clear_caches	101
3.5.5. configchannel	101
3.5.6. cryptokey	105
3.5.7. custominfo	106
3.5.8. distribution	106
3.5.9. errata	108
3.5.10. filepreservation	109
3.5.11. get	110
3.5.12. group	111
3.5.13. kickstart	112
3.5.14. list_proxies	121
3.5.15. login	121
3.5.16. logout	121
3.5.17. org	121
3.5.18. package	123
3.5.19. proxy_container_config	125
3.5.20. repo	126
3.5.21. report	128
3.5.22. scap	130
3.5.23. schedule	130
3.5.24. snippet	133
3.5.25. softwarechannel	134
3.5.26. ssm	140
3.5.27. system	142
3.5.28. toggle	156
3.5.29. user	156
3.5.30. whoami	159
3.5.31. whoamitalkingto	159
3.5.32. Miscellaneous Help Topics	159
<b>4. Command Line Tools</b>	<b>161</b>
4.1. Synchronization CLI Tools	162
4.1.1. Synchronize SCC Repositories With mgr-sync	162
4.1.2. Synchronize Repositories with spacewalk-repo-sync	163
4.1.3. Troubleshooting Synchronization	164
4.2. Channel Management CLI Tools	165
4.2.1. Manage Channels with spacewalk-remove-channel	165
4.3. Bootstrapping Command Line Tools	166
<b>5. GNU Free Documentation License</b>	<b>168</b>

























## Chapter 2. WebUI Reference

### 2.1. Home Menu

The Home section is a dashboard that contains a summary of your current SUSE Multi-Linux Manager status, including tasks, client information, and critical security updates.

#### 2.1.1. Home Overview

The **Home › Overview** section is a dashboard that contains a summary of your current SUSE Multi-Linux Manager status, including tasks, client information, and critical security updates.

#### 2.1.2. Notification Messages




The **Home › Notification Messages** section shows all current messages produced by SUSE Multi-Linux Manager. By default, messages will remain current for thirty days. After this period, messages are deleted whether or not they are marked as read.

To see unread messages, navigate to the Unread Messages tab. To see all messages, navigate to the All Messages tab.

Click **[Refresh]** to update the list.

Perform bulk actions by checking messages in the list. Click **[Delete selected messages]** to bulk delete messages. Click **[Mark selected as read]** to bulk read messages.

**Table 1. Notification Message Severity Statuses**

Icon	Description	Example
	Information	Client onboarding has failed.
	Warning	Channel synchronization has completed.
	Error	Channel synchronization has failed.

#### 2.1.3. User Account Menu

The **Home › User Account** section allows you to change user account preferences.

### 2.1.3.1. My Account

The **Home › User Account › My Account** section allows you to change user account preferences.

Modify your personal information, such as name, password, and title from the **Home › User Account › My Account** page. To modify this information, make the changes in the appropriate text fields and click the **[Update]** button at the bottom.

If you forget your password or username, navigate to Web UI sign in page, click **[About]**, and click **[Lookup Login/Password]**. Enter the username or email address, and click **[Send Password]** or **[Send Login]** to have the missing information sent to you.

### 2.1.3.2. Addresses

The **Home › User Account › Addresses** section allows you set your mailing, billing, and shipping addresses, and associated phone numbers.

Click **[Fill in this address]** or **[Edit this address]** below the address to be modified or added, make your changes, and click **[Update]**.

### 2.1.3.3. Change Email

The **Home › User Account › Change Email** section allows you to set the email SUSE Multi-Linux Manager sends notifications to.

Enter your new email address and click the **[Update]** button. Invalid email addresses, including those ending in @localhost are filtered and rejected.

If you would like to receive email notifications about patch alerts or daily summaries for your systems, ensure you have checked the Receive email notifications option in **Home › My Preferences** section.

### 2.1.3.4. Account Deactivation

The **Home › User Account › Account Deactivation** section allows you to cancel your SUSE Multi-Linux Manager user account.

When you click **[Deactivate Account]** your user account will be deleted, you will be signed out, and you will not be able to sign back in.

If you do this by accident, you will need to contact your SUSE Multi-Linux Manager Administrator to reactivate your user account.



If you are the only SUSE Multi-Linux Manager Administrator for your organization, you can

not deactivate your account.

## 2.1.4. My Preferences

The **Home › My Preferences** section allows you to configure SUSE Multi-Linux Manager Web UI options.

**Table 2. Home Preferences**

Option	Description	Default
Email Notification	Receive email for client and Taskomatic notifications, including a daily summary email.	Checked
SUSE Multi-Linux Manager List Page Size	Maximum number of items that can appear in a list on a single page.	25 entries
"Overview" Start Page	Select the information panes to display on the <b>Home › Overview</b> page.	All checked
Time Zone	Set your local timezone.	System timezone
Interface Language	Set the language to use in the Web UI.	Default language
Style Theme	Set the style theme to use in the Web UI.	susemanager-light
CSV Files	Select whether to use comma or semi-colon delimiters when producing downloadable CSV files.	Comma

For information about changing the default preferences, see **Administration › Users**.

## 2.1.5. My Organization

The **Home › My Organization** section allows you to configure your current organization.

For more information about organizations, see **Administration › Organizations**.

### 2.1.5.1. Organization Configuration

The **Home › My Organization › Configuration** section allows you to configure your current organization.

**Table 3. Organization Configuration Options**

Option	Description	Default
Enable staging contents	For clients in this organization, allow content staging by default.	Unchecked
Enable Errata E-mail Notifications	For users in this organization, send email notifications when errata (patches) are available.	Checked
Enable Upload of Detailed SCAP Files	Allow detailed SCAP content files to be uploaded for auditing.	Unchecked
Allow Deletion of SCAP Results	Allow SCAP results to be deleted after the audit is complete.	Checked
Allow Deletion After	The number of days after an SCAP audit is complete, that results can be deleted.	90 days
Synchronize patches on Content Lifecycle Management build	Controls whether the patch attributes and affected packages should be synchronized to cloned patches when building a content Project	Checked

- For more information about content staging, see **Administration › Content-staging**.
- For more information about OpenSCAP, see **Administration › Openscap**.
- For more information about organizations, see **Administration › Organizations**.
- For more information about Content Lifecycle Management, see **Administration › Content-lifecycle**.

### 2.1.5.2. Organization Trusts

The **Home › My Organization › Organization Trusts** section shows the trusts that you have established within your organization. This section also shows the channels that are available to other users through trusts.

For more information about organization trusts, see **Administration › Organizations**.

### 2.1.5.3. Organization Configuration Channels

The **Home › My Organization › Configuration Channels** section shows the configuration channels available within your organization. Configuration channels can be created in the SUSE Multi-Linux Manager Web UI by

navigating to **Configuration › Channels**. Apply configuration channels to your organization using the SUSE Multi-Linux Manager Web UI.

For more information about organizations, see **Administration › Organizations**.

## 2.2. Systems Menu

The Systems section allows you to manage your client systems.

The **Systems** menu contains submenu entries in the left navigation bar and as its overview page displays the **Systems › System List › All** listing with all client systems registered to the SUSE Multi-Linux Manager Server.

This listing contains information about the clients, including available software updates, extra packages (otherwise often referenced as non-compliant packages), and the base channel they are subscribed to.

All the submenu entries:

- System List - **Reference › Systems**
- System Groups - **Reference › Systems**
- System Set Manager - **Reference › Systems**
- Bootstrapping - **Reference › Systems**
- Proxy Configuration - **Reference › Systems**
- Advanced Search - **Reference › Systems**
- Activation Keys - **Reference › Systems**
- Stored Profiles - **Reference › Systems**
- Custom System Info - **Reference › Systems**
- Autoinstallation - **Reference › Systems**
- `Virtual Host Managers - **Reference › Systems**`

Click the name of a client to go to that client system's Details overview page and all its tabs and subtabs. For more information about the System Details overview page in the Web UI, see **Reference › Systems**.

Check a client to add it to the system set manager. For more information about the system set manager, see **Client-configuration › System-set-manager**.

Click **[Add Systems]** to go to **Systems › Bootstrapping**. For more about bootstrapping new clients, see **Reference › Systems**.

For more information about managing clients, see **Client-configuration › Client-config-overview**.

## 2.2.1. Systems List

The **Systems › System List** section lists all clients available in your SUSE Multi-Linux Manager environment.

For more information about managing clients, see **Client-configuration › Client-config-overview**.

The **Systems › System List** section is split into submenus:

### 2.2.1.1. All

The **Systems › System List › All** section lists every client that you have permission to manage.

### 2.2.1.2. Physical Systems

The **Systems › System List › Physical Systems** section lists every client that is installed on physical hardware.

### 2.2.1.3. Unprovisioned Systems

The **Systems › System List › Unprovisioned Systems** section lists every bare metal client that the SUSE Multi-Linux Manager Server is aware of, but has not yet been registered.

For more information about bare metal clients, see **Client-configuration › Autoinst-intro**.

### 2.2.1.4. Out of Date

The **Systems › System List › Out of Date** section lists every client that has available updates.

For more information about managing client updates, see **Client-configuration › Package-management**.

### 2.2.1.5. Requiring Reboot

The **Systems › System List › Requiring Reboot** section lists every client that requires rebooting.

### 2.2.1.6. Non Compliant

The **Systems › System List › Non Compliant** section lists every client that has non-compliant packages installed. Packages are considered non-compliant if they have been installed from a source other than SUSE Multi-Linux Manager. In the list, the **Extra Packages** column shows the number of non-compliant packages on the client. If there is at least one non-compliant package, you can click the number to display listings of those

non-compliant packages per system.

### 2.2.1.7. Without System Type

The **Systems › System List › Without System Type** section lists every client that does not have a base system type recorded.

For more information about system types, see **Client-configuration › System-types**.

### 2.2.1.8. Ungrouped

The **Systems › System List › Ungroups** section lists every client that is not assigned to a system group.

For more information about system groups, see **Client-configuration › System-groups**.

### 2.2.1.9. Inactive

The **Systems › System List › Inactive** section lists every client that has not checked in with the the SUSE Multi-Linux Manager Server in 24 hours or more.

For more information about client connections to the server, see **Client-configuration › Contact-methods-intro**.

For more information on troubleshooting inactive clients, see **Administration › Troubleshooting**.

### 2.2.1.10. Recently Registered

The **Systems › System List › Recently Registered** section lists every client that has registered within a given period. Select the period to view from the View systems registered field.

### 2.2.1.11. Proxy

The **Systems › System List › Proxy** section lists every client that is registered as a proxy.

### 2.2.1.12. Duplicate Systems

The **Systems › System List › Duplicate Systems** section lists clients that share IP addresses, host names, or MAC addresses. Use the tabs to compare clients.

### 2.2.1.13. System Currency

The **Systems › System List › System Currency** section lists all clients with information about available updates, and provides a currency score for each. You can use the currency score to determine in which order clients should be updated. A score with a larger number indicates that a client is not current, and might require critical updates.

### 2.2.1.14. System Types

The **Systems › System List › System Types** section lists every client, their base system type, add-on system type, and base channel. It also gives a count of clients of each system type.

For more information about system types, see **Client-configuration › System-types**.





## 2.2.2. System Groups

The **Systems › System Groups** section displays the list of system groups in your organization.

Click the name of a group to work with it, or to add or delete clients in the group.

The list shows an icon if there are updates available for any of the clients in the group. Click the icon to see more information about the updates available.

**Table 4. Update Status Icons**

Icon	Description	Action Required
	No applicable updates	All clients in this group are up to date
	Updates available	One or more clients have updates ready to install
	Security updates needed	One or more clients have security updates that must be installed
	Status unknown	Displaying status of available updates is disabled

For more information about system groups, see **Client-configuration › System-groups**.

## 2.2.3. System Set Manager

The **Systems › System Set Manager** section allows you to manage clients that you have added to the system set



manager.

For more information about the system set manager, see **Client-configuration › System-set-manager**.

### 2.2.3.1. System Set Manager Overview

The **Systems › System Set Manager › Overview** section allows you to manage clients that you have added to the system set manager (SSM). You can also access this page by clicking the systems selected icon in the top menu bar.

For more information about SSM, see **Client-configuration › System-set-manager**.

The **Systems › Systems Set Manager** menu is split into tabs:

#### 2.2.3.1.1. Overview

This section provides quick access to all the of the SSM tabs.

#### 2.2.3.1.2. Systems

This section lists all clients currently in the SSM. It provides information about the updates available, when the client last checked in, the registered base channel, and system type. Click the client name to see more information.

#### 2.2.3.1.3. Patches

This section lists all patches available for upgrade on clients currently in the SSM. Click the number in the Affected column to see which clients a patch applies to. To perform upgrades, check the patches to apply and click **[Apply Patches]**.

For more information about patch management, see **Client-configuration › Patch-management**.

#### 2.2.3.1.4. Packages

This section is split into subtabs.

The **Packages › Upgrade** subtab lists all packages available for upgrade on clients currently in the SSM. To perform upgrades, check the packages to upgrade and click **[Upgrade Selected Packages]**.

The **Packages › Install** subtab allows you to install new packages on all clients currently in the SSM. To install packages, click the base channel that contains the package, check the packages to install, and click **[Install Selected Packages]**.

The **Packages › Remove** subtab allows you to remove packages from all clients currently in the SSM. If clients in the SSM have different versions of a package installed, multiple versions are available in the list. To remove packages, select the packages to remove, and click **[Remove Selected Packages]**.

For more information about package management, see **Client-configuration › Package-management**.

### 2.2.3.1.5. Groups

This section lists all system groups clients currently available in your organization. Click **[Create Group]** to create a new system group. For each group in the list, check **Add** to add all clients in the SSM to the group, check **Remove** to remove all clients in the SSM from the group, or check **No Change** to leave group assignments as they are. Click **[Alter Membership]** to change group assignments.

For more information about system groups, see **Client-configuration › System-groups**.

### 2.2.3.1.6. Channels

This section lists all base channels clients currently subscribed to by clients currently in the SSM. You can change all clients subscribed to a current base channel to a new base channel, by selecting the new base channel and following the prompts.

For more information about software channels, see **Client-configuration › Channels**.

For more information about using the SSM to change base channels, see **Client-configuration › System-set-manager**.

### 2.2.3.1.7. Configuration

This section is split into subtabs.

The **Configuration › Deploy Files** subtab lists all configuration files available for deployment. Click the number in the **Systems** column to see which clients are currently subscribed to the configuration file. To assign a configuration file to the clients currently in the SSM, check the configuration file, and click **[Schedule File Deploy]**.

The **Configuration › Compare Files** subtab lists all configuration files available for comparison. This compares the configuration file deployed on a client with the configuration file stored on the SUSE Multi-Linux Manager Server. Click the number in the **Systems** column to see which clients are currently subscribed to the configuration file. To compare configuration files, check the configuration files to compare, and click **[Schedule File Comparison]**.

The **Configuration › Subscribe to Channels** subtab lists all configuration channels available for subscription. To

subscribe the clients in the SSM to a new configuration channel, check the configuration channel, click **[Continue]**, and follow the prompts.

The **Configuration › Unsubscribe from Channels** subtab lists all configuration channels clients in the SSM are currently subscribed to. To unsubscribe the clients in the SSM from a configuration channel, check the configuration channel and click **[Unsubscribe Systems]**.

The **Configuration › Enable Configuration** subtab lists clients in the SSM that are capable of using configuration management, but have not yet been enabled. To enable clients in the SSM to use configuration management, check the client and click **[Enable Configuration Management]**.

For more information about configuration management, see **Client-configuration › Configuration-management**.

## 2.2.3.1.8. Provisioning

This section is split into subtabs.

The **Provisioning › Autoinstallation** subtab lists all clients in the SSM available for autoinstallation, with their base channel. To schedule autoinstallation, select an autoinstallable type, click **[Continue]** and follow the prompts.

The **Provisioning › Power Management Configuration** subtab allows you to configure power management for the clients in the SSM. For more information about power management, see **Client-configuration › Power-management**.

The **Provisioning › Power Operations** subtab allows you to power on, power off, or reboot the clients in the SSM. For more information about power management, see **Client-configuration › Power-management**.

For more information about autoinstallation, see **Client-configuration › Autoinst-intro**.

## 2.2.3.1.9. States

For Salt clients, the **States › Highstate** subtab allows you to apply the highstate to all clients in the SSM.

## 2.2.3.1.10. Audit

For more information about auditing, see **Administration › Auditing**.

## 2.2.3.1.11. Misc

This section is split into subtabs.

The **Misc › Preferences** subtab allows you to configure the custom information, system types, and system preferences for the clients in the SSM.

The **Misc › Hardware** subtab allows you to schedule a hardware profile refresh for the clients in the SSM.

The **Misc › Software** subtab allows you to schedule a package profile refresh for the clients in the SSM.

The **Misc › Remote Command** subtab allows you to schedule a remote command to be executed on the clients in the SSM.

The **Misc › Custom Values** subtab allows you to set or remove custom key values for the clients in the SSM.

The **Misc › Reboot** subtab allows you to schedule a reboot for the clients in the SSM.

The **Misc › Transfer** subtab allows you to move clients in the SSM to a new organization.

The **Misc › Delete** subtab allows you to delete the system profiles of clients in the SSM.

### 2.2.3.2. System Set Manager Task Log

The **Systems › System Set Manager › Task Log** section shows all actions applied to clients that you have added to the system set manager (SSM). The SSM Task Log lists all actions performed against clients currently in SSM. Click an entry to see more information about the action.

This section is divided into tabs:

The All tab lists all actions that have been performed. The In Progress tab lists all actions that are currently in progress. The Completed tab lists all actions that have been completed.

For more information about SSM, see **Client-configuration › System-set-manager**.

### 2.2.4. Bootstrapping

The **Systems › Bootstrapping** section allows you to register a single Salt client.

**Table 5. Bootstrap Options**

Option	Description	Default
Host	The hostname of the client to be registered	-

Option	Description	Default
SSH port	The port on the client that allows SSH access	22
User	The user name to use to log in to the client	root
Authentication Method	Choose Password for simple authentication, or SSH Private Key to use SSH authentication.	Password
Password	The password to use to log in to the client	-
SSH Private Key	Upload the SSH Private Key to use to log in to the client	-
SSH Private Key Passphrase	The passphrase for the SSH Private Key, or leave blank for no password.	-
Activation Key	The activation key to use to register the client. Leave blank to use the universal default activation key, or select None for no activation key.	None
Proxy	The proxy to which the client should be registered. Leave blank if you are not using a proxy.	None
Disable SSH strict host key checking	Automatically adds the host key to the known hosts file	Checked
Manage system completely via SSH	Uses only the SSH contact method	Unchecked



SSH private keys are stored only for the duration of the bootstrapping process. They are deleted from the SUSE Multi-Linux Manager Server as soon as bootstrapping is complete.

When you have completed the details of the client you want to register, click **[Bootstrap]**. When the client has completed registering, navigate to **Systems › System List** to see details.

For more information about bootstrapping, see **Client-configuration › Registration-webui**.

## 2.2.5. Proxy Configuration

The **Systems › Proxy Configuration** section allows you to configure proxy clients.

## 2.2.6. Advanced Search

The **Systems › Advanced Search** section allows you to perform global searches within your SUSE Multi-Linux Manager environment. Searches can include network information, hardware devices, location, activity, packages, details, DMI information, and hardware.

Type your search term in the Search For field. Select the criterion to search by, use the radio buttons to specify whether you want to query all systems or only those in the System Set Manager, and click the **[Search]** button. Check Invert Result to list only results that do not match the specified criteria.

When you add a distribution, synchronize channels, or register a client, it can take several minutes for it to be indexed and appear in search results. To force a rebuild of the search index, use this command at the command prompt:

```
rhnssearch cleanindex
```

## 2.2.7. Activation Keys

The **Systems › Activation Keys** section lists the current activation keys for your organization.

The universal default activation key, if set, is automatically used for all clients registered to your organization, unless you specify a different activation key.

The list of activation keys shows the name and description for each key, and how many times the key has been used. It also shows if the key is currently enabled for your organization. Click the key description to see more information about the activation key.

Click **[Update Activation Keys]** to refresh the list with recent changes.

Click **[Create Key]** to create a new activation key.

For more information about activation keys, see **Client-configuration › Activation-keys**.

## 2.2.8. Stored Profiles

The **Systems › Stored Profiles** section lists the stored profiles for your organization. Profiles can be used to compare packages installed on clients.

Click the name of a profile to see more information about the packages in the profile, or to edit the name or description.

For more information about using profiles to compare packages, see **Client-configuration › Package-management**.

## 2.2.9. Custom System Information

The **Systems › Custom System Info** section lists the custom system information available to clients in your organization.

Click **[Create Key]** to create a new custom system key. Click the key label to see more information, and to edit the value.

For more information about custom system information, see **Client-configuration › Custom-info**.

## 2.2.10. Autoinstallation Menu

The **Systems › Autoinstallation** section allows you to manage clients for autoinstallation.

For more information about autoinstallation, see **Client-configuration › Autoinst-intro**.

### 2.2.10.1. Autoinstallation Overview

The **Systems › Autoinstallation › Overview** section displays an overview of your autoinstallation settings, including clients that are autoinstalling, or scheduled to be autoinstalled.

The **Systems › Details › Overview** subtab is split into sections:

#### Autoinstallation Summary

This section lists the AutoYaST and Kickstart profiles currently available, and the number of clients installed with each profile.

#### Autoinstallation Actions

This section provides links to actions related to autoinstallation. You can also access these using the **Systems › Autoinstallation** menu.

#### Systems Currently Autoinstalling

This section lists all clients that are currently autoinstalling, along with their status.

#### Systems Scheduled to be Autoinstalled

This section lists all clients that are scheduled for autoinstallation, along with their status.

Click **[Create Kickstart Profile]** to create a new Kickstart profile. Click **[Upload Kickstart/AutoYaST File]** to upload a new autoinstallation file.

For more information about autoinstallation, see **Client-configuration › Autoinst-intro**.

## 2.2.10.2. Autoinstallation Profiles

The **Systems › Autoinstallation › Profiles** section lists all profiles currently available. The list includes information about if the profile is active, the distribution it is based on, and if it being managed with SUSE Multi-Linux Manager.

Click the name of a profile to see more information.

Click **[Create Kickstart Profile]** to create a new Kickstart profile. Click **[Upload Kickstart/AutoYaST File]** to upload a new autoinstallation file.

For more information about autoinstallation profiles, see **Client-configuration › Autoinst-profiles**.

## 2.2.10.3. GPG and SSL Keys

The **Systems › Autoinstallation › GPG and SSL Keys** section lists all GPG public keys and SSL certificates currently available. Click the name of a key to see more information.

Click **[Create Stored Key/Cert]** to store a new GPG key or SSL certificate.

For more information about GPG keys and SSL certificates, see **Client-configuration › Gpg-keys**.

## 2.2.10.4. Distributions

The **Systems › Autoinstallation › Distributions** section lists the available autoinstallable distributions.

Click the distribution name to see more information. Click **[Create Distribution]** to create a new autoinstallable distribution.

For more information about autoinstallable distributions, see **Client-configuration › Autoinst-distributions**.

## 2.2.10.5. File Preservation

The **Systems › Autoinstallation › File Preservation** section allows you to store lists of files, to use them in Kickstart profiles later on.

Click **[Create File Preservation List]** to create a new list.

For more information about Kickstart file preservation, see **Client-configuration › Autoinst-profiles**.



## 2.2.10.6. Autoinstallation Snippets

The **Systems › Autoinstallation › Autoinstallation Snippets** section allows you to store code snippets, to use them in autoinstallation profiles later on.

Click [**Create Snippet**] to create a new code snippet.

For more information about autoinstallation profiles using these code snippets, see **Client-configuration › Autoinst-profiles**.

## 2.2.11. Virtual Host Managers

The **Systems › Virtual Host Managers** section lists the active virtual host managers (VHMs).

VHMs can be used to collect private or public cloud instances and organize them into virtualization groups.

For more information about VHMs, see **Client-configuration › Vhm**.

## 2.3. System Details

The System Details section allows you to manage the details for a chosen client. To get to this section, click the name of a client anywhere throughout the Web UI to see the relevant System Details page for the client.

The System Details section is divided into tabs and subtabs. Each tab and some subtabs have own sections in this document.

The **Systems › Details › Overview** subtab is displayed by default. Which tabs are available is dependent on the system type of the client you have selected. Most often, the following are available:

- Details - xref:reference:systems/system-details/sd-details.adoc
- Software - xref:reference:systems/system-details/sd-software.adoc
- Configuration - xref:reference:systems/system-details/sd-configuration.adoc
- Provisioning - xref:reference:systems/system-details/sd-provisioning.adoc
- Groups - xref:reference:systems/system-details/sd-groups.adoc
- Audit - xref:reference:systems/system-details/sd-audit.adoc
- States - xref:reference:systems/system-details/sd-states.adoc
- Formulas - xref:reference:systems/system-details/sd-formulas.adoc
- Recurring Actions - xref:reference:systems/system-details/sd-recurring-actions.adoc

- Events - [xref:reference:systems/system-details/sd-events.adoc](reference:systems/system-details/sd-events.adoc)

For more information about managing clients, see **Client-configuration › Client-config-overview**.

## 2.3.1. Overview

The **Systems › Details › Overview** section shows a summary of information about the selected client, including the current system status. This subtab is displayed by default when you click the name of a client anywhere throughout the Web UI.

Click **[Delete System]** to delete the system profile. Deleting a system profile will not destroy or remove the client, but you will no longer be able to manage it with SUSE Multi-Linux Manager. If you delete a system profile by mistake, you can re-register the client using bootstrap.

The **Systems › Details › Overview** subtab is split into sections:

### 2.3.1.1. System Status

The section shows the current status of the client. If no action is required for this client, the status is **System is up to date**.

If the client has new software ready for installation, the status is **Software Updates Available**, along with details of updates. Apply updates by navigating to **System Details › Packages**.

### 2.3.1.2. System Info

This section shows general information about the client.

**Table 6. System Info Columns**

Column Name	Description	Conditions
Hostname	The hostname used by the client with the SUSE Multi-Linux Manager Server.	-
FQDN	The fully qualified domain name of the client.	Shown only if it differs from the host name.
IP address	The IPv4 IP address of the client.	-
IPv6 address	The IPv6 IP address of the client.	-
Minion ID	The minion ID of the client.	Salt clients only.

Column Name	Description	Conditions
Virtualization	The type of virtualization used by the client.	Virtualized clients only.
UUID	The universally unique identifier.	-
Kernel	The kernel currently in use on the client.	-
SUSE Multi-Linux Manager System ID	A unique identifier generated by SUSE Multi-Linux Manager when the client is registered.	-
Activation key	The activation key used to register the client.	Remains blank if the client has not been activated.
Installed products	Software products currently installed on the client.	-

For more information about system locks, see **Client-configuration › System-locking**.

### 2.3.1.3. Subscribed Channels

This section shows the base and child software channels this client is subscribed to.

Click **[Alter Channel Subscriptions]** to change the channel subscriptions for this client. Click a channel name to go to the Channel Details tab.

For more information about channels, see **Client-configuration › Channels**.

### 2.3.1.4. System Events

This section shows the most recent system events for this client.

**Table 7. System Events Columns**

Column Name	Description
Checked in	The time that the client last successfully checked in with the SUSE Multi-Linux Manager Server.
Registered	The time that the client registered with SUSE Multi-Linux Manager.

Column Name	Description
Last booted	The time that the client was most recently started or rebooted.

Click **[Schedule system reboot]** to set a time for the client to reboot. The reboot will occur when the client next checks in with the SUSE Multi-Linux Manager Server after the scheduled time. For more on task scheduling, see **Administration › Task-schedules**.

### 2.3.1.5. System Properties

This section shows further information about the client.

**Table 8. System Properties Columns**

Column Name	Description
System types	Lists the system type applied to the client. Client type is Salt
Notifications	Lists the current notification options for this client.
Contact method	The method used by this client to communicate with the SUSE Multi-Linux Manager Server.
Auto patch update	Indicates if the client is receiving patches automatically.
Maintenance Schedule	Specifies which maintenance schedule is assigned to this client.
System name	The system name of the client. By default, this is the host name, but it can be changed.
Description	General information about the client. By default, this is automatically gathered when the client is registered, but it can be changed.
Location	The physical location of the client. By default, this is not set, but it can be added.

For more information about contact methods, see **Client-configuration › Contact-methods-intro**.

Click **[Edit These Properties]** to go to **System Details › Details › Properties** subtab.

### 2.3.1.6. Properties

The **Systems › Details › Properties** section allows you to edit details about the selected client, including the system name and details.

**Table 9. Edit System Details Settings**

Setting Name	Description	Default Setting
System Name	The name of the system to use within the SUSE Multi-Linux Manager Web UI.	The hostname of the client.
Base System Type	The type of base system used by the client.	Shown for information only, you cannot edit this.
Add-on System Types	Check additional system types to add features such as build hosts, or monitoring.	Only available system types for this client are shown.
Notifications	Check to receive notifications of updates or patches, and to include this client in the daily summary.	Checked.
Auto Patch Update	Check to have available patches automatically applied.	Unchecked.
Description	This field can contain any text you want.	The operating system, release, and architecture of the system when it first registered to SUSE Multi-Linux Manager.
Facility Address	The physical location of the client.	Blank

### 2.3.1.7. Remote Command

The **Systems › Details › Remote Command** section allows you to run commands remotely on the selected client.

Before doing so, you must first configure the system to accept such commands. For more information about using remote commands, see **Administration › Actions**.

### 2.3.1.8. Reactivation

The **Systems › Details › Reactivation** section allows you to generate reactivation keys for the selected client.

Reactivation keys can be used once only to re-register the client and regain all SUSE Multi-Linux Manager settings.

For more information about reactivation keys, see **Client-configuration › Activation-keys**.

### 2.3.1.9. Hardware

The **Systems › Details › Hardware** section shows detailed hardware information about the selected client, including architecture, networking, and memory.

Click **[Schedule Hardware Refresh]** to update this page with the latest hardware information. To change the primary network interface on the client, select the correct interface in the Primary Network Interface field in the Networking section. For clients with multiple fully qualified domain names (FQDNs) configured, change the primary FQDN by selecting it in the Primary FQDN field in the Networking section. Click **[Update Properties]** to save your changes.



Refreshing hardware information happens once a month automatically when the system-profile-refresh taskomatic job runs.

### 2.3.1.10. Transfer

The **Systems › Details › Transfer** section allows you to move clients between organizations. Clients can only belong to one organization at any time.



You will need to establish trust between organizations when you want to move clients. For more information, see **Administration › Organizations**.

To move a client to a different organization, select the name of the organization in the Organization Name field, and click **[Migrate System]**.



When you move a client to a different organization, channel assignments, system group membership, custom data values, configuration channels, reactivation keys, and snapshots are deleted from the system configuration. You will need to set these values again when the move is complete.

### 2.3.1.11. Notes

The **Systems › Details › Notes** section lists notes about the selected client.

Click **[Create Note]** to create a new note. Give your note a subject, and add any details you require. Click **[Create]** to save the note.

Notes are listed in the table with a time stamp of when they were last edited. Click the subject of a note to edit

or delete it.

### 2.3.1.12. Custom Info

The **Systems › Details › Custom Info** section lists the custom system information that has been applied to the selected client.

Click **[Create Value]** to apply a new custom system key to the client. Click the key label to see more information, and to edit the value.

For more information about custom system information, see **Client-configuration › Custom-info**.

## 2.3.2. Software

The **Systems › Software** section allows you to manage software on the selected client.

### 2.3.2.1. Patches

The **Systems › Software › Patches** section displays a list of all patches currently available to the selected client.

To apply a patch, check it in the list and click **[Apply Patches]** to schedule the installation. The **Status** column in the list shows whether an update has been scheduled. Click the status for more information about the action.

For more information about patching, see **Client-configuration › Patch-management**.

### 2.3.2.2. Packages

The **Systems › Software › Packages** section allows you to manage packages on the selected client.

Click **[Update Package List]** to refresh the list of available packages.

The **Systems › Software › Packages** tab is split into subtabs:

#### List/Remove

Lists all packages currently installed on the selected client. Click the name of a package to see more information. To uninstall packages, check the package in the list and click **[Remove Packages]**.

#### Upgrade

Lists packages that have newer versions available. Click the name of a package to see more information. To upgrade packages, check the package in the list and click **[Upgrade Packages]**. Any EULAs will be accepted automatically.

## Install

Lists packages that are available for installation on the selected client. Click the name of a package to see more information. To install packages, check the package in the list and click **[Install Selected Packages]**. Any EULAs will be accepted automatically.

## Profiles

Compare packages installed on the selected client with a stored profile, or with packages installed on another client. When the comparison is made, you can choose to modify the selected client to match. To compare with a stored profile, select the profile and click **[Compare]**. To compare with another client, select the client name and click **[Compare]**.

## Non Compliant

Lists packages that are installed on the selected client, but are not available in any of the subscribed software channels.

For more information about packages, see **Client-configuration › Package-management**.

### 2.3.2.3. AppStreams

The **Systems › Software › AppStreams** section allows you to manage the list of enabled AppStream modules on the selected client.



- The **Systems › Software › AppStreams** tab is only available if the client has any AppStream channels assigned.

The page lists all the AppStream modules that are currently available to the client. After modifying the selection of enabled modules, click **[Apply Changes]** to schedule an action to update the selection on the client.

For more information about managing AppStreams on a client, see **Client-configuration › Appstreams**.

### 2.3.2.4. Software Channels

The **Systems › Software › Software Channels** section allows you to manage the software channels on the current client. For more information about software channels, see **Client-configuration › Channels**.

The **Systems › Software › Software Channels** subtab is split into sections:

#### 2.3.2.4.1. Base Channel

This section shows the base channel the current client is subscribed to, as well as any other available base channels.



Click the chain icon next to a base channel to see more information about the channel. Change the base channel subscription by selecting the new base channel, and click **[Next]** to schedule the change.

The child channels associated with the base channel are populated in the Child Channels section. Mandatory child channels are pre-selected. Toggle the include recommended switch to also select recommended child channels.



By default, cloned vendor channels match the original vendor channel and automatically select the dependencies. You can disable the automatic selection for cloned channels by adding the following option in `/etc/rhn/rhn.conf`:

```
java.cloned_channel_auto_selection = false
```

In general, channel pre-selection is necessary to avoid problems with missing dependencies for a given channel but it only works flawlessly for vendor channels. For cloned channels, SUSE Multi-Linux Manager relies on the channel label to define dependencies and use it in auto selection. This heuristic sometimes lead to either selecting unnecessary child channels or overlooking some essential ones. Users should exercise caution and pay attention in such case that correct channels are selected.

For Salt clients, apply the highstate after changing software channels.

## 2.3.2.4.2. Child Channels

This section shows the software product and child channels associated with the currently selected base channel.

Hover over the information icon next to the channel name to see channel requirements. Click the chain icon next to a base channel to see more information about the channel.

Child channels are can be either recommended or mandatory. Mandatory child channels must be installed for the selected client to use the associated base channel. Recommended child channels should be installed to provide additional packages. All other child channels are optional.

Check the child channels you want to install, and click **[Next]** to schedule the change.

## 2.3.2.5. Product Migration

The **Systems › Software › Product Migration** section allows you to upgrade clients to the latest service pack of their underlying operating system. Product migration also allows you to migrate openSUSE Leap to the corresponding SLE SP level or clients such as Red Hat Enterprise Linux, or CentOS to SUSE Liberty Linux. Check the product version you want to upgrade the client to, and click **[Select Channels]**.

For more information about service pack upgrades, see **Client-configuration › Client-upgrades-product-**

migration.

## 2.3.3. Configuration

The **Systems › Configuration** section allows you to manage the configuration files for the selected client. Configuration files are distributed with a configuration channel.

For more information about configuration channels, see **Client-configuration › Configuration-management**.

The **Systems › Configuration** tab is split into subtabs:

### 2.3.3.1. Overview

The **Systems › Configuration › Overview** subtab is split into sections:

#### Configuration Overview

This section contained the total number of available configuration files, and channel subscriptions. Click the name of a configuration file or channel to see more information. Click **[Subscribe to channels]** to subscribe to additional configuration channels.

#### Recent Events

This section shows when the configuration channels was most recently deployed on the selected client. It also shows the most recent time that a comparison was performed.

#### Configuration Actions

This section allows you to deploy or to compare configuration channels on the selected client.

### 2.3.3.2. View Files

The **Systems › Configuration › View Files** subtab is split into subtabs for centrally managed, and locally managed configuration files.

The Centrally-Managed Files and Locally-Managed Files subtabs both show a list of all available configuration files. Click **[View]** to see details about the configuration file. Click **[Compare]** to compare the configuration file to other files, or to various revisions of itself. Click the configuration channel name to see more information about the channel that contains this configuration file. Click the revision number to see additional details about the configuration file.

### 2.3.3.3. Deploy Files

The **Systems › Configuration › Deploy Files** shows a list of available configuration files that can be deployed on

the selected client.

### 2.3.3.4. Compare Files

The **Systems › Configuration › Compare Files** shows a list of available configuration files that can be compared to SUSE Multi-Linux Manager managed configuration files. Check the configuration file to compare and click **[Compare Files]** to schedule a comparison. Click the revision number to see additional details about the configuration file. Click the configuration channel name to see more information about the channel that contains this configuration file.

### 2.3.3.5. Manage Configuration Channels

The **Systems › Configuration › Manage Configuration** subtab is split into subtabs:

#### List/Unsubscribe from Channels

This section shows the list of currently subscribed channels. To unsubscribe the selected client from a configuration channel, check the channel, and click **[Unsubscribe]**. Click the configuration channel name to see more information about the channel that contains this configuration file.

#### Subscribe to Channels

This section shows the list of configuration channels that are available for the selected client to subscribe to. To subscribe the selected client to a configuration channel, check the channel, and click **[Continue]**.

#### View/Modify Rankings

This section shows the currently subscribed configuration channels, in ranked order. Where settings conflicts occur between configuration channels, channels closer to the top of the list take precedence. To complete subscription to a configuration channel, review the rankings, adjust as necessary using the up and down arrows, and click **[Update Channel Rankings]**.

## 2.3.4. Provisioning

The **Systems › Provisioning** section allows you to manage provisioning for the selected client. This includes managing and scheduling autoinstallation and booting the selected client.

The **Systems › Provisioning** tab is split into subtabs:

### 2.3.4.1. Autoinstallation

This section displays a list of the available autoinstallation profiles for the selected client. Select a time and date for autoinstallation to re-install the client.

For more information about autoinstallation, see **Client-configuration › Autoinst-intro**.

## 2.3.4.2. Power Management

This section allows you to power on, power off, and reboot the selected client.

This feature uses either the IPMI or Redfish protocol and is managed using a Cobbler profile. The selected client must have a power management controller supporting one of these protocols. For Redfish, ensure you can establish a valid SSL connection between the client and the SUSE Multi-Linux Manager Server.

Complete the details for the power management server, and click the appropriate button for the action to take. Click **[Get status]** to determine if the client is currently running. Click **[Save only]** to save the details without taking any action.

Click **[Remove Cobbler System Profile]** to remove the current client's system profile from Cobbler. For more information about unattended provisioning with Cobbler, see **Client-configuration › Autoinst-unattended**.

For more information about power management, see **Client-configuration › Power-management**.

## 2.3.5. Groups

The **Systems › Groups** section shows the system groups the selected client is assigned to.

The **Systems › Groups** subtab is split into sections:

For more information about system groups, see **Client-configuration › System-groups**.

### 2.3.5.1. List/Leave

This section lists all groups that the selected client belongs to.

Click the group name to see more information about the system group. To remove the selected client from a system group, check the group, and click **[Leave Selected Groups]**.

### 2.3.5.2. Join

This section lists all groups that are available for the selected client to subscribe to.

Click the group name to see more information about the system group. To join a system group, check the group, and click **[Join Selected Groups]**.

## 2.3.6. Audit

The **Systems › Audit** section displays the results of OpenSCAP scans that you have performed on the selected client.

The Security Certification and Authorization Package (SCAP) is a standardized compliance checking solution for enterprise-level Linux infrastructures. SUSE Multi-Linux Manager uses OpenSCAP to implement the SCAP specifications.

For more information about OpenSCAP, see **Administration › Openscap**.

The **Systems › Audit** subtab is split into sections:

### 2.3.6.1. List Scans

This section displays the results of openSCAP scans that have been performed on the selected client.

The table columns on this page are:

**Table 10. OpenSCAP Scan Results**

Name	Description
Xccdf Test Result	The name of the test result
Diff	FIXME
Completed	The time that the scan was completed
Compliance	The unweighted pass/fail ratio
P	The number of checks that passed
F	The number of checks that failed
E	The number of errors that occurred
U	The number of checks with an unknown status
N	The number of checks that were not applicable to the selected client
K	The number of checks not run
S	The number of checks that were not selected
I	The number of checks that have information available for review

Name	Description
X	The number of checks that reported a status of fixed
Total	The total number of checks run

Click the name of a scan test result to see details about the result.

## 2.3.6.2. Schedule

This section allows you to schedule a scan for the selected client.

## 2.3.7. States

The **Systems › States** section allows you to manage Salt states on the selected client. States provide configuration templates for Salt clients. Applying the highstate applies all outstanding Salt states. This is only available for Salt clients.

For more information about Salt states, see **Specialized-guides › Salt**.

The **Systems › States** subtab is split into sections:

### 2.3.7.1. Highstate

This section provides details of the highstate for the selected client. It includes a state summary for the selected client, showing a list of states, formulas, and configuration channels. To schedule a time to apply the highstate, select the date and time and click **[Apply Highstate]**. Toggle the **[Test mode]** switch to test the highstate before you apply it.

### 2.3.7.2. Packages

This section allows you to manage package states for the selected client. Package states determine which packages and versions should be installed on the selected client.

Use the search tool to search for the package you want to change. To set the package state to install the package, select **Installed** as the new state. To always upgrade the package to the latest version, select **latest**. Click **[Save]** to save the changes to the state. Click **[Apply changes]** to apply the new package state to the selected client.

Use the **Changes** subtab to see what changes will occur on the selected client when this state is applied.

### 2.3.7.3. Configuration Channels

This section allows you to manage configuration channels for the selected client.

Use the search tool to search for the configuration channel you want to manage. This section shows the list of configuration channels that are available for the selected client to subscribe to. To subscribe the selected client to a configuration channel, check the channel, and click **[Apply]**.

Use the **Changes** subtab to see what changes will occur on the selected client when this state is applied.

For more information about configuration channels, see **Client-configuration › Configuration-management**.

### 2.3.8. Formulas

The **Systems › Formulas** section allows you to manage Salt formulas on the selected client. This is only available for Salt clients.

This section lists all currently installed formulas. Check the formulas you want to apply, and click **[Save]**. When a formula is applied, it will create a new subtab. Navigate to the subtab to configure the formula on the selected client. After most formula actions, you will need to apply the highstate to pick up the changes.

For more information about formulas, see **Specialized-guides › Salt**.

### 2.3.9. Ansible

The **System Details › Ansible** tab allows you to use the Ansible features on the Control Node system.

The tab is split into the following subtabs:

#### Control Node

Fields for defining playbook directories and paths to inventory files on your Ansible Control Node.

#### Playbooks

Lists all playbooks in the defined paths. You can click a playbook to display its details or to schedule its execution.

#### Inventories

Lists all inventory files in the defined paths. Clicking an inventory file in the list introspects its contents.

For more information, see **Administration › Ansible-integration**.

### 2.3.9.1. Recurring Actions

The **Systems › Recurring Actions** section allows you to manage recurring actions on the selected client. You can schedule an arbitrary set of Salt states or the highstate to be executed at desired intervals. This is only available for Salt clients.

For more information about Salt states, see **Specialized-guides › Salt**.

Currently, SUSE Multi-Linux Manager supports the following action types as recurring actions:

- **Highstate:** Execute the highstate.
- **Custom state:** Execute a set of custom states. A custom state can be either an internal state provided by SUSE Multi-Linux Manager, or a configuration channel created by a user.

For more information about configuration channels, see **Client-configuration › Configuration-management**.

#### 2.3.9.1.1. Creating Recurring Actions

To create new schedules, click the **[Create]** icon on the top right corner. Choose a supported action type, give your recurring schedule a name, select a time and day for it to recur, and click **[Create Schedule]**. Toggle the **[Test mode]** switch to test the highstate before you apply it.

#### 2.3.9.1.2. Recurring Action Details

View the details about an action from the action list. In the Actions column, click the **[Details]** icon for the action you are interested in.

#### 2.3.9.1.3. Disabling Recurring Actions

Disabling an action stops the action recurring, but does not delete it. To disable a recurring action toggle the Active switch off. Enable them again by toggling the Active switch on. Disabled recurring actions remain in the list, but are not executed.

#### 2.3.9.1.4. Editing Recurring Actions

In the Actions column, click the **[Edit]** icon for the action you want to change. On the Schedule Recurring Action page, the existing properties are pre-filled. Make your changes, and click **[Update Schedule]**.

#### 2.3.9.1.5. Deleting Recurring Actions

Deleting an action permanently removes it. To start using the action again, you will need to create a new action. In the Actions column, click the **[Delete]** icon for the action you want to delete, and confirm the deletion.



For more information about recurring actions, see **Administration › Actions**.

## 2.3.10. Events

The **Systems › Events** section shows past, current, and scheduled actions for the selected client.

For more information about actions, see **Administration › Actions**.

The **Systems › Event** tab is split into subtabs:

### 2.3.10.1. Pending

This section shows actions that are scheduled, but have not yet started.

Click the name of an action to see more information. To cancel an action, check the action and click **[Cancel Selected Events]**.

### 2.3.10.2. History

This section shows actions that have been completed on the selected client.

Click the summary of an action to see more information.

## 2.3.11. Proxy

The **Systems › System List › Proxy** section shows all clients connected to the selected client as a proxy. This is only available when the selected client is registered to SUSE Multi-Linux Manager as a proxy.

For more information about setting up a proxy, see **Installation-and-upgrade › Install-proxy**.

## 2.4. Salt Menu

The Salt section displays details of your Salt clients. You can use this menu to perform remote commands or define a state catalog for your Salt clients.

For more information about using Salt with SUSE Multi-Linux Manager, see **Specialized-guides › Salt**.

### 2.4.1. Keys

The **Salt › Keys** section displays the key fingerprints of your current Salt clients.

Key fingerprints are exchanged between the SUSE Multi-Linux Manager Server and Salt clients to verify the

identity of the server and the client. This prevents Salt clients from connecting to the wrong server.

Click **[Refresh]** to update the list. Click the name of a client to go to **Systems › Details** for that client.

**Table 11. Salt Keys List Columns**

Column	Description
Name	Name of the Salt client.
Fingerprint	Key fingerprint of the Salt client.
State	The status of the key exchange: accepted indicates that the client key has been verified by the SUSE Multi-Linux Manager Server.
Actions	Click the <b>Delete</b> icon to delete the client key from the server. Clients that have had their key deleted will need to be onboarded again.

## 2.4.2. Remote Commands

The **Salt › Remote Commands** section allows you to perform remote commands on one or more of your Salt clients. Remote commands allows you to issue commands to individual Salt clients, or to all clients that match a search term.

For more information about remote commands, see **Administration › Actions**.

## 2.4.3. Formula Catalog

The **Salt › Formula Catalog** section allows you to see which formulas are currently installed on your SUSE Multi-Linux Manager Server, and are available to be used on your Salt clients. Install and configure formulas by navigating to **Systems › Details** for the client you want to configure, and navigate to the guimenuFormulas tab.

For more information about SUSE Multi-Linux Manager formulas, see **Specialized-guides › Salt**.

## 2.5. Images Menu

The **Images › Image List** section displays your current operating system images.

For more information about images, see **Administration › Image-management**.

## 2.5.1. Image List

The **Images › Image List** section displays your current operating system images.

Click **[Import]** to import a new Docker image. You can only import new images created from a Docker image using this mechanism. To import images based on Kiwi instead, see **Administration › Image-management**.

Click **[Refresh]** to update the list.

Perform bulk actions by checking images in the list. Click **[Delete]** to bulk delete images.

**Table 12. Image List Columns**

Column	Description
Name	Name of the image.
Version and Revision	Version and revision of the image.
Updates	Any updates that are currently available for the image.
Patches and Packages	Any patches or packages that are currently available for the image.
Build	The current status of the build: Built, Scheduled, Building or Failed.
Last Modified	The time and date the image was last modified.

For more information about images, see **Administration › Image-management**.

## 2.5.2. Images Build

The **Images › Build** section allows you to build operating system images for installing on clients.

**Table 13. Image Build Options**

Option	Description	Default
Image Profile	Select the image profile to use. Manage image profiles at <b>Images › Profiles</b> .	Blank.
Build Host	Select the build host for the new image.	Blank.

Option	Description	Default
Earliest	Schedule the time and date for the build to begin.	Current system time and date.
Add to	Select which action chain to add the build task to.	New action chain.

Built images are listed in **Images › Image List**.

For more information about images, see **Administration › Image-management**.

### 2.5.3. Images Profiles

The **Images › Profiles** section displays your current image profiles.

Click **[Create]** to create a new image profile. Click **[Refresh]** to update the list.

Perform bulk actions by checking profiles in the list. Click **[Delete]** to bulk delete profiles.

For more information about images, see **Administration › Image-management**.

### 2.5.4. Images Stores

The **Images › Stores** section displays your current image stores.

Click **[Create]** to create a new image store. Click **[Refresh]** to update the list.

Perform bulk actions by checking images in the list. Click **[Delete]** to bulk delete image stores.

For more information about images, see **Administration › Image-management**.

## 2.6. Patches Menu

The Patches menu helps you find and manage available patches for your clients.

For more information about patching, see **Client-configuration › Patch-management**.

### 2.6.1. Patch Details

The **Patches › Patch List › Patch Details** section displays the details of a selected patch. Click the advisory number of a patch in the Patch List to see more information about the patch.

This section is divided into tabs.

### 2.6.1.1. Details

The Details tab shows the patch report provided by SUSE.

In the Affected Channels section, all channels that contain the affected package are listed. Click the channel name to go to **Software › Channel Details**.

For security patches, additional information is shown about the vulnerability, including the CVE and OVAL details.

If available, the original advisory provided by the vendor of the patch is shown in the section Vendor Advisory.

For more information about SUSE Update Advisories, see <https://www.suse.com/support/update/>.

### 2.6.1.2. Packages

The Packages tab provides links to each of the updated packages by channel. Click the name of a package to go to **Software › Channel Details**.

### 2.6.1.3. Affected Systems

The Affected Systems tab provides a list of installed clients that the patch affects. You can install updates from this tab.

Click the name of a client to go to **Systems › System Details**.

Each client in the list shows the current status of the patch on that client. This column identifies only the most recent action. Click the name of a status in the list to go to the Action Details page.

**Table 14. Client Update Status Icons**

Description	Action Required	N/A
Check the status manually.	Pending	The client will be updated at the next synchronization.
Picked Up	The client is in the progress of updating.	Completed
The client successfully installed the patch.	Failed	The client attempted to install the patch, but encountered an error.





## 2.6.2. Patch List

### 2.6.2.1. Relevant Patches

The **Patches › Patch List › Relevant** section displays a list of all patches released by SUSE that apply to your installed clients.

Each patch in the list shows a patch type, an advisory number, a short description, the number of clients in your network affected, and the date the patch was last updated. Click the advisory number to see more information about the patch. For more information about the **Patches › Patch List › Patch Details** section, see [xref:reference:patches/patch-details.adoc](#)

**Table 15. Patch Status Icons**

Icon	Description	Action Required
	Bug fix	Recommended
	Product enhancement advisory	Optional
	Security update	Essential
	Affects package management stack	Recommended




To receive email when new patches are available, navigate to **Home › My Preferences** and check Receive email notifications.




### 2.6.2.2. All Patches

The **Patches › Patch List › All** section displays a list of all patches released by SUSE. Not all of the patches will apply to your clients.

Each patch in the list shows a patch type, an advisory number, a short description, the number of clients in your network affected, and the date the patch was last updated. Click the advisory number to see more information about the patch.

**Table 16. Patch Status Icons**

Icon	Description	Action Required
	Bug fix	Recommended

Icon	Description	Action Required
	Product enhancement advisory	Optional
	Security update	Essential
	Affects package management stack	Recommended

For more information about patching, see **Client-configuration › Patch-management**.

### 2.6.3. Advanced Search for Patches

The **Patches › Advanced Search** section allows you to use advanced criteria to search for patches.

You can search for patches by looking for your search term in different fields:

**Table 17. Patch Advanced Search Options**

Option	Description	Example
All Fields	Search in all fields	glibc
Patch Advisory	Search within the name or label fields	slessp1-glibc
Package Name	Search within the package name field only	kernel
CVE	Search within the CVE name or number field only	CVE-2006-4535

You can also search within different types of patches, or within a range of issue dates.

For more information about patching, see **Client-configuration › Patch-management**.

### 2.6.4. Manage Patches

The **Patches › Manage Patches** section shows you all custom patches.

Each patch in the list shows a patch type, an advisory name, a short description, and the date the patch was last updated. Click the advisory name to go to **Patches › Patch List › Patch Details** for the patch.

To create a new patch, click **[Create Patch]**. To delete a patch, select it in the list, and click **[Delete Patches]**.



If you use SUSE Multi-Linux Manager with a proxy, manage patches only on the SUSE Multi-Linux Manager Server. The SUSE Multi-Linux Manager Proxy will receive updates from the server directly. If you manage patches on a proxy, the servers will be unable to synchronize correctly.

For more information about patching, see **Client-configuration › Patch-management**.

## 2.6.5. Clone Patches

The **Patches › Clone Patches** section allows you to create copies of existing patches to distribute to your clients.

To clone a patch, the patch must apply to one of your existing software channels. If the patch was part of a software channel that was cloned, then you can clone the patch from the cloned channel.

See all patches that are available for cloning by selecting the channel name in the View patches potentially applicable to: field, and click **[View]**. From the list, check the patch to clone, and click **[Clone Patch]**. You need to confirm the details to perform the clone.

## 2.7. Software Menu

The Software section allows you to view and manage software channels, repositories, and packages.

For more information about software channels, see **Client-configuration › Channels**.

### 2.7.1. Channel Details

The **Software › Channel List › Channel Details** section displays the details of a selected channel. Click the name of a channel in the Channel List to see more information about the channel.

This section is divided into tabs.

#### 2.7.1.1. Details

The Details tab shows the basic channel details, including a description of the channel, and the dates it was last modified and built. This tab also provides contact information for the maintainer of the product and the GPG key details, where available.

#### 2.7.1.2. Managers

The Managers tab shows which users are authorized to manage the selected channel. The list shows the username, real name, and email address of the channel manager, as well as the current status of the user.



Organization and Channel administrators can manage any channel. SUSE Multi-Linux Manager Administrators can change roles for specific users by clicking the username.

For more information about user management, see **Administration › Users**.

### 2.7.1.3. Patches

The Patches tab shows all available patches for packages in the selected channel. The list displays the advisory type, names, synopsis, and the date the patch was last updated. Click the advisory name to go to the Patch Details page.

For more information about managing patches and packages, see **Client-configuration › Patch-management**.

### 2.7.1.4. Packages

The Packages tab shows all packages in the selected channel. The list shows the package name, summary, and the provider of the package. Click the package name to go to the Package Details page.

For more information about managing patches and packages, see **Client-configuration › Patch-management**.

### 2.7.1.5. Subscribed Systems

The Subscribed Systems tab shows the clients currently subscribed to the selected channel. The list shows the client name and type. Check a client in the list to add it to the system set manager. Click the client name to go to the System Details page.

For more information about the system set manager, see **Client-configuration › System-set-manager**.

### 2.7.1.6. Target Systems

The Target Systems tab shows the clients eligible for subscription to the selected channel. This tab is only available if the selected channel is a child channel. The list shows the client name and type, and the associated base channel.

To subscribe a client to the selected channel, check the client in the list, and click **[Confirm]**.

For more information about software channels, see **Client-configuration › Channels**.

### 2.7.1.7. AppStreams

The AppStreams tab is only visible for modular channels and it shows all the available modules in the channel. The list shows the module name and the streams available for the module. The default stream for each module

is indicated with a highlighted color.

For more information about AppStreams and how to use them, see [administration:content-lifecycle-examples.pdf](#).

## 2.7.2. Channel List Menu

The **Software › Channel List** section allows you to view and manage software channels and packages on your clients.

For more information about software channels, see **Client-configuration › Channels**.

The **Software › Channel List › All** section displays a list of all software channels that are available to your organization.

Each software channel in the list shows a channel name, a provider, the number of packages and patches in the channel, and the number of clients currently subscribed to the channel. Click the plus sign next to the name of a parent channel to expand the entry and see all the related child channels. Click the channel name to see more information about the channel.

Within the **Software › Channel List** section you can select which subset of channels you would like to see by navigating to tabs, or the sub-menu items.

**Table 18. Channel List Filters**

Filter	Description
All	All channels available to your organization.
SUSE	Channels provided by SUSE.
Popular	Channels most subscribed to by clients in your organization.
My Channels	Software channels that belong to your organization, including custom channels.
Shared	Channels shared with others in the organizational trust.
Retired	Channels that have reached end-of-life and no longer receive updates.

For more information about software channels, see **Client-configuration › Channels**.

## 2.7.3. Package Search

The **Software › Package Search** section allows you to search all packages.

Enter your search term in the Search For field.

**Table 19. What to Search Options**

Option	Description
Free form	Performs a general search. Use keywords with this option to perform more specific searches.
Name only	Searches only in the names of packages.
Name and Summary	Searches within the name and one-line summary of packages.
Name and Description	Searches within names and long descriptions of packages.

Check the Channels relevant to your systems option to search only channels available for your existing clients. Check the Specific channel you have access to option to search within a specific channel. Check the Packages of a specific architecture to search only for a particular hardware architecture.

You can perform more specific searches by using keywords in the Search For field and selecting the Free Form option.

**Table 20. Keyword Search Options**

Keyword	Description	Example
name	Search package names	name:SUSE
version	Search for a package version	version:15
filename	Search within package file names	filename:sles
description	Search within the long description	description:java
summary	Search within the one-line summary	summary:java
arch	Search for a package architecture	arch:x86_64

For example, if you want to search all SUSE Linux Enterprise packages that include java in the description and the summary, use this search:

summary:java and description:java

For more information about software channels, see **Client-configuration › Channels**.

## 2.7.4. Manage Menu

The **Software › Manage** section allows you to manage custom channels, packages, and repositories.

For more information about custom channels, see **Administration › Custom-channels**.

### 2.7.4.1. Manage Channels

The **Software › Manage › Channels** section allows you to manage custom channels.

Click **[Create Channel]** to create a new custom channel.

To clone an existing channel, click **[Clone Channel]** and select the channel to clone. You can choose to clone channel with or without all current patches, or select specific patches for inclusion.

For more information about custom channels, see **Administration › Custom-channels**.

### 2.7.4.2. Manage Packages

The **Software › Manage › Packages** section allows you to manage packages that are owned by your organization.

Select a channel from the drop-down box to see all packages related to that channel. If you have administration privileges within your organization, you can also delete packages.

- Orphaned packages are packages that are synchronized by SUSE Multi-Linux Manager, but not associated with a software channel. For handling those packages, see [client-configuration:package-management.pdf](#).
- For more information about custom channels, see **Administration › Custom-channels**.

### 2.7.4.3. Manage Repositories

The **Software › Manage › Repositories** section allows you to manage custom or third-party package repositories and link the repositories to an existing channel.

Click **[Create Repository]** to create a new repository.

For more information about custom repositories and channels, see **Administration › Custom-channels**.

## 2.7.5. Distribution Channel Mapping

The **Software › Distribution Channel Mapping** section lists your defined default base channels. When you register a client for the first time, they will automatically be assigned to these software channels, in accordance with their architecture and operating system. Default channel mappings can be edited, but not deleted.

Click **[Create Distribution Channel Mapping]** to create a new channel map.

**Table 21. Distribution Channel Mapping Columns**

Column	Description
Operating System	The client operating system this mapping applies to.
Release	The operating system release this mapping applies to.
Architecture	The client system architecture architecture this mapping applies to.
Channel Label	The label of the channel.
Organization Specific	Checked if this mapping applies only to the current organization.

For more information about software channels, see **Client-configuration › Channels**.

## 2.8. Content Lifecycle Management Menu

In the Content Lifecycle section, you can customize and test packages before updating production clients.

Content lifecycle management allows you to select software channels as sources, adjust them as required for your environment, and thoroughly test them before installing onto your production clients.

For more information about content lifecycle management, see **Administration › Content-lifecycle**.

### 2.8.1. Projects

In the **Content Lifecycle › Projects** section, you can create new content lifecycle management projects, and edit existing projects.

For more information about content lifecycle management, see **Administration › Content-lifecycle**.

## 2.8.2. Filters

In the **Content Lifecycle › Filters** section, you can create various types of filters. With the filters you control the content that is used when a content lifecycle project is built.

For more information about content lifecycle management, see **Administration › Content-lifecycle**.

## 2.9. Audit Menu

The Audit menu provides access to features for managing security updates on your clients. Audit tasks include finding and updating clients with the latest CVE patches, subscription matching, and managing OpenSCAP scans.




### 2.9.1. CVE Audit






The **Audit › CVE Audit** section shows you which CVEs have been applied to your clients. A CVE (common vulnerabilities and exposures) is a fix for a publicly known security vulnerability. It is important that you apply CVEs to your clients as soon as they become available.

Each CVE contains an identification number, a description of the vulnerability, and links to further information. CVE identification numbers use the form CVE-YEAR-XXXX.

Clients are listed with a patch status icon.

**Table 22. Patch Status Icons**

Icon	Description	Action Required
	Affected, patches are not released for the CVE.	The client is affected by a vulnerability for which a patch has not yet been released.
	Affected, patches were released for the CVE but SUSE Multi-Linux Manager can't find them in any of the relevant channels.	The client is affected by a vulnerability that received a patch, but SUSE Multi-Linux Manager is unable to locate any of the patches in relevant channels.
	Affected, only partial patches are available for the CVE.	The client is affected by a vulnerability and SUSE Multi-Linux Manager has patches for it, but applying the patches will only fix some of the vulnerable packages.

Icon	Description	Action Required
	Affected, patches are available in channels that are not assigned	The client is affected by a vulnerability and SUSE Multi-Linux Manager has patches for it, but the channels offering the patches are not assigned to the client.
	Affected, patches are available in a product migration target	The client is affected by a vulnerability and SUSE Multi-Linux Manager has patches for it, but applying the patch requires migrating the product to a newer version.
	Affected, at least one patch is available in an assigned channel	The client is affected by the vulnerability and SUSE Multi-Linux Manager has patches available in a channel that is directly assigned to the client.
	Not affected	The client is not affected because none of the CVE vulnerable packages are installed.
	Patched	A patch has been successfully installed on the client.

For more information about CVE auditing, see **Administration › Auditing**.

## 2.9.2. Subscription Matching

The **Audit › Subscription Matching** section provides reports that match your currently installed clients to your existing product subscriptions. Subscription matching reports provide information about clients that do not have a subscription, and subscription start and end dates.

**Table 23. Subscription Matching Options**

Column	Description
Part Number	Identifier of the matched product
Description	Description of the matched product
Policy	The type of subscription matched to the product

Column	Description
Matched/Total	The number of clients currently using the subscription, of the total available. If the subscription is fully matched, the quantity column value is highlighted.
Start Date	Start date of the subscription
End Date	End date of the subscription

Table entries are highlighted if they are due to expire within three months. Table entries that have already expired are shown in grayscale.

For messages relating to subscription matching, navigate to the Messages tab.

### Table 24. Subscription Matching Messages

Message	Type	Description	Action
Unsupported part number detected	Debug	The detected part number is unknown or unsupported.	Call SUSE support and open a Service Request ticket to have the part number added to the product.
Physical system is reported as virtual guest, please check hardware data	Debug	A client is reporting as virtual, but could be a physical client.	Check the client hardware data.
Virtual guest has unknown host, assuming it is a physical system	Warning	A virtual client has an unknown host. During the matching process, it was treated as a physical system. This might translate into a wrong subscription assignment.	Check the virtual host manager (VHM) configuration to ensure it is reporting correctly. For Linux-based hosts using libvirt, check that the host is registered, and that the virtual host system type is set correctly.



Message	Type	Description	Action
System has an unknown number of sockets, assuming 16	Warning	Unable to determine how many CPUs a client has. SUSE Multi-Linux Manager used the default value of 16 CPUs every time the number was relevant for matching a subscription. This might translate into a wrong subscription assignment.	Schedule a hardware refresh on this client.
Two subscriptions with the same part number are in a bundle	Informational	Two subscriptions were identified to be part of a bundle and, as result, they were merged together during the computation process.	No actions needed.
Two subscriptions with the same part number (and other properties) have been merged together	Informational	Two subscription shared multiple common properties and they were merged together during the computation process.	No actions needed.
Pinned match adjusted due to merged subscriptions	Informational	A user defined pin was updated since the chosen subscription was merged with another one.	No actions needed.
Subscription with unsupported part number and no associated product has been ignored.	Informational	An unknown subscription without any associated product has been detected and it was ignored during the matching process.	No actions needed.

To pin clients to a particular subscription, navigate to the Pins tab.

## Table 25. Pin Statuses

Status	Description
Satisfied	The client and subscription were matched correctly.
Not satisfied	The client was not successfully matched with a subscription.
Pending next run	Waiting for the next matcher run.

For more information about subscription matching, see **Administration › Subscription-matching**.

## 2.9.3. OpenSCAP Menu

The **Audit › OpenSCAP** section displays the results of OpenSCAP scans that you have performed on your clients.

The Security Content Automation Protocol (SCAP) is a synthesis of interoperable specifications derived from community ideas. SUSE Multi-Linux Manager uses OpenSCAP to implement the SCAP specifications.

For more information about OpenSCAP, see **Administration › Openscap**.

### 2.9.3.1. OpenSCAP

The **Audit › OpenSCAP** section displays the results of OpenSCAP scans that you have performed on your clients.

The Security Certification and Authorization Package (SCAP) is a standardized compliance checking solution for enterprise-level Linux infrastructures. SUSE Multi-Linux Manager uses OpenSCAP to implement the SCAP specifications.

For more information about OpenSCAP, see **Administration › Openscap**.

### 2.9.3.2. All Scans

The **Audit › OpenSCAP** section displays the results of OpenSCAP scans that you have performed on your clients.

🔒 The Security Content Automation Protocol (SCAP) is a synthesis of interoperable specifications derived from community ideas.

## Table 26. OpenSCAP Scan Details

Name	Description	Evaluation Results
System	The name of the scanned client.	
XCCDF Profile	The evaluated profile.	
Completed	The time that the scan was completed.	
Satisfied	The total number of rules that have been satisfied.	A rule is satisfied if the result of the evaluation is Pass or Fixed.
Dissatisfied	The total number of rules that are not satisfied.	A rule is dissatisfied if the result of the evaluation is Fail.
Unknown	The total number of rules that were not able to be evaluated.	A rule is unknown if the result of the evaluation is Error, Unknown or Not checked.



- Rules can also return other results, including Informational, Not Applicable, or Not Selected. Rules that return these results are not shown in the scan results.

For more information about OpenSCAP, see **Administration › Openscap**.

### 2.9.3.3. XCCDF Diff

The **Audit › OpenSCAP › XCCDF Diff** section allows you to compare two OpenSCAP XCCDF scans.

For more information about OpenSCAP, see **Administration › Openscap**.

### 2.9.3.4. Advanced Search

The **Audit › OpenSCAP › Advanced Search** section allows you to search through OpenSCAP scans and results.

For more information about OpenSCAP, see **Administration › Openscap**.

## 2.10. Configuration Menu

The Configuration section provides access to features for managing the configuration of SUSE Multi-Linux Manager clients.



- The Configuration menu is only available if you are signed in with a configuration administrator or SUSE Multi-Linux Manager administrator account.

Within the configuration pages, you can:

- manage clients using configuration files
- configure channels offering configuration files
- manage configuration files themselves

Centrally managed files are available to multiple clients, while locally managed files are available to individual clients only.

## 2.10.1. Configuration Overview

The **Configuration › Overview** section is a dashboard that contains a summary of the configuration files that are managed by your organization in SUSE Multi-Linux Manager. There are different panes listing files that are managed centrally in configuration channels and files that are managed locally with individual system profiles.

For more information about managing configuration files, see **Client-configuration › Configuration-management**.

### Configuration Summary

Provides quick information about your configuration files. Click the blue text to the right to display:

- Systems with managed configuration files
- Configuration channels
- Centrally managed configuration files
- Locally managed configuration files

### Configuration Actions

Configuration Actions offers direct access to the most common configuration management tasks:

- View clients with managed configuration files
- View all managed configuration files
- View all managed configuration channels
- Create a new configuration channel
- Enable configuration management on clients

### Recently Modified Configuration Files

The list shows which files have changed when and to which channel they belong. If no files have been changed, no list appears.

## Table 27. Recently Modified Configuration Files Columns

Column	Description
Filename	Absolute filename of the configuration file.
Configuration Channel	Name of the configuration channel.
Modified	The time and date the file was modified.

Click the name of a file to see its [Details](#) page. Click the channel name to see its [Channel Details](#) page.

### Recently Scheduled Configuration File Deployments

Each scheduled action is listed along with the status of the action. Any scheduled configuration task, from enabling configuration management on a system to deploying a specific configuration file, is displayed. Here you can quickly assess if all tasks have been successfully carried out or fix any problems.

+

**Table 28. Scheduled Configuration File Deployments Columns**

Column	Description
System	Host name of the system where you want to deploy the configuration file.
Files to be Deployed	Number of files to be deployed.
Scheduled By	The user who scheduled the job.
Scheduled For	The time and date the file deployment will happen.
Status	Status of the deployment: <a href="#">Queued</a>

+ Clicking the blue status text displays the **System Details › Schedule** page for the specified system.

## 2.10.2. Channels

SUSE Multi-Linux Manager manages both central and local configuration channels and files. Central configuration management allows you to deploy configuration files to multiple systems, by using state channels. When you create a state channel, you can create or upload custom Salt states. For more information about custom states, see [Specialized-guides › Salt](#).

Click the name of the configuration channel to see the details page for that channel. If you click the number of files in the channel, you are taken to the [List/Remove Files](#) page of that channel. If you click the number of systems subscribed to the configuration channel, you are taken to the **Configuration Channel Details › Systems › Subscribed Systems** page for that channel.

## 2.10.2.1. Configuration Channel Details

### Overview

The Overview page of the Configuration Channel Details page is divided into several panels:

#### Channel Properties [Management]

Edit the name, label, and description of the channel by clicking **[Edit Properties]**.

#### Channel Information

Provides status information for the contents of the channel.

#### Configuration Actions

Provides access to the most common configuration tasks. For Salt clients, there is a link to edit the `init.sls` file.

This panel allows you to deploy, compare, and add and create files. Some action are only available if you have files created and clients assigned to configuration channels.

### List/Remove Files

This page only appears if there are files in the configuration channel. You can remove files or copy the latest versions into a set of local overrides or into other central configuration channels. Check the box next to files you want to manipulate, then click the action button at the bottom.

### Add Files

The Add Files page has three subtabs of its own, which allow you to Upload, Import, or Create configuration files to be included in the channel.

#### Upload File

To upload a file into the configuration channel, browse for the file on your local system, populate all fields, and click the **[Upload Configuration File]** button. The Filename/Path field is the absolute path where the file will be deployed.

You can set the Ownership via the user name and group name and the Permissions of the file when it is deployed.


If the client has SELinux enabled, you can configure SELinux contexts to enable the required file attributes (such as user, role, and file type).

If the configuration file includes a macro (a variable in a configuration file), enter the symbol that marks the beginning and end of the macro. For more information on using macros, see [reference:configuration/files-locally-managed.pdf](#).

### Import Files

To import files from other configuration channels, including any locally managed channels, check the box to the left of any file you want to import. Then click **[Import Configuration Files]**.



A sandbox icon (  ) indicates that the listed file is currently located in a local sandbox. Files in a system's sandbox are considered experimental and could be unstable. Use caution when selecting them for a central configuration channel.

### Create File

Create a configuration file, directory, or symbolic link to be included in the configuration channel.

### Deploy Files

This page only appears when there are files in the channel and a system is subscribed to the channel. Deploy all files by clicking the **[Deploy All Files]** button or check selected files and click the **[Deploy Selected Files]** button. Select to which systems the files should be applied. All systems subscribed to this channel are listed. If you want to apply the file to a different system, subscribe it to the channel first. To deploy the files, click **[Confirm & Deploy to Selected Systems]**.

### Systems

Manage systems subscribed to the configuration channel with two subtabs:

#### Subscribed Systems

All systems subscribed to the current channel are displayed. Click the name of a system to see the System Details page. To unsubscribe a system from the configuration channel, check the box to the left of the system name and click **[Unsubscribe systems]**.

#### Target Systems

This subtab displays a list of systems enabled for configuration management but not yet subscribed to the channel. To add a system to the configuration channel, check the box to the left of the system name and click **[Subscribe systems]**.

## 2.10.3. Files

This page allows you to manage your configuration files independently. Both centrally managed and locally managed files can be reached from sub-pages.



By default, the maximum file size for configuration files is 128 KB (131072 bytes). SUSE supports a configuration file size up to 1 MB. Larger files are not guaranteed to work.

The default maximum file size is set on the SUSE Multi-Linux Manager Server in these files:

```
# /usr/share/rhn/config-defaults/rhn_web.conf
web.maximum_config_file_size = 131072

# /usr/share/rhn/config-defaults/rhn_server.conf
maximum_config_file_size = 131072
```

Copy these variables to `/etc/rhn/rhn.conf` and edit them. Values are specified in bytes, for example:

```
# /etc/rhn/rhn.conf
web.maximum_config_file_size = 262144
server.maximum_config_file_size = 262144
```

Then restart spacewalk:

```
spacewalk-service restart
```

### 2.10.3.1. Centrally Managed Configuration Files

Centrally managed files are available to multiple systems. Changing a file within a centrally managed channel may result in changes to several systems. Locally managed files supersede centrally managed files. For more information about locally managed files, see **Reference › Configuration**.

This page lists all files currently stored in your central configuration channel.

**Table 29. Centrally Managed Files Columns**

Column	Description
Path	Absolute filename of the configuration file.
Configuration Channel	Name of the configuration channel.
Systems Subscribed	Number of systems subscribed.
Systems Overriding	

Click the Path of a file to see Details tab of the file. Click the name of the Configuration Channel to see the Overview tab of the channel. Clicking Systems Subscribed shows you all systems currently subscribed to the channel containing that file. Click Systems Overriding to see all systems that have a local (or override) version of the configuration file. The centrally managed file will not be deployed to those systems.

### 2.10.3.2. Locally Managed Configuration Files

Locally managed configuration files apply to only one system. They may be files in the system's sandbox or files that can be deployed to the system at any time. Local files have higher priority than centrally managed files. If a system is subscribed to a configuration channel with a given file and additionally has a locally managed version



of that file, the locally managed version will be deployed.

The list of all local (override) configuration files for your systems includes the local configuration channels and the sandbox channel for each Provisioning-entitled system.

Click the Path of the file to see its **Config File Details**. Click the name of the system to which it belongs to see its **System Details › Configuration › Overview** page.

For more information about configuration management, see **Client-configuration › Configuration-management**.

## 2.10.4. Systems Menu

Displays status information about your system in relation to configuration. There are two sub-pages: **Managed Systems** and **Target Systems**.

### 2.10.4.1. Managed Systems

By default the **Managed Systems** page is displayed. The listed systems have been fully prepared for configuration file deployment. The number of locally managed and centrally managed files is displayed.

Click the name of a system to show the relevant **System Details › Configuration › Overview** page.

Click the number of local files to show the **System Details › Configuration › View/Modify Files › Locally Managed Files** page, where you can manage which local (override) files apply to the system.

Click the number of centrally managed files to show the **System Details › Configuration › Manage Configuration Channels › List/Unsubscribe from Channels** page. On this page, you can unsubscribe from channels.

### 2.10.4.2. Target Systems

This page shows the systems that are not prepared for configuration file deployment, or are not yet subscribed to a configuration channel.

The table has three columns:

- The system name
- If the system is prepared for configuration file deployment
- The steps necessary to prepare the system.

To prepare a system, check the box to the left of the profile name then click the **[Enable SUSE Multi-Linux**

**Manager Configuration Management]** button. All of the preparatory steps that can be automatically performed are scheduled by SUSE Multi-Linux Manager.



- You will need to perform some manual tasks to enable configuration file deployment.
- Follow the on-screen instructions provided to assist with each step.

## 2.11. Schedule Menu

The Schedule section allows you to view actions and action chains.

Actions include:

- Package alterations, including installation, upgrade, removal, and rolling back of packages
- Client reboots
- Patch installation
- Configuration file alterations, including deploy, upload, and diff
- Hardware profile updates
- Package list profile updates
- Automated installation initiation
- Product migrations
- Remote commands

For more information about actions, see **Administration › Actions**.

### 2.11.1. Pending Actions

The **Schedule › Pending Actions** section shows actions that are in progress, or that have not yet started. Use the Filter by Action field to search the list.

Cancel pending actions by checking the action in the list, and clicking **[Cancel Actions]**. If you archive a pending action, it is not canceled, but the action item moves from the Pending Actions list to the Archived Actions list.

**Table 30. Actions List Columns**

Column	Description
Action	Type of action to perform. Click the action to go to Action Details.

Column	Description
Scheduled Time	The earliest time to perform the action.
Succeeded	Number of clients on which this action was successful.
Failed	Number of clients on which this action has failed.
Pending	Number of clients on which this action is currently running
Total	Total number of clients on which this action has been scheduled.

For more information about actions, see **Administration › Actions**.

## 2.11.2. Recurring Actions

The **Schedule › Recurring Actions** section shows all recurring actions that you have permissions for.



The recurring actions list on this page is a read-only table. To modify a schedule, you can follow the links in the Target Name column and list the schedules of an individual target.

### Recurring Action Details

View the details about an action from the action list. In the Actions column, click the **[Details]** icon for the action you are interested in.

For more information about recurring actions, see **Administration › Actions**.

## 2.11.3. Completed Actions

The **Schedule › Completed Actions** section shows actions that have been successfully completed. Use the Filter by Action field to search the list. Archive completed actions by checking the action in the list, and clicking **[Archive Actions]**.

**Table 31. Completed Actions List Columns**

Column	Description
Action	Type of action to perform. Click the action to go to Action Details.
Scheduled Time	The earliest time to perform the action.
Succeeded	Number of clients on which this action was successful.

Column	Description
Failed	Number of clients on which this action has failed.
Pending	Number of clients on which this action is currently running
Total	Total number of clients on which this action has been scheduled.

For more information about actions, see **Administration › Actions**.

## 2.11.4. Failed Actions

The **Schedule › Failed Actions** section shows actions that have not been completed, or that have returned an error. Use the Filter by Action field to search the list. Archive failed actions by checking the action in the list, and clicking **[Archive Actions]**.

Reschedule failed actions by checking the action in the list, and clicking **[Reschedule]**. Following the rescheduling, the action is:

- removed from the Event History
- replaced by the rescheduled action.

**Table 32. Actions List Columns**

Column	Description
Action	Type of action to perform. Click the action to go to Action Details.
Scheduled Time	The earliest time to perform the action.
Succeeded	Number of clients on which this action was successful.
Failed	Number of clients on which this action has failed.
Pending	Number of clients on which this action is currently running
Total	Total number of clients on which this action has been scheduled.

For more information about actions, see **Administration › Actions**.

## 2.11.5. Archived Actions

The **Schedule › Archived Actions** section shows actions that you have marked as archived. Use the Filter by Action field to search the list. Completed or failed actions can be archived.

For more information about actions, see **Administration › Actions**.

## 2.11.6. Action Chains

The **Schedule › Action Chains** If you need to perform a number of sequential actions on your clients, you can create an action chain to automate them.

For more information about action chains, see **Administration › Actions**.

## 2.11.7. Maintenance Windows

The **Schedule › Maintenance Windows** section allows you to manage your maintenance window schedules. To create a maintenance schedule, you need to have an existing .ical file that contains the calendar. Upload the calendar, create a new schedule, and assign the schedule to a client. When a schedule is applied to a client, you are prevented from executing some actions outside of the specified period.

Navigate to **Schedule › Maintenance Windows › Schedules** to see a list of all current schedules. Click **[Create]** to create a new schedule. Click **[Edit]** to change the schedule.

Navigate to **Schedule › Maintenance Windows › Calendars** to see a list of all current calendars. Click **[Create]** to create a new calendar. Click **[Edit]** to change the calendar.

For more information about maintenance windows, see **Administration › Maintenance-windows**.

## 2.12. Users Menu

The Users menu provides access to grant and edit permissions for those who administer your system groups. You can create new users, and edit user details, roles, and system groups.



The Users menu is only available if you are signed in to SUSE Multi-Linux Manager with an administrator account.

For more information about managing users, see **Administration › Users**.

### 2.12.1. User Details

The User Details section provides additional details about the user account, and allows you to manage

permissions for the user. You can also deactivate or delete users from this section.

For more information about managing users, see **Administration › Users**.

The User Details section is split into tabs:

### 2.12.1.1. Details

This tab allows you to change the name and password of the user account, and provides information about the various permissions the user has assigned.

Use this section to assign or remove roles, except for the SUSE Multi-Linux Manager Administrator. To change a user's SUSE Multi-Linux Manager Administrator role, navigate to **Admin › Users** and check or uncheck SUSE Multi-Linux Manager Admin? as required.

### 2.12.1.2. System Groups

This tab shows the system groups the user is assigned to. Check or uncheck system groups as required.

### 2.12.1.3. Systems

This tab shows the clients the user is able to administer. Use system groups to modify client access levels.

Select multiple systems from this page to add them to the system set manager (SSM). For more information about SSM, see **Client-configuration › System-set-manager**.

### 2.12.1.4. Channel Permissions

This tab shows the channel permissions for the user.

The Subscription subtab shows channels that the user has subscription permissions for. The Management subtab shows channels that the user has management permissions for.

Check channels in the list to grant permissions.

### 2.12.1.5. User Preferences

This tab is used to configure preference settings for users.

## Table 33. User Preferences

Option	Description	Default
Email Notification	Receive email for client and Taskomatic notifications, including a daily summary email.	Checked
SUSE Multi-Linux Manager List Page Size	Maximum number of items that can appear in a list on a single page.	25 entries
"Overview" Start Page	Select the information panes to display on the <b>Home › Overview</b> page.	All checked
Time Zone	Set your local timezone.	System timezone
CSV Files	Select whether to use comma or semi-colon delimiters when producing downloadable CSV files.	Comma

### 2.12.1.6. Addresses

This tab shows the mailing addresses associated with the user. Click **[Fill in this address]** to set a mailing address. Click **[Edit this address]** to change an existing mailing address.

## 2.12.2. User List

The **Users › User List** section provides access to the lists of users.

### 2.12.2.1. Active Users

The **Users › User List › Active** section shows all active users in your SUSE Multi-Linux Manager Server.

Each user in the list shows the username, real name, assigned roles, and the date the user last signed in. Click **[Create User]** to create a new user account. Click the username to go to the User Details page.

For more information about managing users, see **Administration › Users**.

### 2.12.2.2. Deactivated Users

The **Users › User List › Deactivated** section shows all deactivated users in your SUSE Multi-Linux Manager Server.

Each user in the list shows the username, real name, assigned roles, the date the user last signed in, the user

who deactivated the account, and the date the account was deactivated. Click **[Create User]** to create a new user account. Click the username to go to the User Details page.

To reactivate a user, check the username in the list and click **[Reactivate]**.

For more information about managing users, see **Administration › Users**.

### 2.12.2.3. All Users

The **Users › User List › All** section shows all activated and deactivated users in your SUSE Multi-Linux Manager Server. Deleted users are not shown in the list.

Each user in the list shows the username, real name, assigned roles, the date the user last signed in, and the current status of the user. Click **[Create User]** to create a new user account. Click the username to go to the User Details page.

For more information about managing users, see **Administration › Users**.

### 2.12.3. System Group Configuration

The **Users › System Configuration** section allows you to configure system groups for your users.

System groups allow you to grant permissions to a group of users, instead of granting permissions to individuals. This is particularly useful if you have many users.

You can also configure system groups for users that have been externally authenticated.

For more information about managing users with system groups, see **Administration › Users**.

## 2.13. Admin Menu

The Admin menu provides access to features for managing SUSE Multi-Linux Manager configuration. Configuration tasks include creating and managing organizations, users, and tasks. You can also use the setup wizard to help configure SUSE Multi-Linux Manager.



- The Admin menu is only available if you are logged in to SUSE Multi-Linux Manager with an administrator account.

### 2.13.1. Setup Wizard

The **Admin › Setup Wizard** section helps you configure SUSE Multi-Linux Manager. It is the default page when you use the SUSE Multi-Linux Manager Web UI for the first time.



**Table 34. Setup Wizard Options**

Option	Description
HTTP Proxy	Configure an HTTP proxy connection.
Organization Credentials	Configure an organization for accessing SUSE Customer Center.
Products	View product entitlements and subscribe to product channels.

### 2.13.1.1. Configure the HTTP Proxy

SUSE Multi-Linux Manager can connect to the SUSE Customer Center (SCC) or other remote servers using a proxy. Navigate to the HTTP Proxy tab to configure the proxy.

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

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



When choosing a username or password for your SUSE Multi-Linux Manager Proxy, ensure it does not contain an @ or : character. These characters are reserved.

### 2.13.1.2. Configure Organization Credentials

Your SUSE Customer Center account is associated with the administration account of your organization. You can share your SUSE Customer Center access with other users within your organization. Navigate to the Organization Credentials tab to grant users within your organization access to your SUSE Customer Center account.

Click **[Add a new credential]**, enter the username and password of the user to grant access to, and click **[Save]**. A new credential card is shown for the user you have granted access to. Use these buttons on the card to edit or revoke access:

- Check credential validation status (green tick or red cross icon). To re-check the credential with SCC, click the icon.
- Set the primary credentials for inter-server synchronization (yellow star icon).
- List the subscriptions related to a certain credential (list icon).
- Edit the credential (pencil icon).
- Delete the credential (trash can icon).

### 2.13.1.3. Configure Products

Your SUSE subscription entitles you to access a range of products. Navigate to the **Products** tab to browse the products available to you and synchronize SUSE Multi-Linux Manager with SUSE Customer Center.

Filters help you search for products by description or architecture.

The list is organized by product name showing products on top which have a subscription. Freely available products appear at the end of the list. For each product, you can see the architecture it can be used on. Click the arrow next to the product name to see associated channels and extensions. Click the **[Channels]** icon to see the complete list of channels associated with each product.

For products based on SUSE Linux Enterprise 15 and above, you can choose to only synchronize required packages, or to also include recommended products. Toggle the **[include recommended]** switch on to synchronize all products, and toggle the switch off to synchronize only required products.

You can further refine which products you want to synchronize by selecting or deselecting individual product.

When you have completed your selection, click **[Add products]**, and click **[Refresh]** to schedule the synchronization.

Synchronization progress for each product is shown in a progress bar next to the product name. Depending on the products you have chosen, synchronization can take up to several hours. New products will be available for you to use in SUSE Multi-Linux Manager when synchronization is complete.

If your synchronization fails, it could be because of a third party GPG key or your company firewall blocking access to the download server. Please check the notification details for the error. For more information about troubleshooting product synchronization, see **Administration › Troubleshooting**.

## 2.13.2. Organizations

The **Admin › Organizations** section allows you to create and manage your SUSE Multi-Linux Manager organizations. Click an organization in the list to see details.

For more information about organizations, see **Administration › Organizations**.

## 2.13.3. Users

The **Admin › Users** section allows you to view and manage all users of the organization you are logged in to. Every user shows the username, real name, the organization they are associated with, and whether the user is an organization or SUSE Multi-Linux Manager administrator.

To change a user's SUSE Multi-Linux Manager Administrator role, check or uncheck SUSE Multi-Linux Manager

Admin as required.

Click a username to modify the user account details, and change other administrator roles.

For more information, see **Reference › Users**.

## 2.13.4. PAYG

The **Admin › PAYG** section allows you to view and manage PAYG instances. Every instance shows its description and connection data.

To add new instance, click **[Add PAYG]**. Click an instance to modify its details.

For more information, see **Specialized-guides › Public-cloud-guide**.

## 2.13.5. Manager Configuration

The **Admin › Manager Configuration** section contains tabs to allow you to configure SUSE Multi-Linux Manager.

**Table 35. Configuration Options**

Option	Description
General	Configure your SUSE Multi-Linux Manager installation.
Bootstrap Script	Generate a custom bootstrap script.
Organizations	Create and configure organizations and users.
Restart	Restart SUSE Multi-Linux Manager. You will need to do this after making configuration changes.
Cobbler	Run a Cobbler synchronization.
Monitoring	Enable server monitoring.

### 2.13.5.1. General

On the **Admin › Manager Configuration › General** page you can configure your SUSE Multi-Linux Manager installation.

**Table 36. Bootstrap Script Options**

Option	Description	Default
Administrator Email Address	Email address of the SUSE Multi-Linux Manager administrator.	Pre-populated
SUSE Multi-Linux Manager Hostname	Hostname of the SUSE Multi-Linux Manager Server.	Pre-populated
HTTP Proxy	The hostname and port of the proxy, if you are using one. Use syntax <hostname>:<port>, for example: <example.com>:8080.	None
HTTP Proxy username	The username to use on the proxy server, if you are using one.	None
HTTP Proxy password	The password to use on the proxy server, if you are using one.	None
Confirm HTTP Proxy password	The directory where RPM packages are mirrored.	/var/spacwalk/
RPM repository mount point	The hostname of the proxy server, if you are using one.	None
Default to SSL	Check to use SSL as the default value for communications.	Checked

### 2.13.5.2. Bootstrap Script

In the **Admin › Manager Configuration › Bootstrap Script** section you can generate a custom bootstrap script. Bootstrap scripts are used to register clients with SUSE Multi-Linux Manager. The generated script will be placed in `/srv/www/htdocs/pub/bootstrap/` on your SUSE Multi-Linux Manager Server.

**Table 37. Bootstrap Script Options**

Option	Description	Default
SUSE Multi-Linux Manager Server hostname	The hostname for the SUSE Multi-Linux Manager Server to register the client to	Pre-populated
SSL cert location	Location and name of the SSL certificate	Pre-populated
Bootstrap using Salt	Check to bootstrap clients	Checked

Option	Description	Default
Enable SSL	Check to use the corporate public CA certificate on the client, uncheck to use self-managed CA certificates.	Checked
Enable Client GPG checking	Check to use GPG, uncheck to disable GPG checking	Checked
Enable Remote Configuration	Check to allow configuration from a remote server.	Unchecked
Enable Remote Commands	Check to allow commands from a remote server.	Unchecked
Client HTTP Proxy	The hostname of the proxy server, if you are using one.	Unpopulated
Client HTTP Proxy Username	The username to use on the proxy server, if you are using one.	Unpopulated
Client HTTP Proxy Password	The password to use on the proxy server, if you are using one.	Unpopulated



Do not disable SSL in your bootstrap script. Ensure that **Enable SSL** is checked in the Web UI, or that the setting `USING_SSL=1` exists in the bootstrap script. If you disable SSL, the registration process requires custom SSL certificates. For more about custom certificates, see **Administration › Ssl-certs**.

### 2.13.5.3. Configure Organizations

The **Admin › Manager Configuration › Organizations** section contains details about organizations in SUSE Multi-Linux Manager, and provides links to create and configure organizations and users.

### 2.13.5.4. Restart

The **Admin › Manager Configuration › Restart** section allows you to restart SUSE Multi-Linux Manager. You will need to do this after making configuration changes. It will take some time for SUSE Multi-Linux Manager to become available again after a restart.

### 2.13.5.5. Cobbler

The **Admin › Manager Configuration › Cobbler** page allows you to run a Cobbler synchronization. You can

repair or rebuild the contents of the `/srv/tftpboot/` and `/srv/www/cobbler/` directories after a manual modification of the Cobbler setup.

For more information about autoinstallation powered by Cobbler, see **Client-configuration › Autoinst-intro**.



SUSE only supports Cobbler functions that are available in the SUSE Multi-Linux Manager Web UI, or through the SUSE Multi-Linux Manager API. Only supported features are documented here.



Using NFS for the persistent volumes of Cobbler is not supported.

## 2.13.5.6. Monitoring

The **Admin › Manager Configuration › Monitoring** section allows you to enable SUSE Multi-Linux Manager monitoring with Prometheus.

For more information about monitoring, see **Administration › Monitoring**.

## 2.13.6. Task Schedules

The **Admin › Task Schedules** section lists all predefined task bunches. Tasks can be grouped together in bunches to simplify managing them.

This page shows the schedule for each bunch of tasks. Every schedule shows how frequently it runs using cron notation, the time it became active, and the bunch that it belongs to.

Click a schedule to change its frequency, disable or activate it.



Do not disable a schedule if you are not certain what it does. Some schedules are essential for SUSE Multi-Linux Manager to work properly.

For more information about task schedules, see **Administration › Task-schedules**.

## 2.13.7. Task Engine Status

The **Admin › Task Engine Status** section shows all running tasks by the SUSE Multi-Linux Manager task engine.

Navigate to the Last Execution Times tab to see the task list. Each task shows the time it was last run, and the current status of the task.

Navigate to the Runtime Status tab to see all tasks that have run in the past five minutes. Each task shows the start and end time, the amount of time the task ran for, and the current status. Some tasks will also provide further data, if available.

## 2.13.8. Show Tomcat Logs

The **Admin › Show Tomcat Logs** section shows the Apache Tomcat log file. You can also view the Tomcat log from the command prompt at `/var/log/rhn/rhn_web_ui.log`.



The **Admin › Show Tomcat Logs** section is only available if you are signed in to SUSE Multi-Linux Manager with an administrator account.

## 2.14. Help Menu

The **Help** section opens the current version of the SUSE Multi-Linux Manager documentation in a new browser tab. This is the documentation installed locally on your SUSE Multi-Linux Manager Server.

For all versions and formats of the SUSE Multi-Linux Manager documentation, see <https://documentation.suse.com/multi-linux-manager/>

### 2.14.1. Documentation

The **Help › Documentation 5.1** section opens the current version of the SUSE Multi-Linux Manager documentation in a new browser tab. This is the documentation installed locally on your SUSE Multi-Linux Manager Server.

For all versions and formats of the SUSE Multi-Linux Manager documentation, including API documentation, see <https://documentation.suse.com/multi-linux-manager/>.

### 2.14.2. Release Notes

The **Help › Release Notes** section opens the current version of the SUSE Multi-Linux Manager Release Notes in a new browser tab.

### 2.14.3. API Menu

The **Help › API** section contains links to the available API calls, and includes an API FAQ and sample scripts.

#### 2.14.3.1. API Overview

The **Help › API › Overview** section provides a list of available API calls. Click the name of an API call to see the relevant documentation.

For the full API documentation, see [API Documentation](#).

---

## 2.14.3.2. API FAQ

The **Help › API › FAQ** section contains frequently asked questions related to SUSE Multi-Linux Manager APIs.

See: <https://documentation.suse.com/multi-linux-manager/5.1/api/docs/api/faqs.html>

## 2.14.3.3. API Sample Scripts

The **Help: › API › Sample Scripts** section contains example API calls for you to copy. The scripts are written in Ruby, Perl, and Python.

See: <https://documentation.suse.com/multi-linux-manager/5.1/api/docs/api/scripts.html>



## Chapter 3. spacecmd Reference



To access a shell inside the Server container, run `mgrctl term` on the container host. From there, one can run the CLI tools as usual.

The following section will help you become more familiar with the `spacecmd` command-line interface. This interface is available for SUSE Multi-Linux Manager, Satellite and Spacewalk servers. `spacecmd` is written in Python and uses the XML-RPC API provided by the server.

### What can spacecmd do for me?

- Manage almost all aspects of SUSE Multi-Linux Manager from the command line with `spacecmd`
- Tab completion is available for all commands
- Single commands can be passed to `spacecmd` without entering the interactive shell (excellent for shell scripts)
- May also be accessed and used as an interactive shell
- Advanced search methods are available for finding specific systems, thus removing the need to create system groups (nevertheless groups are still recommended)
- Complete functionality through the Spacewalk API. Almost all commands that can be executed from the Web UI can be performed via the `spacecmd` command-line

## 3.1. Configuring spacecmd



To access a shell inside the Server container, run `mgrctl term` on the container host. From there, one can run the CLI tools as usual.

The following section provides configuration tips for `spacecmd`.

### 3.1.1. Setup spacecmd credentials

Normally `spacecmd` prompts you for a username and password each time you attempt to login to the interactive shell. Alternatively you can configure `spacecmd` with a credentials file to avoid this requirement.

#### Procedure: Creating a spacecmd credentials file

1. Create a hidden `spacecmd` directory in your home directory and set permissions:

```
mkdir ~/.spacecmd
chmod 700 ~/.spacecmd
```

2. Create a config file in `~/.spacecmd/` and provide proper permissions:

```
touch ~/.spacecmd/config
chmod 600 ~/.spacecmd/config
```

3. Edit the config file and add the following configuration lines. (You can use either localhost, when running spacecmd from your SUSE Multi-Linux Manager server container, or the FQDN of your SUSE Multi-Linux Manager server):

```
[spacecmd]

server=FQDN-here

username=username-here
password=password-here
```

4. Check connectivity by entering spacecmd as root:

```
# spacecmd
```

### 3.1.2. spacecmd quiet mode

By default spacecmd prints server status messages during connection attempts. These messages can cause a lot of clutter when parsing system lists. The following alias will force spacecmd to use quiet mode thus preventing this behavior. Add the following line to your `~/.bashrc` file:

```
alias spacecmd='spacecmd -q'
```

### 3.1.3. spacecmd help

spacecmd help can be access by typing `spacecmd -h --help`

```
Usage: spacecmd [options] [command]

Options:
  -c CONFIG, --config CONFIG
                        config file to use [default: ~/.spacecmd/config]
  -u USERNAME, --username=USERNAME
                        use this username to connect to the server
  -p PASSWORD, --password=PASSWORD
                        use this password to connect to the server
  -s SERVER, --server=SERVER
                        connect to this server [default: local hostname]
  --nossll
                        use HTTP instead of HTTPS
  --nohistory
                        do not store command history
```

```
-y, --yes      answer yes for all questions
-q, --quiet    print only error messages
-d, --debug    print debug messages (can be passed multiple times)
-h, --help     show this help message and exit
```

As root you can access available functions without entering the spacecmd shell:

```
# spacecmd -- help

      Documented commands (type help <topic>):
=====
activationkey_addchildchannels      org_trustdetails
activationkey_addconfigchannels     package_details
activationkey_addentitlements       package_listdependencies
activationkey_addgroups             package_listerrata
activationkey_addpackages           package_listinstalledsystems
activationkey_clone                 package_listorphans
activationkey_create                package_remove
activationkey_delete                package_removeorphans
activationkey_details               package_search
activationkey_diff                  repo_addfilters
activationkey_disable               repo_clearfilters
activationkey_disableconfigdeployment repo_create
...

```

## 3.2. help

List all available spacecmd commands with the help function.

Check for additional help on a specific function by calling for example:

```
user_create --help
```

### Listing 1. Full List of Available Help Commands

```
Documented commands (type help <topic>):
=====
activationkey_addchildchannels      org_remove trust
activationkey_addconfigchannels     org_rename
activationkey_addentitlements       org_trustdetails
activationkey_addgroups             package_details
activationkey_addpackages           package_listdependencies
activationkey_clone                 package_listerrata
activationkey_create                package_listinstalledsystems
activationkey_delete                package_listorphans
activationkey_details               package_remove
activationkey_diff                  package_removeorphans
activationkey_disable               package_search
activationkey_disableconfigdeployment repo_addfilters
activationkey_enable                repo_clearfilters
activationkey_enableconfigdeployment repo_create
activationkey_export                repo_delete
activationkey_import                repo_details
activationkey_list                  repo_list
activationkey_listbasechannel       repo_listfilters

```

activationkey_listchildchannels	repo_removefilters
activationkey_listconfigchannels	repo_rename
activationkey_listentitlements	repo_setfilters
activationkey_listgroups	repo_updatessl
activationkey_listpackages	repo_updateurl
activationkey_listsystems	report_duplicates
activationkey_removechildchannels	report_errata
activationkey_removeconfigchannels	report_inactivesystems
activationkey_removeentitlements	report_ipaddresses
activationkey_removegroups	report_kernels
activationkey_removepackages	report_outofdatesystems
activationkey_setbasechannel	report_ungroupedsystems
activationkey_setconfigchannelorder	scap_getxccdfscandetails
activationkey_setcontactmethod	scap_getxccdfscanruleresults
activationkey_setdescription	scap_listxccdfscans
activationkey_setuniversaldefault	scap_schedulexccdfscan
activationkey_setusagelimit	schedule_cancel
api	schedule_details
clear	schedule_getoutput
clear_caches	schedule_list
configchannel_addfile	schedule_listarchived
configchannel_backup	schedule_listcompleted
configchannel_clone	schedule_listfailed
configchannel_create	schedule_listpending
configchannel_delete	schedule_reschedule
configchannel_details	snippet_create
configchannel_diff	snippet_delete
configchannel_export	snippet_details
configchannel_filedetails	snippet_list
configchannel_forcedeploy	snippet_update
configchannel_import	softwarechannel_adderrata
configchannel_list	softwarechannel_adderratabydate
configchannel_listfiles	softwarechannel_addpackages
configchannel_listsystems	softwarechannel_addrepo
configchannel_removefiles	softwarechannel_clone
configchannel_sync	softwarechannel_clonetree
configchannel_updatefile	softwarechannel_create
configchannel_verifyfile	softwarechannel_delete
cryptokey_create	softwarechannel_details
cryptokey_delete	softwarechannel_diff
cryptokey_details	softwarechannel_errata_diff
cryptokey_list	softwarechannel_errata_sync
custominfo_createkey	softwarechannel_getorgaccess
custominfo_deletekey	softwarechannel_list
custominfo_details	softwarechannel_listallpackages
custominfo_listkeys	softwarechannel_listbasechannels
custominfo_updatekey	softwarechannel_listchildchannels
distribution_create	softwarechannel_listerrata
distribution_delete	softwarechannel_listerratabydate
distribution_details	softwarechannel_listlatestpackages
distribution_list	softwarechannel_listpackages
distribution_rename	softwarechannel_listrepos
distribution_update	softwarechannel_listsyncschedule
errata_apply	softwarechannel_listsystems
errata_delete	softwarechannel_mirrorpackages
errata_details	softwarechannel_regenerateneededcache
errata_findbycve	softwarechannel_regenerateyumcache
errata_list	softwarechannel_removeerrata
errata_listaffectedsystems	softwarechannel_removepackages
errata_listcves	softwarechannel_removerepo
errata_publish	softwarechannel_removesyncschedule
errata_search	softwarechannel_setorgaccess
errata_summary	softwarechannel_setsyncschedule
filepreservation_create	softwarechannel_sync
filepreservation_delete	softwarechannel_syncrepos

```

filepreservation_details
filepreservation_list
get_apiversion
get_certificateexpiration
get_serverversion
get_session
group_addsystems
group_backup
group_create
group_delete
group_details
group_list
group_listsystems
group_removesystems
group_restore
help
history
kickstart_addactivationkeys
kickstart_addchildchannels
kickstart_addcryptokeys
kickstart_addfilepreservations
kickstart_adoption
kickstart_addpackages
kickstart_addscript
kickstart_addvariable
kickstart_clone
kickstart_create
kickstart_delete
kickstart_details
kickstart_diff
kickstart_disableconfigmanagement
kickstart_disableremotecommands
kickstart_enableconfigmanagement
kickstart_enablelogging
kickstart_enableremotecommands
kickstart_export
kickstart_getcontents
kickstart_getsoftwareetails
kickstart_getupdatetype
kickstart_import
kickstart_import_raw
kickstart_importjson
kickstart_list
kickstart_listactivationkeys
kickstart_listchildchannels
kickstart_listcryptokeys
kickstart_listcustomoptions
kickstart_listoptions
kickstart_listpackages
kickstart_listscripts
kickstart_listvariables
kickstart_removeactivationkeys
kickstart_removechildchannels
kickstart_removecryptokeys
kickstart_removefilepreservations
kickstart_removeoptions
kickstart_removepackages
kickstart_removescript
kickstart_removevariables
kickstart_rename
kickstart_setcustomoptions
kickstart_setdistribution
kickstart_setlocale
kickstart_setpartitions
kickstart_setselinux
ssm_add
ssm_clear
ssm_intersect
ssm_list
ssm_remove
system_addchildchannels
system_addconfigchannels
system_addconfigfile
system_addcustomvalue
system_addentitlements
system_addnote
system_applyerrata
system_comparepackageprofile
system_comparepackages
system_comparewithchannel
system_createpackageprofile
system_delete
system_deletenotes
system_deletepackageprofile
system_deployconfigfiles
system_details
system_installpackage
system_list
system_listbasechannel
system_listchildchannels
system_listconfigchannels
system_listconfigfiles
system_listcustomvalues
system_listentitlements
system_listerrata
system_listevents
system_listhardware
system_listinstalledpackages
system_listnotes
system_listpackageprofiles
system_listupgrades
system_lock
system_reboot
system_removechildchannels
system_removeconfigchannels
system_removecustomvalues
system_removeentitlement
system_removepackage
system_rename
system_runscript
system_schedulehardwarerefresh
system_schedulepackagerefresh
system_search
system_setbasechannel
system_setconfigchannelorder
system_setcontactmethod
system_show_packageversion
system_syncpackages
system_unlock
system_updatecustomvalue
system_upgradepackage
toggle_confirmations
user_adddefaultgroup
user_addgroup
user_addrole
user_create
user_delete
user_details
user_disable
user_enable

```

```

kickstartsetupdatetype      user_list
kickstart_updatevariable    user_listavailableroles
list_proxies                 user_removedefaultgroup
login                        user_removegroup
logout                       user_removeole
org_addtrust                 user_setemail
org_create                   user_setfirstname
org_delete                   user_setlastname
org_details                  user_setpassword
org_list                     user_setprefix
org_listtrusts               whoami
org_listusers                whoamitalkingto

```

```

Miscellaneous help topics:
=====
time  systems  ssm

```

## 3.3. history

List recent commands using the history command.

```

spacecmd {SSM:0}> history
 1  help
 2  api
 3  exit
 4  help
 5  time --help
 6  quit
 7  clear
spacecmd {SSM:0}>

```

## 3.4. Troubleshooting spacecmd

This section provides troubleshooting solutions when working with spacecmd

### 3.4.1. Creating a distribution where spacecmd sets localhost instead of FQDN

#### Situation

When creating a distribution with spacecmd it will automatically set localhost as the server name instead of the FQDN of SUSE Multi-Linux Manager. This will result in the following kernel option being written:

```
install=http://localhost/ks/dist/<distributionname>
```

#### Resolution

Set the FQDN in \$HOME/.spacecmd/config like the following:

```
test:~/.spacecmd # cat config
```

```
[spacecmd]
server=test.mytest.env
username=admin
password=password
noss1=0
```

### Cause

This problem may be experienced if `$HOME/.spacecmd/config` has been created and the server name option was set to `localhost`.

## 3.4.2. spacecmd not accepting commands or options

When running `spacecmd` non-interactively:

- you must escape arguments passed to the command.
- always put `--` before arguments, to avoid them being treated as global arguments.
- make sure you escape any quotes that you pass to the functions so that they are not interpreted.

An example of a well-formed `spacecmd` command:

```
spacecmd -s server1 -- softwarechannel_create -n 'My Channel\' -l channel1 -a x86_64
```

## 3.4.3. spacecmd caching problems

The `spacecmd` command keeps a cache of the various systems and packages that you have installed. Sometimes, this can result in a mismatch between the system name and the system ID.

To clear the `spacecmd` cache, use this command:

```
spacecmd clear_caches
```

## 3.5. spacecmd Functions

The following sections provide descriptions for all documented `spacecmd` commands. Each command is grouped by the function prefix. Keep in mind that all commands may also be called using scripts and passed to `spacecmd` as stand-alone commands.

### 3.5.1. activationkey

The following `spacecmd` commands are available for use with activation keys.

### 3.5.1.1. activationkey\_addchildchannels

Add child channels to an activation key.

```
usage: activationkey_addchildchannels KEY <CHANNEL ...>
```

### 3.5.1.2. activationkey\_addconfigchannels

Add configuration channels to an activation key.

```
usage: activationkey_addconfigchannels KEY <CHANNEL ...> [options]
```

options:

- t add channels to the top of the list
- b add channels to the bottom of the list

### 3.5.1.3. activationkey\_addentitlements

Add available entitlements to an activation key.

```
usage: activationkey_addentitlements KEY <ENTITLEMENT ...>
```



In the WebUI entitlements are known as System Types. Nevertheless the spacecmd backend still utilizes the entitlements term. Therefore any scripts you may be using can remain unchanged.

### 3.5.1.4. activationkey\_addgroups

Add existing groups to an activation key.

```
usage: activationkey_addgroups KEY <GROUP ...>
```

### 3.5.1.5. activationkey\_addpackages

Add packages to an activation key.

```
usage: activationkey_addpackages KEY <PACKAGE ...>
```

### 3.5.1.6. activationkey\_clone

Clone an existing activation key.



usage examples:

```
activationkey_clone foo_key -c bar_key
activationkey_clone foo_key1 foo_key2 -c prefix
activationkey_clone foo_key -x "s/foo/bar"
activationkey_clone foo_key1 foo_key2 -x "s/foo/bar"
```

options:

- c CLONE\_NAME : Name of the resulting key, treated as a prefix for multiple keys
- x "s/foo/bar" : Optional regex replacement, replaces foo with bar in the clone description, base-channel label, child-channel labels, config-channel names

### 3.5.1.7. activationkey\_create

Create a new activation key.

usage: activationkey\_create [options]

options:

- n NAME
- d DESCRIPTION
- b BASE\_CHANNEL
- u set key as universal default
- e [enterprise\_entitled,virtualization\_host]

### 3.5.1.8. activationkey\_delete

Delete an existing activation key.

usage: activationkey\_delete KEY

### 3.5.1.9. activationkey\_details

Show details of an existing activation key.

usage: activationkey\_details KEY ...

### 3.5.1.10. activationkey\_diff

Check the difference between two activation keys.

usage: activationkey\_diff SOURCE\_ACTIVATIONKEY TARGET\_ACTIVATIONKEY

### 3.5.1.11. activationkey\_disable

Disable an existing activation key.

```
usage: activationkey_disable KEY [KEY ...]
```

### 3.5.1.12. activationkey\_disableconfigdeployment

Disable configuration channel deployment for an existing activation key.

```
usage: activationkey_disableconfigdeployment KEY
```

### 3.5.1.13. activationkey\_enable

Enable an existing activation key.

```
usage: activationkey_enable KEY [KEY ...]
```

### 3.5.1.14. activationkey\_enableconfigdeployment

Enable configuration channel deployment for an existing activation key.

```
usage: activationkey_enableconfigdeployment KEY
```

### 3.5.1.15. activationkey\_export

Export activation keys to a JSON formatted file.

```
usage: activationkey_export [options] [<KEY> ...]
```

options:

```
-f outfile.json : specify an output filename, defaults to <KEY>.json
                  if exporting a single key, akeys.json for multiple keys,
                  or akey_all.json if no KEY specified (export ALL)
```

Note : KEY list is optional, default is to export ALL keys

### 3.5.1.16. activationkey\_import

Import activation keys from JSON files

```
usage: activationkey_import <JSONFILE ...>
```

### 3.5.1.17. activationkey\_list

List all existing activation keys.

```
usage: activationkey_list
```

### 3.5.1.18. activationkey\_listbasechannel

List the base channel associated with an activation key.

```
usage: activationkey_listbasechannel KEY
```

### 3.5.1.19. activationkey\_listchildchannels

List child channels associated with an activation key.

```
usage: activationkey_listchildchannels KEY
```

### 3.5.1.20. activationkey\_listconfigchannels

List configuration channels associated with an activation key.

```
usage: activationkey_listconfigchannels KEY
```

### 3.5.1.21. activationkey\_listentitlements

List entitlements associated with an activation key.

```
usage: activationkey_listentitlements KEY
```

### 3.5.1.22. activationkey\_listgroups

List groups associated with an activation key

```
usage: activationkey_listgroups KEY
```

### 3.5.1.23. activationkey\_listpackages

List packages associated with an activation key.

```
usage: activationkey_listpackages KEY
```

### 3.5.1.24. activationkey\_listsystems

List systems registered with an activation key.

```
usage: activationkey_listsystems KEY
```

### 3.5.1.25. activationkey\_removechildchannels

Remove child channels from an activation key.

```
usage: activationkey_removechildchannels KEY <CHANNEL ...>
```

### 3.5.1.26. activationkey\_removeconfigchannels

Remove configuration channels from an activation key.

```
usage: activationkey_removeconfigchannels KEY <CHANNEL ...>
```

### 3.5.1.27. activationkey\_removeentitlements

Remove entitlements from an activation key.

```
usage: activationkey_removeentitlements KEY <ENTITLEMENT ...>
```

### 3.5.1.28. activationkey\_removegroups

Remove groups from an activation key.

```
usage: activationkey_removegroups KEY <GROUP ...>
```

### 3.5.1.29. activationkey\_removepackages

Remove packages from an activation key.

```
usage: activationkey_removepackages KEY <PACKAGE ...>
```

### 3.5.1.30. activationkey\_setbasechannel

Set the base channel for an activation key.

```
usage: activationkey_setbasechannel KEY CHANNEL
```

### 3.5.1.31. activationkey\_setconfigchannelorder

Set the ranked order of configuration channels.

```
usage: activationkey_setconfigchannelorder KEY
```

### 3.5.1.32. activationkey\_setcontactmethod

Set the contact method to use for systems registered with a specific key. (Use the XML-RPC API to access the latest contact methods.)

```
usage: activationkey_setcontactmethod KEY CONTACT_METHOD
```

### 3.5.1.33. activationkey\_setdescription

Add a description for an activation key.

```
usage: activationkey_setdescription KEY DESCRIPTION
```

### 3.5.1.34. activationkey\_setuniversaldefault

Set a specific key as the universal default.

```
usage: activationkey_setuniversaldefault KEY
```



Using a universal default key is not a Best Practice recommendation.

## 3.5.2. api

The following API command and its options are available for calling the XML-RPC API directly. Calling the API directly allows you to use the latest features in SUSE Multi-Linux Manager from the command-line using spacecmd as a wrapper for stand-alone commands or used from within scripts.

To gain access to the latest feature additions call `api api.getApiCallList` from within spacecmd to list all currently available API commands formatted in json.

### 3.5.2.1. api\_

Call XML-RPC API with arguments directly.

```
usage: api [options] API_STRING

options:
  -A, --args Arguments for the API other than session id in comma separated
              strings or JSON expression
  -F, --format Output format
  -o, --output Output file

examples:
  api api.getApiCallList
  api --args "sysgroup_A" systemgroup.listSystems
  api -A "rhel-i386-server-5,2011-04-01,2011-05-01" -F "%(name)s" \
      channel.software.listAllPackages
```

### 3.5.3. clear

Clears the terminal screen.

### 3.5.4. clear\_caches

Clear the internal caches kept for systems and packages.

```
usage: clear_caches
```

### 3.5.5. configchannel

The following spacecmd commands are available for use with configuration channels.

#### 3.5.5.1. configchannel\_addfile

Creates a configuration file.

```
usage: configchannel_addfile [CHANNEL] [options]

options:
  -c CHANNEL
  -p PATH
  -r REVISION
  -o OWNER [default: root]
  -g GROUP [default: root]
  -m MODE [default: 0644]
  -x SELINUX_CONTEXT
  -d path is a directory
  -s path is a symlink
  -b path is a binary (or other file which needs base64 encoding)
  -t SYMLINK_TARGET
```

-f local path to file contents

Note re binary/base64: Some text files, notably those containing trailing newlines, those containing ASCII escape characters (or other characters not allowed in XML) need to be sent as binary (-b). Some effort is made to auto-detect files which require this, but you may need to explicitly specify.

### 3.5.5.2. configchannel\_backup

Backup a configuration channel.

usage: configchannel\_backup CHANNEL [OUTDIR]

OUTDIR defaults to \$HOME/spacecmd-backup/configchannel/YYYY-MM-DD/CHANNEL

### 3.5.5.3. configchannel\_clone

Clone configuration channels.

usage examples:

```
configchannel_clone foo_label -c bar_label
configchannel_clone foo_label1 foo_label2 -c prefix
configchannel_clone foo_label -x "s/foo/bar"
configchannel_clone foo_label1 foo_label2 -x "s/foo/bar"
```

options:

- c CLONE\_LABEL : name/label of the resulting cc (note does not update description, see -x option), treated as a prefix if multiple keys are passed
- x "s/foo/bar" : Optional regex replacement, replaces foo with bar in the clone name, label and description

Note : If no -c or -x option is specified, interactive is assumed

### 3.5.5.4. configchannel\_create

Create a configuration channel.

usage: configchannel\_create [options]

options:

- n NAME
- l LABEL
- d DESCRIPTION

### 3.5.5.5. configchannel\_delete

Delete a configuration channel.

usage: configchannel\_delete CHANNEL ...

### 3.5.5.6. configchannel\_details

Show the details of a configuration channel.

```
usage: configchannel_details CHANNEL ...
```

### 3.5.5.7. configchannel\_diff

Find differences between configuration channels.

```
usage: configchannel_diff SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.5.8. configchannel\_export

Export configuration channels to a json formatted file.

```
usage: configchannel_export <CHANNEL>... [options]
options:
  -f outfile.json : specify an output filename, defaults to <CHANNEL>.json
                    if exporting a single channel, ccs.json for multiple
                    channels, or cc_all.json if no CHANNEL specified
                    e.g (export ALL)
```

Note : CHANNEL list is optional, default is to export ALL

### 3.5.5.9. configchannel\_filedetails

Show the details of a file in a configuration channel.

```
usage: configchannel_filedetails CHANNEL FILE [REVISION]
```

### 3.5.5.10. configchannel\_forcedeploy

Forces a redeployment of files within a channel on all subscribed systems.

```
usage: configchannel_forcedeploy CHANNEL
```

### 3.5.5.11. configchannel\_import

Import configuration channels from a json file.

```
usage: configchannel_import <JSONFILES...>
```



### 3.5.5.12. configchannel\_list

List all configuration channels.

```
usage: configchannel_list
```

### 3.5.5.13. configchannel\_listfiles

List all files in a configuration channel.

```
usage: configchannel_listfiles CHANNEL ...
```

### 3.5.5.14. configchannel\_listsystems

List all systems subscribed to a configuration channel.

```
usage: configchannel_listsystems CHANNEL
```

### 3.5.5.15. configchannel\_removefiles

Remove configuration files.

```
usage: configchannel_removefile CHANNEL <FILE ...>
```

### 3.5.5.16. configchannel\_sync

Sync configuration files between two configuration channels.

```
usage: configchannel_sync SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.5.17. configchannel\_updatefile

Update a configuration file.

```
usage: configchannel_updatefile CHANNEL FILE
```

### 3.5.5.18. configchannel\_verifyfile

Verify a configuration file.

```
usage: configchannel_verifyfile CHANNEL FILE <SYSTEMS>

<SYSTEMS> may be substituted with any of the following targets:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

## 3.5.6. cryptokey

The following spacecmd commands are available for use with cryptographic keys.

### 3.5.6.1. cryptokey\_create

Create a cryptographic key.

```
usage: cryptokey_create [options]

options:
-t GPG or SSL
-d DESCRIPTION
-f KEY_FILE
```

### 3.5.6.2. cryptokey\_delete

Delete a cryptographic key.

```
usage: cryptokey_delete NAME
```

### 3.5.6.3. cryptokey\_details

Show the contents of a cryptographic key.

```
usage: cryptokey_details KEY ...
```

### 3.5.6.4. cryptokey\_list

List all cryptographic keys (SSL, GPG).

```
usage: cryptokey_list
```

## 3.5.7. custominfo

The following spacecmd commands are available for working with custom keys.

### 3.5.7.1. custominfo\_createkey

Create a custom key.

```
usage: custominfo_createkey [NAME] [DESCRIPTION]
```

### 3.5.7.2. custominfo\_deletekey

Delete a custom key.

```
usage: custominfo_deletekey KEY ...
```

### 3.5.7.3. custominfo\_details

Show the details of a custom key.

```
usage: custominfo_details KEY ...
```

### 3.5.7.4. custominfo\_listkeys

List all custom keys.

```
usage: custominfo_listkeys
```

### 3.5.7.5. custominfo\_updatekey

Update a custom key.

```
usage: custominfo_updatekey [NAME] [DESCRIPTION]
```

## 3.5.8. distribution

The following spacecmd commands are available for working with kickstart distributions.

### 3.5.8.1. distribution\_create

Create a Kickstart tree.

```
usage: distribution_create [options]

options:
  -n NAME
  -p path to tree
  -b base channel to associate with
  -t install type [fedora|rhel_4/5/6|suse|generic_rpm]
```

### 3.5.8.2. distribution\_delete

Delete a Kickstart tree.

```
usage: distribution_delete LABEL
```

### 3.5.8.3. distribution\_details

Show the details of a Kickstart tree.

```
usage: distribution_details LABEL
```

### 3.5.8.4. distribution\_list

List the available autoinstall trees.

```
usage: distribution_list
```

### 3.5.8.5. distribution\_rename

Rename a Kickstart tree.

```
usage: distribution_rename OLDNAME NEWNAME
```

### 3.5.8.6. distribution\_update

Update the path of a Kickstart tree.

```
usage: distribution_update NAME [options]

options:
  -p path to tree
```

```
-b base channel to associate with
-t install type [fedora|rhel_4/5/6|suse|generic_rpm]
```

## 3.5.9. errata

The following spacecmd commands are available for use with errata data.

### 3.5.9.1. errata\_apply

Apply an patch to all affected systems.

```
usage: errata_apply ERRATA|search:XXX ...
```

### 3.5.9.2. errata\_delete

Delete an patch.

```
usage: errata_delete ERRATA|search:XXX ...
```

### 3.5.9.3. errata\_details

Show the details of an patch.

```
usage: errata_details ERRATA|search:XXX ...
```

### 3.5.9.4. errata\_findbycve

List errata addressing a CVE.

```
usage: errata_findbycve CVE-YYYY-NNNN ...
```

### 3.5.9.5. errata\_list

List all patches.

```
usage: errata_list
```

### 3.5.9.6. errata\_listaffectedsystems

List of systems affected by an patch.

```
usage: errata_listaffectedsystems ERRATA|search:XXX ...
```

### 3.5.9.7. errata\_listcves

List of CVEs addressed by an patch.

```
usage: errata_listcves ERRATA|search:XXX ...
```

### 3.5.9.8. errata\_publish

Publish a patch to a channel.

```
usage: errata_publish ERRATA|search:XXX <CHANNEL ...>
```

### 3.5.9.9. errata\_search

List patches that meet user provided criteria

```
usage: errata_search CVE|RHSA|RHBA|RHEA|CLA ...
```

Example:

```
> errata_search CVE-2009:1674
> errata_search RHSA-2009:1674
```

### 3.5.9.10. errata\_summary

Print a summary of all errata.

```
usage: errata_summary
```

## 3.5.10. filepreservation

The following spacecmd commands are available for working with kickstart file preservation lists.

### 3.5.10.1. filepreservation\_create

Create a file preservation list.

```
usage: filepreservation_create [NAME] [FILE ...]
```

### 3.5.10.2. filepreservation\_delete

Delete a file preservation list.

```
filepreservation_delete NAME
```

### 3.5.10.3. filepreservation\_details

Show the details of a file preservation list.

```
usage: filepreservation_details NAME
```

### 3.5.10.4. filepreservation\_list

List all file preservations.

```
usage: filepreservation_list
```

## 3.5.11. get

The following spacecmd commands are available for use with get.

### 3.5.11.1. get\_apiversion

Display the API version of the server.

```
usage: get_apiversion
```

### 3.5.11.2. get\_certificateexpiration

Print the expiration date of the server's entitlement certificate.

```
usage: get_certificateexpiration
```

### 3.5.11.3. get\_serverversion

Display SUSE Multi-Linux Manager server version.

```
usage: get_serverversion
```

### 3.5.11.4. get\_session

Show the current session string.

```
usage: get_session
```

## 3.5.12. group

### 3.5.12.1. group\_addsystems

Add systems to a group.

```
usage: group_addsystems GROUP <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.12.2. group\_backup

Backup a system group.

```
usage: group_backup NAME [OUTDIR]

OUTDIR defaults to $HOME/spacecmd-backup/group/YYYY-MM-DD/NAME
```

### 3.5.12.3. group\_create

Create a system group.

```
usage: group_create [NAME] [DESCRIPTION]
```

### 3.5.12.4. group\_delete

Delete a system group.

```
usage: group_delete NAME ...
```



### 3.5.12.5. group\_details

Show the details of a system group.

```
usage: group_details GROUP ...
```

### 3.5.12.6. group\_list

List available system groups.

```
usage: group_list
```

### 3.5.12.7. group\_listsystems

List the members of a group.

```
usage: group_listsystems GROUP
```

### 3.5.12.8. group\_removesystems

Remove systems from a group.

```
usage: group_removesystems GROUP <SYSTEMS>
```

```
<SYSTEMS> can be any of the following:  
name  
ssm (see 'help ssm')  
search:QUERY (see 'help system_search')  
group:GROUP  
channel:CHANNEL
```

### 3.5.12.9. group\_restore

Restore a system group.

```
usage: group_backup INPUTDIR [NAME] ...
```

## 3.5.13. kickstart

The following spacecmd functions are available for use with kickstart.

### 3.5.13.1. kickstart\_addactivationkeys

Add activation keys to a Kickstart profile.

```
usage: kickstart_addactivationkeys PROFILE <KEY ...>
```

### 3.5.13.2. kickstart\_addchildchannels

Add a child channels to a Kickstart profile.

```
usage: kickstart_addchildchannels PROFILE <CHANNEL ...>
```

### 3.5.13.3. kickstart\_addcryptokeys

Add cryptography keys to a Kickstart profile.

```
usage: kickstart_addcryptokeys PROFILE <KEY ...>
```

### 3.5.13.4. kickstart\_addfilepreservations

Add file preservations to a Kickstart profile.

```
usage: kickstart_addfilepreservations PROFILE <FILELIST ...>
```

### 3.5.13.5. kickstart\_adoption

Set an option for a Kickstart profile.

```
usage: kickstart_adoption PROFILE KEY [VALUE]
```

### 3.5.13.6. kickstart\_addpackages

Add packages to a Kickstart profile.

```
usage: kickstart_addpackages PROFILE <PACKAGE ...>
```

### 3.5.13.7. kickstart\_addscript

Add a script to a Kickstart profile.

```
usage: kickstart_addscript PROFILE [options]
```

```
options:
```

- p PROFILE
- e EXECUTION\_TIME ['pre', 'post']
- i INTERPRETER
- f FILE
- c execute in a chroot environment
- t ENABLING\_TEMPLATING

### 3.5.13.8. kickstart\_addvariable

Add a variable to a Kickstart profile.

```
usage: kickstart_addvariable PROFILE KEY VALUE
```

### 3.5.13.9. kickstart\_clone

Clone a Kickstart profile.

```
usage: kickstart_clone [options]
```

```
options:
```

- n NAME
- c CLONE\_NAME

### 3.5.13.10. kickstart\_create

Create a Kickstart profile.

```
usage: kickstart_create [options]
```

```
options:
```

- n NAME
- d DISTRIBUTION
- p ROOT\_PASSWORD
- v VIRT\_TYPE ['none', 'para\_host', 'qemu', 'xenv', 'xenpv']

### 3.5.13.11. kickstart\_delete

Delete kickstart profiles.

```
usage: kickstart_delete PROFILE
usage: kickstart_delete PROFILE1 PROFILE2
usage: kickstart_delete "PROF*"
```

### 3.5.13.12. kickstart\_details

Show the details of a Kickstart profile.

```
usage: kickstart_details PROFILE
```

### 3.5.13.13. kickstart\_diff

List differences between two kickstart files.

```
usage: kickstart_diff SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.13.14. kickstart\_disableconfigmanagement

Disable configuration management on a Kickstart profile.

```
usage: kickstart_disableconfigmanagement PROFILE
```

### 3.5.13.15. kickstart\_disableremotecommands

Disable remote commands on a Kickstart profile.

```
usage: kickstart_disableremotecommands PROFILE
```

### 3.5.13.16. kickstart\_enableconfigmanagement

Enable configuration management on a Kickstart profile.

```
usage: kickstart_enableconfigmanagement PROFILE
```

### 3.5.13.17. kickstart\_enablelogging

Enable logging for a Kickstart profile.

```
usage: kickstart_enablelogging PROFILE
```

### 3.5.13.18. kickstart\_enableremotecommands

Enable remote commands on a Kickstart profile.

```
usage: kickstart_enableremotecommands PROFILE
```

### 3.5.13.19. kickstart\_export

Export kickstart profiles to json formatted file.

```
usage: kickstart_export <KSPROFILE>... [options]
options:
  -f outfile.json : specify an output filename, defaults to <KSPROFILE>.json
                    if exporting a single kickstart, profiles.json for multiple
                    kickstarts, or ks_all.json if no KSPROFILE specified
                    e.g (export ALL)
```

Note : KSPROFILE list is optional, default is to export ALL

### 3.5.13.20. kickstart\_getcontents

Show the contents of a Kickstart profile as they would be presented to a client.

```
usage: kickstart_getcontents LABEL
```

### 3.5.13.21. kickstart\_getsoftwaredetails

Gets kickstart profile software details.

```
usage: kickstart_getsoftwaredetails KS_LABEL
usage: kickstart_getsoftwaredetails KS_LABEL KS_LABEL2 ...
```

### 3.5.13.22. kickstart\_getupdatetype

Get the update type for a kickstart profiles.

```
usage: kickstart_getupdatetype PROFILE
usage: kickstart_getupdatetype PROFILE1 PROFILE2
usage: kickstart_getupdatetype "PROF*"
```

### 3.5.13.23. kickstart\_import

Import a Kickstart profile from a file.

```
usage: kickstart_import [options]

options:
  -f FILE
  -n NAME
  -d DISTRIBUTION
```

```
-v VIRT_TYPE ['none', 'para_host', 'qemu', 'xenfv', 'xenpv']
```

### 3.5.13.24. kickstart\_import\_raw

Import a raw Kickstart or AutoYaST profile from a file.

```
usage: kickstart_import_raw [options]
options:
  -f FILE
  -n NAME
  -d DISTRIBUTION
  -v VIRT_TYPE ['none', 'para_host', 'qemu', 'xenfv', 'xenpv']
```

### 3.5.13.25. kickstart\_importjson

Import kickstart profiles from json file.

```
usage: kickstart_import <JSONFILES...>
```

### 3.5.13.26. kickstart\_list

List the available Kickstart profiles.

```
usage: kickstart_list
```

### 3.5.13.27. kickstart\_listactivationkeys

List the activation keys associated with a Kickstart profile.

```
usage: kickstart_listactivationkeys PROFILE
```

### 3.5.13.28. kickstart\_listchildchannels

List the child channels of a Kickstart profile.

```
usage: kickstart_listchildchannels PROFILE
```

### 3.5.13.29. kickstart\_listcryptokeys

List the crypto keys associated with a Kickstart profile.

```
usage: kickstart_listcryptokeys PROFILE
```

### 3.5.13.30. kickstart\_listcustomoptions

List the custom options of a Kickstart profile.

```
usage: kickstart_listcustomoptions PROFILE
```

### 3.5.13.31. kickstart\_listoptions

List the options of a Kickstart profile.

```
usage: kickstart_listoptions PROFILE
```

### 3.5.13.32. kickstart\_listpackages

List the packages for a Kickstart profile.

```
usage: kickstart_listpackages PROFILE
```

### 3.5.13.33. kickstart\_listscripts

List the scripts for a Kickstart profile.

```
usage: kickstart_listscripts PROFILE
```

### 3.5.13.34. kickstart\_listvariables

List the variables of a Kickstart profile.

```
usage: kickstart_listvariables PROFILE
```

### 3.5.13.35. kickstart\_removeactivationkeys

Remove activation keys from a Kickstart profile.

```
usage: kickstart_removeactivationkeys PROFILE <KEY ...>
```

### 3.5.13.36. kickstart\_removechildchannels

Remove child channels from a Kickstart profile.

```
usage: kickstart_removechildchannels PROFILE <CHANNEL ...>
```

### 3.5.13.37. kickstart\_removecryptokeys

Remove crypto keys from a Kickstart profile.

```
usage: kickstart_removecryptokeys PROFILE <KEY ...>
```

### 3.5.13.38. kickstart\_removefilepreservations

Remove file preservations from a Kickstart profile.

```
usage: kickstart_removefilepreservations PROFILE <FILE ...>
```

### 3.5.13.39. kickstart\_removeoptions

Remove options from a Kickstart profile.

```
usage: kickstart_removeoptions PROFILE <OPTION ...>
```

### 3.5.13.40. kickstart\_removepackages

Remove packages from a Kickstart profile.

```
usage: kickstart_removepackages PROFILE <PACKAGE ...>
```

### 3.5.13.41. kickstart\_removescript

Add a script to a Kickstart profile.

```
usage: kickstart_removescript PROFILE [ID]
```

### 3.5.13.42. kickstart\_removevariables

Remove variables from a Kickstart profile.



```
usage: kickstart_removevariables PROFILE <KEY ...>
```

### 3.5.13.43. kickstart\_rename

Rename a Kickstart profile

```
usage: kickstart_rename OLDNAME NEWNAME
```

### 3.5.13.44. kickstart\_setcustomoptions

Set custom options for a Kickstart profile.

```
usage: kickstart_setcustomoptions PROFILE
```

### 3.5.13.45. kickstart\_setdistribution

Set the distribution for a Kickstart profile.

```
usage: kickstart_setdistribution PROFILE DISTRIBUTION
```

### 3.5.13.46. kickstart\_setlocale

Set the locale for a Kickstart profile.

```
usage: kickstart_setlocale PROFILE LOCALE
```

### 3.5.13.47. kickstart\_setpartitions

Set the partitioning scheme for a Kickstart profile.

```
usage: kickstart_setpartitions PROFILE
```

### 3.5.13.48. kickstart\_setselinux

Set the SELinux mode for a Kickstart profile.

```
usage: kickstart_setselinux PROFILE MODE
```

### 3.5.13.49. kickstartsetupdatetype

Set the update type for a kickstart profiles.

```
usage: kickstartsetupdatetype [options] KS_LABEL
options:
  -u UPDATE_TYPE ['red_hat', 'all', 'none']
```

### 3.5.13.50. kickstart\_updatevariable

Update a variable in a Kickstart profile.

```
usage: kickstart_updatevariable PROFILE KEY VALUE
```

## 3.5.14. list\_proxies

The following spacecmd function is available for listing proxies.

### 3.5.14.1. list\_proxies

List the proxies within the user's organization.

```
usage: list_proxies
```

## 3.5.15. login

Connect as a specific user to the SUSE manager server.

```
# spacecmd -- login <USERNAME>
```

## 3.5.16. logout

Logout from server as the current user.

```
# spacecmd -- logout
```

## 3.5.17. org

The following spacecmd functions are available for use with organizations.

### 3.5.17.1. org\_addtrust

Add a trust between two organizations

```
usage: org_addtrust YOUR_ORG ORG_TO_TRUST
```

### 3.5.17.2. org\_create

Create an organization.

```
usage: org_create [options]

options:
  -n ORG_NAME
  -u USERNAME
  -P PREFIX (Dr., Mr., Miss, Mrs., Ms.)
  -f FIRST_NAME
  -l LAST_NAME
  -e EMAIL
  -p PASSWORD
  --pam enable PAM authentication
```

### 3.5.17.3. org\_createfirst

Create the initial organization and admin user after completing the installation.

```
usage: org_createfirst [options]

options:
  -n ORG_NAME
  -u USERNAME
  -f FIRST_NAME
  -l LAST_NAME
  -e EMAIL
  -p PASSWORD
```

### 3.5.17.4. org\_delete

Delete an organization.

```
usage: org_delete NAME
```

### 3.5.17.5. org\_details

Show the details of an organization.

```
usage: org_details NAME
```

### 3.5.17.6. org\_list

List all organizations.

```
usage: org_list
```

### 3.5.17.7. org\_listtrusts

List an organization's trusts.

```
org_listtrusts NAME
```

### 3.5.17.8. org\_listusers

List an organization's users.

```
org_listusers NAME
```

### 3.5.17.9. org\_remove trust

Remove a trust between two organizations.

```
usage: org_remove trust YOUR_ORG TRUSTED_ORG
```

### 3.5.17.10. org\_rename

Rename an organization.

```
usage: org_rename OLDNAME NEWNAME
```

### 3.5.17.11. org\_trustdetails

Show the details of an organizational trust.

```
usage: org_trustdetails TRUSTED_ORG
```

## 3.5.18. package

The following spacecmd functions are available for working with packages.

### 3.5.18.1. package\_details

Show the details of a software package.

```
usage: package_details PACKAGE ...
```

### 3.5.18.2. package\_listdependencies

List the dependencies for a package.

```
usage: package_listdependencies PACKAGE
```

### 3.5.18.3. package\_listerrata

List the errata that provide this package.

```
usage: package_listerrata PACKAGE ...
```

### 3.5.18.4. package\_listinstalledsystems

List the systems with a package installed.

```
usage: package_listinstalledsystems PACKAGE ...
```

### 3.5.18.5. package\_listorphans

List packages that are not in a channel.

```
usage: package_listorphans
```

### 3.5.18.6. package\_remove

Remove a package from SUSE Multi-Linux Manager/Satellite

```
usage: package_remove PACKAGE ...
```

### 3.5.18.7. package\_removeorphans

Remove packages that are not in a channel.

```
usage: package_removeorphans
```

### 3.5.18.8. package\_search

Find packages that meet the given criteria.

```
usage: package_search NAME|QUERY
```

```
Example: package_search kernel
```

Advanced Search

Available Fields: name, epoch, version, release, arch, description, summary

Example: name:kernel AND version:2.6.18 AND -description:devel

### 3.5.19. proxy\_container\_config

The following spacecmd functions are available for use with proxy container configuration

#### 3.5.19.1. proxy\_container\_config\_generate\_cert

Create SUSE Multi-Linux Manager Proxy container configuration and generate new SSL server certificate for it.

```
usage: proxy_container_config_generate_cert PROXY_FQDN PARENT_FQDN MAX_CACHE EMAIL

parameters:
  PROXY_FQDN  the fully qualified domain name of the proxy to create.
  PARENT_FQDN the fully qualified domain name of the server or another proxy to connect
to.
  MAX_CACHE   the maximum cache size in MB. 60% of the storage is a good value.
  EMAIL       the email of the proxy administrator

options:
  -o, --output Path where to create the generated configuration. Default: 'config.zip'
  -p, --ssh-port SSH port the proxy listens one. Default: 22
  --ca-cert path to the certificate of the CA to use to generate a new proxy certificate.
             Using /root/ssl-build/RHN-ORG-TRUSTED-SSL-CERT by default.
  --ca-key path to the private key of the CA to use to generate a new proxy certificate.
             Using /root/ssl-build/RHN-ORG-PRIVATE-SSL-KEY by default.
  --ca-pass path to a file containing the password of the CA private key, will be prompted
if not passed.
  --ssl-cname alternate name of the proxy to set in the certificate. Can be provided
multiple times
  --ssl-country country code to set in the certificate. If omitted, default values from
mgr-ssl-tool will be used.
  --ssl-state state name to set in the certificate. If omitted, default values from mgr-
ssl-tool will be used.
  --ssl-city the city name to set in the certificate. If omitted, default values from mgr-
ssl-tool will be used.
  --ssl-org the organization name to set in the certificate. If omitted, default values
```

```

from mgr-ssl-tool will be used.
--ssl-org-unit the organization unit name to set in the certificate. If omitted, default
values from mgr-ssl-tool will be used.
--ssl-email the email to set in the certificate. If omitted, default values from mgr-
ssl-tool will be used.

```

### 3.5.19.2. proxy\_container\_config

Create SUSE Multi-Linux Manager Proxy container configuration and use already existing SSL server certificate.

```

usage: proxy_container_config [options] PROXY_FQDN PARENT_FQDN MAX_CACHE EMAIL ROOT_CA CRT
KEY

parameters:
  PROXY_FQDN  the fully qualified domain name of the proxy to create.
  PARENT_FQDN the fully qualified domain name of the server or another proxy to connect
to.
  MAX_CACHE   the maximum cache size in MB. 60% of the storage is a good value.
  EMAIL       the email of the proxy administrator
  CA          path to the root CA used to sign the proxy certificate in PEM format
  CRT         path to the proxy certificate in PEM format
  KEY         path to the proxy certificate private key in PEM format

options:
  -o, --output Path where to create the generated configuration. Default: 'config.zip'
  -p, --ssh-port SSH port the proxy listens one. Default: 22
  -i, --intermediate-ca Path to an intermediate CA used to sign the proxy
certificate in PEM format. May be provided multiple times.

```

## 3.5.20. repo

The following spacecmd functions are available for working with repositories.

### 3.5.20.1. repo\_addfilters

Add filters for a user repository.

```
usage: repo_addfilters repo <filter ...>
```

### 3.5.20.2. repo\_clearfilters

Clears the filters for a user repository.

```
usage: repo_clearfilters repo
```

### 3.5.20.3. repo\_create

Create a user repository.

```
usage: repo_create <options>

options:
  -n, --name    name of repository
  -u, --url     url of repository

  --ca          SSL CA certificate (not required)
  --cert        SSL Client certificate (not required)
  --key         SSL Client key (not required)
```

### 3.5.20.4. repo\_delete

Delete a user repository.

```
usage: repo_delete <repo ...>
```

### 3.5.20.5. repo\_details

Show the details of a user repository.

```
usage: repo_details <repo ...>
```

### 3.5.20.6. repo\_list

List all available user repository.

```
usage: repo_list
```

### 3.5.20.7. repo\_listfilters

Show the filters for a user repository.

```
usage: repo_listfilters repo
```

```
===repo_removefilters
```

Remove filters from a user repository.

```
usage: repo_removefilters repo <filter ...>
```

### 3.5.20.8. repo\_rename

Rename a user repository.



```
usage: repo_rename OLDNAME NEWNAME
```

### 3.5.20.9. repo\_setfilters

Set the filters for a user repo.

```
usage: repo_setfilters repo <filter ...>
```

### 3.5.20.10. repo\_updatessl

Change the SSL certificates of a user repository.

```
usage: repo_updatessl <options>
options:
  --ca          SSL CA certificate (not required)
  --cert        SSL Client certificate (not required)
  --key         SSL Client key (not required)
```

### 3.5.20.11. repo\_updateurl

Change the URL of a user repository.

```
usage: repo_updateurl <repo> <url>
```

## 3.5.21. report

The following spacecmd functions are available for working with reports.

### 3.5.21.1. report\_duplicates

List duplicate system profiles.

```
usage: report_duplicates
```

### 3.5.21.2. report\_errata

List all errata and how many systems they affect.

```
usage: report_errata [ERRATA|search:XXX ...]
```

### 3.5.21.2.1. report\_inactivesystems

List all inactive systems.

```
usage: report_inactivesystems [DAYS]
```

### 3.5.21.3. report\_ipaddresses

List the hostname and IP of each system.

```
usage: report_network [<SYSTEMS>]

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.21.4. report\_kernels

List the running kernel of each system.

```
usage: report_kernels [<SYSTEMS>]

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.21.5. report\_outofdatesystems

List all out-of-date systems.

```
usage: report_outofdatesystems
```

### 3.5.21.6. report\_ungroupedsystems

List all ungrouped systems.

```
usage: report_ungroupedsystems
```

## 3.5.22. scap

The following spacecmd functions are available for working with OpenSCAP.

### 3.5.22.1. scap\_getxccdfscandetails

Get details of given OpenSCAP XCCDF scan.

```
usage: scap_getxccdfscandetails <XID>
```

### 3.5.22.2. scap\_getxccdfscanruleresults

Return a full list of RuleResults for given OpenSCAP XCCDF scan.

```
usage: scap_getxccdfscanruleresults <XID>
```

### 3.5.22.3. scap\_listxccdfscans

Return a list of finished OpenSCAP scans for given systems.

```
usage: scap_listxccdfscans <SYSTEMS>
```

### 3.5.22.4. scap\_scheduledxccdfscan

Schedule Scap XCCDF scan.

```
usage: scap_scheduledxccdfscan PATH_TO_XCCDF_FILE XCCDF_OPTIONS SYSTEMS
```

Example:

```
> scap_scheduledxccdfscan '/usr/share/openscap/scap-security-xccdf.xml' 'profile Web-Default' \  
system-scap.example.com
```

## 3.5.23. schedule

The following spacecmd functions are available for working with scheduling.

### 3.5.23.1. schedule\_cancel

Cancel a scheduled action.

```
usage: schedule_cancel ID|* ...
```

### 3.5.23.2. schedule\_details

Show the details of a scheduled action.

```
usage: schedule_details ID
```

### 3.5.23.3. schedule\_getoutput

Show the output from an action.

```
usage: schedule_getoutput ID
```

### 3.5.23.4. schedule\_list

List all actions.

```
usage: schedule_list [BEGINDATE] [ENDDATE]
```

Dates can be any of the following:

Explicit Dates:

Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format.

The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.

Deltas:

Dates can be expressed as delta values. For example, '2h' would mean 2 hours in the future. You can also use negative values to express times in the past (e.g., -7d would be one week ago).

Units:

s -> seconds

m -> minutes

h -> hours

d -> days

### 3.5.23.5. schedule\_listarchived

List archived actions.

```
usage: schedule_listarchived [BEGINDATE] [ENDDATE]
```

Dates can be any of the following:

Explicit Dates:

Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format.

The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.

Deltas:

Dates can be expressed as delta values. For example, '2h' would mean 2 hours in the future. You can also use negative values to express times in the past (e.g., -7d would be one week ago).

```
Units:
s -> seconds
m -> minutes
h -> hours
d -> days
```

### 3.5.23.6. schedule\_listcompleted

List completed actions.

Dates can be any of the following:  
 Explicit Dates:  
 Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format.  
 The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.

Deltas:  
 Dates can be expressed as delta values. For example, '2h' would mean 2 hours in the future. You can also use negative values to express times in the past (e.g., -7d would be one week ago).

Units:  
s -> seconds  
m -> minutes  
h -> hours  
d -> days

### 3.5.23.7. schedule\_listfailed

List failed actions.

```
usage: schedule_listfailed [BEGINDATE] [ENDDATE]
```

Dates can be any of the following:  
 Explicit Dates:  
 Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format.  
 The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.

Deltas:  
 Dates can be expressed as delta values. For example, '2h' would mean 2 hours in the future. You can also use negative values to express times in the past (e.g., -7d would be one week ago).

Units:  
s -> seconds  
m -> minutes  
h -> hours  
d -> days

### 3.5.23.8. schedule\_listpending

List pending actions.

```
usage: schedule_listpending [BEGINDATE] [ENDDATE]
```

Dates can be any of the following:

Explicit Dates:

Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format.

The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.

Deltas:

Dates can be expressed as delta values. For example, '2h' would mean 2 hours in the future. You can also use negative values to express times in the past (e.g., -7d would be one week ago).

Units:

s -> seconds

m -> minutes

h -> hours

d -> days

### 3.5.23.9. schedule\_reschedule::

Reschedule failed actions.

```
usage: schedule_reschedule ID|* ...
```

## 3.5.24. snippet

The following spacecmd functions are available for working with Kickstart snippets.

### 3.5.24.1. snippet\_create

Create a Kickstart snippet

```
usage: snippet_create [options]
```

options:

-n NAME

-f FILE

### 3.5.24.2. snippet\_delete

Delete a Kickstart snippet.

```
usage: snippet_removefile NAME
```

### 3.5.24.3. snippet\_details

Show the contents of a snippet.

```
usage: snippet_details SNIPPET ...
```

### 3.5.24.4. snippet\_list

List the available Kickstart snippets.

```
usage: snippet_list
```

### 3.5.24.5. snippet\_update

Update a Kickstart snippet.

```
usage: snippet_update NAME
```

## 3.5.25. softwarechannel

The following spacecmd functions are available for working with software channels.

### 3.5.25.1. softwarechannel\_adderrata

Add patches from one channel into another channel.

```
usage: softwarechannel_adderrata SOURCE DEST <ERRATA|search:XXX ...>
Options:
  -q/--quick : Don't display list of packages (slightly faster)
  -s/--skip  : Skip errata which appear to exist already in DEST
```

### 3.5.25.2. softwarechannel\_adderratabydate

Add errata from one channel into another channel based on a date range.

```
usage: softwarechannel_adderratabydate [options] SOURCE DEST BEGINDATE ENDDATE
Date format : YYYYMMDD
Options:
  -p/--publish : Publish errata to the channel (don't clone)
```

### 3.5.25.3. softwarechannel\_addpackages

Add packages to a software channel.

```
usage: softwarechannel_addpackages CHANNEL <PACKAGE ...>
```

### 3.5.25.4. softwarechannel\_addrepo

Add a repo to a software channel.

```
usage: softwarechannel_addrepo CHANNEL REPO
```

### 3.5.25.5. softwarechannel\_clone

Clone a software channel.

```
usage: softwarechannel_clone [options]

options:
  -s SOURCE_CHANNEL
  -n NAME
  -l LABEL
  -p PARENT_CHANNEL
  --gpg-copy/-g (copy SOURCE_CHANNEL GPG details)
  --gpg-url GPG_URL
  --gpg-id GPG_ID
  --gpg-fingerprint GPG_FINGERPRINT
  -o do not clone any patches
  --regex/-x "s/foo/bar" : Optional regex replacement,
                           replaces foo with bar in the clone name and label
```

### 3.5.25.6. softwarechannel\_clonetree

Clone a software channel and its child channels.

```
usage: softwarechannel_clonetree [options]A
      e.g   softwarechannel_clonetree foobasechannel -p "my_"
             softwarechannel_clonetree foobasechannel -x "s/foo/bar"
             softwarechannel_clonetree foobasechannel -x "s/^/my_"

options:
  -s/--source-channel SOURCE_CHANNEL
  -p/--prefix PREFIX (is prepended to the label and name of all channels)
  --gpg-copy/-g (copy GPG details for corresponding source channel)
  --gpg-url GPG_URL (applied to all channels)
  --gpg-id GPG_ID (applied to all channels)
  --gpg-fingerprint GPG_FINGERPRINT (applied to all channels)
  -o do not clone any errata
  --regex/-x "s/foo/bar" : Optional regex replacement,
                           replaces foo with bar in the clone name, label and description
```

### 3.5.25.7. softwarechannel\_create

Create a software channel.

```
usage: softwarechannel_create [options]
```



```
options:
-n NAME
-l LABEL
-p PARENT_CHANNEL
-a ARCHITECTURE ['ia32', 'ia64', 'x86_64', 'ppc',
                 'i386-sun-solaris', 'sparc-sun-solaris']
-c CHECKSUM ['sha1', 'sha256', 'sha384', 'sha512']
-u GPG_URL
-i GPG_ID
-f GPG_FINGERPRINT
```

### 3.5.25.8. softwarechannel\_delete

Delete a software channel.

```
usage: softwarechannel_delete <CHANNEL ...>
```

### 3.5.25.9. softwarechannel\_details

Show the details of a software channel.

```
usage: softwarechannel_details <CHANNEL ...>
```

### 3.5.25.10. softwarechannel\_diff

Check the difference between software channels.

```
usage: softwarechannel_diff SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.25.11. softwarechannel\_errata\_diff

Check the difference between software channel files.

```
usage: softwarechannel_errata_diff SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.25.12. softwarechannel\_errata\_sync

Sync errata of two software channels.

```
usage: softwarechannel_errata_sync SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.25.13. softwarechannel\_getorgaccess

Get the org-access for the software channel.

```
usage : softwarechannel_getorgaccess : get org access for all channels
usage : softwarechannel_getorgaccess <channel_label(s)> : get org access for specific
channel(s)
```

### 3.5.25.14. softwarechannel\_list

List all available software channels.

```
usage: softwarechannel_list [options]'
options:
  -v verbose (display label and summary)
  -t tree view (pretty-print child-channels)
```

### 3.5.25.15. softwarechannel\_listallpackages

List all packages in a channel.

```
usage: softwarechannel_listallpackages CHANNEL
```

### 3.5.25.16. softwarechannel\_listbasechannels

List all base software channels.

```
usage: softwarechannel_listbasechannels [options]
options:
  -v verbose (display label and summary)
```

### 3.5.25.17. softwarechannel\_listchildchannels

List child software channels.

```
usage:
softwarechannel_listchildchannels [options]
softwarechannel_listchildchannels : List all child channels
softwarechannel_listchildchannels CHANNEL : List children for a specific base channel
options:
  -v verbose (display label and summary)
```

### 3.5.25.18. softwarechannel\_listerrata

List the errata associated with a software channel.

```
usage: softwarechannel_listerrata <CHANNEL ...> [from=yyyymmdd [to=yyyymmdd]]
```

### 3.5.25.19. softwarechannel\_listerratabydate

List errata from channelbased on a date range.

```
usage: softwarechannel_listerratabydate CHANNEL BEGINDATE ENDDATE
Date format : YYYYMMDD
```

### 3.5.25.20. softwarechannel\_listlatestpackages

List the newest version of all packages in a channel.

```
usage: softwarechannel_listlatestpackages CHANNEL
```

### 3.5.25.21. softwarechannel\_listpackages

List the most recent packages available from a software channel.

```
usage: softwarechannel_listpackages CHANNEL
```

### 3.5.25.22. softwarechannel\_listrepos

List the repos for a software channel.

```
usage: softwarechannel_listrepos CHANNEL
```

### 3.5.25.23. softwarechannel\_listsyncschedule

List sync schedules for all software channels.

```
usage: softwarechannel_listsyncschedule : List all channels
```

### 3.5.25.24. softwarechannel\_listsystems

List all systems subscribed to a software channel.

```
usage: softwarechannel_listsystems CHANNEL
```

### 3.5.25.25. softwarechannel\_mirrorpackages

Download packages of a given channel.

```
usage: softwarechannel_mirrorpackages CHANNEL
Options:
  -l/--latest : Only mirror latest package version
```

### 3.5.25.26. softwarechannel\_regenerateneededcache

Regenerate the needed errata and package cache for all systems.

```
usage: softwarechannel_regenerateneededcache
```

### 3.5.25.27. softwarechannel\_regenerateyumcache

Regenerate the YUM cache for a software channel.

```
usage: softwarechannel_regenerateyumcache <CHANNEL ...>
```

### 3.5.25.28. softwarechannel\_removeerrata

Remove patches from a software channel.

```
usage: softwarechannel_removeerrata CHANNEL <ERRATA:search:XXX ...>
```

### 3.5.25.29. softwarechannel\_removepackages

Remove packages from a software channel.

```
usage: softwarechannel_removepackages CHANNEL <PACKAGE ...>
```

### 3.5.25.30. softwarechannel\_removerepo

Remove a repo from a software channel.

```
usage: softwarechannel_removerepo CHANNEL REPO
```

### 3.5.25.31. softwarechannel\_removesyncschedule

Removes the repo sync schedule for a software channel.

```
usage: softwarechannel_setsyncschedule <CHANNEL>
```

### 3.5.25.32. softwarechannel\_setorgaccess

Set the org-access for the software channel.

```
usage : softwarechannel_setorgaccess <channel_label> [options]
-d,--disable : disable org access (private, no org sharing)
-e,--enable  : enable org access (public access to all trusted orgs)
```

### 3.5.25.33. softwarechannel\_setsyncschedule

Sets the repo sync schedule for a software channel.

```
usage: softwarechannel_setsyncschedule <CHANNEL> <SCHEDULE>

The schedule is specified in Quartz CronTrigger format without enclosing quotes.
For example, to set a schedule of every day at 1am, <SCHEDULE> would be 0 0 1 * * ?
```

### 3.5.25.34. softwarechannel\_sync

Sync the packages of two software channels.

```
usage: softwarechannel_sync SOURCE_CHANNEL TARGET_CHANNEL
```

### 3.5.25.35. softwarechannel\_syncrepos

Sync users repos for a software channel.

```
usage: softwarechannel_syncrepos <CHANNEL ...>
```

## 3.5.26. ssm

The following spacecmd functions are available for use with the system set manager (SSM).

### 3.5.26.1. ssm\_add

Add systems to the SSM.

```
usage: ssm_add <SYSTEMS>

see 'help ssm' for more details
```

```
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.26.2. ssm\_clear

Remove all systems from the SSM.

```
usage: ssm_clear
```

### 3.5.26.3. ssm\_intersect

Replace the current SSM with the intersection of the current list of systems and the list of systems passed as arguments.

```
usage: ssm_intersect <SYSTEMS>
see 'help ssm' for more details
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNE
```

### 3.5.26.4. ssm\_list

List the systems currently in the SSM.

```
usage: ssm_list
see 'help ssm' for more details
```

### 3.5.26.5. ssm\_remove

Remove systems from the SSM.

+

```
usage: ssm_remove <SYSTEMS>
see 'help ssm' for more details
<SYSTEMS> can be any of the following:
name
```

```
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

## 3.5.27. system

The following spacecmd functions are available for use with systems.

### 3.5.27.1. system\_addchildchannels

Add child channels to a system.

```
usage: system_addchildchannels <SYSTEMS> <CHANNEL ...>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.2. system\_addconfigchannels

Add config channels to a system.

```
usage: system_addconfigchannels <SYSTEMS> <CHANNEL ...> [options]

options:
  -t add channels to the top of the list
  -b add channels to the bottom of the list

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.3. system\_addconfigfile

Create a configuration file.

```
Note this is only for system sandbox or locally-managed files
Centrally managed files should be created via configchannel_addfile
usage: system_addconfigfile [SYSTEM] [options]

options:
  -S/--sandbox : list only system-sandbox files
  -L/--local   : list only locally managed files
  -p PATH
```

```
-r REVISION
-o OWNER [default: root]
-g GROUP [default: root]
-m MODE [default: 0644]
-x SELINUX_CONTEXT
-d path is a directory
-s path is a symlink
-b path is a binary (or other file which needs base64 encoding)
-t SYMLINK_TARGET
-f local path to file contents
```

Note re binary/base64: Some text files, notably those containing trailing newlines, those containing ASCII escape characters (or other characters not allowed in XML) need to be sent as binary (-b). Some effort is made to auto-detect files which require this, but you may need to explicitly specify.

### 3.5.27.4. system\_addcustomvalue

Set a custom value for a system.

```
usage: system_addcustomvalue KEY VALUE <SYSTEMS>
```

<SYSTEMS> can be any of the following:

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.5. system\_addentitlements

Add entitlements to a system.

```
usage: system_addentitlements <SYSTEMS> ENTITLEMENT
```

<SYSTEMS> can be any of the following:

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.6. system\_addnote

Set a note for a system.

```
usage: system_addnote <SYSTEM> [options]
```

options:

```
-s SUBJECT
-b BODY
```

<SYSTEMS> can be any of the following:

```
name
```



```
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.7. system\_applyerrata

Apply errata to a system.

```
usage: system_applyerrata <SYSTEMS> [ERRATA|search:XXX ...]

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.8. system\_comparepackageprofile

Compare a system against a package profile.

```
usage: system_comparepackageprofile <SYSTEMS> PROFILE

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.9. system\_comparepackages

Compare the packages between two systems.

```
usage: system_comparepackages SOME_SYSTEM ANOTHER_SYSTEM
```

### 3.5.27.10. system\_comparewithchannel

Compare the installed packages on a system with those in the channels it is registered to, or optionally some other channel.

```
usage: system_comparewithchannel <SYSTEMS> [options]
options:
  -c/--channel : Specific channel to compare against,
                  default is those subscribed to, including
                  child channels

<SYSTEMS> can be any of the following:
```

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.11. system\_createpackageprofile

Create a package profile.

```
usage: system_createpackageprofile SYSTEM [options]

options:
  -n NAME
  -d DESCRIPTION
```

### 3.5.27.12. system\_delete

Delete a system profile.

```
usage: system_delete <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.13. system\_deletenotes

Delete notes from a system.

```
usage: system_deletenotes <SYSTEM> <ID|*>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.14. system\_deletepackageprofile

Delete a package profile.

```
usage: system_deletepackageprofile PROFILE
```

### 3.5.27.15. system\_deployconfigfiles\

Deploy all configuration files for a system.

```
usage: system_deployconfigfiles <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.16. system\_details

Show the details of a system profile.

```
usage: system_details <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.17. system\_installpackage

Install a package on a system.

```
usage: system_installpackage <SYSTEMS> <PACKAGE ...>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.18. system\_list

List all system profiles.

```
usage: system_list
```

### 3.5.27.19. system\_listbasechannel

List the base channel for a system.

```
usage: system_listbasechannel <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.20. system\_listchildchannels

List the child channels for a system.

```
usage: system_listchildchannels <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.21. system\_listconfigchannels

List the config channels of a system.

```
usage: system_listconfigchannels <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.22. system\_listconfigfiles

List the managed config files of a system.

```
usage: system_listconfigfiles <SYSTEMS>'
options:
  -s/--sandbox : list only system-sandbox files
  -l/--local   : list only locally managed files
  -c/--central : list only centrally managed files
  -q/--quiet   : quiet mode (omits the header)

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.23. system\_listcustomvalues

List the custom values for a system.

```
usage: system_listcustomvalues <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.24. system\_listentitlements

List the entitlements for a system.

```
usage: system_listentitlements <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.25. system\_listerrata

List available errata for a system.

```
usage: system_listerrata <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.26. system\_listeventhistory

List the event history for a system.

```
usage: system_listeventhistory <SYSTEMS> [options]

options:
-s START_TIME list only the events happened after the specified time. [Default: returns all events]
-o OFFSET skip the first events. Ignored if -l is not specified as well. [Default: 0]
-l LIMIT limit the results to the specified number of events. [Default: no limit]
```

```
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.27. system\_listevents

List the event history for a system.

```
usage: system_listevents <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.28. system\_listhardware

List the hardware details of a system.

```
usage: system_listhardware <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.29. system\_listinstalledpackages

List the installed packages on a system.

```
usage: system_listinstalledpackages <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.30. system\_listnotes

List the available notes for a system.

```
usage: system_listnotes <SYSTEM>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.31. system\_listpackageprofiles

List all package profiles.

```
usage: system_listpackageprofiles
```

### 3.5.27.32. system\_listupgrades

List the available upgrades for a system.

```
usage: system_listupgrades <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.33. system\_lock

Lock a system.

```
usage: system_lock <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.34. system\_reboot

Reboot a system.

```
usage: system_reboot <SYSTEMS>

<SYSTEMS> can be any of the following:
name
```

```
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.35. system\_removechildchannels

Remove child channels from a system.

```
usage: system_removechildchannels <SYSTEMS> <CHANNEL ...>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.36. system\_removeconfigchannels

Remove config channels from a system.

```
usage: system_removeconfigchannels <SYSTEMS> <CHANNEL ...>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.37. system\_removecustomvalues

Remove a custom value for a system.

```
usage: system_removecustomvalues <SYSTEMS> <KEY ...>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.38. system\_removeentitlement

Remove an entitlement from a system.

```
usage: system_removeentitlement <SYSTEMS> ENTITLEMENT
```



```
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.39. system\_removepackage

Remove a package from a system.

```
usage: system_removepackage <SYSTEMS> <PACKAGE ...>
```

```
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.40. system\_rename

Rename a system profile.

```
usage: system_rename OLDNAME NEWNAME
```

### 3.5.27.41. system\_runscript

Schedule a script to run on the list of systems provided.

```
usage: system_runscript <SYSTEMS> [options]
```

```
options:
-u USER
-g GROUP
-t TIMEOUT
-s START_TIME
-l LABEL
-f FILE
```

```
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

Dates can be any of the following:

Explicit Dates:

Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format. The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.

**Deltas:**

Dates can be expressed as delta values. For example, '2h' would mean 2 hours in the future. You can also use negative values to express times in the past (e.g., -7d would be one week ago).

**Units:**

s -> seconds  
 m -> minutes  
 h -> hours  
 d -> days

### 3.5.27.42. system\_schedulehardwarerefresh

Schedule a hardware refresh for a system.

usage: system\_schedulehardwarerefresh <SYSTEMS>

<SYSTEMS> can be any of the following:

name  
 ssm (see 'help ssm')  
 search:QUERY (see 'help system\_search')  
 group:GROUP  
 channel:CHANNEL

### 3.5.27.43. system\_schedulepackagerefresh

Schedule a software package refresh for a system.

usage: system\_schedulepackagerefresh <SYSTEMS>

<SYSTEMS> can be any of the following:

name  
 ssm (see 'help ssm')  
 search:QUERY (see 'help system\_search')  
 group:GROUP  
 channel:CHANNEL

### 3.5.27.44. system\_search

List systems that match the given criteria.

usage: system\_search QUERY

**Available Fields:**

id  
 name  
 ip  
 hostname  
 device  
 vendor  
 driver  
 uuid

**Examples:**

```
> system_search device:vmware
> system_search ip:192.168.82
```

### 3.5.27.45. system\_setbasechannel

Set a system's base software channel.

```
usage: system_setbasechannel <SYSTEMS> CHANNEL
```

<SYSTEMS> can be any of the following:

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.46. system\_setconfigchannelorder

Set the ranked order of configuration channels.

```
usage: system_setconfigchannelorder <SYSTEMS>
```

<SYSTEMS> can be any of the following:

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.47. system\_setcontactmethod

Set the contact method for a given system.

Available contact methods: ['default', 'ssh-push', 'ssh-push-tunnel']

```
usage: system_setcontactmethod <SYSTEMS> <CONTACT_METHOD>
```

<SYSTEMS> can be any of the following:

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.48. system\_show\_packageversion

Shows version of installed package on a given system.

```
usage: system_show_packageversion <SYSTEM> <PACKAGE>
```

```
<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.49. system\_syncpackages

Sync packages between two systems.

```
usage: system_syncpackages SOURCE TARGET
```

#### system\_unlock

Unlock a system.

```
usage: system_unlock <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.50. system\_updatecustomvalue

Update a custom value for a system.

```
usage: system_updatecustomvalue KEY VALUE <SYSTEMS>

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

### 3.5.27.51. system\_upgradepackage

Upgrade a package on a system.

```
usage: system_upgradepackage <SYSTEMS> <PACKAGE ...>|*

<SYSTEMS> can be any of the following:
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

## 3.5.28. toggle

The following spacecmd functions are available to toggle functions on and off.

### 3.5.28.1. toggle\_confirmations

Toggle confirmation messages on/off.

```
usage: toggle_confirmations
```

## 3.5.29. user

The following spacecmd functions are available managing users.

### 3.5.29.1. user\_adddefaultgroup

Add a default group to an user account.

```
usage: user_adddefaultgroup USER <GROUP ...>
```

### 3.5.29.2. user\_addgroup

Add a group to an user account.

```
usage: user_addgroup USER <GROUP ...>
```

### 3.5.29.3. user\_addrole

Add a role to an user account.

```
usage: user_addrole USER ROLE
```

### 3.5.29.4. user\_create

Create an user.

```
usage: user_create [options]

options:
  -u USERNAME
  -f FIRST_NAME
  -l LAST_NAME
  -e EMAIL
```

```
-p PASSWORD  
--pam enable PAM authentication
```

### 3.5.29.5. user\_delete

Delete an user.

```
usage: user_delete NAME
```

### 3.5.29.6. user\_details

Show the details of an user.

```
usage: user_details USER ...
```

### 3.5.29.7. user\_disable

Disable an user account.

```
usage: user_disable NAME
```

### 3.5.29.8. user\_enable

Enable an user account.

```
usage: user_enable NAME
```

### 3.5.29.9. user\_list

List all users.

```
usage: user_list
```

### 3.5.29.10. user\_listavailableroles

List all available roles for users.

```
usage: user_listavailableroles
```

### 3.5.29.11. user\_removedefaultgroup

Remove a default group from an user account.

```
usage: user_removedefaultgroup USER <GROUP ...>
```

### 3.5.29.12. user\_removegroup

Remove a group to an user account.

```
usage: user_removegroup USER <GROUP ...>
```

### 3.5.29.13. user\_removeole

Remove a role from an user account.

```
usage: user_removeole USER ROLE
```

### 3.5.29.14. user\_setemail

Set an user accounts email field.

```
usage: user_setemail USER EMAIL
```

### 3.5.29.15. user\_setfirstname

Set an user accounts first name field.

```
usage: user_setfirstname USER FIRST_NAME
```

### 3.5.29.16. user\_setlastname

Set an user accounts last name field.

```
usage: user_setlastname USER LAST_NAME
```

### 3.5.29.17. user\_setpassword

Set an user accounts name prefix field.

```
usage: user_setpassword USER PASSWORD
```

### 3.5.29.18. user\_setprefix

Set an user accounts name prefix field.

```
usage: user_setprefix USER PREFIX
```

### 3.5.30. whoami

The following command is available for returning the currently logged spacecmd username.

#### 3.5.30.1. whoami

Print the currently logged spacecmd user.

```
spacecmd {SSM:0}> whoami
admin
```

### 3.5.31. whoamitalkingto

The following spacecmd function is available for returning the server hostname.

#### 3.5.31.1. whoamitalkingto

Return the server hostname that spacecmd is connected with.

```
spacecmd {SSM:0}> whoamitalkingto
MGR_SERVER_HOSTNAME
```

### 3.5.32. Miscellaneous Help Topics

The following help topics are printed with all functions requiring the relevant information.

#### 3.5.32.1. time

Dates can be any of the following:

Explicit Dates:  
Dates can be expressed as explicit date strings in the YYYYMMDD[HHMM] format.  
The year, month and day are required, while the hours and minutes are not; the hours and minutes will default to 0000 if no values are provided.



**Deltas:**

Dates can be expressed as delta values.

For example, '2h' would mean 2 hours in the future.

You can also use negative values to express times in the past (e.g., -7d would be one week ago).

**Units:**

s -> seconds

m -> minutes

h -> hours

d -> days

## 3.5.32.2. systems

<SYSTEMS> can be any of the following:

```
name
ssm (see 'help ssm')
search:QUERY (see 'help system_search')
group:GROUP
channel:CHANNEL
```

## 3.5.32.3. ssm

The System Set Manager (SSM) is a group of systems that you can perform tasks on as a group.

**Adding Systems:**

```
> ssm_add group:rhel5-x86_64
> ssm_add channel:rhel-x86_64-server-5
> ssm_add search:device:vmware
> ssm_add host.example.com
```

**Intersections:**

```
> ssm_add group:rhel5-x86_64
> ssm_intersect group:web-servers
```

**Using the SSM:**

```
> system_installpackage ssm zsh
> system_runscript ssm
```

## Chapter 4. Command Line Tools



- To access a shell inside the Server container, run `mgrctl term` on the container host. From there, one can run the CLI tools as usual.

There are several command line tools available in SUSE Multi-Linux Manager. Every action that can be completed using the Web UI can be performed at a command prompt instead. Additionally, there are some actions that can only be performed at the command prompt.

Manage package and channel synchronization with:

- `spacewalk-repo-sync`
- `mgr-sync`

Manage bootstrapping with:

- `mgr-create-bootstrap-repo`

Manage the database with:

- `smdba`

Some of these command line tools are installed by default. To install a command line tool, you can use the SUSE Multi-Linux Manager Web UI, or use your package manager at the command prompt.

### Procedure: Installing Command Line Tools with the WebUI

1. In the SUSE Multi-Linux Manager Web UI, navigate to **Systems › System List**, select the client to install the tool on, and navigate to the **Software › Packages › Install** sub-tab.
2. Use the search tool to search for the command line tool you want to install.
3. Check the package to install, and click **[Install Selected Packages]**.
4. Click **[Confirm]** to begin installation.

### Procedure: Installing Command Line Tools from the Command Prompt

1. On the client that you want to install the packages on, at the command prompt, as root, use `zypper` to install the package:

```
zypper in <CLI_TOOL_NAME>
```

## 4.1. Synchronization CLI Tools



- To access a shell inside the Server container, run `mgrctl term` on the container host. From there, one can run the CLI tools as usual.

There are two tools for synchronizing clients to the server. For clients that are connected to the SUSE Customer Center, use `mgr-sync`. For all other clients, use `spacewalk-repo-sync`.

### 4.1.1. Synchronize SCC Repositories With `mgr-sync`

The primary use of `mgr-sync` is to connect to the SUSE Customer Center, retrieve product and package information, and prepare channels for synchronization with the SUSE Multi-Linux Manager Server.

This tool is designed for use with a SUSE support subscription. It is not required for open source distributions, including openSUSE, CentOS, and Ubuntu.

The available commands and arguments for `mgr-sync` are listed in this table. Use this syntax for `mgr-sync` commands:

```
mgr-sync [-h] [--version] [-v] [-s] [-d {1,2,3}] {list,add,refresh,delete}
```

**Table 38. `mgr-sync` Commands**

Command	Description	Example Use
list	List channels, organization credentials, or products	<code>mgr-sync list channels</code>
add	Add channels, organization credentials, or products	<code>mgr-sync add channel &lt;channel_name&gt;</code>
refresh	Refresh the local copy of products, channels, and subscriptions	<code>mgr-sync refresh</code>
delete	Delete existing SCC organization credentials from the local system	<code>mgr-sync delete credentials</code>
sync	Synchronize specified channel or ask for it when left blank	<code>mgr-sync sync channel &lt;channel_name&gt;</code>

To see the full list of options specific to a command, use this command:

```
mgr-sync <command> --help
```

**Table 39. `mgr-sync` Optional Arguments**

Option	Abbreviated option	Description	Example Use
help	h	Display the command usage and options	<code>mgr-sync --help</code>
version	N/A	Display the currently installed version of mgr-sync	<code>mgr-sync --version</code>
verbose	v	Provide verbose output	<code>mgr-sync --verbose refresh</code>
store-credentials	s	Store credentials a local hidden file	<code>mgr-sync --store-credentials</code>
debug	d	Log additional debugging information. Requires a level of 1, 2, 3. 3 provides the highest ammount of debugging information	<code>mgr-sync -d 3 refresh</code>
no-sync	N/A	Use with the add command to add products or channels without beginning a synchronization	<code>mgr-sync --no-sync add &lt;channel_name&gt;</code>

Logs for mgr-sync are located in:

- `/var/log/rhn/mgr-sync.log`
- `/var/log/rhn/rhn_web_api.log`

## 4.1.2. Synchronize Repositories with spacewalk-repo-sync

The spacewalk-repo-sync tool synchronizes software repositories into SUSE Multi-Linux Manager channels. In most cases, this happens automatically, but you can use the tool to run it manually if required.

The spacewalk-repo-sync tool has these primary commands:

**Table 40. spacewalk-repo-sync Options**

Option	Description	Example Use
list	List all custom channels and the repositories assigned to them.	<code>spacewalk-repo-sync --list</code>

Option	Description	Example Use
channel	Synchronize a single channel to all repositories assigned to it.	spacewalk-repo-sync --channel <custom-channel>
deep-verify	ignore cached package checksums.	spacewalk-repo-sync --deep-verify
force-all-errata	force re-importing all the patches.	spacewalk-repo-sync --deep-verify
no-packages	excludes packages from the operation.	spacewalk-repo-sync --deep-verify --no-packages

For a complete list of options, see the `spacewalk-repo-sync` manpage:

```
man spacewalk-repo-sync
```

### 4.1.3. Troubleshooting Synchronization

If you are having trouble synchronizing with `spacewalk-repo-sync` you can find out more by watching the HTTP log as the command runs.

#### Procedure: Troubleshooting Synchronization Problems

1. Log the HTTP output into `/var/log/zypper.log`:

```
ZYPP_MEDIA_CURL_DEBUG=2 spacewalk-repo-sync --channel <channel-label>
```

2. Export the setting:

```
export URLGRABBER_DEBUG=DEBUG
```

3. Start the synchronization:

```
/usr/bin/spacewalk-repo-sync --channel <channel-label> --type yum
```

You can increase the debug level, by adding the `[option]``-vvv``` option to the command.

4. When the complete completes, or fails, disable debug mode:

```
unset URLGRABBER_DEBUG
```

### 4.1.3.1. Add Custom Extra HTTP Headers

You can add custom HTTP headers to the requests made by `spacewalk-repo-sync` at the time of synchronization. The custom HTTP headers are defined in the `/etc/rhn/spacewalk-repo-sync/extra_headers.conf` configuration file. The headers can be defined by repository name or channel label. You can also define global headers by putting them in the main section. For example:

```
[testchannel]
X-MY-HEADER-1=VALUE
X-MY-HEADER-2=VALUE

[mychannel]
X-MY-HEADER-3=VALUE
X-MY-HEADER-4=VALUE

[main]
X-MYGLOBAL-HEADER=VALUE
```

This can be particularly useful when dealing with Red Hat Update Infrastructure (RHUI) repositories in the public cloud.

## 4.2. Channel Management CLI Tools



- To access a shell inside the Server container, run `mgrctl` term on the container host. From there, one can run the CLI tools as usual.

There are tools for managing channels on the server. With `spacewalk-remove-channel`, list and delete channels in various ways.

### 4.2.1. Manage Channels with `spacewalk-remove-channel`

Usage: `spacewalk-remove-channel` [options]

The use of `spacewalk-remove-channel` is to remove channels in various ways.

The available commands and arguments for `spacewalk-remove-channel` are listed in this table. Use this syntax for `spacewalk-remove-channel` commands:

```
spacewalk-remove-channel [options]
```

The `spacewalk-remove-channel` tool has these primary commands:

#### Table 41. `spacewalk-remove-channel` Options

Option	Description	Example Use
list	List defined channels and exit.	spacewalk-remove-channel --list
channel	Delete this channel (can be present multiple times).	spacewalk-remove-channel --channel=CHANNEL
channel-with-children	Delete this channel and its child channels (can be present multiple times).	spacewalk-remove-channel --channel-with-children=CHANNEL_WITH_CHILDREN
unsubscribe	Unsubscribe systems registered to the specified channels. Note: Credentials are needed	spacewalk-remove-channel --unsubscribe
justdb	Delete only from the database, do not remove files from disk.	spacewalk-remove-channel --justdb
just-kickstart-trees	Remove only the kickstart trees for the channels specified.	spacewalk-remove-channel --just-kickstart-trees
skip-channels	Remove only packages from channel not the channel itself.	spacewalk-remove-channel --skip-channels

For a complete list of options and abbreviated options, see the `--help` output or the `spacewalk-remove-channel` manpage:

```
man spacewalk-remove-channel
```

For more information, see **Administration › Removing-channels**.

## 4.3. Bootstrapping Command Line Tools



To access a shell inside the Server container run `mgrctl term` on the container host. From there, one can run the CLI tools as usual.

The `mgr-create-bootstrap-repo` tool allows you to create a bootstrap repository.

Use the `mgr-create-bootstrap-repo` command on the SUSE Multi-Linux Manager Server to create a new bootstrap repository. The `-l` option lists all available repositories:

```
mgr-create-bootstrap-repo -l
```

Give the repository name to create the bootstrap repository you require:

```
mgr-create-bootstrap-repo <repo-name>
```

You can also create a new bootstrap repository from a custom channel, with the `--with-custom-channels` option:

```
mgr-create-bootstrap-repo --with-custom-channels
```

If you create a bootstrap repository that contains custom channels, and later attempt to rebuild with the `mgr-create-bootstrap-repo` command, the custom channel information will remain in the bootstrap repository. To remove custom channel information from your bootstrap repository, use the `--flush` option when you rebuild:

```
mgr-create-bootstrap-repo --flush
```



---

## Chapter 5. 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. Secondly, 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 "GNU Free Documentation License".