

# HP Server Automation

*Ultimate Edition*

Software Version: 10.20

## User Guide: Chef Cookbook Management

Document Release Date: December 12, 2014

Software Release Date: December 12, 2014



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  - d Enter your keyword and click Search.

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## Product Editions

There are two editions of Server Automation:

- Server Automation (SA) is the Ultimate Edition of Server Automation. For information about Server Automation, see the SA Release Notes and the SA User Guide: Server Automation.
- Server Automation Virtual Appliance (SAVA) is the Premium Edition of Server Automation. For more information about what SAVA includes, see the SAVA Release Notes and the SAVA at a Glance Guide.

## Documentation Change Notes

The following table indicates changes made to this document since the last released edition.

<b>Date</b>	<b>Changes</b>
May 2014	Pre-released draft for bootcamp
July 2014	Original release of this document with SA 10.1.



# Contents

<b>1</b>	<b>Getting Started with Chef Cookbooks in SA</b> .....	9
	Overview of Chef Cookbooks in SA .....	9
	Setting up your SA Environment to Handle Chef Cookbooks .....	9
	Required User Group Permissions.....	9
	Enabling an SA Server to Run Chef Recipes by Installing the chef-solo Policy.....	9
	Attach the chef-solo Policy to the Servers .....	11
	Remediate Servers to Deploy the chef-solo Policy .....	12
	Chef-supported Platforms .....	13
	Downloading Cookbooks from the Chef Community.....	14
	chef-solo Bundle Configuration in SA.....	14
	chef-solo configuration file—solo.rb.....	14
	Unix solo.rb Parameters .....	14
	Windows solo.rb Parameters.....	15
	Package Repository for Chef .....	15
	Specifying the Package Repository for Chef.....	15
	Localization Support for Chef Recipes .....	16
<b>2</b>	<b>Chef Management</b> .....	17
	Using Chef Cookbooks and Recipes in SA.....	17
	Uploading Chef Cookbooks to SA .....	17
	Importing a Chef Cookbook from the SA Client .....	18
	Uploading Chef Cookbooks from the SA Command Line Interface (CLI) .....	20
	Cookbook Versioning .....	21
	Managing Chef Cookbooks in SA .....	21
	Accessing Chef Cookbooks from the SA Client .....	21
	Viewing Cookbook Details in SA Client.....	22
	Editing Chef Cookbook Properties .....	23
	Running Chef Recipes .....	24
	Customizing a Run Chef Recipe Job.....	27
	Retain Job Output.....	28
	Log Files on the SA Managed Server .....	28
	Job Results Fields Examples 29	
	Job Results Fields Defined 30	
	Blocking a Run Chef Recipe Job .....	30
<b>A</b>	<b>Chef Cookbook Management Permissions</b> .....	31
	Permissions for Running a Chef Recipe from a Cookbook with No Dependencies .....	31
	Permission Management for Cookbooks with Dependencies .....	32
	Multi-tenancy .....	33





# 1 Getting Started with Chef Cookbooks in SA

## Overview of Chef Cookbooks in SA

You can now use SA to view and manage Chef Cookbooks and run Chef Recipes. Server Automation 10.1 supports native Chef Cookbooks in the following ways:

- Uploading Chef Cookbooks to SA
- Managing Chef Cookbooks from SA
- Running Chef Recipes from SA

This document describes how to perform these Chef-related activities in SA.

- See the Opscode documentation for explanations about Chef content and framework:  
<http://docs.opscode.com/>

## Setting up your SA Environment to Handle Chef Cookbooks

### Required User Group Permissions

SA provides user group *Chef Group* out of the box with all the necessary action permissions.

In addition to having the required action permissions, the user must be assigned the appropriate resource and folder permissions.

- For detailed guidelines of the permissions for managing Chef Cookbooks, see [Chef Cookbook Management Permissions](#).

### Enabling an SA Server to Run Chef Recipes by Installing the chef-solo Policy

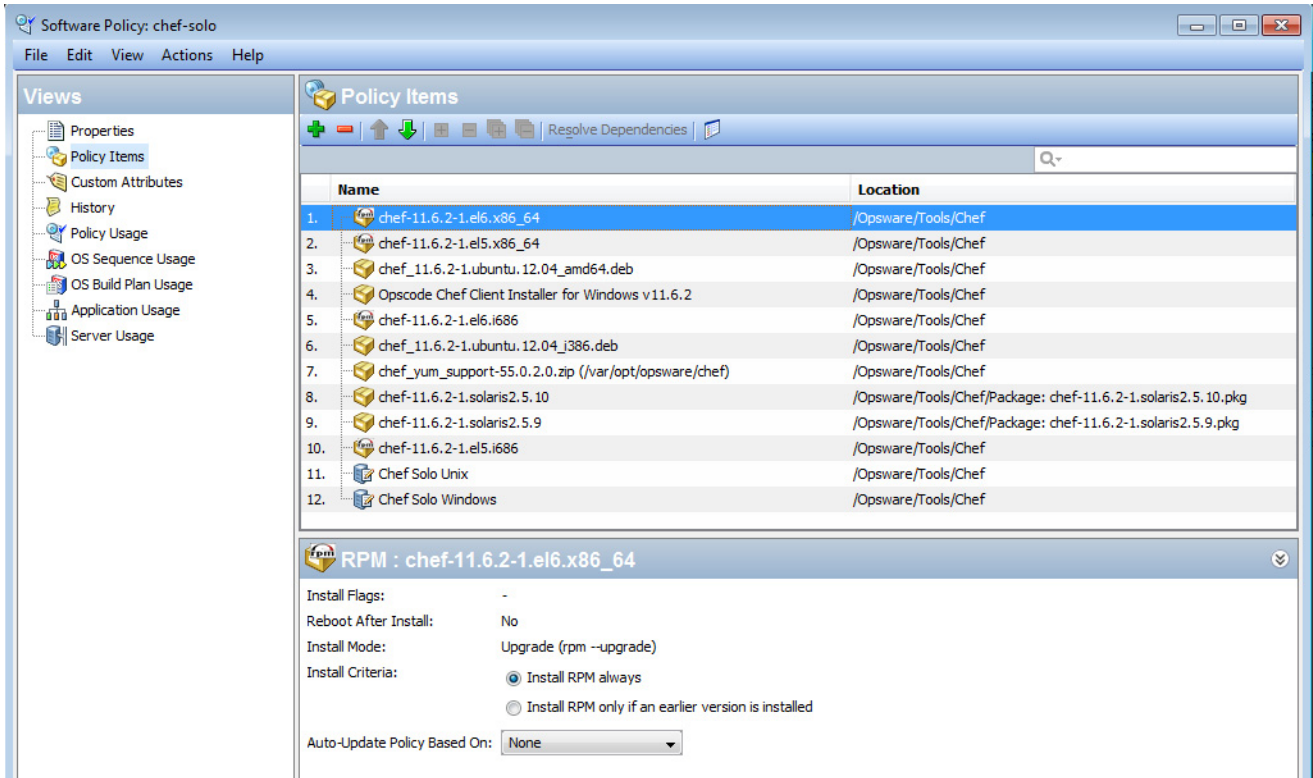
In order to run Chef Recipes on an SA Agent-managed server, you must first deploy the Chef runtime environment on the server.

- An SA Agent-managed server is a server that is managed by an SA Agent. There are multiple ways to deploy a managed server in SA, such as by SA Agent or a virtualization service. To run Chef Recipes, the servers must be managed by the SA Agent.

SA 10.1 ships with a single chef-solo bundled software policy that can be run on any supported server platform to enable the Chef Runtime Environment.

The chef-solo bundled policy contains the same open source Chef Client installers for each chef-supported platform that can be downloaded from the Chef Community, as well as two Application Configurations for the supported platform families: Chef Solo Unix and Chef Solo Windows. This policy is provided directly in SA for your convenience.

**figure 1 chef-solo bundled policy**



After the Chef Runtime Environment is enabled on a server, that server can handle running Chef Recipes.

To implement this policy on a server, attach it to the desired server and remediate the server. The chef-solo bundled software policy will recognize the OS and platform of the server and deploy the correct package and Application Configuration on the server. This means that you do not need to find and select individual Chef Client installation packages for each server; the one bundled software policy contains them all and deploys the items that are required.

To deploy the chef-solo policy and enable the Chef Runtime Environment:

- 1 Attach the chef-solo Policy to the Servers.

Use your preferred method:

- Method 1: To attach server(s) or device group(s) to the chef-solo policy
- Method 2: To attach the chef-solo policy to server(s) or device group(s)

- 2 Remediate Servers to Deploy the chef-solo Policy.

This will install the correct Chef Client installation package and Application Configuration on each of the attached servers.

These steps are described below.

## Attach the chef-solo Policy to the Servers

### Method 1: To attach server(s) or device group(s) to the chef-solo policy

- 1 From the SA Client navigation pane, select **Library > By Type > Software Policies**.
  - a A list of supported operating systems appears in the content pane. Select the desired OS and platform to display the available software policies in the content pane.
  - b You may have to drill down the hierarchy a few levels to see the list of software policies.
  - c See [Chef-supported Platforms](#) on page 13 for a list of platforms with a Chef Client installer.
- 2 Select the chef-solo software policy. The policy details will appear in the lower pane.
- 3 From the Actions menu, select **Attach....** The Attach Server window appears.

(Optional) Enable **Remediate Servers Immediately** to remediate the attached servers against the software policy.
- 4 Navigate to the list of managed servers or device groups:
  - a Select **All Managed Servers** to view the server list.  
Or
  - b Select **Device Groups** to view the device group list.
- 5 From the content pane, select the desired servers or device groups.



Only agent-managed servers can be used to run the Chef Recipes, so you must select SA Agent-managed servers or device groups containing agent-managed servers.

- 6 Click **Attach**. The Remediate window will appear.

### Method 2: To attach the chef-solo policy to server(s) or device group(s)

- 1 From the SA Client navigation pane, access the list of managed servers or device groups:
  - a Select **Devices > Servers > All Managed Servers** to view the server list.  
Or
  - b Select **Devices > Device Groups** to view the device group list.
- 2 From the content pane, select the servers or device groups.
- 3 From the **Actions** menu, select **Attach > Software Policy**. The Attach Software Policy window appears.

(Optional) Select **Remediate Servers Immediately** to remediate the servers against the software policy.
- 4 Select the **Browse Software Policies** tab to view a flat list of software policies.
- 5 Select the **chef-solo** policy.
- 6 Click **Attach**. The Remediate window will appear.

## Remediate Servers to Deploy the chef-solo Policy

To remediate the servers to deploy the chef-solo policy:

- 1 Access the Remediate window from the server list or from the policy view:

There are two ways to access the remediate window. Each is described below.

- a To access the Remediate window from the server list:

- From the SA Client navigation pane, access the list of managed servers or device groups:  
Select **Devices > Servers > All Managed Servers** to view the server list.

Or

- Select **Devices > Device Groups** to view the device group list.

- Select the server(s) or device group(s) you want to remediate.



Only agent-managed servers can be used to run the Chef Recipes, so you must select SA Agent-managed servers or device groups containing agent-managed servers.

- From the **Actions** menu, select **Remediate....**

- b To access the Remediate window from the software policy list:

- From the SA Client navigation pane, select **Library > By Type > Software Policies**.

Select the desired OS and platform to display the available software policies in the content pane. (You may have to drill down the hierarchy a few levels to see the list of software policies.)

See [Chef-supported Platforms](#) on page 13 for a list of platforms with a Chef Client installer.

- Select the **chef-solo** software policy. The policy details will appear in the lower pane.

- Select **View > Server Usage**. A list of the servers attached to this policy appears in the lower pane.



- Select a server or multiple servers, and then select **Remediate...** from the **Actions** menu.

- 2 From the Remediate window, you can specify the remediation job options, run the job, and view the job status. The navigation pane in the Remediate window walks you through the following standard remediation steps.

In each step, review and modify the settings as desired and click **Next** to proceed through the steps.

(See the *User Guide: Software Management* for additional details about these options.)

### Step 1: Select Servers and Policies for Remediation

- This option will reflect the server(s) you selected in step 1. You can modify your selection within the job as well using the  and  icons to add or remove selected servers.
- You can click **Start Job** at any point after Step 1 to run the remediation job. However, it is recommended that you review the optional settings before running the job.

### Step 2 (Optional): Specify Reboot, Error Handling, and Script Options for Remediation

- In the **Reboot** section, you can control when to reboot servers during the **chef-solo** Client Package installation or uninstallation.
- In the **Error Handling** section, specify if you want to skip error handling when possible to minimize downtime.
- In the **RPM Rollback** section, select the Create RPM Rollback point option to set the current server state as a rollback point. This preserves the current state in case you want to restore it later if something about a subsequent update fails.



This option is only available and relevant on certain Linux servers.

- In the **Scripts** section, specify if you want any scripts to run on a server before or after installation or uninstallation. You can specify different scripts on each of the four tabs in this section:
  - Pre-Download (Installation Only)
  - Post-Download (Installation Only)
  - Pre-Install/ Pre-Uninstall
  - Post-Install/ Post-Uninstall

### Step 3 (Optional): Preview the Remediation Job

You can preview a detailed list of actions that will be performed on a server as a result of the software remediation job. Information is displayed for each server or device group where the job will be run.

### Step 4 (Optional): Schedule the Remediation Stages

The remediation process has three stages: 1) Analysis, 2) Download, and 3) Remediate. You can schedule specific times to run each stage, or set each stage to run immediately after the previous one completes.

### Step 5 (Optional): Set E-mail Notifications for Remediation

Set e-mail notifications to alert you or other users on the success or failure of the remediation process. You can associate a Ticket ID to identify and track this job.

### Step 6: Run the Remediation Job and View Job Status

- When you are satisfied with the job settings, click **Start Job** to run the remediation job.
- When you run the remediation job, the Job Status window provides summary information about the job progress. You can also view the status of each action required to complete the job.

## Chef-supported Platforms

See the *SA Support and Compatibility Matrix* for SA-supported managed server platforms. See the Chef Community (<http://community.opscode.com/>) for Chef Client supported platforms.

## Downloading Cookbooks from the Chef Community

Download the desired Chef Cookbooks from the Chef Community to your local machine to upload to SA.

- 1 Point your browser to the Chef Community portal: <http://community.opscode.com/>
- 2 Select a Chef Cookbook to download.
- 3 Click Download and browse to a local directory to store the cookbook.
- 4 Follow the on-screen instructions to complete the download.

After downloading the cookbooks to your local machine, you can upload them to SA and manage their usage. For details, see [Using Chef Cookbooks and Recipes in SA](#) on page 17.

## chef-solo Bundle Configuration in SA

The Chef standalone client, chef-solo, is installed and configured in SA by remediating the platform-independent software policy by the same name, chef-solo, located in folder /Opware/Tools/ Chef. The chef-solo bundled software policy contains the platform installers for the platforms supported both by SA managed servers and Chef.

▶ See [Enabling an SA Server to Run Chef Recipes by Installing the chef-solo Policy](#) on page 9 for details on the installation procedure.

The remainder of this topic section describes the configuration of the chef-solo configuration file, 'solo.rb', in SA.

### chef-solo configuration file—solo.rb

Where the chef-solo configuration file is stored depends on the operating system of the server:

- **Unix:** /etc/opt/opsware/chef/solo.rb
- **Windows:** C:\Program Files\Common Files\Opware\etc\chef\solo.rb

This section shows the integration-required parameters that go into the Chef's solo.rb file, per operating system. You can add or remove parameters as needed for your implementation.

### Unix solo.rb Parameters

These parameters will be overridden in SA for Unix managed servers:

setting	default value in SA
cookbook_path	"/var/opt/opsware/chef/cookbooks"
file_backup_path	"/var/opt/opsware/chef/backup"
file_cache_path	"/var/opt/opsware/chef/cache"
node_path	"/var/opt/opsware/chef/node"
role_path	"/var/opt/opsware/chef/roles"

## Windows solo.rb Parameters

These parameters will be overridden in Windows managed servers:

setting	default value in SA
cookbook_path	"C:/Program Files/Common Files/Opware/chef/cookbooks"
file_backup_path	"C:/Program Files/Common Files/Opware/chef/backup"
file_cache_path	"C:/Program Files/Common Files/Opware/chef/cache"
node_path	"C:/Program Files/Common Files/Opware/chef/node"
role_path	"C:/Program Files/Common Files/Opware/chef/roles"



The template namespace is set to /system/chef and the filename key to /files/chef/solo\_rb.

## Package Repository for Chef

Package installations in Chef rely on the native package manager to retrieve the packages and dependencies from the configured repositories. This requires that the managed server be connected to the internet directly or through an internet proxy.

If SA is deployed in an air-gapped environment, the only source of package content is the SA Software Repository. In this case, the package managers (PKGMR) on the managed servers need to be configured to use the Software Repository as a package repository for Chef.

### Specifying the Package Repository for Chef

This section describes how to make the Chef content (recipes) search for packages inside SA instead of the Internet.



To perform this task, the system administrator must belong to a user group with the appropriate permissions to edit System Configuration Settings.



Editing SA System Configuration settings is discouraged unless you have approval from HP Support to make a specific change. Changes to the System Configuration settings can have adverse effects on all SA operations and cannot always be resolved. You may perform this specific task as explicitly stated, but do not change any other System Configuration settings without the express instructions from HPSA Support.

To modify the package repository setting:

- 1 Log in to the SA Client as an Opware System Administrator.
- 2 Navigate to system configuration settings for the Command Engine:  
**Administration > System Configuration > Command Engine**
- 3 Search for 'way.chef.package\_repository'.

4 Enter the configuration state that works for your environment:

**0:** SA package repository only (default)

**1:** Both the SA package repository and external repositories configured on the managed server

**2:** Repositories configured on the managed server only



Setting SA as the package repository for Chef works only for managed servers that use yum as their package manager.

## Localization Support for Chef Recipes

SA supports recipes that are localized. It does not support non-ASCII-based names for cookbooks or recipes.



# 2 Chef Management

## Using Chef Cookbooks and Recipes in SA

This section describes how to use and manage Chef Cookbooks and Recipes in SA.

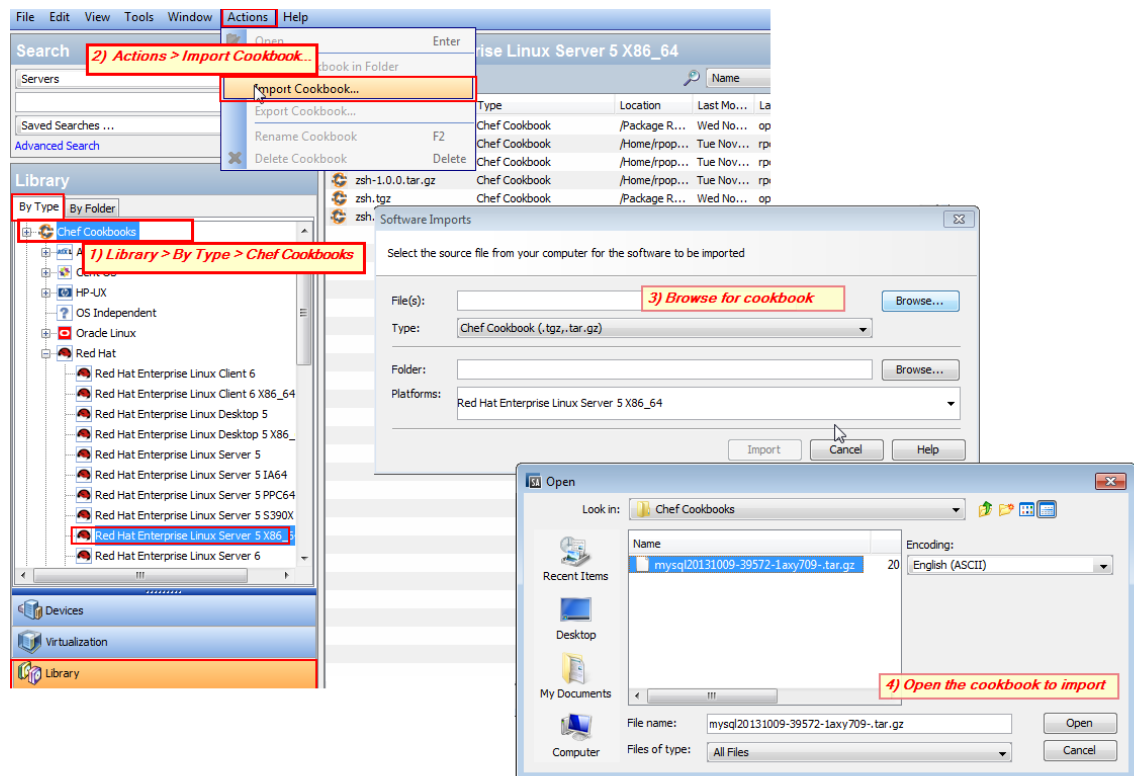
- ▶ HP does not provide Chef content. The Chef Cookbooks can be downloaded from the Chef Community portal, any other source provider, or can be created by software developers. See the Opscode documentation for explanations about Chef content and framework:

<http://docs.opscode.com/>

## Uploading Chef Cookbooks to SA

SA supports uploading Chef Cookbooks to SA the same way you would import any software package. You can import from the SA Client or from the SA Command Line Interface (CLI).

figure 2 primary method for uploading chef cookbooks to SA



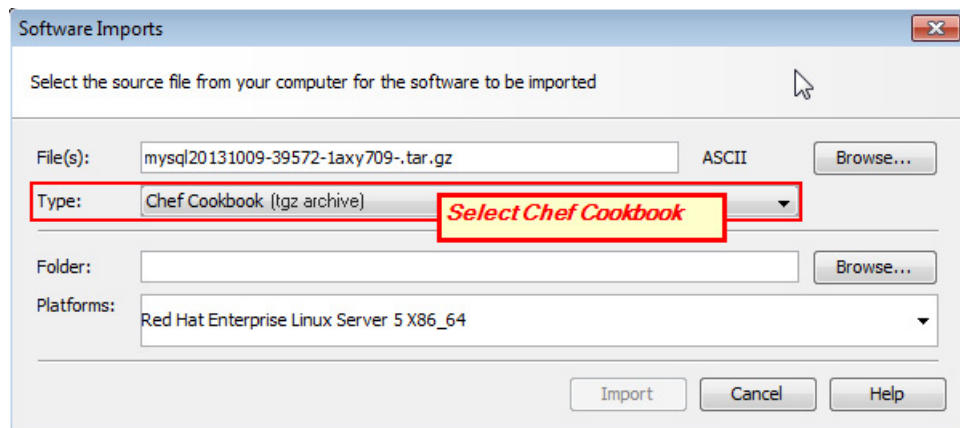
See the *User Guide: Software Management* for additional details about the software import task in SA.

## Importing a Chef Cookbook from the SA Client

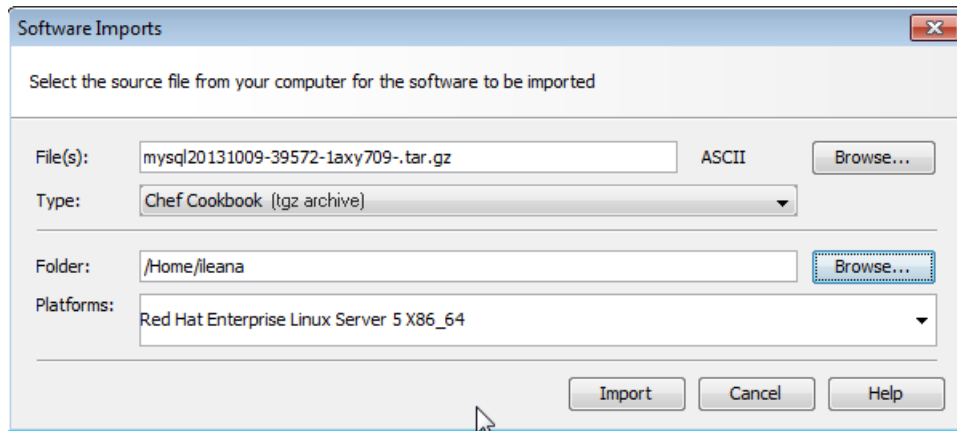
Importing cookbooks in the SA Client is the same process as importing other packages. It is important to select “Chef Cookbook” file type during the import.

To import a Chef Cookbook from the SA Client:

- 1 Find and select the desired import destination for the Chef Cookbook using one of the following methods. All of these methods start from the Library tab in the SA Client:
  - a Method 1: **Library > By Type > Chef Cookbooks.**
    - Find and open the operating system where the Chef Cookbook(s) should be imported.
    - Select **Actions > Import Cookbook...**
  - b Method 2: **Library > By Type > Packages.**
    - Find and open the operating system where the Chef Cookbook(s) should be imported.
    - Select **Actions > Import Software...**
  - c Method 3: **Library > By Folder.**
    - Find and open the folder in which the Chef Cookbook(s) should be imported.
    - Select **Actions > Import Software...**
- 2 In the **File(s)** section of the Software Imports window:
  - a Click **Browse** to locate the Chef Cookbook(s) to import.
  - b Select the cookbook(s) to import.
  - c Click **Open**.
  - d Select *Chef Cookbook (tgz archive)* file type from the **Type** drop-down list:



- 3 In the **Folder** section of the Software Imports window, click **Browse** to select the destination folder location.



- a From the **Platform** drop-down list, select the applicable operating systems or operating system families.



**Best Practice:** Associate a cookbook with the supported platforms defined by the cookbook metadata. The platform associations for Chef Cookbooks are only guidelines as SA mirrors the behavior of Chef and will run the Recipe on any chosen server.



When viewing cookbooks on the Chef Community portal (<http://community.opscode.com/>), the supported platforms are indicated on the download page and in the cookbook metadata file (metadata.rb). To view the cookbook metadata in SA, see [Viewing Cookbook Details in SA Client](#) on page 22.

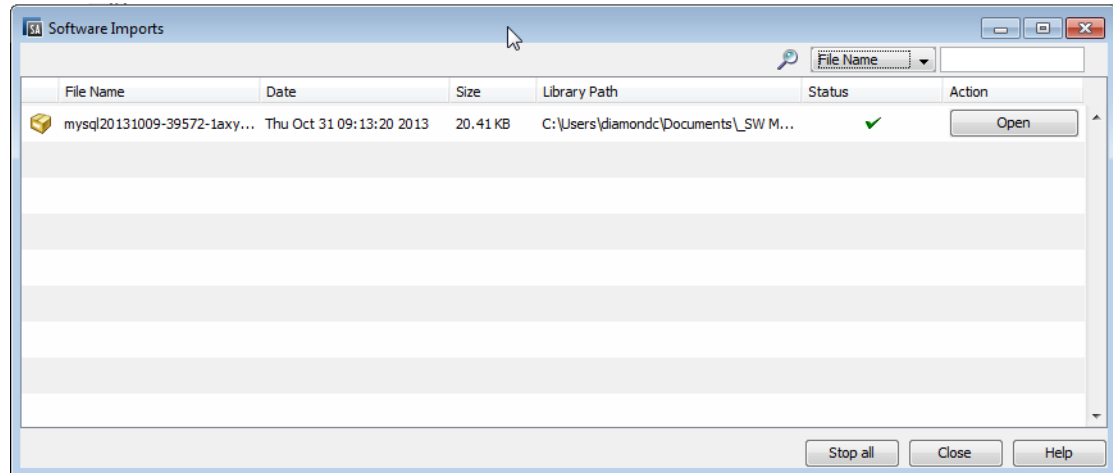
- 4 Click **Import**.

(Optional) If one of the packages you are importing already exists in the folder, you will be prompted with the following options for handling the duplicate file:

You have the following options:

- **Replace:** Replace (overwrite) the contents of the existing file.
- **Replace All:** When there are multiple existing files with the same name as the file you are importing, you can replace (overwrite) the contents of all the existing file.
- **Skip:** Skip the replacement of a single file. If you have multiple existing files with the same name as the files you are importing, you can select which files to skip or not. Skipping the import of a file does not affect other files with different names if you are importing multiple files. Only the specified file(s) will be skipped, the other specified files will be imported.
- **Skip All:** All specified files with the same name as the file you are importing will be skipped and not replaced.
- **Cancel:** Cancels the Import Packages operation entirely. No files are imported.
- **Help:** Provides online help for the current dialog.

- View the progress of the importing files in the Software Imports window while the import is underway, the Software Imports window displays the details and progress of the import. This window displays all the imports made within the session.



## Uploading Chef Cookbooks from the SA Command Line Interface (CLI)

Importing cookbooks via the SA CLI is the same process as importing other packages. It is important to specify “Chef Cookbook” file type during the import.



To perform SA CLI commands, your login must have the appropriate authorizations to run `upload` or `download`. For information on permissions, see the *SA Administration Guide*.



See the *SA User Guide: Server Automation* for additional details about SA CLI commands. See the *SA User Guide: Software Management* for information specific to different package types.

### To Upload Chef Cookbooks from the SA Command Line Interface (CLI)

The `upload` command has the following syntax. The `filenames` can contain a relative or absolute local file or directory path. If an option value contains spaces, enclose the value in quotes.

```
upload [options] filenames
```

- To upload a Chef Cookbook, specify the package type, “Chef Cookbook” in quotes or just `CHEF_COOKBOOK`, without quotes.

For example:

```
[root@cbt1 ~]# /opt/opsware/ocli/ocli/bin/upload.sh --os "Red Hat
Enterprise Linux Server 6" --pkgtype "Chef Cookbook" --folder "Package
Repository" ./ntp20131006.tar.gz
```

where `./ntp20131006.tar.gz` is the local relative path to the cookbook you are uploading to the SA folder “Package Repository.” In this example, the command is performed from one of the SA Core servers.

- When prompted, enter the username and password of an SA user with the appropriate authorizations.
- If the file already exists, in the specified location, you will be prompted with the option to overwrite the file. Enter “y” to overwrite it or “n” to cancel the action:

```
ntp20131006.tar.gz already exists. overwrite? [y,n]: y
```

- “COMPLETE” will appear on the command line to notify you when the process is complete:

```
Package Repository/./ntp20131006.tar.gz: COMPLETE
[root@core-20 install_opsware]#
```

## Cookbook Versioning

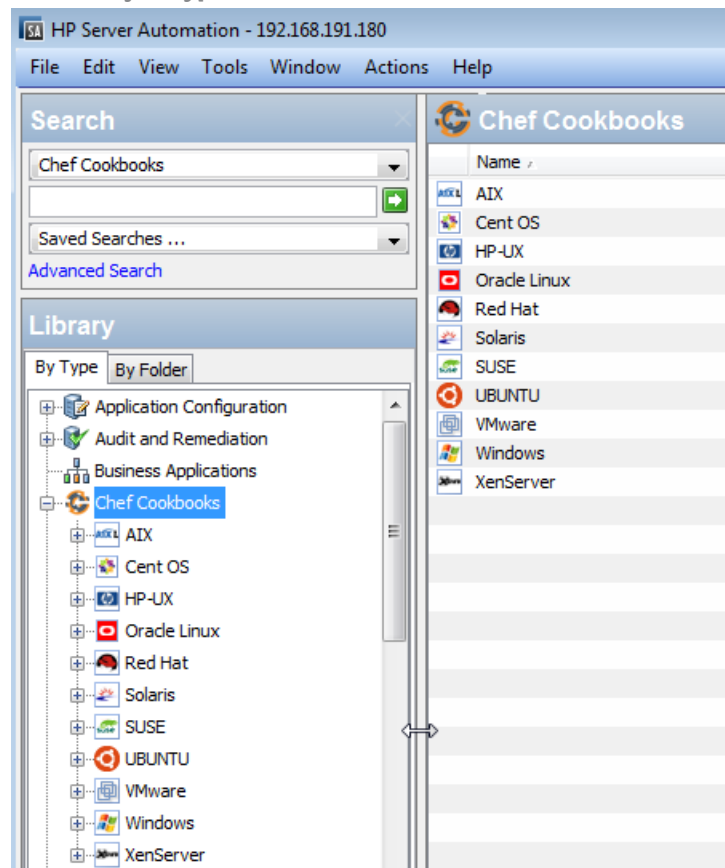
SA stores cookbooks in a folder-like structure and this allows users to upload the same cookbook (name and version) several times by placing it in different folders or in the same folder but with different SA filenames.

In such a case, it is undefined which exact instance of the cookbook will be used at runtime. This will not cause any issues as long as users follow the basic principle that two cookbooks having the same names and versions are identical.

## Managing Chef Cookbooks in SA

### Accessing Chef Cookbooks from the SA Client

figure 3 new SA object type: chef cookbooks



To locate Chef Cookbooks in SA Client By Folder:

- 1 From the navigation pane, select **Library > By Type > Chef Cookbooks**.
- 2 Navigate down the hierarchy by selecting a platform and then a platform version.
- 3 From the content pane, select a cookbook and then select **Locate in Folders** from the **Actions** menu. The folder hierarchy for the policy appears in the content pane.

To locate Chef Cookbooks in SA Client By Type:

- 1 From the navigation pane, select **Library > By Type > Chef Cookbooks**.
- 2 Navigate down the hierarchy by selecting a platform and then a platform version.
- 3 Select a cookbook associated with this specific platform version.

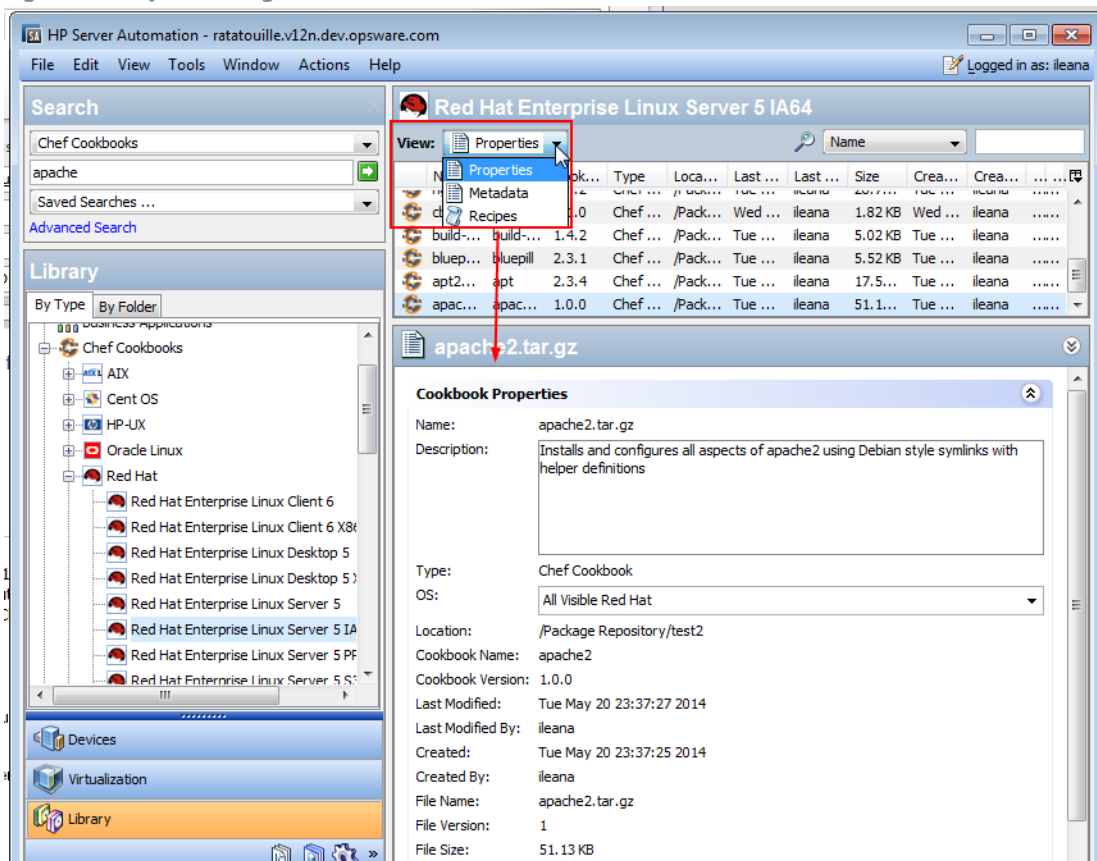
## Viewing Cookbook Details in SA Client

SA provides complete visibility into the properties, metadata, and recipes of the imported cookbooks.

To view cookbook details from the preview pane:

You can access the cookbook details directly from the preview pane when selecting the cookbook:

**figure 4** previewing details of a cookbook from the chef cookbooks list view



To view cookbook details from within the cookbook:

- 1 From the navigation pane, select **Library > By Type > Chef Cookbooks**.
- 2 Navigate down the hierarchy by selecting a platform and then a platform version.
- 3 Select a cookbook associated with this specific platform version.

- 4 From the **Actions** menu, select **Open** to view Cookbook details. There are three views in the Cookbook explorer.
  - a **Properties** (cookbook file information)
  - b **Metadata** (attributes and components of the cookbook)
  - c **Recipes** (the contents of each of the recipes in the cookbook).

## Editing Chef Cookbook Properties

The Cookbook: Properties window in the SA Client allows you to view and edit the properties of a cookbook. You can edit a cookbook's Name, Description, OS, and Location.



Editing cookbook properties can be done only by users that have write permissions for the folder where the cookbook resides.

To edit chef cookbook properties:

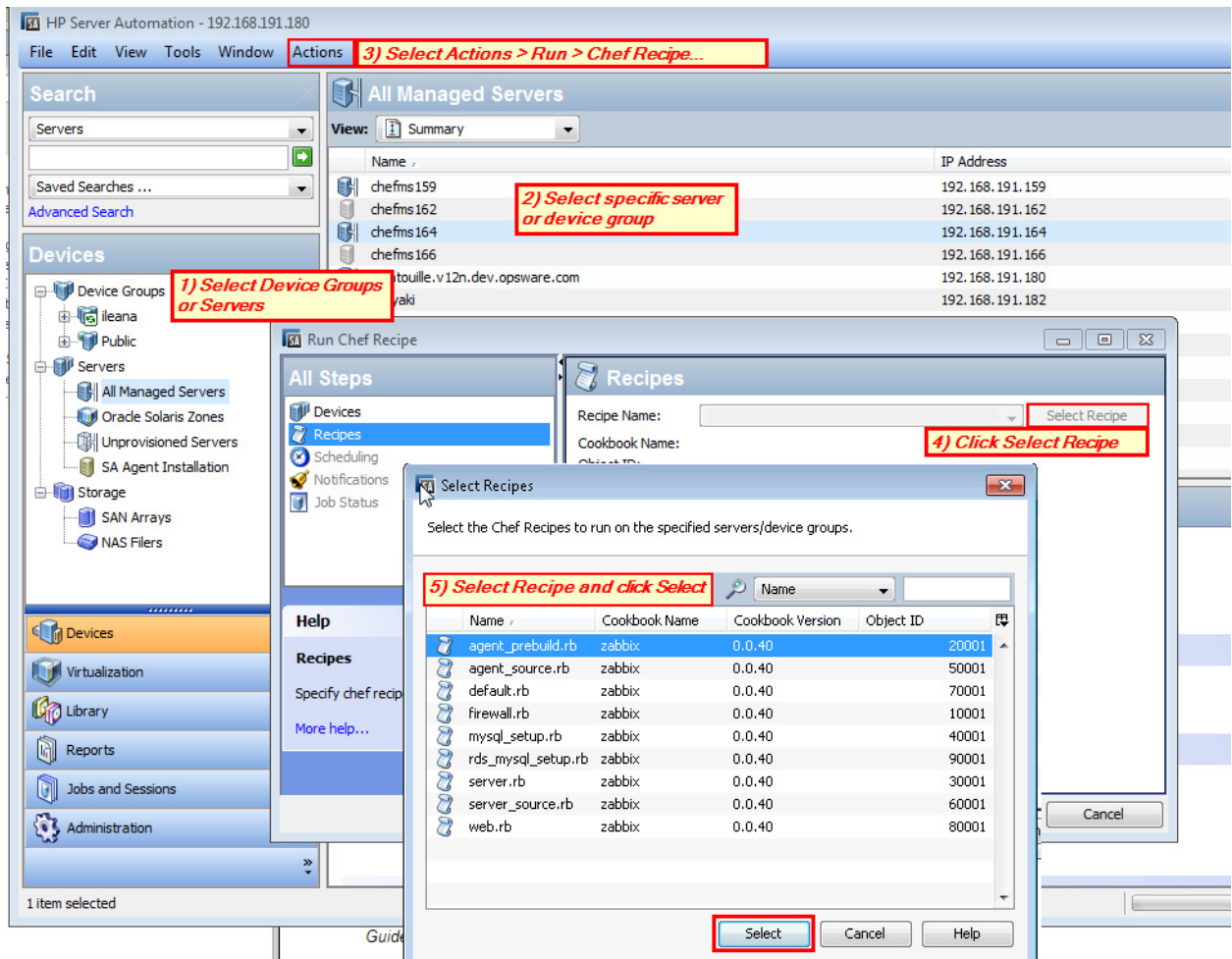
- 1 From the navigation pane, select **Library > By Type > Chef Cookbooks**.
- 2 Navigate down the hierarchy by selecting a platform and then a platform version.
- 3 Select a cookbook associated with this specific platform version.
- 4 From the **Actions** menu, select **Open** to view Cookbook details.
- 5 In the navigation pane, select **Properties** to view cookbook file information.
- 6 Update the editable fields:
  - **Name:** The default name is based on the name of the import file. This is an editable text field.
    - Only the internal SA name of the cookbook is editable; not the native one, so cookbook-dependency resolution is not affected by a rename.
  - **Description:** Enter a meaningful description for the cookbook in the text field
  - **OS:** Click the arrow to select or deselect supported operating systems for this cookbook.
  - **Location:** Click **Select** to navigate to and select the folder path in the SA Library. Navigate to the desired folder location and click **Select** again to make the selection.
- 7 Select **File > Save** to save your changes.

# Running Chef Recipes

After enabling the SA Server to run Chef Recipes, and after importing a Chef Cookbook, you can easily run a Chef Recipe on any Chef-enabled SA managed server.

- ▶ For prerequisite steps, see [Enabling an SA Server to Run Chef Recipes by Installing the chef-solo Policy on page 9](#).

figure 5 running chef recipes on a chef-enabled SA managed server

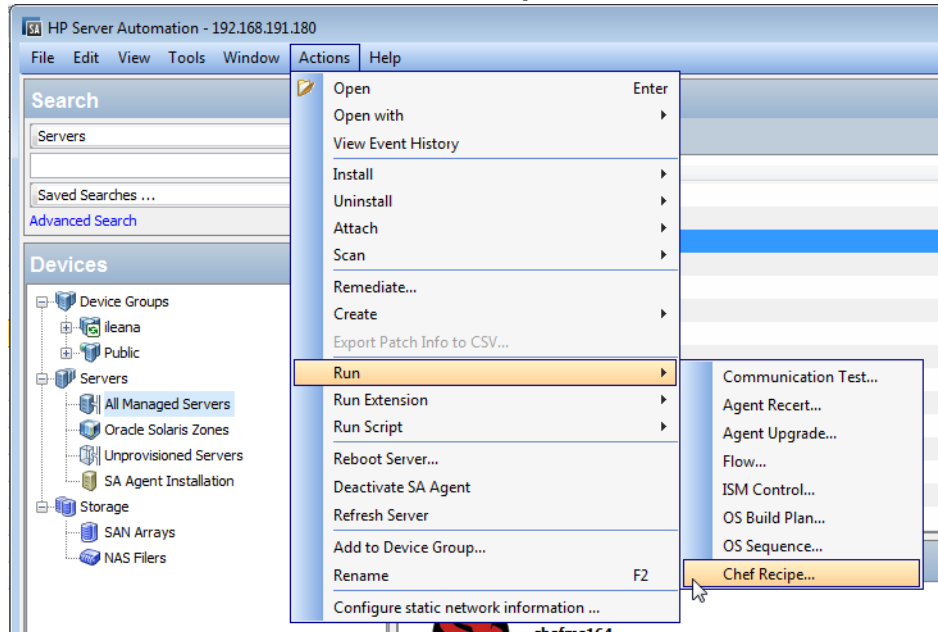


To run Chef Recipes from SA Devices tab:

- 1 From the SA Client navigation pane, access the list of managed servers or device groups:
  - a Select **Devices > Servers > All Managed Servers** to view the server list.  
Or
  - b Select **Devices > Device Groups** to view the device group list.
- 2 From the content pane, select the servers or device groups.



- 3 From the **Actions** menu, select **Run > Chef Recipe**.



- 4 Click **Select Recipe** to find the desired recipe.
- 5 Select the specific Chef Recipe you wish to run and click **Select**.
- 6 From the Run Chef Recipe window, review the additional options:
  - a Scheduling: specify to run the recipe at a schedule time. By default, it will run immediately.
  - b Notifications: specify e-mail notifications be sent when the job succeeds or fails. By default, no e-mails are sent.

➤ You can override the chef command options. For example, you can use the Options window to specify any Runtime or Output options. See [Run Chef Recipe: Options](#) for details.

- 7 When you are satisfied with the job settings, click **Start Job** to run the recipe.

To run Chef Recipes from the SA Library:



You can also run Chef Recipes by selecting the recipe from the SA Library.

- 1 From the SA Client navigation pane, access the list Chef Cookbooks in the SA Library:  
**Library > By Type > Chef Cookbooks**
- 2 Select the platform and version you want.
- 3 From the content pane, select the cookbook you want.
- 4 In the **View** list, select *Recipes*.
- 5 From the list of recipes in the detail pane, select the recipe or recipes that you want to run.

## Library > By Type > Chef Cookbooks:

The screenshot shows the Chef Library interface. On the left, the 'Library' pane is set to 'By Type' and 'Chef Cookbooks' is selected. The main pane shows a list of recipes for 'Red Hat Enterprise Linux Desktop 5 X86\_64'. Below this, a detailed view of the 'zsh\_new.tgz' recipe is shown, listing its components: 'default.rb' (Object ID 220001) and 'uninstall.rb' (Object ID 230001).

6 Select **Action > Run Chef Recipe...**

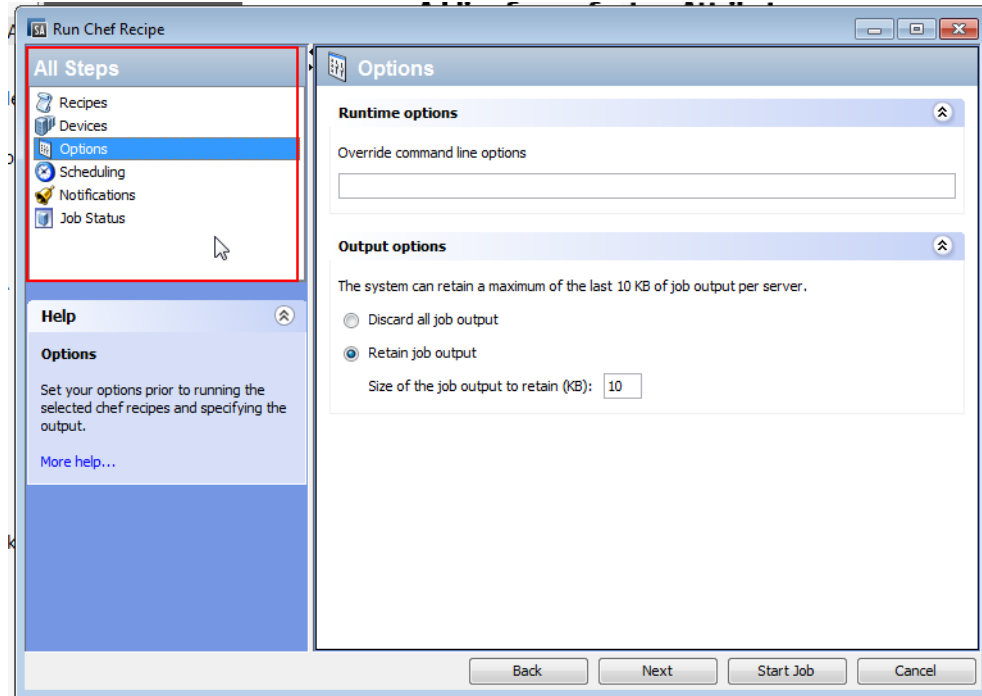
7 In the Recipes step, the selected recipes appear. You can add or remove using the  or  icons.

The **Server group calculation** option enables you to choose whether to calculate the device group servers “Now” or “At runtime.”

The screenshot shows the 'Run Chef Recipe' dialog box. The 'Devices' section is active, showing a table of devices. The 'Server group calculation' option is set to 'At runtime', which is highlighted with a red box. The table lists devices like 'bogdan\_test', 'chefms176', 'cobalt2.cobalt.qa.opswar...', and 'permissions\_read' with their respective OS, Customer, Facility, and Object ID.

- Select “Now” to calculate the servers that comprise the device groups now, while you define the job.
- Select “At runtime” to defer calculating the servers that comprise the selected device groups to when the Run Chef Recipe job is run.

- Step through the additional settings in the Run Chef Recipe window before starting the job:



- In the **Devices** step, select the servers or device groups where you want to run the recipe.
  - In the **Options** step, specify any Runtime or Output options. You can override the chef command options at run time or control whether to retain job output. (See [Run Chef Recipe: Options](#) for details about these settings. See [Retain Job Output](#) for information about how and where the output log files are stored.)
  - In the **Scheduling** step, specify to run the recipe at a schedule time. By default, it will run immediately.
  - In the **Notifications** step, specify e-mail notifications be sent when the job succeeds or fails. By default, no emails are sent.
- When you are satisfied with the job settings, click **Start Job** to run the recipe.

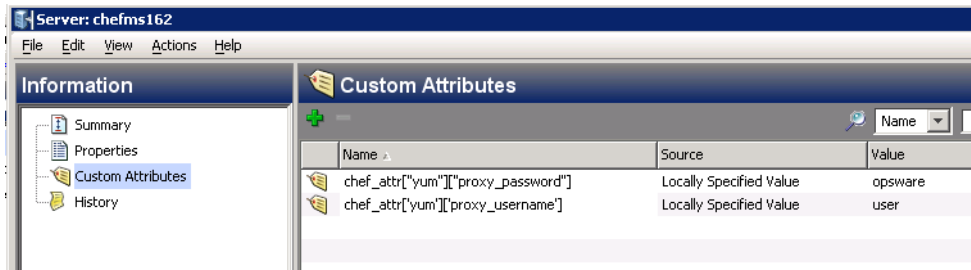
## Customizing a Run Chef Recipe Job

Attributes are a basic concept in Chef and play a crucial role in managing a Chef node (a managed server in SA terminology). Chef attributes have different scopes and sources. See the Chef documentation on attributes.

The SA custom attributes framework provides a way to pass attributes defined in SA at Chef runtime, during a Run Chef Recipe job.

The syntax used to define SA custom attributes for Chef is very similar to the one used to define Chef native attributes: all custom attributes applicable to a managed server (after scope resolution), whose names start with "chef\_attr," will be passed to the Chef runtime.

The following figure is an example of how to override the proxy username and password that will be used by the yum cookbook. Notice that both " and ' can be used as separators. Using ' keeps the look and feel of the community Chef cookbooks:



➤ See the *SA User Guide: Server Automation* for more information about how to use SA Custom Attributes.

## Retain Job Output

This section describes the chef-solo log files on the SA Managed Server and the *retain job output* setting in the Run Chef Recipe job.

### Log Files on the SA Managed Server

There are two log files containing information regarding the chef-solo command execution on SA managed servers:

- **chef.log** - contains the SA log of Run Chef Recipe Jobs and is additive
- **chef-solo.out** - contains the full chef-solo command output for the last job executed on the managed server

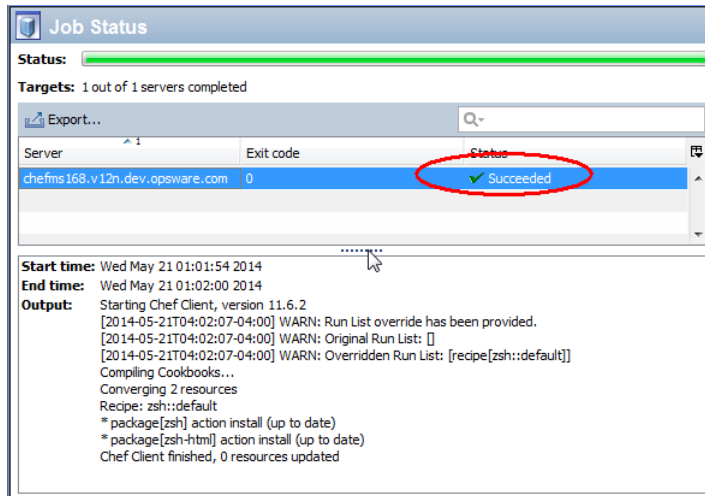
Where the chef-solo log files are stored depends on the operating system of the server:

- **Unix:** /var/log/opsware/agent/
- **Windows:** C:\Program Files\Common Files\Opware\log\agent\

## Job Results Fields Examples

Successful Run Chef Recipe job results display the chef-solo output if the *retain job output* was selected in the job options with a value >0 KB:

figure 6 Successful Job Results:



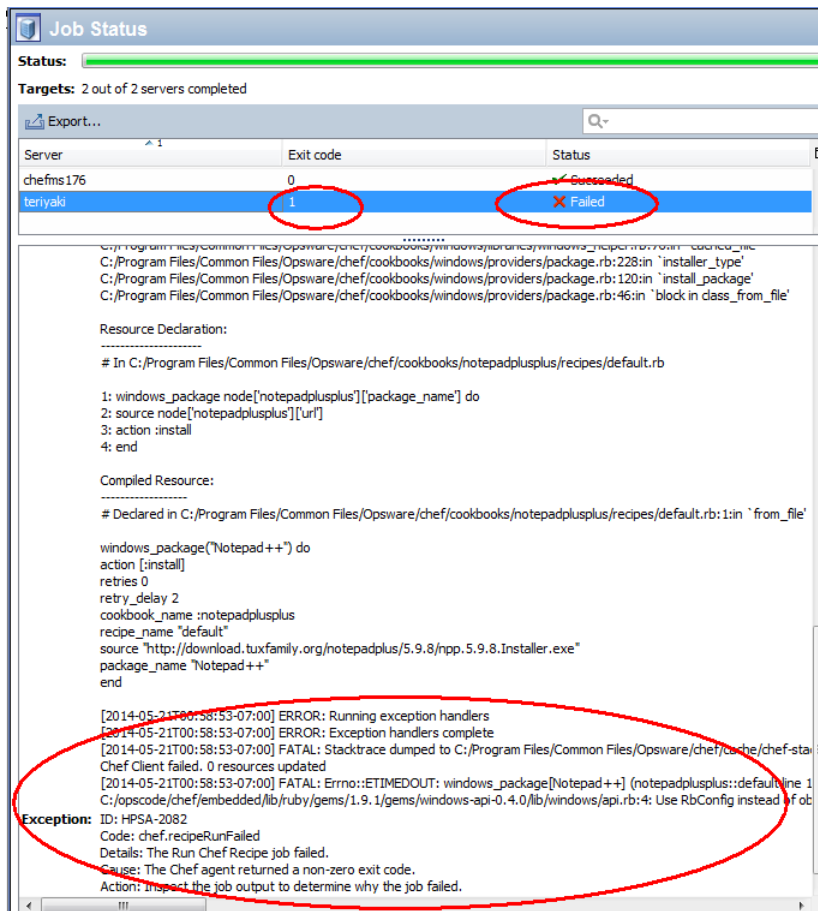
The screenshot shows the 'Job Status' window for a successful run. The status bar is green, and the 'Targets' section indicates '1 out of 1 servers completed'. A table lists the server 'chefms168.v12n.dev.opsware.com' with an exit code of 0 and a status of 'Succeeded', which is circled in red. Below the table, the 'Output' section shows the chef-solo log, including the start and end times and the recipe execution details.

Server	Exit code	Status
chefms168.v12n.dev.opsware.com	0	Succeeded

**Start time:** Wed May 21 01:01:54 2014  
**End time:** Wed May 21 01:02:00 2014  
**Output:**  
Starting Chef Client, version 11.6.2  
[2014-05-21T04:02:07-04:00] WARN: Run List override has been provided.  
[2014-05-21T04:02:07-04:00] WARN: Original Run List: []  
[2014-05-21T04:02:07-04:00] WARN: Overridden Run List: [recipe[zsh::default]]  
Compiling Cookbooks...  
Converging 2 resources  
Recipe: zsh::default  
\* package[zsh] action install (up to date)  
\* package[zsh-html] action install (up to date)  
Chef Client finished, 0 resources updated

If the job failed, the Exception section will state the failure and provide the exit code, the error details and cause, and any action if there is one. This is displayed for all servers that are not successful:

figure 7 Failed Job Results:



The screenshot shows the 'Job Status' window for a failed run. The status bar is green, but the 'Targets' section indicates '2 out of 2 servers completed'. A table lists the servers 'chefms176' (exit code 0, status 'Succeeded') and 'teriyaki' (exit code 1, status 'Failed'), with the '1' and 'Failed' circled in red. Below the table, the 'Exception' section is circled in red, showing the error details for the failed server.

Server	Exit code	Status
chefms176	0	Succeeded
teriyaki	1	Failed

**Exception:**  
ID: HPSA-2082  
Code: chef.recipeRunFailed  
Details: The Run Chef Recipe job failed.  
Cause: The Chef agent returned a non-zero exit code.  
Action: inspect the job output to determine why the job failed.

## Job Results Fields Defined

**table 1** Job Results Fields

Field	Description
Start time	time the job started
End time	time the job ended
Output	<ul style="list-style-type: none"><li>contains the chef-solo output if 'Retain job output' was selected and the 'Size of the job output to retain' was set to a value greater than 0 KB</li><li>empty if 'Discard all job output' was selected or 'Retain job output' was selected with 'Size of the job output to retain' set to 0 KB</li></ul>
Exit Code	<ul style="list-style-type: none"><li>Values are grouped into three categories:<ul style="list-style-type: none"><li>negative values: failed Run Chef Recipe jobs where SA prerequisites are not met (such as missing permissions or missing dependencies)</li><li>positive values (native chef-solo error codes): failed Run Chef Recipe jobs where chef-solo fails</li><li>0: successful Run Chef Recipe jobs</li></ul></li></ul>
Exception	<ul style="list-style-type: none"><li>displayed for all servers with 'Failed' Run Chef Recipe job status</li></ul>

### Blocking a Run Chef Recipe Job

You can block Run Chef Recipe jobs just as you can any software or script job via the Operations Orchestration job blocking function. See [Blocking Jobs](#) in the [SA-OO Integration – Job Blocking and Approving](#) chapter in the *SA integration Guide* for instructions.

# A Chef Cookbook Management Permissions

This section specifies the Chef Cookbook Management permissions required by users to perform specific actions in the SA Client. For security administrators, the table answers this question: To perform a particular action, what permissions does a user need?

- ▶ In addition to the action permissions listed, every user action also requires the Managed Servers and Groups permission. For additional guidelines on how to set up SA permissions, see the Permissions Reference appendix in the *SA Administration Guide*.

## Permissions for Running a Chef Recipe from a Cookbook with No Dependencies

The following permissions are required in order to run a Chef Recipe from a cookbook with no dependencies:

- These **Action Permissions** control the Chef tasks you can perform.

Permission	Setting	Task Enabled
Run Chef Recipes	Yes	the ability to start or schedule a specific Run Chef Recipe job.
Manage Package	Read (or stronger)	the ability to use Cookbooks (which is a type of SA package) in Run Chef Recipe jobs.

The user running the Run Chef Recipe job must belong to a user group with the *Run Chef Recipes* and *Manage package* permissions.

- **Folder Permissions** control the access to the SA Library folder where the cookbook resides.

The user running the Run Chef Recipe job must belong to a user group with *Read* permission on the folder where the cookbook resides.

- **Resource Permissions** control the access of the current user to the managed servers in SA.

The user running the Run Chef Recipe job must belong to a user group with *Read&Write* permission on the server's facility, customer, and at least one of its Device Groups.

For more information about setting resource permissions, see *About Resource Permissions* in the *SA Administration Guide*.

- **Customer Constraints on Folders** determine which servers can be the target of a Run Chef Recipe job. As each server is assigned to a *Customer*, the customer constraints of the cookbook folder must include the Customer of the target server.

Alternatively, you can ignore folder customer permissions entirely by assigning the *Customer Independent* customer to the cookbook folders.

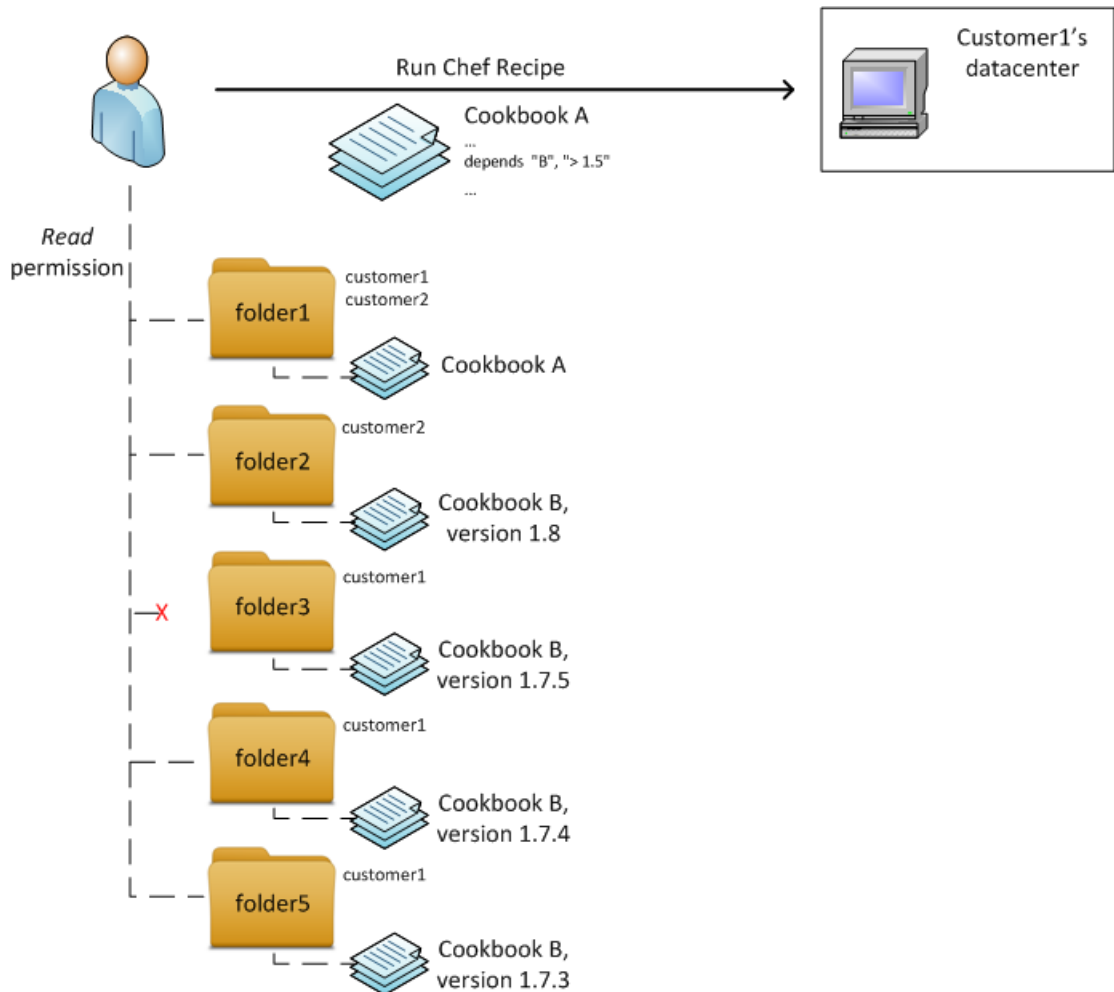
For more information about setting folder permissions, see *About Resource Permissions* in the *SA Administration Guide*.

## Permission Management for Cookbooks with Dependencies

The dependencies of a cookbook must satisfy the same permission requirements as the main cookbook: Read folder permissions and the proper folder customer constraints. If multiple versions of the dependent cookbooks exist, SA will use the newest version of the dependent cookbooks for which the entire dependency graph satisfies all required permissions.

**Example:** In the following setup, when the user tries to run a recipe from cookbook A, SA will resolve its dependency on cookbook B to version 1.7.4.

figure 8 Illustration of Permissions for Running Chef Recipes



More in-depth, version 1.8 of cookbook B cannot be used because folder2 is not associated to customer1 (the customer of the targeted server). Version 1.7.5 of cookbook B can't be used because the user doesn't have any permissions on folder3. Versions 1.7.4 and 1.7.3 are both accessible and SA will choose the higher version, therefore 1.7.4.

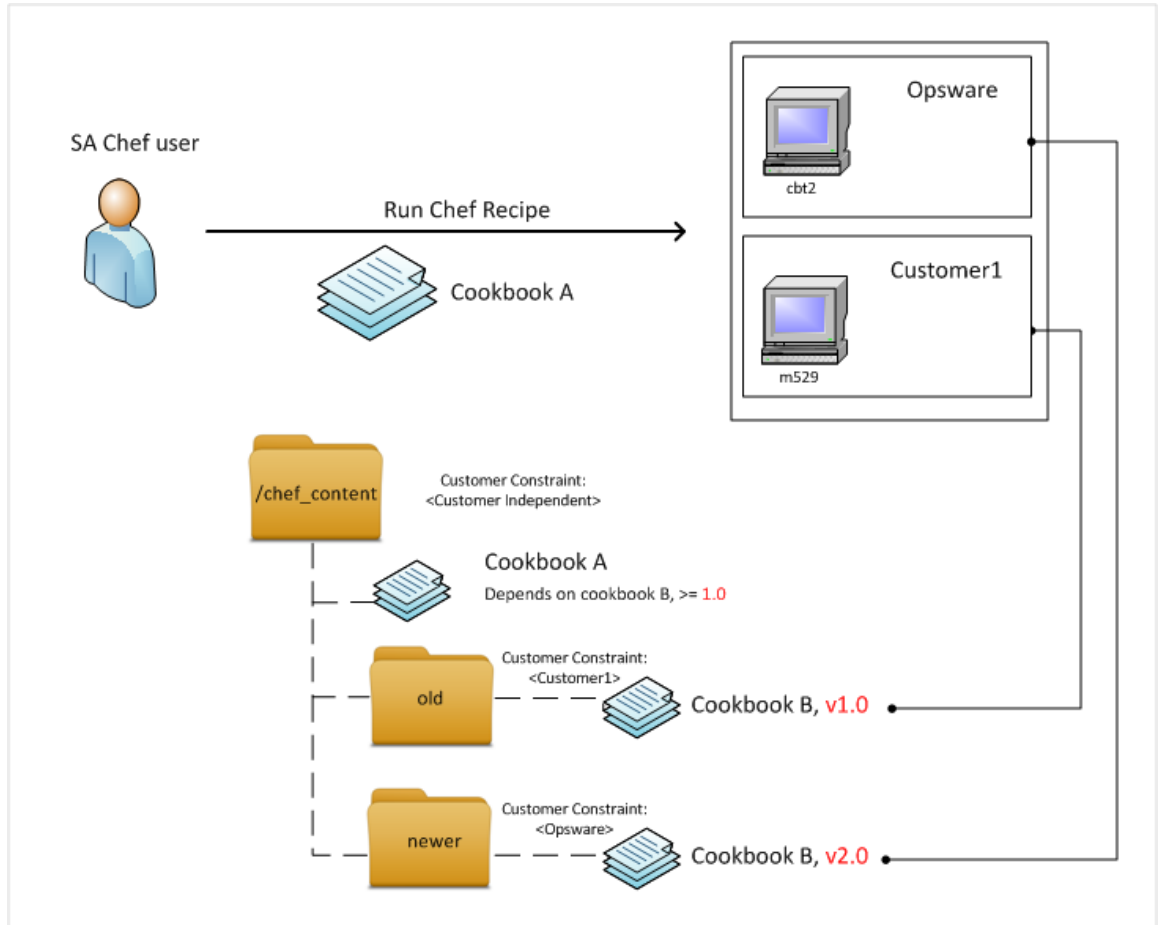


## Multi-tenancy

Customer constraints on folders provide the mechanism to support multi-tenancy, which allows you to apply different content to different customers.

In the example below, applying cookbook A to a group of two managed servers (cbt2 and m529) will result in applying version 1.0 of cookbook B to server m529 and version 2.0 of cookbook B to server cbt2.

figure 9 Illustration of Multi-tenancy for Chef Recipes





# B Chef Cookbook Page Help

This appendix provides help on each of the pages in the SA Client that are used for managing and using Chef Cookbooks and Recipes.

## Pages:

- Chef Cookbooks
- Cookbook: Properties
- Cookbook: Metadata
- Cookbook: Recipes
- Recipes: Contents
- Cookbook Imports
- Run Chef Recipe: Devices
- Run Chef Recipe: Add Devices
- Run Chef Recipe: Recipes
- Run Chef Recipe: Select Recipes
- Run Chef Recipe: Options
- Run Chef Recipe: Scheduling
- Run Chef Recipe: Notifications
- Run Chef Recipe: Job Status

## Chef Cookbooks

This window displays and manages Chef Cookbooks that are in the Library.

From the navigation pane, select an operating system to display cookbooks for that operating system. Then, select a specific cookbook to view detailed information in the Details pane. The type of information displayed in the Details pane depends on the option selected in the **View** list. The optional views are:

- Properties (See [Cookbook: Properties](#))
- Metadata (See [Cookbook: Metadata](#))
- Recipes (See [Cookbook: Recipes](#))

The **Actions** menu provides the following options when you select a cookbook:

- **Open:** opens the cookbook explorer window.
- **Locate a Cookbook in Folder:** searches the By Folder directory in the SA Library to find the location of the selected cookbook.
- **Import Cookbook...:** opens the import window. (See [Cookbook Imports](#))
- **Export Cookbook...:** opens the export window where you can browse your local machine for a directory to save the cookbook.

- **Rename Cookbook:** renames the selected cookbook
- **Delete Cookbook:** deletes the selected cookbook
  - [Editing Chef Cookbook Properties](#)
  - [Running Chef Recipes](#)
  - [Accessing Chef Cookbooks from the SA Client](#)
  - [Cookbook: Properties](#)
  - [Cookbook: Metadata](#)
  - [Cookbook: Recipes](#)

## Cookbook: Properties

The Cookbook: Properties window in the SA Client allows you to view the properties of a cookbook. If you are in the cookbook object browser after you have opened the cookbook, you can edit some of the cookbook's properties, such as Name, Description, OS, and Location.

- [Chef Cookbooks](#)
- [Editing Chef Cookbook Properties](#)

## Cookbook: Metadata

The Cookbook: Metadata window in the SA Client displays the content of the metadata.rb file from the cookbook, which can contain cookbook version, recipe(s) names, description, supported OS, and other defining attributes.

- [Chef Cookbooks](#)

## Cookbook: Recipes

The Cookbook: Recipes window in the SA Client lists all the recipes in the cookbook. If you are in the cookbook object browser after you have opened the cookbook, you can view the contents of the recipe. From this window, you can also run any of the selected recipes.

- [Chef Cookbooks](#)
- [Running Chef Recipes](#)

## Recipes: Contents

The Recipes: Contents window allows you to view the recipe text. From this window, you can also run any of the selected recipes.

- [Managing Chef Cookbooks in SA](#)
- [Running Chef Recipes](#)

## Cookbook Imports

The Cookbook Imports window allows you to import (upload) cookbooks into SA.

### Import Cookbook fields:

<b>File(s)</b>	Click <b>Browse</b> to locate and select the cookbook to import.
<b>Type</b>	Chef Cookbook
<b>Folder</b>	Click <b>Browse</b> to locate and select the desired directory of the SA Library to store the imported cookbook.
<b>Platforms</b>	Select all the relevant operating system versions for the import file. All supported SA platforms are available for selection.
<b>Import</b>	Click <b>Import</b> to import the file into the SA Library. The Software Imports window displays the status of the import.

- [Chef Cookbooks](#)
- [Importing a Chef Cookbook from the SA Client](#)
- [Managing Chef Cookbooks in SA](#)

## Duplicate File Handling

If a cookbook being uploaded already exists in the Software Repository, the override dialog appears providing you with options for handling the duplicate file:

- **Replace:** Replace (overwrite) the contents of the existing file.
- **Replace All:** When there are multiple existing files with the same name as the file you are importing, you can replace (overwrite) the contents of all the existing file.
- **Skip:** Skip the replacement of a single file. If you have multiple existing files with the same name as the file you are importing, you can select which files to skip or not. Skipping the import of a file does not affect other files with different names if you are importing multiple files. Only the specified file(s) will be skipped, the other specified files will be imported.
- **Skip All:** All specified files with the same name as the file you are importing will be skipped and not replaced.
- **Cancel:** Cancels the Import Packages operation entirely. No files are imported.
- **Help:** Provides online help for the current dialog.

## Run Chef Recipe: Devices

Use the Devices window to specify the managed servers and devices on which to run the Chef Recipe. From this window you can add or remove the selected devices.

- Click the Add (+) icon to add a server or device
- Click the Remove (-) icon to remove the selected server or device.
  - [Running Chef Recipes](#)

## Run Chef Recipe: Add Devices

Use the Select Servers and Device Groups window to select additional managed servers and device groups on which to run the Chef Recipe.

From this window you can filter or search the list of servers by any server attribute. You can also select one or multiple servers to add to the job.

After selecting the desired servers, click **Select** to return to the Run Chef Recipe window.

- [Running Chef Recipes](#)

## Run Chef Recipe: Recipes

Use the Recipes window to specify the Chef Recipes to run. From this window you can add or remove recipes as well as specify the order in which the recipes are run. When you select a recipe, the Details pane displays the contents of the recipe.

- Click the Add (+) icon to add a recipe.
- Click the Remove (-) icon to remove a recipe.
- Use the Up (↑) and Down (↓) arrows to specify the order in which the recipes are run.
  - [Running Chef Recipes](#)

## Run Chef Recipe: Select Recipes

Use the Select Recipes window to specify the Chef Recipes to run on the selected servers/device groups.

From this window you can filter or search the list of recipes by any recipe attribute. You can also select one or multiple recipes.

After selecting the desired recipes, click **Select** to return to the Run Chef Recipe window.

- [Running Chef Recipes](#)

## Run Chef Recipe: Options

Use the Options window to specify any Runtime or Output options in order to optimize runtime performance.

- **Runtime Options:** this option enables you to override all Chef parameters, except the following:

Option	Description of override limitation
<code>-c</code>	The configuration file cannot be overridden by this option. If you want to use a different configuration file, you will need to update the content of the existing one.
<code>--no-color</code>	This option is not relevant in the SA Client environment.
<code>-o</code>	Mixing the selected recipes with another list of recipes provided by the <code>-o</code> option is not supported.



If you provide override parameters containing paths, the `chef-solo` command cannot work properly both for UNIX and Windows machines. If you provide override parameters containing filesystem paths, you must run the job separately for UNIX and Windows machines.

- **Output Options:** specify how to handle the job output.

These options support customizing the chef run and storing the chef run output.

Jobs can generate a maximum of 10 KB of screen output per server. Use this option to determine whether to keep or delete the job log after the job is run.

- If you choose to retain the log output, you can specify the maximum size (in KB) of the file to retain, up to 10 KB.
- If you choose to discard all job output, then the chef-solo output will not be retained.

- [Running Chef Recipes](#)

## Run Chef Recipe: Scheduling

Use the Scheduling window to specify the timing for the Chef Recipe job. Options include:

[Schedule Frequency:](#)

Specify how often to run this recipe. Select any one of the following options:

- **Once:** Choose this option to run the job immediately or only once at a specified date and time.
- **Daily:** Choose this option to run the job on a daily basis at a specified time.
- **Weekly:** Choose this option to specify the day or days of the week to run the job.
- **Monthly:** Choose this option to specify the months to run the job, and the days of the month.
- **Custom:** In the Custom Crontab string field, enter a string that indicates a time schedule. The crontab string can include serial (1,2,3,4) and range (1-5) values.

### Time and Duration:

For each type of schedule, specify the start time for the job. You must also specify the start date and end date for the job. The Time Zone is set according to the time zone set in your user profile.

- [Running Chef Recipes](#)

## Run Chef Recipe: Notifications

Set e-mail notifications to alert you or other users on the success or failure of the Chef Recipe job. You can associate a Ticket ID to identify and track this job.

- [Running Chef Recipes](#)

### E-mail Notifications:

- By default, your e-mail address will appear in the list of recipient e-mail addresses.
  - To add additional recipients, click **Add Notifier** and enter the e-mail addresses in the E-mail Address of Recipient field.
  - To remove a recipient, select the recipient and click **Remove**.
- For each recipient, select the options for when to send an e-mail notification:
  - On Success: sends e-mail to recipient if the job succeeds.
  - On Failure: sends e-mail to recipient if the job fails.

### Ticket Tracking:

In the Ticket **ID** field, enter a unique text string to identify this job. This string will appear in the e-mail notifications.

## Run Chef Recipe: Job Status

When you run the Chef Recipe job, the Job Status window provides summary information about its progress. You can also view the status of each action required to complete the job.

- [Running Chef Recipes](#)

The Job Status window will appear without any details until the job actually begins. When the job starts depends on the settings defined in the Scheduling step.

- If you set the job to run immediately, then the job will begin immediately after you click **Start Job** from any of the setting steps.
  - When the job starts, the Job Status window will appear showing the progress of the job.
  - To view the details of each action, select an action row in the table. The details for the selected action appear in the lower panel of the content pane.
  - You can also perform any of the following optional actions:
    - Click **Back** or **Next** to check job specification details.
    - Click **Close** to close the window.



- If you scheduled the job for a later time, the job will run at the scheduled time and only then will the Job Status window show progress details.
- To view job status later, click **Jobs and Sessions** from the SA Client navigation pane, and then double-click on the job to view details.

