



U Y U N I

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Quick Start - SAP

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Quick Start: SAP Overview

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This guide shows you how to use Uyuni to install and configure an SAP cluster. It guides you through setting up a single Uyuni Server, preparing your client systems, and configuring the cluster using formulas.

- For more information about SAP, see the SAP documentation at <https://documentation.suse.com/sles-sap>.
- For more information about Uyuni, see the Uyuni documentation at <https://documentation.suse.com/suma>.

Chapter 1. Prepare Server

Before you start you need to install the Uyuni Server. The method for installing the Uyuni Server varies depending on your hardware and environment.

Uyuni is installed using the SUSE Linux Enterprise Server 15 unified installer. During the installation process, when you are prompted for which product to install, select Uyuni Server. The server does not need to have the SUSE Linux Enterprise Server 15 with SAP product installed. For more information about installing the Uyuni Server, see [Installation > Install-server-unified](#).

When the Uyuni Server is installed, set it up by running the `yast2 susemanager_setup` command from the command prompt. The setup script prompts you to complete additional details about your server, and give you the URL to use to access the Web UI. For more information about setup, see [Installation > Server-setup](#).

You need to do some configuration to set up the Uyuni Web UI. In your browser, navigate to the URL of the server, and configure your administration access to the Web UI. For more information about setting up the Web UI, see [Installation > Webui-setup](#).

Now you can use the Web UI to prepare software channels and activation keys for your clients.

On the Uyuni Server, add the appropriate SAP channels: From the Web UI, add [SUSE Linux Enterprise Server 15 for SAP](#).

Synchronize the Uyuni Server with the SUSE Customer Center. You can do this using the Web UI. Add the new channel to your activation key.

To check if a channel has finished synchronizing navigate to [Admin > Setup Wizard](#) and select the [Products](#) tab. This dialog displays a completion bar for each product when they are being synchronized.



Software channels can be very large. The initial channel synchronization can sometimes take up to several hours.

初始同步完成后，建议您克隆频道后再加以使用。这样您便拥有一份原始同步数据的备份。

Chapter 2. Preparing Clients

Your SAP cluster requires several client systems. Prepare your clients on physical or virtual hardware, and ensure you have SUSE Linux Enterprise Server 15 for SAP installation media ready. You cannot create an SAP cluster without the SUSE Linux Enterprise Server SAP extension, as it provides tooling specific to SAP.

One of the key features of SAP is high availability of the cluster. Every component within an SAP cluster has redundancy and failover protection. When you are preparing your clients, ensure you have enough hardware and infrastructure to allow for this. For more information about hardware requirements, see <https://documentation.suse.com/sles-sap/15-SP2/html/SLES-SAP-quick/cha-plan.html#sec-hardware>.

For more information about the clients you need to set up for an SAP cluster, see <https://documentation.suse.com/sbp/all>.

2.1. Register Clients to the SUSE Customer Center

Each client within your SAP cluster must be registered with the SUSE Customer Center. To obtain your registration code, navigate to <https://scc.suse.com/login> in your web browser. Log in to your SCC account, or follow the prompts to create a new account. Click the **[Subscriptions]** tab to see the registration code. When you install SUSE Linux Enterprise Server 15 for SAP the Unified Installer prompts you for the code.

For more information about registering Uyuni with SUSE Customer Center, see **Installation > General-requirements**.

2.2. Configure the Clients for Clustering

Every client system must have all the other client systems listed in their **/etc/hosts** file. Open the **/etc/hosts** file on each client, and add the hostname for each of the other clients.

2.3. Create a Shared Storage Device

Each of the clients needs to be able to access a shared disk. The shared disk can be physical hardware connected by ethernet, or you can set up a virtual disk and access it with iSCSI.

If you use a virtual disk, consider hosting it on a separate system. Do not use a client machine to host the shared storage disk.

2.4. Download the SAP Installation Software

Download the SAP installation media and save a copy on each client. The software that you require differs depending on your environment. For example, if you are using HANA, you need the SAP HANA platform. If you are using Netweaver, you need different packages. These software packages are provided by SAP, not by SUSE.

Ensure you have saved the installation software in the same file system location on each client. Alternatively, save it to a shared NFS drive.

2.5. Configure Clients to Use Latest `module.run`

Each client needs to be configured to use the latest version of `module.run`. On each of the client machines, open the `/etc/salt/minion` configuration file and add or edit this line:

```
use_superseded:  
  - module.run
```

Restart the `salt-minion` process to enable the changes:

```
systemctl restart salt-minion
```

2.6. Install Additional Disks for HANA

For the clients that are going to run the HANA database, you require an additional storage device. This device is used to store files required by HANA, which are located in the `/hana/` directory.

We recommend that this storage device be at least 20 GB. For some installations, you might require more, and it is possible to use multiple disks to provide this storage. For comprehensive hardware requirements, see <https://documentation.suse.com/sbp/all>.

2.7. Register Clients to the Server

First of all, make sure you have an activation key that is associated with the `SLE-Product-SLES_SAP15` base channel. For more information about activation keys, see [Client-configuration > Activation-keys](#).

In the Uyuni Web UI, navigate to **Systems > Bootstrapping**. Fill in the appropriate details, and make sure you check the `Manage System Completely via SSH` checkbox. In the `Activation Key` field, select the SLES for SAP activation key.

For more information about registering, see [Client-configuration > Registration-webui](#).

Chapter 3. Configure Clients

Uyuni uses formulas with forms to configure your SAP clients. There are two formulas that you need to use:

- **Hana** to configure the HANA database
- **Cluster** to configure the clients into a cluster

The formulas are provided by packages that you can download with your package manager. You need to install the formulas on the Uyuni Server. When you have installed the package, you can use the Uyuni Web UI to enable and configure the formulas. As you go through the formula configuration process, provide details of the clients that contain your SAP cluster, to set them up appropriately.

To install the formulas on the Uyuni Server, use your package manager to install these packages:

- **saphanabootstrap-formula**
- **sapnwbootstrap-formula**
- **drbd-formula**
- **habootstrap-formula**
- **salt-shaptools**



The order that you enable and configure the formulas is important. You must enable, configure, and apply the HANA formula first. Then you can enable, configure, and apply the cluster formula. If you perform these steps in the wrong order, your SAP installation fails.

3.1. Enable and Configure the HANA Formula

In the Uyuni Web UI, navigate to **Systems > System List** and click the client to use as the primary client in the cluster.

Navigate to the **Formulas** tab, locate the **Sap Hana Deployment** heading, and check the **Saphanabootstrap** formula in the list. Click **[Save]** and apply the highstate to activate the formula.

When the formula is activated, navigate to the **Formulas > Hana** tab, and complete the details in the form.

Make sure you check **Install required packages** to install everything you need on the client. In the **Nodes** sections, type the hostname of the client to install the HANA database, and provide details for the installation.

Complete the remaining details according to your environment, click **[Save]**, and apply the highstate. When the highstate is complete, you can go on to apply the cluster formula.

The screenshot shows the Uyuni Web UI interface for managing system configurations. At the top, there's a navigation bar with tabs: Details, Software, Configuration, Provisioning, Groups, Audit, States, Formulas, and Events. The 'Formulas' tab is selected, and within it, the 'Saphanabootstrap Formula' is chosen under the 'Configuration' section. Below the navigation, a message states: 'On this page you can configure Salt Formulas to automatically install and configure software.' There are 'Save Formula' and 'Clear values' buttons at the top right.

The main content area is titled 'Saphanabootstrap Formula' and describes it as a 'SAP HANA deployment formula'. It contains several configuration sections:

- HANA**: A collapsed section containing fields for Hostname to install HANA, HANA system identifier (SID), HANA instance number, SAP user password, and HANA scenario type (set to 'performance-optimized'). An 'Install required packages' checkbox is checked.
- Nodes**: A collapsed section labeled 'Nodes'.
- Install new HANA instance**: A collapsed section containing fields for Downloaded HANA software path, Machine root user, and Machine root password.

3.2. Enable and Configure the Cluster Formula

In the Uyuni Web UI, navigate to **Systems > System List** and click the client to use as the primary client in the cluster.

Navigate to the **Formulas** tab, locate the **Cluster** heading, and check the **Habootstrap** formula in the list. Click **[Save]** and apply the highstate to activate the formula.

The screenshot shows a web-based configuration interface for formulas. At the top right are three buttons: 'Save' (highlighted in blue), 'Remove all', and 'Reset Changes'. Below this is a section titled 'Formulas' with a heading 'Choose formulas:'. A list of formulas is presented in a table format with checkboxes and information icons.

Formula Category	Formula Name	Info Icon
General System Configuration	General System Configuration	ⓘ
Bind	Bind	ⓘ
Dhcpd	Dhcpd	ⓘ
Locale	Locale	ⓘ
System Lock	System Lock	ⓘ
Tftpd	Tftpd	ⓘ
Vsftpd	Vsftpd	ⓘ
Clustering	Clustering	ⓘ
Caasp Management Node	Caasp Management Node	ⓘ
Caasp Management Settings	Caasp Management Settings	ⓘ
Security Configuration	Security Configuration	ⓘ
Cpu Mitigations	Cpu Mitigations	ⓘ
Drbd Deployment	Drbd Deployment	ⓘ
Drbd Formula	Drbd Formula	ⓘ
Monitoring	Monitoring	ⓘ
Grafana	Grafana	ⓘ
Prometheus	Prometheus	ⓘ
Prometheus Exporters	Prometheus Exporters	ⓘ
Cluster	Cluster	ⓘ
Habootstrap Formula	Habootstrap Formula	ⓘ
Sap Hana Deployment	Sap Hana Deployment	ⓘ
Saphanbootstrap Formula	Saphanbootstrap Formula	ⓘ
Virtualization	Virtualization	ⓘ
Virtualization Host	Virtualization Host	ⓘ

In the list, several formulas are checked: 'Cluster', 'Habootstrap Formula', 'Sap Hana Deployment', and 'Saphanbootstrap Formula'. The 'Cluster' formula is highlighted with a blue background.

When the formula is activated, navigate to the **Formulas > Cluster** tab, and complete the details in the form.

Make sure you check **Install required packages** to install everything you need on the client. Give your cluster a name, and specify the hostname of the primary client in the cluster.

Complete the remaining details according to your environment, click **[Save]**, and apply the highstate.

3.2. Enable and Configure the Cluster Formula

test-client 

Delete System

Details Software Configuration Provisioning Groups Audit States Formulas Events

Configuration Haboobstrap Formula Saphanbootstrap Formula

On this page you can configure Salt Formulas to automatically install and configure software.

◀ Prev Next ▶  Save Formula  Clear values

Saphanbootstrap Formula

SAP HANA deployment formula

HANA

Install required packages:

Nodes

Nodes

Hostname to install HANA: 

HANA system identifier (SID): 

HANA instance number: 

SAP user password:  

HANA scenario type: 

Install HANA: 

Install new HANA instance

Install new HANA instance

Downloaded HANA software path: 

Machine root user: 

Machine root password:  

Use configuration file: 

SAP admin password (<sid>adm):  

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