



U Y U N I

# Uyuni 2022.04

## Installation and Upgrade Guide

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# Chapter 1. 要求

下表指定了最低要求。

表格 1. x86-64 体系结构的服务器硬件要求

Software and Hardware	Details	Recommendation
openSUSE Leap 15.3	Clean installation, up-to-date	openSUSE Leap 15.3
CPU	-	Minimum 4 dedicated 64-bit CPU cores (x86-64)
RAM	Test Server	Minimum 8 GB
	Base Installation	Minimum 16 GB
	Production Server	Minimum 32 GB
Disk Space	/ (root directory)	Minimum 40 GB
	/var/lib/pgsql	Minimum 50 GB
	/var/spacewalk	Minimum 50 GB per SUSE product and 360 GB per Red Hat product
	/var/cache	Minimum 10 GB. Add 100 MB per SUSE product, 1 GB per Red Hat or other product. Double the space if the server is an ISS Master.
	Swap space	3 GB

## 1.1. 网络要求

本节详细说明 Uyuni 的网络和端口要求。

### 完全限定的域名 (FQDN)

Uyuni 服务器必须正确解析其 FQDN。如果无法解析 FQDN，可能会导致许多不同的组件出现严重问题。

有关配置主机名和 DNS 的详细信息，请参见 <https://documentation.suse.com/sles/15-SP3/html/SLES-all/cha-network.html#sec-network-yast-change-host>。

### 主机名和 IP 地址

为确保 Uyuni 域名可由其客户端解析，服务器和客户端计算机都必须连接到一台正常工作的 DNS 服务器。还需要确保正确配置反向查找。

有关设置 DNS 服务器的详细信息，请参见 <https://documentation.suse.com/sles/15-SP3/html/SLES-all/cha-dns.html>。

## 从 SUSE Linux Enterprise 媒体安装时使用代理

如果您在内部网络中操作并且无法访问 SUSE Customer Center，可以在安装期间设置并使用一个代理。

有关在 SUSE Linux Enterprise 安装期间配置用于访问 SUSE Customer Center 的代理的详细信息，请参见 <https://documentation.suse.com/sles/15-SP3/html/SLES-all/cha-boot-parameters.html#sec-boot-parameters-advanced-proxy>。



Uyuni 的主机名不得包含大写字母，否则可能导致 jabberd 失败。请慎重选择 Uyuni 服务器的主机名。尽管可以并且也支持更改服务器名称，但在更改之前必须事先经过规划。更改服务器的主机名时，挂接到该服务器的所有客户端必须知道发生了这种更改。

In a production environment, the Uyuni Server and clients should always use a firewall. For a comprehensive list of the required ports, see **Installation-and-upgrade > Ports**.

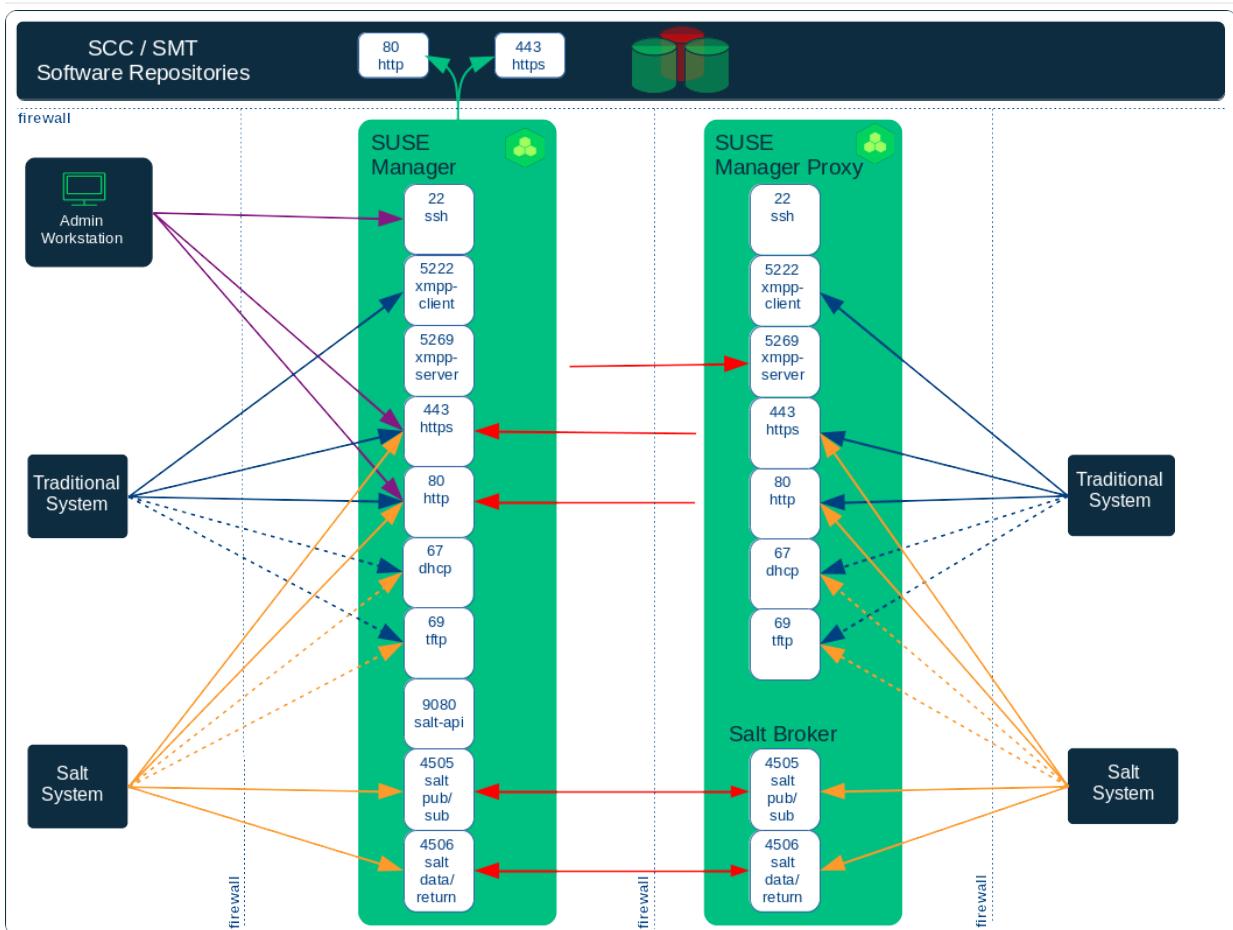
For more information on disconnected setup and port configuration, see **Administration > Disconnected-setup**.

### 1.1.1. Required Network Ports

本节提供了 Uyuni 中各种通讯使用的端口的综合列表。

您不需要打开所有这些端口。某些端口只有在您使用需要这些端口的服务时才需打开。

下图显示了 Uyuni 中使用的主要端口：



### 1.1.1.1. 外部入站服务器端口

必须打开外部入站端口，以在 Uyuni 服务器上配置防火墙用于防范未经授权访问服务器。

打开这些端口将允许外部网络流量访问 Uyuni 服务器。

表格 2. Uyuni Server 的外部端口要求

端口号	协议	使用方	备注
22			采用 ssh-push 和 ssh-push-tunnel 联系方法时需要此端口。
67	TCP/UDP	DHCP	仅当客户端向服务器请求 IP 地址时才需要此端口。
69	TCP/UDP	TFTP	将服务器用作 PXE 服务器进行自动化客户端安装时需要此端口。
80	TCP	HTTP	某些引导储存库和自动化安装需要临时使用此端口。端口 80 不用于为 Web UI 传递数据。

端口号	协议	使用方	备注
443	TCP	HTTPS	Web UI、客户端、服务器和代理 ( <code>tftpsync</code> ) 请求。
4505	TCP	salt	接受来自客户端的通讯请求时需要此端口。客户端启动连接，并保持打开状态以接收 Salt 主控端发出的命令。
4506	TCP	salt	接受来自客户端的通讯请求时需要此端口。客户端启动连接，并保持打开状态以向 Salt 主控端报告结果。
5222	TCP	osad	将 OSAD 操作推送到客户端时需要此端口。
5269	TCP	jabberd	向代理以及从代理推送操作时需要此端口。
25151	TCP	Cobbler	

### 1.1.1.2. 外部出站服务器端口

必须打开外部出站端口，以在 Uyuni 服务器上配置防火墙用于限制服务器可访问的内容。

打开这些端口将允许来自 Uyuni 服务器的网络流量与外部服务通讯。

表格 3. Uyuni Server 的外部端口要求

端口号	协议	使用方	备注
80	TCP	HTTP	SUSE Customer Center 需要此端口。端口 80 不用于为 Web UI 传递数据。
443	TCP	HTTPS	SUSE Customer Center 需要此端口。
5269	TCP	jabberd	向代理以及从代理推送操作时需要此端口。
25151	TCP	Cobbler	

### 1.1.1.3. 内部服务器端口

内部端口由 Uyuni 服务器在内部使用。只能从 `localhost` 访问内部端口。

大多数情况下无需调整这些端口。

表格 4. Uyuni Server 的内部端口要求

端口号	备注
2828	Satellite-search API，由 Tomcat 和 Taskomatic 中的 RHN 应用程序使用。
2829	Taskomatic API，由 Tomcat 中的 RHN 应用程序使用。
8005	Tomcat 关机端口。
8009	Tomcat 到 Apache HTTPD (AJP)。
8080	Tomcat 到 Apache HTTPD (HTTP)。
9080	Salt-API，由 Tomcat 和 Taskomatic 中的 RHN 应用程序使用。
32000	与运行 Taskomatic 和 satellite-search 的 Java 虚拟机 (JVM) 建立 TCP 连接时使用的端口。

32768 和更高的端口用作临时端口。这些端口往往用于接收 TCP 连接。收到 TCP 连接请求后，发送方将选择其中一个临时端口号来与目标端口进行匹配。可使用以下命令来确定哪些端口是临时端口：

```
cat /proc/sys/net/ipv4/ip_local_port_range
```

#### 1.1.1.4. 外部入站代理端口

必须打开外部入站端口，以在 Uyuni Proxy 上配置防火墙用于防范未经授权访问代理。

打开这些端口将允许外部网络流量访问 Uyuni Proxy。

表格 5. Uyuni Proxy 的外部端口要求

端口号	协议	使用方	备注
22			采用 ssh-push 和 ssh-push-tunnel 联系方法时需要此端口。与代理连接的客户端在服务器上启动签入，然后跳接到其他客户端。
67	TCP/UDP	DHCP	仅当客户端向服务器请求 IP 地址时才需要此端口。
69	TCP/UDP	TFTP	将服务器用作 PXE 服务器进行自动化客户端安装时需要此端口。
443	TCP	HTTPS	Web UI、客户端、服务器和代理 ( <code>tftpsync</code> ) 请求。

端口号	协议	使用方	备注
4505	TCP	salt	接受来自客户端的通讯请求时需要此端口。客户端启动连接，并保持打开状态以接收 Salt 主控端发出的命令。
4506	TCP	salt	接受来自客户端的通讯请求时需要此端口。客户端启动连接，并保持打开状态以向 Salt 主控端报告结果。
5222	TCP		将 OSAD 操作推送到客户端时需要此端口。
5269	TCP		向服务器以及从服务器推送操作时需要此端口。

### 1.1.1.5. 外部出站代理端口

必须打开外部出站端口，以在 Uyuni Proxy 上配置防火墙用于限制代理可访问的内容。

打开这些端口将允许来自 Uyuni Proxy 的网络流量与外部服务通讯。

表格 6. Uyuni Proxy 的外部端口要求

端口号	协议	使用方	备注
80			用于访问服务器。
443	TCP	HTTPS	SUSE Customer Center 需要此端口。
5269	TCP		与服务器来回推送操作时需要此端口。

### 1.1.1.6. 外部客户端端口

必须打开外部客户端端口，以在 Uyuni 服务器及其客户端之间配置防火墙。

大多数情况下无需调整这些端口。

表格 7. Uyuni 客户端的外部端口要求

端口号	方向	协议	备注
22	入站	SSH	ssh-push 和 ssh-push-tunnel 联系方法需要此端口。
80	出站		用于访问服务器或代理。

端口号	方向	协议	备注
5222	出站	TCP	将 OSAD 操作推送到服务器或代理时需要此端口。
9090	出站	TCP	Prometheus 用户界面需要此端口。
9093	出站	TCP	Prometheus 警报管理器需要此端口。
9100	出站	TCP	Prometheus 节点导出器需要此端口。
9117	出站	TCP	Prometheus Apache 导出器需要此端口。
9187	出站	TCP	Prometheus PostgreSQL 需要此端口。

### 1.1.1.7. 所需的 URL

Uyuni 必须能够访问某些 URL 才能注册客户端和执行更新。大多数情况下，允许访问以下 URL 便已足够：

- scc.suse.com
- updates.suse.com

如果您正在使用非 SUSE 客户端，则还可能需要允许访问为这些操作系统提供特定软件包的其他服务器。例如，如果您使用的是 Ubuntu 客户端，则需要能够访问 Ubuntu 服务器。

有关对非 SUSE 客户端的防火墙访问进行查错的详细信息，请参见 [Administration > Tshoot-firewalls](#)。

## 1.2. 支持的客户端系统

下表列出了传统客户端和 Salt 客户端支持的操作系统。

在此表格中，✓ 表示 SUSE 支持运行对应操作系统的客户端，✗ 表示不支持。标有 ? 的字段表示正在考核中，将来可能支持对应的操作系统，也可能不支持。



对于 SUSE 操作系统，版本和 SP 级别必须享受标准支持（常规或 LTSS）才受 Uyuni 的支持。有关受支持产品版本的细节，请参见：

<https://www.suse.com/lifecycle>

对于非 SUSE 操作系统，包括 Red Hat Enterprise Linux、CentOS 和 Oracle Linux，只有最新可用版本才享受标准支持。

表格 8. 支持的客户端系统

操作系统	体系结构	传统客户端	Salt 客户端
SUSE Linux Enterprise 15	x86-64、ppc64le、IBM Z、ARM	✓	✓
SUSE Linux Enterprise 12	x86-64、ppc64le、IBM Z、ARM	✓	✓
SUSE Linux Enterprise 11	x86、x86-64、Itanium、ppc64、IBM Z	✓	✓
SUSE Linux Enterprise Server for SAP 15	x86-64、ppc64le	✓	✓
SUSE Linux Enterprise Server for SAP 12	x86-64、ppc64le	✓	✓
SLE Micro	x86-64、ppc64le、aarch64	✗	✓
openSUSE Leap 15	x86-64、aarch64	✓	✓
SUSE Linux Enterprise Server ES 8	x86-64	✗	✓
SUSE Linux Enterprise Server ES 7	x86-64	✓	✓
Alibaba Cloud Linux 2	x86-64、aarch64	✗	✓
AlmaLinux 8	x86-64、aarch64	✗	✓
Amazon Linux 2	x86-64、aarch64	✗	✓
CentOS 8	x86-64、ppc64le、aarch64	✗	✓
CentOS 7	x86-64、ppc64le、aarch64	✓	✓
Debian 10	x86-64、aarch64、armv7l、i586	✗	✓
Debian 9	x86-64、aarch64、armv7l、i586	✗	✓
Oracle Linux 8	x86-64、aarch64	✗	✓
Oracle Linux 7	x86-64、aarch64	✓	✓
Red Hat Enterprise Linux 8	x86-64	✗	✓
Red Hat Enterprise Linux 7	x86-64	✓	✓
Rocky Linux 8	x86-64、ppc64le、aarch64	✗	✓

操作系统	体系结构	传统客户端	Salt 客户端
Ubuntu 20.04	x86-64	✗	✓
Ubuntu 18.04	x86-64	✗	✓



Red Hat Enterprise Linux 6、Oracle Linux 6、CentOS 6、SUSE Linux Enterprise Server-ES 6 和 Ubuntu 16.04 是生命周期已结束的上游，SUSE 不再支持它们作为客户端操作系统。为方便起见，SCC 中仍会提供适用于这些操作系统的 SUSE Manager 客户端工具。

设置客户端硬件时，需确保为操作系统以及您要在客户端上执行的工作负载提供足够的空间；对于 Uyuni，需按如下所述提供额外的资源：

表格 9. 客户端的额外硬件要求

硬件	额外所需大小
RAM	512 MB
磁盘空间：	200 MB

## 1.3. 公有云要求

本节介绍在公有云基础结构上安装 Uyuni 所要满足的要求。我们已在 Amazon EC2、Google Compute Engine 和 Microsoft Azure 上对这些指令进行过测试，不过它们进行一定修改后在其他提供商的云服务上也应能正常工作。

在开始之前，请注意以下一些事项：

- Uyuni 设置过程执行正向确认的反向 DNS 查找。此操作必须成功，设置过程才能完成，并且 Uyuni 才能按预期方式运行。请务必在设置 Uyuni 之前执行主机名和 IP 配置。
- Uyuni Server 和 Proxy 实例需在适当的网络配置中运行，该网络配置可让您控制 DNS 项，但无法通过因特网自由访问。
- 在此网络配置中必须提供 DNS 解析：`hostname -f` 必须返回完全限定的域名 (FQDN)。
- DNS 解析对于连接客户端也很重要。
- DNS 取决于所选的云框架。有关详细说明，请参见云提供商文档。
- 我们建议将软件储存库、服务器数据库和代理 squid 缓存储存在外部虚拟磁盘上。这可以防止在实例意外终止时丢失数据。本节包含有关设置外部虚拟磁盘的说明。



如果您正在尝试引导传统客户端，请在已登录到客户端的情况下检查是否可以解析服务器的主机名。可能需要将服务器的 FQDN 添加到客户端上的 `/etc/hosts` 本地解析文件。请结合服务器的本地 IP 地址使用 `hostname -f` 命令进行检查。

### 1.3.1. 网络要求

在公有云上使用 Uyuni 时，必须使用受限制的网络。我们建议使用带有适当防火墙设置的 VPN 专用子网。只能允许指定 IP 范围内的计算机访问该实例。



在公有云上运行 Uyuni 时，必须应用安全措施来限制对该实例的访问。全球可访问的 Uyuni 实例违反了 Uyuni EULA 的条款，且不受 SUSE 的支持。

要访问 Uyuni Web UI，请在配置网络访问控制时允许 HTTPS。这将允许您访问 Uyuni Web UI。

在 EC2 和 Azure 中，创建一个新安全组，并添加 HTTPS 入站和出站规则。在 GCE 中，选中 防火墙 部分下的 允许 HTTPS 流量 复选框。

### 1.3.2. 准备储存卷

我们建议将 Uyuni 的储存库和数据库储存在不同于根卷的储存设备上。这有助于避免数据丢失。不要使用逻辑卷管理 (LVM) 进行公有云安装。

必须在运行 YaST Uyuni 设置过程之前设置储存设备。

用于储存储存库的磁盘大小取决于您要使用 Uyuni 管理的发行套件和频道数目。挂接虚拟磁盘时，它们将作为 Unix 设备节点显示在实例中。设备节点的名称因提供商及所选实例类型而异。

确保 Uyuni 服务器的根卷大小不少于 100 GB。如果可能，请另外添加一个 500 GB 或以上大小的储存磁盘，并选择 SSD 储存类型。当您的实例启动时，Uyuni 服务器的云映像会使用脚本来指派这个单独的卷。

启动实例后，您便可登录 Uyuni 服务器，并使用以下命令查找所有可用的储存设备：

```
hwinfo --disk | grep -E "Device File:"
```

如果您不确定应选择哪个设备，可使用 `lsblk` 命令查看每个设备的名称和大小。请选择与要寻找的虚拟磁盘大小匹配的名称。

您可以使用 `suma-storage` 命令设置外部磁盘。这会创建一个装入到 `/manager_storage` 的 XFS 分区，并使用它作为储存数据库和储存库的位置：

```
/usr/bin/suma-storage <设备名称>
```

## 1.4. 安装使用 openSUSE 的 Uyuni Server

可以在 openSUSE 上安装 Uyuni Server。

For requirements, see [Installation-and-upgrade > Uyuni-install-requirements](#).



有关 openSUSE Leap 最新版本和更新的详细信息，请参见  
<https://doc.opensuse.org/release-notes/>。

## 1.4.1. 在 openSUSE Leap 上安装 Uyuni

过程：安装包含 Uyuni 的 openSUSE Leap

1. 安装应用了所有可用服务包和软件包更新的 openSUSE Leap 作为基础系统。
2. 通过 **yast** > **系统** > **网络设置** > **主机名/DNS** 配置一个可解析的完全限定域名 (FQDN)。
3. Set variables to use to create repository as **root** :

```
repo=repositories/systemsmanagement:/  
repo=${repo}Uyuni:/Stable/images/repo/Uyuni-Server-Pool-x86_64-Media1/
```

4. 以 **root** 身份添加用于安装 Uyuni Server 软件的储存库：

```
zypper ar https://download.opensuse.org/$repo uyuni-server-stable
```

5. 以 **root** 身份刷新储存库中的元数据：

```
zypper ref
```

6. 以 **root** 身份安装 Uyuni Server 的模式：

```
zypper in patterns-uyuni_server
```

7. 重引导。

- 有关稳定版 Uyuni 的详细信息，请参见 <https://www.uyuni-project.org/pages/stable-version.html>。
- 有关开发版 Uyuni 的详细信息，请参见 <https://www.uyuni-project.org/pages/development-version.html>。

When the installation is complete, you can continue with Uyuni setup. For more information, see **Installation-and-upgrade** > **Uyuni-server-setup**.

## 1.5. 在 openSUSE Leap 中安装 Uyuni Proxy

可以在 openSUSE Leap 15.3 上安装 Uyuni Proxy。

过程：安装包含 Uyuni Proxy 的 openSUSE Leap

1. 安装 openSUSE Leap 并应用所有可用的软件包更新。
2. 通过 **yast > 系统 > 网络设置 > 主机名/DNS** 配置一个可解析的完全限定域名 (FQDN)。
3. 添加包含 Uyuni Proxy 软件的储存库。以 **root** 身份输入：

```
repo=repositories/systemsmanagement:/  
repo=${repo}Uyuni:/Stable/images/repo/Uyuni-Proxy-Pool-x86_64-Media1/  
zypper ar https://download.opensuse.org/$repo uyuni-proxy-stable
```

4. 刷新储存库中的元数据。以 **root** 身份输入：

```
zypper ref
```

5. 安装 Uyuni Proxy 的模式：以 **root** 身份输入：

```
zypper in patterns-uyuni_proxy
```

6. 重引导 Uyuni Proxy。

- 有关稳定版 Uyuni 的详细信息，请参见 <https://www.uyuni-project.org/pages/stable-version.html>。
- 有关开发版 Uyuni 的详细信息，请参见 <https://www.uyuni-project.org/pages/development-version.html>。

When the installation is complete, you can continue with Uyuni setup. For more information, see **Installation-and-upgrade > Uyuni-proxy-registration**.

## 1.6. Uyuni Server 设置

本节介绍如何使用以下过程设置 Uyuni 服务器：

- 使用 YaST 启动 Uyuni 安装程序
- 使用 Uyuni Web UI 创建主管理帐户
- 为基础结构命名并添加登录身份凭证
- 从 SUSE Customer Center 同步 SUSE Linux Enterprise 产品频道

### 1.6.1. 使用 YaST 安装 Uyuni}

本部分将指导您完成 Uyuni 安装过程。

过程：Uyuni 安装

1. 登录到 Uyuni 服务器并启动 YaST。
2. 在 YaST 中，导航到 **网络服务 > Uyuni 安装程序** 开始安装。
3. 在简介屏幕中选择 **Uyuni 安装程序 > 从头开始安装 Uyuni**，然后单击 **[下一步]** 继续。
4. 输入电子邮件地址以接收状态通知，然后单击 **[下一步]** 继续。Uyun 有时可能会发送大量的通知电子邮件。如果需要，安装后您可以在 Web UI 中禁用电子邮件通知。
5. 输入您的证书信息和口令。口令长度必须至少为七个字符，不能包含空格、单引号或双引号 (' 或 " )、感叹号 (!) 或美元符号 (\$)。始终将口令储存在安全的位置。



必须具有证书口令才能设置 Uyuni Proxy。

6. 单击 **[下一步]** 继续。
7. 在**Uyuni 安装程序>数据库设置**屏幕中输入数据库用户和口令，然后单击 **[下一步]** 继续。口令长度必须至少为七个字符，不能包含空格、单引号或双引号 (' 或 " )、感叹号 (!) 或美元符号 (\$)。始终将口令储存在安全的位置。
8. 单击 **[下一步]** 继续。
9. 出现提示时，单击 **[是]** 以运行安装程序。
10. 安装完成后，单击 **[下一步]** 继续。您将看到 Uyuni Web UI 的地址。
11. 单击 **[完成]** 以完成 Uyuni 安装。

## 1.6.2. 创建主管理帐户

本节介绍如何创建组织的 Uyuni 主管理帐户。



主管理帐户在 Uyuni 中拥有最高的权威。请确保此帐户的访问信息安全。

我们建议为组织和组创建较低级别的管理帐户。不要共享主管理帐户的访问权限细节。

过程：设置主管理帐户

1. 在网页浏览器中输入 Uyuni Web UI 的地址。完成安装后已提供此地址。有关详细信息，请参见 [uyuni-server-setup.pdf](#)。
2. 登录到 Web UI，导航到 **创建组织 > 组织名称** 字段，然后输入您的组织名称。
3. 在 **创建组织 > 所需的登录名** 和 **创建组织 > 所需的口令** 字段中，输入您的用户名和口令。
4. 填写“帐户信息”字段，包括用于接收系统通知的电子邮件地址。
5. 单击 **[创建组织]** 以完成管理帐户的创建。

完成 Uyuni Web UI 安装后，您将转到 **主页 > 概览** 页。

### 1.6.3. 可选：从 SUSE Customer Center 同步产品

SUSE Customer Center (SCC) 维护一系列储存库，其中包含所有受支持企业客户端系统的软件包、软件和更新。这些储存库已组织成不同的频道，其中每个频道提供特定于某个发行套件、发行版和体系结构的软件。与 SCC 同步后，客户端可以接收更新，可组织成不同的组并指派到特定的产品软件频道。

本节介绍如何通过 Web UI 来与 SCC 同步，以及如何添加第一个客户端频道。



对于 Uyuni 而言，从 SUSE Customer Center 同步产品是可选操作。

在与 SCC 同步软件储存库之前，需在 Uyuni 中输入组织身份凭证。您可以使用组织身份凭证访问 SUSE 产品下载内容。可以在 <https://scc.suse.com/organizations> 中找到您的组织身份凭证。

在 Uyuni Web UI 中输入您的组织身份凭证：

过程：输入组织身份凭证

1. 在 SUSE Manager Web UI 中，导航到 **主菜单 > 管理 > 安装向导**。
2. 在 **安装向导** 页中，导航到 **[组织身份凭证]** 选项卡。
3. 单击 **[添加新身份凭证]**。
4. 输入用户名和口令，然后单击 **[保存]**。

确认身份凭证后，会显示一个打勾图标。成功输入新的身份凭证后，即可同步到 SUSE Customer Center。

过程：与 SUSE Customer Center 同步

1. 在 Uyuni Web UI 中，导航到 **管理 > 安装向导**。
2. 在 **安装向导** 页中，选择 **SUSE 产品** 选项卡。等待片刻以填充产品列表。如果您以前在 SUSE Customer Center 中注册过产品，则表格中会填充产品列表。此表格列出了体系结构、频道和状态信息。有关详细信息，请参见 **Reference > Admin**。

The screenshot shows the 'Setup Wizard' interface for 'Organization Credentials'. The 'SUSE Products' tab is active. On the left, a list of products is displayed with columns for 'Product Description', 'Arch', and 'Channels'. A progress bar at the bottom right of each row indicates the synchronization status. The 'SUSE Linux Enterprise Desktop 15' product is highlighted with a checked checkbox and a 100% sync progress bar. On the right, there's a sidebar with options to refresh the catalog and a note about why not all products are shown.

Product Description	Arch	Channels
Open Enterprise Server 2018	x86_64	☰
RHEL Expanded Support 5	i386	☰
RHEL Expanded Support 5	x86_64	☰
> RHEL Expanded Support 6	i386	☰
> RHEL Expanded Support 6	x86_64	☰
> RHEL Expanded Support 7	x86_64	☰
SUSE Container as a Service Platform 1.0	x86_64	☰
SUSE Container as a Service Platform 2.0	x86_64	☰
> SUSE Linux Enterprise Desktop 11 SP2	i586	☰
> SUSE Linux Enterprise Desktop 11 SP2	x86_64	☰
> SUSE Linux Enterprise Desktop 11 SP3	i586	☰
> SUSE Linux Enterprise Desktop 11 SP3	x86_64	☰
> SUSE Linux Enterprise Desktop 11 SP4	i586	☰
> SUSE Linux Enterprise Desktop 11 SP4	x86_64	☰
> SUSE Linux Enterprise Desktop 12	x86_64	☰
> SUSE Linux Enterprise Desktop 12 SP1	x86_64	☰
> SUSE Linux Enterprise Desktop 12 SP2	x86_64	☰
> SUSE Linux Enterprise Desktop 12 SP3	x86_64	☰
<input checked="" type="checkbox"/> > SUSE Linux Enterprise Desktop 15	x86_64	100%
> SUSE Linux Enterprise High Performance Computing 15	aarch64	☰ <input type="radio"/> include recommended
> SUSE Linux Enterprise High Performance Computing 15	x86_64	☰ <input type="radio"/> include recommended
> SUSE Linux Enterprise Server 10 SP3	i586	☰
> SUSE Linux Enterprise Server 10 SP3	ia64	☰
> SUSE Linux Enterprise Server 10 SP3	ppc	☰
> SUSE Linux Enterprise Server 10 SP3	s390x	☰

3. 如果您的 SUSE Linux Enterprise 客户端基于 **x86\_64** 体系结构，请向下滚动页面，并选中此频道对应的复选框。

- 选中每个频道左侧的复选框将相应频道添加到 Uyuni。单击说明左侧的箭头符号可以展开产品并列出可用的模块。
- 单击 **[添加产品]** 开始产品同步。

添加频道后，Uyuni 将安排该频道的同步。这可能需要较长时间，因为 Uyuni 会将频道软件源从 SUSE Customer Center 中的 SUSE 储存库复制到您服务器的本地 **/var/spacwalk/** 目录。

在某些环境中，内核提供的透明巨页可能会明显减慢 PostgreSQL 工作负载的速度。

要禁用透明巨页，请将 `transparent_hugepage` 内核参数设置为 `never`。还需要打开 `/etc/default/grub` 文件，然后添加或编辑 `GRUB_CMDLINE_LINUX_DEFAULT` 行。例如：



```
GRUB_CMDLINE_LINUX_DEFAULT="resume=/dev/sda1
splash=silent quiet showopts elevator=noop
transparent_hugepage=never"
```

要写入新配置，请运行 `grub2-mkconfig -o /boot/grub2/grub.cfg`。

通过查看 `/var/log/rhn/reposync` 目录中的频道日志文件来实时监视频道同步过程：

```
tail -f /var/log/rhn/reposync/<CHANNEL_NAME>.log
```

频道同步过程完成后，您可以继续进行客户端注册。有关详细说明，请参见 [Registration-overview](#)。

[Client-configuration](#)

## 1.7. 代理注册

可以使用引导脚本将代理系统注册为 Salt 客户端。

本过程说明如何设置软件频道，以及如何使用激活密钥将安装的代理注册为 Uyuni 客户端。



确保将 openSUSE Leap 频道与全部所需的子频道和 Uyuni Proxy 频道正确同步，这样才能在创建激活密钥时选择正确的子频道。

过程：注册代理

1. 在 Uyuni 服务器上，使用 `spacewalk-common-channels` 命令创建 openSUSE Leap 和 Uyuni Proxy 频道。`spacewalk-common-channels` 是 `spacewalk-utils` 软件包的一部分：

```
spacewalk-common-channels \
opensuse_leap15_3 \
opensuse_leap15_3-non-oss \
opensuse_leap15_3-non-oss-updates \
opensuse_leap15_3-updates \
opensuse_leap15_3-uyuni-client \
uyuni-proxy-stable-leap-153
```

如果不使用 `uyuni-proxy-stable-leap-152` 的话，您也可以尝试 `uyuni-proxy-devel-leap`（当前开发版）。

有关详细信息，请参见 [Client-configuration > Clients-opensuseleap](#)。

2. 在使用 openSUSE Leap 作为基础频道并使用其他频道作为子频道的情况下创建一个激活密钥。有关激活密钥的详细信息，请参见 [Client-configuration > Activation-keys](#)。
3. 修改代理的引导脚本。将 GPG 密钥添加到 `ORG_GPG_KEY=` 参数。有关详细信息，请参见 [Client-configuration > Clients-opensuseleap](#)。有关引导脚本的详细信息，请参见 [Client-configuration > Registration-bootstrap](#)。
4. 使用脚本引导客户端。有关详细信息，请参见 [Client-configuration > Registration-bootstrap](#)。
5. 导航到 **Salt** > **密钥** 并接受该密钥。接受密钥后，新代理将显示在 **系统** > **概栏** 中的 **最近注册的系统** 部分。
6. 导航到 **系统细节** > **软件** > **软件频道**，检查代理频道是否已选中。

有关如何设置已注册的 Uyuni Proxy，请参见 [uyuni-proxy-setup.pdf](#)。

## 1.8. Uyuni Proxy 设置

Uyuni Proxy 需要额外进行配置。

### 1.8.1. 安装 `uyuni_proxy` 模式

Check that the Proxy pattern is installed correctly. This step is part of [Installation-and-upgrade > Install-proxy-uyuni](#). To verify a successful installation, on the server select the `pattern_uyuni_proxy` package for installation.

安装完成后，salt-broker 服务会自动启动。此服务将 Salt 交互转发到 Uyuni 服务器。



- 代理链
- 可以在链中排列 Salt 代理。在这种情况下，上游代理名为 `parent`。

确保 TCP 端口 **4505** 和 **4506** 已在代理上打开。代理必须能够在这些端口上访问 Uyuni 服务器或父代理。

### 1.8.2. 复制服务器证书和密钥

代理将与 Uyuni 服务器共享一些 SSL 信息。请从 Uyuni 服务器或父代理复制证书及其密钥。

在代理上，以 root 身份使用您的 Uyuni 服务器或父代理（名为 **PARENT**）输入以下命令：

```
mkdir -m 700 /root/ssl-build
cd /root/ssl-build
scp root@PARENT:/root/ssl-build/RHN-ORG-PRIVATE-SSL-KEY .
scp root@PARENT:/root/ssl-build/RHN-ORG-TRUSTED-SSL-CERT .
scp root@PARENT:/root/ssl-build/rhn-ca-openssl.cnf .
```



为使安全链保持不变，Uyuni Proxy 功能要求为 SSL 证书签名的 CA 与为 Uyuni Server 证书签名的 CA 相同。不支持对代理和服务器使用由不同 CA 签名的证书。

### 1.8.3. 运行 `configure-proxy.sh`

`configure-proxy.sh` 脚本将完成 Uyuni Proxy 的设置。

执行交互式 `configure-proxy.sh` 脚本。如果在不提供其他输入的情况下按 `Enter`，脚本将使用方括号 [] 中提供的默认值。下面是有关所请求设置的一些信息：

**Uyuni 父项：**Uyuni 父项可以是另一个代理或 Uyuni 服务器。

#### HTTP 代理

Uyuni Proxy 可以通过 HTTP 代理访问 Web。如果防火墙禁止直接访问 Web，则需要使用 HTTP 代理。

#### 回溯电子邮件

要将问题报告到的电子邮件地址。

#### 使用 SSL

出于安全原因，请按 `Y`。

#### 您要导入现有证书吗？

请按 `N`。这可以确保使用前面从 Uyuni 服务器复制的新证书。

#### 组织

下一组问题与代理 SSL 证书的用法特征有关。组织可能是服务器上使用的同一组织，当然，如果您的代理不在主服务器所在的同一组织中，则两个组织是不同的。

#### 组织单位

此处的默认值是代理的主机名。

#### 城市

附加到代理证书的其他信息。

#### 州/省

附加到代理证书的其他信息。

#### 国家/地区代码

在 `国 家/ 地 区 代 码` 字段中，输入安装期间设置的国家/地区代码。例如，如果您的代理位于美国，而 Uyuni 位于德国，请为代理输入 `DE`。



国家/地区代码必须是两个大写字母。有关国家/地区代码的完整列表，请参见 <https://www.iso.org/obp/ui/#search>。

## CNAME 别名（空格分隔）

如果可以通过不同的 DNS CNAME 别名访问您的代理，请使用此字段。否则可将其留空。

## CA 口令

输入 Uyuni 服务器的证书使用的口令。

## 您要使用现有的 SSH 密钥来代理 SSH-Push Salt 受控端吗？

如果您要重复使用对服务器上的 SSH-Push Salt 客户端所用的 SSH 密钥，请使用此选项。

## 要创建并填充配置频道 rhn\_proxy\_config\_1000010001 吗？

接受默认值 **Y**。

## SUSE Manager 用户名

使用 Uyuni 服务器上的相同用户名和口令。

如果缺少某些部分（例如 CA 密钥和公共证书），脚本将列显必须执行的以集成所需文件的命令。复制必需的文件后，请再次运行 **configure-proxy.sh**。如果在执行脚本期间收到 HTTP 错误，请再次运行脚本。

**configure-proxy.sh** 激活 Uyuni Proxy 所需的服务，例如 **squid**、**apache2**、**salt-broker** 和 **jabberd**。

要检查代理系统及其客户端的状态，请在 Web UI 中单击代理系统的细节页（单击 **系统 > 代理**，然后单击系统名称）。**连接和代理** 子选项卡会显示各种状态信息。

## 1.8.4. 启用 PXE 引导

### 1.8.4.1. 同步配置文件和系统信息

要通过代理启用 PXE 引导，必须在 Uyuni 代理和 Uyuni 服务器上安装并配置额外的软件。

1. 在 Uyuni Proxy 上安装 **susemanager-tftpsync-recv** 软件包：

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

2. 在 Uyuni Proxy 上，运行 **configure-tftpsync.sh** 设置脚本并输入请求的信息：

```
configure-tftpsync.sh
```

需要提供 Uyuni 服务器和代理的主机名与 IP 地址。此外，需要输入代理上 tftpboot 目录的路径。

3. 在 Uyuni 服务器上安装 **susemanager-tftpsync**：

```
zypper in susemanager-tftpsync
```

- 在 Uyuni 服务器上运行 `configure-tftpsync.sh`。这会创建配置并将其上载到 Uyuni Proxy：

```
configure-tftpsync.sh FQDN_of_Proxy
```

- 在 Uyuni 服务器上启动初始同步：

```
cobbler sync
```

也可以在 Cobbler 中发生了需要立即同步的更改后执行此操作。如果不执行此操作，Cobbler 同步将在需要时自动运行。有关 PXE 引导的详细信息，请参见 [Client-configuration > Autoinst-pxeboot](#)。

#### 1.8.4.2. 通过代理为 PXE 配置 DHCP

Uyuni 使用 Cobbler 进行客户端置备。PXE (tftp) 默认已安装并已激活。客户端必须能够使用 DHCP 在 Uyuni Proxy 上找到 PXE 引导。对于包含要置备的客户端的区域，请使用以下 DHCP 配置：

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

#### 1.8.5. 更换 Uyuni 代理

代理不包含有关与它连接的客户端的任何信息。因此，随时可将一个代理替换为新代理。替换用的代理必须与其前任代理具有相同的名称和 IP 地址。

准备替换时，请关闭旧代理并使其保持已安装状态。为此系统创建重新激活密钥，然后使用重新激活密钥注册新代理。如果您不使用重新激活密钥，则需要针对新代理重新注册所有客户端。



仅当您不想要丢失计算机的历史记录时，才需要使用重新激活密钥。如果您不使用重新激活密钥，替换用的代理将成为具有新 ID 的“新”代理。

过程：替换代理并保持客户端的已注册状态

- 在启动实际迁移过程之前，请根据需要保存旧代理中的数据。考虑将重要数据或手动创建的数据复制到新代理也可访问的中心位置。
- 关闭代理。
- 安装新的 Uyuni 代理。有关安装说明，请参见 [代理安装](#)。
- 在 Uyuni Web UI 中，选择新安装的 Uyuni 代理并将其从系统列表中删除。
- 单击 **重 新 激 活**，为旧代理系统创建重新激活密钥：在旧代理的“系统细节”选项卡上单击 **重 新 激 活**，单击 **生 成 新 密 钥** 并记下新密钥，因为稍后需要用到。有关重新激活密钥的详细信息，请参见 [Reference Systems](#)。

## 6. 可选：安装新代理后，可能还需要：

- 将集中保存的数据复制到新代理系统
- 安装任何其他所需软件
- 设置 TFTP 同步（如果该代理用于自动安装）



在安装代理期间，客户端将无法访问 Uyuni 服务器。删除某个代理后，系统列表可能暂时不正确。以前已连接到该代理的所有客户端将显示为直接连接到服务器。在客户端上成功完成第一个操作（例如执行远程命令，或者安装软件包或补丁）后，此信息将自动更正。这种更正可能发生在几小时之后。

## 1.9. 公有云设置

Uyuni 服务器需要注册到 SUSE Customer Center 中以接收更新，之后您才能登录。



You must have set up the storage devices before you run the YaST Uyuni setup procedure. For more information, see [Installation-and-upgrade > Pubcloud-requirements](#).

请按照云提供商的说明通过 SSH 连接实例，然后运行以下命令启动设置过程：

```
yast2 susemanager_setup
```

按照提示操作，然后等待设置过程完成。

For detailed instructions on setting up Uyuni with YaST, see [Installation-and-upgrade > Server-setup](#).

### 1.9.1. 激活公有云模块

要在公有云实例上使用 Uyuni，需要激活公有云模块。

过程：激活公有云模块

1. 在 Uyuni 服务器上打开 YaST 管理工具，然后导航到 **软件 > 软件储存库**。
2. 单击 **[添加]** 并选择 **注册服务器上的扩展和模块**。
3. 在 **可用的扩展** 字段中选择 **Public Cloud Module**。

如果您偏爱使用命令行，可通过以下命令添加该模块：

```
SUSEConnect -p sle-module-public-cloud/15.3/x86_64
```

安装过程完成后，可以检查是否已安装全部所需的模块。在命令提示符下输入：

```
SUSEConnect --status-text
```

对于公有云上的 Uyuni 服务器，预期安装的模块包括：

- SUSE Linux Enterprise Server Basesystem 模块
- Python 2 Module
- Server Applications 模块
- Web and Scripting 模块
- SUSE Manager Server Module
- Public Cloud Module

## 1.9.2. 在 Web UI 中完成设置

使用类似如下的地址在网页浏览器中打开 Uyuni Web UI：

```
https://<public_IP>
```

使用管理员帐户登录 Uyuni Web UI。用户名和口令因提供商而异。

表格 10. 默认管理员帐户细节

提供商	默认用户名	默认口令
Amazon EC2	admin	<instance-ID>
Google Compute Engine	admin	<instance-ID>
Microsoft Azure	admin	<instance-name>-suma

可以从公有云实例的 Web 控制台或者从命令提示符检索实例名称或 ID：

Amazon EC2：

```
ec2metadata --instance-id
```

Google Compute Engine：

```
gcemetadata --query instance --id
```

Microsoft Azure：

```
azuremetadata --compute --name
```

首次登录到管理员帐户时，系统会为您分配一个自动生成的组织名称。请导航到管理 > 组织编辑组织名称，以更改此名称。



首次登录到管理员帐户时，请更改默认口令以保护您的帐户。

For more information about setting up your Uyuni Server, see [Installation-and-upgrade > Server-setup](#).

使用 Uyuni Web UI 添加所需的软件产品，并安排储存库同步。为此，最好的办法是导航到管理 > 安装向导并按照提示操作。

For more information about the setup wizard, see [Installation-and-upgrade > Setup-wizard](#).

如果您打算注册 Ubuntu 或 Red Hat Enterprise Linux 客户端，则需要设置自定义储存库和频道。有关详细信息，请参见 [Client-configuration > Registration-overview](#) 中的相关章节。

要同步您的频道，请导航到软件 > 管理 > 频道。单击您创建的每个频道，导航到储存库 > 同步选项卡，然后单击 **[立即同步]**。您也可以在此屏幕中安排同步。



引导客户端之前，请确保为该产品选择的所有频道都已同步。

同步过程有时可能需要数小时才能完成，特别是 openSUSE、SLES ES 和 RHEL 频道。

设置好 Uyuni 服务器后，您便可开始注册客户端。有关在公有云上注册客户端的详细信息，请参见 [Client-configuration > Clients-pubcloud](#)。

## 1.10. Web 界面设置

要使用 Uyuni Web UI，请在浏览器中导航到您的 Uyuni URL。使用您的 Uyuni 管理帐户登录到 Web UI。

在使用 Web UI 期间，单击 **②** 图标可访问相应部分的文档。

首次登录到 Web UI 时，请完成安装向导来设置您的用户首选项。随时可以通过导航到管理 > 安装向导来访问安装向导。

完成初始安装并登录后，您会转到 **主页 > 概览** 部分。此部分包含摘要窗格，其中提供了有关系统的重要信息。

**任务** 窗格提供最常用 Web UI 任务的快捷方式。

**非活动系统** 窗格显示已停止签入到 Uyuni 服务器的所有客户端。您需要检查这些客户端。

**最关键系统** 窗格显示需要软件更新的所有客户端。在列表中单击某个客户端的名称会转到该客户端系统。

细节部分。在此页中可以应用任何所需的更新。

**最近安排的操作** 窗格显示最近已运行的所有操作及其状态。单击操作的标签可查看更多细节。

**相关安全补丁** 窗格显示需要应用到客户端的所有可用安全补丁。请尽快应用安全补丁以确保客户端安全，这一点至关重要。

**系统组** 窗格显示您创建的所有系统组，以及这些组中的客户端是否已完全更新。

**最近注册的系统** 窗格显示所有客户端。在列表中单击某个客户端的名称会转到该客户端的**系统** > **系统细节** 部分。

## 1.10.1. Web 界面导航

Uyuni Web UI 使用一些标准元素来帮助您导航。在使用 Web UI 期间，单击  图标可访问相应部分的文档。

### 1.10.1.1. 顶部导航栏

在顶部导航栏中可以访问系统范围的功能。

#### 通知

通知钟形图标在一个圆圈中显示未读的通知消息数。单击通知图标会转到 [主页](#) > [通知消息](#)。

#### 概览图例

单击眼睛图标可查看 Web UI 中当前活动部分的常用图标。

#### 搜索

单击放大镜图标可打开搜索框。可以搜索系统（客户端）、软件包、补丁或文档。单击  可转到相关的 [高级搜索](#) 页并查看搜索结果。

#### 已选择系统

已选择系统图标在一个圆圈中显示当前已选择的系统数。单击已选择系统图标会转到 [系统](#) > [系统集管理器](#) > [概览](#)。单击橡皮擦图标可取消选择所有系统。有关系统集管理器的详细信息，请参见 [Client-configuration](#) > [System-set-manager](#)。

#### 用户帐户

用户帐户图标与当前已登录用户的名称一同显示。单击用户帐户图标会转到 [主页](#) > [用户帐户](#) > [我的帐户](#)。

#### 组织

组织图标与当前活动组织的名称一同显示。单击组织图标会转到 [主页](#) > [我的组织](#) > [配置](#)。

#### 首选项

单击齿轮图标会转到 [主页](#) > [我的首选项](#)。

## 注销

单击退出图标可注销当前用户并返回到登录屏幕。



如果您添加了发行套件、刚刚同步了频道，或者将系统注册到了 Uyuni 服务器，该对象可能需要几分钟才能完成索引编制并显示在搜索结果中。如果您需要强制重构建搜索索引，请在命令提示符处使用以下命令：

```
rhn-search cleanindex
```

## 1.10.1.2. 左侧导航栏

左侧导航栏是 Uyuni Web UI 的主菜单。

### 展开

如果单击某个菜单项的图标或向下箭头，将会展开菜单树的此部分，但不会实际装载页面。

### 折叠

要折叠菜单系统的已打开部分，请单击菜单项的向上箭头。

### 自动装载

如果单击某个菜单项的名称，将会自动装载并显示该菜单项的第一个可用页面。

### 搜索

在 **搜索** 字段中输入搜索字符串可以查找菜单树的某个项。可用的菜单项取决于用户的角色。



只有 Uyuni 管理员可以访问以下部分：

- 映像
- 用户
- 管理

## 1.10.1.3. 表格

许多部分在表格中提供信息。单击表格右上方与右下方的向左箭头和向右箭头可以在大多数表格之间导航。导航到 [主页 > 我的首选项](#) 可以更改每个页面上显示的默认项数。

可以使用表格顶部的搜索栏来过滤大多数表格中的内容。单击用作排序依据的列标题可将表格项排序。再次单击该列标题会反转排序顺序。

## 1.10.1.4. 补丁警报图标

根据补丁的类型通过三个主要图标来表示补丁。图标根据严重性采用绿色、黄色或红色。

	盾形图标表示安全警报。
	红色盾形是优先级最高的安全警报。
	虫子图标表示 Bug 修复警报。
.	方块图标表示增强警报。

其他一些图标用于提供附加信息：

	环形箭头图标表示应用补丁后需要重引导。
	档案箱图标表示补丁会对软件包管理产生影响。

### 1.10.1.5. 界面自定义

Uyuni Web UI 默认使用适用于您所安装的产品的主题。 您可以更改主题以反映 Uyuni 或 SUSE Manager 颜色。SUSEManager主题还提供深色选项。要使用Web UI更改主题，请导航到主页>我的首选项，找到 风格 主题部分。

有关更改默认主题的信息，请参见 Administration > Users。

### 1.10.1.6. 请求超时值

当您使用 Web UI 时，您就在向 Uyuni 服务器发送请求。在某些情况下，这些请求可能需要很长时间处理或者完全失败。默认情况下，请求会在 30 秒后超时，并且 Web UI 中会显示一条消息，以及一条供您再次尝试发送请求的链接。

您可以通过在 `etc/rhn/rhn.conf` 配置文件中调整 `web.spa.timeout` 参数来配置默认超时值。请在更改此参数后重启动 tomcat 服务。如果您的因特网连接速度很慢，或者经常一次对很多客户端执行操作，将此设置更改为更高的数值可能会有帮助。

## 1.11. 安装向导

完成 Uyuni 安装后，可以使用安装向导来完成最后几个步骤。在安装向导中可以配置 HTTP 代理、组织身份凭证和 SUSE 产品。

当您首次登录到 Uyuni Web UI 时，默认会显示安装向导。可以通过导航到管理 > 安装向导来直接访问安装向导。

### 1.11.1. 配置 HTTP 代理

Uyuni 可以使用代理连接到 SUSE Customer Center (SCC) 或其他远程服务器。请导航到 HTTP 代理 选项卡来配置代理。

需要提供代理的主机名。请使用语法 < 主机名>:<端口>。例如：<example.com>:8080。

可以通过清除字段来禁用代理。



请确保所选的 Uyuni Proxy 用户名或口令不包含 @ 或 : 字符。这些字符是保留的字符。

## 1.11.2. 配置组织身份凭证

您的 SUSE Customer Center 帐户与组织的管理帐户相关联。您可以与组织中的其他用户共享您的 SUSE Customer Center 访问权限。导航到 **组织身份凭证** 选项卡，向组织中的用户授予对您的 SUSE Customer Center 帐户的访问权限。

**[添加新身份凭证]**，输入要向其授予访问权限的用户的用户名和口令，**[保存]**。已向其授予访问权限的用户将显示一张新的身份凭证卡片。使用该卡片上的这些按钮可以编辑或撤消访问权限：

- 检查身份凭证验证状态（绿色对勾图标或红色划叉图标）。要在 SCC 中重新检查身份凭证，请单击该图标。
- 设置用于服务器间同步的主要身份凭证（黄色星形图标）。
- 列出与特定身份凭证相关的订阅（列表图标）。
- 编辑身份凭证（铅笔图标）。
- 删除身份凭证（垃圾桶图标）。

## 1.11.3. 配置产品

您的 SUSE 订阅赋予您访问各种产品的权利。导航到 **产品** 选项卡可以浏览您的可用产品，以及将 Uyuni 与 SUSE Customer Center 同步。

过滤器可帮助您按说明或体系结构搜索产品。

列表按产品名称排序，有订阅的产品显示在顶部，免费提供的产品显示在列表末尾。对于每个产品，您可以查看其适用的体系结构。单击产品名称旁边的箭头可以查看关联的频道和扩展。单击 **[频道]** 图标可以查看与每个产品关联的频道的完整列表。

对于基于 SUSE Linux Enterprise 15 和更高版本的产品，可以选择仅同步所需的软件包，或者选择同时包括建议的产品。将 **[包括建议的项]** 开关切换为打开可以同步所有产品，将此开关切换为关闭则只同步所需的产品。

可以通过选择或取消选取单个产品，来进一步具体化您要同步的产品。

完成选择后，请单击 **[添加产品]**，然后单击 **[刷新]** 以安排同步。

每个产品的同步进度显示在产品名称旁边的进度条中。根据所选的产品，同步最长可能需要花费几个小时。同步完成后，新产品即可供您在 Uyuni 中使用。

如果同步失败，原因可能是使用了第三方 GPG 密钥，或者您的公司防火墙阻止访问下载服务器。请查看错误的通知细节。有关产品同步查错的详细信息，请参见 **Administration > Tshoot-sync**。

## 1.12. 连接 Pay-as-you-go 实例

在三大主流公有云提供商（AWS、GCP 和 Azure）中，SUSE：

- 提供 SLES、SLES for SAP 等产品的自定义 Pay-as-you-go 产品映像
- 为以 Pay-as-you-go 形式提供的产品操作按区域 RMT 服务器镜像储存库

本文介绍如何将现有 Pay-as-you-go 实例连接到 Uyuni 服务器，以及提供有关从实例收集身份凭证的基本信息。此类连接是为了提取身份验证数据，以便 Uyuni 服务器能够连接到云 RMT 主机。

在使用 Pay-as-you-go 功能之前，请确保：

- Uyuni 服务器已部署在 Pay-as-you-go 实例所在的同一区域
- 已在管理 > 安装向导 > 组织身份凭证中输入有效的 SUSE Customer Center 身份凭证，即使它们仅提供产品的受限访问权限

### 1.12.1. 连接 Pay-as-you-go 实例

过程：连接新的 Pay-as-you-go 实例

1. 在 Uyuni Web UI 中，导航到管理 > 安装向导 > Pay-as-you-go，然后单击  [添加 Pay-as-you-go]。
2. 从页面的 Pay-as-you-go 连接说明部分开始。
3. 在说明字段中添加说明。
4. 移到页面的 实例 SSH 连接数据部分。
5. 在主机字段中，键入要从 Uyuni 连接的实例 DNS 或 IP 地址。
6. 在 SSH 端口字段中输入端口号或使用默认值 22。
7. 在用户名字段中输入云中指定的用户名。
8. 在口令字段中输入口令。
9. 在 SSH 私用密钥字段中输入实例密钥。
10. 在 SSH 私用密钥通行口令字段中输入密钥通行口令。



身份验证密钥必须采用 PEM 格式。

如果您要通过 SSH 堡垒连接实例而不是直接连接，请执行[过程：添加 SSH 堡垒连接数据](#)。

否则，请执行[过程：完成 Pay-as-you-go 连接](#)。

过程：添加 SSH 堡垒连接数据

1. 导航到页面的 堡垒 SSH 连接数据部分。
2. 在主机字段中输入堡垒主机名。
3. 在 SSH 端口字段中输入堡垒端口号。

4. 在 **用 户** 字段中输入堡垒用户名。
5. 在 **口 令** 字段中输入堡垒口令。
6. 在 **SSH 私 用 密 钥** 字段中输入堡垒密钥。
7. 在 **SSH 私 用 密 钥 通 行 口 令** 字段中输入堡垒密钥通行口令。

执行过程：完成 Pay-as-you-go 连接完成设置过程。

过程：完成 Pay-as-you-go 连接

1. 要完成添加新 Pay-as-you-go 连接数据的过程，请单击  [创建]。
2. 返回 Pay-as-you-go 连接数据 **细 节** 页面。顶部的 **信 息** 部分会显示更新的连接状态。
3. **管 理 > 安 装 向 导 > Pay-as-you-go** 屏幕中也会显示连接状态。
4. 如果实例的身份验证数据正确无误，**状 态** 列会显示“已成功更新身份凭证”。



如果在任何时间输入了无效数据，**管理 > 安 装 向 导 > Pay-as-you-go** 中会显示新创建的实例，同时 **状 态** 列会显示错误消息。

一旦服务器上有可用的身份验证信息，可用产品列表即会更新。

Available products are all versions of the same product family and architecture as the one installed in the Pay-as-you-go instance. For example, if the instance has the SLES 15 SP1 product installed, SLES 15 SP2, SLES 15 SP3 and SLES 15 SP4 are automatically shown in **Admin > Setup Wizard > Products**.

当有产品显示为可用时，用户便可选中该产品名称旁边的复选框并单击  [添加产品]，将产品添加到 Uyuni 中。

成功消息显示后，您可以在 Web UI 中导航到 **软 件 > 频 道 列 表 > 所 有** 校验新添加的频道。

要监控每个频道的同步进度，请查看 Uyuni 服务器上 `/var/log/rhn/reposync` 目录中的日志文件。

### 1.12.1.1. 删 除 实 例 连 接 数据

下面的过程介绍如何删除实例的 SSH 连接数据。

过程：删除实例的连接数据

1. 打开 **管 理 > 安 装 向 导 > Pay-as-you-go**。
2. 在现有实例列表中找到该实例。
3. 单击实例细节。
4. 选择  [删除] 并确认您的选择。
5. 您会返回到实例列表。刚才删除的实例不再显示。

### 1.12.2. 实 例 身 份 凭 证 收 集 状 态

Uyuni 服务器使用从实例收集的身份凭证来连接 RMT 服务器和下载使用 reposync 的软件包。Taskomatic 会

使用定义的 SSH 连接数据每 10 分钟刷新一次这些身份凭证。RMT 服务器连接始终使用从 Pay-as-you-go 实例收集的最新已知身份验证身份凭证。

“状态”列或实例细节页面中会显示 Pay-as-you-go 实例身份凭证收集的最新状态。当无法访问实例时，身份凭证更新进程将会失败。

除非明确删除了 SSH 连接数据，否则 Pay-as-you-go 实例将一直连接到 Uyuni 服务器。要删除实例的 SSH 连接数据，请执行[过程：删除实例的连接数据](#)。

并非在任何时间都可从 Uyuni 服务器访问 Pay-as-you-go 实例。

1. 如果实例存在但已停止，系统将使用最新的已知身份凭证尝试连接实例。 身份凭证的有效时长取决于云提供商。
2. 如果实例不再存在，但在 SUMA 中仍保持注册状态，其身份凭证将不再有效，身份验证将会失败。 “状态”列中会显示错误消息。



错误消息只会指出实例不再可用。云提供商需要对实例的状态进行进一步诊断。

## 1.13. 升级服务器

Uyuni 采用滚动发布版本控制模式。请查阅发行说明，获取有关用于升级到下一版本的升级策略的信息：

### 次要升级

You can consider minor upgrades as regular upgrades. For more information, see [Installation-and-upgrade > Server-minor-upgrade-uyuni](#).

### 主要升级

You can consider major upgrades as special upgrades. In this case components such as the base operating system, Salt, or the PostgreSQL database will be upgraded. For more information, see [Installation-and-upgrade > Server-major-upgrade-uyuni](#).

## 服务器 - 次要升级

Uyuni 团队每年都会发布几次 Uyuni Server 的次要升级。这些更新旨在修复 Bug 并改进功能，有时也包含一些新功能。



您可能需要执行一些额外的手动步骤，这些信息仅在发行说明中提供。有关升级的额外重要信息，请参见发行说明，网址：<https://www.uyuni-project.org/pages/stable-version.html>。

执行次要升级的过程与安装操作系统软件包更新类似。

**过程：更新 Uyuni 服务器上的软件包**

默认会为 Uyuni 服务器配置并启用多个更新储存库。新软件包和更新的软件包会自动变为可用状态。

It is recommended you make a backup of the server before upgrading.

1. 在 Uyuni 服务器上的命令提示符处，以 root 身份停止 spacewalk 服务：

```
spacewalk-service stop
```

2. 刷新软件储存库：

```
zypper ref
```

3. Update new packages: (Repeat this if prompted by zypper)

```
zypper up
```

4. If zypper reports that the Uyuni package won't be upgraded, run the command manually:

```
zypper install Uyuni-Server-release
```

5. 重启 spacewalk 服务：

```
spacewalk-service start
```

如果补丁更新建议重引导服务器，请将其重引导。



Zypper 默认每十分钟刷新一次储存库（请参见 `/etc/zypp/zypp.conf` 中的 `repo.refresh.delay`）。如果 `自动刷新` 被禁用，请运行 `zypper ref` 以刷新所有储存库。



从 Uyuni 2020.04 开始，不再需要 `spacewalk-schema-upgrade`。

使用 `spacewalk-service start` 启动 spacewalk 服务时，会自动运行纲要升级。



更新后，受软件包更新影响的服务不会自动重启动。您需要手动重启动这些服务，以免发生潜在故障。运行 `zypper ps` 检查有无使用旧代码并需要重启动的应用程序。

## 服务器 - 主要升级

当 Uyuni 核心组件升级到新的主要版本时，需在 Uyuni 服务器上执行主要升级。如果需要升级 PostgreSQL、Salt 或 openSUSE Leap 的版本，就需要进行主要升级。openSUSE Leap 为底层基础操作系统

(OS)。



您可能需要执行一些额外的手动步骤，这些信息仅在发行说明中提供。有关升级的额外重要信息，请参见发行说明，网址：

<https://www.uyuni-project.org/pages/stable-version.html>



迁移期间产生的问题无法修复。 在开始迁移前，请确保已创建备份。 如果您是在虚拟机上运行 Uyuni Server，我们建议在开始前创建快照。

**server-migrator.sh** 脚本会将 Uyuni 服务器迁移到最新的版本，还会将底层操作系统升级到版本 15.3。该脚本包含在 **susemanager** 软件包中。

过程：迁移 Uyuni 服务器

1. 在运行 **server-migrator.sh** 脚本前，需检查是否安装了 **susemanager** 软件包的最新版本：

```
zypper ref
zypper up susemanager
```

2. 运行 **/usr/lib/susemanager/bin/server-migrator.sh** 脚本以升级基础 OS 和 Uyuni 服务器。

3. To migrate the database to the latest database version run the migrate script:

```
/usr/lib/susemanager/bin/pg-migrate-x-to-y.sh
```

For more information about PostgreSQL database migration, see [db-migration-xy.pdf](#).

+

. After the migration is complete, manually reboot the {productname} Server:

+

## 1.14. 升级代理

在执行任何代理更新前，请安排维护时段。 进行更新时，通过代理注册到 Uyuni 的客户端将无法连接到 Uyuni。有关维护时段的详细信息，请参见 **Administration > Maintenance-windows**。



The upgrade procedure to 2022.04 can either be a major or a minor upgrade. For more information, see the Uyuni 2022.04 release notes.

## Major Upgrade

See [proxy-uyuni.pdf](#).

## Minor Upgrade

See [proxy-minor-uyuni.pdf](#).

### 1.14.1. Proxy - Major Upgrade

在执行任何代理更新前，请安排维护时段。进行更新时，通过代理注册到 Uyuni 的客户端将无法连接到 Uyuni。有关维护时段的详细信息，请参见 [Administration > Maintenance-windows](#)。



Major proxy upgrades include a version upgrade of the operating system. For more information, see the Uyuni 2022.04 release notes.

#### 1.14.1.1. Preparation for the Upgrade

Procedure: Update the package `opensuse-build-key` at the proxies

1. At the command prompt on the Uyuni Server, as root, use the `spacewalk-repo-sync` command to sync all the openSUSE Leap 15.2 channels:

```
spacewalk-repo-sync -p opensuse_leap15_2-x86_64
```

1. Update the package `openSUSE-build-key` on all Uyuni proxies.

Procedure: Adding openSUSE Leap 15.3 Software Channels at the Command Prompt

1. 在 Uyuni 服务器上的命令提示符下，以 root 身份使用 `spacewalk-common-channels` 命令添加相应的频道：

```
spacewalk-common-channels opensuse_leap15_3 \
opensuse_leap15_3-non-oss \
opensuse_leap15_3-non-oss-updates \
opensuse_leap15_3-updates \
opensuse_leap15_3-backports-update \
opensuse_leap15_3-sle-updates \
opensuse_leap15_3-uyuni-client \
uyuni-proxy-stable-leap-153
```

2. 使用 `spacewalk-repo-sync` 完全同步所有频道。

#### 1.14.1.2. 升级代理

要更新代理，首先需停止代理服务，然后替换软件储存库，更新软件，最后重启动代理服务。

过程：更新 Uyuni 代理

1. 在 Uyuni 服务器 Web UI 中，导航到代理系统的细节页面，单击 **重 新 激 活** 子选项卡。
2. 单击 **[生 成 新 密 钥]** 以生成重新激活密钥。
3. 在 Uyuni 代理上，停止代理服务：

```
spacewalk-proxy stop
```

4. 在 Uyuni 服务器 Web UI 中，导航到 **系统 > 代理**，然后单击代理名称。
5. 单击 **软件 > 软件频道**，选择 **自 定 义 频 道** 列表中所列的 openSUSE Leap 15.3 频道作为基础频道。
6. 在 **子 频 道** 窗格中，选择 15.3 子频道。
7. 单击 **[下 一 步]**，然后单击 **[确 认] [guimenu]` ```** 以确认软件频道更改。
8. Click **Details > Remote Command**, add **zypper dup --allow-vendor-change** to the script field, and click **[Schedule]**
9. Wait until the remote command is executed.
10. 使用 **rhnreg\_ks** 命令行实用程序通过重新激活密钥重新注册。系统即会重新注册并具有相同的 ID、历史记录和分组。
11. 在 Uyuni 代理上，启动代理服务：

```
spacewalk-proxy start
```

如果需要更新许多代理，可以在 Uyuni 服务器上创建由此命令序列组成的操作链。您可以使用操作链同时对多个代理执行更新。

## 1.14.2. Proxy - Minor Upgrade

在执行任何代理更新前，请安排维护时段。进行更新时，通过代理注册到 Uyuni 的客户端将无法连接到 Uyuni。有关维护时段的详细信息，请参见 **Administration > Maintenance-windows**。



Minor proxy upgrades do not include a version upgrade of the operating system. For more information, see the Uyuni 2022.04 release notes.

### 1.14.2.1. 升级代理

要更新代理，首先需停止代理服务，然后更新软件，最后重启动代理服务。

过程：更新 Uyuni 代理

1. 在 Uyuni 代理上，停止代理服务：

```
spacewalk-proxy stop
```

2. 在 Uyuni 服务器 Web UI 中，导航到**系统 > 代理**，然后单击代理名称。
3. Select all the packages to be updated on the proxy, and then apply the selection.
4. 在 Uyuni 代理上，启动代理服务：

```
spacewalk-proxy start
```

如果需要更新许多代理，可以在 Uyuni 服务器上创建由此命令序列组成的操作链。您可以使用操作链同时对多个代理执行更新。

```
#include::modules/installation-and-upgrade/pages/installation-and-upgrade:client-intro.adoc[leveloffset=+1] :leveloffset: +2
```

# 升级数据库

To successfully perform a major Uyuni update, you might need to upgrade the underlying database.

To upgrade to the latest PostgreSQL, see [Installation-and-upgrade > Db-migration-xy](#).

This table shows the PostgreSQL version required for each version of Uyuni and openSUSE:

表格 11. PostgreSQL 版本

Uyuni version	Operating System version	PostgreSQL version
Uyuni >= 2020.07	openSUSE 15.2	PostgreSQL 12
Uyuni >= 2021.06	openSUSE 15.3	PostgreSQL 13

## Database Migration to Latest Version

This section covers upgrading the PostgreSQL database to the latest version. If you are already using PostgreSQL 14, you do not need to perform this migration.

If you want to upgrade to the latest Uyuni version, you must be using PostgreSQL version 13 or 14, depending on the underlying operating system:

- If you are running SLES 15 SP4, use PostgreSQL 14.
- If you are running Leap 15.3, use PostgreSQL 13.

## 准备升级

在开始升级前，准备现有 Uyuni 服务器并创建数据库备份。

PostgreSQL 将数据储存在 `/var/lib/pgsql/data/` 中。

过程：准备升级

1. 检查活动 PostgreSQL 版本：

```
psql --version
```

2. 检查活动 smdba 版本：

```
rpm -q smdba
```

PostgreSQL 14 requires `smdba` version 1.7.6 or later.

3. 备份数据库。有关备份的详细信息，请参见 [Administration > Backup-restore](#)。

## 升级 PostgreSQL



在每次进行迁移前都需创建数据库备份。

升级 PostgreSQL 的方式有两种：常规升级或快速升级：

常规升级会创建完整的数据库副本，因此需要两倍于现有数据库大小的可用空间。 常规升级可能需要大量时间，具体取决于数据库大小和储存系统的速度。

快速升级只需要几分钟时间，并且几乎不会使用额外的磁盘空间。 但是，如果快速升级失败，则必须通过备份来恢复数据库。 快速升级可降低磁盘空间用尽的风险，但会增加数据丢失的风险（如果没有备份或备份无法重放）。 常规升级会复制数据库文件，而不是在文件之间创建硬链接。

PostgreSQL 将数据储存在 `/var/lib/pgsql/data/` 中。

过程：执行常规升级

1. 备份数据库。有关备份的详细信息，请参见 [Administration > Backup-restore](#)。
2. 开始升级。运行脚本：

```
/usr/lib/susemanager/bin/pg-migrate-x-to-y.sh
```

3. 升级成功完成后，您便可以放心删除旧数据库目录，并回收用掉的磁盘空间。旧目录会重命名为 `/var/lib/pgsql/data-pg12` 或 `/var/lib/pgsql/data-pg10`，具体取决于您是从哪个版本升级的。

**pg-migrate-x-to-y.sh** 脚本会执行以下操作：

- 停止 spacewalk 服务
- 关闭正在运行的数据库
- 检查是否安装了最新的 PostgreSQL，并根据需要安装
- 从 PostgreSQL 的上一个版本切换到最新版本（作为新的默认数据库）
- 发起数据库迁移
- 创建已针对 Uyuni 优化的 PostgreSQL 配置文件
- 启动数据库和 spacewalk 服务



如果升级失败，迁移脚本会尝试将数据库恢复其原始状态。

过程：执行快速 PostgreSQL 升级

1. 备份数据库。 如果没有已经过校验的数据库备份，切勿启动快速升级。 有关备份的详细信息，请参见 [Administration > Backup-restore](#)。
2. 开始升级。运行脚本。

```
/usr/lib/susemanager/bin/pg-migrate-x-to-y.sh fast
```

3. 升级成功完成后，您便可以放心删除旧数据库目录，并回收用掉的磁盘空间。旧目录会重命名为 `/var/lib/pgsql/data-pg12` 或 `/var/lib/pgsql/data-pg10`，具体取决于您是从哪个版本升级的。

## Chapter 2. 查错

本章介绍 Uyuni 升级时可能遇到的一些常见问题以及解决方案。

要了解升级问题的细节，请检查迁移日志文件。 日志文件位于要升级的系统的 `/var/log/rhn/migration.log` 中。

### 2.1. 磁盘空间不足

在开始迁移前，需检查可用磁盘空间。我们建议将 `/var/spacewalk` 和 `/var/lib/pgsql` 存放于不同的 XFS 文件系统中。

设置单独的文件系统时，编辑 `/etc/fstab` 并去除 `/var/lib/pgsql` 子卷。重引导服务器以应用更改。

### 2.2. 重新尝试设置目标系统

如果需要重新尝试设置目标系统，请执行以下步骤：

1. 删除 `/root/.MANAGER_SETUP_COMPLETE`。
2. 停止 PostgreSQL 并去除 `/var/lib/pgsql/data`。
3. 将目标系统主机名设置为与源系统主机名匹配的名称。
4. 检查 `/etc/hosts` 文件，并根据需要更正。
5. 检查目标系统中的 `/etc/setup_env.sh`，并确保已设置数据库名称：

```
MANAGER_DB_NAME='susemanager'
```

6. 重引导目标系统。
7. 再次运行 `mgr-setup`。

### 2.3. 纲要升级失败

如果纲要升级失败，数据库版本检查和所有其他 spacewalk 服务都不会启动。请运行 `spacewalk-service start`，获取有关如何继续的详细信息和提示。

您也可以直接运行版本检查：

```
systemctl status uyuni-check-database.service
```

或

```
journalctl -u uyuni-check-database.service
```

如果不想运行更常规的 `spacewalk-service` 命令，这些命令会列显调试信息。

## 2.4. Web UI 加载失败

有时，Web UI 在迁移后不会加载。如果新系统的主机名和 IP 地址与旧系统的相同，这种情况通常是由浏览器缓存所致。两个系统的主机名和 IP 地址相同可能会使一些浏览器产生混淆。

清理缓存并重新加载页面可以解决这个问题。在大多数浏览器中，可通过按 `Ctrl+F5` 快速解决此问题。

## 2.5. Registering a traditional client as Salt minion after deleting it

This is not a valid scenario. Normally you migrate a traditional client to a Salt minion without deleting the client. Salt automatically detects that you have a traditional client and does the necessary changes itself. But if you somehow deleted the traditional client and want to register it as a Salt minion again, you have to do the following steps on the client before registering it as Salt minion:

1. Remove the following file:

```
/etc/sysconfig/rhn/systemid
```

2. Remove the following package:

```
zypp-plugin-spacewalk
```

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