

## **SUSE Linux Enterprise Server 15 SP7**

# 安装快速入门

本《快速入门》将引导您逐步完成安装 SUSE® Linux Enterprise Server 15 SP7 的过程。

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## 1 欢迎安装 SUSE Linux Enterprise Server

执行以下过程可在所有支持的硬件平台上安装本产品。这些过程假设您已成功引导进入或通过 IPL 进入安装系统。有关更详细的安装说明和部署策略,请参见《部署指南》。有关为了引导进 入或通过 IPL 进入安装系统而需在特定平台上完成的准备工作,请参见上述指南的以下部分:

- 《部署指南》,第2章 "在 AMD64 和 Intel 64 上安装"
- 《部署指南》,第3章 "在 AArch64 上安装"
- 《部署指南》,第4章 "在IBM POWER 上安装"
- 《部署指南》,第5章 "IBM Z 和 LinuxONE 上的安装"

### 1.1 统一安装程序

从 SUSE Linux Enterprise Server 15 开始,安装媒体仅包含统一安装程序 - 一个用于安装、更新和注册所有 SUSE Linux Enterprise 基础产品的精简系统。在安装期间,您可以通过选择要基于统一安装程序安装的模块和扩展来添加功能。

### 1.2 脱机安装或者安装但不注册

默认安装媒体 SLE-15-SP7-Online-ARCH-GM-media1.iso 的大小已经过优化,不包含任何模块和扩展。因此,安装过程中需要能够访问网络,以注册您的产品并检索模块和扩展的储存库数据。

若要安装但不注册系统,请使用 https://www.suse.com/download/sles/ → 中的 SLE-15-SP7-Full-ARCH-GM-medial.iso 映像,并参见《部署指南》,第9章 "安装步骤",第9.7.3节 "安装但不注册"获取相关说明。



### 提示: 将安装媒体映像复制到可卸闪存盘

使用以下命令将安装映像的内容复制到可卸闪存盘。

> sudo dd if=IMAGE of=FLASH\_DISK bs=4M && sync

需将 IMAGE 替换为映像文件 SLE-15-SP7-Online-ARCH-GM-media1.iso 或 SLE-15-SP7-Full-ARCH-GM-media1.iso 的路径。需将 FLASH\_DISK 替换为闪存 设备。要识别设备,请插入该设备并运行:

确保设备的大小足以容纳所需的映像。可使用以下命令检查设备的大小:

```
# fdisk -l /dev/sdc | grep -e "^/dev"
/dev/sdc1 * 2048 31490047 31488000 15G 83 Linux
```

在此示例中,设备的容量为 15 GB。对于 <u>SLE-15-SP7-Full-ARCH-GM-medial.iso</u>使用的命令是:

```
dd if=SLE-15-SP7-Full-ARCH-GM-medial.iso of=/dev/sdc bs=4M && sync
```

在运行 dd 命令时,不得挂载该设备。请注意,分区中的所有数据都将被删除!

### 2 安装过程

要安装 SUSE Linux Enterprise Server,请从统一安装程序媒体引导进入或通过 or IPL 进入安装程序,然后开始安装。

### 2.1 语言、键盘和产品选择



语言和键盘布局设置会根据您在引导屏幕上选择的语言进行初始化。如果您之前未更改默认设置,则语言为"英语(美国)"。如果需要,可在此处更改设置。使用键盘测试文本框可测试布局。

使用统一安装程序可以安装所有 SUSE Linux Enterprise 基础产品:

- SUSE Linux Enterprise Server 15 SP7(本文所述产品)
- SUSE Linux Enterprise Desktop 15 SP7(有关安装说明,请参见 https://documentation.suse.com/sled/♪)
- SUSE Linux Enterprise Real Time 15 SP7(有关安装说明,请参见 https://documentation.suse.com/sle-rt/ ♪)
- SUSE Linux Enterprise Server for SAP Applications 15 SP7 (有关安装说明,请参见 https://documentation.suse.com/sles-sap

选择要安装的产品。您需有相应产品的注册码。本文档假设您已选择 SUSE Linux Enterprise Server。单击下一步继续。

### 提示: 浅色主题和高对比度主题

如果您难以看清安装程序中的标签,可以更改挂件颜色和主题。

单击 → 按钮或按 Shift - F3 键打开主题选择对话框。从列表中选择一个主题,然后关闭对话框。

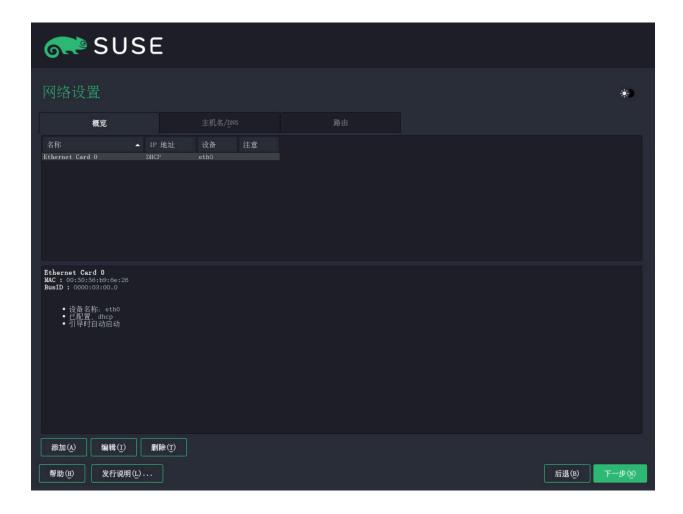
按 Shift - F4 可切换到适合视力受损用户的颜色方案。再按一下按钮可切换回默认方案。

### 2.2 许可协议



阅读许可协议。此内容以您在引导屏幕上选择的语言显示。可以通过许可证语言下拉列表获取翻译。您需要选中我同意许可证条款接受该协议,才能安装 SUSE Linux Enterprise Server。单击下一步继续。

### 2.3 网络设置

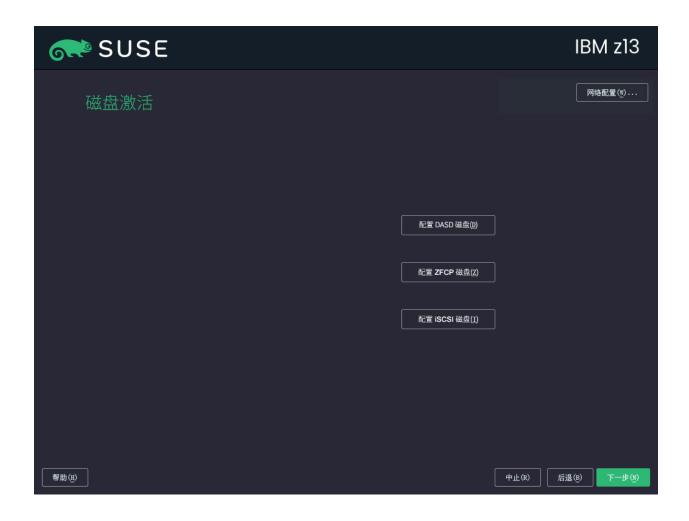


随后会进行系统分析,在此过程中,安装程序会探测存储设备,并尝试查找其他安装的系统。 如果在开始安装期间已通过 DHCP 自动配置了网络,您将转到注册步骤。

如果尚未配置网络,则网络设置对话框将会打开。从列表中选择网络接口,然后使用编辑对其进行配置。也可以手动添加一个接口。有关详细信息,请参见《部署指南》,第9章"安装步骤",第9.6节"网络设置"和《管理指南》,第23章"基本网络知识",第23.4节"使用YaST 配置网络连接"。如果您希望在不访问网络的情况下执行安装,请不做任何更改跳过此步骤,然后单击下一步继续。

### 2.4 IBM Z: 磁盘激活

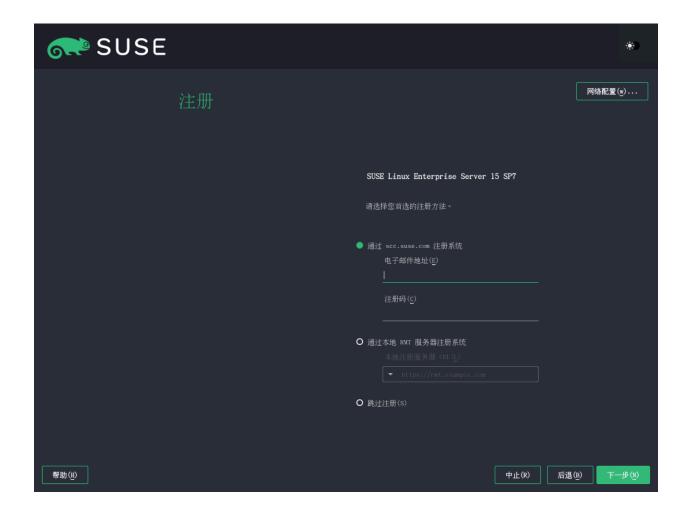
如果不是在 IBM Z 硬件上安装,请跳过此步骤。



配置挂接的硬盘。选择 DASD、光纤通道挂接式 SCSI 磁盘 (zFCP) 或 iSCSI 来安装 SUSE Linux Enterprise Server。DASD 和 zFCP 配置按钮仅在挂接了相应设备时方可使用。单击下一步继续设置选定的磁盘类型。有关详细信息,请参见《部署指南》,第 9 章 "安装步骤",第 9.5 节 "IBM Z:磁盘激活"。

IBM Z: 磁盘激活 | SLES 15 SP7

### 2.5 注册



要获取技术支持和产品更新,需要在 SUSE Customer Center 或本地注册服务器中注册并激活 SUSE Linux Enterprise Server。在此阶段注册产品还可让您立即获得访问更新储存库的权限。如此,您便可以将最新的更新和可用补丁随系统一起安装。

在注册时,将从注册服务器加载模块和扩展的储存库和依赖项。

#### 通过 scc.suse.com 注册系统

要注册到 SUSE Customer Center 中,请输入与您的 SUSE Customer Center 帐户关联的电子邮件地址,以及 SUSE Linux Enterprise Server 的注册代码。单击下一步继续。

#### 通过本地 RMT 服务器注册系统

如果您的组织提供了本地注册服务器,您也可以在该服务器中注册。激活通过本地 RMT 服务器注册系统,然后从下拉列表中选择相应 URL,或者键入地址。单击下一步继续。

#### 跳过注册

如果您处于脱机状态,或想跳过注册过程,请激活跳过注册。单击确定接受警告,然后单击下一步继续。

### 📗 重要: 跳过注册

需要注册您的系统和扩展才能检索更新以及获得支持资格。仅当从 SLE-15-SP7-Full-ARCH-GM-medial.iso 映像安装时,才能跳过注册。

如果在安装期间未注册,以后随时可以从运行中的系统上注册。为此,请运行 YaST > 产品注册或命令行工具 SUSEConnect。

### ☑ 提示:在安装时安装产品补丁

成功注册 SUSE Linux Enterprise Server 后,系统会在安装期间询问您是否安装最新的可用联机更新。如果您选择是,最新的软件包将随系统一起安装,如此便不必在安装后应用更新。建议激活此选项。

### 注意:用于接收更新的防火墙设置

如果系统受到会阻止传出流量的防火墙的保护,请确保允许通过端口 80 和 443 连接至 https://scc.suse.com/ 和 https://updates.suse.com, 以便接收更新。有关详细信息,例如 IP 地址和代理服务器配置,请参见 https://www.suse.com/support/kb/doc/?id=000021034 之。

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### 2.6 扩展和模块选择



成功注册系统后,安装程序会列出适用于 SUSE Linux Enterprise Server 的模块和扩展。模块是用于根据需要定制产品的组件。它们包含在您的 SUSE Linux Enterprise Server 订阅中。扩展可在产品中添加功能。扩展只能单独购买。

在安装的第一步中选择的产品将决定有哪些模块或扩展可用。有关模块及其生命周期的说明,请选择一个模块查看附带的文本。《Modules and Extensions Quick Start》(模块和扩展快速入门)(https://documentation.suse.com/sles-15/html/SLES-all/article-modules.html) 中提供了更多详细信息。

模块的选择会间接影响安装范围,因为该选择定义了哪些软件源(储存库)可用于安装,以及可用于运行中的系统。

以下模块和扩展适用于 SUSE Linux Enterprise Server:

#### **Basesystem Module**

此模块在统一安装程序的基础上添加一个基本系统。其他所有模块和扩展都需要此模块。只包含基础系统的安装范围相当于旧版 SUSE Linux Enterprise Server 的 minimal system 安装软件集。系统默认已选择安装此模块,不应将其取消选择。

依赖项:无

#### **Certifications Module**

包含 FIPS 认证软件包。

依赖项: Server Applications

#### **Confidential Computing Technical Preview**

包含与机密计算相关的软件包。

依赖项: Basesystem

#### **Containers Module**

包含容器的支持和工具。

依赖项: Basesystem

#### **Desktop Applications Module**

向系统添加图形用户界面和最基本的桌面应用程序。

依赖项: Basesystem

#### **Development Tools Module**

包含编译及调试应用程序所需的编译器(包括 gcc)和库。取代了以前的 Software Development Kit (SDK)。

依赖项: Basesystem、Desktop Applications

### **High Performance Computing (HPC) Module**

提供常用于高性能计算密集型工作负载的特定工具。

依赖项: Basesystem

#### **Legacy Module**

通过提供 SUSE Linux Enterprise 中已停产的软件包,帮助您将应用程序从 SUSE Linux Enterprise Server 早期版本和其他系统迁移到 SLES 15 SP7。此模块中的软件包是根据迁移要求和配置复杂程度选择的。

从旧版产品迁移时,建议使用此模块。

依赖项: Basesystem、Server Applications

#### **NVIDIA Compute Module**

包含 NVIDIA CUDA(Compute Unified Device Architecture,统一计算设备架构)驱动程序。

此模块中的软件由 NVIDIA 按照 CUDA 最终用户许可协议 (http://docs.nvidia.com/cuda/eula/) ▶ 提供,SUSE 不提供其相关支持。

依赖项: Basesystem

#### **Public Cloud Module**

包含创建映像所需的全部工具,这些映像用于在云环境(例如 Amazon Web Services (AWS)、Microsoft Azure、Google Compute Platform 或 OpenStack)中部署 SUSE Linux Enterprise Server。

依赖项: Basesystem、Server Applications

#### **Python 3 Module**

此模块包含选定 Python 3 软件包的最新版本。

依赖项: Basesystem

#### **SAP Business One Server**

此模块包含专用于 SAP Business One Server 的软件包和系统配置。通过 SUSE Linux Enterprise Server 产品订阅来对该模块提供维护和支持。

依赖项:基础系统、服务器应用程序、桌面应用程序、开发工具

#### **Server Applications Module**

通过提供 DHCP 服务器、名称服务器或 Web 服务器等网络服务来添加服务器功能。系统 默认已选择安装此模块;不建议将其取消选择。

依赖项: Basesystem

#### **SUSE Linux Enterprise High Availability**

向 SUSE Linux Enterprise Server 添加任务关键型设置的群集支持。此扩展需要单独的许可证密钥。

依赖项: Basesystem、Server Applications

#### **SUSE Linux Enterprise Live Patching**

添加无需关闭系统即可执行关键修补的支持。此扩展需要单独的许可证密钥。

依赖项: Basesystem、Server Applications

#### **SUSE Linux Enterprise Workstation Extension**

使用 SUSE Linux Enterprise Server 中的软件包(例如附加的桌面应用程序(办公套件、电子邮件客户端、图形编辑器等)和库),扩展 SUSE Linux Enterprise Server 的功能。使用该扩展可以将这两个产品相结合来打造功能完备的工作站。此扩展需要单独的许可证密钥。

依赖项: Basesystem、Desktop Applications

### **SUSE Package Hub**

用于访问 openSUSE 社区维护的各个 SUSE Linux Enterprise Server 软件包。提供的这些软件包不享有 L3 支持,且不影响 SUSE Linux Enterprise Server 的受支持情况。有关详细信息,请参见 https://packagehub.suse.com/ 🗗。

依赖项: Basesystem

#### **Transactional Server Module**

添加了对事务更新的支持。更新将以单个事务的形式统一应用到系统,或者不应用。这种方式不会影响正在运行的系统。如果某项更新失败,或者成功应用的更新被视为不兼容或者存在其他错误,可以丢弃该更新,使系统立即恢复到以前的正常运行状态。

依赖项: Basesystem

#### Web and Scripting 模块

包含用于运行中 Web 服务器的软件包。

依赖项: Basesystem、Server Applications

某些模块需要已安装其他模块。因此,在选择某个模块时,可能会自动选择其他模块来满足依赖关系。

根据具体的产品,注册服务器可能会将模块和扩展标记为建议安装。系统会将建议的模块和扩展预先选为要加以注册和安装。如要避免安装这些建议的项目,请手动取消选择。

选择要安装的模块和扩展,然后单击下一步继续。如果您选择了一个或多个扩展,系统会提示您提供相应的注册码。根据所做的选择,您可能还需要接受附加的许可协议。

### 🚺 重要:脱机安装默认选择的模块

使用 SLE-15-SP7-Full-ARCH-GM-media1.iso 执行脱机安装时,默认只会选择 Basesystem Module。要安装 SUSE Linux Enterprise Server 的所有默认软件包,另外还需选择 Server Applications Module。

### 2.7 附加产品



附加产品对话框可让您向 SUSE Linux Enterprise Server 添加并非由 SUSE Customer Center 提供的其他软件源(即"储存库")。附加产品可以包括第三方产品和驱动程序,以及适用于您系统的其他软件。



### 提示: 在安装期间添加驱动程序

您还可以通过附加产品对话框添加驱动程序更新储存库。https://drivers.suse.com/ ▶ 上会提供 SUSE Linux Enterprise 的驱动程序更新。这些驱动程序已通过 SUSE SolidDriver Program 创建。

如果要跳过此步骤,请单击下一步继续。否则,请激活我要安装其他附加产品。请指定媒体类型、本地路径或托管储存库的网络资源,然后按照屏幕上的指导操作。

选中下载储存库说明文件可立即下载用于描述储存库的文件。如果不激活,系统将在安装启动后下载它们。单击下一步继续,并根据需要插入媒体。您可能需要接受附加许可协议,具体取决于附加产品的内容。单击下一步继续。如果您选择了需要注册密钥的附加产品,在继续下一步之前,系统会要求您输入该密钥。

### 2.8 系统角色



可用的系统角色取决于所选的模块和扩展。例如,系统角色定义要预先选定加以安装的整套软件集。请参考屏幕上的说明做出选择。选择角色,然后单击下一步继续。如果在已启用的模块中,只有一个角色或者没有任何角色适合相关的基础产品,则不会显示系统角色对话框。



### 提示:发行说明

从此步骤开始,可以通过选择发行说明在安装过程中的任一屏幕上查看发行说明。

### 2.9 建议的分区



查看系统建议的分区设置。如果需要,可以更改它们。您可以选择以下选项:

#### 引导性配置

启动可用来优化分区建议的向导。此处可用的选项取决于系统设置。如果系统包含多个 硬盘,则您可以选择要使用哪个磁盘,以及要将根分区放到哪个位置。如果磁盘已包含分 区,请决定是要去除分区还是调整分区的大小。

在后续步骤中,您还可以添加 LVM 支持和磁盘加密配置。您可以更改根分区的文件系统, 并决定是否创建单独的主分区。

#### 专家分区程序

打开专家分区程序,如《部署指南》,第11章 "专家分区程序",第11.1节 "使用专家分区程序"中所述。此选项可让您完全控制分区设置,以及创建自定义设置。它面向的是专家用户。

### 🅛 警告:磁盘空间单位

请注意,在分区时,磁盘空间的计量单位是二进制而不是十进制。例如,如果您输入 1GB、1GiB 或 1G 作为大小,这些数字全部表示 1 GiB(千兆二进制字节),而不是 1 GB(千兆字节)。

#### 二进制

1 GiB = 1 073 741 824 字节。

#### 十进制

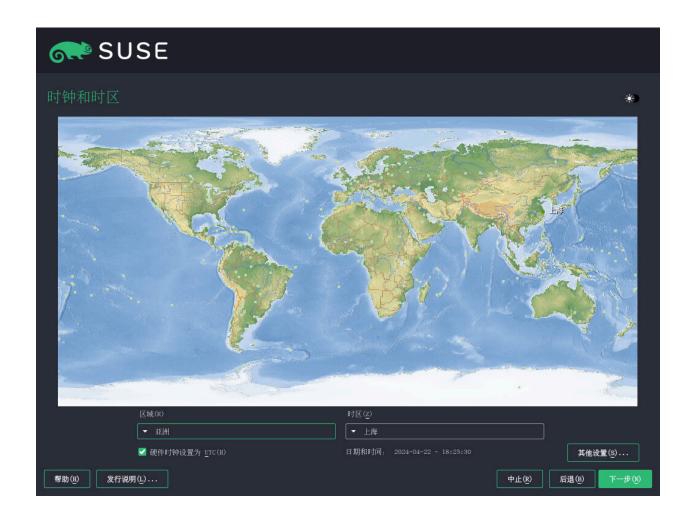
1 GB = 1 000 000 000 字节。

#### 差异

 $1 \, \text{GiB} \approx 1.07 \, \text{GB}_{\circ}$ 

要接受建议的设置而不做任何改动,请选择下一步继续。

### 2.10 时钟和时区



选择系统使用的时钟和时区。要手动调整时间或配置 NTP 服务器以保持时间的同步,请选择其他设置。有关详细信息,请参见《部署指南》,第9章"安装步骤",第9.12节"时钟和时区"。单击下一步继续。

### 2.11 本地用户



要创建本地用户,请在用户的完整名称字段中输入姓氏和名称,在用户名字段中输入登录名,在口令字段中输入口令。

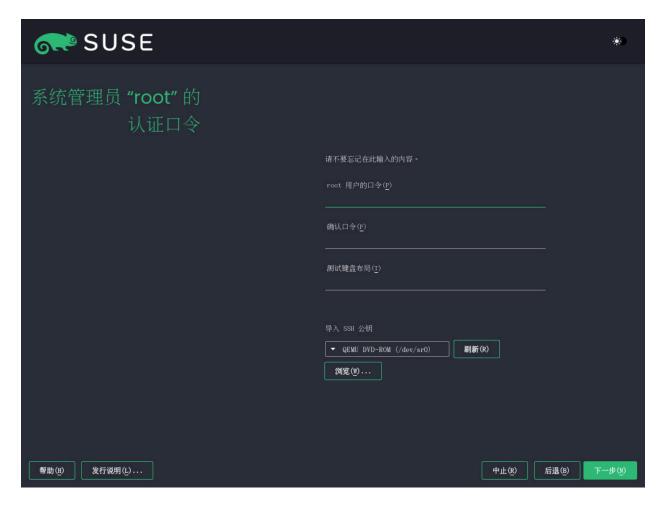
口令至少为 8 个字符,而且应包含大小写字母及数字。口令最长为 72 个字符,区分大小写。 出于安全考虑,强烈建议您**不要**启用自动登录。此外,也**不应**对系统管理员使用此口令,而应 在安装的下一步中提供一个单独的 root 口令。

如果在包含旧版 Linux 安装的系统上安装,您可以从旧版安装导入用户数据。单击选择用户查看可用用户帐户的列表。选择一个或多个用户。

在集中管理用户的环境(例如,通过 NIS 或 LDAP 进行管理)中,您可以跳过本地用户的创建过程。在这种情况下,请选择跳过用户创建。

单击下一步继续。

### 2.12 系统管理员 "root" 的身份验证



键入系统管理员(称为 root 用户)的口令,或者提供公共 SSH 密钥。如果需要,您也可以同 时使用这两种身份凭证。

由于 root 用户配备了众多的权限,因此请慎重选择口令。千万不要忘记 root 口令! 您在此处 输入之后,就不能检索该口令。

### 🕠 提示: 口令和键盘布局

建议仅使用 US ASCII 字符。如果发生系统错误,或者您需要在救援模式下启动系统时, 键盘可能不会本地化。

如果您要使用公共密钥通过 SSH 远程访问系统,请从可卸媒体或现有分区导入密钥。有关更 多信息,请参见《部署指南》,第9章 "安装步骤",第9.14节 "系统管理员 root 的身份验 证"。

### 2.13 安装设置



使用安装设置屏幕查看并根据需要更改若干建议的安装设置。每个设置的当前配置都在此处列出。要进行更改,请单击标题。有些设置(如防火墙或 SSH)可以直接通过单击相应链接更改。

## 🚺 重要:远程访问

您也可以在日后随时从安装的系统中更改此处可以更改的设置。但是,如果您在安装后需要立即进行远程访问,则可能需在安全设置中打开 SSH 端口。

#### 软件

安装范围由为此安装选择的模块和扩展定义。但是,根据您所做的选择,不一定会选中模块中提供的所有软件包加以安装。

单击软件会打开软件选择和系统任务屏幕,您可在此处选择或取消选择某些软件集来更改软件选择。每个软件集都包含特定功能(例如 KVM 主机服务器)所需的几个软件包。如果想要基于要安装的软件包进行更详细的选择,请选择细节切换到 YaST 软件管理器。有关更多信息,请参见《管理指南》,第8章"安装或去除软件"。

#### 引导

此部分显示引导加载程序配置。建议您仅在确实需要时才更改默认设置。有关细节,请参见《管理指南》,第 18 章 "引导加载程序 GRUB 2"。

#### 安全性

CPU 缓解策略是指为防御 CPU 边信道攻击而部署的软件缓解策略对应的内核引导命令行参数。单击选定的项可选择其他选项。有关详细信息,请参见 《管理指南》,第 18 章 "引导加载程序 GRUB 2" CPU 缓解措施。

系统默认会对配置的所有网络接口都启用防火墙。要完全禁用 firewalld,请单击禁用(不建议如此)。有关配置细节,请参见《安全和强化指南》,第23章"伪装和防火墙"。



### 注意: 用干接收更新的防火墙设置

如果系统受到会阻止传出流量的防火墙的保护,请确保允许通过端口 80 和 443 连接至 https://scc.suse.com/ 和 https://updates.suse.com, 以便接收更新。有关详细信息,例如 IP 地址和代理服务器配置,请参见 https://www.suse.com/support/kb/doc/?id=000021034 ♂。

SSH 服务默认处于启用状态,但在防火墙中其端口 (22) 是关闭的。单击打开可将该端口打开,单击禁用可将该服务禁用。请注意,如果禁用了 SSH,将无法进行远程登录。有关更多信息,请参考《安全和强化指南》,第 22 章 "使用 OpenSSH 保护网络操作"。 默认的主要 Linux 安全模块为 AppAmpor。要禁用该模块,请在安全设置中针对模块选择无。

#### 安全策略

单击以启用 Defense Information Systems Agency STIG 安全策略。如果有任何安装设置与该策略不兼容,系统将提示您进行相应修改。有些设置可以自动调整,其余设置则需要用户输入信息。

启用安全性配置文件可让系统在首次引导时执行完整的 SCAP 修正。您也可以选择仅扫描或不执行任何操作,稍后再使用 OpenSCAP 手动修正系统。有关详细信息,请参见《部署指南》,第9章"安装步骤",第9.15.4节"安全配置文件"。

#### 网络配置

显示当前网络配置。默认情况下,wicked 用于安装的服务器,NetworkManager 用于桌面工作负载。单击网络配置可更改设置。有关详细信息,请参见《管理指南》,第 23 章 "基本网络知识",第 23.4 节 "使用 YaST 配置网络连接"。

## 🚺 重要:对 NetworkManager 的支持

只有安装了 SLED 扩展或 Workstation 扩展的 SUSE 桌面工作负载支持 NetworkManager。所有服务器认证都通过网络配置工具 wicked 来完成,使用 NetworkManager 可能会使它们失效。SUSE 服务器工作负载不支持 NetworkManager。

#### Kdump

如果发生内核崩溃,Kdump 可将内存映像("内核转储")保存到文件系统中。如此,您便可以通过调试转储文件来查找崩溃原因。Kdump 已预先配置好,默认处于启用状态。有关更多信息,请参见《系统分析和微调指南》,第 20 章 "Kexec 和 Kdump",第 20.7 节 "Kdump 基本配置"。

#### 默认 systemd 目标

如果您已安装 Desktop Applications Module,系统会引导到支持网络、多用户和显示管理器的图形目标。如果您不需要通过显示管理器登录,请切换到多用户。

#### 系统

单击系统可查看详细的硬件信息。在随后显示的屏幕中,还可以更改内核设置,有关更多信息,请参见《部署指南》,第9章 "安装步骤",第9.15.10节 "系统"。

### 2.14 开始安装



在安装设置屏幕上确定了系统配置后,单击安装。根据您做的软件选择,您可能需要先同意许可协议,安装确认屏幕才会弹出。到目前为止,我们还未对您的系统进行任何更改。当您再次单击安装后,安装过程即会开始。

### 2.15 安装过程



安装期间会显示进度。安装例程完成后,计算机会重引导至安装的系统。

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