SUSE

SUSE Linux Enterprise Server 15 SP3
安装快速入门

此快速入门引导您逐步完成安装 SUSE® Linux Enterprise Server 15 SP3 的过程。

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目录

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/通过 IPL 进入安装系统。有关更详细的安装指导和部署策略，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，请参见前面所述指南的以下部分：

- 《部署指南》,第 2 章 "在 AMD64 和 Intel 64 上安装"

- 《部署指南》,第 3 章 "Arm AArch64 上的安装"

- 《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，这是一个用于安装、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-SP3-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，安装程序需要能够访问网络，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://download.suse.com/ ↗ 中的 `SLE-15-SP3-Full-ARCH-GM-media1.iso` 映像。

💡 **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。

```
tux > sudo dd if=IMAGE of=FLASH_DISK bs=4M && sync
```

需将 `IMAGE` 替换为 `SLE-15-SP3-Online-ARCH-GM-media1.iso` 或 `SLE-15-SP3-Full-ARCH-GM-media1.iso` 映像文件的路径。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：

```
root # grep -Ff <(hwinfo --disk --short) <(hwinfo --usb --short)
disk:
  /dev/sdc              General USB Flash Disk
```

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：

```
root # 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 `SLE-15-SP3-Full-ARCH-GM-media1.iso` 使用的命令是：

```
dd if=SLE-15-SP3-Full-ARCH-GM-media1.iso of=/dev/sdc1 bs=4M && sync
```

在运行 **dd** 命令时，不得装入该设备。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 IPL 进入安装程序，然后开始安装。

2.1 语言、键盘和产品选择

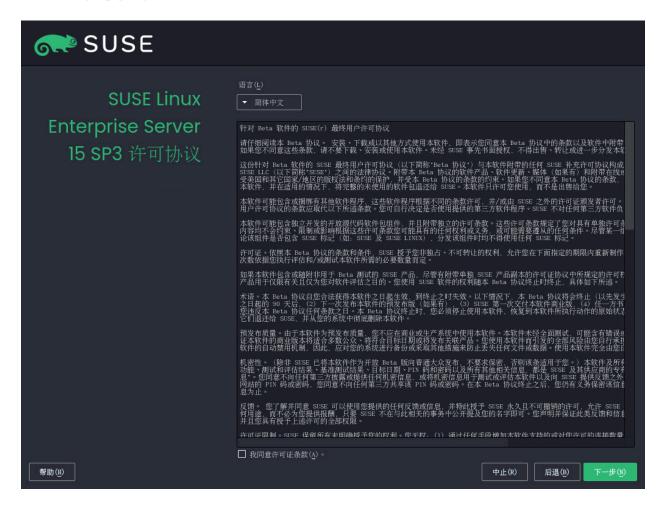语言和键盘布局设置会根据您在引导屏幕上选择的语言进行初始化。如果您之前未更改默认设置，则语言为"英语（美国）"。如果需要，可在此处更改设置。使用键盘测试文本框可测试布局。

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 SP3（本文所述产品）

- SUSE Linux Enterprise Desktop 15 SP3（有关安装指导，请参见 https://documentation.suse.com/sled/ ）

- SUSE Linux Enterprise High Performance Computing 15 SP3

- SUSE Linux Enterprise Real Time 15 SP3（有关安装指导，请参见 https://documentation.suse.com/sle-rt/ ）

- SUSE Linux Enterprise Server for SAP Applications 15 SP3（有关安装指导，请参见 https://documentation.suse.com/sles-sap ↗）

- SUSE Manager Server 4.2（有关安装指导，请参见 https://documentation.suse.com/suma/ ↗）

- SUSE Manager Proxy 4.2（有关安装指导，请参见 https://documentation.suse.com/suma/ ↗）

- SUSE Manager Retail Branch Server 4.2（有关安装指导，请参见 https://documentation.suse.com/suma-retail ↗）

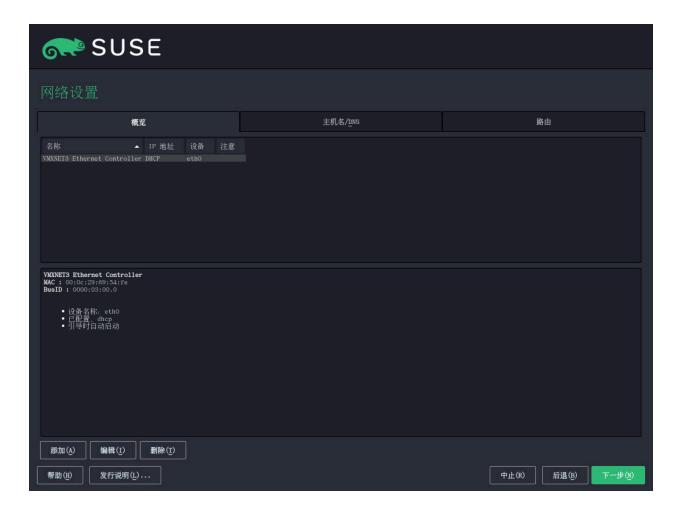选择要安装的产品。您需有相应产品的注册代码。整篇文档假设您已选择 SUSE Linux Enterprise Server。单击下一步继续。

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框获取翻译。您需要选中我接受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。
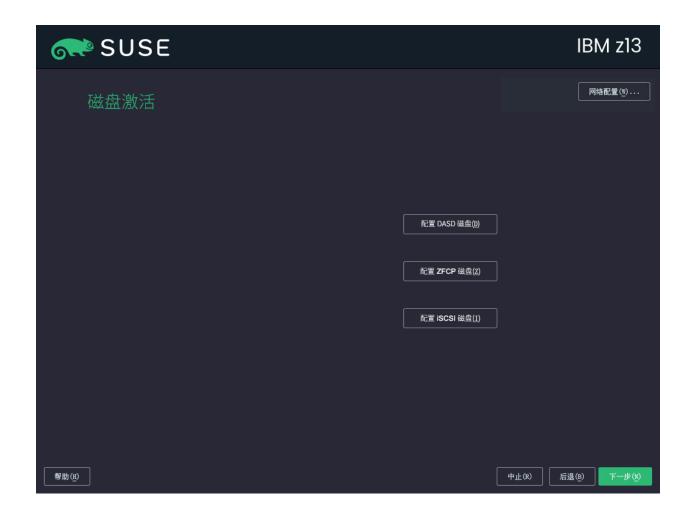
2.3 网络设置

随后会进行系统分析，在此过程中，安装程序会探测储存设备，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 8 章 "安装步骤"，第 8.6 节 "网络设置"和《管理指南》，第 19 章 "基本网络知识"，第 19.4 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。
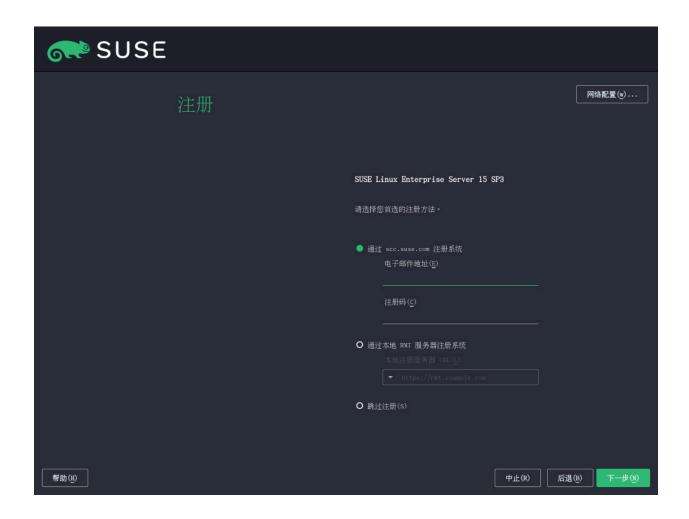
2.4　IBM Z：磁盘激活

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 8 章 "安装步骤"，第 8.5 节 "IBM Z：磁盘激活"。

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。

注册时，将从注册服务器装载您下一步要安装的模块和扩展的储存库与依赖项。

通过 scc.suse.com 注册系统

要注册到 SUSE Customer Center 中，请输入与您的 SCC 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 SMT 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 SMT 服务器注册系统，然后从下拉框中选择 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，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-SP3-Full-ARCH-GM-media1.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。

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功能的组件。它们是免费提供的。扩展可在产品中添加功能。它们以订阅的形式提供，需要注册密钥，因此需付费才能使用。

有哪些模块或扩展可用取决于您在安装的第一步中选择的产品。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。《模块和扩展快速入门》 (https://
documentation.suse.com/sles-15/html/SLES-all/art-modules.html) ↗ 和《发行说明》
(https://www.suse.com/releasenotes/x86_64/SUSE-SLES/15/#Intro.Module) ↗ 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其范围相当于旧版 SUSE Linux Enterprise Server 的最小系统安装模式。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 140-2 认证软件包。

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

包含编译器（包括 gcc）以及编译和调试应用程序所需的库。取代了以前的 Software Development Kit (SDK)。

依赖项：Basesystem、Desktop Applications

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 SP3。根据迁移要求和配置的复杂性级别选择此模块中的软件包。

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 根据 CUDA 最终用户许可协议 (http://docs.nvidia.com/cuda/eula/) ↗提供，不受 SUSE 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 SUSE OpenStack Cloud）中部署 SUSE Linux Enterprise Server。

依赖项：Basesystem、Server Applications

Python 2 Module

SUSE Linux Enterprise 15 SP3 使用 Python 版本 3。此模块包含 Python 2 运行时与模块。

依赖项：Basesystem

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 Cloud Application Platform Tools Module

添加用来与 SUSE Cloud Application Platform 产品交互的工具。

依赖项：Basesystem

SUSE Linux Enterprise High Availability Extension

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增补的支持。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 Desktop 中与其他桌面应用程序（如办公套件、电子邮件客户端、图形编辑器等）类似的软件包和库，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。提供的这些软件包没有 L3 支持，且不影响 SUSE Linux Enterprise Server 的支持。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 Module

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-SP3-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 的完整默认软件包集，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 添加不是由 SUSE Customer Center 提供的其他软件源（即"储存库"）。此类附加产品可以包括第三方产品和驱动程序，或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。http://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。

选中下载安装源描述文件可立即下载用于描述安装源的文件。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。根据产品内容，可能必须接受附加许可协议。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软件模式集。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。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 10 章 "专家分区程序"，第 10.1 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）。

二元

　　1 GiB = 1 073 741 824 字节。
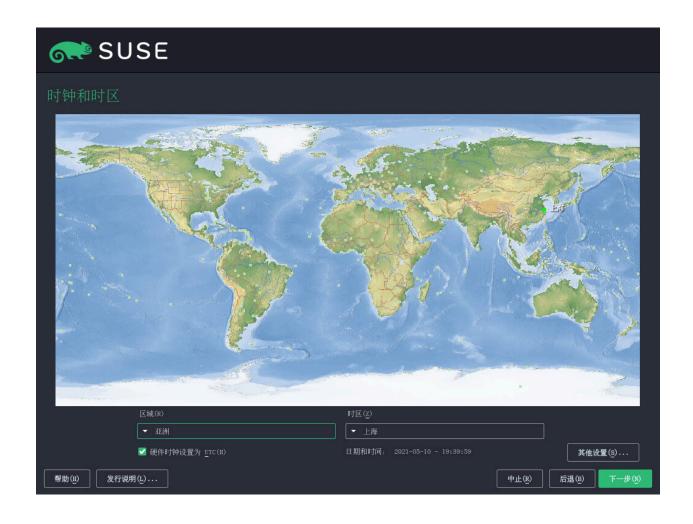
十进制

　　1 GB = 1 000 000 000 字节。

差异

　　1 GiB ≈ 1.07 GB。

要接受建议的设置而不做任何改动，请选择下一步继续。

💡 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。

2.10　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 8 章 "安装步骤"，第 8.12 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中（例如，通过 NIS 或 LDAP 进行管理），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

建议您只使用英语键盘上可用的字符。如果发生系统错误，或者您需要以救援模式启动系统时，本地化键盘可能会无法使用。

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 8 章 "安装步骤"，第 8.14 节 "系统管理员 root 的身份验证"。

单击下一步继续。

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**
>
> 此处可更改的设置也可以日后在安装的系统中加以更改。但是，如果您在安装后需要立即进行远程访问，则需调整安全设置。

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模式以更改软件选择。每个模式都包含特定功能（例如 KVM 主机服务器）所需的几个软件包。如果想查看要安装软件包的更为详细的选择，请选择细节切换到 YaST 软件管理器。有关更多信息，请参见《部署指南》，第 21 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，请参考《管理指南》，第 14 章 "引导加载程序 GRUB 2"。

安全性

CPU 缓解措施是指为防御 CPU 边信道攻击而部署的软件缓解措施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 14 章 "引导加载程序 GRUB 2" CPU 缓解措施。

默认情况下，防火墙启用时，所有网络接口都会配置为用于 公共 区域，在该区域中，所有端口默认都处于关闭状态，确保提供最高的安全性。有关配置细节，请参见《安全和强化指南》，第 24 章 "掩蔽和防火墙"。

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。单击打开将该端口打开，或单击禁用将该服务禁用。请注意，如果禁用了 SSH，将无法进行远程登录。

网络配置

显示当前网络配置。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 19 章 "基本网络知识"，第 19.4 节 "使用 YaST 配置网络连接"。

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 18 章 "Kexec 和 Kdump"，第 18.7 节 "Kdump 基本配置"。

默认 systemd 目标

如果您已安装 Desktop Applications 模块，系统会引导进入支持网络、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 8 章 "安装步骤"，第 8.15.9 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，细节选项卡中会显示详细的安装进度。SUSE Linux Enterprise Server 发行说明选项卡显示了重要信息；建议阅读这些信息。

安装例程完成后，计算机会重引导至安装的系统。登录并启动 YaST 以微调系统。如果您使用的不是图形桌面或者正通过远程方式工作，请参考《管理指南》，第 4 章 "文本模式下的 YaST" 获得有关从终端使用 YaST 的信息。

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