

SUSE Linux Enterprise Server 15 SP4

模块和扩展快速入门

本快速入门提供了 SUSE Linux Enterprise 系列可用模块和扩展的概述。您可以了解它们的用途和功能，以及如何管理它们。

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1 模块和扩展简介

从 SUSE Linux Enterprise Server 15 开始，安装媒体仅包含统一安装程序：一个用于部署、更新和注册 SUSE Linux Enterprise 的精简系统。在部署期间，您可以通过选择要在统一安装程序的基础上安装的模块和扩展来添加功能。

从技术上讲，模块和扩展非常类似。它们都可以使用 YaST 或命令行工具

SUSEConnect 进行管理。模块和扩展都会添加一组包含所有必要软件包的联机软件源（`main`、`update`、`source`、`debug`）。此外，它们都可添加可以在部署期间选择的分区建议和系统角色。

不过，模块和扩展之间也存在一些重大差异：

模块

模块可让您根据需要定制产品功能。每个模块都有明确定义的范围，从用于进行 Web 开发和编写脚本的工具到公共云、再到 SUSE Package Hub（提供由社区管理的软件包）。利用模块，您可以仅提供满足计算机用途所需的一组软件包，从而精简系统、加快其运行速度，并提高其安全性。这种模块化方法还可让您轻松提供专为容器和云环境定制的映像。

您可以在系统的整个生命周期内随时添加或删除模块。这样您便可轻松调整系统以满足不断变化的要求。


模块属于您的 SUSE Linux Enterprise Server 订阅的一部分，因此可免费使用。模块与 SUSE Linux Enterprise Server 基础系统的唯一不同之处就是生命周期。SUSE 为模块所提供的几乎所有软件包都提供 L3 支持（SUSE Package Hub 模块除外）。有关 SUSE Linux Enterprise Server 支持声明的详细信息，请参见[发行说明 \(https://www.suse.com/releases/notes/x86_64/SUSE-SLES/15-SP4/#intro-support\)](https://www.suse.com/releases/notes/x86_64/SUSE-SLES/15-SP4/#intro-support)。

扩展




扩展为 SUSE Linux Enterprise Server 的在线增补和高可用性群集组建等任务提供高级功能。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。<https://www.suse.com/releases/notes> 上通常会提供各扩展的发行说明。

1.1 支持

一般会对软件包提供 L3 支持（[SUSE Package Hub](#) 和第三方模块除外）。要检查针对软件包的支持级别，请运行 **zypper info PACKAGE**。

对大部分模块和扩展会提供[长期服务包支持 \(LTSS\)](#)。有关详细信息，请参见[长期服务包支持 \(https://www.suse.com/products/long-term-service-pack-support/\)](https://www.suse.com/products/long-term-service-pack-support/) 。

有些模块和扩展还包含[延期的服务包重叠支持 \(ESPOS\)](#)。有关详细信息，请参见[延期的服务包重叠支持 \(https://www.suse.com/support/policy-products/#hpc\)](https://www.suse.com/support/policy-products/#hpc) .

有关支持和生命周期的详细信息，请参见 [SUSE 技术支持政策 \(https://www.suse.com/support/policy/\)](https://www.suse.com/support/policy/)  和 [产品生命周期支持政策 \(https://www.suse.com/support/policy-products/\)](https://www.suse.com/support/policy-products/) 。如需各产品生命周期日期的完整列表，请参见[产品支持生命周期 \(https://www.suse.com/lifecycle/\)](https://www.suse.com/lifecycle/)  页面。

2 SUSE Linux Enterprise 产品系列的模块和扩展

SUSE Linux Enterprise 产品系列中提供下列模块和扩展：

- Basesystem
- Containers
- Desktop Applications
- Development Tools
- High Availability
- High Performance Computing
- Legacy
- Live Patching
- NVIDIA Compute
- Public Cloud
- Python 3

- Real Time
- SAP Applications
- Server Applications
- SUSE Package Hub
- Transactional Server
- Web and Scripting
- Workstation Extension

请注意，可用性视产品而定。并非所有模块和扩展都可用于所有产品。有些模块包含在一个产品中，但也可以用作另一个产品的扩展。

2.1 Basesystem

此模块在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 的精简系统安装软件集。系统默认已选择安装此模块，不应将其取消选择。

- **依赖项：**无
- **可用性：**默认所有产品上均提供
- **生命周期：**10 年
- **扩展支持：**3 年 LTSS
- **支持级别：**L3

2.2 Certifications

此模块包含 FIPS 140-2 认证软件包。

- **依赖项：**Basesystem
- **可用性：**SLES、SLES-SAP、SUSE Linux Enterprise Real Time、SLE-HPC

- **生命周期:** 10 年
- **扩展支持:** 3 年 LTSS
- **支持级别:** L3

2.3 Containers

此模块包含与容器相关的软件包，包括容器引擎和核心的容器相关工具（例如本地注册表）。

- **依赖项:** Basesystem
- **可用性:** SLES、SLES-SAP、SLE-HPC
- **生命周期:** 10 年
- **扩展支持:** 3 年 LTSS
- **支持级别:** L3

2.4 Desktop Applications

此模块可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
- **可用性:** SLES、SLED（默认）、SLE-WE（默认）、SLES-SAP、SLE-RT（默认）、SLE-HPC
- **生命周期:** 10 年
- **扩展支持:** 3 年 LTSS
- **级别:** L3

2.5 Development Tools

此模块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

- **可用性:** SLES、SLES-SAP、SLED、SLE-RT (默认)、SLE-HPC
- **生命周期:** 10 年
- **扩展支持:** 3 年 LTSS
- **级别:** L3

2.6 High Availability

此扩展提供可在物理和/或虚拟环境中部署的高可用性群集技术。

High Availability 以模块形式包含在 SLES-SAP 的订阅中。它还可用作 SLES 和 SLE-HPC 的扩展。有关 SUSE Linux Enterprise High Availability Extension 的详细信息，请访问 <https://www.suse.com/products/highavailability>。

- **依赖项:** Basesystem、Server Applications
- **可用性:** SLES、SLES-SAP (已包含)、SLE-HPC、SUSE Linux Enterprise Real Time
- **生命周期:** 10 年
- **扩展支持:** 3 年 LTSS
- **级别:** L3

2.7 High Performance Computing

此扩展包含与高性能计算 (HPC) 相关的工具和库。

- **依赖项:** Basesystem
- **可用性:** SLE-HPC (已包含)
- **生命周期:** 10 年
- **扩展支持:** 1 年 ESPOS、3 年 LTSS
- **级别:** L3

2.8 Legacy

此模块通过提供 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 SP4。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。

请注意，此模块的生命周期与其自身所含的一些软件包不同。并非所有软件包都支持该模块的完整生命周期，具体视迁移要求和上游生命周期而定。

- **依赖项：**Basesystem、Server Applications
- **可用性：**SLES、SLES-SAP、SLE-HPC
- **生命周期：**10 年
- **扩展支持：**3 年 LTSS
- **级别：**L3

2.9 Live Patching

此扩展提供无需关闭系统即可更新 SUSE Linux Enterprise 中的关键组件的软件包，有助于减少计划内停机时间和提高服务可用性。

- **依赖项：**Basesystem
- **可用性：**SLES、SLES-SAP、SLE-HPC
- **生命周期：**10 年
- **扩展支持：**3 年 LTSS
- **级别：**L3

2.10 NVIDIA Compute

此模块包含 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 \(http://docs.nvidia.com/cuda/eula/\)](http://docs.nvidia.com/cuda/eula/) 提供，不受 SUSE 支持。

❗ 重要：不要使用 **SUSEConnect** 来添加此模块

不要尝试使用 **SUSEConnect** CLI 工具添加此模块。**SUSEConnect** 无法处理第三方软件源。

在安装期间，请从扩展和模块选择屏幕中选择该模块。在已安装的系统中运行 **yast registration**，依次选择选择扩展、**NVIDIA Compute 模块**，然后选择下一步继续。校验并接受 NVIDIA 软件源 GPG 密钥。

❗ 重要：不支持将 Workstation Extension 和 NVIDIA Compute 模块结合使用

Workstation Extension 为 NVIDIA 显卡提供驱动程序。这些驱动程序与 CUDA 共用某些软件包，但它们的版本可能不同。因此，既不建议也不支持同时启用 **NVIDIA Compute 模块** 和 **Workstation Extension**。

- **依赖项：** Basesystem
- **可用性：** AMD64/Intel 64 和 AArch64 上的 SLES 与 SLE-HPC
- **支持：** 此模块中的软件由 NVIDIA 提供，SUSE 并不提供相关支持

2.11 Public Cloud

此模块包含创建用于在云环境中部署 SUSE Linux Enterprise Server 的映像所需使用的全部工具。例如：Amazon Web Services (AWS)、Microsoft Azure、Google Compute Platform 或 OpenStack。

- **依赖项：** Basesystem、Server Applications
- **可用性：** SLES、SLES-SAP、SLE-HPC
- **生命周期：** 10 年
- **扩展支持：** 3 年 LTSS
- **级别：** L3

2.12 Python 3

此模块包含选定 Python 3 软件包的最新版本。它的生命周期与 SUSE Linux Enterprise 产品本身不同。此模块中的软件包会频繁地更新到新的上游版本。

- **依赖项:** Basesystem
- **可用性:** SLES、SLES-SAP、SLE-HPC、SLED
- **生命周期:** 10 年
- **扩展支持:** 无
- **级别:** L3

2.13 Real Time

此扩展旨在降低延迟并提高对时间敏感的任务关键型应用程序的可预测性和可靠性。

对此模块中的软件包的支持一般会持续到有更新版本的软件包发布或软件包从此模块中删除时为止。

- **依赖项:** Basesystem、Desktop Applications、Development Tools、Server Applications
- **可用性:** SLE-RT (已包含)
- **生命周期:** 10 年
- **扩展支持:** 无
- **级别:** L3

2.14 SAP Applications

此模块包含特定于 SLES-SAP 的软件包。它的生命周期与 SUSE Linux Enterprise 产品本身不同。SUSE Linux Enterprise Server for SAP Applications 的订阅包含 1.5 年的标准支持外加每个服务包各 3 年的延期的服务包重叠支持 (ESPOS)。因此，在产品版本的最后一个服务包之前，客户将无需购买长期服务包支持 (LTSS)。

- **依赖项:** Basesystem
- **可用性:** SLES-SAP (已包含)
- **生命周期:** 10 年
- **扩展支持:** 3 年 ESPOS、3 年 LTSS (针对最后一个 SP)
- **级别:** L3

2.15 Server Applications

此模块通过提供 DHCP 服务器、名称服务器或 Web 服务器等网络服务来增加服务器功能。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
- **可用性:** SLES (默认)、SLES-SAP、SLE-RT (默认)、SLE-HPC
- **生命周期:** 10 年
- **扩展支持:** 3 年 LTSS
- **级别:** L3

2.16 SUSE Package Hub

此模块用于访问 openSUSE 社区维护的各个 SUSE Linux Enterprise Server 软件包。对于这些软件包不提供 L3 支持，但这不影响对 SUSE Linux Enterprise Server 的支持。有关更多信息，请参见 <https://packagehub.suse.com/>。

- **依赖项:** Basesystem
- **可用性:** 所有产品
- **生命周期:** 无
- **扩展支持:** 无
- **级别:** 无

2.17 Transactional Server

此模块为 SUSE Linux Enterprise 系统提供以“原子”方式整体更新操作系统及其软件包的方法。更新将以单个事务的形式统一应用到系统，或者全部都不应用。这种方式不会影响正在运行的系统。如果更新失败，或者如果成功更新被视为不兼容或不正确，您可以立即将其丢弃并恢复到先前的正常运行状态。

- **依赖项：**Basesystem
- **可用性：**SLES
- **生命周期：**10 年
- **扩展支持：**3 年 LTSS
- **级别：**L3

2.18 Web and Scripting

此模块包含用于运行中 Web 服务器的软件包。

- **依赖项：**Basesystem、Server Applications
- **可用性：**SLES、SLES-SAP、SLE-HPC
- **生命周期：**10 年
- **扩展支持：**3 年 LTSS
- **级别：**L3

2.19 Workstation Extension

此扩展提供额外的桌面应用程序和库。SUSE Linux Enterprise Desktop 上默认已安装该扩展。通过在 SUSE Linux Enterprise Server 安装中添加 Workstation Extension，您可以将这两个产品无缝融合，以创建功能完备的服务器工作站。有关更多信息，请参见 <https://www.suse.com/products/workstation-extension>。

- **依赖项：**Basesystem、Desktop
- **可用性：**SLES、SLED（默认）、SLES-SAP
- **生命周期：**10 年
- **扩展支持：**无
- **级别：**混合的 L2/L3（取决于软件包）

3 安装和管理模块与扩展

在最初设置系统时以及在现有的 SUSE Linux Enterprise Server 安装上可以安装模块和扩展。

3.1 在系统安装期间安装模块和扩展

在设置系统时可以轻松安装模块和扩展。相应步骤属于安装例程的一部分。如果使用默认安装路径，您需要拥有网络访问权限以访问提供相应软件源的 SUSE Customer Center 或本地注册服务器（[SUSE Manager \(https://www.suse.com/products/suse-manager/\)](https://www.suse.com/products/suse-manager/) 或 Repository Mirroring Tool）。您也可以采用脱机安装方式。脱机安装需要额外的安装媒体。有关详细信息，请参见《部署指南》，第 8 章“安装步骤”，第 8.8 节“扩展和模块选择”。

3.2 使用 YaST 安装模块和扩展

要从正在运行的系统安装模块和扩展，您需要确保系统已在 SUSE Customer Center 或本地注册服务器中注册。如果您在安装期间未注册系统，请参考《部署指南》，第 9 章“注册 SUSE Linux Enterprise 和管理模块/扩展”，第 9.3 节“从安装的系统注册”中的相关说明。



注意：查看已安装的附加产品

要查看已安装的附加产品，请启动 YaST 并选择软件 > 附加产品

过程 1：使用 YAST 从联机通道安装附加产品和扩展

1. 启动 YaST，然后选择软件 > 系统扩展。YaST 将连接到注册服务器并显示可用的扩展和模块列表。



注意：可用扩展和模块

可用扩展和模块数视注册服务器而定。本地注册服务器可能只提供更新软件源，而不提供其他扩展。

2. 单击一项可查看其说明。
3. 要添加模块或扩展，请选择您要安装的所有组件。请注意，需要为所有扩展提供付费购买的附加注册码。
4. 单击下一步继续。
5. 根据您为扩展或模块添加的软件源，系统可能会提示您导入软件源的 GPG 密钥，或者要求您同意许可条款。
6. YaST 软件包管理器将会打开，以安装每个模块的发行软件包；根据您所选的模块和扩展，它还会安装其他的软件包。强烈建议**不要取消选择**系统预先选择的任何软件包；不过，您可以添加其他的软件包。
依次选择接受和完成以完成该过程。

7. 如果需要，请根据《管理指南》，第 8 章 “安装或去除软件”，第 8.4.2 节 “管理软件源属性” 中所述调整软件源的属性。



提示：模块依赖项

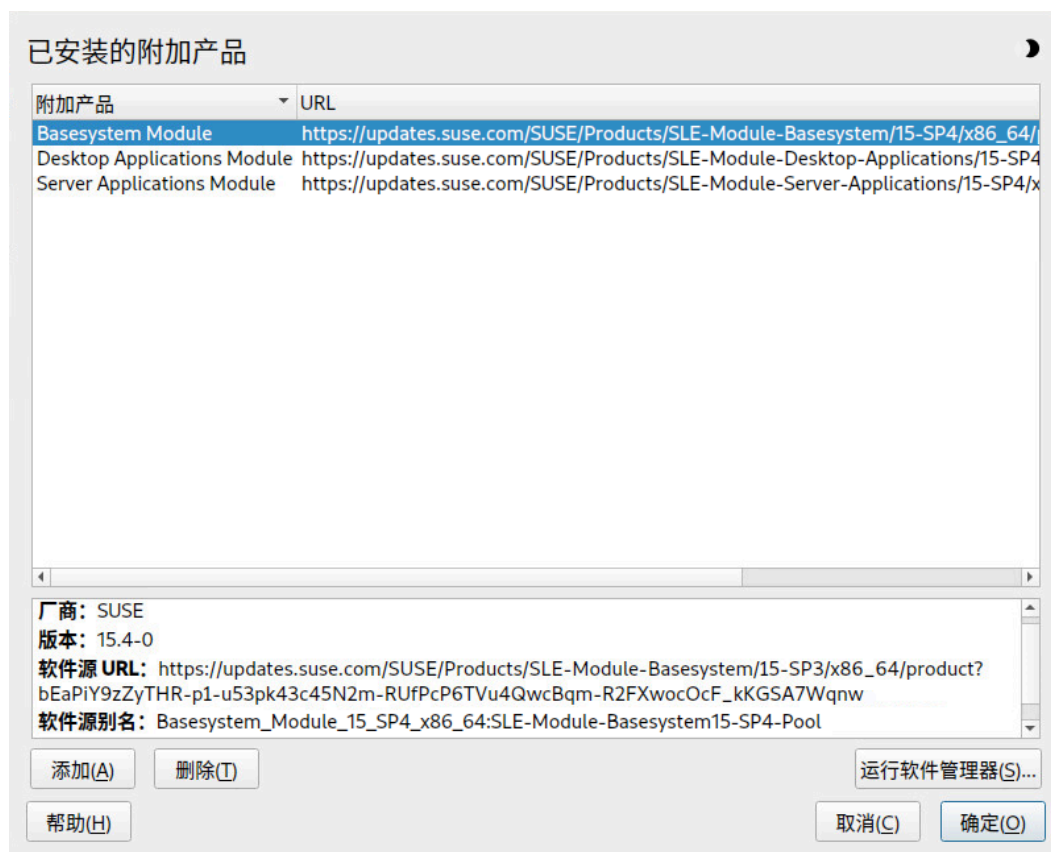
软件包可能需要依赖其他软件包才能正常运行，而模块与此类似，它们也可能依赖于其他模块。如果存在这种情况，系统会自动选择安装所依赖的模块。

3.3 从媒体安装扩展和第三方附加产品

从媒体安装扩展或附加产品时，您可以选择各种产品媒体，例如 DVD/CD、可移动大容量储存设备（如闪存盘）、本地目录或 ISO 映像。网络服务器也可以提供媒体，例如，通过 HTTP、FTP、NFS 或 Samba。

1. 启动 YaST，然后选择软件 > 附加产品。或者在命令行中使用 `sudo yast2 add-on` 启动 YaST 附加产品模块。

对话框将显示已安装附加产品、模块和扩展的概览。



2. 单击添加以安装新的附加产品。
3. 在附加产品对话框中，选择与您要从中进行安装的媒体类型匹配的选项：



- 要通过 SLP 在网络中扫描宣告了其服务的安装服务器，请选择使用 SLP 扫描，然后单击下一步。
- 要从可卸媒体添加安装源，请选择相关选项，并在计算机中插入媒体或连接 USB 设备。单击下一步开始安装。
- 对于大多数媒体类型，在选择相应的选项并单击下一步后，系统会提示您指定媒体的路径（或 URL）。可以选择性地指定软件源名称。如果不指定任何软件源名称，YaST 将使用产品的名称或 URL 作为软件源名称。

默认情况下已激活下载软件源说明文件选项。如果停用该选项，YaST 稍后会根据需要自动下载这些文件。

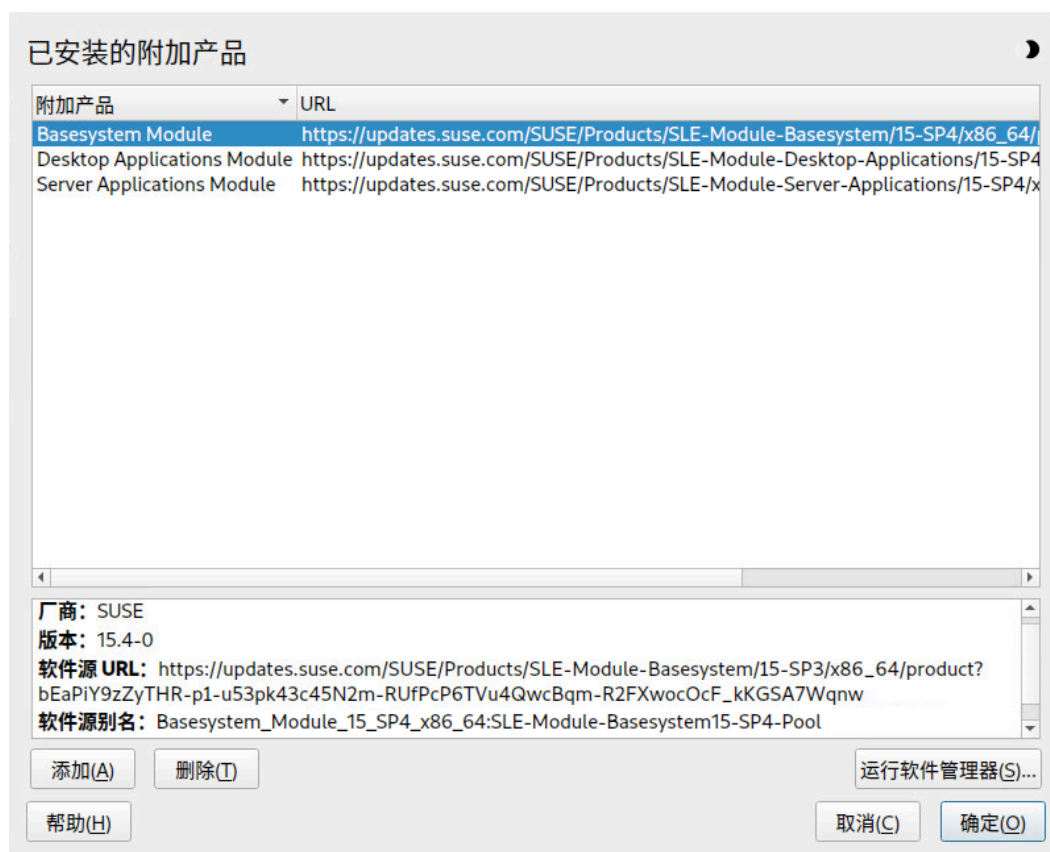
4. 根据您添加的软件源，系统可能会提示您导入软件源的 GPG 密钥，或者要求您同意许可条款。

确认这些消息后，YaST 将下载并分析元数据。它会将软件源添加到已配置软件源列表。

5. 如果需要，请根据《管理指南》，第 8 章 “安装或去除软件”，第 8.4.2 节 “管理软件源属性” 中所述调整软件源的属性。
6. 单击确定确认所做的更改，并关闭配置对话框。
7. 成功添加附加产品媒体中的安装源后，软件管理器会启动，让您开始安装软件包。有关细节，请参见《管理指南》，第 8 章 “安装或去除软件”。

3.4 使用 YaST 删除模块和扩展

1. 启动 YaST > 软件 > 附加产品。



2. 选择要去除的模块或扩展，然后单击删除。当有警告指出将要去除选定组件中的所有软件包时，请确认删除。

3. YaST 软件管理器此时将会打开，并列出已删除的模块或扩展中所有已安装的软件包。单击接受以去除所有这些软件包。强烈建议您去除不想要的软件包，因为对于已删除的模块或扩展中的软件包，系统不再提供其更新。如果您保留软件包，请务必至少去除每个已删除的模块或扩展的 `*-release` 软件包。

依次单击接受和确定以继续。



警告：删除模块

请注意，切勿删除 Basesystem 模块。另外，建议不要删除 Server Applications 模块。



警告：系统不会为已删除的模块和扩展中的软件包提供更新

如果您选择保留已删除模块或扩展中的软件包，将不会再收到这些软件包的更新。因为这些更新包括安全修复，保留此类软件包可能会给系统带来安全风险。

3.5 使用 SUSEConnect 添加/删除模块和扩展

1. 运行 `SUSEConnect -list-extensions` 获取可用扩展的概览：

```
> sudo SUSEConnect -list-extensions
AVAILABLE EXTENSIONS AND MODULES

Basesystem Module 15 SP4 x86_64 (Installed)
Deactivate with: SUSEConnect -d -p sle-module-basesystem/15.4/x86_64

Containers Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-containers/15.4/x86_64

Desktop Applications Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-desktop-applications/15.4/
x86_64

Development Tools Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-development-tools/15.4/
x86_64
```

SUSE Linux Enterprise Workstation Extension 15 SP4 x86_64
Activate with: SUSEConnect -p sle-we/15.4/x86_64 -r ADDITIONAL
REGCODE

SUSE Cloud Application Platform Tools Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-cap-tools/15.4/x86_64

SUSE Linux Enterprise Live Patching 15 SP4 x86_64
Activate with:
SUSEConnect -p sle-module-live-patching/15.4/x86_64 -r ADDITIONAL
REGCODE

SUSE Package Hub 15 SP4 x86_64
Activate with: SUSEConnect -p PackageHub/15.4/x86_64

Server Applications Module 15 SP4 x86_64 (Installed)
Deactivate with: SUSEConnect -d -p sle-module-server-applications/15.4/
x86_64

Legacy Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-legacy/15.4/x86_64

Public Cloud Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-public-cloud/15.4/x86_64

SUSE Enterprise Storage 6 x86_64
Activate with: SUSEConnect -p ses/6/x86_64 -r ADDITIONAL REGCODE

SUSE Linux Enterprise High Availability Extension 15 SP4 x86_64
Activate with: SUSEConnect -p sle-ha/15.4/x86_64 -r ADDITIONAL
REGCODE

Web and Scripting Module 15 SP4 x86_64
Activate with: SUSEConnect -p sle-module-web-scripting/15.4/x86_64

MORE INFORMATION

You can find more information about available modules here:

2. 运行用于激活/停用模块或扩展的命令列表中的命令，以添加或删除组件。请注意，添加扩展需要提供付费购买的附加注册码。



警告：删除模块

请注意，切勿删除 Basesystem 模块。另外，建议不要删除 Server Applications 模块。



重要：系统不会自动安装/去除软件包

使用 **SUSEConnect** 添加或删除模块和扩展时，相应组件将会取消注册，相关的软件源或服务将从系统中去除。此时不会安装或去除软件包。如果您想要自动完成此类操作，请使用 YaST 添加或删除模块和扩展。

添加模块或扩展并不意味着会自动安装默认的软件包或软件集。您需要在命令行中使用 Zypper，或者运行 YaST > 软件管理来手动完成此操作。

删除某个模块或扩展并不意味着会自动进行清理。属于该模块或扩展的所有软件包仍会安装在系统上，但不再与某个软件源相关联，因此，不再会收到更新。要去除这些所谓的“孤立”软件包，请在命令行中使用 Zypper。**zypper packages --orphaned** 可列出这些软件包，**zypper remove** 可删除一个或多个软件包。或者，可以使用 YaST > 软件管理列出和删除孤立的软件包。



警告：系统不会为已删除的模块和扩展中的软件包提供更新

如果您选择保留已删除模块或扩展中的软件包，将不再会收到这些软件包的更新。因为这些更新包括安全修复，保留此类软件包可能会给系统带来安全风险。

4 软件包的模块成员资格

默认情况下，用于搜索软件包的工具（YaST 软件管理或 **zypper search**）被限制为仅可在已激活的软件源中搜索。要将搜索范围扩展到尚未激活的远程软件源，您可以运行以下命令：

```
zypper search-packages PACKAGE
```



提示：在 SUSE Customer Center 中搜索软件包

您还可以在 SUSE Customer Center Web 界面（网址为 <https://scc.suse.com/packages>）中搜索软件包及其相应模块。此服务不需要登录 SUSE。

zypper search-packages 提供了以下选项供您调整搜索结果：

-x、--match-exact

搜索完全匹配项。

-g、--group-by-module

按模块而非软件包名称对搜索结果分组。

-d、--details

同时列出版本号和包含该软件包的软件源。

--xmlout

生成 XML 输出。

下面是如何使用 **zypper search-packages** 的一些示例。

例 1：简单搜索

下面的命令会搜索软件包 `nodejs` 和 `hawk`。第一个软件包在 `Web and Scripting` 模块中提供，第二个软件包属于 SUSE Linux Enterprise High Availability Extension 的一部分。这两个软件包都尚未安装：

```
> zypper search-packages openjdk nodejs
Following packages were found in following modules:
```

Package	Module or Repository
	SUSEConnect Activation Command
-----	-----
java-11-openjdk	Basesystem Module (sle-module-basesystem/15.4/x86_64)
	SUSEConnect --product sle-module-basesystem/15.4/x86_64
java-17-openjdk	Basesystem Module (sle-module-basesystem/15.4/x86_64)
	SUSEConnect --product sle-module-basesystem/15.4/x86_64
nodejs14	Web and Scripting Module (sle-module-web-scripting/15.4/x86_64)
	SUSEConnect --product sle-module-web-scripting/15.4/x86_64
nodejs16	Web and Scripting Module (sle-module-web-scripting/15.4/x86_64)

```
SUSEConnect --product sle-module-web-scripting/15.4/x86_64
[...]
```

例 2：搜索完全匹配项

如果您知道确切的软件包名称，则可以使用选项 `-x` 将搜索结果缩小到完全匹配的软件包：

```
> zypper search-packages -x java-11-openjdk nodejs14
Following packages were found in following modules:

Package      Module or Repository
              SUSEConnect Activation Command
-----
-----
java-11-openjdk Basesystem Module (sle-module-basesystem/15.4/x86_64)
              SUSEConnect --product sle-module-basesystem/15.4/x86_64
nodejs14       Web and Scripting Module (sle-module-web-scripting/15.4/x86_64)
              SUSEConnect --product sle-module-web-scripting/15.4/x86_64
[...]
```

例 3：搜索已安装或提供的软件包

如果您要搜索的软件包已安装或在您系统上可用的某个模块中提供，搜索结果会有所不同。下面的示例中已安装软件包 `vim`，未安装软件包 `emacs`，但您无需添加模块就可安装它。

```
> zypper search-packages -x vim
Following packages were found in following modules:

Package      Module or Repository
              SUSEConnect Activation Command
-----
-----
vim Basesystem Module (sle-module-basesystem/15.4/x86_64)
    SUSEConnect --product sle-module-basesystem/15.4/x86_64
vim Installed
vim Available in repo Basesystem_Module_15_SP4_x86_64:SLE-Module-Basesystem15-SP4-Pool
vim Available in repo Basesystem_Module_15_SP4_x86_64:SLE-Module-Basesystem15-SP4-Updates

> zypper search-packages -x emacs
Following packages were found in following modules:

Package      Module or Repository
              SUSEConnect Activation Command
-----
```

```
-----
emacs Basesystem Module (sle-module-basesystem/15.4/x86_64)
      SUSEConnect --product sle-module-basesystem/15.4/x86_64
emacs Available in repo Basesystem_Module_15_SP4_x86_64:SLE-Module-Basesystem15-SP4-Pool
```

如果不搜索软件包，您还可以查看属于某个模块或扩展的软件包列表。启动 YaST 软件管理模块，然后单击查看 > 服务。选择一项以显示属于此模块或扩展的软件包列表。

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