



## SUSE Linux Enterprise Micro 5.4

# Release Notes

SUSE Linux Enterprise Micro is a modern operating system primarily targeted for edge computing. This document provides a high-level overview of features, capabilities, and limitations of SUSE Linux Enterprise Micro 5.4.

*This product will be released in TBD.* The latest version of these release notes is always available at <https://www.suse.com/releasenotes> . Drafts of the general documentation can be found at <https://susedoc.github.io/doc-sle/main> .

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# 1 SUSE Linux Enterprise Micro

SUSE Linux Enterprise Micro 5.4 is a modern operating system primarily targeted for edge computing.

## 1.1 Documentation and other information

### 1.1.1 Available on the product media

- Read the READMEs on the media.
- Get the detailed change log information about a particular package from the RPM (where *FILENAME.rpm* is the name of the RPM):

```
rpm --changelog -qp FILENAME.rpm
```

- Check the ChangeLog file in the top level of the installation medium for a chronological log of all changes made to the updated packages.
- Find more information in the docu directory of the installation medium of SUSE Linux Enterprise Micro 5.4. This directory includes PDF versions of the SUSE Linux Enterprise Micro 5.4 Installation Quick Start Guide.

### 1.1.2 Online documentation

- For the most up-to-date version of the documentation for SUSE Linux Enterprise Micro 5.4, see <https://susedoc.github.io/doc-sle/main> (draft version).
- Find a collection of White Papers in the SUSE Linux Enterprise Micro Resource Library at <https://www.suse.com/products/server#resources>.

## 1.2 Support and life cycle

SUSE Linux Enterprise Micro is backed by award-winning support from SUSE, an established technology leader with a proven history of delivering enterprise-quality support services.

SUSE Linux Enterprise Micro 5.4 has a 4-year life cycle. For more information, see <https://www.suse.com/lifecycle> and the Support Policy page at <https://www.suse.com/support/policy.html>.

## 1.3 Product Certifications

SUSE Linux Enterprise Micro is built upon the SUSE Linux Enterprise Server 15 SP4 code base. As such, it inherits the hardware certification from SUSE Linux Enterprise Server 15 SP4.

## 2 About the release notes

These Release Notes are identical across all architectures, and the most recent version is always available online at <https://www.suse.com/releasesnotes>.

Entries are only listed once but they can be referenced in several places if they are important and belong to more than one section.

Release notes usually only list changes that happened between two subsequent releases. Certain important entries from the release notes of previous product versions are repeated. To make these entries easier to identify, they contain a note to that effect.

However, repeated entries are provided as a courtesy only. Therefore, if you are skipping one or more service packs, check the release notes of the skipped service packs as well. If you are only reading the release notes of the current release, you could miss important changes.

## 3 Changes affecting all architectures

Information in this section applies to all architectures supported by SUSE Linux Enterprise Micro 5.4.

## 4 General features and fixes

Information in this section applies to all architectures supported by SUSE Linux Enterprise Micro 5.4.

## 4.1 Installation media

There are two types of installation media of SUSE Linux Enterprise Micro. The installer ISO allows to install via YaST or AutoYaST, with the possibility to fully customize the installation. The pre-built images contain a system image already pre-configured. Neither of the media is intended to be used for upgrades from the previous version of SUSE Linux Enterprise Micro. To upgrade from the previous version, use the `transactional-update` command.

There are the following differences between these two types:

- the software selection for the default installation from the ISO contains fewer packages than the pre-built image
- `firewalld` is only installed from the ISO if the firewall is enabled during installation

In both types of the installation media `firewalld` is disabled by default.

## 4.2 NetworkManager

With SUSE Linux Enterprise Micro 5.4, the default network management stack has changed from Wicked to NetworkManager. The raw images are configured to use NetworkManager. The YaST installer defaults to NetworkManager but allows users to choose the network management stack. After upgrading from previous versions, Wicked remains in use. Wicked is still fully supported but will be deprecated and removed in a future version.

## 4.3 Podman upgrade from 3.4.x to 4.3.1

Podman 4.x is a major release with 60 new features and more than 50 bug fixes compared to Podman 3. It also includes a complete rewrite of the network stack.

Podman 4.x brings a new container network stack based on [Netavar](https://github.com/containers/netavark) (<https://github.com/containers/netavark>), the new container network stack and [Aardvark DNS server](https://github.com/containers/aardvark-dns) (<https://github.com/containers/aardvark-dns>) in addition to the existing container network interface (CNI) stack used by Podman 3.x. The new stack brings 3 important improvements:

- Better support for containers in multiple networks
- Better IPv6 support
- Better performance

To ensure that nothing break with this major change, the old CNI stack will remain the default on existing installations, while new installs will use Netavark.

New installations can opt to use CNI by explicitly specifying it via the `containers.conf` configuration file, using the `network_backend` field.

If you have run Podman 3.x before upgrading to Podman 4, Podman will continue to use CNI plugins as it had before. There is a marker in Podman's local storage that indicates this. In order to begin using Podman 4, you need to destroy that marker with `podman system reset`. This will destroy the marker, all of the images, all of the networks, and all of the containers.



## Warning

Before testing Podman 4 and the new network stack, you will have to destroy all your current containers, images, and networks. You must export/save any import containers or images on a private registry, or make sure that your Dockerfiles are available for rebuilding and scripts/playbooks/states to reapply any settings, regenerate secrets, etc.

Last but not least CNI will be deprecated from upstream at a future date: <https://github.com/containers/podman/tree/main/cni>

For a complete overview of the changes, please check out the upstream 4.0.0 (<https://github.com/containers/podman/releases/tag/v4.0.0>) but also 4.1.1 (<https://github.com/containers/podman/releases/tag/v4.1.1>), 4.2.0 (<https://github.com/containers/podman/releases/tag/v4.2.0>) and 4.3.0 (<https://github.com/containers/podman/releases/tag/v4.3.0>) to be informed about all the new features and changes.

## 4.4 Cockpit web-based node management system

For web-based management of a single node, Cockpit is included. For details, refer to <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/article-administration-slemicro.html#sec-admin-cockpit>.

There have been new Cockpit modules added to the product. Due to the amount of dependencies, not all of the Cockpit modules are part of the raw images and some have to be installed additionally.

When enabling firewall via the Cockpit user interface, be aware that your connection to the host may be interrupted unless the Cockpit port is configured to be open in advance.

The new SELinux module for Cockpit provides basic functionality for users to troubleshoot their configuration. Functionality will be extended with the introduction of the `setroubleshoot-server` package in a future SUSE Linux Enterprise Micro release.

## 4.5 Managing SUSE Linux Enterprise Micro with SUSE Manager

SUSE Manager can be used to manage SUSE Linux Enterprise Micro hosts. There are certain limitations:

- SUSE Linux Enterprise Micro host cannot be monitored with SUSE Manager
- SUSE Manager does not provide integrated container management yet. As a workaround, you can use Salt via `cmd.run podman`.
- SUSE Manager can manage the SUSE Linux Enterprise Micro hosts only with the Salt stack; the traditional stack is not supported
- Ansible control node cannot be installed on SUSE Linux Enterprise Micro

We intend to resolve these issues in the future maintenance updates of SUSE Linux Enterprise Micro on SUSE Manager.

## 4.6 SELinux in Enforcing Mode

SUSE Linux Enterprise Micro includes SELinux with base system policies. The default setting of SELinux for new installations has been changed from permissive to enforcing mode. This is now the recommended default.

Systems updated from previous versions will not change the SELinux mode during update.




### Note

If you see broken functionality and denials because of SELinux, you can switch it to permissive mode, or disable SELinux completely. Consider reporting these issues so that they can be fixed.

## 4.7 Change of the internal identifier of the product

The internal identifier of the product has changed from SUSE-MicroOS to SLE-Micro in order to have the internal identifier name consistent with the user-visible name of the product. Your AutoYaST profile may need updating.

## 4.8 toolbox container

SUSE Linux Enterprise Micro provides the toolbox container. However, it is not part of the media and needs to be downloaded from <https://registry.suse.com> . To download from the registry, the system needs network access. For details refer to <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/article-administration-slemicro.html#sec-admin-toolbox> .

The toolbox container does not include or inherit a software repository setup from the underlying system. If the underlying system is registered properly, zypper will enable a basic set of repositories (Basesystem and Server Applications modules of SUSE Linux Enterprise Server 15 SP3) when you execute zypper inside the toolbox container. Then you can install additional software into the container.

## 4.9 Kernel Live Patching

SUSE Linux Enterprise Micro supports Kernel Live Patching, for details refer to <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/cha-images-procedure.html#sec-slemicro-live-patching> .

Note that kernel live patching is only available for the x86-64 and s390x architectures. It is also not available for the real-time kernel.

## 4.10 User Space Live Patching

The User Space Live Patching is available for SUSE Linux Enterprise Micro as a technology preview.

When applying user space live patches on the system, running process will get live patched. Due to the immutable nature of SUSE Linux Enterprise Micro, the underlying filesystem cannot be changed during runtime. Processes started after the live patch is applied to the system will still be vulnerable. Full application of the patches to SUSE Linux Enterprise Micro requires a reboot of the system.

## 4.11 Intel Secure Device Onboard (SDO)

SUSE Linux Enterprise Micro includes needed packages for Intel Secure Device Onboard. Intel Secure Device Onboard helps onboard any device to any device management system. With this release, the SDO client has been replaced with FDO client, which is a portable implementation of the FIDO Device Onboard Spec. The packages are only provided as a technology preview and do not offer full support. Using Intel Secure Device Onboard needs proper integration into your target environment and only works on supported hardware.

## 4.12 System V init scripts

SUSE Linux Enterprise Micro does not support init script of system services, which are usually located in `/etc/init.d` directory. Even if this directory still exists, it is empty on purpose. systemd unit files should be used instead of initscripts. To start system services or to configure their status on boot, use the `systemctl` command instead.

## 4.13 Rename of the `microos-sssd_ldap` pattern

Compared to version 5.1, the `microos-sssd_ldap` pattern has been renamed to `microos-sssd_ldap` (the first underscore has been replaced with a dash). This new name is consistent with other pattern names. Note that your AutoYaST profile may need updating.

## 4.14 Change of SUSEConnect handling of licenses

Some third party repositories available as SLE extension modules come with their own EULAs. Previously, SUSEConnect silently accepted these licenses when registering such modules.

Now SUSEConnect will display the license text and explicitly ask user for acceptance in interactive mode.



### Note

This can break some existing scripts which relied on automatic acceptance of licenses. Users who want to use SUSEConnect with third party licenses in an automatic way can use the `--auto-agree-with-licenses` CLI option.

## 5 Installing SUSE Linux Enterprise Micro

SUSE Linux Enterprise Micro 5.4 can be installed in the following ways:

- *Section 5.1, “Manually installing with YaST”*
- *Section 5.2, “Unattended installation with AutoYaST”*
- *Section 5.3, “Unattended installation with Yomi (technology preview)”*
- *Section 5.4, “Deploying pre-built images”*


### 5.1 Manually installing with YaST

The installation workflow for manual installation is described in <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/part-manual-installation.html> .

### 5.2 Unattended installation with AutoYaST


Installing SUSE Linux Enterprise Micro with AutoYaST is described in <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/book-autoyast.html> .

### 5.3 Unattended installation with Yomi (technology preview)

To learn how to install a system with Yomi, see the [SUSE Manager documentation](https://documentation.suse.com/external-tree/en-us/suma/4.1/suse-manager/salt/yomi.html), section [Install using Yomi](https://documentation.suse.com/external-tree/en-us/suma/4.1/suse-manager/salt/yomi.html) (<https://documentation.suse.com/external-tree/en-us/suma/4.1/suse-manager/salt/yomi.html>) . Installation with Yomi is a technology preview.

### 5.4 Deploying pre-built images

SUSE Linux Enterprise Micro is provided as raw images which can be deployed directly to a storage device, for example, a memory card, a USB stick, or a hard drive. SUSE Linux Enterprise Micro is also provided as images for specific hardware device with a customized software selection.

For a procedure of deploying an image refer to <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/part-raw-image.html> .

## 5.5 Upgrade from previous version

Upgrade from SLE Micro 5.3 is only possible via the `transactional-update` tool. For the upgrade procedure, refer to <https://documentation.suse.com/sle-micro/5.4/html/SLE-Micro-all/book-upgrade.html> ↗.

## 6 Known issues

### 6.1 Error on console while booting with SELinux enabled

When booting the system with SELinux enabled, the console reports:

```
Failed to transition into init label 'system_u:system_r:init_t:s0'
```

This message is harmless.

### 6.2 Podman and firewalld

When reloading `firewalld` via `firewall-cmd --reload`, all Podman-related rules go missing. For this reason, `firewalld` is not enabled by default during installation. For more information, see <https://github.com/containers/podman/issues/5431> ↗.

### 6.3 Pre-built images report two IP addresses on first boot

When booting the pre-built images the first time, two IP addresses may be reported by the `ip a` command or other tools. This issue only happens on the first boot of the image, on the following boots only a single IP address is assigned to the network interface.

### 6.4 VNC package cannot be installed during installation

The YaST installer offers installation via VNC. The installer also tries to make it possible to use the final system the same way that the system was initially installed. Therefore, the installer will attempt to install appropriate software and open appropriate firewall ports for later access to the system. However, the VNC server package is only available during the installation, but not for the installed system.

As the VNC server package cannot be installed, the installer will issue a warning. You can safely ignore this warning.

## 6.5 AppArmor error messages in log after upgrade

SLE Micro supports SELinux as the security framework, however, some AppArmor packages are still included because of package dependencies. Since they have been reduced since SLE Micro 5.1, it may happen that there are error messages showing in the system journal after upgrade. If this happens, make sure that the `apparmor.service` service is not enabled in your system.

## 7 Obtaining source code


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