



Release Notes

This document provides guidance and an overview to high-level general features and updates for SUSE Linux Enterprise Server for SAP Applications 15 SP3. In addition to architecture- or product-specific information, it also describes the capabilities and limitations of SUSE Linux Enterprise Server for SAP Applications 15 SP3.

These release notes are updated periodically. The latest version of these release notes is always available at <https://www.suse.com/releasenotes> . General documentation can be found at <https://documentation.suse.com/sles-sap/15-SP3> .

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1 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/releasenotes> .

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.

2 SUSE Linux Enterprise Server for SAP Applications

SUSE Linux Enterprise Server for SAP Applications 15 SP3 is the leading Linux platform for SAP HANA, SAP NetWeaver, and SAP S/4HANA applications that provides optimized performance, reduced downtime, and faster SAP landscape deployments. It includes features to secure SAP HANA systems and ease the transition to SAP S/4HANA for systems administrators. SUSE Linux Enterprise Server for SAP Applications combines SUSE Linux Enterprise Server and SUSE Linux Enterprise High Availability Extension with additional software specifically meant to simplify running and managing SAP applications. This document provides an overview of high-level general features, capabilities, and limitations of SUSE Linux Enterprise Server for SAP Applications 15 SP3 and important product updates.

2.1 What Is New?

2.1.1 General Changes

Media Changes

The Unified Installer and Packages DVDs known from SUSE Linux Enterprise Server for SAP Applications 15 SP1 are deprecated and have been replaced by the following media:

- **Online Installation Media:** All SUSE Linux Enterprise 15 products can be installed with this stand alone media, after entering a registration key. The necessary packages are fetched from online repositories only. For information about available modules, see https://www.suse.com/releasenotes/x86_64/SUSE-SLES/15-SP2#Intro.ModuleExtensionRelated ↗
- **Full Installation Media:** All SUSE Linux Enterprise Server for SAP Applications 15 products can be installed without network connection with this media, for offline installation scenarios. The media contains all necessary packages. It consists of directories with module repositories which need to be added manually as needed. RMT (Repository Mirroring Tool) and SUSE Manager provide additional options for disconnected or managed installation.

Extended Package Search

Use the new Zypper command `zypper search-packages` to search across all SUSE repositories available for your product even if they are not yet enabled. This functionality makes it easier for administrators and system architects to find the software packages needed. To do so, it leverages the SUSE Customer Center.

Software Development Kit

With SLE 15, the Software Development Kit is now integrated into the products. Development packages are packaged alongside regular packages. In addition, the *Development Tools* module contains the tools for development.

RMT Replaces SMT

SMT (Subscription Management Tool) has been removed. Instead, RMT (Repository Mirroring Tool) now allows mirroring SUSE repositories and custom repositories. You can then register systems directly with RMT. In environments with tightened security, RMT can also proxy other RMT servers.

Kernel

SLE 15 SP3 will come with Kernel 5.3. This new kernel release includes upstream features like 16 million new IPv4 addresses, utilization clamping support in the task scheduler, power efficient userspace waiting with the `umwait` x86 instructions and many more.

MAJOR UPDATES TO THE SOFTWARE SELECTION:

Salt

SLE 15 SP3 can be managed via salt to help integration into up-to-date management solutions, such as SUSE Manager.

Python 3

As the first enterprise distribution, SLE 15 offers full support for Python 3 development in addition to Python 2.

Directory Server

389 Directory Server replaces OpenLDAP to provide a sustainable directory service.

2.1.2 Changes in SUSE Linux Enterprise Server for SAP Applications 15 SP3

2.1.2.1 ClusterTools2

- The `cs_clear_sbd_devices`, `cs_show_saphanasr_status`, and `cs_wait_for_idle` commands have been added.
- Usage of `systemd-timer` instead of `cron`.
- The `supportconfig` plugins `cat_messages`, `show_error_patterns`, and `show_elevator` are now disabled by default when the package ClusterTools2 is installed the first time. Existing configurations will not be changed during package update.
- The format of error pattern variables for `cs_show_error_patterns` and `cs_show_supportconfig` will be changed in a future release of ClusterTools2. This change is planned for SLES-SAP 15 SP3.

For details please refer to these manual pages:

- `cs_clear_sbd_devices(8)`
- `cs_show_saphanasr_status(8)`
- `cs_wait_for_idle(8)`
- `ClusterTools2-timer(7)`
- `supportconfig_plugins(5)`
- `cs_show_error_patterns(8)`

2.1.2.2 **SAPHanaSR-ScaleOut has been added**

Starting with package version 0.180, SAP HANA multi-target system replication is supported for SAP HANA scale-out systems. In addition to the two sites controlled by the SUSE HA cluster, one system replication site can be connected from outside that cluster.

The new SAPHanaSR-ScaleOut package contains updated resource agents and a new HADR provider hook script. New CRM attributes are used for managing site-specific system replication status. These attributes are not backward compatible with the global ones.

Two upgrade scenarios are supported:

- upgrading the RPM only, without adding support for multi-target system replication
- upgrading the RPM and adding support for multi-target system replication

The SAPHanaSR-manageAttr tool helps with performing an upgrade.

For details please refer to these manual pages:


- SAPHanaSR-ScaleOut(7)
- ocf_suse_SAPHanaController(7)
- SAPHanaSrMultiTarget.py(7)
- SAPHanaSR-manageAttr(8)

2.1.2.3 **sapstartsrv-resource-agents has been added**

The new sapstartsrv-resource-agents package eliminates the need for a dedicated instance work directory filesystems in SUSE HA clusters for SAP NetWeaver and SAP S/4HANA enqueue replication setups. A common NFS share can now be statically mounted on all cluster nodes. The package contains a new resource agent called ocf:suse:SAPStartSrv.

Additionally, the resource-agents package has been updated. It now contains a new version of the ocf:heartbeat:SAPInstance resource agent.

For more information, see:

- these manual pages:
 - [`ocf_suse_SAPStartSrv\(7\)`](#)
 - [`ocf_heartbeat_SAPInstance\(7\)`](#)
- this SUSE TID:
 - <https://www.suse.com/support/kb/doc/?id=000019944> 


2.2 Important Sections of This Document

If you are upgrading from a previous SUSE Linux Enterprise Server for SAP Applications release, you should review at least the following sections:

- *Section 2.6, “Support statement for SUSE Linux Enterprise Server for SAP Applications”*

2.3 Security, Standards, and Certification

SUSE Linux Enterprise Server for SAP Applications 15 SP3 has been submitted to the certification bodies for:

- Common Criteria Certification, see <https://www.commoncriteriaportal.org/> 
- FIPS 140-2 validation, see <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/140InProgress.pdf> 

For more information about certification, see <https://www.suse.com/security/certificates.html> .

2.4 Documentation and other information

2.4.1 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 Server for SAP Applications 15 SP3. This directory includes PDF versions of the SUSE Linux Enterprise Server for SAP Applications 15 SP3 Installation Quick Start Guide.

2.4.2 Online documentation

- For the most up-to-date version of the documentation for SUSE Linux Enterprise Server for SAP Applications 15 SP3, see <https://documentation.suse.com/sles-sap/15-SP3>.
- Find a collection of White Papers in the SUSE Linux Enterprise Server for SAP Applications Resource Library at <https://www.suse.com/products/server#resources>.

2.5 Support and life cycle

SUSE Linux Enterprise Server for SAP Applications 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 Server for SAP Applications 15 has a 13-year life cycle, with 10 years of General Support and 3 years of Extended Support. SUSE Linux Enterprise Server for SAP Applications comes with Extended Service Pack Overlap Support by default, this means SP3 will be fully maintained and supported until 3.5 years after the release of SUSE Linux Enterprise Server for SAP Applications 15 SP4.

For more information, check our Support Policy page <https://www.suse.com/support/policy.html> or the Long Term Service Pack Support Page <https://www.suse.com/support/programs/long-term-service-pack-support.html>.

2.6 Support statement for SUSE Linux Enterprise Server for SAP Applications

To receive support, you need an appropriate subscription with SUSE. For more information, see https://www.suse.com/support/programs/subscriptions/?id=SUSE_Linux_Enterprise_Server_for_SAP_Applications.

The following definitions apply:

L1

Problem determination, which means technical support designed to provide compatibility information, usage support, ongoing maintenance, information gathering and basic troubleshooting using available documentation.

L2

Problem isolation, which means technical support designed to analyze data, reproduce customer problems, isolate problem area and provide a resolution for problems not resolved by Level 1 or prepare for Level 3.

L3

Problem resolution, which means technical support designed to resolve problems by engaging engineering to resolve product defects which have been identified by Level 2 Support.

For contracted customers and partners, SUSE Linux Enterprise Server for SAP Applications is delivered with L3 support for all packages, except for the following:

- Technology Previews, see [Section 2.7, "Technology Previews"](#)
- Sound, graphics, fonts and artwork
- Some packages shipped as part of the module *Workstation Extension* are L2-supported only
- Packages with names ending in `-devel` (containing header files and similar developer resources) will only be supported together with their main packages.

SUSE will only support the usage of original packages. That is, packages that are unchanged and not recompiled.

2.6.1 General support

To learn about supported features and limitations, refer to the following sections in this document:

- *Section 5, "New Features, Changes & Fixes"*
- *Section 6, "Known Issues & Workarounds"*
- *Section 7, "Removed and Deprecated Features and Packages"*

2.6.2 Software requiring specific contracts

Certain software delivered as part of SUSE Linux Enterprise Server for SAP Applications may require an external contract. Check the support status of individual packages using the RPM metadata that can be viewed with `rpm`, `zypper`, or YaST.

Major packages and groups of packages affected by this are:

- PostgreSQL (all versions, including all subpackages)

2.6.3 SAP Support Statement

Make sure to also review the SAP Product Availability Matrix (<https://apps.support.sap.com/sap/support/pam>) and/or SAP Note 2235581 - SAP HANA: Supported Operating Systems (<https://launchpad.support.sap.com/#/notes/2235581>) for official SAP support and certification statements.

2.6.4 Software under GNU AGPL

SUSE Linux Enterprise Server for SAP Applications 15 SP3 (and the SUSE Linux Enterprise modules) includes the following software that is shipped *only* under a GNU AGPL software license:

- Ghostscript (including subpackages)

SUSE Linux Enterprise Server for SAP Applications 15 SP3 (and the SUSE Linux Enterprise modules) includes the following software that is shipped under multiple licenses that include a GNU AGPL software license:

- MySpell dictionaries and LightProof
- ArgyllCMS

2.7 Technology Previews

Technology previews are packages, stacks, or features delivered by SUSE which are not supported. They may be functionally incomplete, unstable or in other ways not suitable for production use. They are included for your convenience and give you a chance to test new technologies within an enterprise environment.

Whether a technology preview becomes a fully supported technology later depends on customer and market feedback. Technology previews can be dropped at any time and SUSE does not commit to providing a supported version of such technologies in the future.

Give your SUSE representative feedback about technology previews, including your experience and use case.

3 Modules, Extensions, and Related Products

This section comprises information about modules and extensions for SUSE Linux Enterprise Server for SAP Applications 15 SP3. Modules and extensions add functionality to the system.

3.1 Modules in the SLE 15 SP3 Product Line

The SLE 15 SP3 product line is made up of modules that contain software packages. Each module has a clearly defined scope. Modules differ in their life cycles and update timelines.

The modules available within the product line based on SUSE Linux Enterprise 15 SP3 at the release of SUSE Linux Enterprise Server for SAP Applications 15 SP3 are listed in the *Modules and Extensions Quick Start* at <https://documentation.suse.com/sles/15-SP3/html/SLES-all/article-modules.html>.

Not all SLE modules are available with a subscription for SUSE Linux Enterprise Server for SAP Applications 15 SP3 itself (see the column *Available for*).

For information about the availability of individual packages within modules, see <https://scc.suse.com/packages>.

3.2 Available Extensions

Extensions add extra functionality to the system and require their own registration key, usually at additional cost. Most extensions have their own release notes documents that are available from <https://www.suse.com/releasenotes>.

The following extensions are available for SUSE Linux Enterprise Server for SAP Applications 15 SP3:

- SUSE Linux Enterprise Live Patching: <https://www.suse.com/products/live-patching>

The following extension is not covered by SUSE support agreements, available at no additional cost, and without an extra registration key:

- SUSE Package Hub: <https://packagehub.suse.com/>

3.3 Derived and Related Products

This section lists derived and related products. Usually, these products have their own release notes documents that are available from <https://www.suse.com/releasenotes>.

- SUSE Linux Enterprise Server: <https://www.suse.com/products/server>
- SUSE Linux Enterprise JeOS: <https://www.suse.com/products/server/jeos>
- SUSE Linux Enterprise Desktop: <https://www.suse.com/products/desktop>
- SUSE Linux Enterprise for High-Performance Computing: <https://www.suse.com/products/server/hpc>

- SUSE Linux Enterprise Real Time: <https://www.suse.com/products/realtime> ↗
- SUSE Manager: <https://www.suse.com/products/suse-manager> ↗

4 Changes affecting all architectures

Information in this section applies to all architectures supported by SUSE Linux Enterprise Server for SAP Applications 15 SP3.

5 New Features, Changes & Fixes

Information in this section applies to all architectures supported by SUSE Linux Enterprise Server for SAP Applications 15 SP3 unless noted otherwise.

5.1 CPE_NAME has been changed in `/etc/os-release`

The `CPE_NAME` variable in `/etc/os-release` has been changed. For more information, see <https://www.suse.com/support/kb/doc/?id=7023490> ↗.

5.2 SAP native systemd support

In the past for Linux the systemV init service `sapinit` was starting the SAP Host Agent and all the `sapstartsrv` processes listed in `/usr/sap/sapservices`. A real systemd integration was not available.

Now the native integration of SAP Host Agent is started via the `saphostagent.service` unit. Adaptations to the `saphostagent.service` unit must be done by adding a so-called drop-in file. For any native integrated SAP instance a systemd unit with name schema `SAP<SID>_<INO>` (for example, `SAPEN1_10`) is added. Adaptations should be done using a drop-in file. It is highly recommended to still use the `sapcontrol` functions which guarantees also the functionality of cluster integration like the `sap-suse-cluster-connector`.

Before you start your new installation or update to the native systemd integration, make sure you update the resource agent packages to the newest available versions. The native SAP systemd integration is supported starting with the following package versions for SUSE Linux Enterprise Server for SAP Applications 15:

- resource-agents 4.8.0 + git30.d0077df0-8.11.1
- sapstartsrv-resource-agents 0.9.0 + git.1645795466.55a8cca-1.12.1
- SAPHanaSR 0.155.0
- SAPHanaSR-ScaleOut 0.181.0

For details please refer to the manual pages [ocf_suse_SAPStartSrv\(7\)](#), [SAPHanaSR\(7\)](#), and [SAPHanaSR-ScaleOut\(7\)](#).

6 Known Issues & Workarounds

This is a list of known issues for this release.

6.1 Workarounds to Enable SAP HANA Workloads on Intel Optane DC Memory

SUSE Linux Enterprise Server for SAP Applications 15 supports Intel Optane DC persistent memory. This enables SAP workloads, such as SAP HANA to benefit from persistent memory. This shortens start times of the system and provides better system stability.

From a file system perspective, the XFS file system is supported for persistent memory, with SAP HANA running in DAX mode. Make sure to also check the SAP instructions for using persistent memory with SAP HANA. SUSE is working closely with SAP on future developments.

If there are pmem namespaces, these need to be destroyed before the installation. To mount persistent memory directly on boot, the respective entries need to be added to [/etc/fstab](#), for example:

/dev/pmem0	/mnt/pmem0	xfs	dax	0	0
/dev/pmem1	/mnt/pmem1	xfs	dax	0	0

Namespaces need to be created individually. Execute the following command for each namespace you want to create:

```
ndctl create-namespace --mode=fsdax --map=dev
```

Because the systemd and udev default timeout may be too short for large memory setups to become usable, your system may run into a timeout and the boot process may stop with an emergency shell. To prevent this from happening, increase the timeout to 1200 seconds. Create the file `/etc/systemd/system/systemd-udev-settle.service.d/00-override.conf` with the following content:

```
[Service]
TimeoutSec=1200s
ExecStart=/usr/bin/udevadm settle -t 300
```



Important

In an earlier version of this document, we recommended mounting persistent memory with the `nofail` option in `/etc/fstab`. Unfortunately this frequently required a manual mount of pmem devices on reboot. To automatically mount pmem file systems after reboot, we strongly recommend removing the `nofail` option and modifying the timeout value as described above.

7 Removed and Deprecated Features and Packages

This section lists features and packages that got removed from SUSE Linux Enterprise Server for SAP Applications or will be removed in upcoming versions.

7.1 Removed Features and Packages

The following features and packages have been removed in this release.

7.2 Deprecated Features and Packages

The following features and packages are deprecated and will be removed with a future service pack of SUSE Linux Enterprise Server for SAP Applications.

8 Obtaining source code

This SUSE product includes materials licensed to SUSE under the GNU General Public License (GPL). The GPL requires SUSE to provide the source code that corresponds to the GPL-licensed material. The source code is available for download at <https://www.suse.com/download/sle-sap/> on Medium 2. For up to three years after distribution of the SUSE product, upon request, SUSE will mail a copy of the source code. Send requests by e-mail to sle_source_request@suse.com (mailto:sle_source_request@suse.com). SUSE may charge a reasonable fee to recover distribution costs.

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