



SAP Note 958253 - SUSE LINUX Enterprise Server 10: Installation notes

Note Language: English

Version: 44 Validity:

Valid Since 07.10.2009

Summary

Symptom

You want to use SAP software on SUSE LINUX Enterprise Server 10.

More Terms

SUSE, SLES, Enterprise Server, suse, SuSE, Novell, novell, LINUX, as/400, as400, i386, i484, i586, i686, ix86, ia64, iSeries, pSeries, Power, PowerPC, power, ppc, s390x, x86, x86_64, SLES10, virtualization, XEN

Cause and Prerequisites

You want to use SAP software on SUSE LINUX Enterprise Server 10.

Solution

This document deals with the installation and configuration of SAP Software on SUSE LINUX Enterprise Server 10, as well as upgrading an existing SAP system from SUSE LINUX Enterprise Server 9 (SLES 9) and earlier to SUSE LINUX Enterprise Server 10 (SLES 10). The following hardware platforms are certified to use SAP software on SUSE LINUX Enterprise Server 10 (SLES 10):

- o x86 (Intel-compatible 32-bit -- "i386/i586/i686") SUSE LINUX Enterprise Server 10 (SLES 10) for x86
- o x86_64 (AMD and Intel-compatible 32- and 64-bit - "x86_64") SUSE LINUX Enterprise Server 10 (SLES 10) for AMD64 and Intel EM64T
- o IA64 (Intel Itanium2 64-bit - "ia64") SUSE LINUX Enterprise Server 10 (SLES 10) for Itanium Processor Family
- o IBM Power (64-bit - "ppc") SUSE LINUX Enterprise Server 10 (SLES 10) for IBM POWER
- o IBM zSeries (64-bit - "s390x") SUSE LINUX Enterprise Server 10 (SLES 10) for IBM zSeries

Requirements for support

To receive full support for your SAP system, the following requirements must be met (this list is not exclusive):

- o To ensure support for problems that may occur with the operating system a valid support contract for SUSE LINUX Enterprise Server is required. A support contract can be made directly with Novell or with a support partner who is authorized to redirect possible level 3 support queries to Novell.

For more information, see also:

<http://support.novell.com/linux/>

http://www.novell.com/licensing/linux_upg/index.html

or contact your local Novell sales representative.

For more information about "SUSE Priority Support for SAP applications", please, refer to SAP Note 1056161.

- o You must use hardware that is certified by your hardware vendor for use with SAP on Linux. See SAP Note 171356 for a list of the corresponding notes of hardware partners.
- o You may use any Linux kernel provided by Novell/SUSE for your architecture. Usually this will be the kernel selected by the YaST installer.

Life cycle of SUSE LINUX Enterprise Server 10 (SLES 10)

An overview of the various life cycles for the SUSE LINUX Enterprise Server product line can be found in SAP Note 936887.

Service Packs for SUSE LINUX Enterprise Server 10 (SLES 10)

Updates for SLES 10 are released in the form of Service Packs (SP). When you import a Service Pack, many RPM packages are updated to a new version. For SLES 10 you may use all Service Packs officially released by Novell.

It is sufficient and highly recommended to install the most current Service Pack released by Novell.

Also, kindly notice that after the release of a new Service Pack, older versions of packages that are updated with this Service Pack, are considered obsolete. If you have an issue with a package, for which a newer version is available in a service pack, you might be requested to update to the new package version in order to be fully supported with your issues.

The most current Service Pack for SLES 10 at present time is Service Pack 2 (known as SLES 10 SP2). The next upcoming Service Pack is Service Pack 3 and will be available for download end of September 2009.

Installing SUSE LINUX Enterprise Server 10 (SLES 10)

Install SLES 10 as described in the documentation delivered with the product - the "Start-up Guide". The "Start-up Guide" is also electronically available in a number of languages and can be found on the SLES 10 installation media in the directory "/docu/<language>" (e.g. "en" for English). Besides from the "Start-up Guide" the following documentation is also electronically available in English under the "/docu/en" directory:

en/preparation.pdf	SUSE LINUX Enterprise Server: Preparation
en/sles-admin.pdf	SUSE LINUX Enterprise Server: Admin Manual
en/apparmor-admin.pdf	SUSE LINUX Enterprise Server: AppArmor Admin Manual

General installation instructions:

- o Select English as the installation and system language.
- o Default password encryption

- SLES 10, SLES 10 SP1, SLES 10SP2:
Select the "MD5" password encryption as the default encryption method used (see also the section "PAM configuration needed for sapstartsrv and sapcontrol" further below).
- SLES 10 SP3 and later:
Use the default password encryption method "blowfish". See also the section "PAM configuration needed for sapstartsrv and sapcontrol" further below
- o Use as a starting point for package selections the default pattern selection presented by YaST in the "Software Selection" sub-menu and make the additional selections below:
- o Manually select the pattern "SAP Application Server Base" from the Software Selection Dialogue. This ensures the installation of the "sapinit" RPM package, see also note 1275776 for more details.
- o Manually select the pattern "C/C++ Compiler and Tools". This should be done as a general rule, and **must** be selected when ORACLE is being installed on the system, while the ORACLE install process requires the compiling tools to be present. On an x86_64 system you need in addition the package: glibc-devel-32bit. This package is not part of a pattern. In order to install it, go to the Software Selection dialog and click on: "Details". From the dropdown list on top of the Patterns list, select "Search" and enter the package name. Select the package and click on "Accept" to confirm the package selection.
- o You should then have the following software selections:

SUSE Linux Enterprise Server 10
 - + SAP Application Server Base
 - + X Window System
 - + Print Server
 - + C/C++ Compiler and Tools
 - + Server Base System
 - + 32Bit Runtime Environment
- o If you intend to install Oracle and SAP on the same system, please, **do not** install the "Oracle Server Base" pattern (i.e. the "orarun" RPM package) on the system. Doing so, will prevent "sapinst" from doing a correct installation of the SAP system parts.

Note the following additional installation instructions:

- o Manually adjust the hard disk partitioning to the requirements of the SAP components. Usually, SAP components and any database components are installed on separate partitions.

- o **Do not** manually modify the machine's hostname during the installation when the IP address gets assigned via DHCP. Doing this will create a new entry in /etc/hosts: 127.0.0.2 <hostname>.<domain> <hostname>

which leads to errors in the hostname resolution later. If existing you need to remove this entry manually.

- o The "hostname" command may **only** output the host name and **not** the FQDN (Fully Qualified Domain Name).

Example:

Fully qualified domain name is "ls3001.example.com". Needed output of the "hostname" command is "ls3001".

When the system has been correctly configured, "hostname -f" can be used to get the FQDN.

- o If you can access an NTP server, you should configure and activate the Network Time Protocol service (this can easily be done using "yast2 -> Network services -> NTP client"). This automatically synchronizes the date and time of all SAP application servers.
- o The recommended size of the transfer memory (swap space) is double that of the main memory (2 x RAM). The Linux kernel usually requires little swap space because other limits are reached before the swap space can be used completely ("late assignment"). If you decide that a larger swap space is nevertheless necessary for operating SAP software, the necessary enhancements can be carried out at any time using the architecture specific tools for such operations.
- o After the initial installation, it is **strongly** recommended to carry out an online update either by using YaST or manually to bring the system up-to-date.
- o On ssh connections to the machine, some environment settings from the client are preserved. This is undesirable when executing management commands to the SAP software. In order to suppress this you need to edit the file: /etc/ssh/sshd_config and remove or comment out the following lines: AcceptEnv LANG LC_CTYPE LC_NUMERIC LC_TIME LC_COLLATE LC_MONETARY LC_MESAcceptEnv LC_PAPER LC_NAME LC_ADDRESS LC_TELEPHONE LC_MEASUREMENT AcceptEnv LC_IDENTIFICATION LC_ALL

Specific installation instructions for SLES 10 SP3

Starting with SLES 10 SP3, the default password encryption doesn't have to be changed from "blowfish" to "MD5" anymore in order to use "sapstartsrv" and "sapcontrol". See also the section "PAM configuration needed for "sapstartsrv" and "sapcontrol" further below).

Specific installation instructions for SLES 10 SP2

For the actual updating of your SLES 10 GM system to SLES 10 SP2, please, follow the instructions as given in the Novell Support TID 7000387 article, as well as the instructions found in the "README" file on the first SP2 DVD under section 5.

When Updating from SLES10 GM, please also read the installation instruction for SLES10 SP1 in Novell Support TID 3509359. This is because an update from SLES10 GM to SLES10 SP2 requires an update to SLES10 SP1 first. The Novell Support TID 3509359 article can be found via the URL:

<http://www.novell.com/support/search.do>

by entering "3509359" in the blank field left to the word "Knowledgebase" making sure that the checkbox for "Support TID" has been selected.

Linux kernel

For SLES 10 you may use all Linux kernel packages officially released by Novell as long as the conditions described above under "Requirements for support" are met. According to functional and security patches we recommend to install a Linux kernel package which was released quite recently. If you need to install a new kernel version on your system manually, proceed as follows:

Log on to the system as the system administrator (the "root" user) and install the kernel package required:

```
rpm -ivh <kernel.rpm>
```

The kernel and "initrd" images, shared libraries and kernel modules are installed using this command. In addition, the boot loader configuration files specific to the used architecture are automatically adjusted to use the new kernel version, as well as leaving an entry for booting of the previous installed version of the kernel in the "/boot" directory.

E.g. on the AMD/Intel-compatible architectures (i.e. "ix86" and "x86_64") the default used boot loader is "GRUB" using the file "/boot/grub/menu.lst" as boot loader configuration file.

Note: If you do not want to keep the previous kernel, use instead:

```
rpm -Uvh <kernel.rpm>
```

to update the already installed kernel -- Be aware, though, that you in this case will **not** be able to fall back to the previously working kernel (while this is no longer available), should the new kernel refuse to reboot your system.

GLIBC and "saplocales" resp. "sap-locale" RPM packages

For SLES 10 you may use all Linux "glibc" packages officially released by Novell as long as the conditions described above under "Requirements for support" are met. According to functional and security patches we recommend to install a Linux "glibc" package, which was released quite recently. For supporting the character set of certain languages on non Unicode systems,

additional code pages are needed. These are provided by the saplocales resp. the sap-locale rpm packages. For details about how and when to apply these packages, please read sap Note: 187864. After making changes to the "glibc" (e.g. through an update) you must reinstall both, the "sap-locale" and "saplocales" RPM packages. You reinstall the "sap-locale" package using the YaST2 Software Management under:

Software => Software Management For reinstalling the saplocales package please refer to SAP Note: 517716.

Linux kernel parameter (the "sapinit" RPM package)

In order to activate the specific Linux kernel parameters needed by SAP software, you need to have the "sapinit" RPM package installed on the system. For more information about sapinit, please refer to SAP Note: 1275776.

Upgrading from SUSE LINUX Enterprise Server 9 (SLES 9)

Customers who previously used SLES 9 can use YaST to upgrade their system directly to SLES 10. You will find a detailed description of how to upgrade from SLES 9 to SLES 10 in the documentation delivered on the SLES 10 installation media in the file "docu/en/sles-admin.pdf" under the chapter "8 Updating SUSE Linux Enterprise" on page 199 forwards.

Using raw devices, Journaling File System, and LVM

The SAP Note 405827 contains information on the usage of raw devices as well as Journaling File Systems. A detailed discussion about file systems and their usage is available at:

http://wiki.novell.com/index.php/File_System_Primer

Note that from SLES 10 on the used Linux kernel implements the so called LVM2 (LVM Version 2) format. This format is incompatible with the previous LVM (LVM1 == LVM version 1) format, but SLES 10 is capable of using both formats. This incompatibility means that LVM volumes can be upgraded to LVM2, but not back. It also means that when upgrading from a SLES 9 installation where LVM partitions are in use, the **old LVM1** format will **still** be used under SLES 10! Kindly refer to the "SUSE LINUX Enterprise Server: Admin Manual" for further information on using LVM under SLES 10.

Additional notes on installing an SAP system on SLES 10

Deactivating UTF-8 autodetection

Starting the SAP system via sapstartsrv requires that UTF8-autodetection is off. Make sure that the parameter:

AUTO_DETECT_UTF8="no" is set in: /etc/sysconfig/language.

Number of "file descriptors"

The sapinit script automatically sets the number of open file

descriptors for the groups sapsys, sdba and dba. So all applications that run under the above groups will already have the SAP recommended limits.

However, some SAP applications (e.g. SAP J2EE Engine) might need an even larger limit.

In this case you can edit the file

```
/etc/sysconfig/sapinit
```

and modify the limit for the group to which the application belongs. E.g. if it belongs to sapsys you can put:

```
LIMIT_1="@sapsys soft nofile 48000" LIMIT_2="@sapsys hard  
nofile 48000"
```

Afterwards you need to execute

```
/etc/init.d/boot.sapconf restart
```

and log off and log in again in order to make the changes take effect.

You can check the result in the shell by executing: "ulimit -n".

Using SAPINST

Please, use the latest version available of SAPINST for installation of SAP systems.

NPTL and LinuxThreads

Since the LinuxThreads model is no longer available under SLES 10, it is also no longer possible to make use of the "LD_ASSUME_KERNEL" environment variable setting, as it was under SLES 9. This poses no problems with SAP kernel versions higher than or equal to 7.00, but may be an issue with lower kernel versions (version 6.40). In these cases, please, make sure you are using the latest "KernelPatch" from SAP -- for details, please, refer to SAP Note 19466.

PAM configuration needed for "sapstartsrv" and "sapcontrol".

SLES 10 SP3 or later:

After having installed the Web Service Interface (which uses "sapstartsrv" and "sapcontrol") the following configuration steps are required:

The sapstartsrv file within directory /etc/pam.d has to be created and has to contain the following lines:

```
##PAM-1.0
```

```
auth requisite pam_unix_auth.so nullok
```

SLES 10, SLES 10 SP1 and SLES 10 SP2:

After having installed the Web Service Interface (which uses "sapstartsrv" and "sapcontrol"), it might not be possible to authenticate a local created user (i.e. a user entered into the "/etc/passwd" and "/etc/shadow" files), if the SLES 10 system was not installed using the "md5" encryption method as default encryption method (see also above under section "Installing SUSE LINUX Enterprise Server 10 (SLES 10)"). This is due to a known limitation in the PAM authentication module "pam_unix_auth.so" used by "sapstartsrv" and "sapcontrol" via the PAM configuration file "/etc/pam.d/sapstartsrv".

This sapstartsrv file within directory /etc/pam.d has to be created and has to contain the following lines:

```
#%PAM-1.0  
  
auth    requisite          pam_unix_auth.so         nullok
```

Unfortunately, this PAM module is only capable of authenticating passwords that have been encrypted with either the "DES" or "MD5" encryption method, but not "blowfish", which is the default in SLES 10.

To change the default used encryption method, do as follows:

Start "yast2" as the "root" user.

Select "Security and Users".

Select "Local Security".

If the "Security Settings" has "Customer Settings" selected, click on "Next" button, otherwise click on "Details...".

Under "Password Encryption Method", select either "MD5" (preferred method to make use of) or "DES".

Click on the "Next" button until the "Finish" button appears.

Click on the "Finish" button to save the changes.

In addition, you have to edit the variable "CRYPT_FILES" in the file "/etc/default/passwd", using your favorite editor, setting the assigned value to either "MD5" (preferred) or "DES" (possible, but is less secure). After having changed the default used encryption method as described above, you have to reencrypt the password for the user used by the calls of "sapstartsrv" and "sapcontrol" by issuing the command "passwd <username>" as "root" and entering the wanted password twice.

Using LDAP with SAP software

When using SAP software in an LDAP environment, a number of additional symbolic links for two libraries are needed, because the SAP binaries used to access LDAP were built against libraries

using a non-standard "SONAME".

The two libraries that the SAP software is using are named:

```
/usr/lib/liblber.so.199
```

```
/usr/lib/libldap.so.199
```

Each of these two libraries need to be created as symbolic links to the actual available libraries on your system.

Depending on the used architecture the symbolic links may have to be created for the 32-bit as well as the 64-bit environment. On the AMD/Intel-compatible architecture "i386" (32-bit) the additional links are as follows:

```
ln -s liblber-2.2.so.7 /usr/lib/liblber.so.199
```

```
ln -s libldap-2.2.so.7 /usr/lib/libldap.so.199
```

On the AMD/Intel-compatible architecture "x86_64" (64-bit) is in addition to the above specified symbolic links the following links also needed:

```
ln -s liblber-2.2.so.7 /usr/lib64/liblber.so.199
```

```
ln -s libldap-2.2.so.7 /usr/lib64/libldap.so.199\Uffffff
```

Additional notes for IBM DB2 UDB

- o The installation of the RDBMS software IBM DB2 V8.x is only possible in scroll mode with the following command (no graphical user interface):

```
db2_install
```

After the DB2 installation is complete, the license must be added manually as described in SAP Note 801415.

- o Under the URL (although this does not specifically refer to Linux nor SLES 10):

```
http://www-1.ibm.com/support/docview.wss?rs=865&uid=swg21238113
```

you can read more about DB2 product installation on NFS (Network File System), including a reference to the IBM white paper "Setting Up DB2 on NFS Mounted File System".

- o When installing DB2 under SLES 10 using the DB2 V9.1 the installation procedure finishes successfully, but you may be able

to find an error message in the install log file
"/tmp/db2_install.log.<pid>" complaining about failing
dependencies. This is a known issue by IBM and can be safely
ignored -- The issue will be fixed by IBM in a later FIX PACK.

- o Filesystems: All filesystems, supported by Novell for SUSE Linux Enterprise Server 10 can be used: reiserFS, ext2, ext3, ocfs2, XFS, NFS. Novell is not aware of any limitation which may affect the continuous support by SAP, IBM or Novell.

Additional notes for MaxDB

- o Should the central instance installation of a MaxDB system fail with the following error message in the installation log (see also SAP note #965036):

Execution of the command "/usr/sbin/usermod -L sdb" finished
with returncode 3.

Output:

Password for 'sdb' is already locked!

Choose "Retry" and the installation continues normally without
error.

- o Filesystems: Please note, that the following filesystems are fully supported by Novell and SAP: reiserFS, ext2, ext3, XFS and NFS. Novell is not aware of any limitation which may affect the continuous support by SAP or Novell.

Additional notes for ORACLE

- o Please keep in mind not to use "cpio" when creating database backups with SAP tool BRBACKUP. "cpio" just has problems to handle file sizes equal 2 GB or larger than 2 GB. Instead "dd" is the preferred solution. More information can be found in SAP note 20577.
- o Kindly refer to SAP Note 986578 for specific installation instructions of ORACLE on the Intel Itanium ("ia64") platform.
- o If you get error messages from the Oracle installer check, please refer to SAP Note 980426.
- o Filesystems: The following filesystems are fully supported by SAP, Novell and Oracle: ext2, ext3, ocfs2, NFS (NetApp and EMC NFS). Continuous support for all other filesystems can't be guaranteed, even if these filesystems are supported by Novell for SUSE Linux Enterprise Server 10. Therefore it is highly recommended, to exclusively use the filesystems named above when using an Oracle database.

Additional Notes for Wily Introscope Installation

- o For issues concerning the installation of Wily Introscope Enterprise Manager on SLES 10, please refer to SAP note: 797147. The file IntroscopeFAQ.pdf, that is attached to this note, contains additional information.

Previous Service Packs

Specific installation instructions for SLES 10 SP1 In order to be able to update a SLES 10 GM installed system to SLES 10 SP1, a number of prerequisites are needed as outlined below -- all the following instructions assume that you have a valid support contract with Novell as outlined above under "Requirements for support". The system must have been updated with the newest version of the "libzypp-zmd-backend" RPM package (minimum version is 7.1.1.0-42.66). The RPM package itself is available via this URL (entered into your browser as one single line):

[http://support.novell.com/techcenter/psdb/
862f355ac021e9b707ac1dec5a01dcfa.html](http://support.novell.com/techcenter/psdb/862f355ac021e9b707ac1dec5a01dcfa.html)

Kindly observe that the above described and installed "libzypp-zmd-backend" RPM package version 7.1.1.0-42.66 will have been updated to the newer version 7.1.1.0_0.8-0.16 after the update to SLES 10 SP1. If the system has been configured to make use of the Novell Online Update servers, you need to install and run the "switch-update-server" RPM and script. The RPM package itself is available via this URL (entered into your browser as one single line):

[http://support.novell.com/techcenter/psdb/
f5a4c820ad537651149279f88c113c9e.html](http://support.novell.com/techcenter/psdb/f5a4c820ad537651149279f88c113c9e.html)

After having installed the RPM package, you need to run the command "switch-update-server" as user "root" in order to migrate the already configured Novell update server names to the new update server names. If you are using your own internal installation and update servers, there is no need to install the "switch-update-server" RPM package. You can perform the RPM package updating either via YaST using the

"Software" => "Online Updating"

menu or manually by downloading the package and follow the instructions found in the above given URL.

Additional notes for AS-Java (NetWeaver 04 and NetWeaver 7.0 based products)

Automatic online updates of IBM JDK 1.4.2 service releases can lead into problems with Java based SAP systems that require IBM JDK 1.4.2 (relevant for NetWeaver 04 and NetWeaver 7.0 based products).

The online update process will automatically replace the installed version of IBM JDK 1.4.2 with a newer version, overwriting manually installed files, like policy files for the data encryption. Without manual post-processing on the SAP side, this prevents the SAP system from starting.

Please consult note 861215 for detailed information on the latest



recommended version of the IBM JDK.

Solution:

Automatic online updates of the IBM JDK can be blocked using the Novell ZMD / rug package lock mechanism, so the package(s) can then be installed manually in a planned way, when the SAP system is prepared for the JVM update.

A lock for the IBM JDK can be added with the following command:

```
rug la java-1_4_2-ibm
rug la java-1_4_2-ibm-devel
```

Existing locks can be reviewed with the following command

```
rug ll
```

A lock can be deleted using the following command

```
rug ld <lock nr>
(where <lock nr> is the number of the lock to be removed)
```

Header Data

Release Status:	Released for Customer
Released on:	15.10.2009 12:08:21
Master Language:	English
Priority:	Recommendations/additional info
Category:	Installation information
Primary Component	BC-OP-LNX-SUSE SUSE Linux

The Note is release-independent

Related Notes

Number	Short Text
1403020	Linux: Certified Cisco Hardware
1379130	Linux: Released NEC hardware
1275776	Linux: Preparing SLES for SAP environments
1172419	Linux: Supported Java versions on the x86_64 platform
1122387	Linux: SAP Support in virtualized environments



SAP Note 958253 - SUSE LINUX Enterprise Server 10: Installation notes

Number	Short Text
1118749	Manual steps to update Netweaver CE from SP1
1066142	Linux: libj9vm22.so: cannot open shared object file
1056161	SUSE Priority Support for SAP applications
1037703	SLES10: SAPINST 642 terminates in step dGetHostInfo
1008828	ACC 7.1 PI / Adaptive Computing Controller Collective Note
992016	TREX 7.0: Cannot start/stop TREX by SAP Management Console
986578	Oracle support on Itanium 2 (Montecito & Montvale) systems
965036	6.20/6.40 Patch Collection Installation: SAP MaxDB / UNIX
962334	Linux: SAP on Xen virtual machine
953763	Installation of SAP NetWeaver Composition Environment 7.1
941735	SAP memory management for 64-bit Linux systems
936887	End of maintenance for Linux distributions
929929	Latest SAPinst Patch
927637	Web service authentication in sapstartsrv as of Release 7.00
914177	File system reiserfs Oracle parameter filesystemio_options
906403	ORA-7445 during DESCRIBE
839624	ORA-27125 while starting Oracle instance
825822	Installation 4.6C SR2 on Linux x86_64 with DB2
816145	Installation 4.6C SR2 on Linux x86_64 with Oracle
801415	DB6 Installation on Unix with db2_install
797084	SUSE LINUX Enterprise Server 9: Installation notes
788272	Compatibility of Linux Kernel 2.6/NPTL with MaxDB
784391	SAP support terms and 3rd-party Linux kernel drivers
765424	Linux: Released IBM Hardware - POWER based servers
722890	SAPinst or process started by SAPinst terminates abnormally
597415	Logical volume manager (LVM) on Linux
531069	Heterogeneous Unix - Unix Systems
405827	Journalled file system and raw devices on Linux
386605	SAP Memory Management for Linux (32-bit)
306408	Oracle 9.2.0: Using OPatch to install patches
171356	SAP software on Linux: Essential information
81737	DB2-z/OS: APAR List
20577	Cpio cannot backup files larger than or equal to 2 GB
19466	Downloading SAP kernel patches