

# **SUSE Linux Enterprise Server 10 JeOS**

Copyright © 2006- 2009 Novell, Inc.

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.2 or any later version published by the Free Software Foundation; with the Invariant Section being this copyright notice and license. A copy of the license is included in the section entitled “GNU Free Documentation License”.

SUSE®, openSUSE®, the openSUSE® logo, Novell®, the Novell® logo, the N® logo, are registered trademarks of Novell, Inc. in the United States and other countries. Linux\* is a registered trademark of Linus Torvalds. All other third party trademarks are the property of their respective owners. A trademark symbol (®, ™, etc.) denotes a Novell trademark; an asterisk (\*) denotes a third-party trademark.

All information found in this book has been compiled with utmost attention to detail. However, this does not guarantee complete accuracy. Neither Novell, Inc., SUSE LINUX Products GmbH, the authors, nor the translators shall be held liable for possible errors or the consequences thereof.

# Contents

1	Introduction . . . . .	3
2	Requirements . . . . .	4
3	JeOS Installation and Configuration . . . . .	5
4	Preparing an Application for JeOS . . . . .	8
5	Troubleshooting . . . . .	10
6	Packages Included in JeOS . . . . .	10
7	For More Information . . . . .	11

Major open source distributions are notorious for their bulk and complexity. This is due to the fact that these operating systems must support every software function and option. However, most applications require only a fraction of the full functionality of these OS environments. The extra, unused packages become a liability from a security and management perspective.

## 1 Introduction

JeOS, pronounced “juice,” is a slimmed-down version of SUSE Linux Enterprise Server that is designed to fit the needs of a particular application. JeOS runs only in virtualized environments and provides exactly the functionality, resources and components that the application requires and nothing else. The result is a lightweight VM Guest system that is prepared for a specific task. Compared to a full installation, it is more efficient, higher performing and better secured.

JeOS is small.

JeOS is delivered preinstalled on a 2 GB sparse file that uses about 300 MB on harddisk.

JeOS can be extended.

Unlike special embedded linux solutions, JeOS can be extended to provide any functionality that is provided by SUSE Linux Enterprise Server operating systems.

JeOS for virtual machines.

To get JeOS up and running as a virtual machine, it is sufficient to modify the delivered Xen configuration file to point at the disk image and provide network access.

## 2 Requirements

To take full advantage of JeOS several requirements should be met:

### SUSE Linux Enterprise Server installation source

To be able to install packages to the running JeOS operating system, an SUSE Linux Enterprise Server installation source is needed that is on the same patch level as the JeOS in use. For more details about how to setup an installation server, see [http://www.novell.com/documentation/sles10/sles\\_admin/data/sec\\_deployment\\_remoteinst\\_instserver.html](http://www.novell.com/documentation/sles10/sles_admin/data/sec_deployment_remoteinst_instserver.html).

### Xen VM Host Server system

JeOS is prepared to run as a Xen VM Guest. The Xen hypervisor is available with the SUSE Linux Enterprise Server product. For details about how to setup the Xen VM Host Server, see [http://www.novell.com/documentation/sles11/book\\_xen/data/cha\\_xen\\_vhost.html](http://www.novell.com/documentation/sles11/book_xen/data/cha_xen_vhost.html).



---

### Important

Make sure that the VM Host Server system is up to date.

---

### Hardware requirements

JeOS is just a small installation of SUSE Linux Enterprise Server 10. The requirements that are needed for SUSE Linux Enterprise Server 10 also apply to the JeOS products. Find more details about the requirements for SUSE Linux Enterprise Server at <http://www.novell.com/products/server10/techspecs.html>. Note, that depending on the appliance used, the memory requirements of JeOS may even be lower than those of SUSE Linux Enterprise.

The disk image that comes with JeOS only needs about 300 MB harddisk space. However, during operation, it may grow up to 2 GB.

Like most other virtual machines, JeOS needs a network connection to be easily accessible.

# 3 JeOS Installation and Configuration

Use the following procedure to install JeOS as VM Guest on a prepared VM Host Server:

## **Procedure 1** *Basic Installation of JeOS*

**1** Download the tar archive of JeOS to your VM Host Server system.

**2** Unpack the archive with the command:

```
tar xf <archive_name>
```

Depending on the architecture used, the name can differ.

**3** Create a directory for the virtual machine image. Select a name appropriate for your environment, e.g. `jeos-1`:

```
mkdir -p /var/lib/xen/images/jeos-1
```

Change the name of the directory according to the name of the VM Guest you want to install.

**4** Copy the raw JeOS image to that directory. In the following example, the image name is `SLE10-SP3-JeOS-xen.x86_64.raw`:

```
cp SLE10-SP3-JeOS-xen.x86_64.raw /var/lib/xen/images/jeos-1/jeos-1.raw
```

**5** Copy the Xen configuration file `SLE10-SP3-JeOS-xen.x86_64.xenconfig` to the standard configuration directory of Xen:

```
cp SLE10-SP3-JeOS-xen.x86_64.xenconfig /etc/xen/vm/jeos-1
```

**6** Edit the configuration file `/etc/xen/vm/jeos-1` and accomplish the following tasks:

**6a** Change the name to “`jeos-1`”

**6b** Change the path of the raw JeOS image according to the following line (please do not insert linebreaks):

```
disk=[ "tap:aio:/var/lib/xen/images/jeos-1/jeos-1.raw,xvda,w" ]
```

- 6c** Add the following line to gain network access over the bridge br0:

```
vif=[ 'bridge=br0', ]
```

- 7** Load the configuration file into the Xend to get a managed domain:

```
xm create -f /etc/xen/vm/jeos-1
```

- 8** Check, that the guest appears in the virtual machine manager with name “jeos-1” and status “Shutoff”.

- 9** Start the VM Guest for the first time with the command:

```
xm start -c jeos-1
```

With this command, you the console of the VM Guest is connected to your local console, which is required during the first boot to accept the license.

- 10** When prompted for acceptance of the license, read through the text and answer with “yes”.

After this procedure is finished, the VM Guest is managed by Xend. To start or shutdown the guest, it is sufficient to use the commands:

```
xm start jeos-1  
xm shutdown jeos-1
```

The JeOS VM Guest can also be managed with the Virtual Machine Manager (VMM). Note, that by default, JeOS does not handle the framebuffer console, and thus you will not be able to get access to a login prompt over VNC.

## 3.1 First Login to JeOS

To log into the system, use the following credentials:

---

Username:	root
Password:	linux

---



### Important

The default JeOS installation does not provide remote console access. Before you activate `ssh` to open remote access, change the default password with the command:

```
passwd
```

The only supported keyboard language of a default JeOS is english. Please consider this when selecting a password.

---

Activate the `ssh` server with the command:

```
rcsshd start
```

To start the `ssh` service during system startup, run the command:

```
insserv sshd
```

## 3.2 Connecting JeOS to the Novell Customer Center

In order to get easy access to maintenance updates, the JeOS system must be registered with the Novell Customer Center (NCC). For more details about NCC, see <http://www.novell.com/documentation/ncc/>.

To register JeOS, you need to prepare your email address as well as the registration code for JeOS. Then run the commands:

```
suse_register -a email=your_email -a regcode-sles=your_registration_code  
zypper refresh
```

During the first refresh you will have to accept the SuSE Package Signing Key.

If you want to remove your registration data from the system, use the command:

```
cleanupRegistration
```

## 3.3 Adding Software to JeOS

By default, JeOS does not provide a lot of functionality. To run arbitrary services on JeOS, more than the default installed software is needed.

- 1 To setup a network installation source, follow the descriptions found at [http://www.novell.com/documentation/sles10/sles\\_admin/data/sec\\_deployment\\_remoteinst\\_instserver.html](http://www.novell.com/documentation/sles10/sles_admin/data/sec_deployment_remoteinst_instserver.html).
- 2 This installation source must then be made available to `zypper`, the command line interface for managing installed software. To add a repository, run:

```
zypper addrepo URI Alias
```

- 3 To install a package from a registered repository, run the command:

```
zypper install package_name
```

This command will also take care for all dependencies and additionally needed packages.

Details about setting up `zypper` are found at [http://www.novell.com/documentation/sles11/book\\_sle\\_admin/data/sec\\_zypper.html](http://www.novell.com/documentation/sles11/book_sle_admin/data/sec_zypper.html).

## 4 Preparing an Application for JeOS

The purpose of JeOS is to provide a system with special functionality. There are several methods to create a JeOS image that may be deployed to the user.

## 4.1 Manual Image Creation

A straight forward method to create a customized image, is to manually install all the needed packages to the system:

- 1 Install JeOS as described in [Section 3, “JeOS Installation and Configuration”](#) (page 5).
- 2 Add the needed applications as described in [Section 3.3, “Adding Software to JeOS”](#) (page 8).
- 3 Remove all temporary and uniq data from the image. Typical examples of modified files that should be removed are:

```
/etc/ssh/ssh_host*  
/etc/udev/rules.d/*persistent*
```

- 4 Shut down the system.
- 5 Distribute and copy the resulting image to other machines and use it as customized JeOS image.

## 4.2 Using SUSE Studio

SUSE Studio offers the possibility to create arbitrary images from scratch. This is a powerful system, that can also be used to create customized versions of JeOS.

SUSE Studio can be found at <http://susestudio.com/>. The documentation to this project is handled in the openSUSE Wiki, found at [http://en.opensuse.org/SUSE\\_Studio](http://en.opensuse.org/SUSE_Studio).

## 4.3 Creating Images with KIWI

Just like SUSE Studio, the command line interface KIWI can be used to create arbitrary operating systems. The main difference to SUSE Studio is that you have many more options available, but the simple web interface is missing.

A template for building JeOS images with KIWI can be found at <http://git.opensuse.org/?p=projects/jeos.git>. Find the entry point to the KIWI documentation at <http://en.opensuse.org/Kiwi>.

## 5 Troubleshooting

When my JeOS is started, the ethernet device is renamed from eth0 to eth1. How do I fix that?

In some cases, especially when the Xen VM Guest is not managed by the xend, it may happen that the MAC address of the virtual ethernet device is changed during the startup of the virtual machine. The VM Guest detects this, and renames the interface in order to keep persistent device names. To solve this, make sure that always the same MAC address is used for the ethernet device. When using Xen configuration files, add the MAC address similar to the following line:

```
vif=[ 'mac=00:16:3e:31:2c:85,bridge=br0' ]
```

To remove the udev rule that renames eth0 to eth1, open the file `/etc/udev/rules.d/30-net_persistent_names.rules` and remove the entries starting with the work `SUBSYSTEM`.

Alternatively, set the variable `FORCE_PERSISTENT_NAMES` in `/etc/sysconfig/network/config` to the value “no”.

## 6 Packages Included in JeOS

To retrieve the package names of all installed packages, run the command:

```
rpm -qa --qf "%{NAME}\n"
```

If you need more details about a specific package, run the command

```
rpm -qi package_name
```

While this works for the currently installed packages, all packages that are available for SUSE Linux Enterprise Server 10 are available for installation from an online repository using the “zypper” utility. See [Section 3.3, “Adding Software to JeOS”](#) (page 8) for more details on how to use Zypper.

# 7 For More Information

All the documentation that is available for SUSE Linux Enterprise Server 10 is also relevant for JeOS 10. Find the documentation on the official Novell documentation web site at <http://www.novell.com/documentation>.

For creating customized JeOS images, see <http://susestudio.com>.

To create new appliances, it may be useful to create an own build service as described in [http://en.opensuse.org/Build\\_Service](http://en.opensuse.org/Build_Service).

Lots of details and examples to create JeOS images are available at [http://en.opensuse.org/Build\\_Service/KIWI/Cookbook](http://en.opensuse.org/Build_Service/KIWI/Cookbook).

