

SLES10 - Device ID mapping HOWTO

LSI Corporation

Eric Moore

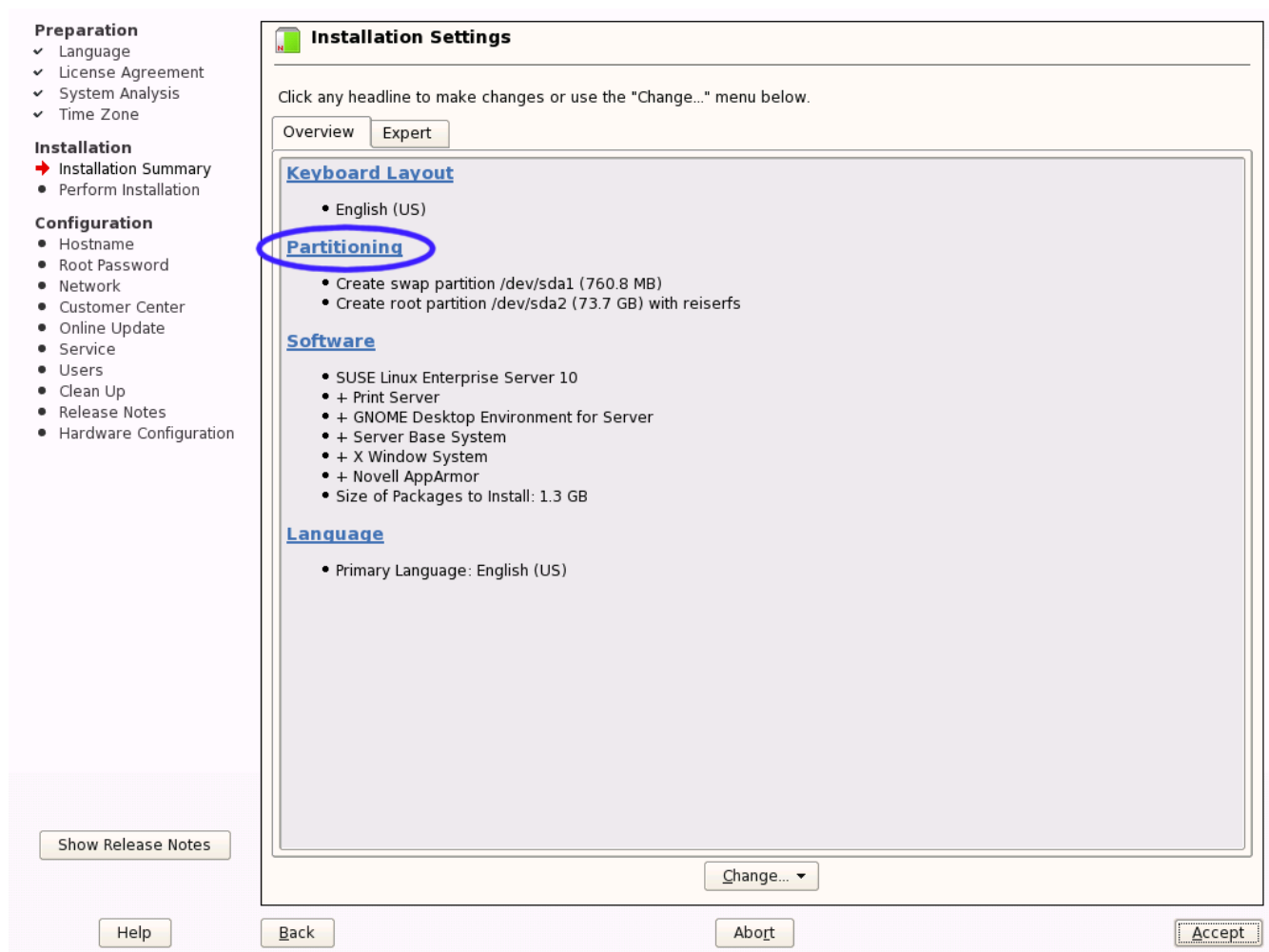
April 16, 2007

Overview:

Device name mapping is default mechanism for SLES10 in describing which device is to be mounted in fstab. The fstab file can be found in /etc folder in Linux, and this configuration file defines which devices are to be mounted, its formatted file system, and whether its read-only or have write permissions. Please refer to the manual page on fstab more info specific info that, as this is beyond the scope of this document. Device name mapping explicitly defines the device. An example is /dev/sda. The problem with device names is that they are not persistent between boot up in a hot plug environment. The way Linux works, is the first device that is reported to the block layer obtains /dev/sda, the next /dev/sdb, and so on. So if your installation was on a device at ID=3, and it was assigned /dev/sda, it would be possible that the device name could change on the next boot up if another device was added to an ID less than 3. So if fstab is using device names, and the installation was on /dev/sda, you wouldn't be able to mount your root partition when the other device was hot added prior to ID=3. The other device would end up with /dev/sda, and your installation disk would be on /dev/sdb.

Scope:

Linux has alternative. Instead of giving the device name explicitly, you can modify the fstab options during or after install using Yast, where the device that is mounted is defined using UID, Label Device ID, or Device path. All these are persistent to the device, so it doesn't matter where your device is in the topology, Linux will explicitly find and mount the correct device. Red Hat already uses Label's for their default, and its rumored that for SLES10 SP1, the default will be Device ID mapping. The nature of the document is to provide a HOWTO into convert device name to device id mapping. The following are snapshots taken during install.



During a normal installation, you will need to select 'Partitioning' from the step above.

Your hard disks have been checked. The partition setup displayed is proposed for your hard drive.

To accept these suggestions and continue, select **Accept Proposal**.

If the suggestion does not fit your needs, create your own partition setup starting with the partitions as currently present on the disks. For this, select **Custom Partition Setup**. This is also the option to choose for advanced options like RAID and LVM.

Suggested Partitioning

- Create swap partition /dev/sda1 (760.8 MB)
- Create root partition /dev/sda2 (73.7 GB) with reiserfs

Partitioning

☐ Accept Proposal

☐ Base Partition Setup on This Proposal

☒ Create Custom Partition Setup

Back

About

Next

Select custom partitioning.

All hard disks automatically detected on your system are shown here. Select the hard disk on which to install SUSE Linux.

You may select later which part of the disk is used for SUSE Linux.

The **Custom Partitioning** option for experts allows full control over partitioning the hard disks and assigning partitions to mount points when installing SUSE Linux.

Preparing Hard Disk: Step 1

Hard Disk

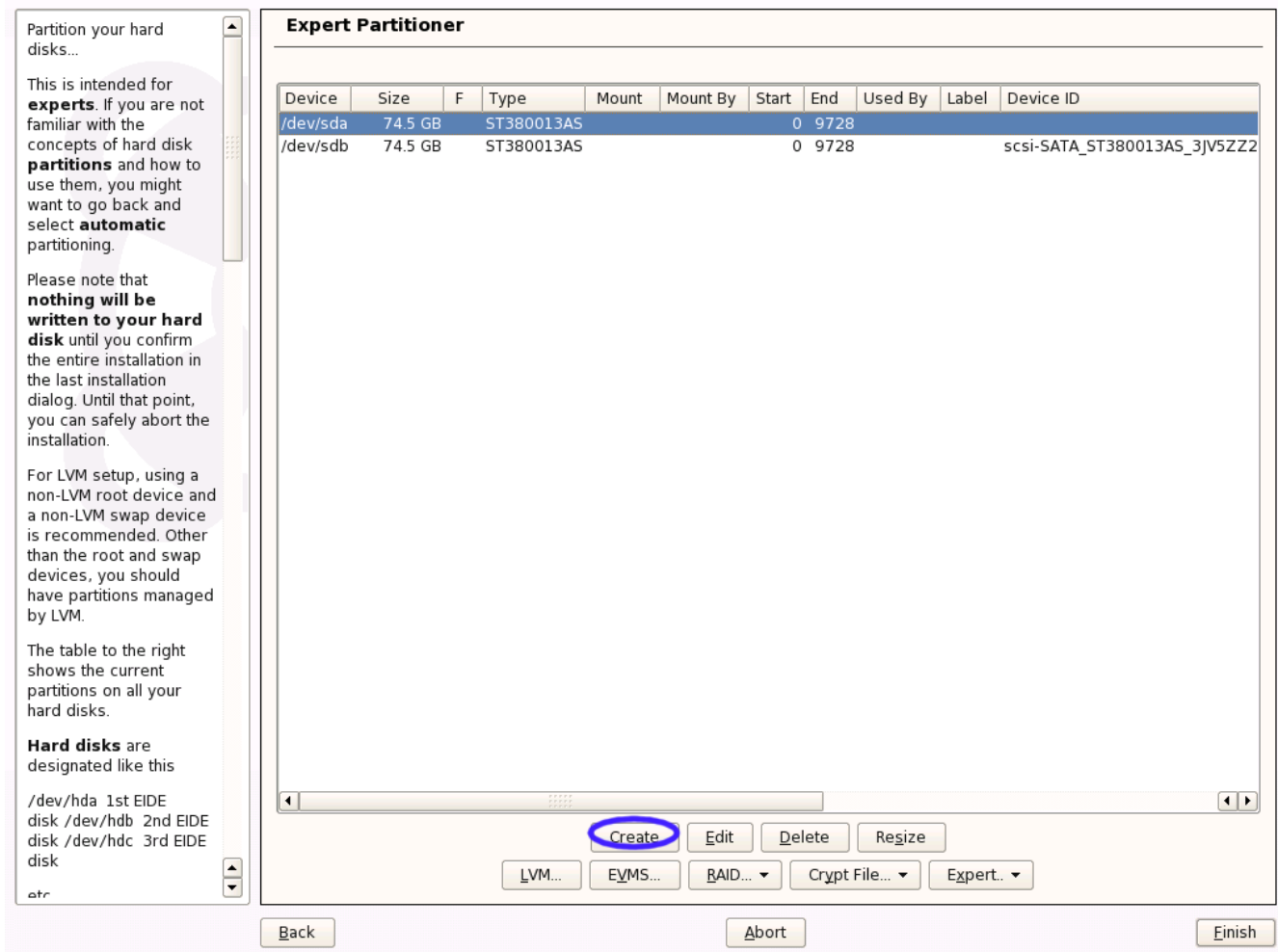
- ☐ 1: 1. IDE, 74.5 GB, /dev/sda, ST380013AS
- ☐ 2: 2. IDE, 74.5 GB, /dev/sdb, ST380013AS
- ☒ Custom Partitioning (for experts)

Back

Abort

Next

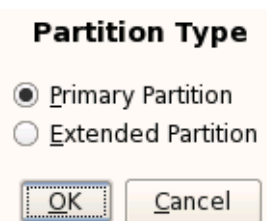
Select custom partitioning for experts.



You will see all your device from this page. You could select any one, but typically most end users would select /dev/sda. You will need to create two or three partitions, at least a root "/" and swap, and perhaps a separate "/boot" partition. To create the partitions, select 'Create' at the bottom.



Select `'/dev/sda'`



Select 'Primary Partition' if you think you will need 4 or less partitions. If you need more, then select 'Extended Partition'

First, choose the type of the partition and whether this partition should be formatted.

Then, enter the mount point (/, /boot, /usr, /var, etc.)

Now, enter the location of the new partition on your hard disk.

Please enter the starting cylinder number of the partition.

After that, either specify an ending cylinder number or an

Create a Primary Partition on /dev/sda

Format

☐ Do not format

File system ID:
0x83 Linux

☒ Format

File system
Reiser

Options

☐ Encrypt file system

Size

Cylinder size: 7.84 M

Start cylinder:
0

End: (9 or +9M or +3.2GB)
+1GB

Fstab Options

Mount Point
/boot

OK Cancel

For a 'boot' partition, you will need to fill in the 'Mount Point' with '/boot', as above. In addition, you will need to enter the size of the partition. In my example, I set it to '+1GB', which is plenty. Then select the tab 'Fstab Options'

Mount in /etc/fstab By:
Normally, a file system to mount is identified in /etc/fstab by the device name. This identification can be changed so the file system to mount is found by searching for a UUID or a volume label. Not all file systems can be mounted by UUID or a volume label. If an option is disabled, it is not possible.

Volume Label: The name entered in this field is used as the volume label. This normally only makes sense when you activate the option for mounting by volume label. A volume label cannot contain the / character or spaces.

Mount Read-Only: No writable access to the file system is possible. Default is false.

No access time: Access times are not updated when a file is read. Default is false.

Mountable by User: The file

Fstab options:

Mount in /etc/fstab by

☒ Device name ☐ Device ID
☐ Volume label ☐ Device Path
☐ UUID

Volume label

☐ Mount read-only
☐ No access time
☐ Mountable by user
☐ Do Not Mount at System Start-up

Data Journaling Mode

ordered

☒ Access Control Lists (ACL)
☒ Extended User Attributes

Arbitrary option value

OK Cancel

Here is the 'Fstab Options' tab. In the section labeled 'Mount in /etc/fstab by', you see that the default is 'Device Name'.

Mount in /etc/fstab By:
Normally, a file system to mount is identified in /etc/fstab by the device name. This identification can be changed so the file system to mount is found by searching for a UUID or a volume label. Not all file systems can be mounted by UUID or a volume label. If an option is disabled, it is not possible.

Volume Label: The name entered in this field is used as the volume label. This normally only makes sense when you activate the option for mounting by volume label. A volume label cannot contain the / character or spaces.

Mount Read-Only: No writable access to the file system is possible. Default is false.

No access time: Access times are not updated when a file is read. Default is false.

Mountable by User: The file

Fstab options:

Mount in /etc/fstab by
☐ Device name
☐ Volume label
☐ UUID
☒ Device ID
☐ Device Path

Volume Label

☐ Mount read-only
☐ No access time
☐ Mountable by user
☐ Do Not Mount at System Start-up

Data Journaling Mode

☒ Access Control Lists (ACL)
☒ Extended User Attributes

Arbitrary option value

You will need to change 'Device name' to 'Device ID', as shown above, then select 'OK' at the bottom. Repeat this steps with the "/" and swap partitions.

First, choose the type of the partition and whether this partition should be formatted.

Then, enter the mount point (/, /boot, /usr, /var, etc.)

Now, enter the location of the new partition on your hard disk.

Please enter the starting cylinder number of the partition.

After that, either specify an ending cylinder number or an

Create a Primary Partition on /dev/sda

Format

☐ Do not format

File system ID:

0x82 Linux swap

☒ Format

File system

Swap

Options

☐ Encrypt file system

Size

Cylinder size: 7.84 M

Start cylinder:

0

End: (9 or +9M or +3.2GB)

+1GB

Fstab Options

Mount Point

swap

OK Cancel

In creating the SWAP partition, please follow steps described on pages 6 - 10. The typical size of the partition is '+1GB', as seen above.

First, choose the type of the partition and whether this partition should be formatted.

Then, enter the mount point (/, /boot, /usr, /var, etc.)

Now, enter the location of the new partition on your hard disk.

Please enter the starting cylinder number of the partition.

After that, either specify an ending cylinder number or an

Create a Primary Partition on /dev/sda

Format

☐ Do not format

File system ID:
0x83 Linux

☒ Format

File system
Reiser

Options

☐ Encrypt file system

Size

Cylinder size: 7.84 M

Start cylinder:
262

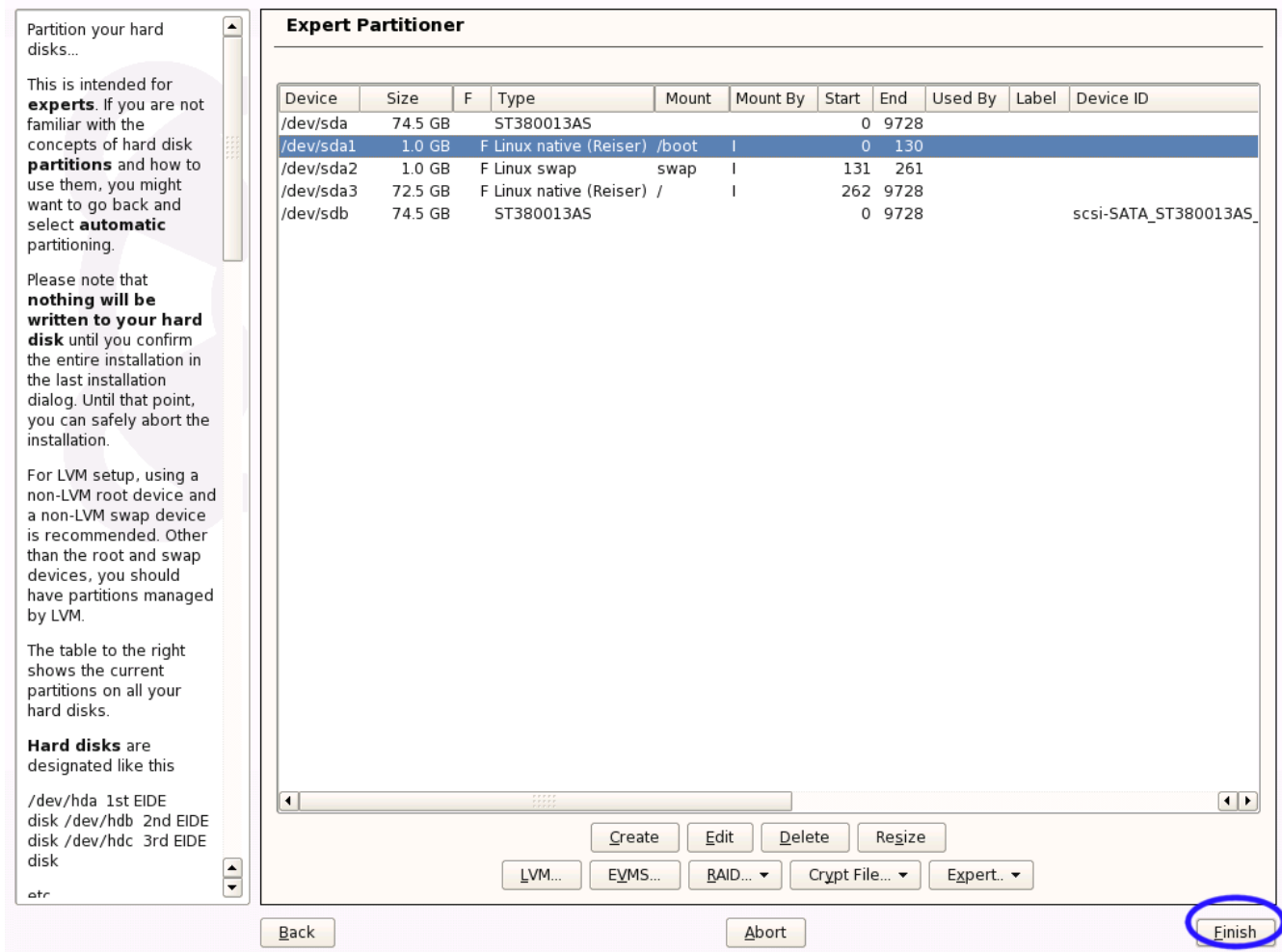
End: (9 or +9M or +3.2GB)
9728

Fstab Options

Mount Point
/

OK Cancel

In creating the root partition "/", please follow steps described on pages 6 - 10. You will probably want to use the rest of available drive space for this. In the case above, the field 'End' is left unmodified.



Once all the partitions are created, you can select 'Finish', and proceed with normal installation.