



**Intel® Modular Server System MFSYS25
Intel® Modular Server System MFSYS35**

Virtual Disk Copy BKM

**SUSE* Linux Enterprise Server 10 SP1
and SP2**

Revision 1.0

October, 2009

Enterprise Platforms and Services Division - Marketing

Revision History

Date	Revision Number	Modifications
October, 2009	1.0	Initial release.

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1. Introduction

When a virtual disk containing an installation of SUSE* Linux Enterprise Server 10 SP1 or SP2 (SLES10.1 or SLES10.2) is copied the data on the disk is replicated exactly to a new virtual disk. While the data on the virtual disks does not change information about the virtual disk itself it will be different on the new disk, for one example, the disk ID (the SAS WWN) is different between the source virtual disk and the copy. This change in disk information will cause problems booting the SLES10 OS if multipathing has been configured. The multipathing configuration relies on information specific to the virtual disk and the OS cannot boot and run normally if this information has changed.

This BKM contains instructions for removing the multipathing configuration so the SLES10 installation can be copied and the copies will be bootable. After copying the virtual disk multipathing should be reconfigured on the source virtual disk and on all copies.

The steps in this BKM are **not** required for SLES10 installations without multipathing. For ease of use it is recommended any new installations be copied before multipathing is configured.

1.1 Supported Intel® Server Products

The following Intel® Server Products are supported with the Intel® Modular Server System Unified Firmware Update V4.0 or later installed:

- Intel® Modular Server System MFSYS25
 - Intel® Modular Server System MFSYS35
 - Intel® Compute Module MFS5000SI
 - Intel® Compute Module MFS5520VI
-

2. Repair Instructions

These instructions will reverse the steps used to configure multipathing in the multipathing setup BKM: "SuSE* Linux Enterprise Server 10 SP1 and 10 SP2 (x86 and x64) Dual SCM (ALUA) Installation BKM".

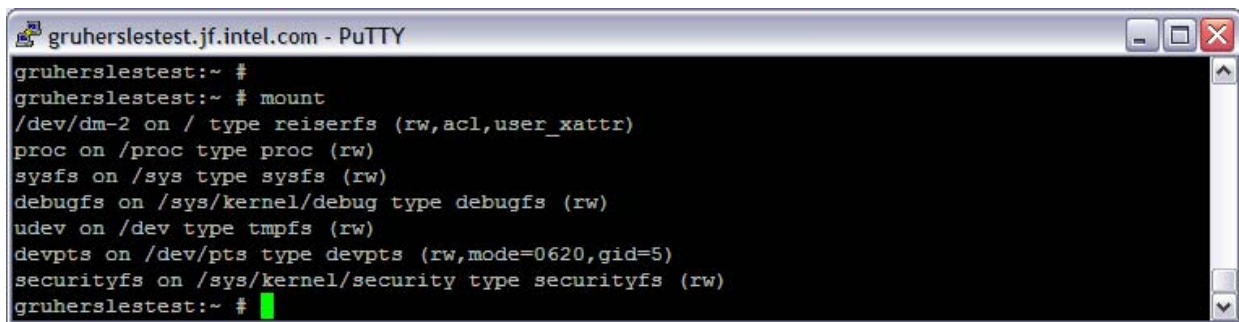
1. For ease of use these instructions should be performed with the OS virtual disk (the disk you intend to copy) having affinity to SCM1.
 - a. Log into the Intel® Modular Server Control GUI and browse to the storage tab.
 - b. Select the OS virtual disk (the disk you intend to copy) and check the affinity setting, as highlighted in the screenshot below.



Figure 1. Select Virtual Disk to Copy

- c. If the OS virtual disk has affinity SCM 1 / SCM 1 or SCM 2 / SCM 1 you can skip to step 2.

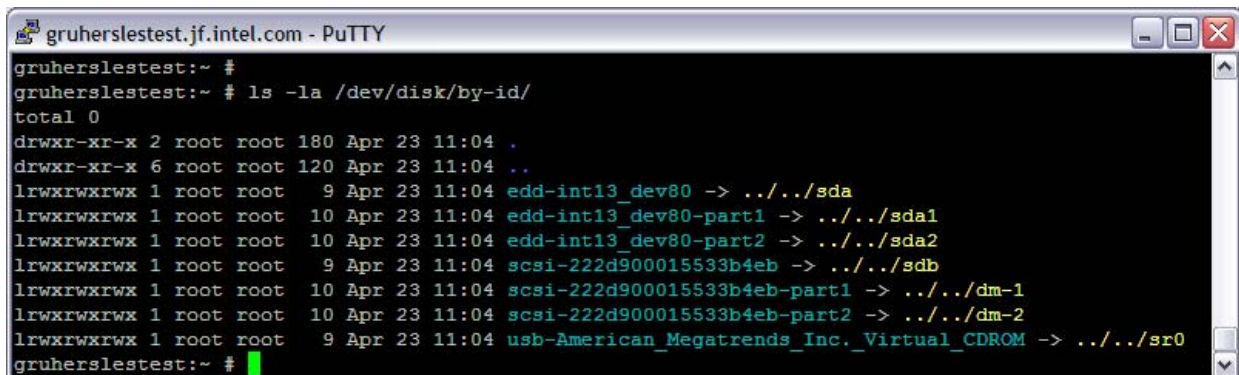
- d. If the OS virtual disk has affinity SCM 2 / SCM 2 please power down the server, use the “Change Affinity” button to set affinity to SCM 1, then power up and continue at step 2. This is necessary to cause the virtual disk to become active on SCM 1.
 - e. If the OS virtual disk has affinity SCM 1 / SCM 2 please power down the server, use the “Change Affinity” button to set affinity to SCM 2, then again to set affinity back to SCM 1, then power up and continue at step 2. This is necessary to cause the virtual disk to become active on SCM 1.
2. Next you will need to establish the disk ID of the virtual disk containing the OS.
 - a. Run the command “mount” and check which multipath device is mounted as the root (/) partition. In the screenshot below it is “dm-2”.



```
gruherstestest.jf.intel.com - PuTTY
gruherstestest:~ #
gruherstestest:~ # mount
/dev/dm-2 on / type reiserfs (rw,acl,user_xattr)
proc on /proc type proc (rw)
sysfs on /sys type sysfs (rw)
debugfs on /sys/kernel/debug type debugfs (rw)
udev on /dev type tmpfs (rw)
devpts on /dev/pts type devpts (rw,mode=0620,gid=5)
securityfs on /sys/kernel/security type securityfs (rw)
gruherstestest:~ #
```

Figure 2. Mount Command

- b. Run the command “ls -la /dev/disk/by-id/” and find the SCSI ID corresponding to the multipath device identified in the previous step. In this example, the multipath device was “dm-2”, so the SCSI ID is “scsi-222d900015533b4eb”.



```
gruherstestest.jf.intel.com - PuTTY
gruherstestest:~ #
gruherstestest:~ # ls -la /dev/disk/by-id/
total 0
drwxr-xr-x 2 root root 180 Apr 23 11:04 .
drwxr-xr-x 6 root root 120 Apr 23 11:04 ..
lrwxrwxrwx 1 root root 9 Apr 23 11:04 edd-int13_dev80 -> ../../sda
lrwxrwxrwx 1 root root 10 Apr 23 11:04 edd-int13_dev80-part1 -> ../../sda1
lrwxrwxrwx 1 root root 10 Apr 23 11:04 edd-int13_dev80-part2 -> ../../sda2
lrwxrwxrwx 1 root root 9 Apr 23 11:04 scsi-222d900015533b4eb -> ../../sdb
lrwxrwxrwx 1 root root 10 Apr 23 11:04 scsi-222d900015533b4eb-part1 -> ../../dm-1
lrwxrwxrwx 1 root root 10 Apr 23 11:04 scsi-222d900015533b4eb-part2 -> ../../dm-2
lrwxrwxrwx 1 root root 9 Apr 23 11:04 usb-American_Megatrends_Inc._Virtual_CDROM -> ../../sr0
gruherstestest:~ #
```

Figure 3. Find SCSI ID for Root Partition

3. Next you will need to edit fstab to replace the SCSI disk ID with the device name.
 - a. Edit “/etc/fstab”. It should appear similar to the screenshot below.

```

gruherstestest.jf.intel.com - PuTTY
/dev/disk/by-id/scsi-222d900015533b4eb-part2 / reiserfs acl,user_xattr 1 1
/dev/disk/by-id/scsi-222d900015533b4eb-part1 swap swap defaults 0 0
proc /proc proc defaults 0 0
sysfs /sys sysfs noauto 0 0
debugfs /sys/kernel/debug debugfs noauto 0 0
usbfs /proc/bus/usb usbfs noauto 0 0
devpts /dev/pts devpts mode=0620,gid=5 0 0
~
~
~
~
1,1 All

```

Figure 4. Edit "/etc/fstab"

- b. For each line item containing the SCSI disk ID identified in the previous section, replace the device string with /dev/sdaX, where X is the partition number, the same as in the device ID string.
- c. In this example, “/dev/disk/by-id/scsi-222d900015533b4eb-part2” becomes “/dev/sda2” and “/dev/disk/by-id/scsi-222d900015533b4eb-part1” becomes “/dev/sda1”. After changes fstab should appear similar to the screenshot below.
- d. Save and exit.

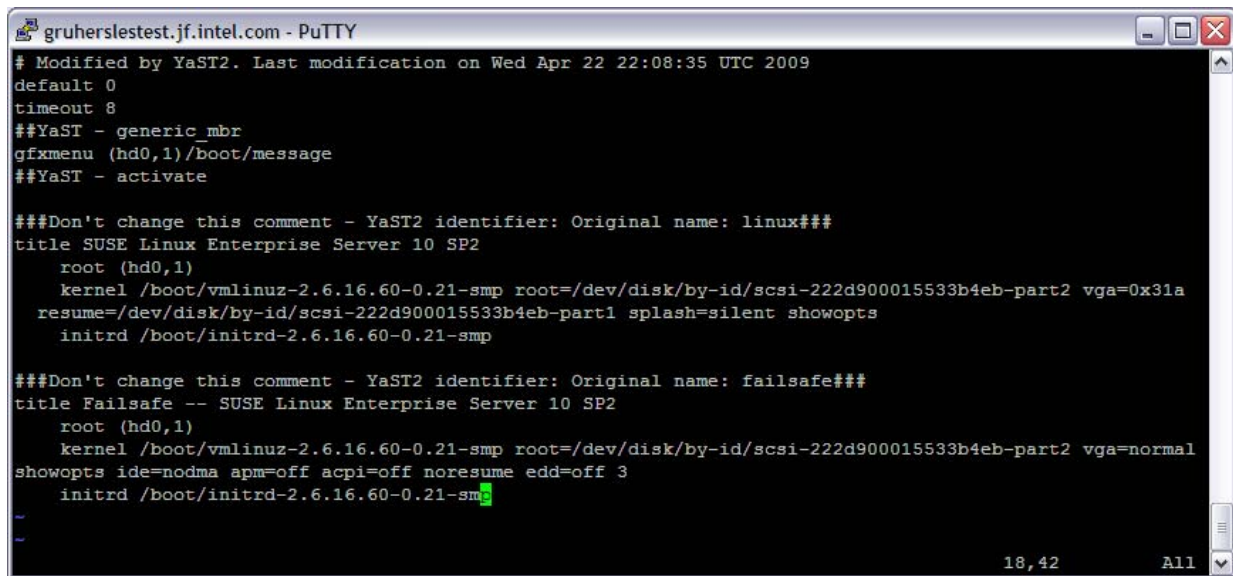
```

gruherstestest.jf.intel.com - PuTTY
/dev/sda2 / reiserfs acl,user_xattr 1 1
/dev/sda1 swap swap defaults 0 0
proc /proc proc defaults 0 0
sysfs /sys sysfs noauto 0 0
debugfs /sys/kernel/debug debugfs noauto 0 0
usbfs /proc/bus/usb usbfs noauto 0 0
devpts /dev/pts devpts mode=0620,gid=5 0 0
~
~
~
~
2, 60-75 All

```

Figure 5. Updated fstab

4. Next you will need to make a change to the GRUB menu similar to the changes made to fstab.
 - a. Edit “/boot/grub/menu.lst”. It should appear similar to the screenshot below.



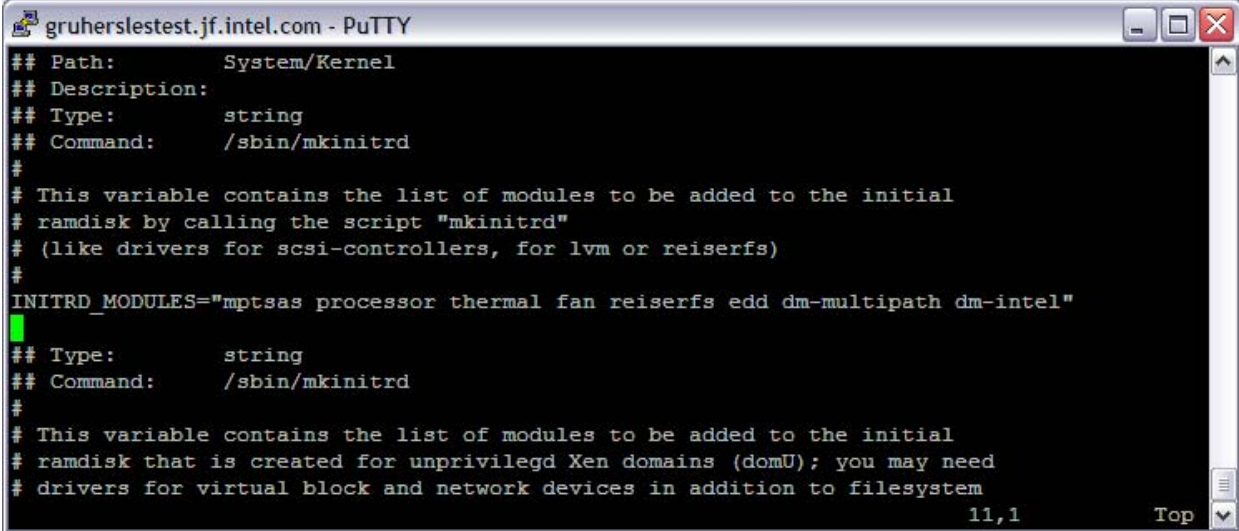
```
# Modified by YaST2. Last modification on Wed Apr 22 22:08:35 UTC 2009
default 0
timeout 8
##YaST - generic_mbr
gfxmenu (hd0,1)/boot/message
##YaST - activate

###Don't change this comment - YaST2 identifier: Original name: linux###
title SUSE Linux Enterprise Server 10 SP2
    root (hd0,1)
    kernel /boot/vmlinuz-2.6.16.60-0.21-smp root=/dev/disk/by-id/scsi-222d900015533b4eb-part2 vga=0x31a
    resume=/dev/disk/by-id/scsi-222d900015533b4eb-part1 splash=silent showopts
    initrd /boot/initrd-2.6.16.60-0.21-smp

###Don't change this comment - YaST2 identifier: Original name: failsafe###
title Failsafe -- SUSE Linux Enterprise Server 10 SP2
    root (hd0,1)
    kernel /boot/vmlinuz-2.6.16.60-0.21-smp root=/dev/disk/by-id/scsi-222d900015533b4eb-part2 vga=normal
    showopts ide=nodma apm=off acpi=off noresume edd=off 3
    initrd /boot/initrd-2.6.16.60-0.21-sm
```

Figure 6. Edit "/boot/grub/menu.lst"

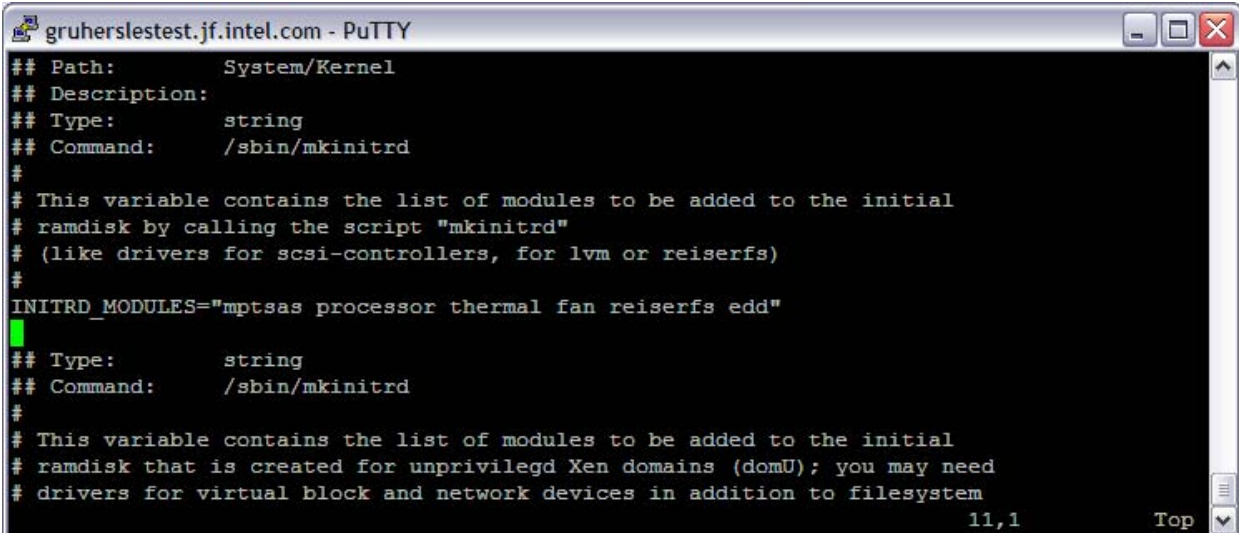
- b. For each line item containing the SCSI disk ID identified in the previous section, replace the device string with `/dev/sdaX`, where X is the partition number, the same as in the device ID string.
- c. In this example, `"/dev/disk/by-id/scsi-222d900015533b4eb-part2"` becomes `"/dev/sda2"` and `"/dev/disk/by-id/scsi-222d900015533b4eb-part1"` becomes `"/dev/sda1"`. After changes menu.lst should appear similar to the screenshot below.
- d. Save and exit.



```
gruherstestest.jf.intel.com - PuTTY
## Path:      System/Kernel
## Description:
## Type:      string
## Command:   /sbin/mkinitrd
#
# This variable contains the list of modules to be added to the initial
# ramdisk by calling the script "mkinitrd"
# (like drivers for scsi-controllers, for lvm or reiserfs)
#
INITRD_MODULES="mptsas processor thermal fan reiserfs edd dm-multipath dm-intel"
## Type:      string
## Command:   /sbin/mkinitrd
#
# This variable contains the list of modules to be added to the initial
# ramdisk that is created for unprivileged Xen domains (domU); you may need
# drivers for virtual block and network devices in addition to filesystem
11,1 Top
```

Figure 9. Edit "/etc/sysconfig/kernel"

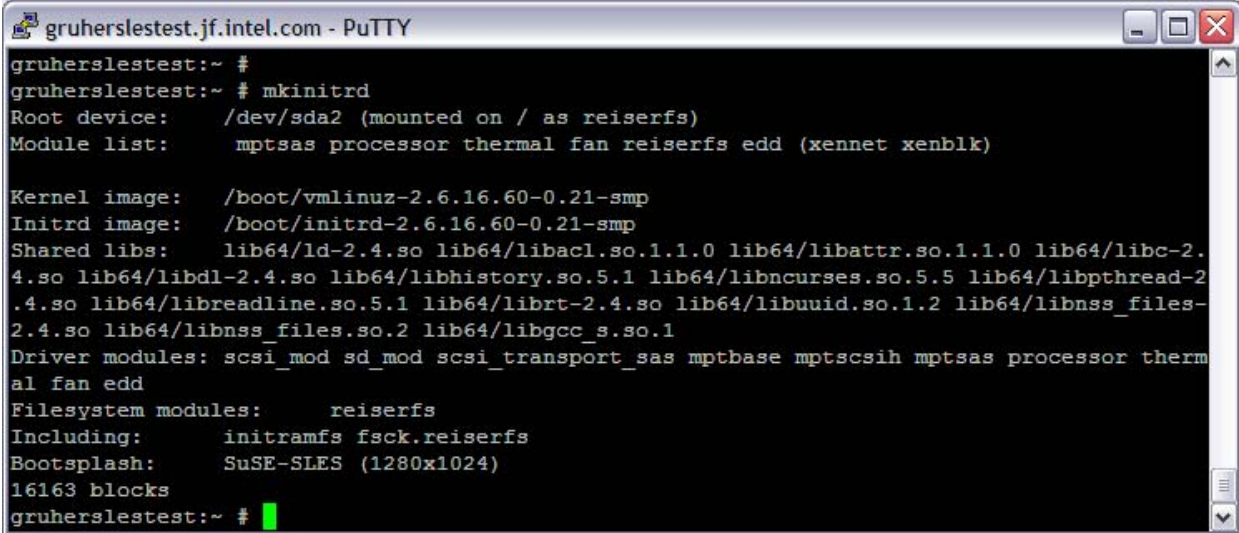
- b. From the list of INITRD_MODULES remove dm-multipath and dm-intel. After changes, the file should appear similar to the screenshot below.
- c. Save and exit.



```
gruherstestest.jf.intel.com - PuTTY
## Path:      System/Kernel
## Description:
## Type:      string
## Command:   /sbin/mkinitrd
#
# This variable contains the list of modules to be added to the initial
# ramdisk by calling the script "mkinitrd"
# (like drivers for scsi-controllers, for lvm or reiserfs)
#
INITRD_MODULES="mptsas processor thermal fan reiserfs edd"
## Type:      string
## Command:   /sbin/mkinitrd
#
# This variable contains the list of modules to be added to the initial
# ramdisk that is created for unprivileged Xen domains (domU); you may need
# drivers for virtual block and network devices in addition to filesystem
11,1 Top
```

Figure 10. Remove dm-multipath and dm-intel

- d. Run "mkinird" from the command line.



```
gruherstestest.jf.intel.com - PuTTY
gruherstestest:~ #
gruherstestest:~ # mkinitrd
Root device:      /dev/sda2 (mounted on / as reiserfs)
Module list:      mptsas processor thermal fan reiserfs edd (xennet xenblk)

Kernel image:    /boot/vmlinuz-2.6.16.60-0.21-smp
Initrd image:    /boot/initrd-2.6.16.60-0.21-smp
Shared libs:     lib64/ld-2.4.so lib64/libacl.so.1.1.0 lib64/libattr.so.1.1.0 lib64/libc-2.
4.so lib64/libdl-2.4.so lib64/libhistory.so.5.1 lib64/libncurses.so.5.5 lib64/libpthread-2
.4.so lib64/libreadline.so.5.1 lib64/librt-2.4.so lib64/libuuid.so.1.2 lib64/libnss_files-
2.4.so lib64/libnss_files.so.2 lib64/libgcc_s.so.1
Driver modules:  scsi_mod sd_mod scsi_transport_sas mptbase mptscsih mptsas processor therm
al fan edd
Filesystem modules:      reiserfs
Including:                initramfs fsck.reiserfs
Bootsplash:              SuSE-SLES (1280x1024)
16163 blocks
gruherstestest:~ #
```

Figure 11. Run "mkinitrd"

- e. Reboot the server and confirm the server boots successfully.
- f. After rebooting, you can shut down the server and copy the virtual disk.
- g. When copying is complete, before booting the copied virtual disks, make sure each copy is active on SCM 1 and not SCM 2 (see steps 1a through 1e in this BKM for guidance).
- h. Follow “SuSE* Linux Enterprise Server 10 SP1 and 10 SP2 (x86 and x64) Dual SCM (ALUA) Installation BKM” to reconfigure multipath operation on the original virtual disk and on all copies. After multipath configuration virtual disk affinity can safely be set to either SCM.