



Storix and Xen User Guide

The purpose of this guide is to provide the steps necessary to use Storix in a Xen environment and define what aspects of system recovery are and are not available when using Storix in a Xen environment. With this release, Storix is capable of some system recovery into and out of Xen virtualized environments. This guide does not include all the features and options available with Storix, but is intended to be used as an addendum to the SBAdmin User Guide.

Performing Full System Backups and Restores on *Dom0*

When creating a backup of Dom0, Storix will re-create the layout of Dom0's disks, partitions and logical volumes. By default partition based *domU's* will NOT be backed up. It is possible to do a raw backup of domU's built on partitions, however the domU's should be powered off at the time. File based and Logical Volume based DomU's may have their data backed up, but should be powered off.

Creating Boot media

Currently (PXE) network booting a Dom0 is not supported. Boot media may be created from cdrom or hard disk. For more information on creating storix boot media please refer to the [SBAdmin Linux System Recovery Guide](#).

Manually Determining Hypervisor File

Creating boot media for a Dom0 requires knowing the running hypervisor. Under most circumstances Storix will be able to determine the booted hypervisor file. In the case that Storix is unable to determine which hypervisor was used at boot time, it is possible to manually specify the file. Note, this file must be updated if the hypervisor is changed with system updates.

To manually determine the hypervisor that was used to boot, it will be necessary to know which grub entry was chosen at boot time. Open the file `/boot/grub/menu.lst` and find the stanza that the system was booted from. Within the stanza there will be a kernel entry line similar to the following.

```
kernel /boot/xen-3.0-i386.gz
```

To specify the hypervisor to storix, create the file `/opt/storix/config/multibootfile`. Within this file specify the path to the Xen hypervisor. In this case it would be as follows.

```
/boot/xen-3.0-i386.gz
```

At this point boot media can be created.

Backing Up a Dom0 System

In order to restore a Dom0 system, a full system backup is required. This will be done in the same manner as performing a normal Linux system backup. For further information on full system backups please refer to the backup administrators guide.

Restoring a Dom0 system

Restoring a Dom0 is the same as restoring a normal Linux system. For further detail please refer to the "Linux System Recovery Guide".

Performing a Full System Backup on a DomU (Paravirtualized)

In a paravirtualized Xen environment the Xen hypervisor is responsible for loading a modified kernel. For sbadmin to properly create a full system backup and recovery of this type of environment the following requirements must be met.

1. There is a copy of the running kernel in the /boot directory of DomU. This may need to be copied over from Dom0
2. There are kernel modules for the running DomU kernel in /lib/modules. This may need to be copied over from Dom0
3. The "fdisk -l" command must show a valid partition table for the DomU to be backed up. Errors can occur if the DomU is using a file, partition or logical volume without it's own partition table.
4. There is a copy of the domU's kernel and modules on dom0.

Because of the limitations of a paravirtualized DomU kernel. DomU machines may NOT be moved to a real hardware environment. Storix will be able to backup and restore them to similar Xen paravirtualized environments.

Creating boot media

Booting a paravirtualized DomU must be done from within a running Dom0. DomU's are started by specifying a DomU kernel and initrd from within a Xen configuration file.

To create a storix install initrd image, run the following command on a properly configured DomU.

```
# stmakeboot -t initrd-install -o /storix/temp/initrd-domUinstall.img
```

This image will be created on the domU and needs to be copied to the dom0 in order to be booted. It is possible that some domU's will contain a kernel not present on dom0. To ensure that this initrd will work, it may be necessary to copy the running kernel from domU to dom0.

Note some domU's will allow you to create regular .iso media. This media does not contain the proper kernel to be booted.

Backing up a paravirtualized DomU

A full system backup of a DomU is the same as backing up a Linux system for more information please refer to the backup administrators guide.

Restoring paravirtualized DomU

In order to restore a paravirtualized domU it must use a Storix initrd image created on a similar domU. Below is a sample configuration file that can be used to start a domU into the Storix recovery screens.

```
*note Suse systems typically keep the configurations in /etc/xen/vm

#/etc/xen/sample
#Sample xen configuration file for Storix boot media
name = "storix" # xen name
kernel = "/boot/vmlinuz-2.6.19-4-generic" #DomU kernel
ramdisk = "/boot/initrd-domUinstall.img" #Storix initrd image
memory = 128 # memory to be used
vif = ['mac=aa:00:00:00:00:11','bridge=xenbr0'] #DomU interface
disk = ['phy:/dev/sdb5,hda,w'] # Disk resource for DomU
```

Boot the domU and attach a console with the following command:

```
# xm create -c /etc/xen/sample
```

When starting this DomU the normal Storix recovery screens will appear, and the system will have disk and network resources as specified in the configuration file. A recovery may be performed to the disk. After the recovery completes, the domU must be shut down and the configuration file changed to use the standard initrd for the corresponding kernel.

Booting the recovered system:

For systems without the pygrub boot loader, a configuration similar to the following will allow you to specify the kernel and initrd to be used to boot. This kernel and initrd must be present in the /boot directory of dom0.

```
#/etc/xen/sample
#Sample xen configuration file for a restored system
name = "storix" # xen name
kernel = "/boot/vmlinuz-2.6.19-4-generic" #DomU kernel
ramdisk = "/boot/initrd-2.6.19-4-generic" #Original initrd image
memory = 128 # memory to be used
vif = ['mac=aa:00:00:00:00:11','bridge=xenbr0'] #DomU interface
disk = ['phy:/dev/sdb5,hda,w'] # Disk resource for DomU
```

Please note, this method reuses the original initrd. Changes to the disk layout during the recovery process may cause problems on reboot.

For systems that use the pygrub boot loader, the following configuration is appropriate. Pygrub will allow the domU to have a grub like menu system upon reboot. All kernels and initrd's contained on the domU will be presented as boot options.

```
#/etc/xen/sample
#Sample xen configuration file for a restored system
name = "storix" # xen name
bootloader="/usr/bin/pygrub" # bootloader
memory = 128 # memory to be used
vif = ['mac=aa:00:00:00:00:11','bridge=xenbr0'] #DomU interface
disk = ['phy:/dev/sdb5,hda,w'] # Disk resource for DomU
```

Migrating to a paravirtualized DomU

If a backup of a real or fully virtualized system chosen to be restored into a paravirtualized environment, the restored system will no longer be running its native kernel. Problems can arise with init scripts and kernel incompatibilities. Storix will not support operating system errors that occur.

Performing a Full System Backup on a *DomU* (Full Virtualization)

In a fully virtualized environment the guest operating system is running it's own un-modified kernel. A fully virtualized system can be backed up and restored. Please not a dom0 can not be restored into either a fully virtualized or paravirtualized domU.