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Protecting Citrix XenServer Using Hitachi Dynamic Replicator - Scout

Hitachi Data Systems

MK-98DF8221-00

Contents

Conventions

Keywords, command buttons and other such fields are enclosed in " " while being bold (for example, to denote 

"**Next**" is used).

Inputs for commands and Variables are shown in *Italics*
File names and paths are shown in **bold**
Commands are shown in **`Courier new font`**
Optional keywords and arguments are enclosed within [ ].

 **Notes:**

Contains suggestions or tips.

 **Caution:**

Contains critical information

1 How this solution works

This document contains two major parts; the first part explains the LV based solution, where individual volumes are backed up to the target Citrix XenServer. The second part explains backing up whole disks to the target Citrix XenServer.

In both parts, the source Citrix XenServer is prepared before being backed up to the target Citrix XenServer through a VX replication, while the target virtual machines are powered down. Consistency markers are issued through the virtual machines which go through the source Citrix XenServer to reach the target Citrix XenServer.

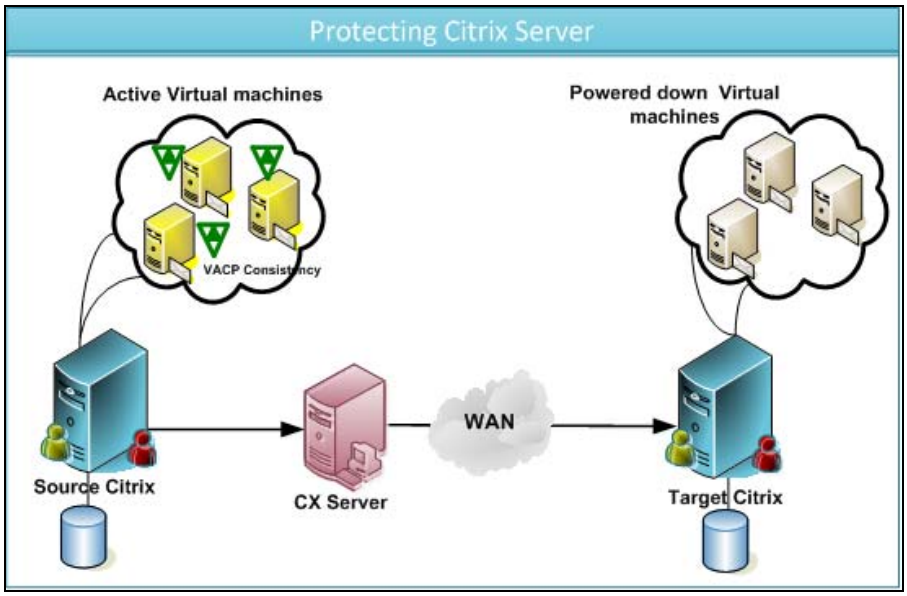


Figure 1

Recovering the VMs on Citrix XenServer may be performed in two ways; the first is to rollback the VMs' virtual disks at the target Citrix XenServer to a consistent point and start using the target virtual machines. The second approach is to take a snapshot of the virtual disks of the VMs and boot the virtual machines over the snapshot volume.

Refer to the check list in the next section before deploying the solution.

2 Check list

- Ensure VX agents are installed on both the Citrix XenServers
- Install CX server within the same LAN as of the source Citrix XenServer
- Point all VX agents to the same CX server and assign appropriate licenses
- Ensure that "**/etc/hosts"** on the Citrix XenServer contains the Citrix XenServer's IP address and host name. This step is applicable for both source and target Citrix XenServers.
- Disable the firewall on both source and target Citrix XenServers through "**system-config-securitylevel-tui"** interface.
- Target Citrix XenServer should have all the networks existing at source and being used by the VMs on the source Citrix XenServers.
- Edit the file "**/etc/sysconfig/xapi**" to set the base memory which is the minimum possible allocated to dom0 by setting the value of XAPI_DOM0_MEM_BASE. This requires a reboot for the new setting to take effect. For example, XAPI_DOM0_MEM_BASE= "752"

Notes:

If not existing already, create networks at the target Citrix XenServer host with the same name_label of the networks at source Citrix XenServer host

Part 1: Backing up through LV replication approach

This part explains protecting Citrix XenServer by backing up logical volumes. The prepare section is divided into sub sections, combined together they explain identifying the volumes that are to be replicated, creating guest machine structure on the target Citrix XenServer and where to install DR-Scout. The protect section explains setting replication pairs, issuing consistency tags and monitoring replication pairs.

The failover section is branched into two, the first being a rollback approach and the second being a snapshot approach. Finally a failback is described in detail.

3 Introduction to solution

This solution document describes how to backup/restore a Citrix XenServer to another Citrix XenServer. The production Citrix server will be referred to as the source Citrix XenServer and the DR Citrix Xenserver will be referred to as a target Citrix XenServer.

The solution is divided into three steps, i.e.

Prepare
This section includes installing the CX server and VX agents on both source and target Citrix XenServers. Then create the guest machines on target that correspond to the source guest machines with the same disk size.

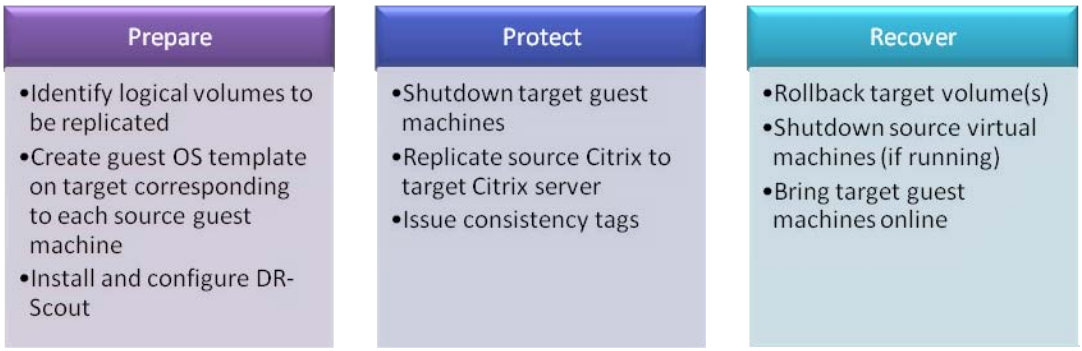


Figure 2

Protect
Once the guest machines are created on the target shutdown the guest machines and proceed to set replication pair(s) from source Citrix XenServer to target Citrix XenServer. Set a consistency job to issue consistency tags on the source volume(s) at regular intervals.

Recover
Stop the source guest machines and rollback the target volumes either through the CX UI or through CLI. Then start the target guest machines.

Caution:

This solution is for virtual machines based on LVMs.

4 Prepare

4.1 Identify logical volumes to be replicated

Step 1. In this step, all the logical volumes belonging to their respective virtual machines are identified through two commands

Access the source Citrix XenServer's command prompt to issue the following command

"**`xe vm-disk-list –multiple`**"

The above command:-

- Displays the virtual machines and their corresponding VBDs and VDIs on the host
- Extracs the uuid of VDI of a VM

```
[root@IMITS137 ~]# xe vm-disk-list --multiple
Disk 0 VBD:
uuid ( RO)             : 343065d6-b678-3200-3def-c849157caee7
    vm-name-label ( RO): Red Hat Enterprise Linux 5.1 x64 (1)
       userdevice ( RW): 0


Disk 0 VDI:
uuid ( RO)             : 3047b517-1de0-4854-9260-6503f8b234a8
       name-label ( RW): 0
    sr-name-label ( RO): Local storage on IMITS137
     virtual-size ( RO): 8589934592


Disk 0 VBD:
uuid ( RO)             : 6c8dfc5d-fbf2-4483-7f2b-4d24f30b7f7c
    vm-name-label ( RO): Windows Server 2003 x64 (1)
       userdevice ( RW): 0
```

Figure 3

Notes:

The uuid of the virtual machine that is to be replicated

Step 2. Once the command is complete, proceed to issue the following command on the source Citrix XenServer's command prompt.

"`lvdisplay`"

- This displays all the available logical volumes on the host
- Identify the logical volume with the same uuid as of the virtual machine that is to be protected.

```
[root@IMITS137 ~]# lvdisplay
  --- Logical volume ---
  LV Name                /dev/VG_XenStorage-84a2406c-dcbb-0e0b-d402-030b98c69582/LV-4f643506-
fe82-4442-a89e-091b61fa2074
  VG Name                VG_XenStorage-84a2406c-dcbb-0e0b-d402-030b98c69582
  LV UUID                NetFAK-PjQ0-Eo2v-R01L-nLQG-LL8j-yYuMo4
  LV Write Access        read/write
  LV Status              NOT available
  LV Size                752.00 MB
  Current LE             188
  Segments               1
  Allocation             inherit
  Read ahead sectors     0

  --- Logical volume ---
  LV Name                /dev/VG_XenStorage-84a2406c-dcbb-0e0b-d402-030b98c69582/LV-3047b517-
1de0-4854-9260-6503f8b234a8
  VG Name                VG_XenStorage-84a2406c-dcbb-0e0b-d402-030b98c69582
  LV UUID                2qxF0F-zdN3-f9o5-BKmz-37FE-yubp-nY9LHn
  LV Write Access        read/write
  LV Status              available
  # open                 1
  LV Size                8.00 GB
  Current LE             2048
  Segments               1
  Allocation             inherit
  Read ahead sectors     0
  Block device           252:0
```

Figure 4

After the above two command, you will be able to map virtual machines with their respective logical volumes.

4.2 Re-create guest machines on the target

Open the XenCenter interface, then create the guest machines on the target citrix XenServer with the same configuration, operating system and disk size. Creating Windows and Linux virtual machines are slightly different, however both procedures are described below.

Creating Window virtual machine

Step 1. Open the XenCenter then select the target Citrix XenServer and click on "**New VM**". This will create a new virtual machine on the target Citrix XenServer.

Figure 5

Step 2. The wizard follows, select the same template as of the production guest, and then click on "**Next".**

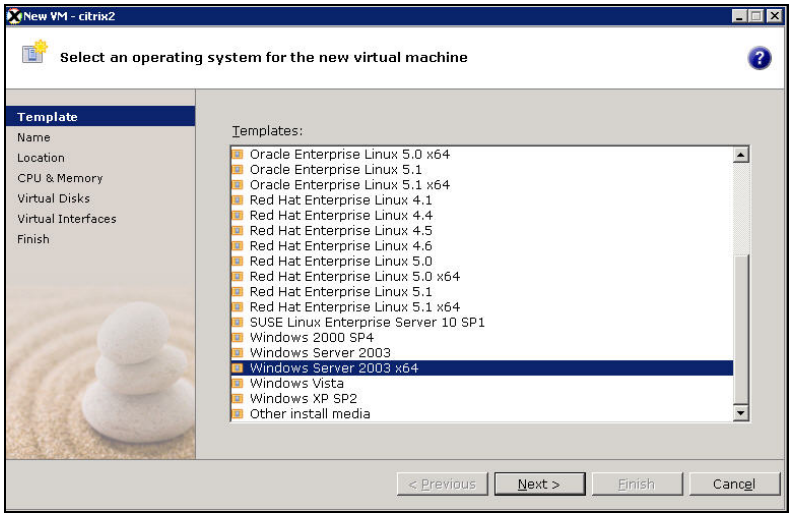


Figure 6

Step 3. Enter the "**Name"** and "**Description"** of the guest machine and then click on "**Next"** to continue.

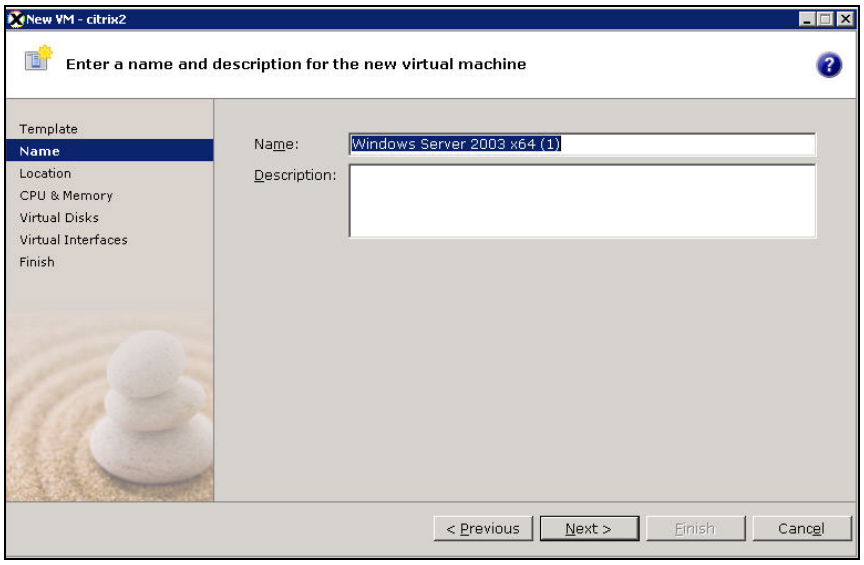


Figure 7

Step 4. You may choose to load a bootable CD into the CD drive or enter the path of a bootable ISO image. Then click on "**Next".**

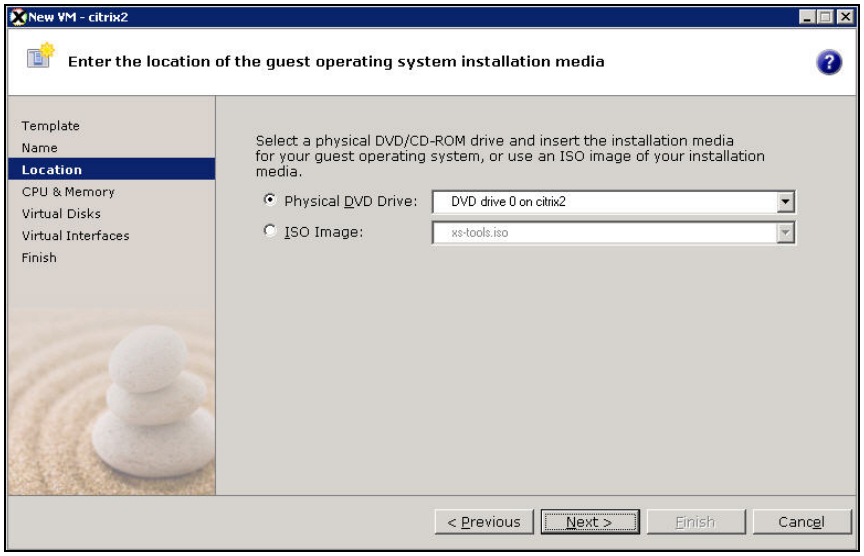


Figure 8

Step 5. Enter the number of virtual CPUs and physical memory and then click on "**Next".**

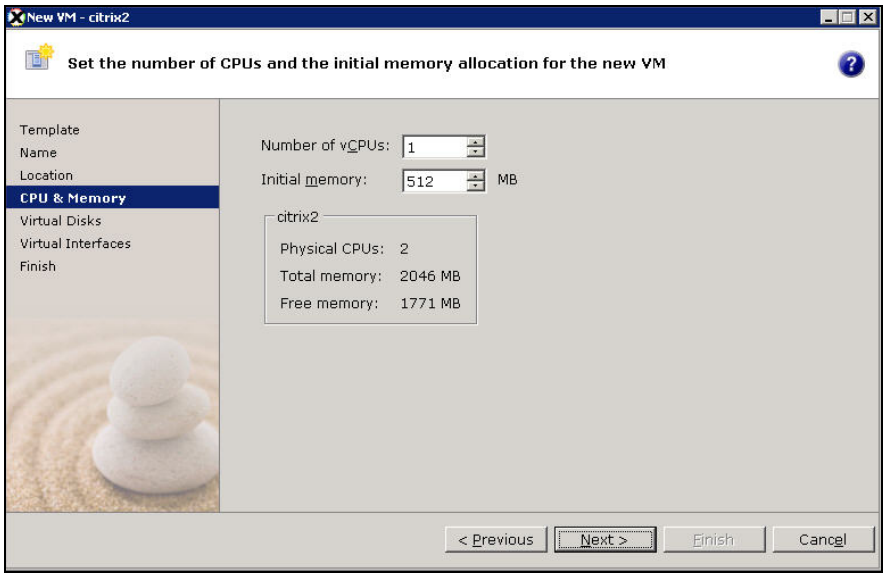


Figure 9

Step 6. The next screen opens up, ensure that you add a disk of similar or larger size as of the source guest machine, then click on "**Next"**

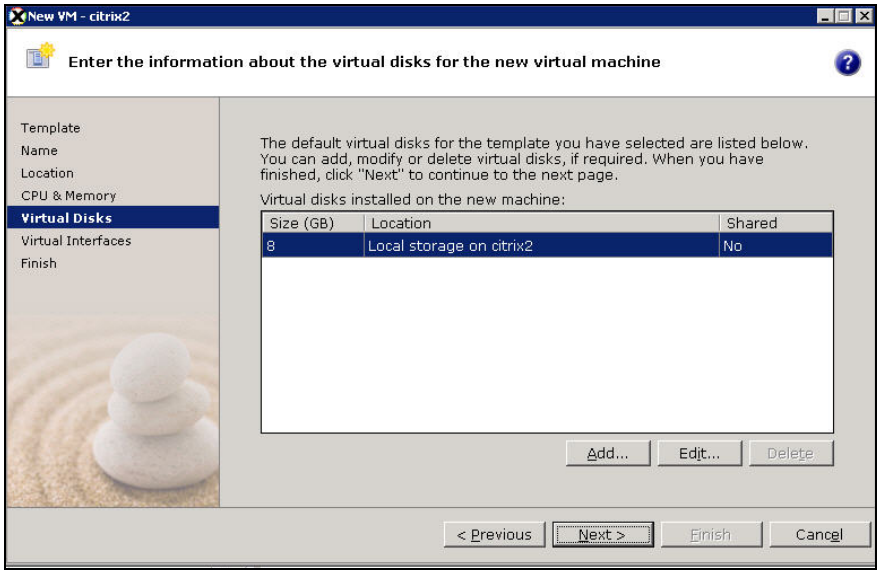


Figure 10

Step 7. Through this screen you can add a desired number of virtual NICs. Create the virtual interfaces such that the configuration reflects that of the source VM. Click on "**Next**" to proceed

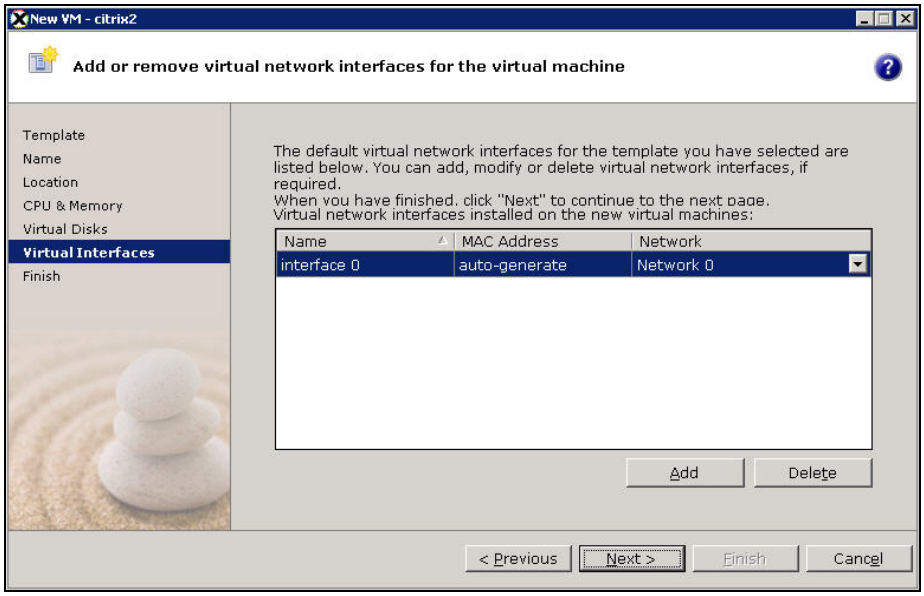


Figure 11

Step 8. Click on "**Finish**" and the virtual machine starts.

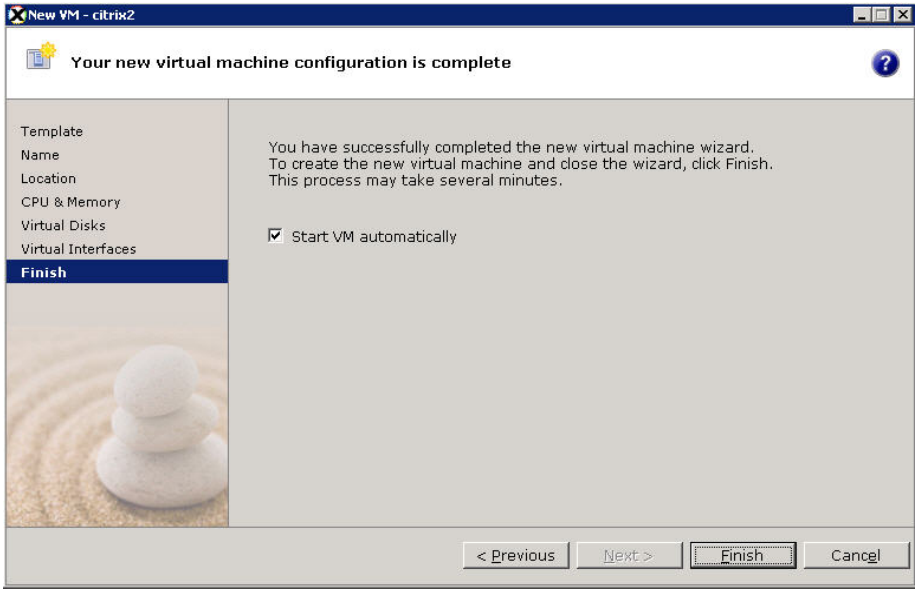


Figure 12

Creating Linux virtual machine

Step 1. A new "**New Storage**" is created to load a boot image. Select the target Citrix Xenserver then click on "**New storage".**

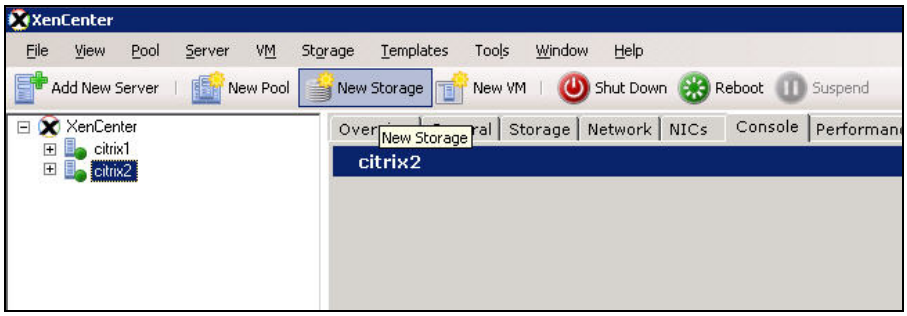


Figure 13

Step 2. You may choose any of the desired option then click on "**Next". (**For this example however, we select windows file sharing)

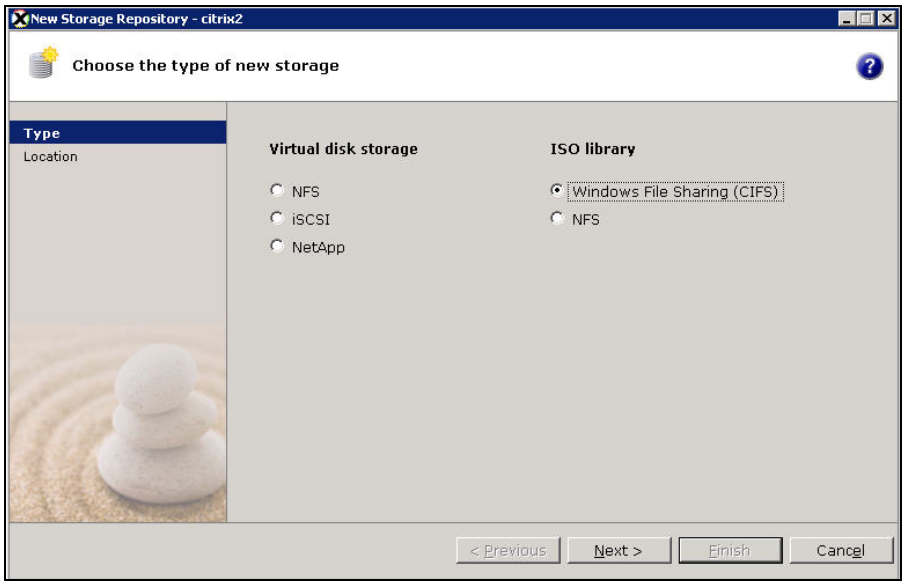


Figure 14

Step 3. Enter the "N**ame"** and "**Path"** and then enter the full user name and password to access the entered path. Click on "**Finish"** to complete adding a new storage.

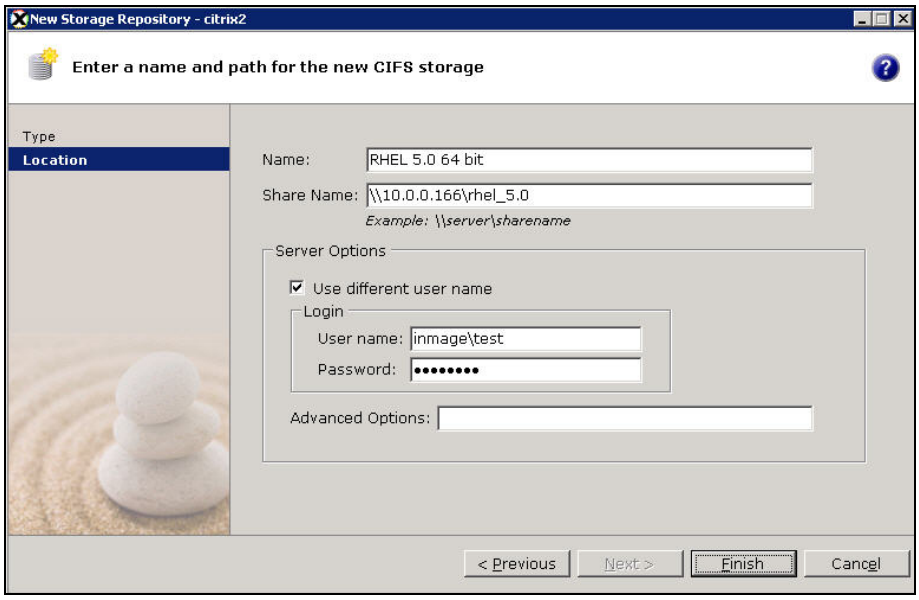


Figure 15

Step 4. The new storage now appears under the target Citrix XenServer. Click on "**New VM**" to create a new Linux guest machine on the target Citrix XenServer.

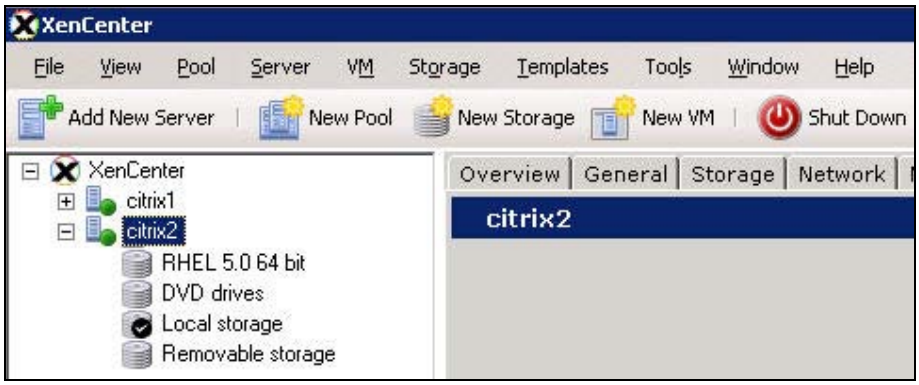


Figure 16

Step 5. The template screen opens up, select the desired Linux template, and click on "**Next" .**
For this example we select a 64 bir RHEL 5 operating system. Ensure that you select the same template as of the production guest machine.

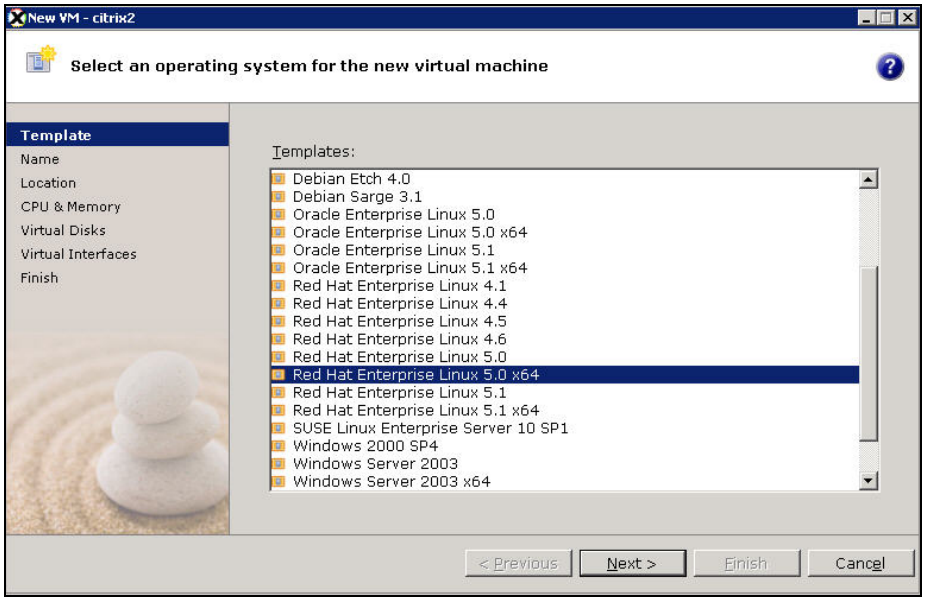


Figure 17

Step 6. Enter the name of the new virtual machine and description and then click on "**Next".**

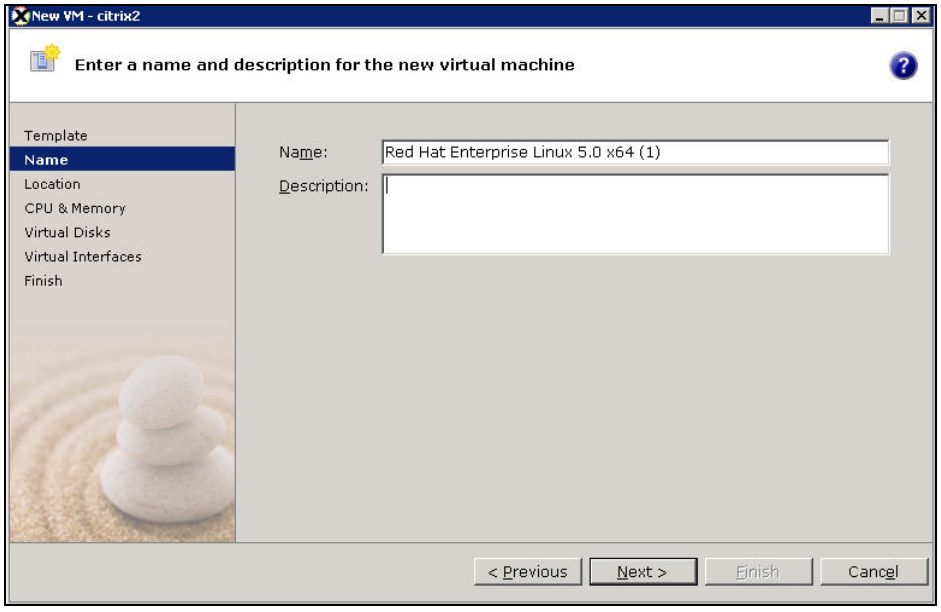


Figure 18

Step 7. Select the desired option (a URL, CD drive or ISO image path). Entering boot parameters is optional. Click on "**Next"** to proceed.

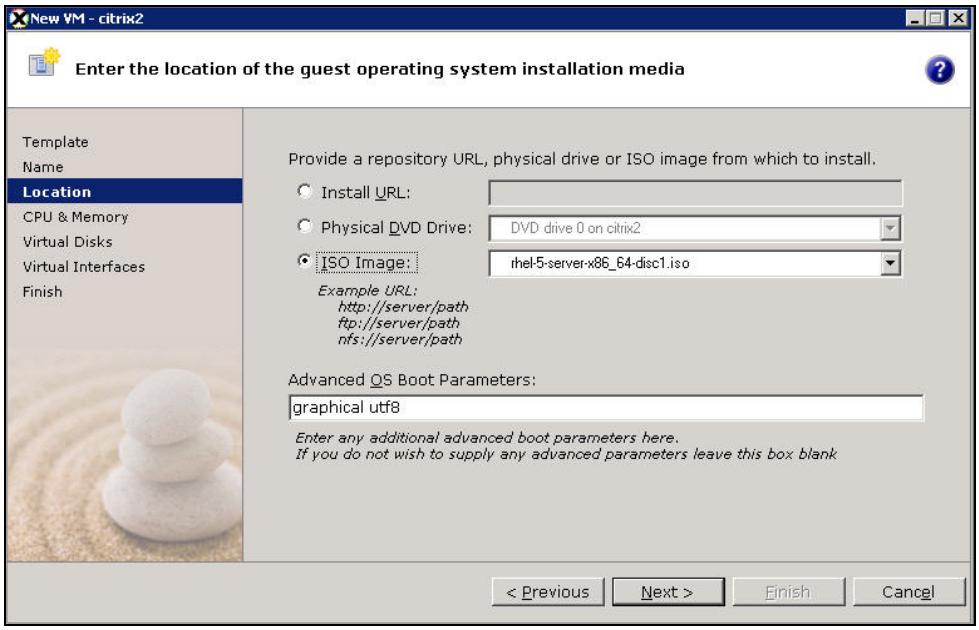


Figure 19

Step 8. Enter the number of virtual CPUs and physical memory and then click on "**Next"**

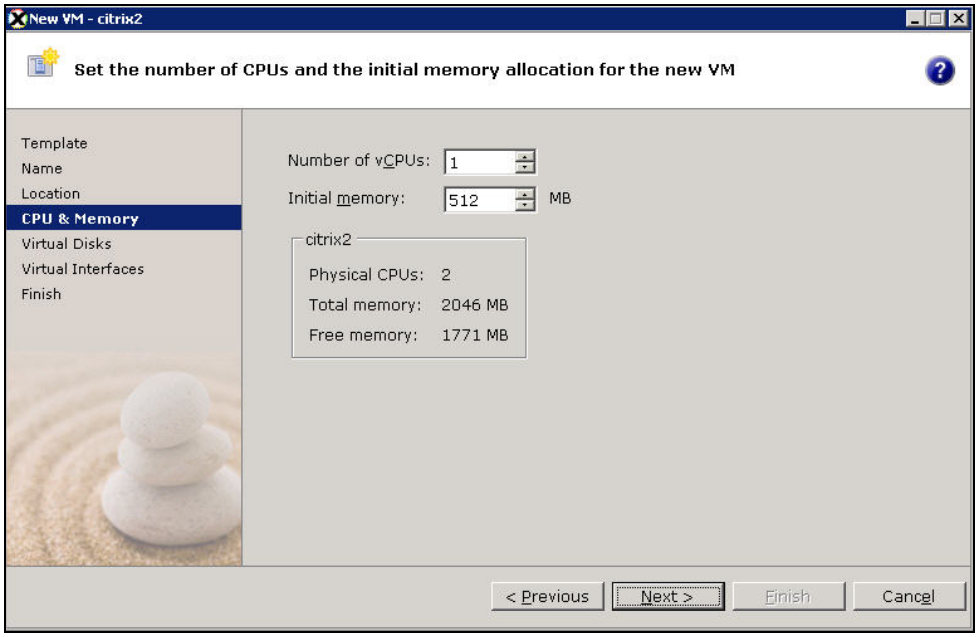


Figure 20

Step 9. The next screen opens up, ensure that you add a disk of the same size as of the source guest machine and then click on "**Next".**

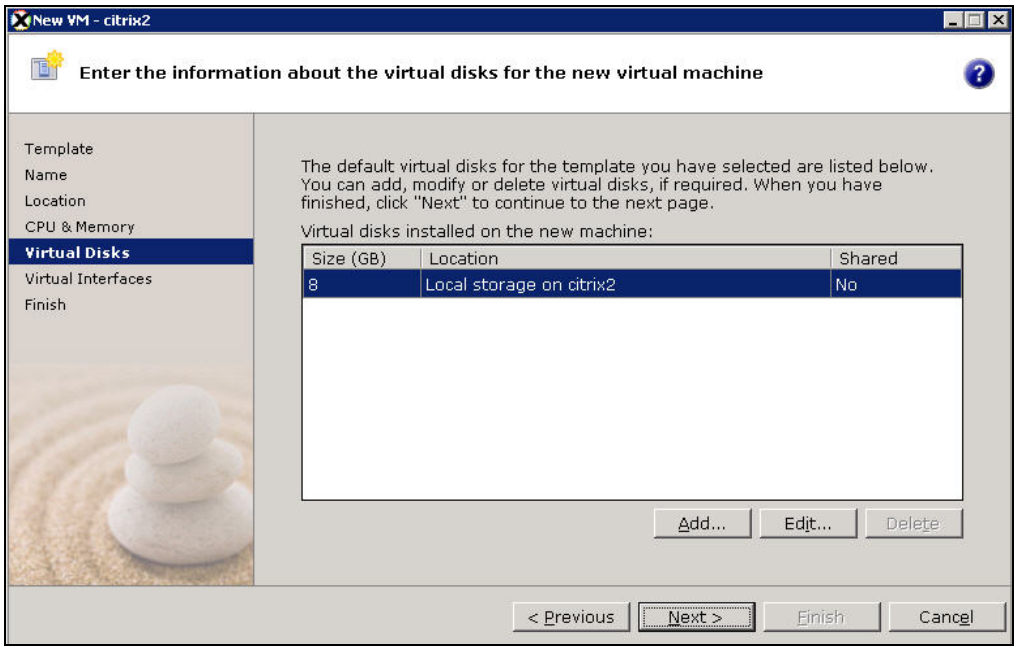


Figure 21

Step 10. Through this screen you can add a desired number of virtual NICs. Create the virtual interfaces such that the configuration reflects that of the source VM. Click on "**Next"** to proceed.

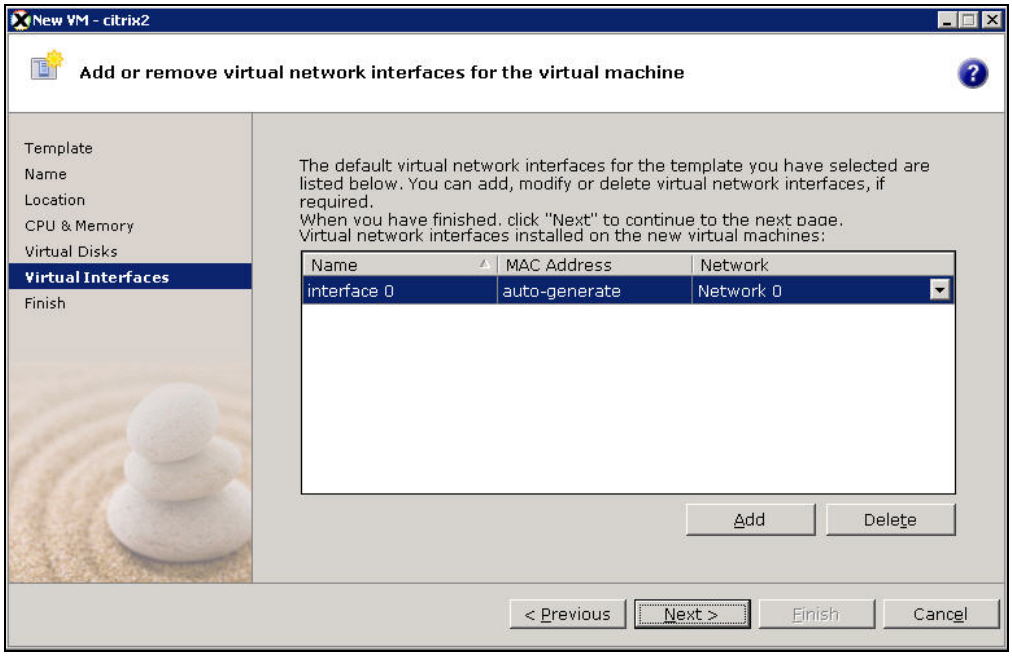


Figure 22

Step 11. Click on "**Finish**" to start the virtual machine.

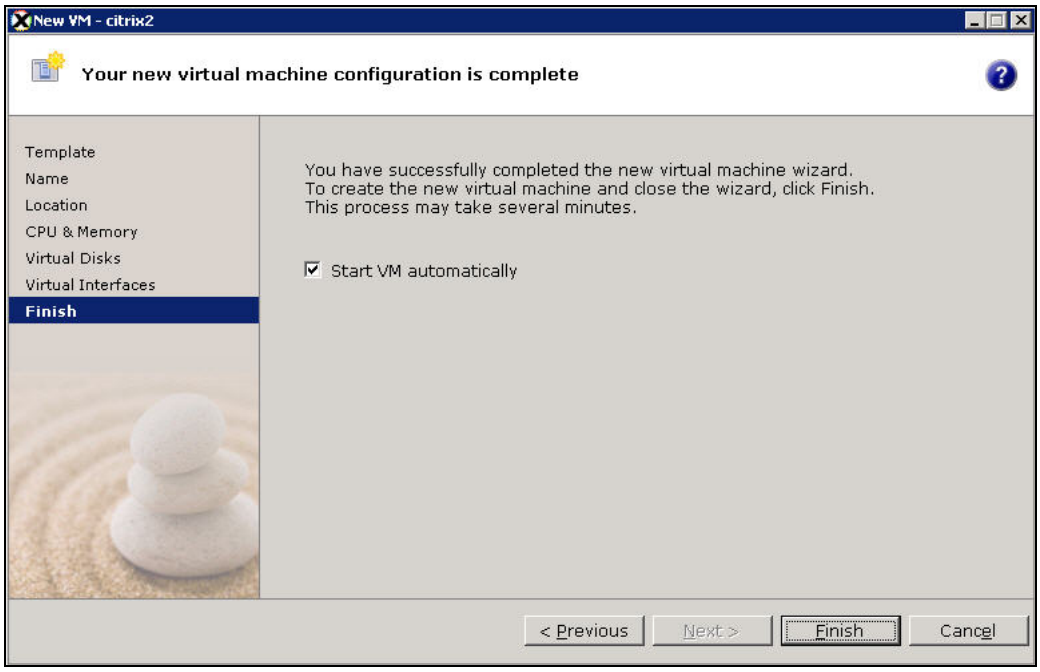


Figure 23

Step 12. The machine boots up as shown in the picture below

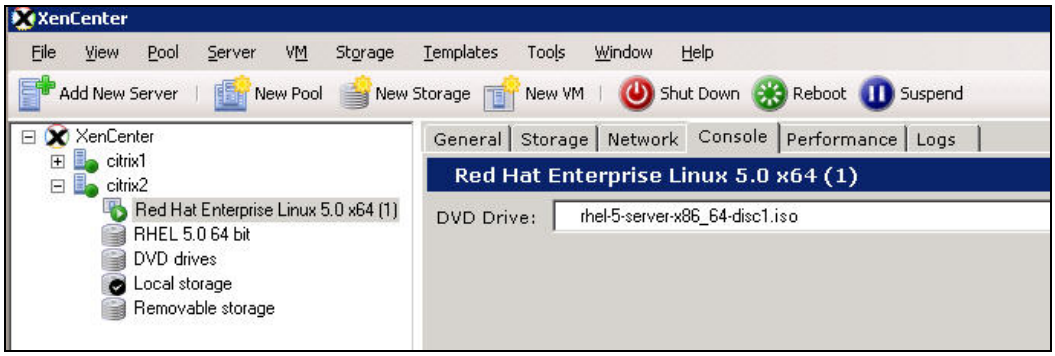


Figure 24

4.3 Install DR-Scout

Please refer to the installation guide for installing and configuring CX server and VX agents. The VX agents are to be installed on the source and target Citrix XenServers.

5 Protect

5.1 Replicate source virtual machines

Setting a volume replication is performed in four steps as shown in the picture below.

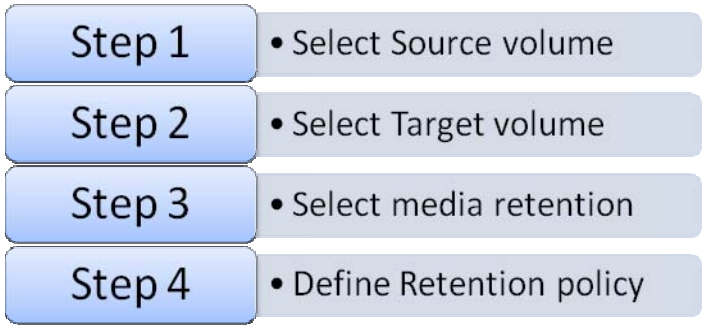


Figure 25

Step 1. Open the CX UI and click on "**Volume Protection**", then expand the source Citrix XenServer to select the source volume corresponding to the source guest machine that is to be protected and click on "**Start Replication"**

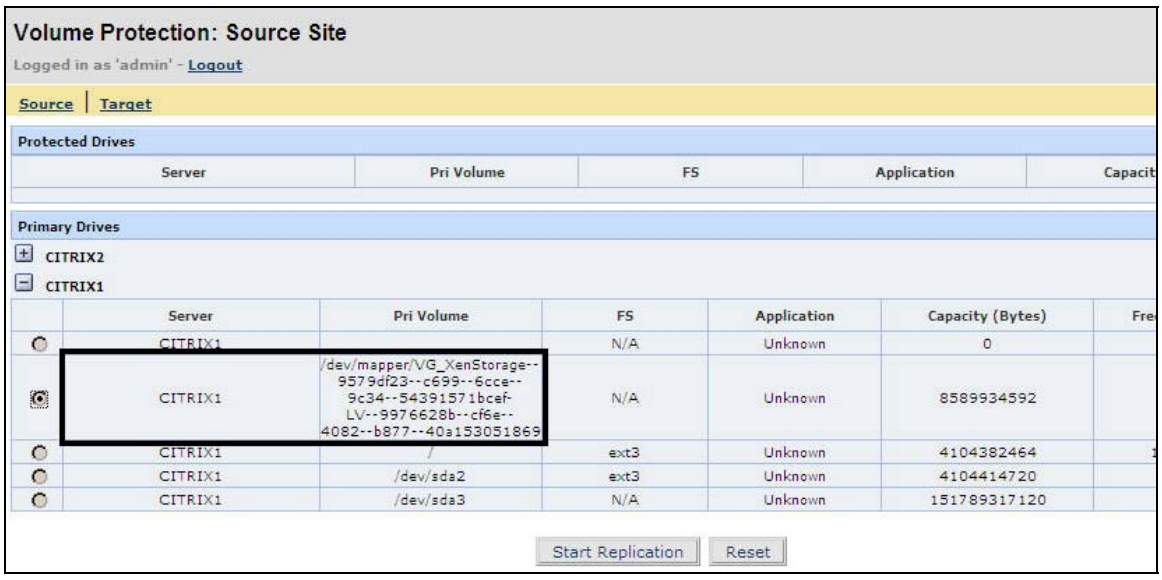


Figure 26

Step 2. The next screen opens up. Expand the target Citrix XenServer to select the respective target volume. Then scroll down to set the replication options.

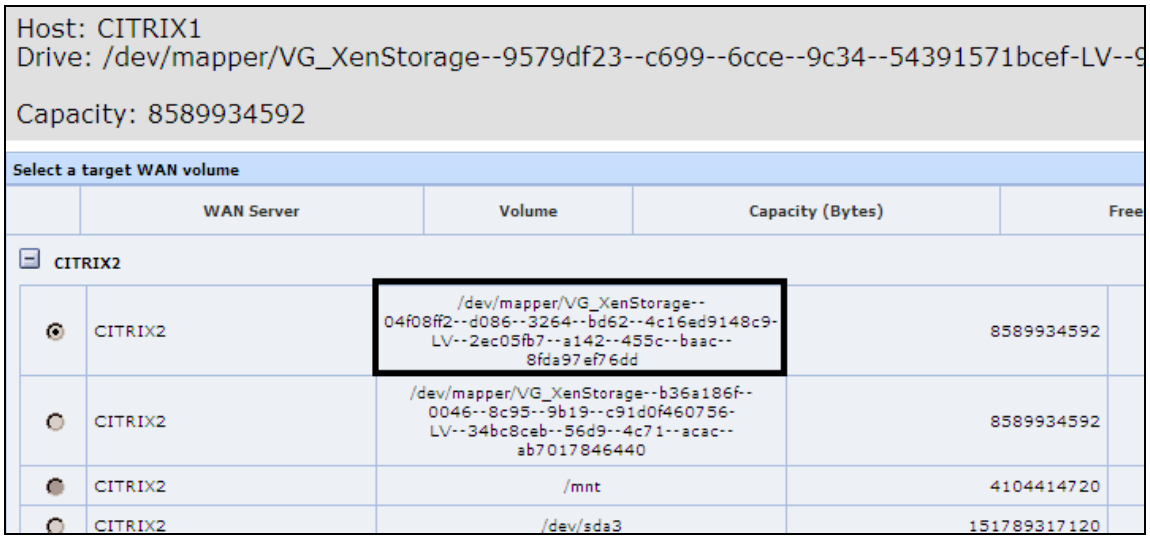


Figure 27

Step 3. All the process servers pointed to the CX server are listed here. You may choose a desired process server which will handle all the offload activities specific to this replication pairs. For better scalability you may point more process servers to the CX server. Select the process server and scroll down to set the "**Replication Options"**

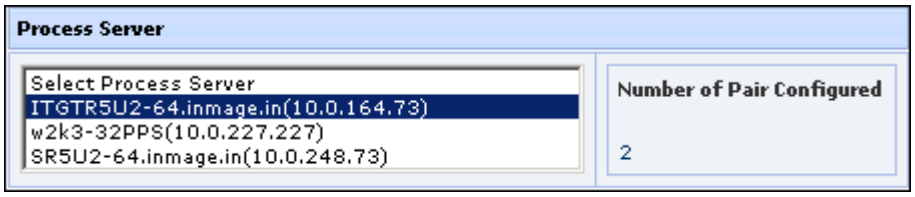


Figure 28

Step 4. Enable the Media Retention and click on "**Submit**" and the rest are optional.

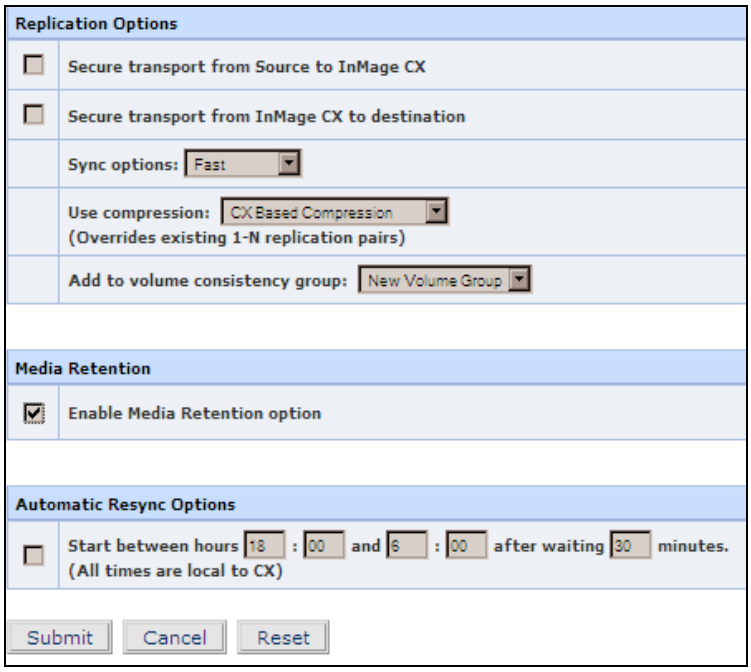


Figure 29

Step 5. The next screen opens up, choose the desired retention policy, and click on "**Submit"** to start the replication pair

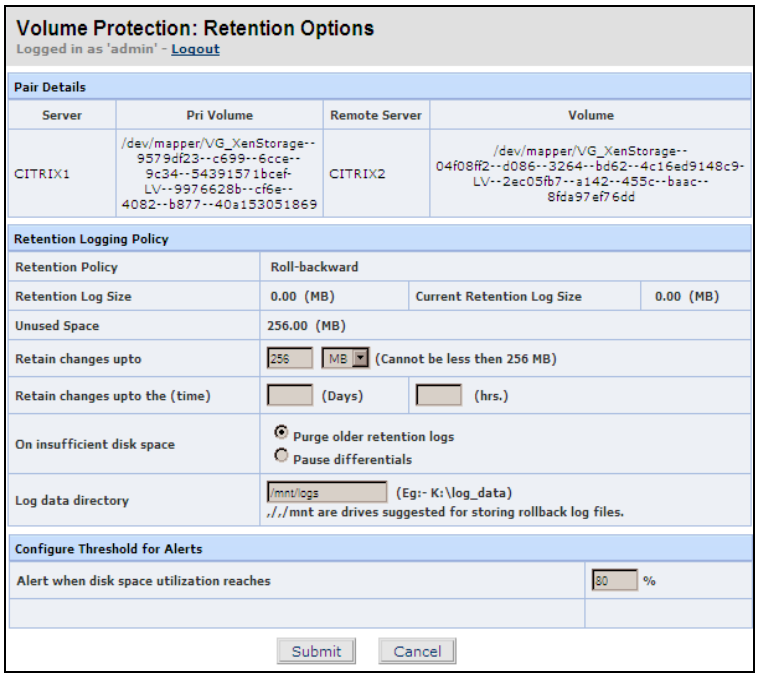


Figure 30

Notes:

Repeat above steps to protect any additional guest machines
Setting the replication pair is similar for windows and Linux platforms.

5.2 Shutdown target virtual machines

Before setting the replication pairs shutdown target virtual machines.

Step 1. Shutdown the Windows target virtual machine(s) as shown below.

Figure 31

Step 2. Similarly, shutdown the Linux target virtual machine(s)

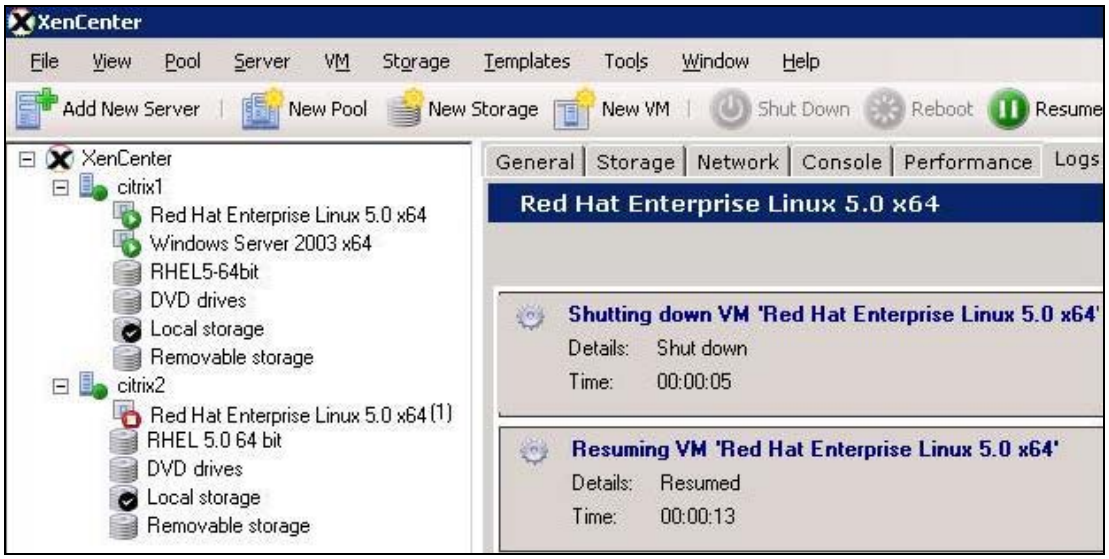


Figure 32

After shutting down the VM ensure that all the protected logical volumes (corresponding to the virtual disks of the VM that was shutdown) are available or not. If any protected logical volume is not available, run **"lvchange –ay <Logical_Volume>"** to make the logical volume available.

5.3 Monitor replication pair

In this Click on "Protection Status" to monitor the replication status. Observe that there are two replication pairs, one for windows, and the other for Linux virtual machines.

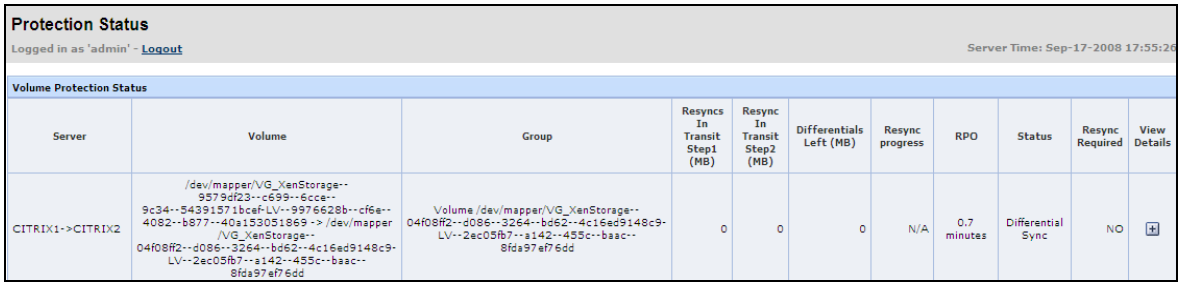


Figure 33

Notes:

You may choose to set email alerts or traps. Please refer to the Admin guide.pdf for detailed description.

5.4 Consistency tags

Step 1. Once the replication pair reaches "**Differential Sync**", proceed to issue consistency tags on the source volume. Consistency tags are issued on the source virtual machine, Access the CX UI through the source virtual machine to download the vacp client. Download the appropriate vacp client through "**System-> Agent installers**".

Figure 34

- vacp32-suse9 is used for guest machine with 32 bit platforms of SUSE 9, SLES 9 SP2, SLES 9 SP3.
- Vacp x64.exe is used for 64 bit windows platforms
- Vacp IA64.exe is used for 64 bit windows on Itanium platform.
- Vacp64 is used for the guest machines with any 64 bit platform
- Vacp.exe is used for 32 bit windows platforms
- Vacp32 is used for 32 bit Linux platforms

For a Linux virtual machine use the following command

./vacp –remote –v <*volume1*>,<*volume2*>,… -t <*name of the consistency tag*> -serverdevice <*corresponding volume on the source Citrix* XenServer >,… -serverip <*Source Citrix* XenServer*'s IP address*> [-serverport 20003]

-serverport 20003 is an optional switch

```
[root@citrixguest1 ~]# ./vacp -v /dev/mapper/VolGroup00-LogVol00 -remote -server
device /dev/mapper/VG_XenStorage--04f08ff2--d086--3264--bd62--4c16ed9148c9-LV--2
ec05fb7--a142--455c--baac--8fda97ef76dd  -t "my tag" -serverip 10.0.1.3
Caught an exception with Local Configurator Settings
Generating tag names ...
Tag: FileSystem48d0fbd5
Tag: my tag

Sending Following Tag Request ...
Flags = 3
Num. Volumes = 1
Volume: 1  Name: /dev/mapper/VG_XenStorage--04f08ff2--d086--3264--bd62--4c16ed91
48c9-LV--2ec05fb7--a142--455c--baac--8fda97ef76dd Length:112
Num. Tags = 2
Tag: 1 Length:11
Tag: 2 Length:23

Starting device I/O suspension...
```

Figure 35

6 Failover

6.1 Differences between rollback and snapshot

The target virtual machines may be recovered either by rolling back the target volumes or by taking a snapshot of the target volumes.

Table 1: Differences between rollback and snapshot

	Snapshot	Rollback
Replication	Intact	Breaks replication pair
Storage	Requires an additional volume with equal or larger capacity on the DR server	No additional storage required
Consistency	Both tag based and time based	Both tag based and time based

A snapshot is not disruptive to the replication pair where as a rollback breaks the replication pair.

6.2 Rollback approach

Target volume can be rolled back in time based or an event back in time based on a vacp tag issued on the source volume or based on time. A roll back can be performed through CX UI and command line interface of the DR Server. This example describes to perform an event based roll back.

Step 1. On the CX UI, click on "**Recovery**" then select the replication pair and click on "**Rollback"**. A confirmation message appears, click on "**Ok"**

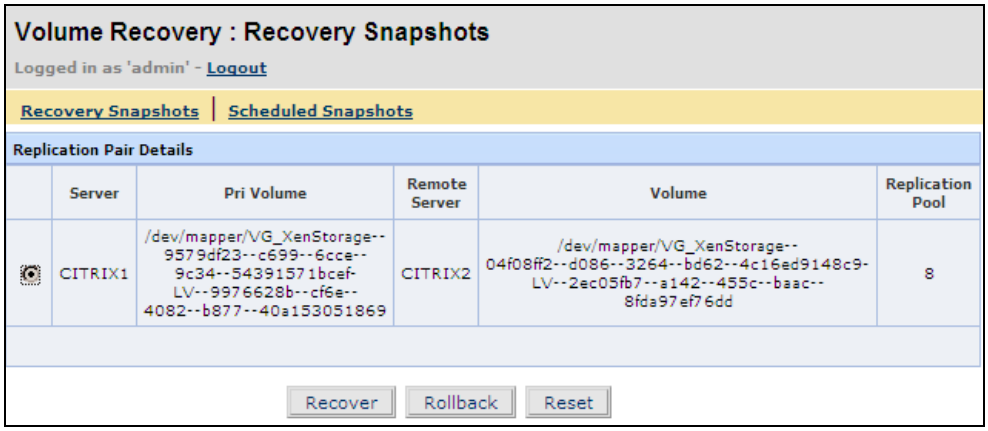


Figure 36

Step 2. The next screen opens up, to perform an event based rollback, select the option" **Using Application consistency & Event based**"

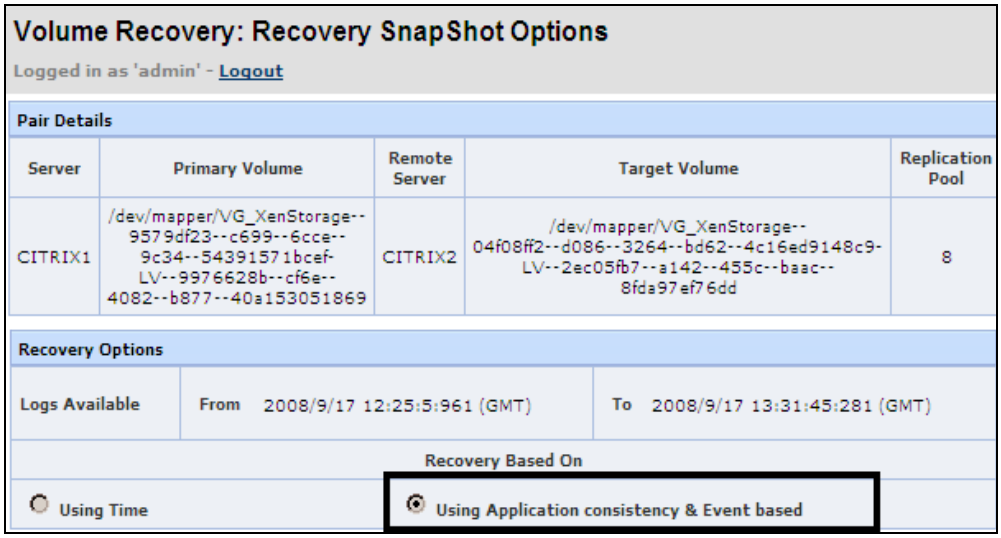


Figure 37

This changes the interface below to a "**search result"** and display a list of available consistency tags to which a roll back may be performed. Select the desired tag and click on "**Save"**

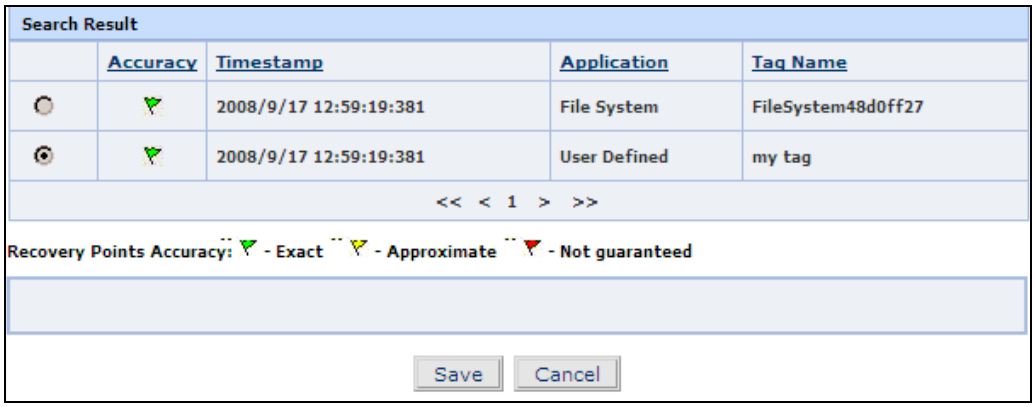


Figure 38

This will roll back the target volume to a consistent point

Step 3. Click on "**Recovery"** to check the status of the rollback. A rollback is similar for windows replication pairs as well.

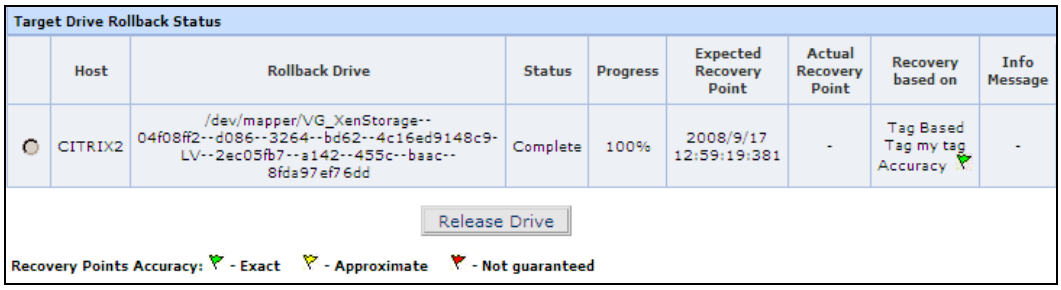


Figure 39

6.3 Bring target virtual machines online

In case of an unplanned failover shutdown the production Citrix XenServer once the rollback is complete. For planned failover shutdown the source virtual machines then reboot the target virtual machines (which should be in halted state now). The target guest machines should come up normally.

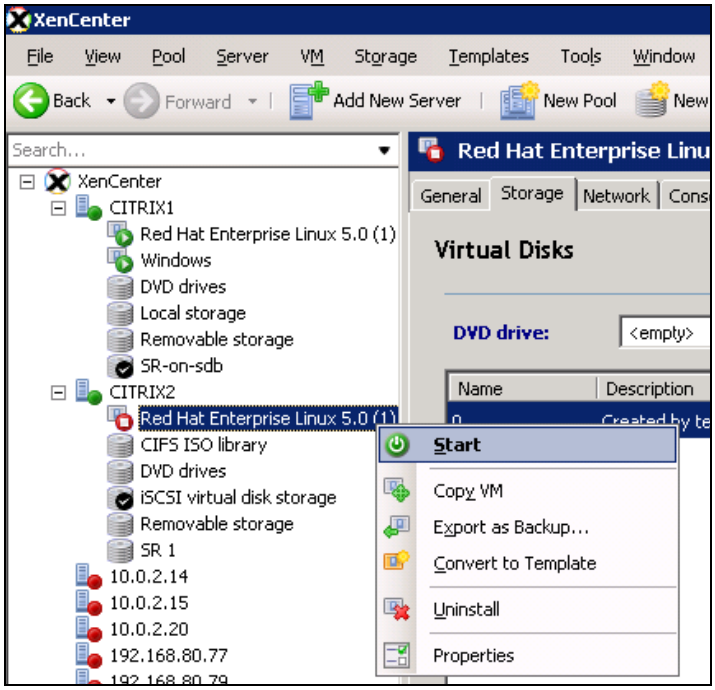


Figure 40

6.4 Snapshot approach

This involves four steps

- **Prepare for snapshot disk**: Create a new disk with equal capacity
- **Create snapshot**: Create a snapshot of the target volume through the CX UI
- **Swap device**: Swap the original device with the snapshot device
- **Start guest machine**: The guest machine should boot up with the snapshot disk

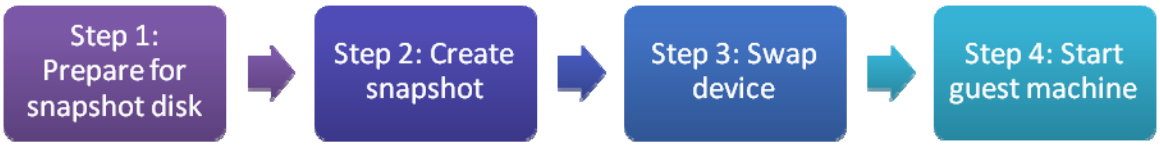


Figure 41

Prepare for the snapshot

Create a virtual disk equal in size to that of the target volume. This virtual disk is used to contain the snapshot.

`xe vdi-create name-label=<`*label of the virtual disk*`> sr-uuid=<`*UUID of SR where this virtual disk is being created*`> -type=<"`*system" for bootable disk or "user" for other disks*`> -size=<`*size of the disk should be equal to that of the target volume*`>`

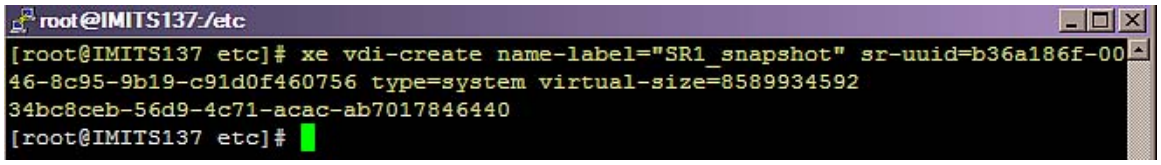


Figure 42

Once the disk is created, bring the newly created virtual disk online through the command as shown below

`lvchange -ay <`*Logical volume corresponding to the virtual disk*`>`

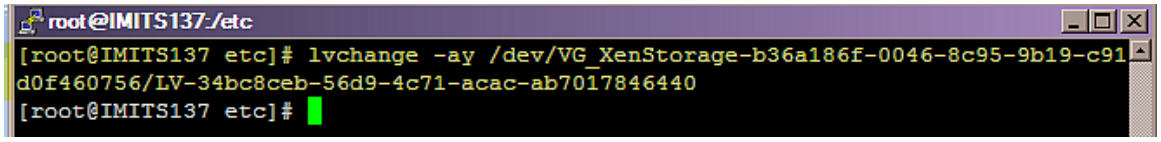


Figure 43

Create a snapshot

Step 1. On the CX UI, click on "**Recovery**", select the replication pair, and click on "**Recover"**.

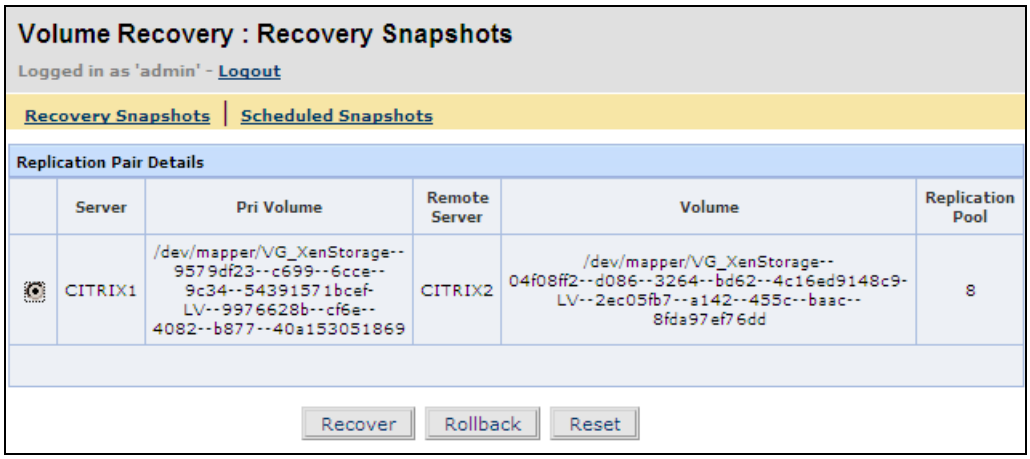


Figure 44

Step 2. The next screen opens up. Select the option "**Using Application consistency & Event based**" to perform an event based recovery.

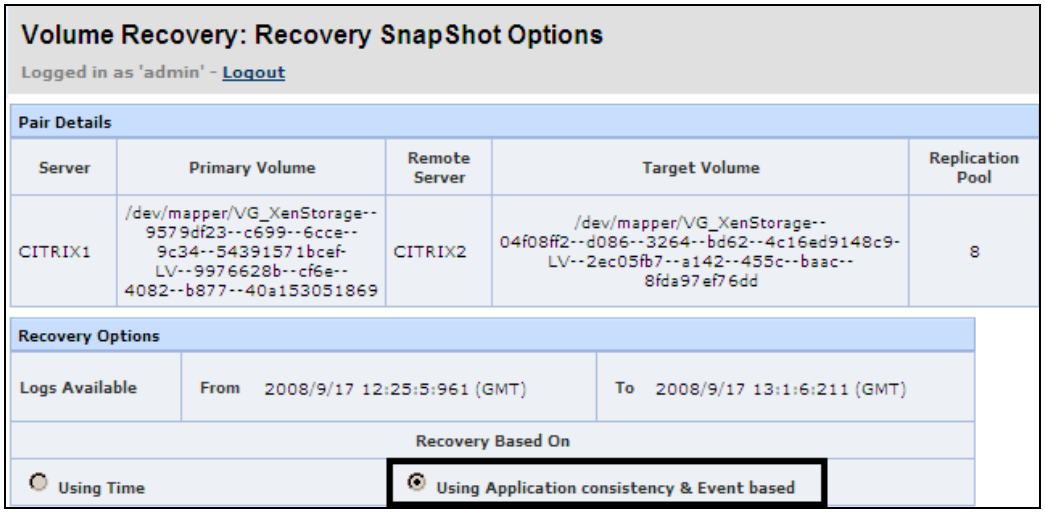


Figure 45

Notes:

To perform a time based recovery select the option "Using time"

Step 3. Select the tag from the "**Search Result** ". Select the "**Drive Type"** as "**Physical"** , select the LV corresponding to the newly created virtual disk under the "**Physical Drives"** and click on "**Save"**. Refer the section Prepare for the snapshot on page Step 2. 33

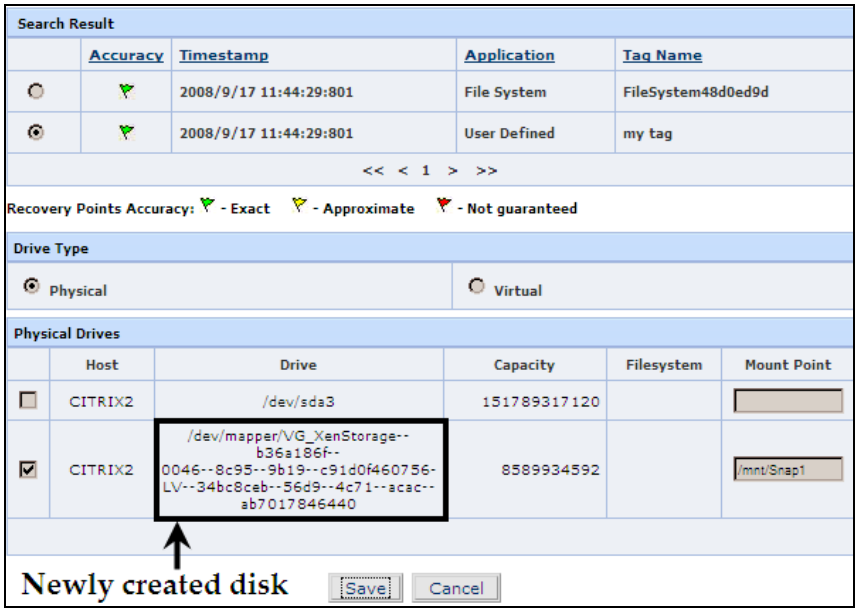


Figure 46

Step 4. Click on "**Recovery"** to monitor the snapshot progress.

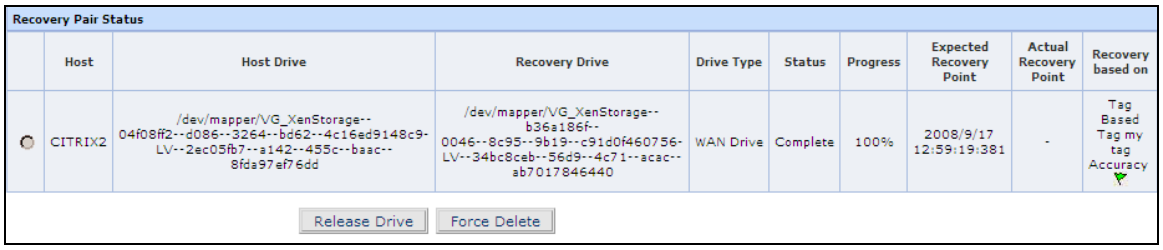


Figure 47

Swap device

Step 1. Once the snapshot is complete, access the XenCenter interface and click on "**Storage"** tab then on "**Attach"**.

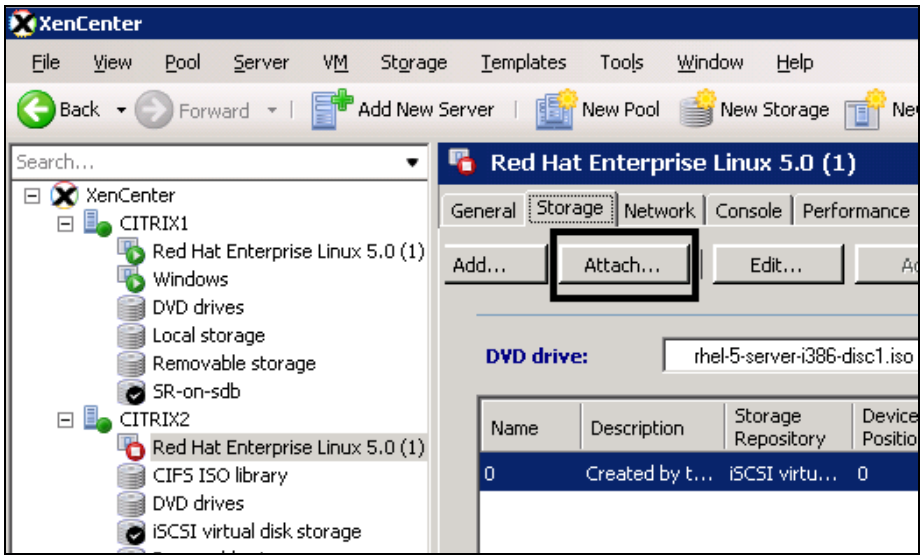


Figure 48

Step 2. Select the newly created virtual volume and click on "**Attach"**

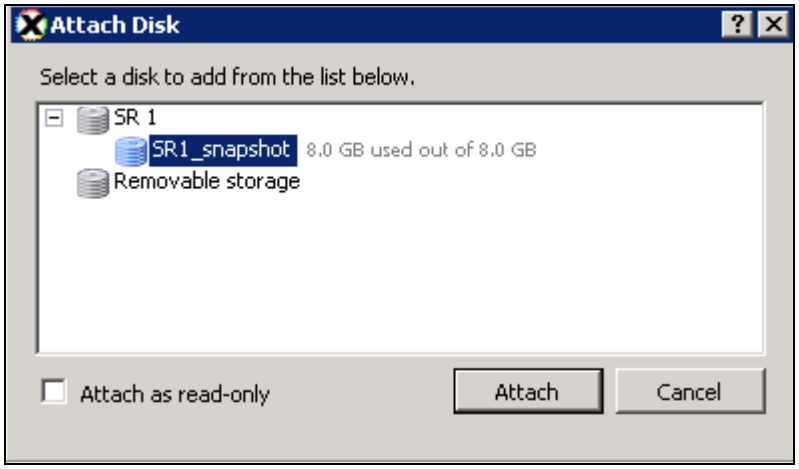


Figure 49

Step 3. Now that the snapshot disk is attached, proceed to remove the previous disk as shown in the picture.

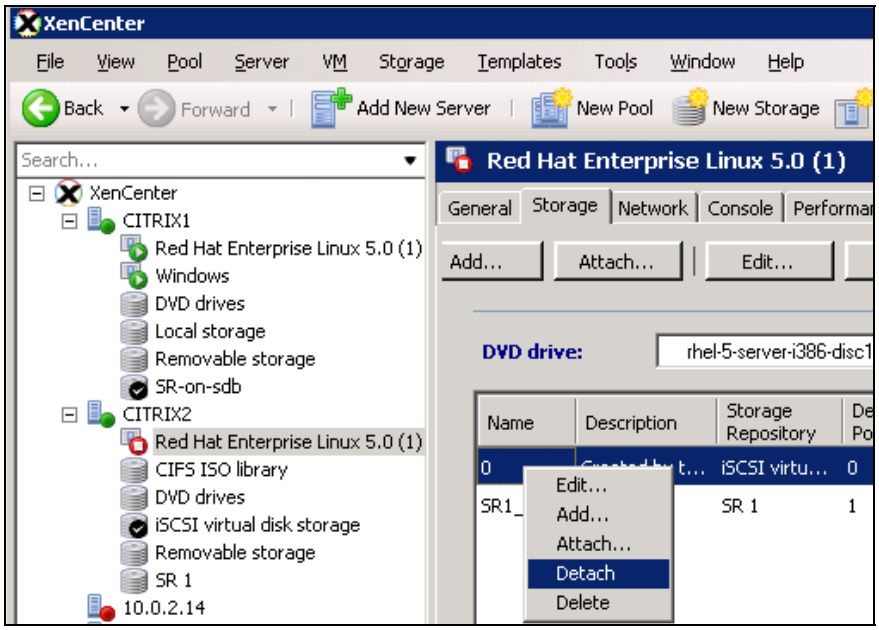


Figure 50

Start the guest machine

Step 4. Then start the guest machine. Now the machine will boot through the snapshot disk.

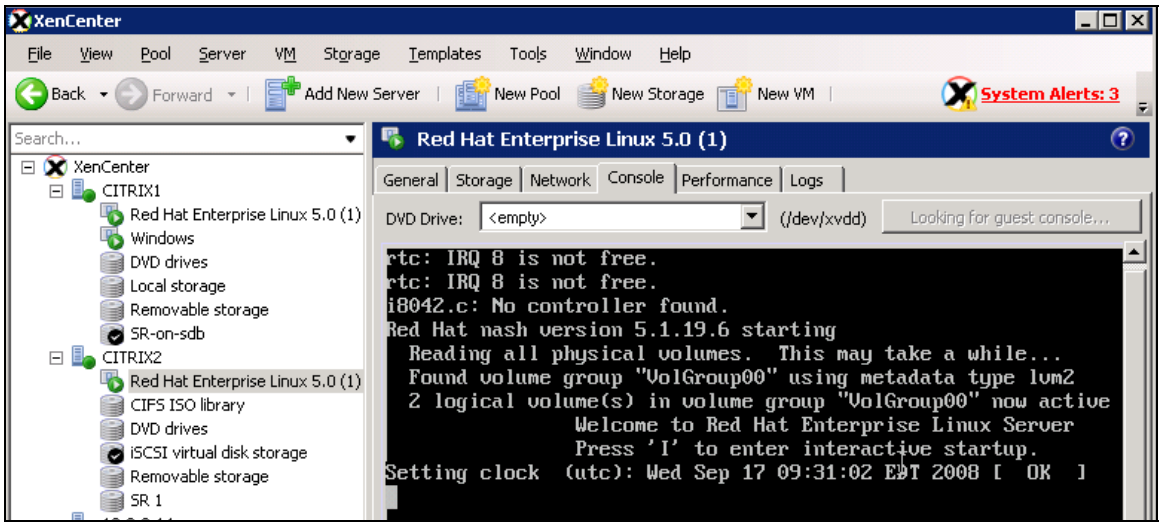


Figure 51

7 Failback

To perform a failback in rollback approach, set a reverse replication from the target LV to the source LV. Similarly, to perform a failback from snapshot approach perform a reverse replication from the snapshot LV to the source LV. In this example, we perform a failback from snapshot LV.

Failback is performed in four steps

- Reverse replication: A reverse replication is set to update the production volume with all the changes occurred during its outage
- Consistency tag: Consistency tags is issued to which a rollback will be performed
- Rollback: The target volume is rolled back to a consistency tag
- Start guest machine: The guest machine should boot up with the rolled back volume.

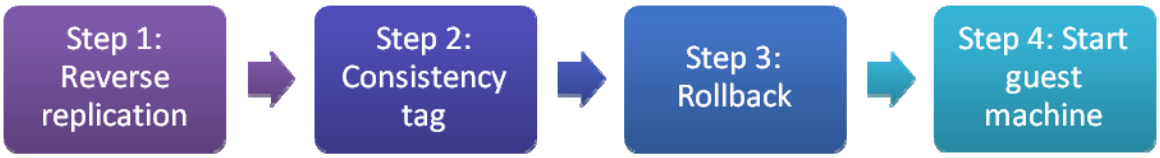


Figure 52

7.1 Reverse replication

Step 1. Set a reverse replication from the snapshot LV to the source LV with media retention as shown in the picture below.

Protection Status

Logged in as 'admin' - Logout — Server Time: Sep-17-2008 19:18:06

Volume Protection Status

Server	Volume	Group	Resyncs In Transit Step1 (MB)	Resync In Transit Step2 (MB)	Differentials Left (MB)	Resync progress	RPO	Status	Resync Required	View Details
CITRIX2->CITRIX1	/dev/mapper/VG_XenStorage--b36a186f--0046--8c95--9b19--c91d0f460756-LV--34bc8ceb--56d9--4c71--acac--ab7017846440 -> /dev/mapper/VG_XenStorage--9579df23--c699--6cce--9c34--5439157 1bcef-LV--9976628b--cf6e--4082--b877--40a153051869	Volume /dev/mapper/VG_XenStorage--9579df23--c699--6cce--9c34--5439157 1bcef-LV--9976628b--cf6e--4082--b877--40a153051869	0	0	0	N/A	0.42 minutes	Differential Sync	NO	⊞

Figure 53

7.2 Consistency tag

Step 1. Once the replication pair reaches "**Differential Sync",** access the guest machine then navigate to the inmage agent installation path to issue a consistency tag

```
[root@citrixguest1 ~]# ./vacp -v /dev/mapper/VolGroup00-LogVol00 -remote -server
device /dev/mapper/VG_XenStorage--b36a186f--0046--8c95--9b19--c91d0f460756-LV--3
4bc8ceb--56d9--4c71--acac--ab7017846440 -t "TAG_1" -serverip 10.0.0.42
Caught an exception with Local Configurator Settings
Generating tag names ...
Tag: FileSystem48d11083
Tag: TAG_1

Sending Following Tag Request ...
Flags = 3
Num. Volumes = 1
Volume: 1  Name: /dev/mapper/VG_XenStorage--b36a186f--0046--8c95--9b19--c91d0f46
0756-LV--34bc8ceb--56d9--4c71--acac--ab7017846440 Length:112
Num. Tags = 2
Tag: 1 Length:10
Tag: 2 Length:23
```

Figure 54

7.3 Rollback

Step 1. Rollback the target volume based on the above issued consistency tag. Refer to the section Rollback approach on page 30 to perform a rollback.

Target Drive Rollback Status

	Host	Rollback Drive	Status	Progress	Expected Recovery Point	Actual Recovery Point	Recovery based on	Info Message
○	CITRIX1	/dev/mapper/VG_XenStorage--9579df23--c699--6cce--9c34--54391571bcef-LV--9976628b--cf6e--4082--b877--40a153051869	Complete	100%	2008/9/17 14:13:23:60	-	Tag Based Tag TAG_1 Accuracy	-

Release Drive

Figure 55

7.4 Start the guest machine

Step 1. Once the rollback is complete, access the XenCenter interface to start the guest machine

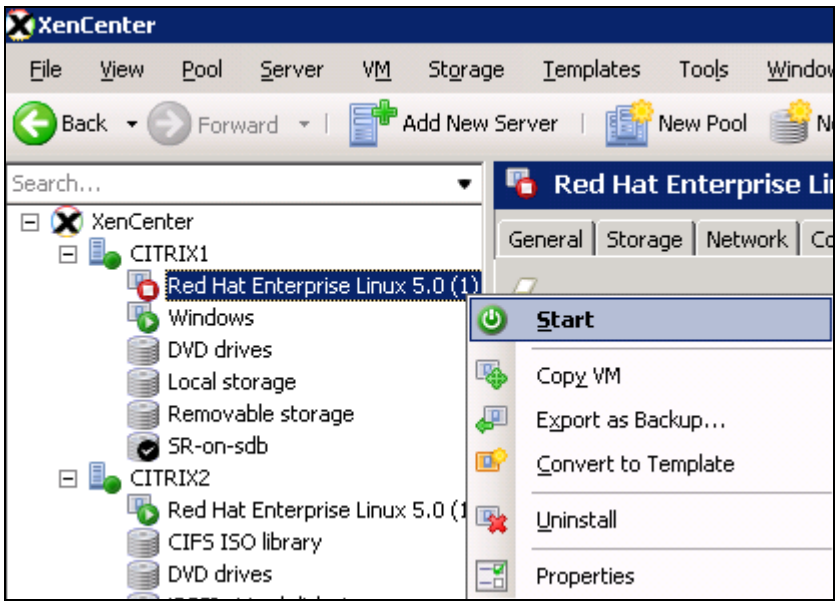


Figure 56

Part 2: Backing up through SR approach

The SR replication, explains to replicate complete disks to the target Citrix XenServer. This part contains three sections

Prepare: The prepare section contains two FX jobs that are required before proceeding with the prepare section

Protect: This section explains to replicates source Citrix disks to target Citrix disks

Recover: The recover section is branched into two sub sections, the rollback approach and the snapshot approach.

8 Introduction to the solution

To replicate whole disks (which in turn contain volumes) as volumes from one host to another the "**drscout.conf"** file is edited to expose the disks as volumes on the CX UI.

The protect section explains to replicate and issue consistency tags on these volumes

Figure 57

Recover section explains to restore the virtual machines on the production server to the corresponding DR Server.

9 Prepare

Edit the file "**drscout.conf"** under the etc folder of VX installation folder and change the "**ReportFullDeviceNamesOnly"** from the default value 0 to 1**.** Doing this will expose the full device name to the CX UI. Ensure that you restart the VX agent service

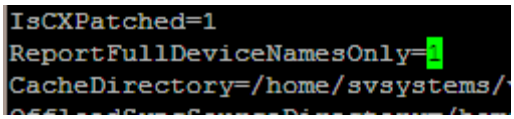


Figure 58

Make sure the target Citrix XenServer does not have any LVM based storage repository. If any LVM based storage repository is present then set FX job using "hard_clean_target.sh" as destination post script. This cleans up the DR server. Schedule the job to run on demand. Please refer to the Admin guide.pdf to set FX job

Notes:

Target Citrix XenServer should NOT have any LVM based "storage repository" configured prior to the protection of source Citrix XenServer.

9.1 Cleanup

Setting up of FX job to clean up the DR server before protecting the source SRs

Step 1. Select the DR server as both source & target of the FX job. Specify the directory as "**/usr/local/InMage/Vx/failover_data**"

Figure 59

Step 2. Enter the post script for destination as "**<VX installation path> /scripts/hard_clean_target.sh**" and click on "**Finish"**

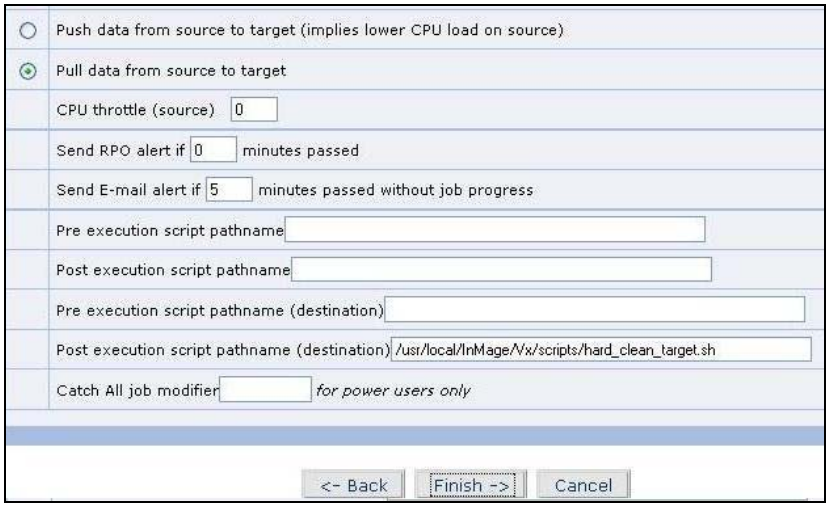


Figure 60

Step 3. Set the scheduling of the job to "**Run On Demand"**. This job should be run only once before setting up replication pairs to protect the storage repositories of the production server.

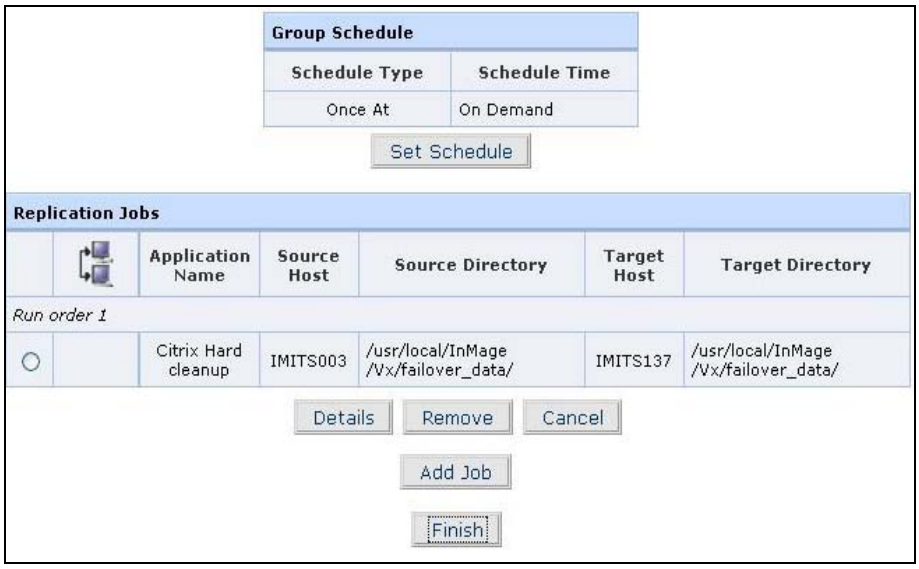


Figure 61

9.2 Discovery

Set FX job to relay the metadata of the VMs of production server to the DR Server. Use xenserver_failover_prescript_sr.sh as the source prescript to set the FX job.
Schedule the job to run at a time interval or run on demand. The time interval should be decided based on the frequency of changes to VM metadata (e.g., 15 minutes.).

Step 1. Select the Production sever as source and DR server as destination of the FX job. Enter the source and destination directory as "**<VX_INSTALL_PATH>/failover_data**" and click on "**Next"**

Figure 62

Step 2. Select the "**Copy the contents of the source directory directly into the target directory option**" as shown below

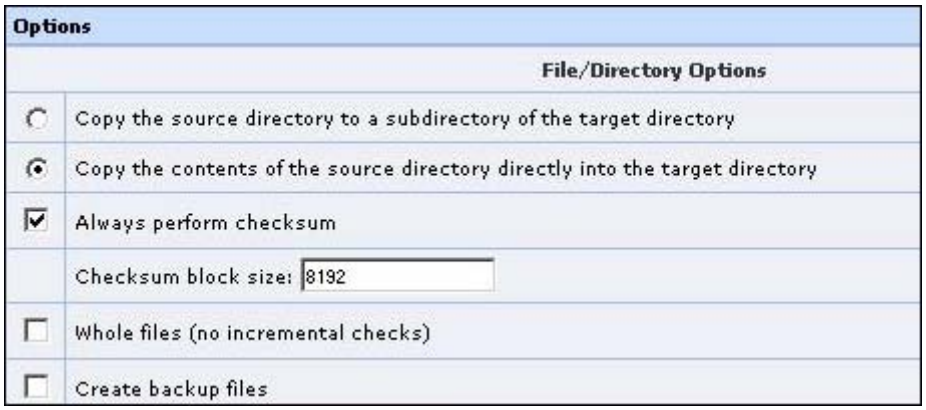


Figure 63

Step 3. Enter the pre script for the source as "**<VX_INSTALL_PATH>/scripts/xenserver_failover_prescript_sr.sh**" and click on "**Finish"**

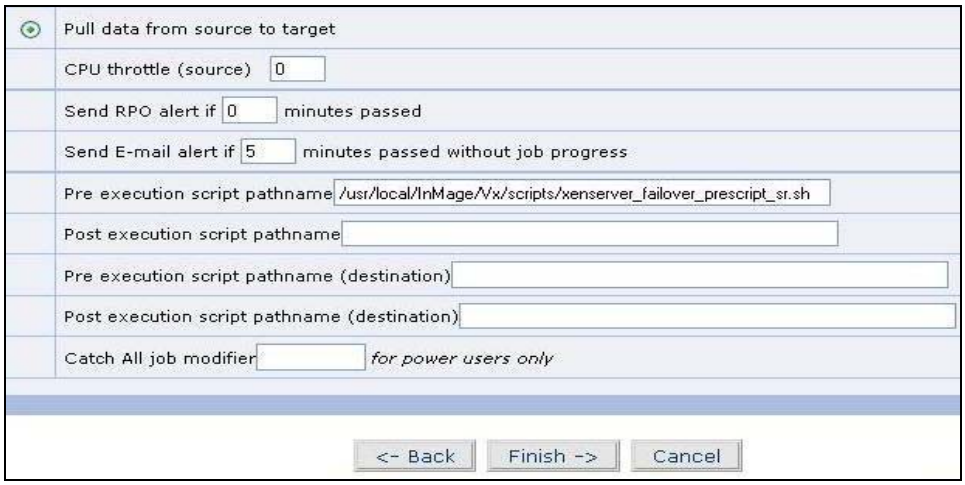


Figure 64

Step 4. Set the job to "**Run On Demand**". It can be scheduled to run at an interval also. The schedule type has to be decided based on the protection type, managed or unmanaged. For managed protection "**Run On Demand**" schedule would suffice.

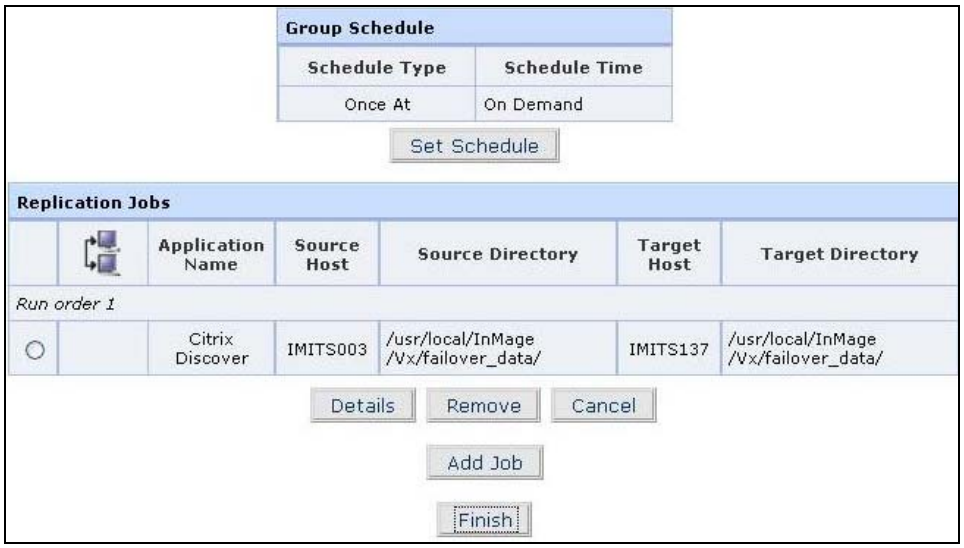


Figure 65

Step 5. Click on **"File Protection"** then select the job and click on "**Start**" to start the job.

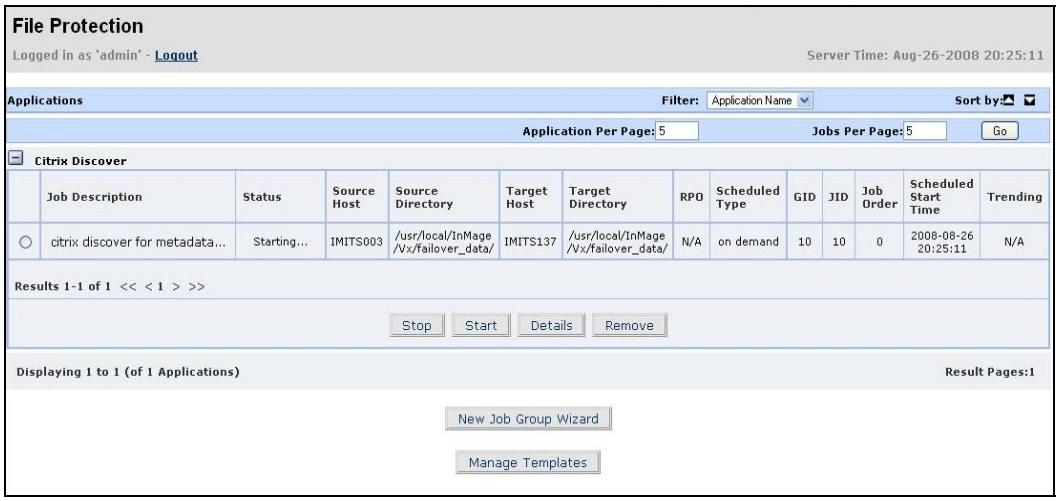


Figure 66

You may monitor the log file of the FX job. Once the discovery is complete, proceed to setting up the VX replication pairs.

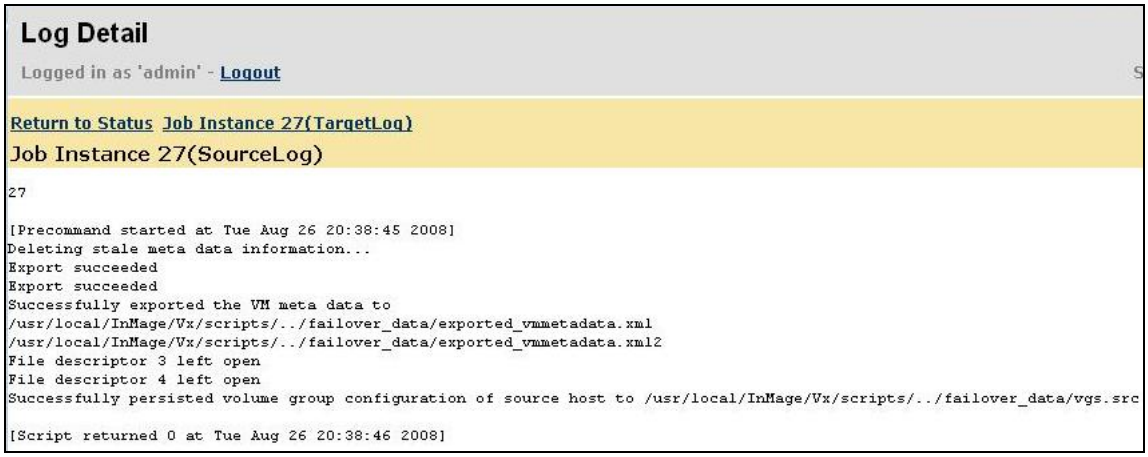


Figure 67

10 Protect

10.1 VX replication

Step 1. Then switch to the CX UI to replicate the disk which now appears as a volume. Click on "**Volume Protection"** and select the corresponding volume and click on "**Start Replication"**

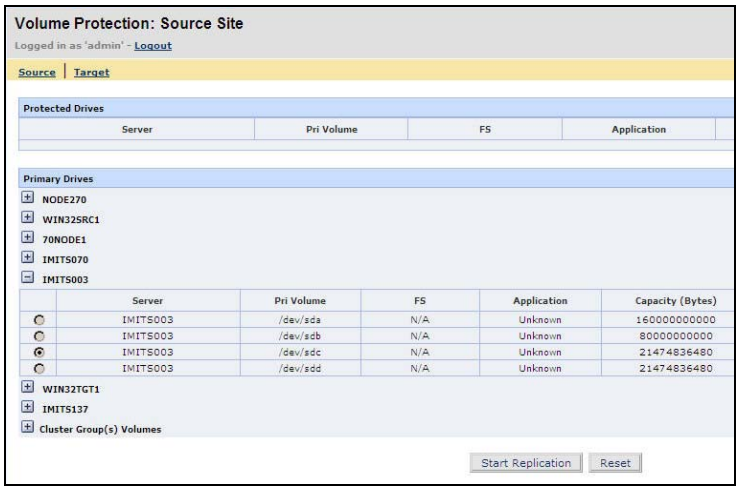


Figure 68

Notes:

Target device should be either local device or device backed by Fibre Channel LUN. Failover can recover the source SR to SR of type lvm or lvmohba at target.

Step 2. The target screen appears, expand the DR server to select the target volume, then scroll down to set the "**Replication options"**

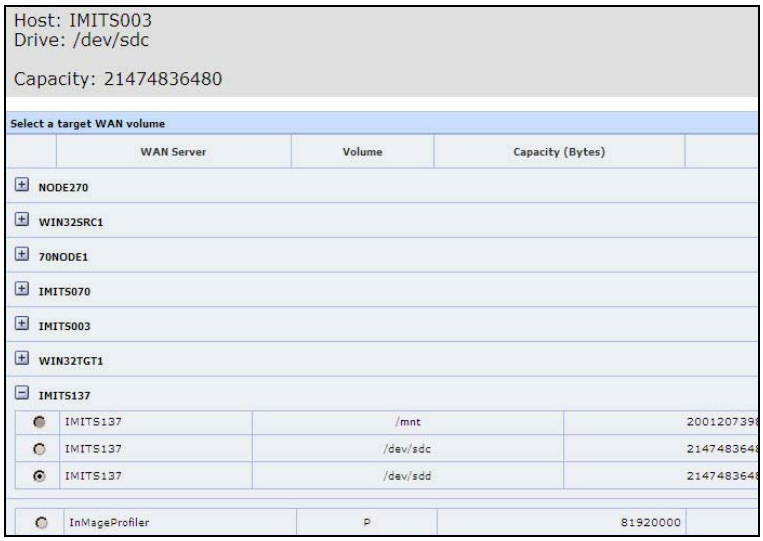


Figure 69

Step 3. All the process servers pointed to the CX server are listed here, you may choose a desired process server which will handle all the offload activities specific to this replication pairs. For better scalability you may point more process servers to the CX server. Select the process server and scroll down to set the "**Replication Options"**

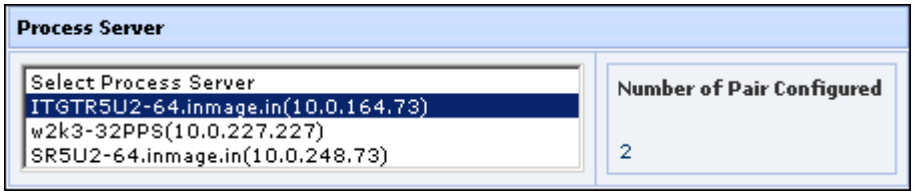


Figure 70

Step 4. Disable "**Media Retention"** option and click on "**Submit**"

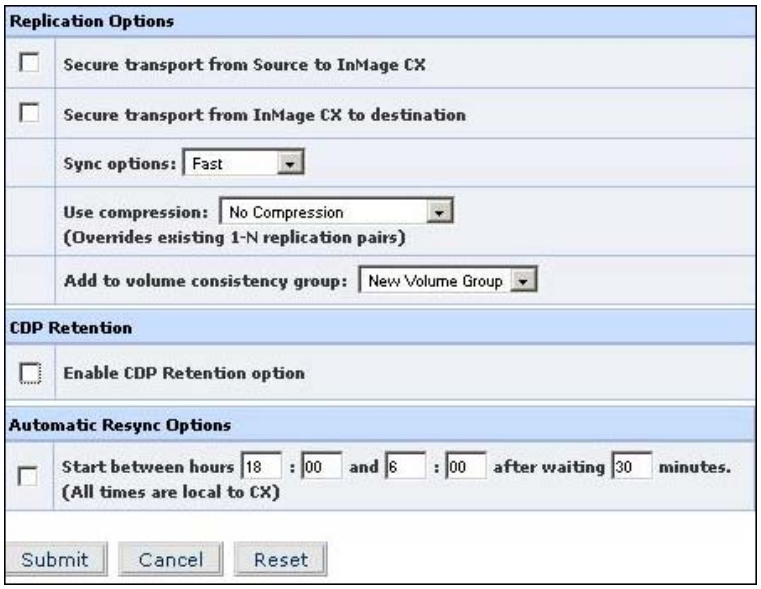


Figure 71

Step 5. Once the pair is configured, access the DR server to edit "**<VX installation folder>\etc\drscout.conf"**. Change the "**ReportFullDeviceNamesOnly"** from the default value 1 to 0**.** Doing this will stop exposing the device name to the CX UI.

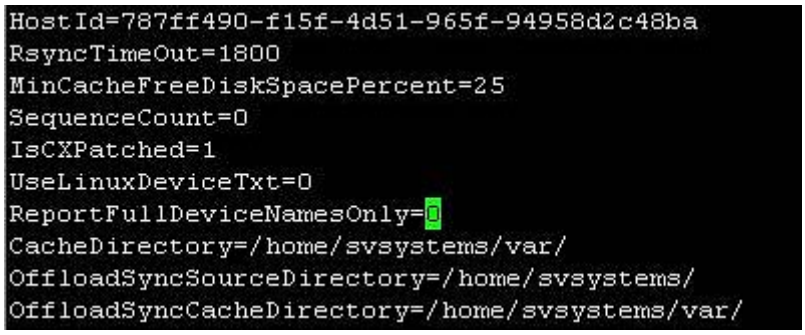


Figure 72

Step 6. Restart the VX agent service on the DR server

Step 7. Access the CX UI and navigate to "**Volume Protection**" -> "**Target**" then select the pair configured and click on "**View Details"**. Click on the "**Configure retention**" to configure media retention for this replication pair.

Figure 73

Step 8. In the next screen select the type of retention policy to be enforced for this replication pair. You may choose time based, space based or a combination of both. Click on "**Submit"** to start the replication pair

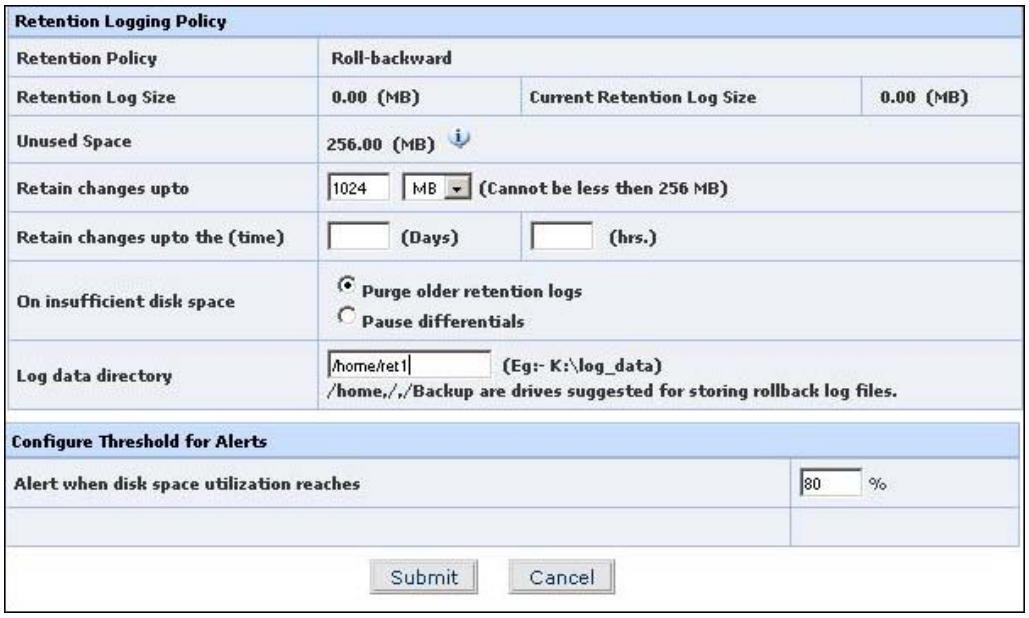


Figure 74

Step 9. The replication pair reaches "**Differential Sync"** as shown in the picture below

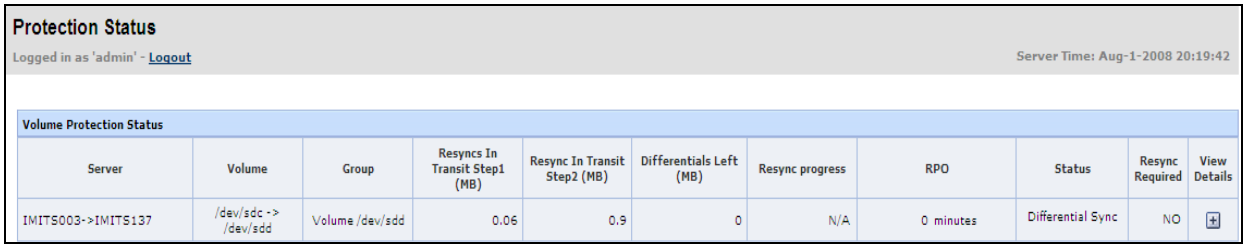


Figure 75

10.2 Consistency

To recover individual VM, you may choose to execute consistency tags on the virtual machine Proceed to issue consistency tags through the virtual machine's command prompt. Access the source command prompt then navigate to the VX agent installation path to issue the following command

./vacp –remote –v <*volume1*>,<*volume2*>… –serverdevice <*disk1*>,<*disk2*>,…-serverip <*ip address of vacp server*> -t <*name of the tag*>

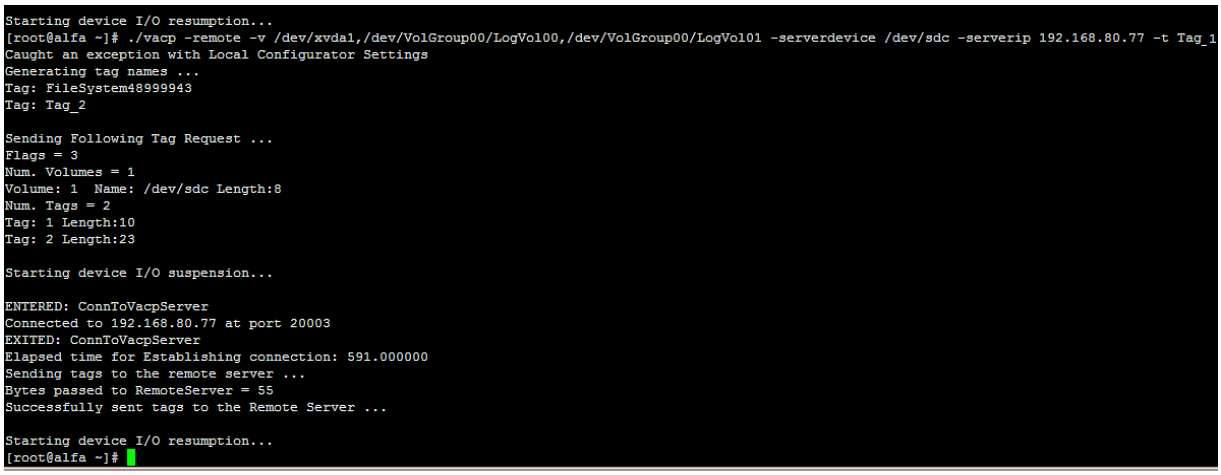


Figure 76

A tag can be issues at the Citrix XenServer host level also. Use **"vacp"** to issue tag on the block device(s). Option "-x" has to be used along with option "-v" to issue tag without any consistency mechanism. For example, to issue tag on dismounted volumes/raw devices.

./vacp [-v <*volume1*>,<*volume2*>..**] [-t** <*tag1,..*>**] [-x] [-h]**

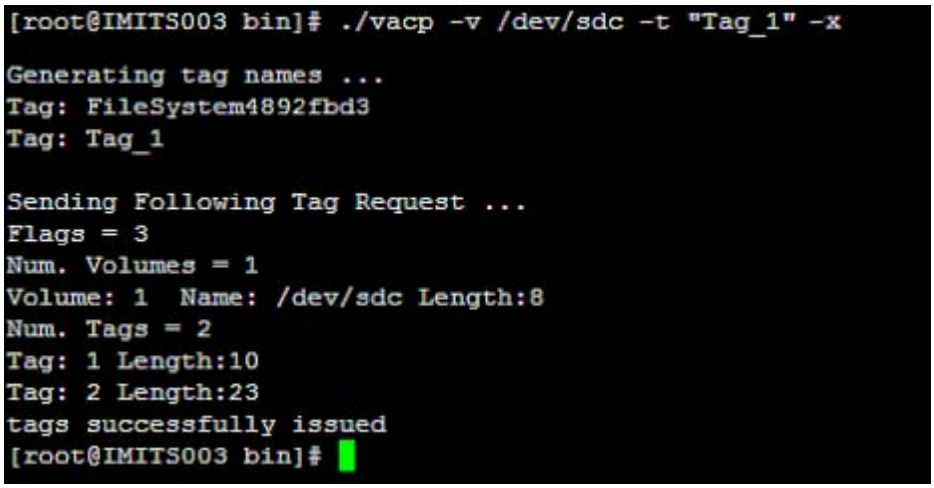


Figure 77

11 Recovery

11.1 Rollback

Step 1. To perform a recovery, switch to the CX UI and click on "**Recovery"**, then select the replication pair and click on "**Rollback".** A confirmation appears, click on "**Ok"** to continue

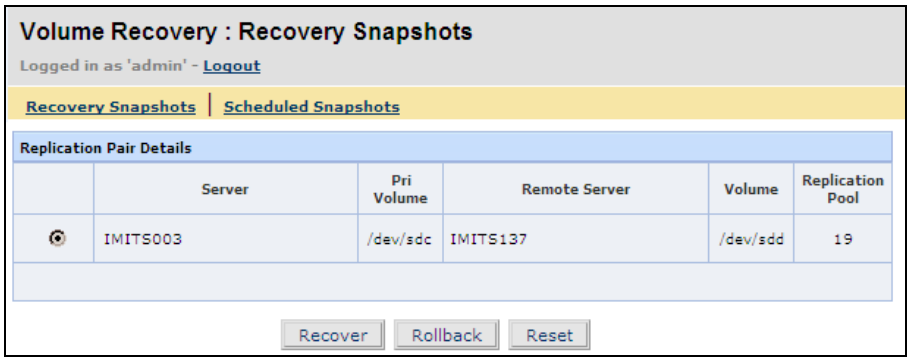


Figure 78

Step 2. The next screen opens up, select the option "**Using Application consistency & Event based**", this changes the interface below to "**Search Result"** and select the consistency tag and click on "**Save"**

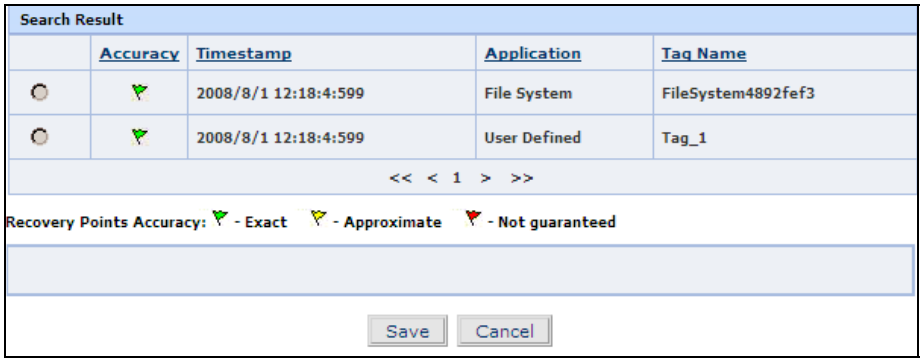


Figure 79

Step 3. Verify if the rollback of target volume back to the consistency point is finished.

11.2 Restore VMs

Run XenServer failover job to recover the storage repositories on the replicated devices & the virtual machines.

Step 1. Setup the failover job with source and destination as the DR Server with directory to be replicated as "**<VX_INSTALL_PATH>/failover_data**"

Figure 80

Step 2. Enter the post script for destination as "**<VX_INSTALL_PATH>/scripts/xenserver_failover_postscript_sr.sh**" and click on "**Finish"**

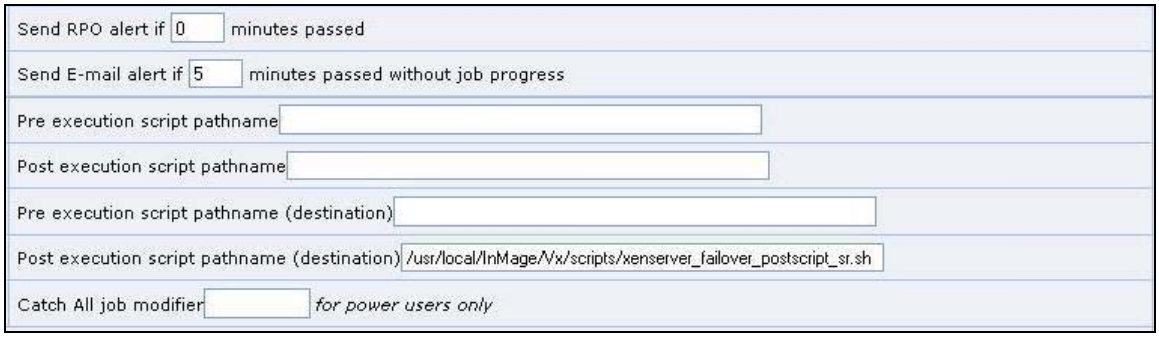


Figure 81

Step 3. Set the job to **"Run on demand"** and click on "**Finish"**

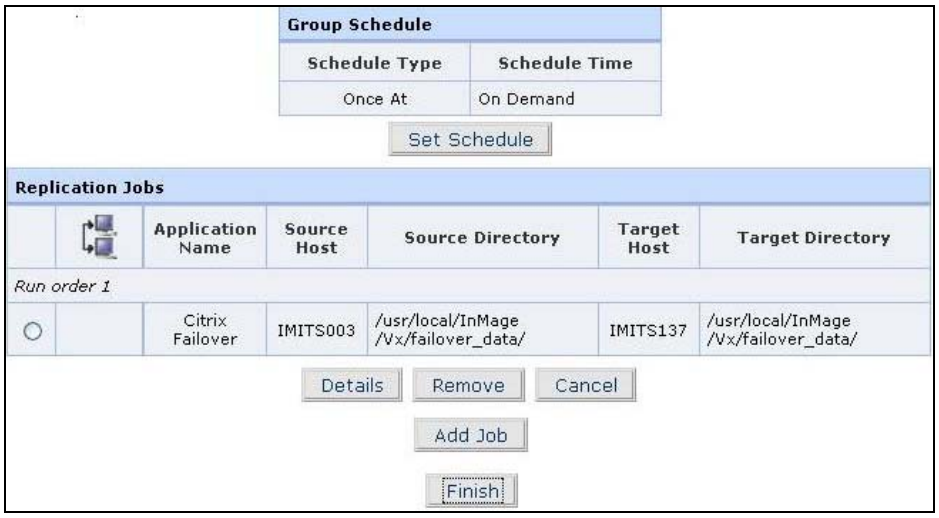


Figure 82

Step 4. Click on **"File Protection"** then select the failover job and click "**Start**" to recover all the SRs and to restore all the VMs to the target XenServer host.

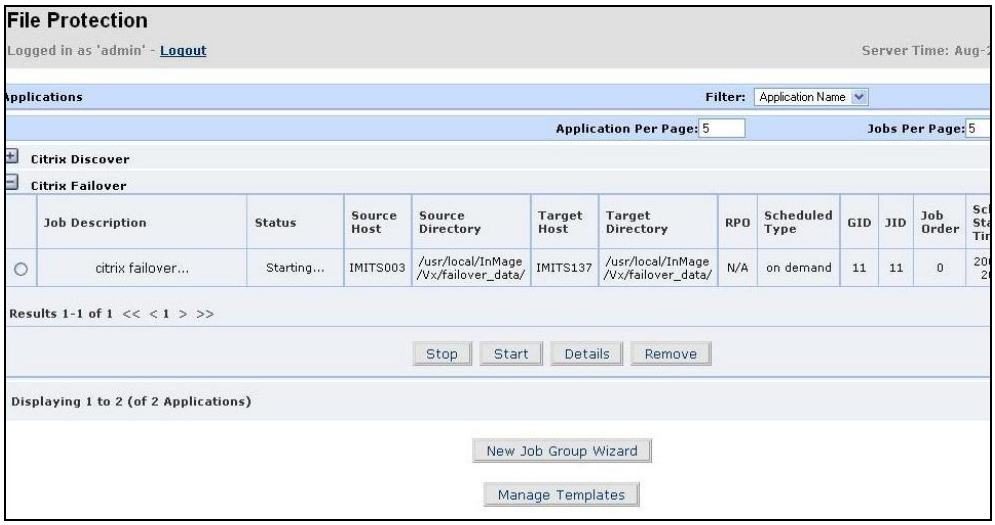


Figure 83

Caution:

The MAC addresses of the network interfaces & DHCP configured IPs of the source VM might not be retained after failover.

Notes:

In case of an unsuccessful failover, run <VX_INSTALL_PATH>/"xenserver_reset_target.sh" to reset the status (to state before the failover attempt) of target XenServer before a re-attempt of failover.

Currently we do not support recovering virtual machines that span across multiple storage repositories.

12 Failback

To perform a failback in rollback approach, set a reverse replication from the target SR to the source SR. Similarly, to perform a failback from snapshot approach, perform a reverse replication from the snapshot SR to the source SR. In this example, we perform a failback from snapshot SR.

Failback is performed in four steps

- Reverse replication: A reverse replication is set to update the production volume with all the changes occurred during its outage
- Consistency tag: Consistency tags is issued to which a rollback will be performed
- Rollback: The target volume is rolled back to a consistency tag
- Start guest machine: The guest machine should boot up with the rolled back volume.

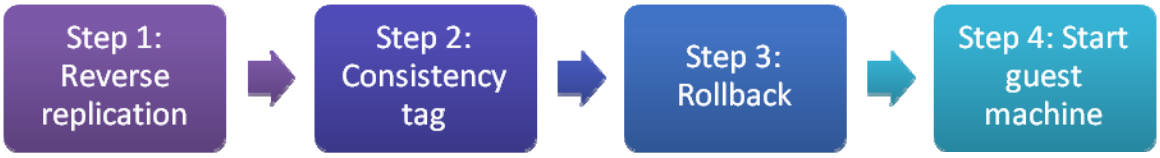


Figure 79

12.1 Reverse replication

Step 1. Set a reverse replication from the snapshot SR to the source SR with media retention. The section 11.1 VX Replication can be referred.

12.2 Consistency tag

Step 2. Once the replication pair reaches "**Differential Sync",** access the guest machine then navigate to the inmage agent installation path to issue a consistency tag. The section 11.2 Consistency can be referred.

12.3 Rollback

Step 3. Rollback the target volume based on the above issued consistency tag. Refer to the section Rollback approach on page 30 to perform a rollback.

12.4 Start the guest machine

Step 4. Once the rollback is complete, access the XenCenter interface to start the guest machines

Part 3: Backing up XenServer resource pool through LV replication

13 Introduction to the solution

This solution document describes how to backup/restore a XenServer pool to another Citrix XenServer. The production Citrix XenServer will be referred to as the source Citrix XenServer and the DR Citrix XenServer will be referred to as a target Citrix XenServer.

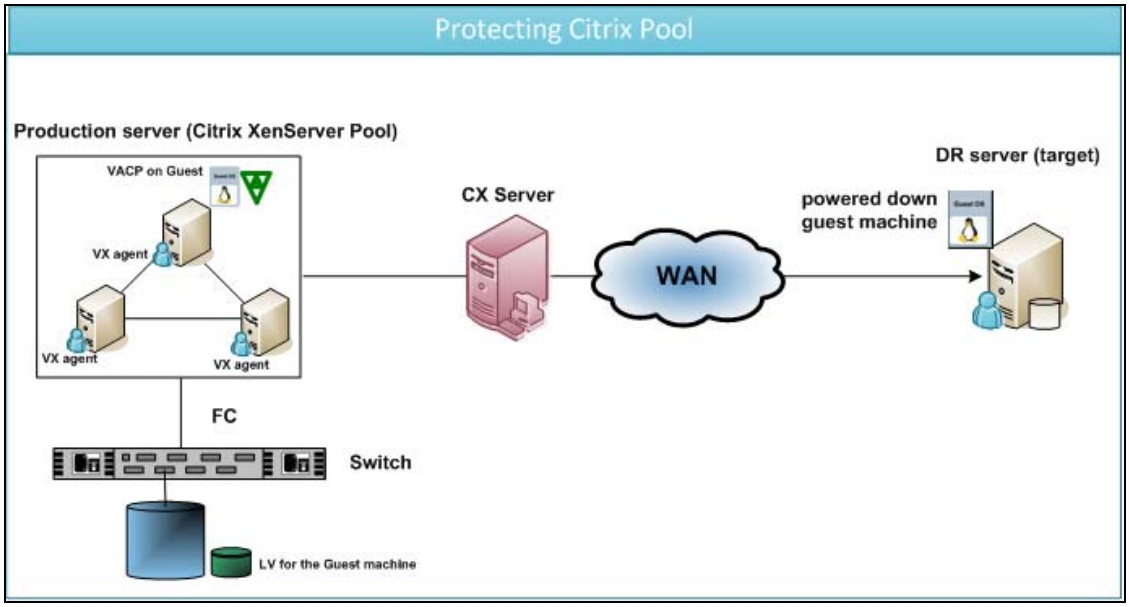


Figure 84

The solution is divided into three steps, i.e.

Prepare

This section includes installing the CX server and VX agents on the all XenServer pool servers and the target Citrix XenServer for DR. Then create the guest machines on target that correspond to the source guest machines with the same disk size.

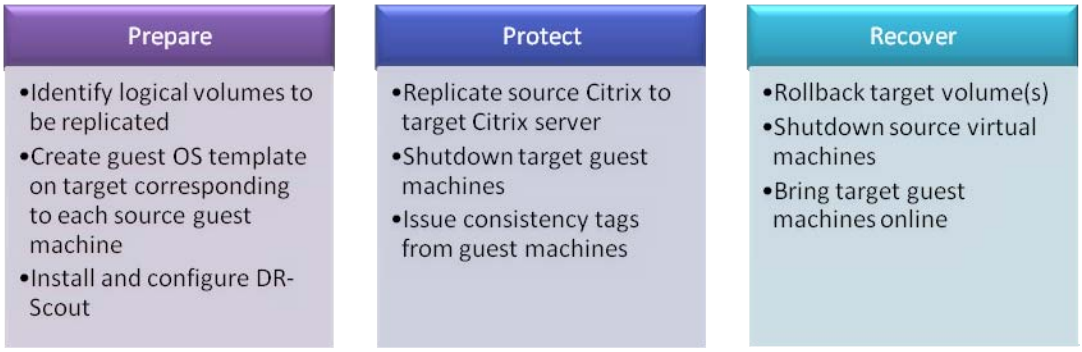


Figure 85

Protect

Once the guest machines are created on the target shutdown the guest machines and proceed to set the replication pair(s) from source Citrix to target Citrix server. Shutdown the target guest machine(s). Set a consistency job to issue consistency tags on the source volume(s) at regular intervals.

Recover

Stop the source guest machines and rollback the target volumes either through the CX UI or through CLI. Then start the target guest machines.

Caution:

This solution is for virtual machines based on LVMs.
Ensure that you have execute privileges for vacp scripts

14 Prepare

Access the target Citrix Xen Server and create the guest machines with the same disk capacity. Install the VX agent on all pool members

15 Protect

15.1 Set replication pairs

Access the CX UI to replicate the guest machines (these are virtual machines on the production Citrix XenServer pool). Guest machines belonging to a pooled Citrix XenServer will appear as cluster volumes.

Step 1. Click on "**Volume protection"** then expand the "**Xen Pools**" to find the cluster group corresponding to the guest machine. Click on "**Start Replication**"

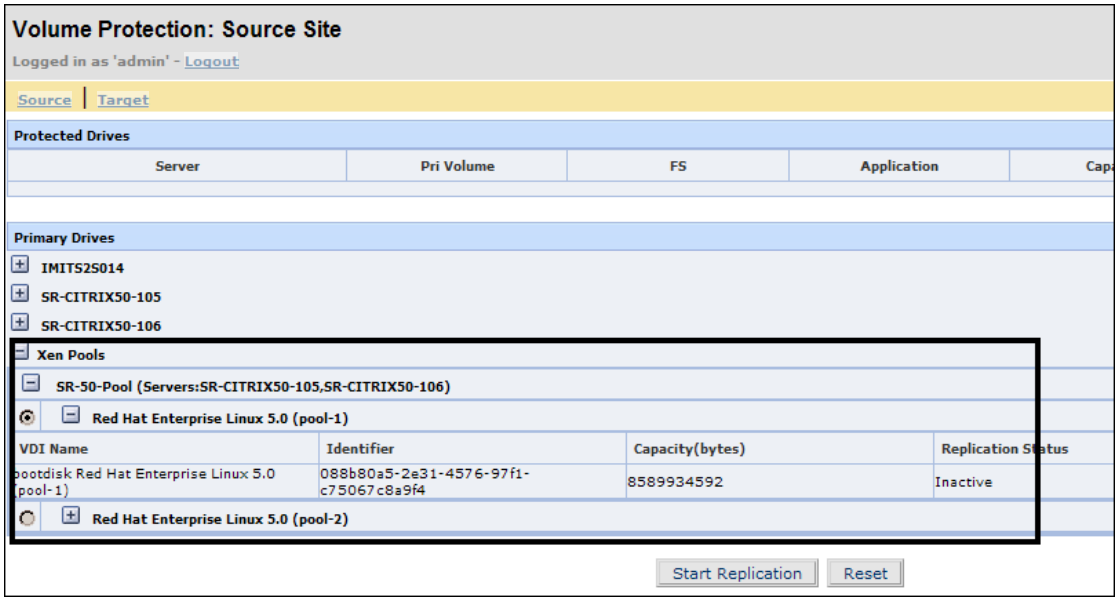


Figure 86

Step 2. Select the volume from the group and click on "**Next**"

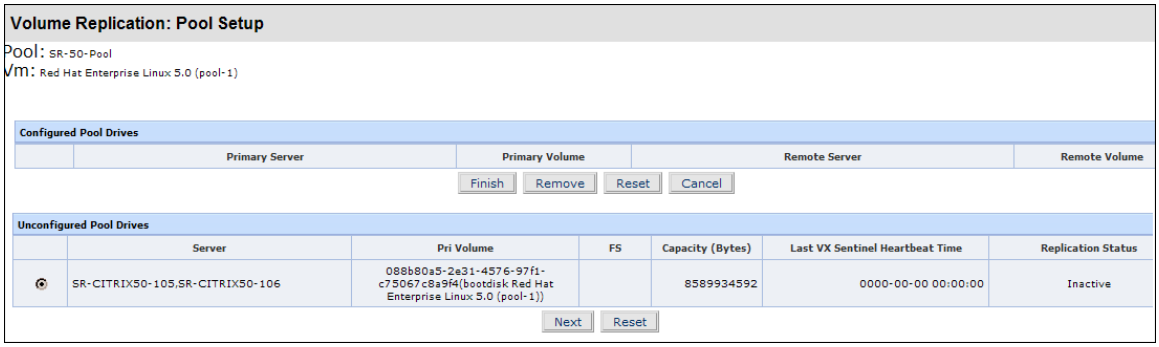


Figure 87

Step 3. The next screen opens up, expand the target Citrix Xen Server to select the target volume, then scroll down to set the "**Replication Options**"

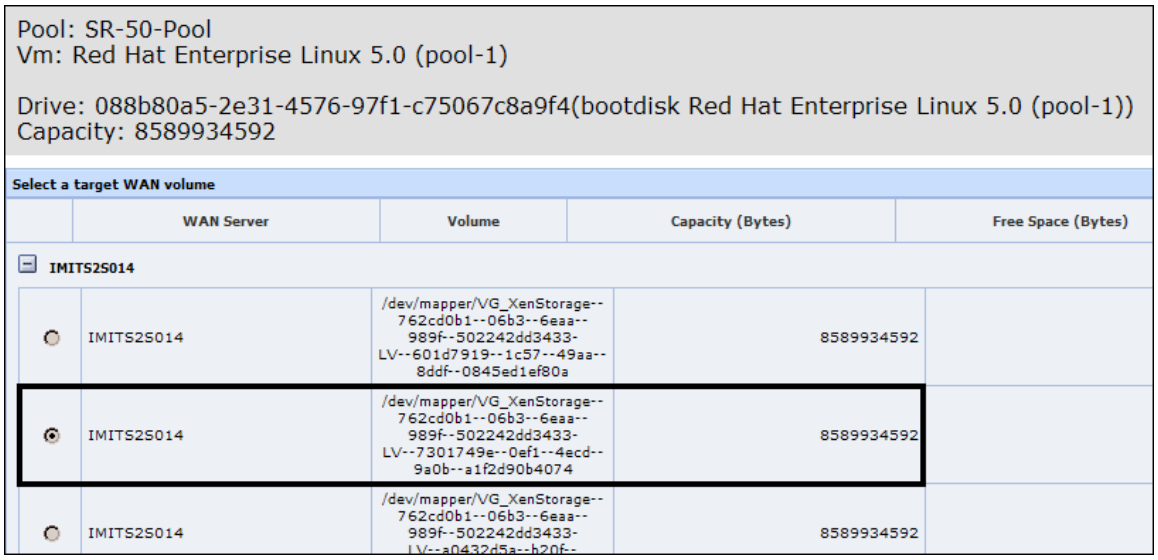


Figure 88

Step 4. All the process servers pointed to the CX server are listed here, you may choose a desired process server which will handle all the offload activities specific to this replication pairs. For better scalability you may point more process servers to the CX server. Select the process server and scroll down to set the "**Replication Options"**

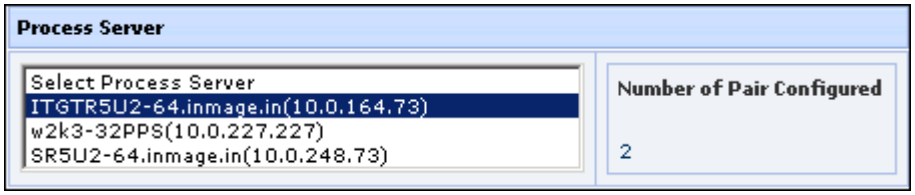


Figure 89

Step 5. Ensure that the "**Media Retention"** option is enabled, the rest of the features are optional. Click on "**Submit"** to continue

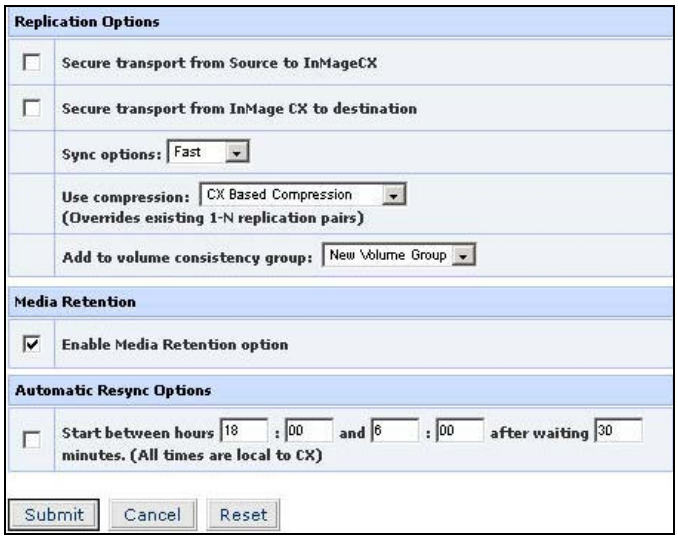


Figure 90

Step 6. By enabling the Media Retention option, you will require to define a retention policy. Select the desired retention policy such as time based, space based or a combination of both. Click on "**Submit"** to continue

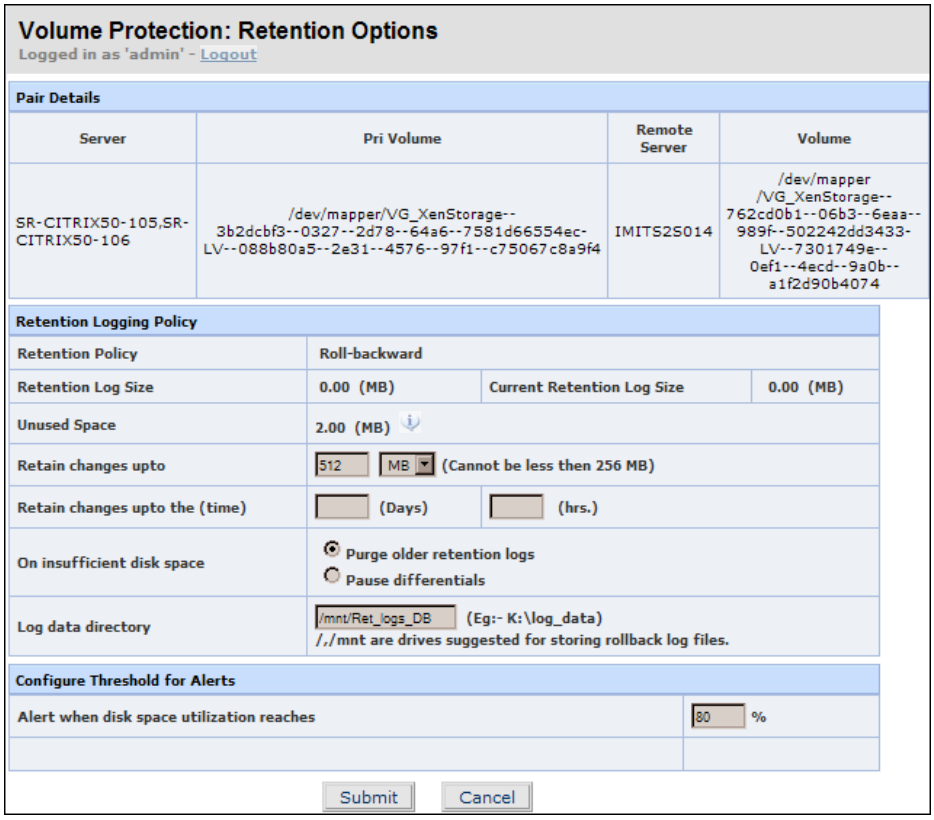


Figure 91

Step 7. Select the replication pair and click on "**Finish"** to start the replication pair

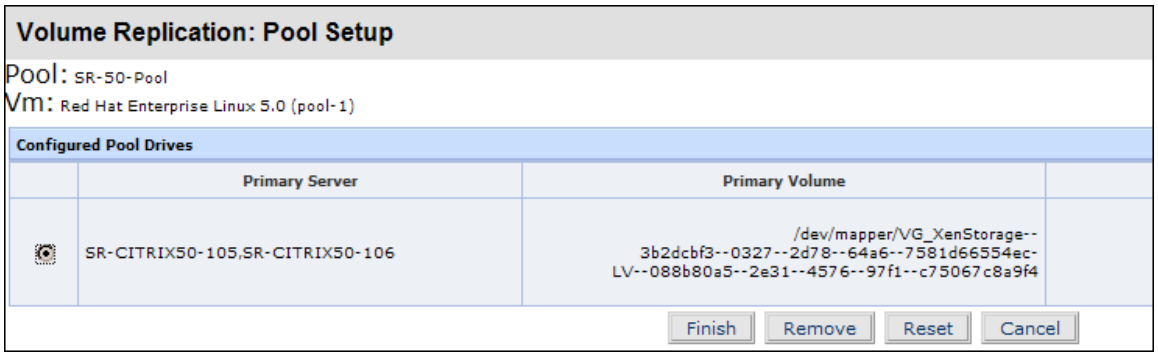
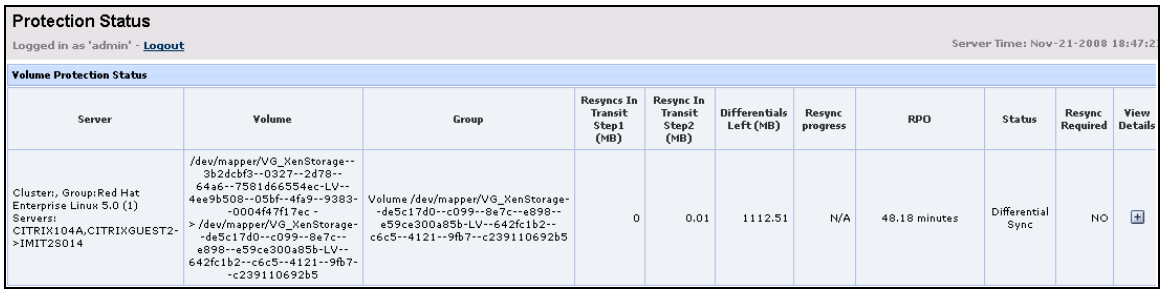


Figure 92

Step 8. This will start the replication pair. Shutdown the target guest machines. The replication pair will reach "**Differential Sync"**



Protection Status

Logged in as 'admin' - Logout

Server Time: Nov-21-2008 18:47:2

Volume Protection Status

Server	Volume	Group	Resyncs In Transit Step1 (MB)	Resync In Transit Step2 (MB)	Differentials Left (MB)	Resync progress	RPO	Status	Resync Required	View Details
Cluster:, Group:Red Hat Enterprise Linux 5.0 (1) Servers: CITRIX104A,CITRIXGUEST2->IMIT2S014	/dev/mapper/VG_XenStorage--3b2dcbf3--0327--2d78--64a6--7581d66554ec-LV--4ee9b508--05bf--4fa9--9383--0004f47f17ec -> /dev/mapper/VG_XenStorage--de5c17d0--c099--8e7c--e898--e59ce300a85b-LV--642fc1b2--c6c5--4121--9fb7--c239110692b5	Volume /dev/mapper/VG_XenStorage--de5c17d0--c099--8e7c--e898--e59ce300a85b-LV--642fc1b2--c6c5--4121--9fb7--c239110692b5	0	0.01	1112.51	N/A	48.18 minutes	Differential Sync	NO	⊞

Figure 93

Step 9. Make sure, after shutting down the VM, all the protected logical volumes (corresponding to the virtual disks of the VM that was shutdown) are available or not. If any protected logical volume is not available, run **"lvchange –ay <Logical_Volume>"** to make the logical volume available.

15.2 Consistency tags

Access the source guest machine and issue consistency tags. These tags later act as markers to which you may perform a recovery. In this example consistency tag is issued manually, you may however choose to schedule this through a cron job.

Step 1. To issue a consistency tag, you will need to download the appropriate vacp script. You can download this off the CX UI by navigating to "**System-> Agent installers"**

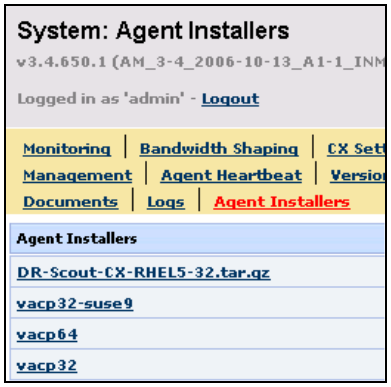


Figure 94

Step 2. Ensure that the script is given execute privilege before you issue the following command

`./vacp32 -v <LogicalVolume> -remote -serverdevice < source volume > -t <Name of the tag> -serverip <Citrix XenServer on which the guest is active> -serverport 20003`

```
[root@citrixguest1 tmp]# ./vacp32 -v /dev/mapper/VolGroup00-LogVol00 -remote -se
rverdevice /dev/VG_XenStorage-3b2dcbf3-0327-2d78-64a6-7581d66554ec/LV-088b80a5-2
e31-4576-97f1-c75067c8a9f4 -t Tag1 -serverip 10.0.104.106 -serverport 20003
Caught an exception with Local Configurator Settings
Generating tag names ...
Tag: FileSystem4946c06e
Tag: Tag1

Sending Following Tag Request ...
Flags = 3
Num. Volumes = 1
Volume: 1  Name: /dev/VG_XenStorage-3b2dcbf3-0327-2d78-64a6-7581d66554ec/LV-088b
80a5-2e31-4576-97f1-c75067c8a9f4 Length:95
Num. Tags = 2
Tag: 1 Length:9
Tag: 2 Length:23

Starting device I/O suspension...

ENTERED: ConnToVacpServer
Connected to 10.0.104.106 at port 20003
EXITED: ConnToVacpServer
Elapsed time for Establishing connection: 4291.000000
```

Figure 95

16 Recover

To recovery you will need to roll back the target volume back to a consistent point. Ensure that the source guest machines are shutdown before performing a rollback.

Step 1. Click on "**Recovery"** on the CX UI, select the replication pair to be rolled back and click on "**Rollback".** You will be prompted for a confirmation, click on "**Ok"** to continue

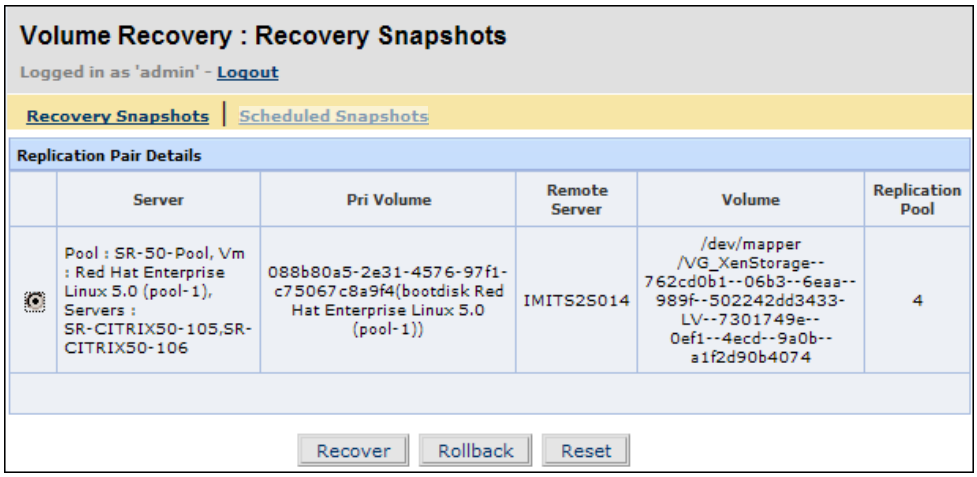


Figure 96

Step 2. The next screen appears, select the "**Using Application consistency & Event based"** option

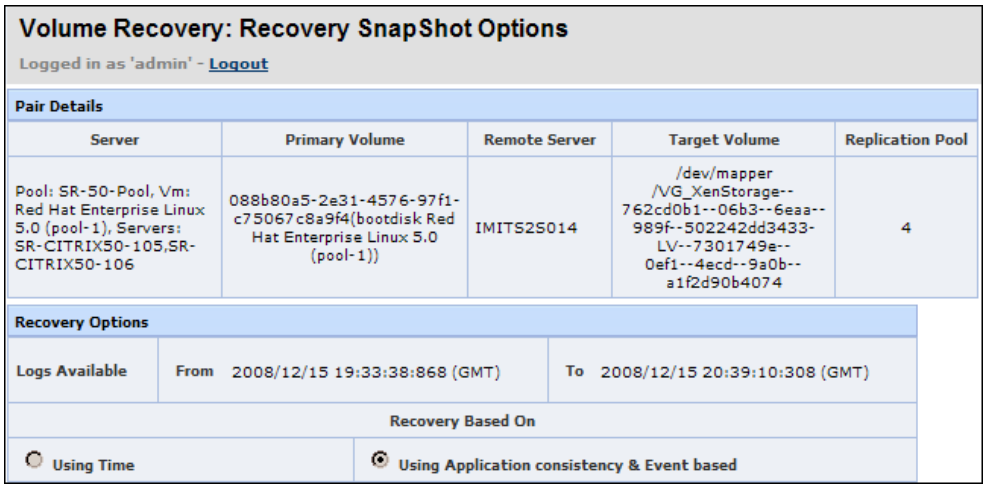


Figure 97

Step 3. You should see the interface change to the search result as shown below. Select the desired consistency tag to which the target volume will be rolled back and click on "**Save"**

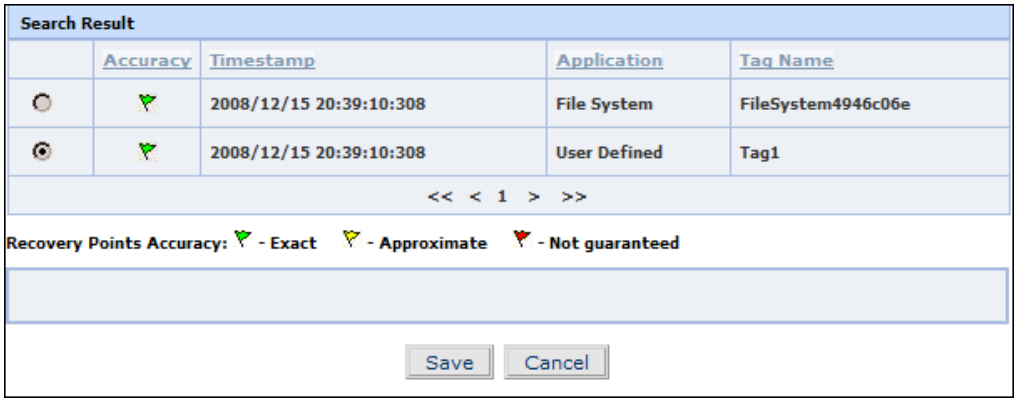


Figure 98

Step 4. The roll back will soon complete then proceed to the next step

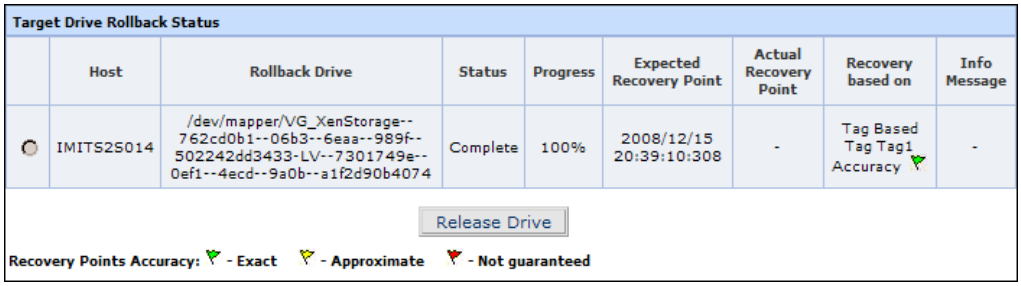


Figure 99

Step 5. Start the guest machines on the target Citrix Xen Server, they should come up normally without requiring any configuration changes

Part 4: Pool – Pool LV Solution

This solution document explains backing up and restoring an entire XenServer resource pool to a DR XenServer pool. The source XenServer pool will be referred to as the production XenServer pool and the target XenServer pool will be referred to as a DR XenServer pool.

17 Introduction to the solution

The solution is divided into three steps, i.e.

Prepare
This section includes installing the CX server and VX agents on the all members of the production as well as DR XenServer pool members. Then create the virtual disks in the target SR that are of the same size as that of the virtual disks of the guest machines to be protected.

Protect
Once the virtual disks are created on the target, proceed to set the replication pair(s) from production XenServer resource pool to corresponding virtual disk at DR XenServer resource pool. Set consistency job(s) for each protected guest machine to issue consistency tags on the source volume(s) at regular intervals.

Failover
There are two approaches to perform a failback. The rollback approach requires you to stop the replication pair and then perform a failover. The snapshot approach on the other hand is non disruptive and preferred when testing the solution.

Failback
When the production XenServer is back online and ready to resume its role, a failback is performed to update the production XenServer with all the changes occurred during its outage. This is similar to that of a planned failover.

 **Caution:**

Do not associate the virtual disks created in the target SR with any of the VM's as long as the replication pair is alive.
Ensure that you have execute privileges for vacp scripts.

18 Prepare

This section includes installing the CX server and VX agents on the all members of the production as well as DR XenServer pool members.

Create the virtual disks, within shared SR of DR XenServer resource pool, that are of the same size as the virtual disks of the guest machines to be protected.

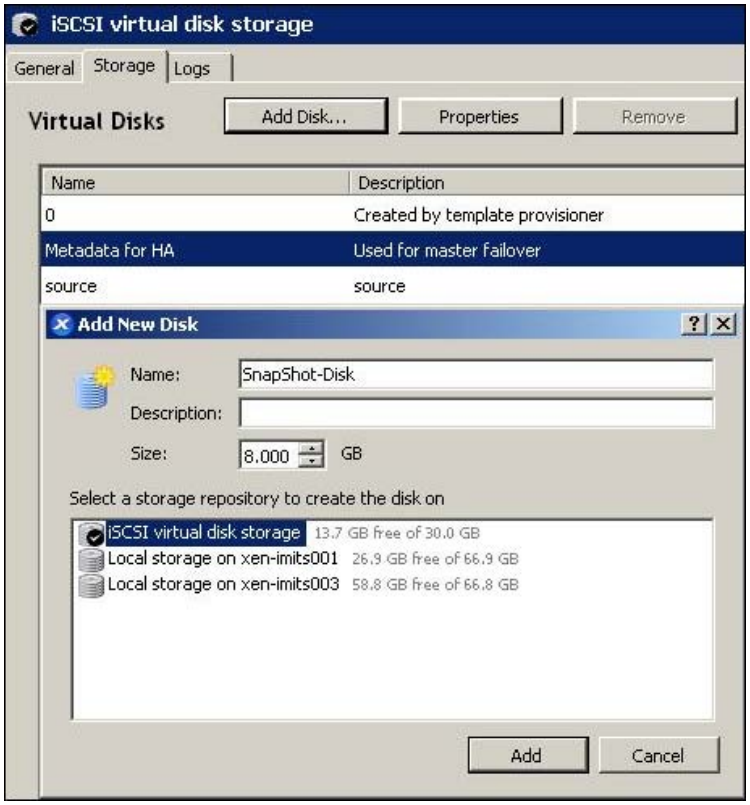


Figure 100

19 Protect

19.1 Set replication pairs

Step 1. Switch to the DR XenServer pool to identify the logical volume that corresponds to the newly created virtual disk then run the command "**`lvchange -ay <`***DEVICE_PATH***`>`**" on a pool member that acts as target for the replication pair. This will activate the logical volume on that pool member.

```
[root@xen-imits001 ~]# lvchange -a y /dev/VG_XenStorage-0e54c82e-5991-8093-6c91-dfebc899bc40/LV-73f07999-ba97-4a66-a71d-2356246dd1c4
```

Figure 101

Step 2. Access the CX UI & replicate all the virtual disks of the guest machines on the production XenServer pool). Guest machines belonging to a pooled Citrix XenServer will appear as Xen Pool volumes. Click on "**Volume protection"** then expand "**Xen Pools**" to find the virtual disk corresponding to the guest machine. Click on "**Start Replication**"

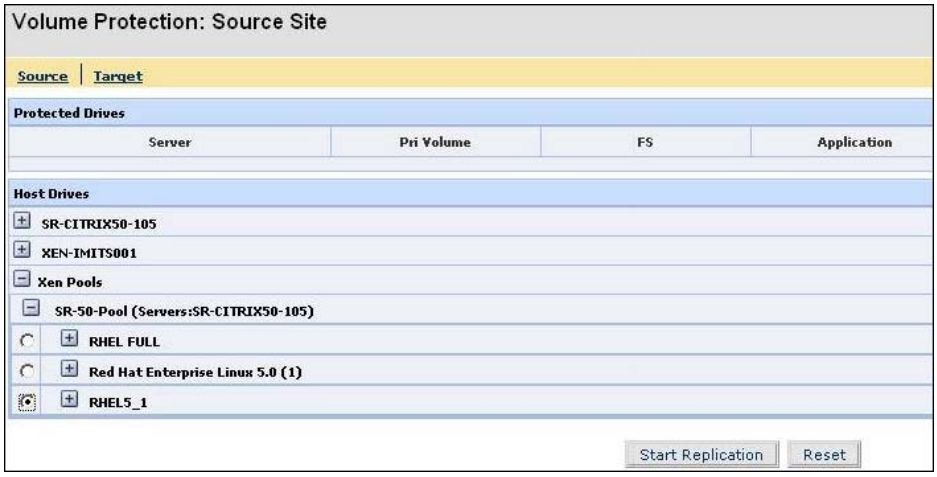


Figure 102

Step 3. In the next screen, expand the target XenServer pool member to select the target volume, then scroll down to set the "**Replication Options**"

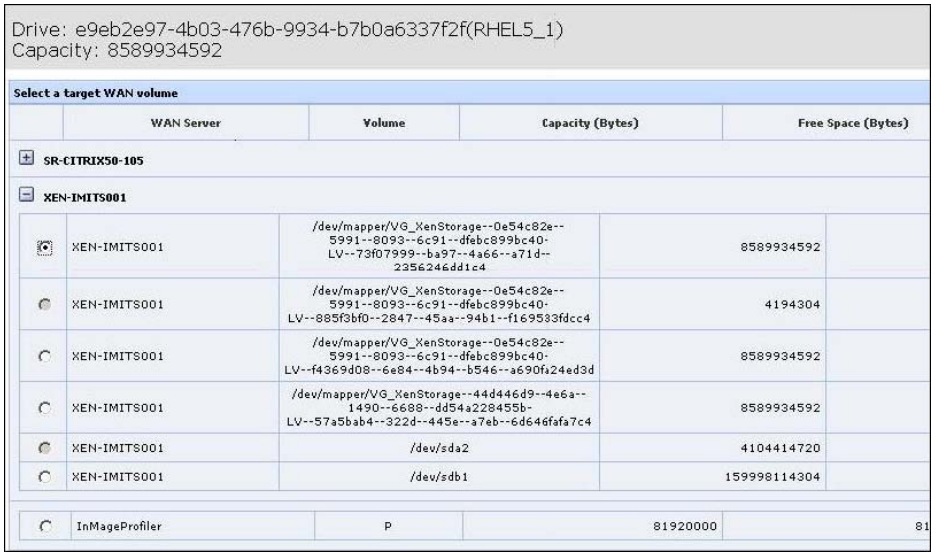


Figure 103

Step 4. All the process servers pointed to the CX server are listed here, you may choose a desired process server which will handle all the offload activities specific to this replication pairs. For better scalability you may point more process servers to the CX server. Select the process server and scroll down to set the "**Replication Options"**

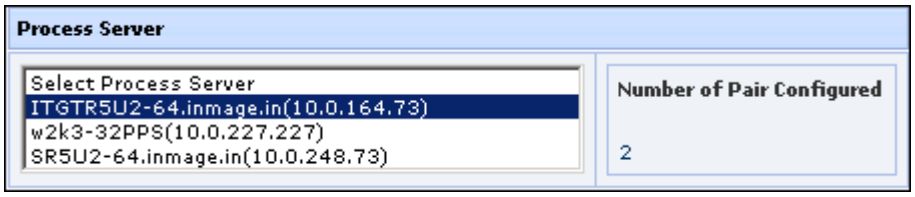


Figure 104

Step 5. Ensure that the "**Media Retention"** option is enabled, the rest of the features are optional. Click on "**Submit"** to continue

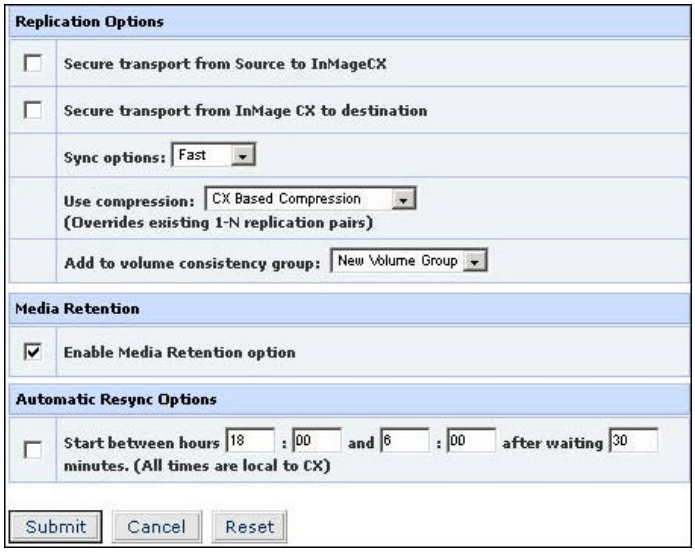


Figure 105

Step 6. By enabling the Media Retention option, you will require to define a retention policy. Select the desired retention policy such as time based, space based or a combination of both. Click on "**Submit"** to continue

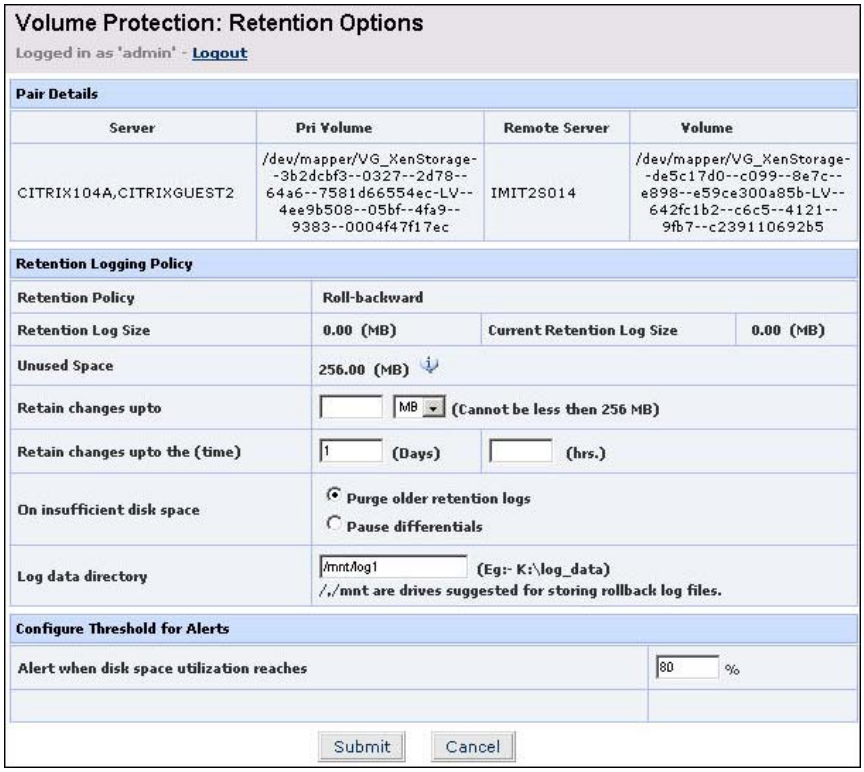


Figure 106

Step 7. Select the replication pair and click on "**Finish"** to start the replication pair.

Step 8. This will start the replication pair. The replication pair will reach "**Differential Sync"**

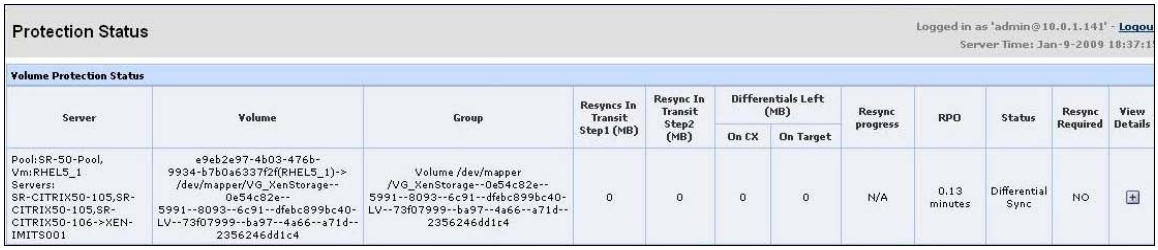


Figure 107

19.2 Consistency tags

Access the source guest machine and issue consistency tags. These tags later act as markers to which you may perform a recovery. In this example consistency tag is issued manually, you may however choose to schedule this through a cron job.

Step 1. To issue a consistency tag, you will need to download the appropriate vacp script. You can download this off the CX UI by navigating to "**System-> Agent installers"**

Figure 108

Ensure that the script is given execute privilege before you issue the following command

`./vacp32 –v <`*`volume group`*`> -remote –serverdevice <` *`source volume`* `> -t <`*`Name of the tag`*`> -serverip <`*`Citrix XenServer on which the guest is active`*`> -serverport 20003`

Figure 109

20 Failover

20.1 Rollback approach

To recover you will need to roll back the target volume back to a consistent point. Ensure that the source guest machines are shutdown before performing a rollback.

Step 1. Click on "**Recovery"** on the CX UI, select the replication pair to be rolled back and click on "**Rollback".** You will be prompted for a confirmation, click on "**Ok"** to continue

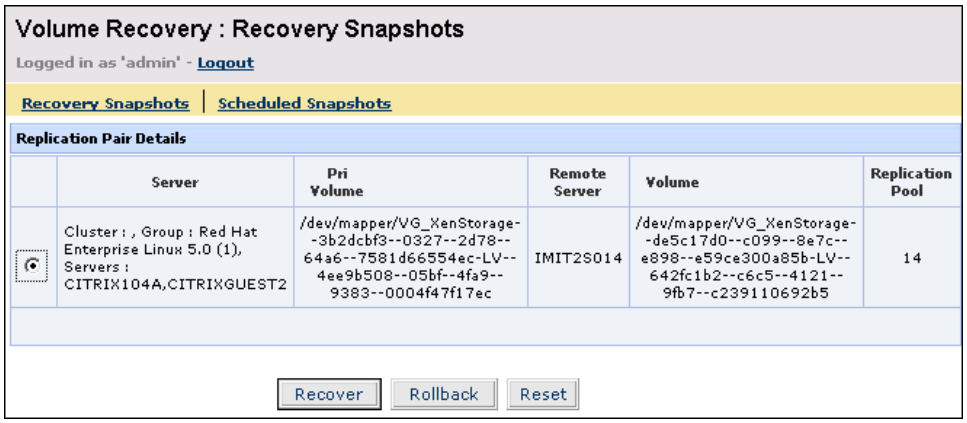


Figure 110

Step 2. The next screen appears, select the "**Using Application consistency & Event based"** option

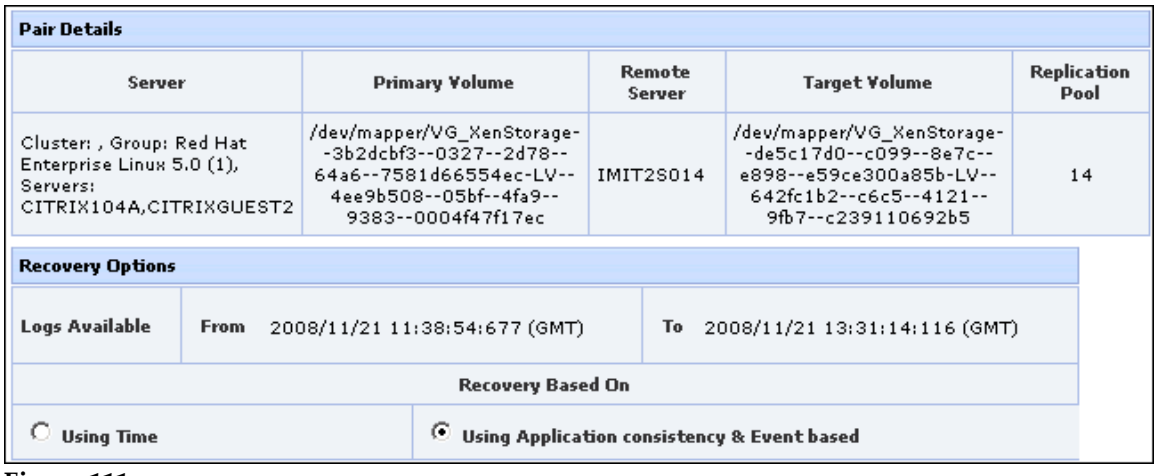


Figure 111

Step 3. You should see the interface change to the search result as shown below. Select the desired consistency tag to which the target volume will be rolled back and click on "**Save"**

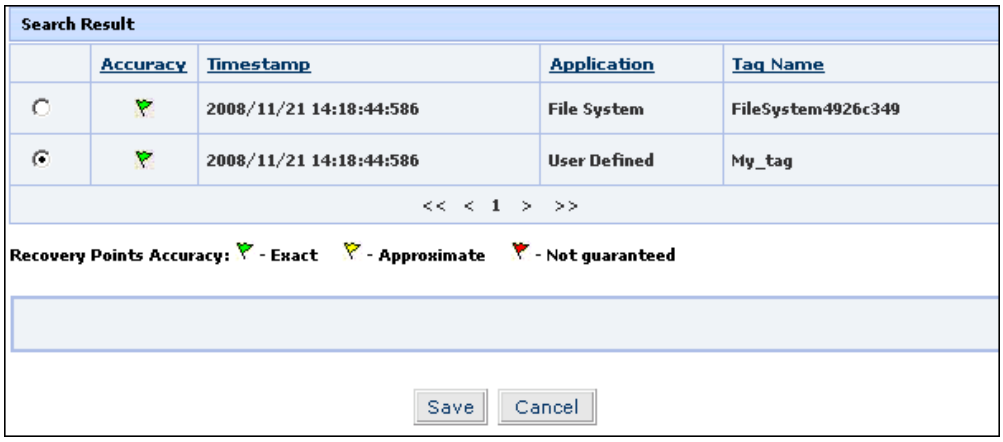


Figure 112

Step 4. The rollback will soon complete then proceed to the next step

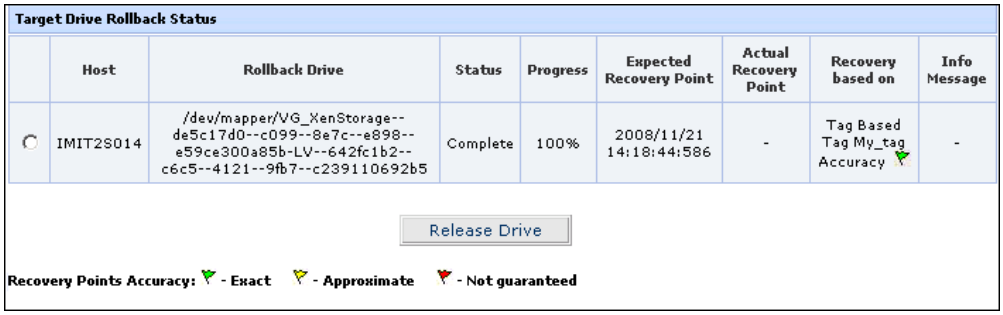


Figure 113

Step 5. Start the guest machines on the target Citrix XenServer pool, they should come up normally without requiring any configuration changes

20.2 Snapshot Approach

Rather than rolling the target volume back and stopping the replication pair, you may choose the snapshot approach of the target volume there by keeping the replication pair intact.

20.2.1 Prepare for snapshot

Step 1. In this approach we will first create a virtual disk (SnapShot-Disk) in the target SR

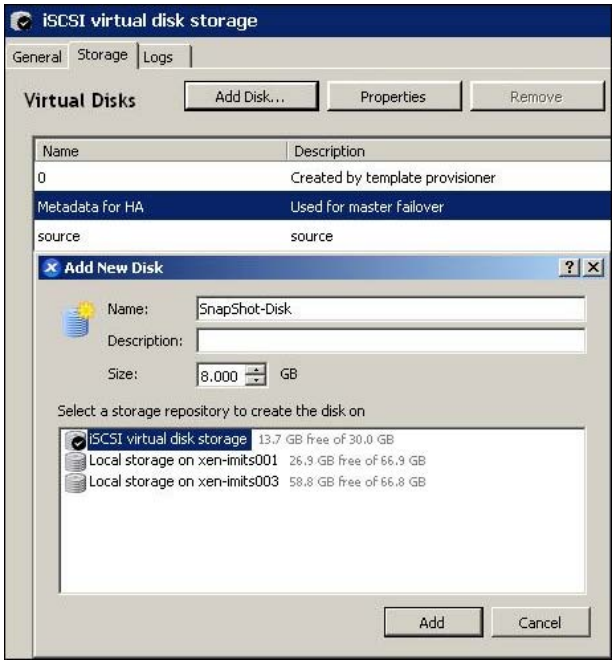


Figure 114

Step 2. Make this virtual disk available to the CX by changing its status using the command "lvchange –ay <DEVICE_PATH>".

```
[root@xen-imits001 ~]# lvchange -a y /dev/VG_XenStorage-0e54c82e-5991-8093-6c91-dfebc899bc40/LV-73f07999-ba97-4a66-a71d-2356246dd1c4
```

20.2.2 Perform snapshot

Step 1. Click on "**Recovery"** on the CX UI, select the replication pair to be rolled back and click on "**Recover" and** click on "**Ok"** to continue

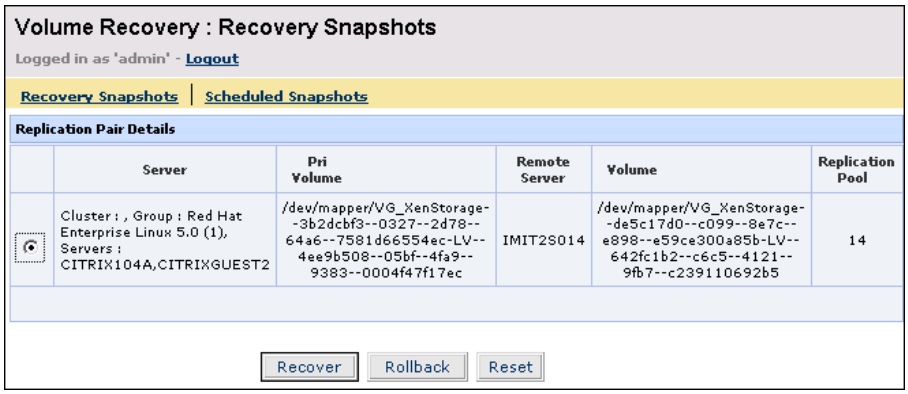


Figure 115

Step 2. The next screen appears, select the "**Using Application consistency & Event based"** option

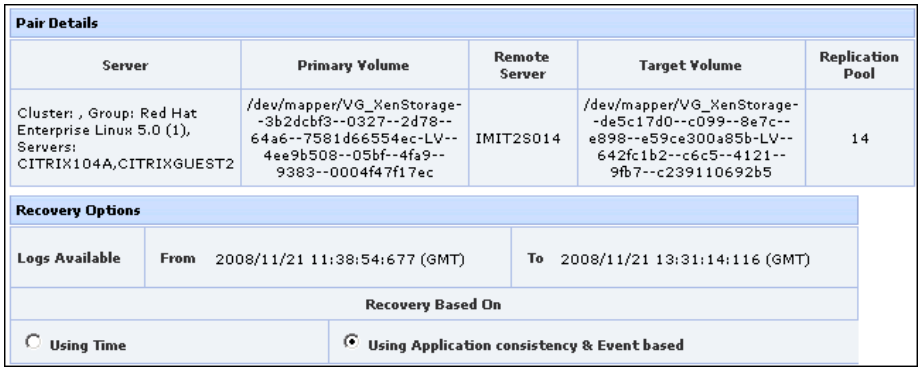


Figure 116

Step 3. Use Physical and then select the Drive corresponding to the new SnapShot-Disk VDI created for this purpose. Now take a snapshot of the target, onto this disk.

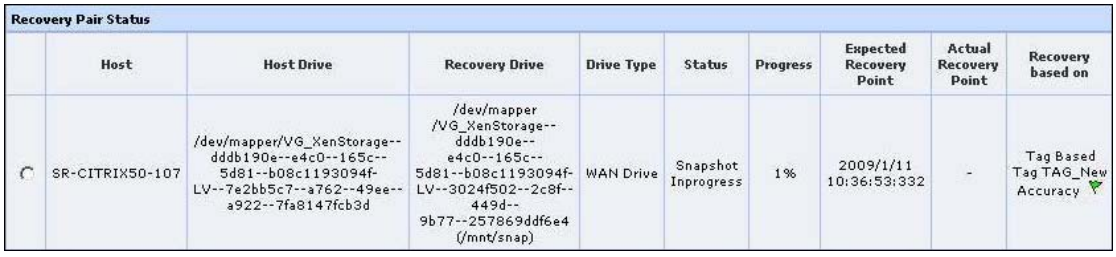


Figure 117

Step 4. Create a new VM corresponding to that of the source guest machine in Target system. Now shutdown this VM.

Step 5. Remove the original disk from this VM and attach the snapshot disk to this VM.

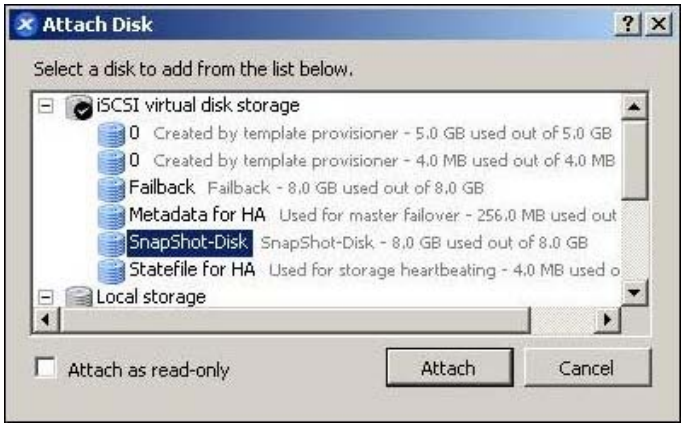


Figure 118

Step 6. Start the VM, it should boot up normally.

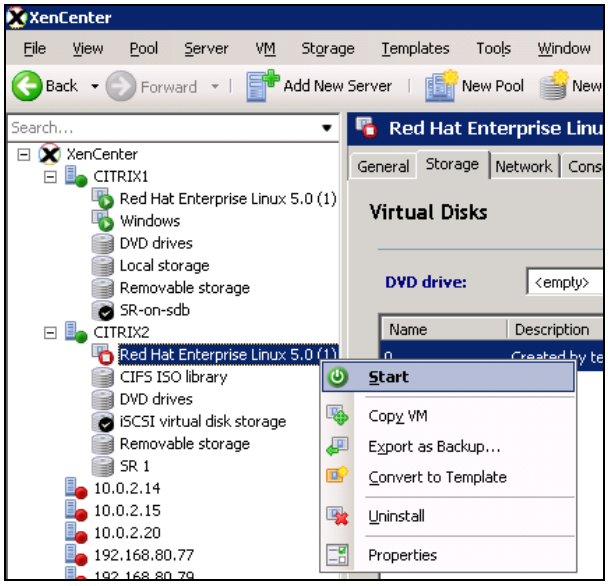


Figure 119

21 Failback

21.1 Rollback approach

To perform a failback in rollback approach, set a reverse replication from the target Pool to the source Pool. Now perform a reverse replication from the Target Drive to the source VDI (newly created).

Failback is performed in four steps

- Reverse replication: A reverse replication is set to update the production volume with all the changes occurred during its outage
- Consistency tag: Consistency tags is issued to which a rollback will be performed
- Rollback: The target volume is rolled back to a consistency tag
- Start guest machine: The guest machine should boot up with the rolled back volume.

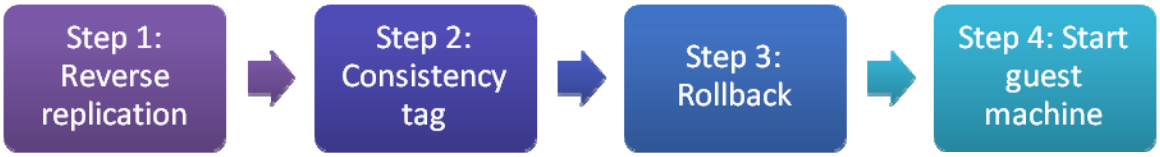


Figure 79

Reverse replication

Step 1. Set a reverse replication of the Target VM to the newly created VDI in the source SR with media retention.

Consistency tag

Step 2. Once the replication pair reaches "**Differential Sync",** access the guest machine then navigate to the inmage agent installation path to issue a consistency tag. The section 11.2 Consistency can be referred.

Rollback

Step 3. Rollback the target volume based on the above issued consistency tag. Refer to the section Rollback approach on page 30 to perform a rollback.

Start the guest machine

Step 4. Once the rollback is complete, access the XenCenter interface to start the guest machines

21.2 Snapshot approach

To perform a failback from snapshot approach, we need to create **two** new VDI in Source SR and activate the VDI in one of the Host system in Source Pool. One VDI will be used to set up a replication pair and the other will be used to take snapshot of the replication pair based on some consistency tag. Now perform a reverse replication from the Target snapshot Drive to the source VDI (newly created).

Failback is performed in four steps

- Reverse replication: A reverse replication is set to update the production volume with all the changes occurred during its outage
- Consistency tag: Consistency tags is issued to which a rollback will be performed
- Snapshot: Take one snapshot of the replication pair based on a consistency tag
- Attach the snapshot drive : Now attach this snapshot drive to a newly created VM.
- Start guest machine: The guest machine should boot up with the rolled back volume.

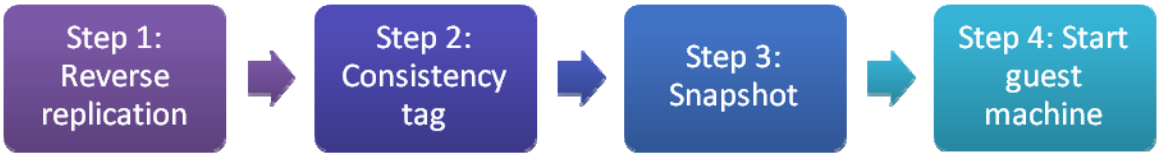


Figure 79

Reverse replication

Step 1. Set a reverse replication of the Target VM to the newly created VDI in the source SR with media retention.

Consistency tag

Step 2. Once the replication pair reaches "**Differential Sync",** access the guest machine then navigate to the inmage agent installation path to issue a consistency tag. The section 11.2 Consistency can be referred.

Snapshot

Step 3. Use the second VDI to take a snapshot of the target drive once the pair is in differential sync based on the above issued consistency tag. Refer to the section Snapshot approach on page 33 to perform a rollback.

Start the guest machine

Step 4. Once the snapshot is complete, create a new VM -> shutdown the VM -> detach the boot disk and attach this snapshot disk. Access the XenCenter interface to start the guest machines

Part 5: Protecting XenServer Pool: Master target guest approach

This part explains protecting a XenServer resource pool by replicating source pool storage to target pool storage attached to the master guest machine on the target XenServer resource pool

22 Introduction

This section describes protecting the source XenServer pool to a master guest machine on the target XenServer pool.

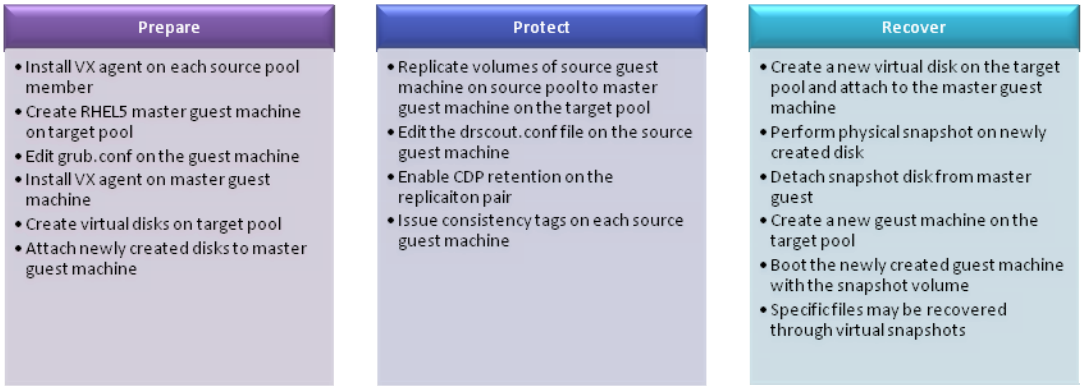


Figure 120

Prepare
There are a total of six steps to be performed in this stage as shown in the picture above.

Protect
This section explains to replicate the virtual disks of VMs on source pool to newly created virtual disks attached to master guest machine and issuing consistency tags at regular intervals. Issuing consistency tags may be automated by using a cron job or any scheduler

Recover
This section describes steps involved in performing a physical snapshot and booting another guest machine over the snapshot disk.

23 Prepare

Step 1. Install the VX agent on each of the source pool members
Step 2. Create RHEL-5 master guest machine on target pool

Step 3. Access the master guest machine's command prompt and open the file "**/boot/grub/menu**" to set the "**default"** value to 1. This loads the regular kernel rather than the XenServer's kernel.

```
# grub.conf generated by anaconda
#
# Note that you do not have to rerun grub after making changes to this file
# NOTICE:  You have a /boot partition.  This means that
#          all kernel and initrd paths are relative to /boot/, eg.
#          root (hd0,0)
#          kernel /vmlinuz-version ro root=/dev/VolGroup00/LogVol00
#          initrd /initrd-version.img
#boot=/dev/xvda
default=1
timeout=5
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Red Hat Enterprise Linux Server (2.6.18-92.1.10.el5.xs5.0.0.39xen)
```

Figure 121

Step 4. Install the VX agent on the master guest machine

Step 5. Create a new virtual disk & attach it to master guest machine through the XenCenter interface

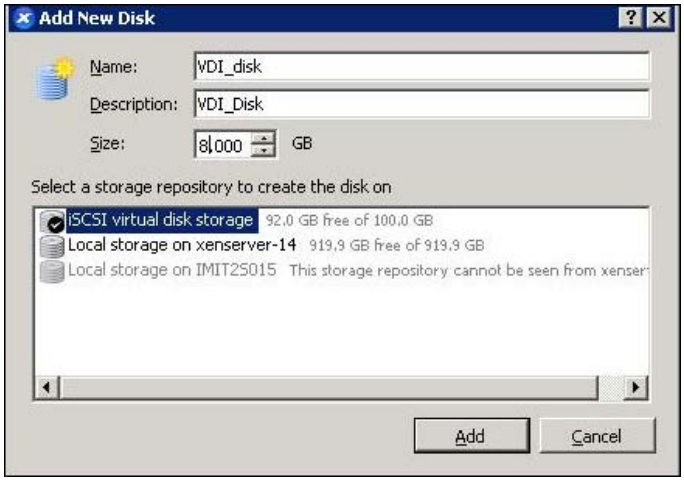


Figure 122

24 Protect

24.1 Set replication pairs

Step 1. Access the CX UI and click on "**Volume Protection".** Expand "**Xen Pools"** to find the list of pools available. Then expand the source pool to select the source guest machine and click on "**Start Replication"**

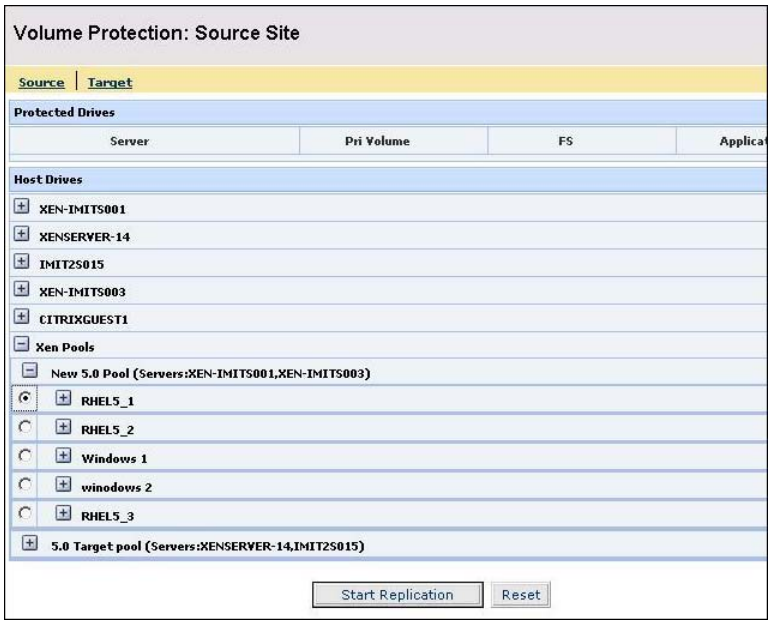


Figure 123

Step 2. Select the "**Unconfigured pool Drive"** and click on "**Next"**

Figure 124

Step 3. The next screen appears, expand the master guest machine and select the newly created/attached virtual disk and scroll down to set the "**Replication options"**

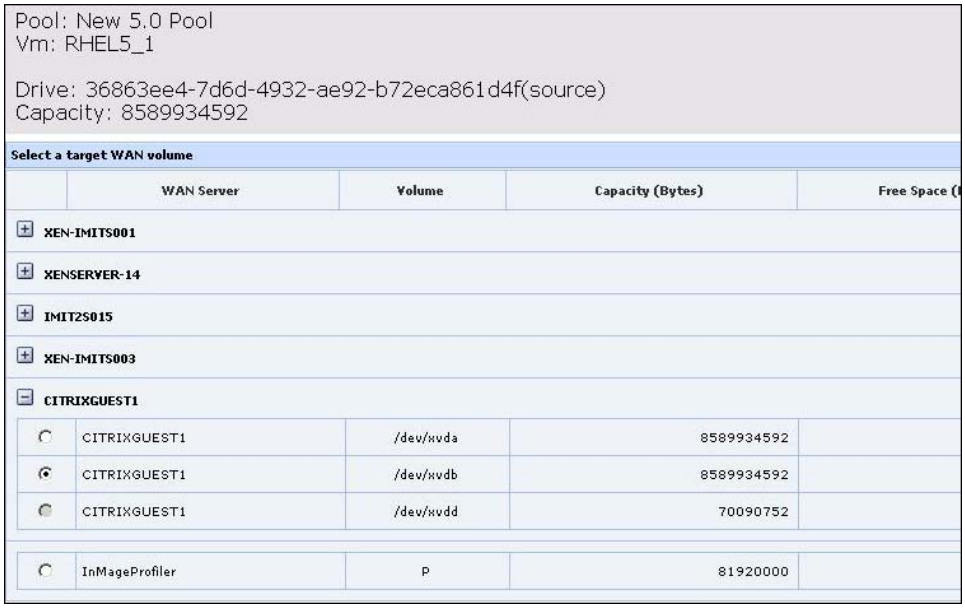


Figure 125

Step 4. Select the desired Process Server and check the "**Enable CDP Retention option**" click on "**Submit"** to continue.

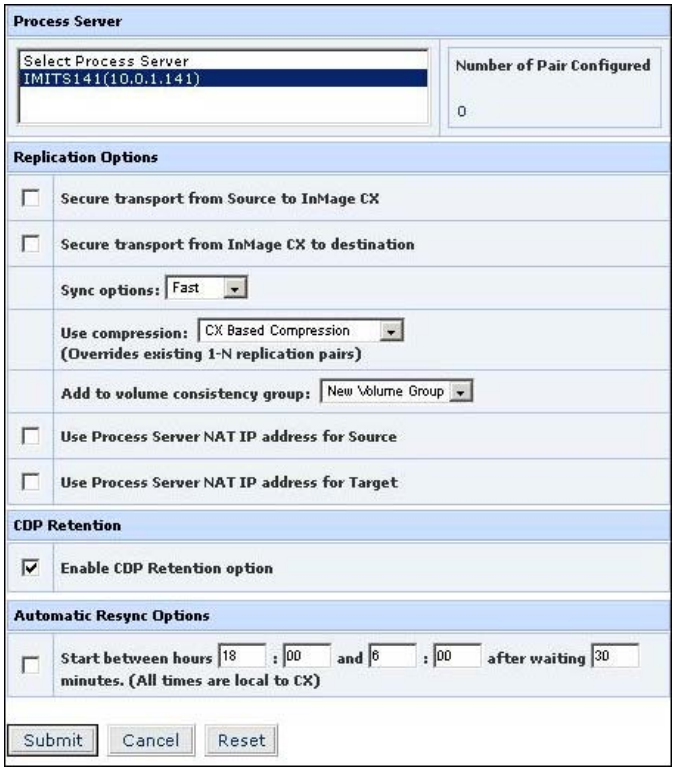


Figure 126

Step 5. Fill up the required "**Retention Options**" and click "**Submit**" button.

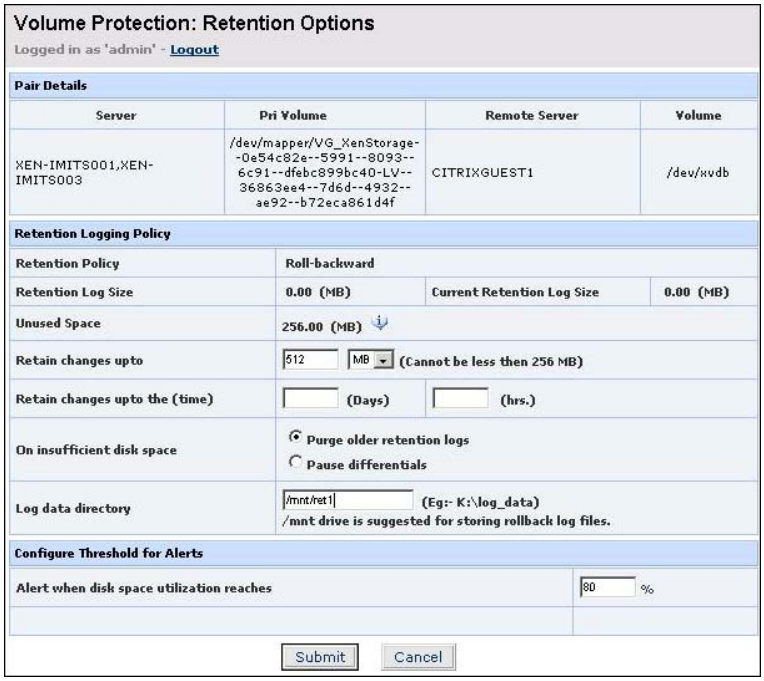


Figure 127

Step 6. The final screen appears, select the "**Configured Pool Drive"** and click on "**Finish"** to start the replication pair.

Figure 128

Step 7. The replication pair starts with Resyncing Step 1 then moves to Resyncing step 2 and finally reaches Differential Sync, indicating that the initial copy is made on the target volume

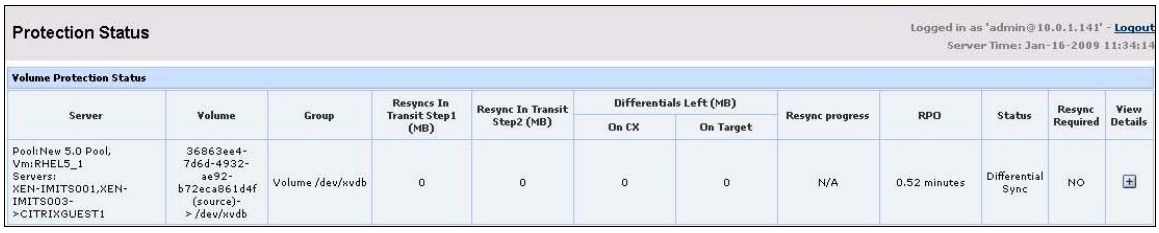


Figure 129

24.2 Issue consistency tags

Once the replication pair is in "**Differential Sync",** access the source guest machine's command prompt and issue the consistency tag through the vacp utility. The vacp utility may be downloaded from the CX UI under "**System -> Agent installers**"

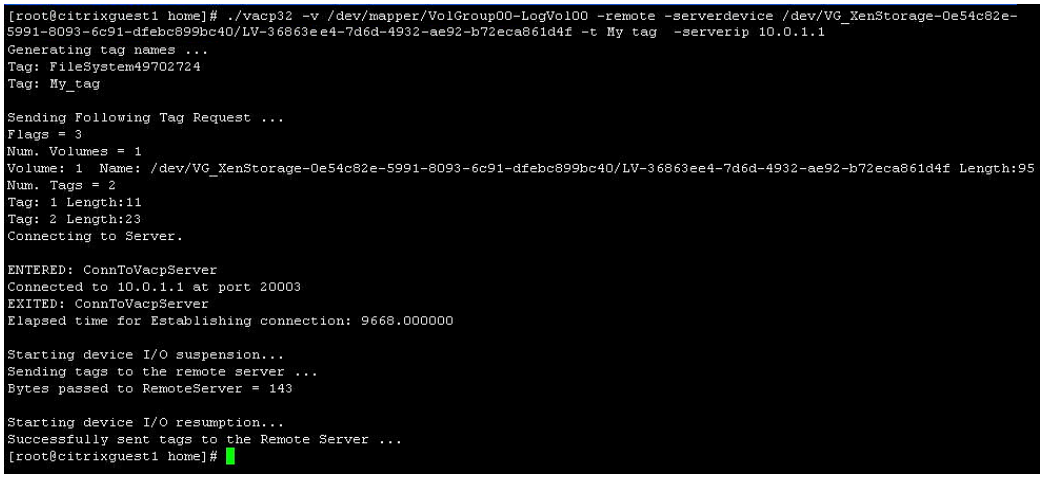


Figure 130

25 Recover

25.1 Add a disk to contain the snapshot

Access the XenCenter interface to create an extra disk on target pool & attach to the master guest machine to hold the snapshot as shown in the picture below.

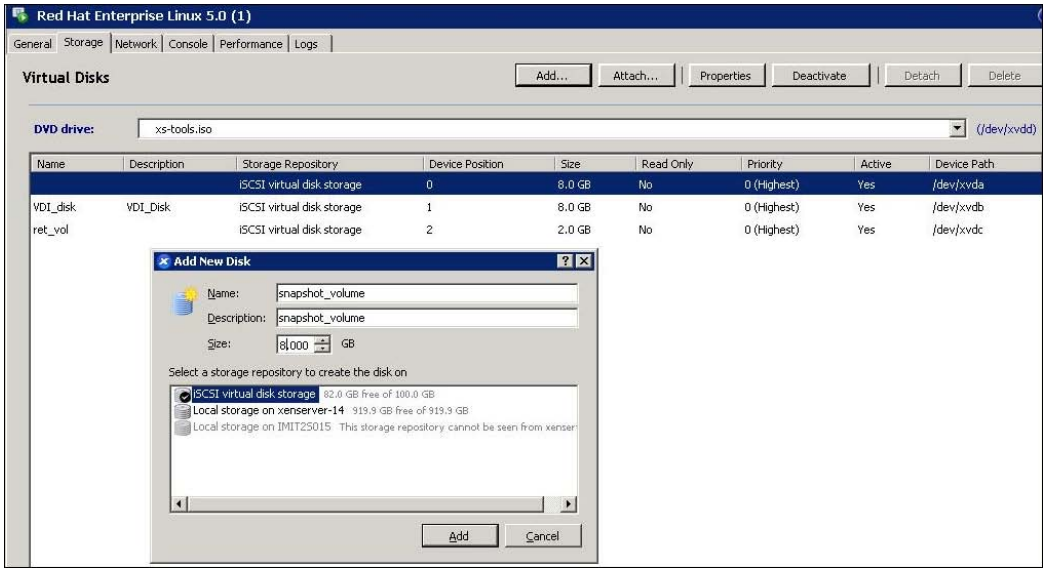


Figure 131

25.2 Create a Snapshot

Step 1. Access the CX UI and click on "**Recovery"**, then select the replication pair and click on "**Recover"**

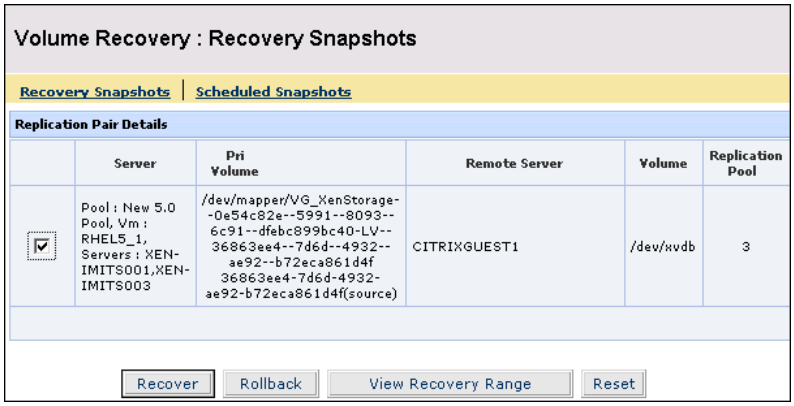


Figure 132

Step 2. Select the "**Using Application consistency & Event based**" option

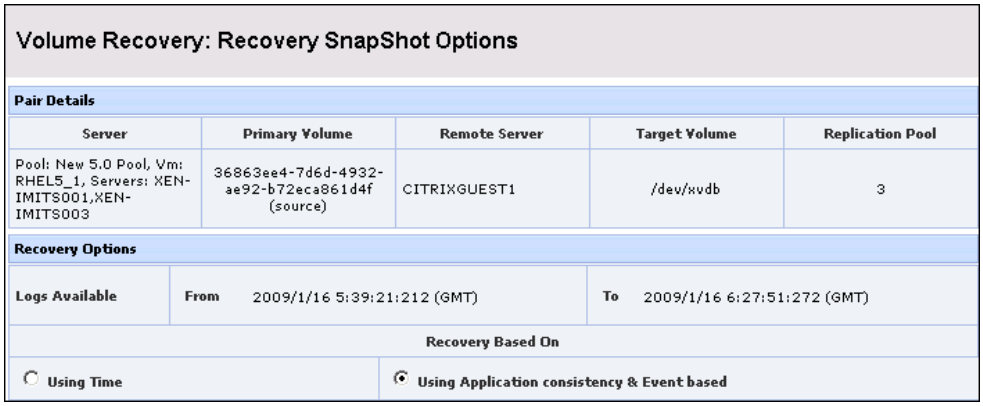


Figure 133

Step 3. The "**Search Result"** appears; select the desired consistency tag, then select "**Drive Type"** as "**Physical**". Select the newly added disk to hold the virtual snapshot, enter the mount point and click on "**Save".**

Figure 134

Notes:

You may recover specific files by taking a virtual snapshot. You will need to choose the "Drive Type" as "Virtual".
After the virtual snapshot is ready, access the master guest's command prompt to setup a loop device to the virtual snapshot device. This loop device may be mounted to recover individual files.
The command to setup a loop device is
losetup /dev/loop<loop device number> /dev/vs/cx<vsnap device number>

Step 4. You may observe the snapshot status through the "**Recovery"** screen

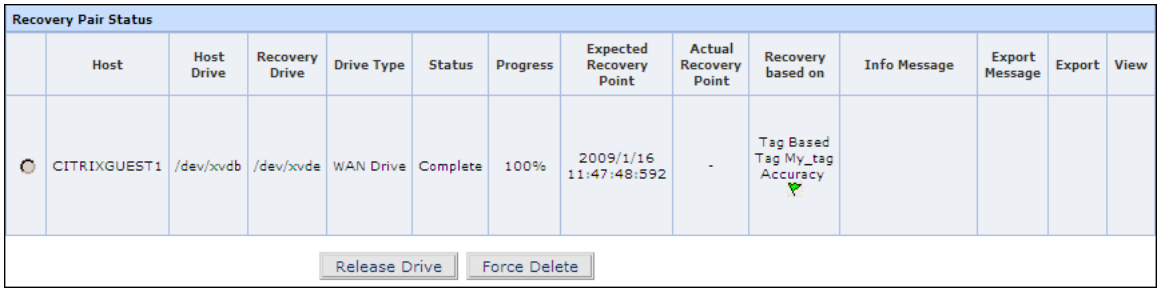


Figure 135

25.3 Detach snapshot disk from master guest machine

Step 1. Access the XenServer interface and "**Deactivate"** the snapshot volume as shown in the picture below.

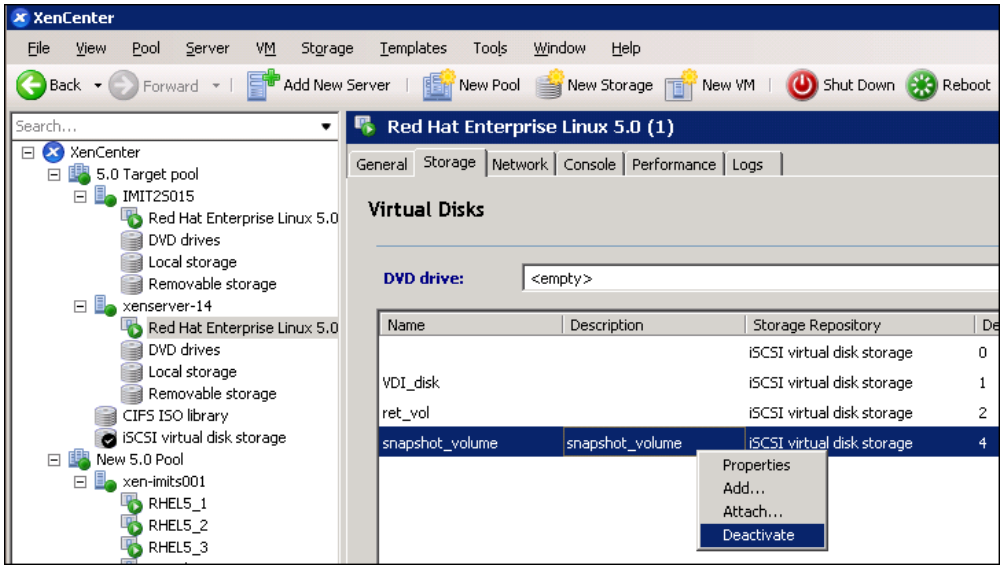


Figure 136

Step 2. Then "**Detach"** the snapshot volume from the master guest machine

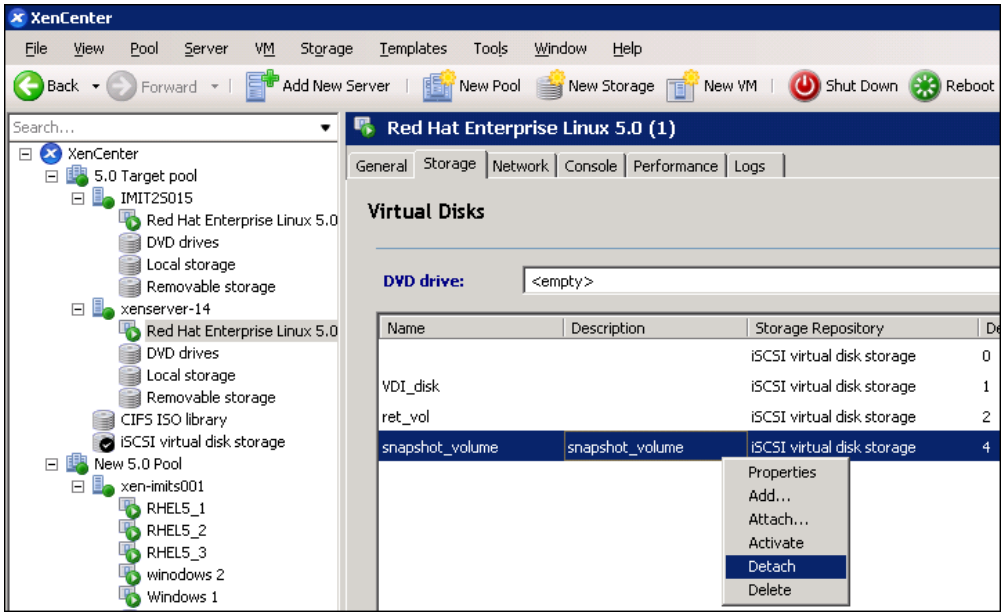


Figure 137

Step 3. You will be prompted for a confirmation, click on "**Yes"** to continue.

25.4 Attach the Snapshot disk to another Guest

Step 1. Create another guest machine
Step 2. Attach the snapshot disk as shown in the picture.

Note: VM should be started at least once before attaching the boot volume to the VM

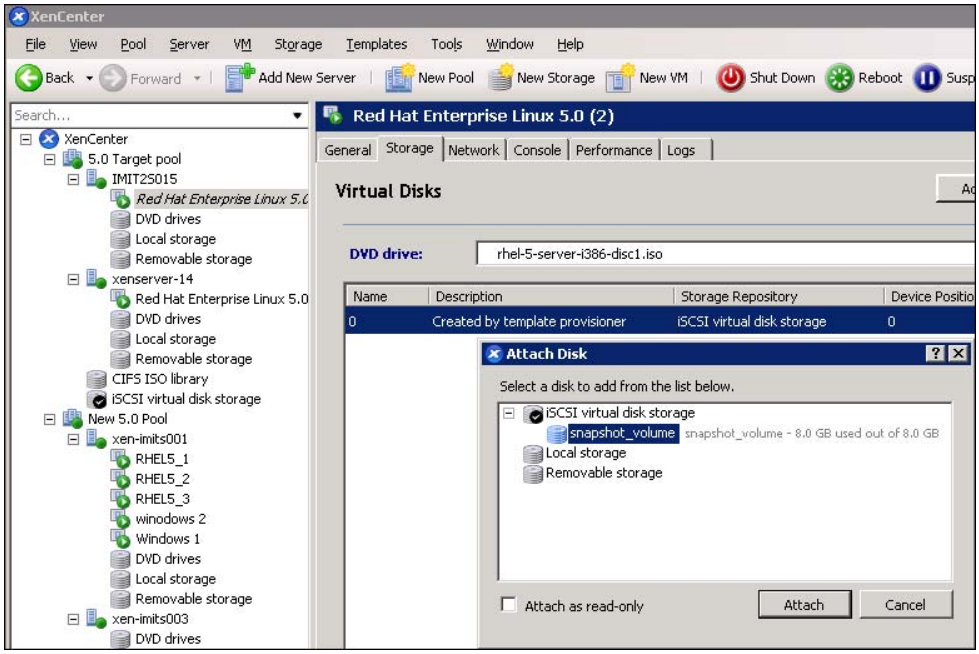


Figure 138

Step 3. Detach the earlier disk, you will be asked for confirmation, click on "**Yes"** to continue

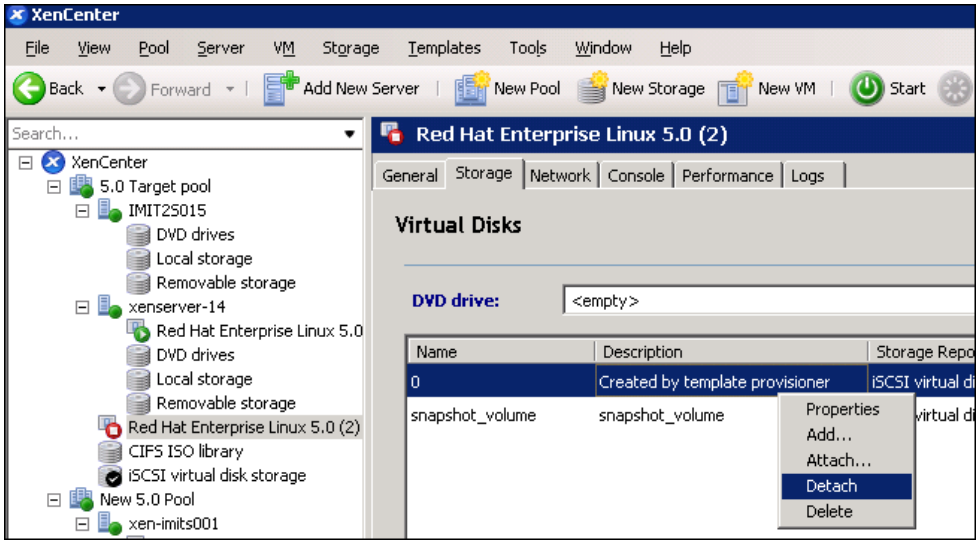


Figure 139

Step 4. Start the guest machine, it should boot up normally.

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