

EMC® SAN Copy™ and Open Replicator Migration from IBM XIV to EMC Storage

Technical Notes

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These technical notes contain information on migrating EMC SAN Copy and Open Replicator from IBM XIV to EMC storage. Topics include:

- ◆ Introduction..... 2
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- ◆ Open Replicator migration from IBM XIV to VMAX..... 23



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Introduction

This section includes the following information:

- ◆ [“Purpose” on page 2](#)
- ◆ [“Limitations” on page 2](#)

Purpose

This technical note, prepared by EMC® E-Lab™, provides best practices for migrating EMC SAN Copy™ and Open Replicator from IBM XIV to EMC storage. The source disk array used in this document is IBM XIV arrays. The destinations included are the EMC VNX™ and EMC Symmetrix® VMAX™ storage systems, as follows:

First, you must set up the IBM XIV as detailed in the following section:

- ◆ [“IBM XIV setup for SAN Copy and Open Replicator migrations” on page 4](#)

Then, perform migration using the following two procedures.

- ◆ [“SAN Copy migration from IBM XIV to VNX” on page 14](#)
- ◆ [“Open Replicator migration from IBM XIV to VMAX” on page 23](#)

Limitations

This section discusses limitations you must be aware of:

- ◆ Data migration to EMC VMAX or EMC VNX storage systems need to use data device. Thin device is not supported with IBM XIV storage.
- ◆ For maximum LUN size and LUN numbers, refer to EMC Online Support at <http://support.emc.com>, for EMC SAN Copy and Open Replicator documentation. Contact PSE for the maximum size of migration volume and number of maximum concurrent migrations.
- ◆ A storage processor or a director port may have many LUNs, but not all these LUNs are used for the disk-to-disk copy process. To perform a disk-to-disk copy, it is required that you block the unwanted LUNs and use only the ones needed by taking advantage of the following:

- On the VNX, *storage groups* are created.
- On the VMAX, a *device file* created contain both initiators and LUNs, with rules to prevent duplicate access.
- IBM XIV systems, see the *IBM XIV Storage System Management Tools Version 4.0 User Guide* for information on how to map various LUNs and rules to prevent duplicate access.
- ◆ There is no iSCSI support with third-party arrays.
- ◆ SAN Copy and Open Replicator migration cannot do incremental pull copies from a remote source, such as IBM XIV.

IBM XIV setup for SAN Copy and Open Replicator migrations

This section includes the following information for setting up IBM XIV to perform migration using either SAN Copy or Open Replicator:

- ◆ [“Step 1: Initial setup” on page 4](#)
- ◆ [“Step 2: Create volumes” on page 6](#)
- ◆ [“Step 3: Create hosts” on page 9](#)
- ◆ [“Step 4: Add LUN mappings to hosts” on page 11](#)

Step 1: Initial setup

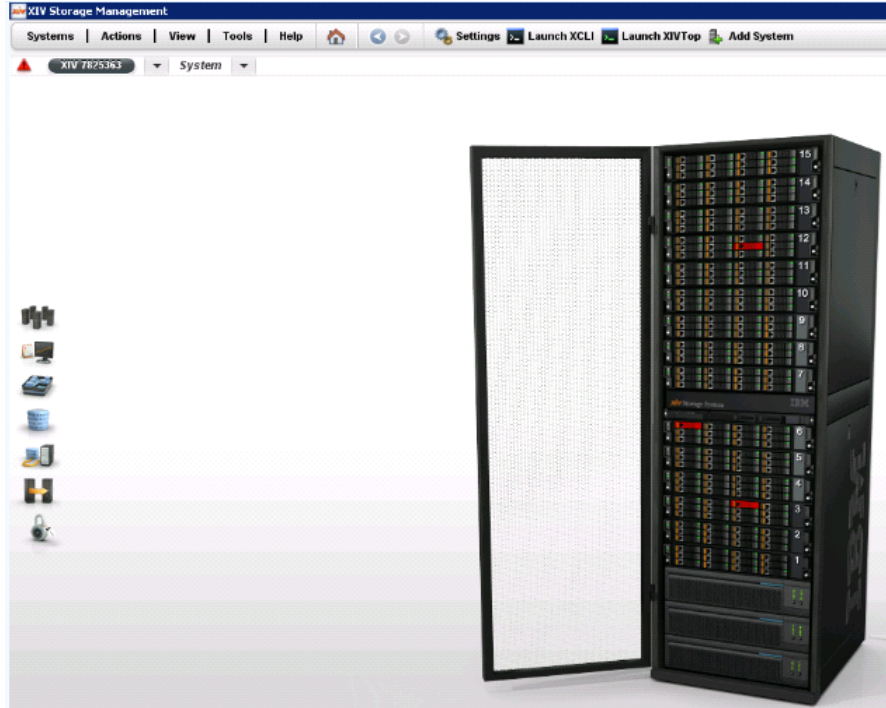
In order to perform a successful migration, you need to complete the following initial steps:

1. Port WWN zoning needs to be created between IBM XIV and VNX for SAN Copy or VMAX for Open Replicator.

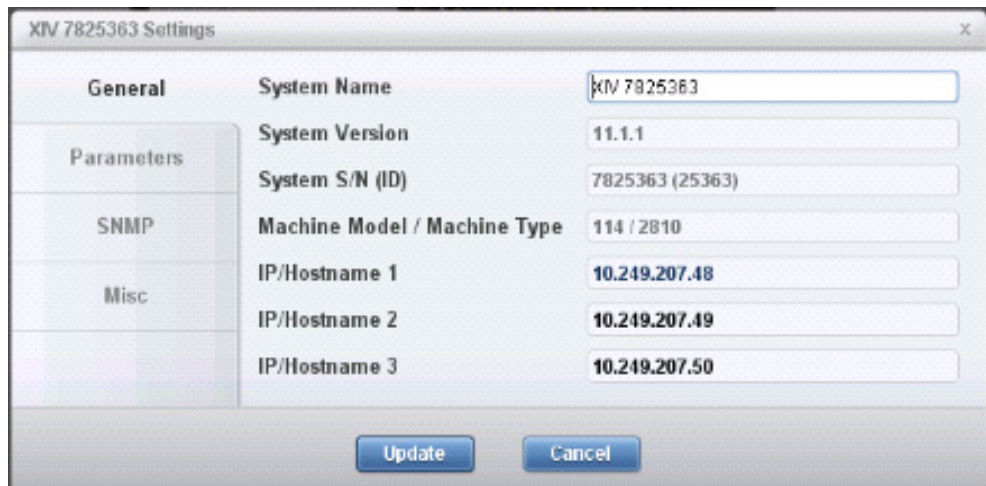
Refer to *BM XIV Storage System Management Tools Version 4.0 User Guide* for any additional questions for IBM XIV series arrays.

Note: This document describes some of the setup steps for IBM XIV array using the IBM XIV Storage Manager. There is also setup support for using any type of CLI for this type of arrays.

2. Start IBM System Storage Management GUI.



This test used XIV model 114, machine type 2810, as shown in the following screenshot.



Proceed to [“Step 2: Create volumes”](#) on page 6.

Step 2: Create volumes

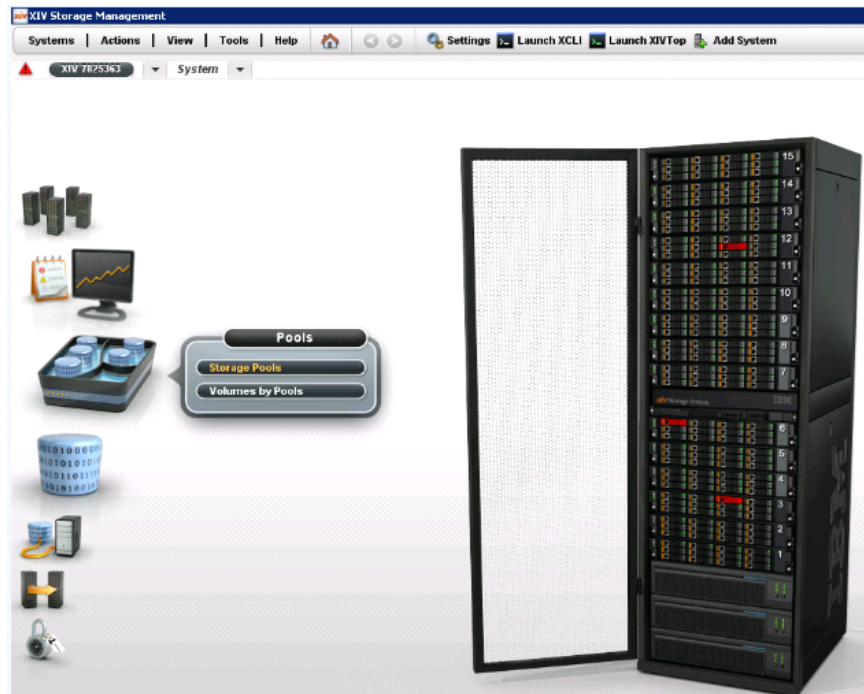
The LUN size for the IBM XIV array must be either smaller than, or equal to, either VNX or VMAX LUNs.

EMC recommends taking the LUN size in bytes given in response to some kind of commands and not the nominal size in Gigabytes quoted on the IBM XIV GUI or in some console command responses. The multiprotocol type of the LUN means that the nominal size in Gigabytes is smaller than the actual size of the LUN, but the byte count is always accurate. The safest way to reduce the risk of SAN Copy session failures is to create destination LUN sizes that are a little larger than the source.

Create a storage pool

To create a storage pool, complete the following steps.

1. Using XIV Storage Manager, select **Pools > Select Storage Pools**.



2. Select the name of the storage pool. For this test, Thick_Lun_Pool was selected.

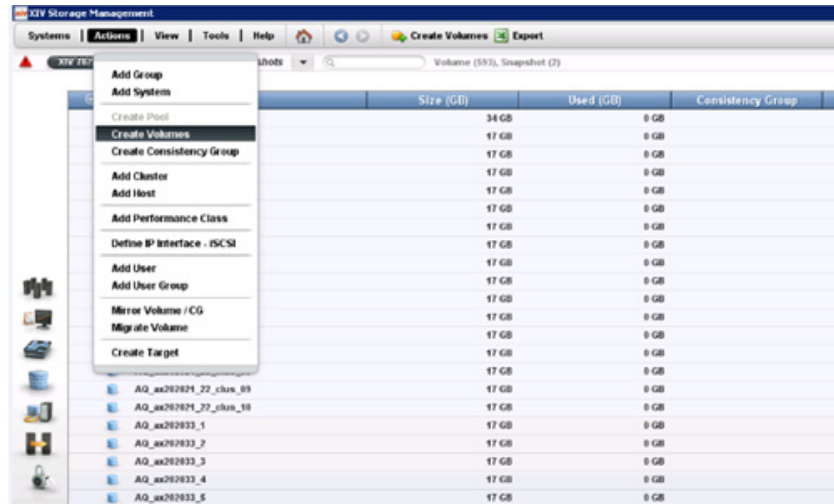
Name	Usage	Snapshots (GB)	Lock Behavior
Thick_Lun_Pool	1.3 TB Used Volumes 105.3 TB Hard free of 106.6 TB Hard (99%) 78.8 TB Volumes allocated 106.6 TB Soft 42.1 TB Hard	Snapshots reserved 10.7 TB	Read only
Thin_Pool_1	722 GB Volumes allocated 53.2 TB Soft	Snapshots reserved 5.4 TB	Read only

Create a volume To create a volume, complete the following steps.

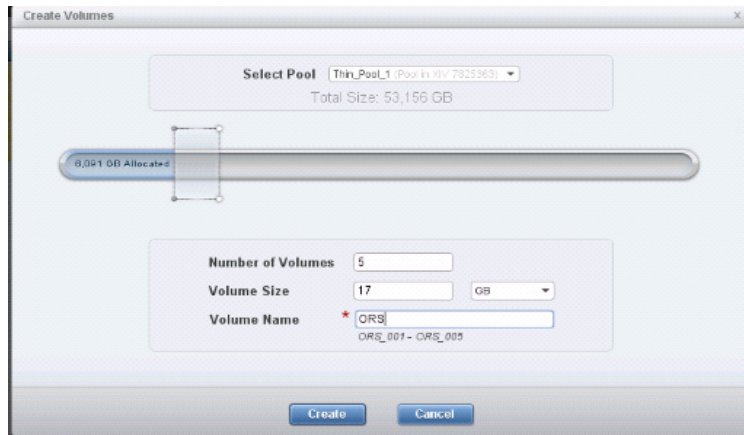
1. Using XIV Storage Manager, select **Volumes > Select Volumes and Snapshots**.



2. Select Actions > Create Volumes.



The Create Volumes dialog box displays.



3. In the **Create Volumes** dialog box, complete the information in the following fields:
 - a. Number of Volumes.
 - b. Volume Size.
 - c. Volume Name.
 - d. Click **Create**.

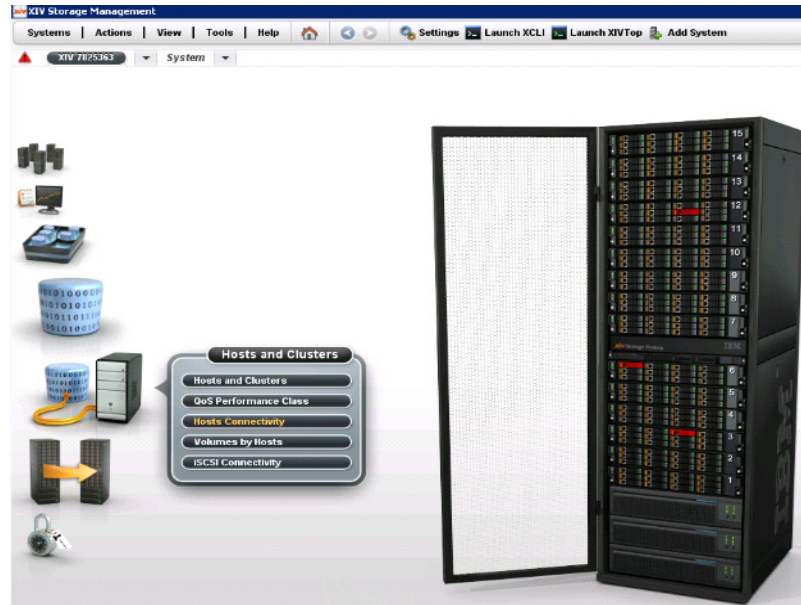
In this example, ORS_001 and ORS_005 were created.

Name	Size (GB)	Used (GB)	Consistency Group
LQ_Linx197_31	3,029 GB	0 GB	
LQ_Linx197_32	3,029 GB	0 GB	
LQ_Linx197_33	3,029 GB	0 GB	
LQ_Linx197_34	3,029 GB	0 GB	
LQ_Linx197_35	3,029 GB	0 GB	
LQ_Linx197_36	3,029 GB	0 GB	
LQ_Linx197_37	3,029 GB	0 GB	
LQ_Linx197_38	3,029 GB	0 GB	
LQ_Linx197_39	3,029 GB	0 GB	
ORS_001	17 GB	0 GB	
ORS_002	17 GB	0 GB	
ORS_003	17 GB	0 GB	
ORS_004	17 GB	0 GB	
ORS_005	17 GB	0 GB	
SD_Lcib110_1	17 GB	0 GB	
SD_Lcib110_2	17 GB	0 GB	

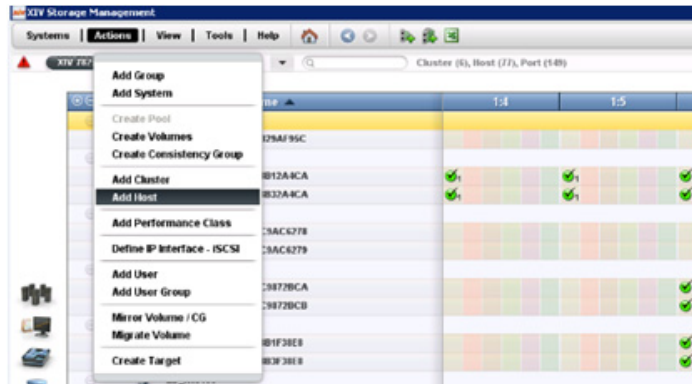
Step 3: Create hosts

To create host Groups and hosts, complete the following steps.

1. Using the XIV Storage Management GUI, select **Hosts and Clusters> Host Connectivity**.



2. Select **Actions > Add Host**.



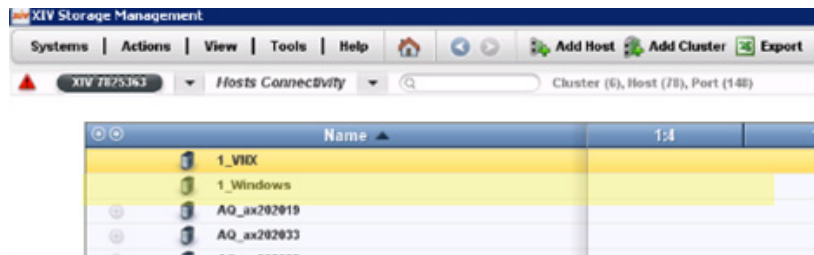
The **Add Host** dialog box displays.

3. Complete the following fields:

- a. System/Cluster
- b. Name
- c. Type

4. Click **Add**.

Hosts **1_Windows** and **1_VNX** were added.

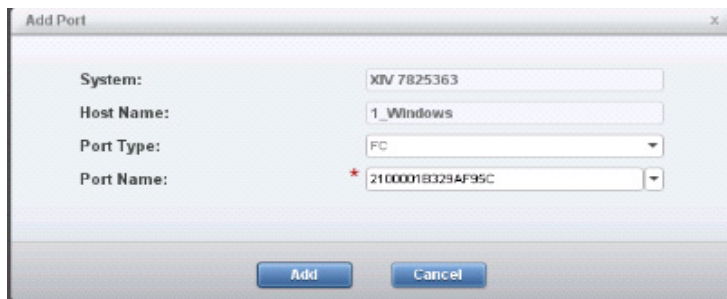


5. Right-click on each host to add its WWPN.

6. In the drop-down menu, select **Add Port**.



The **Add Port** dialog box displays.

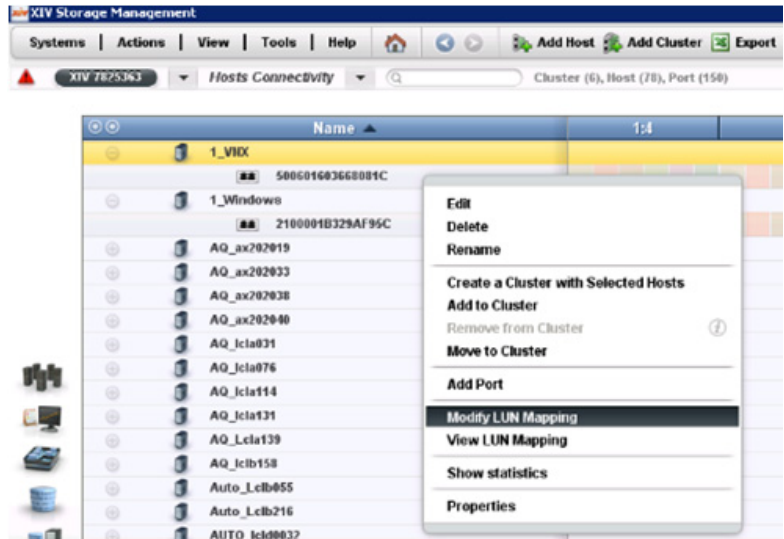


7. Complete the following fields:
 - a. Port Type
 - b. Port Name (WWPN for the host)
8. Click **Add**.

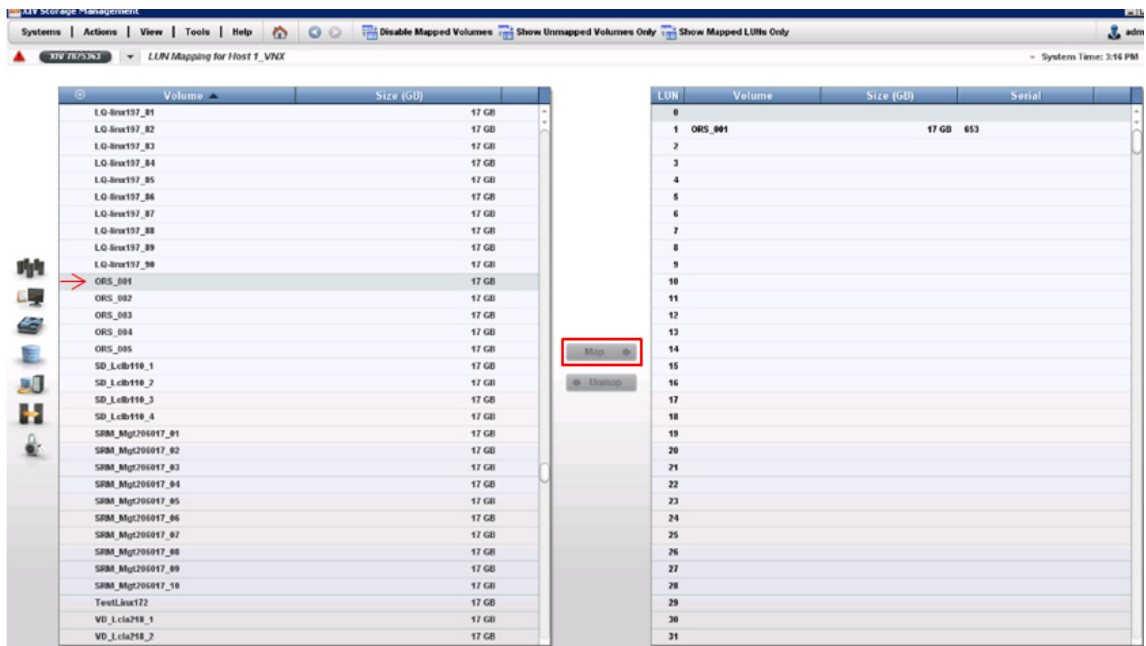
Step 4: Add LUN mappings to hosts

To add LUN mappings to the hosts, complete the following steps.

1. Using the XIV Storage Management GUI, right-click on the host name and in the drop-down menu select **Modify LUN Mapping**.



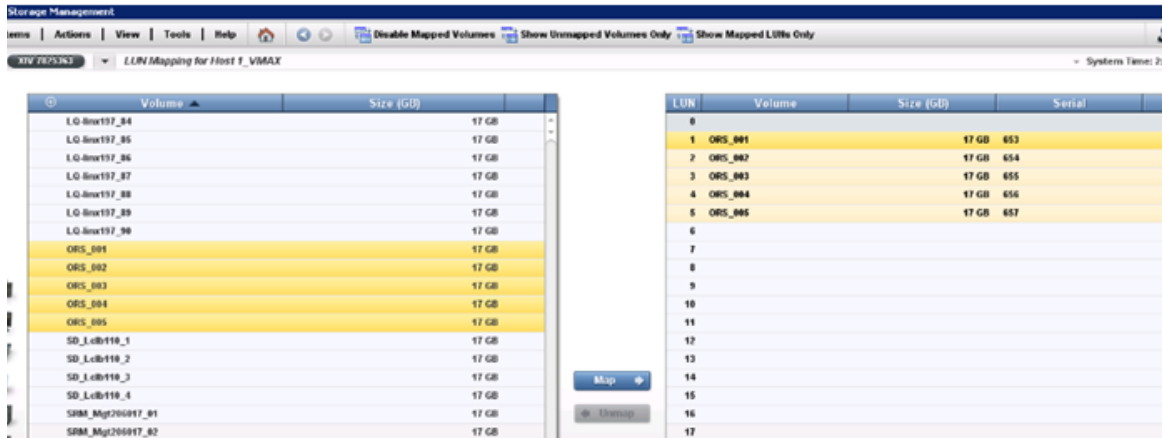
The following screen displays:



2. Select **ORS_001** (VNX LUN) from the left screen and click **Map** to save one LUN for SAN Copy testing.

3. Repeat this step for ORS_2 through ORS_5.

The following screenshot shows ORS_001 through ORS_5 mapped.



SAN Copy migration from IBM XIV to VNX

The following information to migrate disk data from IBM XIV to a VNX storage system using SAN Copy is included in this section:

- ◆ [“Step 1: Create switch zoning” on page 14](#)
- ◆ [“Step 2: Create VNX target LUNs” on page 15](#)
- ◆ [“Step 3: Create SAN Copy session” on page 17](#)
- ◆ [“Step 4: Activate the SAN Copy session” on page 19](#)
- ◆ [“Step 5: Fix SAN Copy session failure” on page 21](#)
- ◆ [“Step 6: Clean up session after SAN Copy data migration” on page 22](#)

Figure 1 shows an example of the topology used in this section.

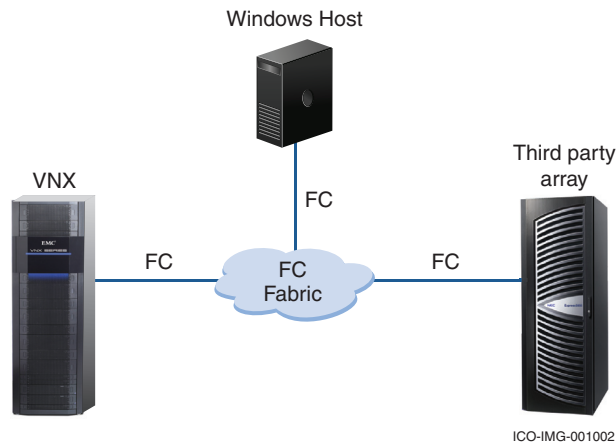


Figure 1 SAN Copy migration from IBM XIV to VNX example

Step 1: Create switch zoning

Figure 1 shows typical topology requirements between a VNX storage system and any third-party array. SAN Copy requires creating zones on the SAN switch so that the server initiators that use the LUNs on the IBM XIV can access the migrated LUNs on the VNX. This zoning also allows VNX FC ports to access the IBM XIV ports for the SAN Copy migration. When the zones become effective on the switch, a typical initiator WWN should appear in the Unisphere GUI.

Register the initiator WWN as a host in Unisphere so a storage group containing the initiator can be created on the VNX. It is expected that the servers have access to the LUNs immediately after zoning.

Step 2: Create VNX target LUNs

Complete the following steps to configure the VNX target LUNs:

Using Unisphere

1. Ensure that you have SAN Copy enablers installed.
2. Use Unisphere to manage the target VNX system.
3. On the system page, go to **Storage System Properties** on the right. When the **Storage System Properties** dialog box opens, click the **Software** tab. You can see what is enabled, as shown in [Figure 2](#).

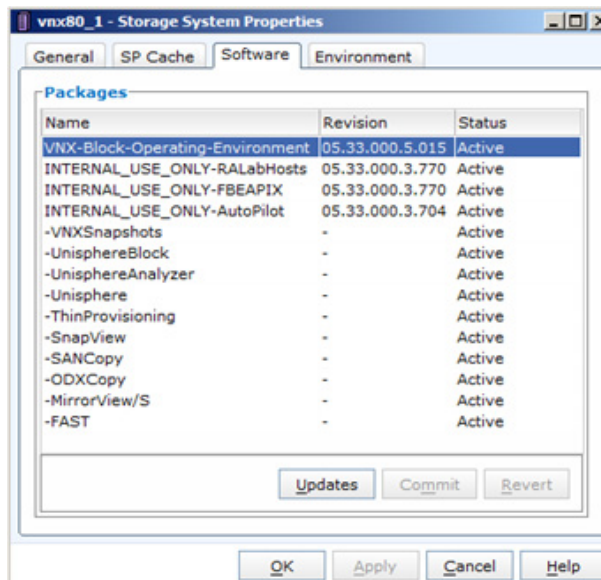


Figure 2 Storage System Properties dialog box, Software tab

4. On the VNX, if needed, create RAID groups or pools to contain target LUNs.
5. Verify that the migration-target LUNs were created on the VNX. Based on information previously gathered from the IBM XIV, ensure that the VNX LUNs are the same size or slightly larger than the corresponding IBM XIV LUNs.

- For each LUN, look up the properties in the Unisphere GUI in the **LUN Properties > General** tab, as shown in [Figure 3](#), and note the unique LUN WWN for possible use in later CLI commands. However, you do not have to use this ID for SAN Copy creation.

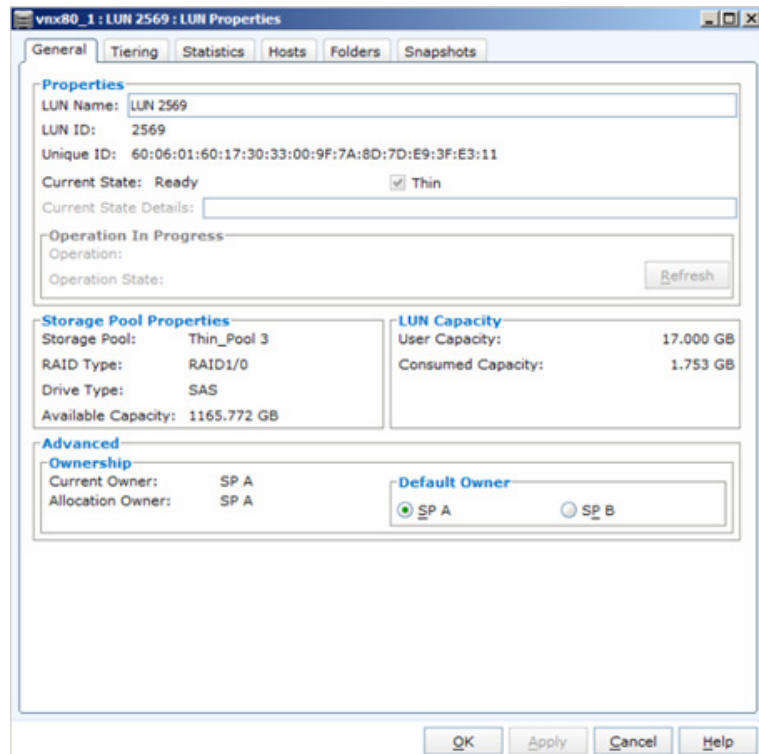


Figure 3 LUN Properties dialog box, General tab

Using CLI Alternatively, you can obtain the LUN IDs through `navicli`, if required:

- Install `Naviseccli` on a workstation with access to the VNX.
- Issue the following command:

```
naviseccli -h 10.249.206.56 -user xxxx -password yyyy -scope 0 getlun -uid
```

The following output displays:

```
LOGICAL UNIT NUMBER 1529 UID: 60:06:01:60:17:30:33:00:1C:83:F8:00:3C:F5:E2:11
LOGICAL UNIT NUMBER 2279 UID: 60:06:01:60:07:10:34:00:A6:A7:51:9D:0D:36:E3:11
LOGICAL UNIT NUMBER 2318 UID: 60:06:01:60:07:10:34:00:25:64:83:B5:0D:36:E3:11
LOGICAL UNIT NUMBER 2569 UID: 60:06:01:60:17:30:33:00:9F:7A:8D:7D:E9:3F:E3:11
```


Step 3: Create SAN Copy session

If the zoning has been correctly created, the VNX accepts the IBM XIV array FC port as a source. This is an important requirement needed so SAN Copy can create a session. This also binds to the IBM XIV LUN for the SAN Copy access.

Using CLI To create a SAN Copy session, a `navicli` command can be used in following format:

```
sancopy -create -name <name> -destlunnumber Networkadmin <VNX lun #> -srcportwwn
<IBM XIV WWPN> <IBM XIV LUN #>
```

Using the above command, create a session which connects a 17 G IBM XIV LUN with VNX LUN 2569, which is also 17 G.

To execute the `navicli` command, security needs to be set and the storage network name needs to be identified:

```
C:\> naviseccli -h 10.249.206.56 -addusersecurity -user xxxx -password yyyy -scope 0

C:\> naviseccli -h 10.249.206.56 -user xxxx -password yyyy -scope 0 networkadmin -get
Storage Processor:                SP A
Storage Processor Network Name:    mgt206056
Storage Processor IP Address:      10.249.206.56
Storage Processor Subnet Mask:     255.255.255.0
Storage Processor Gateway Address: 10.249.206.1

C:\>naviseccli -h 10.246.249.206.56 -user sysadmin -password sysadmin -scope 0
sancopy -create -name pull -destlunnumber mgt206056 2569 -srcportwwn
50:01:73:80:63:13:01:80 1
```

Make sure that all destination LUNs are not less than the source LUN in size.
Do you want to create a copy descriptor now? (y/n) **y**

Verify that all destination LUNs are not less than the source LUN in size.

When SAN Copy is successfully executed and created, the session name will appear in the Unisphere GUI. You may need a screen refresh in the GUI. Refer to [Figure 4](#) and [Figure 5](#), “Storage System Unisphere window, after SAN Copy session,” on page 19.

Figure 4 shows the **Storage System Unisphere** window before creating a SAN copy session:

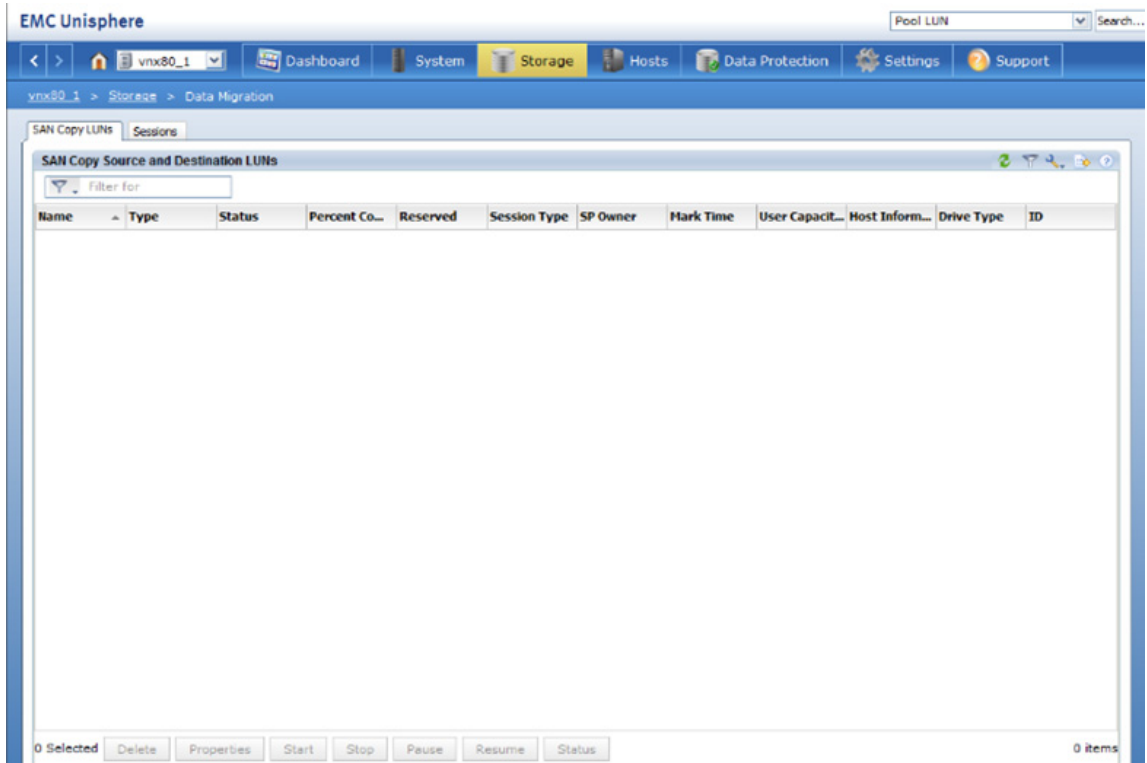


Figure 4 Storage System Unisphere window, before SAN copy session

Figure 5 shows the **Storage System Unisphere** window after creating a SAN Copy session:

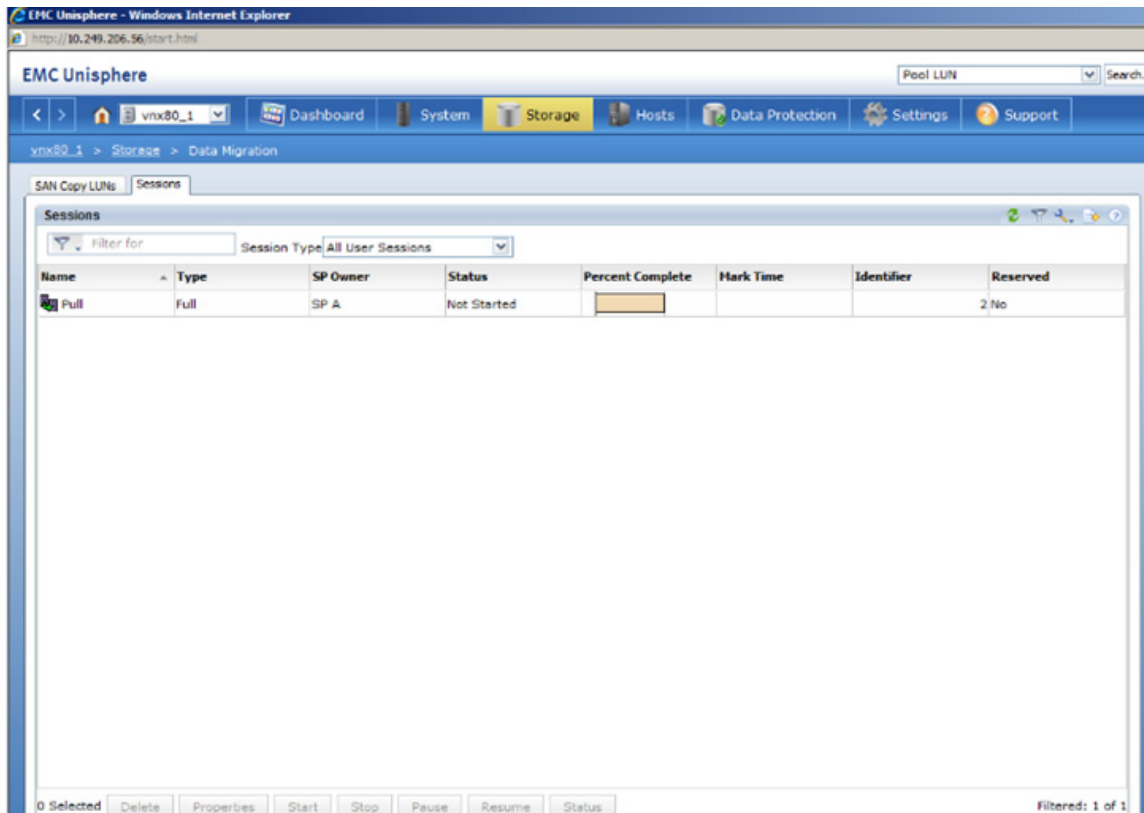


Figure 5 Storage System Unisphere window, after SAN Copy session

Step 4: Activate the SAN Copy session

The SAN Copy run will be a full copy directly from the source. Therefore, in order for it to be a consistent copy, all buffers of servers that write to the LUN should be flushed.

The best and the safest best practice is to remove all LUNs from the *host storage* in Unisphere during the SAN Copy data transfer before activating the session. However, it is also possible to unmount LUNs in UNIX hosts and stop all applications on the Windows environment.

Using Unisphere [Figure 6](#) shows the status details and session progress in the SAN Copy Session Status, Copy tab as the SAN Copy session begins.

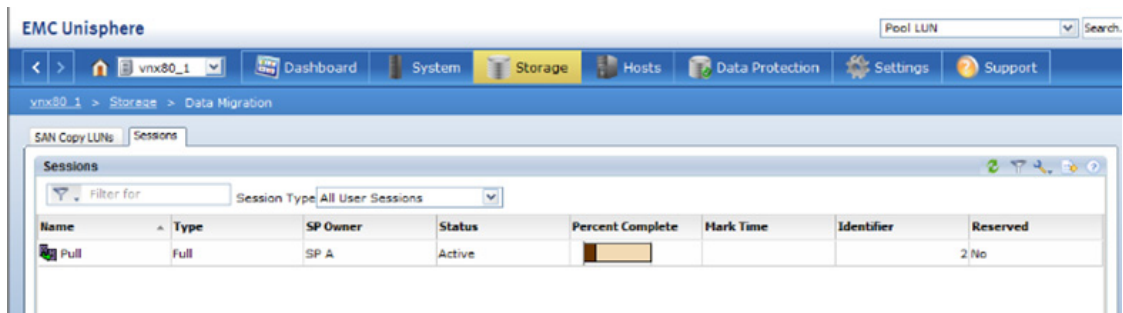


Figure 6 SAN Copy Session Status dialog box, session just started

[Figure 7](#) shows the status details and session progress in the SAN Copy Session Status, Copy tab during the data transfer.

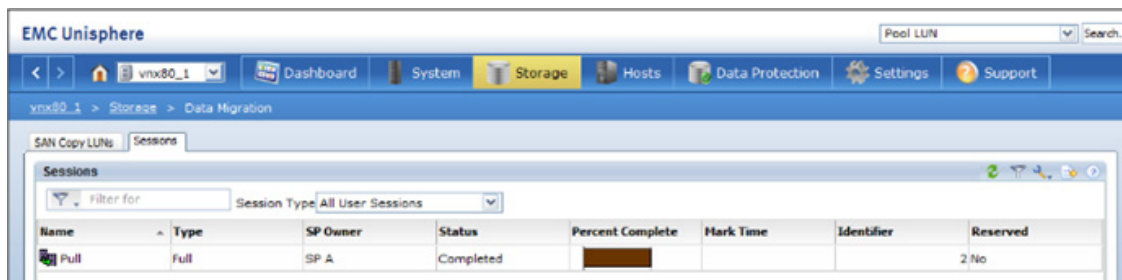


Figure 7 SAN Copy Session Status dialog box, successful data transfer

Using CLI The same information can be confirmed by looking at the responses to the navicli **sancopy -info** command to see **No Failure** displayed. The following **-info** example uses **-all** since there was more than one SAN Copy session. The session created is called "pull" in the following SAN Copy sessions.

```
C:\>naviseccli -h 10.246.206.56 -user xxxx -password yyyy -scope 0 sancopy -info -all
```

```
Copy Descriptor Name: Pull
Copy Descriptor ID: 2
Owner: SPA
Copy Descriptor Type: Full
Source LUN WWN: N/A
Source PortWWN and LUN: 50:01:73:80:63:13:01:80 1
Number of Blocks to Copy: 33609728
Number Of Destinations: 1
Destination LUN WWN: 60:06:01:60:17:30:33:00:9F:7A:8D:7D:E9:3F:E3:11
```

```
Destination PortWWN and LUN: N/A
Session Status: Complete
Initial Throttle: 6
Current Throttle: 6
Transfer Count: 33609728
Percent Complete: 100
Start Time: 10/29/13 05:26:41
Completion Time: 10/29/13 05:43:45
Duration: 17 min 4 sec
Failure Status: No Failure
Requested Connection Type: Fibre Only
Actual Connection Type: Fibre
```

The Unisphere screen will display the SAN Copy result as successful. If not, the issue needs to be investigated.

Step 5: Fix SAN Copy session failure

It is possible for the SAN Copy session to fail for a variety of reasons. The following are some examples of SAN Copy session failures:

- ◆ The source and destination LUN size are mismatched. For example, if the VNX LUN was 8.0 G for migration, which could actually be smaller than the 8.0 G IBM XIV LUN in terms of actual bytes of capacity, the migration will be successful only up until just before the end. Then, you will see an error in the **Session Status** window on Unisphere.
- ◆ To obtain a successful SAN Copy session, the destination LUN must be larger than the source LUN. If the VNX LUN is made larger than the IBM XIV LUN, the SAN Copy session will complete without error. However, the session will copy what is there. It will not extend the primary Windows partition containing the NTFS filesystem on that LUN. This will result in having unallocated space in the disc seen on the Windows server.
- ◆ For other cases, even creating a SAN Copy session will not be possible because one of the destination LUNs is not owned by the SP, which has the SAN connection. It is perfectly possible for a server (initiator) to mount a LUN that is owned by one SP through a FC connected to the other one. However, the SAN Copy connected SP must be the owning LUN.
- ◆ There could also be a genuine SAN or remote port access problem. To fix the problem of mismatched SP connection and ownership, trespass the LUN to the SP that has the FC connection and issue the **SAN Copy** command to that SP.

Step 6: Clean up session after SAN Copy data migration

Right after a SAN Copy successful operation, remount LUNs on the UNIX hosts. If the host is Windows, make sure Windows sees the LUN. Some UNIX servers require a reboot if a different LUN is mounted to a previously used mount point with same drive letters as before.

When all the migrations are complete, you can remove the SAN Copy zone from SAN switches.

Open Replicator migration from IBM XIV to VMAX

This section provides steps for migrating EMC Open Replicator from IBM XIV to the EMC Symmetrix VMAX storage system. The following information is included:

- ◆ “Step 1: Create switch zoning” on page 24
- ◆ “Step 2: Create VMAX target LUNs” on page 24
- ◆ “Step 3: Create VMAX device file” on page 25
- ◆ “Step 4: Create Rcopy session (Open Replicator session)” on page 27
- ◆ “Step 5: Query Rcopy session prior to activation” on page 28
- ◆ “Step 6: Activate the Rcopy session” on page 29
- ◆ “Step 7: Query Rcopy session after activation” on page 29
- ◆ “Step 8: Verify Rcopy session” on page 30
- ◆ “Step 9: Terminate Rcopy session” on page 31

Figure 8 shows an example of the topology used in this section.

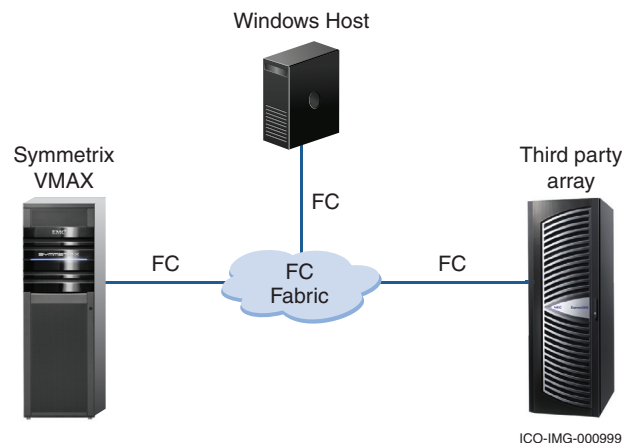


Figure 8 Open Replicator Session example

Step 1: Create switch zoning

Figure 8 shows typical topology requirements between a VMAX storage system and any third-party array. Open Replicator requires creating zones on the SAN switch so that the server initiators that use the LUNs on the IBM XIV can access the migrated LUNs on the VMAX.

This zoning also allows VMAX FC ports to access the IBM XIV ports for the Open Replicator. It is expected for the servers to have access to the LUNs immediately after zoning.

Step 2: Create VMAX target LUNs

Complete the following steps to configure the VMAX target LUNs:

1. Use a tool, such as the EMC Symmetrix Management Console (SMC), to create VMAX devices for this migration.
2. Install Solution Enabler v7.x on a workstation with access to the VMAX.
3. Complete the following steps to make sure VMAX is visible:
 - a. Check the version of symcli.
 - b. Discover the VMAX.

```
C:\>Symcli
```

```
Symmetrix Command Line Interface (SYMCLI) Version V7.6.0.0 (Edit Level: 1707)
built with SYMAPI Version V7.6.0.0 (Edit Level: 1707)
```

```
C:\>symcfg disc
```

This operation may take up to a few minutes. Please be patient...

```
C:\>symcfg list
```

S Y M M E T R I X

SymmID	Attachment	Model	Mcode Version	Cache Size (MB)	Num Phys Devices	Num Symm Devices
000195700879	Local	VMAX40K	5876	368640	16	5166
000195701184	Remote	VMAX40K	5876	172032	0	1414

Step 3: Create VMAX device file

Define one or more control/remote device pairings in a text file. Complete the following steps to obtain all the LUN information from remote arrays (third-party or EMC) to create the device file.

1. Verify zoning and obtain the remote LUN information (remote LUN's WWN) using the **symsan** command. The command shows all the zoning with control symm (sid 879).

```
C:\>symsan -sid 879 list -sanports -dir 8e -p 0
```

```
Symmetrix ID: 000195700879
```

DIR:P	Flags	Vendor	Array	Num LUNs	Remote Port	WWN
08E:0	.	IBM	3000	6	5001738063130180	

Legend:

Flags: (I)ncomplete : X = record is incomplete, . = record is complete.

Left row (DIR:P) for control symm FA and port numbers.

Right row for Remote Port WWN.

2. Obtain all the LUNs information (WWN) for the destination VMAX devices.

```
C:\>syminq -wwn
```

Name	Num	Array ID	WWN
\\.\PHYSICALDRIVE0	0F2D	000195700879	60000970000195700879533030463244
\\.\PHYSICALDRIVE1	0F2E	000195700879	60000970000195700879533030463245
\\.\PHYSICALDRIVE2	0F2F	000195700879	60000970000195700879533030463246
\\.\PHYSICALDRIVE3	0F30	000195700879	60000970000195700879533030463330
\\.\PHYSICALDRIVE4	0F31	000195700879	60000970000195700879533030463331
\\.\PHYSICALDRIVE5	0F32	000195700879	60000970000195700879533030463332
\\.\PHYSICALDRIVE6	0F33	000195700879	60000970000195700879533030463333
\\.\PHYSICALDRIVE7	0F34	000195700879	60000970000195700879533030463334
\\.\PHYSICALDRIVE8	0F35	000195700879	60000970000195700879533030463335
\\.\PHYSICALDRIVE9	0F36	000195700879	60000970000195700879533030463336
\\.\PHYSICALDRIVE10	0F37	000195700879	60000970000195700879533030463337
\\.\PHYSICALDRIVE11	0F38	000195700879	60000970000195700879533030463338
\\.\PHYSICALDRIVE12	0F39	000195700879	60000970000195700879533030463339
\\.\PHYSICALDRIVE13	0F3A	000195700879	60000970000195700879533030463341
\\.\PHYSICALDRIVE14	0F3B	000195700879	60000970000195700879533030463342
\\.\PHYSICALDRIVE15	0F3C	000195700879	60000970000195700879533030463343
\\.\PHYSICALDRIVE16	N/A	N/A	N/A
\\.\PHYSICALDRIVE17	N/A	N/A	N/A
\\.\PHYSICALDRIVE18	N/A	N/A	N/A
\\.\PHYSICALDRIVE19	N/A	N/A	N/A
\\.\PHYSICALDRIVE20	N/A	N/A	N/A
\\.\PHYSICALDRIVE21	N/A	N/A	N/A
\\.\PHYSICALDRIVE22	N/A	N/A	N/A

- Obtain all the LUNs information (WWN) for migration. This example uses symm FA 8e and Port 0 and it is connected with IBM XIV array and its WWN # 500507630E800C83.

```
C:\>symmsan list -sid 879 -sanluns -wwn 5001738063130180 -dir 8e -p 0 -detail
```

```
Symmetrix ID:      000195700879
Remote Port WWN:   5001738063130180
```

```

      ST
      A
      T  Flags  Block   Capacity  LUN   Dev  LUN
DIR:P E  ICRTHS  Size      (MB)    Num   Num  WWN
-----
08E:0 RW X..F..  N/A      N/A      0    N/A  0017380063130000
08E:0 -- X..F..  512      16411   1    N/A  001738006313028D
08E:0 -- X..F..  512      16411   2    N/A  001738006313028E
08E:0 -- X..F..  512      16411   3    N/A  001738006313028F
08E:0 -- X..F..  512      16411   4    N/A  0017380063130290
08E:0 -- X..F..  512      16411   5    N/A  0017380063130291

```

Legend:

```

Flags: (I)ncomplete : X = record is incomplete, . = record is complete.
       (C)ontroller : X = record is controller, . = record is not controller.
       (R)eserved   : X = record is reserved, . = record is not reserved.
       (T)ype       : A = AS400, F = FBA, C = CKD, . = Unknown
       t(H)in       : X = record is a thin dev, . = record is not a thin dev.
       (S)ymmetrix : X = Symmetrix device, . = not Symmetrix device.

```

- Create the *device file* for migration (using Open Replicator).

Example

From Windows host: cat XIV-Pull.txt:

```

Symdev=000195700879:0F2D wwn=001738006313028D
Symdev=000195700879:0F2E wwn=001738006313028E
Symdev=000195700879:0F2F wwn=001738006313028F
Symdev=000195700879:0F30 wwn=0017380063130290
Symdev=000195700879:0F31 wwn=0017380063130291

```

Example

Performing a hot pull operation:

- The **symrcopy create** command creates online copy sessions so that data on the remote devices specified in file XIV-pull.txt can be copied to the control devices when the copy operation is activated.
- The **-pull** parameter specifies that the VMAX control array is pulling the data to it.
- The **-hot** parameter indicates that the VMAX remains online during the operation.
- The **-name** option gives these sessions the label name Ben_1.

- The **-donor_update** parameter indicates that all writes to the control device from the host will also be copied to the remote device.

Step 4: Create Rcopy session (Open Replicator session)

```
C:\>symrcopy create -copy -name Ben_1 -pull -hot -donor_update -file
IBM-XIV-pull.txt -nop -v
```

```
'Create' operation execution is in progress for the device list in device file
'IBM-XIV-Pull.txt'. Please wait...
```

```
'Create' operation successfully executed for the device list in device file
'IBM-XIV-Pull.txt'.
```

```
STARTING a REMOTE Copy CREATE (PULL) (HOT) (NODIFFERENTIAL) (COPY) (DONOR UPDATE)
```

```
SELECTING Control device - Remote devices:
```

```
(Ctl)Sym: 000195700879 Device: 00F2D - LUN WWN: 001738006313028D - [SELECTED]
(Ctl)Sym: 000195700879 Device: 00F2E - LUN WWN: 001738006313028E - [SELECTED]
(Ctl)Sym: 000195700879 Device: 00F2F - LUN WWN: 001738006313028F - [SELECTED]
(Ctl)Sym: 000195700879 Device: 00F30 - LUN WWN: 0017380063130290 - [SELECTED]
(Ctl)Sym: 000195700879 Device: 00F31 - LUN WWN: 0017380063130291 - [SELECTED]
```

```
STARTING a RCOPY 'CREATE' operation.
```

```
SELECTING Control device - Remote devices:
```

```
(Ctl)Sym: 000195700879 Device: 00F2D - LUN WWN: 001738006313028D - [CREATED]
(Ctl)Sym: 000195700879 Device: 00F2E - LUN WWN: 001738006313028E - [CREATED]
(Ctl)Sym: 000195700879 Device: 00F2F - LUN WWN: 001738006313028F - [CREATED]
(Ctl)Sym: 000195700879 Device: 00F30 - LUN WWN: 0017380063130290 - [CREATED]
(Ctl)Sym: 000195700879 Device: 00F31 - LUN WWN: 0017380063130291 - [CREATED]
```

```
The Rcopy 'CREATE' operation SUCCEEDED.
```

```
'Create' operation successfully executed for the device list
in device file 'IBM_XIV_pull.txt'.
```

If a case arises where you need to force a copy from a larger device to a smaller device (for example, you initially copied data to a larger device and now want to copy the same data back to the smaller device), you must include the **-force_copy** option with the **symrcopy create** command.

Step 5: Query Rcopy session prior to activation

The **symrcopy query** command indicates that the sessions for the control/remote device pairs in the file XIV-pull.txt are in the "Created" state and are considered to be active sessions. When the control host can "see" the remote devices (in this case, a remote Symmetrix array), Open Replicator converts the remote device LUN WWN identifier (specified in file XIV-pull.txt) to the array ID:device format.

```
C:\>symrcopy query -file IBM-XIV-pull.txt -detail
```

```
Device File Name      : IBM-XIV-Pull.txt
```

Control Device	Remote Device	Flags	Status	Done	Pace	Name
SID:symdev	Protected Tracks	Modified Tracks	Identification	RI	CDSHUTZ	CTL <=> REM (%)
000195700879:0F2D	262576	0	001738006313028D	.W	X..XXS.	Created N/A 5 Ben_1
000195700879:0F2E	262576	0	001738006313028E	.W	X..XXS.	Created N/A 5 Ben_1
000195700879:0F2F	262576	0	001738006313028F	.W	X..XXS.	Created N/A 5 Ben_1
000195700879:0F30	262576	0	0017380063130290	.W	X..XXS.	Created N/A 5 Ben_1
000195700879:0F31	262576	0	0017380063130291	.W	X..XXS.	Created N/A 5 Ben_1

```
Total
Track(s)      1312880
MB(s)         82055.0
```

Legend:

```
R: (Remote Device Vendor Identification)
   S = Symmetrix, C = Clariion, . = Unknown.
```

```
I: (Remote Device Specification Identifier)
   D = Device Name, W = LUN WWN, World Wide Name.
```

Flags:

```
(C): X = The background copy setting is active for this pair.
      . = The background copy setting is not active for this pair.
(D): X = The session is a differential copy session.
      . = The session is not a differential copy session.
(S): X = The session is pushing data to the remote device(s).
      . = The session is pulling data from the remote device(s).
(H): X = The session is a hot copy session.
      . = The session is a cold copy session.
(U): X = The session has donor update enabled.
      . = The session does not have donor update enabled.
(T): M = The session is a migration session.
      R = The session is a RecoverPoint session.
      S = The session is a standard ORS session.
(Z): X = The session has front-end zero detection enabled.
      . = The session does not have front-end zero detection enabled.
(*): The failed session can be reactivated.
```

Step 6: Activate the Rcopy session

The **symrcopy activate** command activates the copy sessions for the pairings in the file `XIV-pull.txt`. Copying from the remote array to the control array begins. At this point, you can begin accessing the migrated data on the VMAX array. You do not need to wait for the copy operation to complete.

```
C:\>symrcopy activate -file IBM-XIV-pull.txt -nop
```

```
'Activate' operation execution is in progress for the device list
in device file 'IBM-XIV-pull.txt'. Please wait...
```

```
'Activate' operation successfully executed for the device list
in device file 'IBM-XIV-pull.txt'
```

Step 7: Query Rcopy session after activation

The **symrcopy query** command with the **-detail** option indicates that the sessions for the device pairs defined in the file are in the `CopyInProg` state and the percent (14%) completion. The display also contains other details, such as the pace. The default pace value of 5 provides relatively fast copy time with only a moderate impact on the application.

In the following example, the completion percentage is about 14%.

```
C:\>symrcopy query -file IBM-XIV-Pull.txt -detail
```

```
Device File Name      : IBM-XIV-Pull.txt
```

Control Device	Remote Device	Flags	Status	Done	Pace	Name

	Protected Modified					
SID:symdev	Tracks Tracks	Identification	RI CDSHUTZ	CTL <=>	REM	(%)

000195700879:0F2D	201774 0	001738006313028D	.W X..XXS.	CopyInProg	14 5	Ben_1
000195700879:0F2E	201243 0	001738006313028E	.W X..XXS.	CopyInProg	14 5	Ben_1
000195700879:0F2F	202187 0	001738006313028F	.W X..XXS.	CopyInProg	14 5	Ben_1
000195700879:0F30	201299 0	0017380063130290	.W X..XXS.	CopyInProg	14 5	Ben_1
000195700879:0F31	202113 0	0017380063130291	.W X..XXS.	CopyInProg	14 5	Ben_1

```
Total      -----
  Track(s)      1008616
  MB(s)         63038.5
```

Legend:

```
R: (Remote Device Vendor Identification)
  S = Symmetrix, C = Clariion, . = Unknown.
```

```
I: (Remote Device Specification Identifier)
  D = Device Name, W = LUN WWN, World Wide Name.
```

Flags:

- (C): X = The background copy setting is active for this pair.
 . = The background copy setting is not active for this pair.
- (D): X = The session is a differential copy session.
 . = The session is not a differential copy session.
- (S): X = The session is pushing data to the remote device(s).
 . = The session is pulling data from the remote device(s).
- (H): X = The session is a hot copy session.
 . = The session is a cold copy session.
- (U): X = The session has donor update enabled.
- (T): C = The session is a continuous session.
 M = The session is a migration session.
 R = The session is a RecoverPoint session.
 S = The session is a standard ORS session.
- (Z): X = The session has front-end zero detection enabled.
 . = The session does not have front-end zero detection enabled.
- (*): The failed session can be reactivated.

Step 8: Verify Rcopy session

A subsequent **symrcopy query** command indicates that the sessions for the device pairs defined in the file **IBM_XIV_Pull.txt** are now in the Copied state and that copying is 100% complete.

C:\>**symrcopy query -file IBM_XIV_pull.txt -detail**

Device File Name : XIV-pull.txt

Control Device	Remote Device	Flags	Status	Done	Pace	Name
SID:symdev	Protected Modified Tracks Tracks	Identification	RI CDSHUTZ	CTL <=>	REM	(%)
000195700879:0F2D	0 0	001738006313028D	.W X..XXS.	Copied	100	5 Ben_1
000195700879:0F2E	0 0	001738006313028E	.W X..XXS.	Copied	100	5 Ben_1
000195700879:0F2F	0 0	001738006313028F	.W X..XXS.	Copied	100	5 Ben_1
000195700879:0F30	0 0	0017380063130290	.W X..XXS.	Copied	100	5 Ben_1
000195700879:0F31	0 0	0017380063130291	.W X..XXS.	Copied	100	5 Ben_1
Total	-----					
Track(s)	0					
MB(s)	0.0					

Legend:

- R: (Remote Device Vendor Identification)
 S = Symmetrix, C = Clariion, . = Unknown.
- I: (Remote Device Specification Identifier)
 D = Device Name, W = LUN WWN, World Wide Name.

Flags:

- (C): X = The background copy setting is active for this pair.
 . = The background copy setting is not active for this pair.
- (D): X = The session is a differential copy session.
 . = The session is not a differential copy session.
- (S): X = The session is pushing data to the remote device(s).
 . = The session is pulling data from the remote device(s).
- (H): X = The session is a hot copy session.
 . = The session is a cold copy session.

(U): X = The session has donor update enabled.
 . = The session does not have donor update enabled.
 (T): M = The session is a migration session.
 R = The session is a RecoverPoint session.
 S = The session is a standard ORS session.
 (Z): X = The session has front-end zero detection enabled.
 . = The session does not have front-end zero detection enabled.
 (*): The failed session can be reactivated.

Step 9: Terminate Rcopy session

The **symrcopy terminate** command ends all copy sessions defined in the file XIV-pull.txt. This step requires the following two commands:

- ◆ **turn donor update off**
- ◆ **terminate the session**

```
C:\>symrcopy -file IBM-XIV-pull.txt set donor_update off -consistent -nop
```

```
'Set Donor Update Off' operation execution is in progress for the device list
in device file 'IBM-XIV-pull.txt'. Please wait...
```

```
'Set Donor Update Off' operation successfully executed for the device list
in device file 'IBM-XIV-pull.txt'.
```

```
C:\>symrcopy -file IBM-XIV-pull.txt terminate -nop
```

```
'Terminate' operation execution is in progress for the device list
in device file 'IBM-XIV-pull.txt'. Please wait...
```

```
'Terminate' operation successfully executed for the device list
in device file 'IBM-XIV-pull.txt'.
```

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