XenServer & DataCore SAN-Symphony-V

Integration of XenServer in DataCore SAN-Symphony-V

This document describes how XenServer can be successfully connected to a multi-site SAN-Symphony-V configuration. While this document relates to iSCSI configuration it should be easily adaptable to a fibre channel environment, too. In fact FC should be more trivial as no session initialization compared to iSCSI is required.

Note: This is no official Citrix recommendation. The document reflects experiences from a project related implementation. So the information provided is “as is” and does not present a full documentation of all options available.

1 Typical redundant iSCSI connection

A typical DataCore configuration consists of 2 DataCore servers with 2 NICs each and mirrored LUNs. The related XenServers have got a network connection to each of the DataCore servers twice. This results in 4 available paths from each XenServer to a LUN presented by the DataCore servers.

Find below screenshots from a sample XenServer & DataCore configuration with 2 XenServers and 2 DataCore servers:

Management Interfaces

Click Configure to add, remove or edit your management interfaces.

Server	Interface	Network	IP Address	Subnet mask	Gateway	DNS
xenserver-1	Primary	Network 0	172.16.1.1	255.255.0.0	172.16.0.254	172.16.10.10,172.16.0.254
xenserver-1	Storage	VLAN 20	172.20.1.1	255.255.0.0		
xenserver-1	Storage 2	VLAN 30	172.30.1.1	255.255.0.0		
xenserver-2	Primary	Network 0	172.16.1.2	255.255.0.0	172.16.0.254	
xenserver-2	Storage	VLAN 20	172.20.1.2	255.255.0.0		
xenserver-2	Storage 2	VLAN 30	172.30.1.2	255.255.0.0		

DataCore Server DCR01

Computer name: DCR01

Description:

Running

Info | Properties | Physical Disks | Disk Pools | Virtual Disks | Ports | Performance | Events

Name	Alias	Status	Mode	Type
22-FE-00-30-D9-49-74-C6	Loopback Port	Connected	Initiator/Target	Loopback
iqn.1991-05.com.microsoft:dcr01	Microsoft iSCSI Initiator	Connected	Initiator	iSCSI
iqn.2000-08.com.datacore:dcr01-1	Server iSCSI Port 1	Ready	Target	iSCSI
iqn.2000-08.com.datacore:dcr01-2	Server iSCSI Port 2	Ready	Target	iSCSI

DataCore Server DCR02

Computer name: DCR02

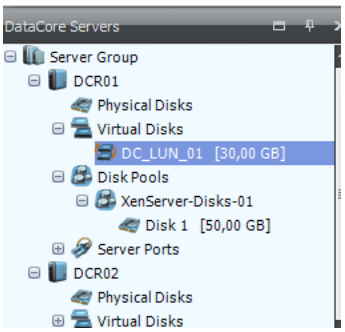
Description:

Running

Info | Properties | Physical Disks | Disk Pools | Virtual Disks | Ports | Performance | Events

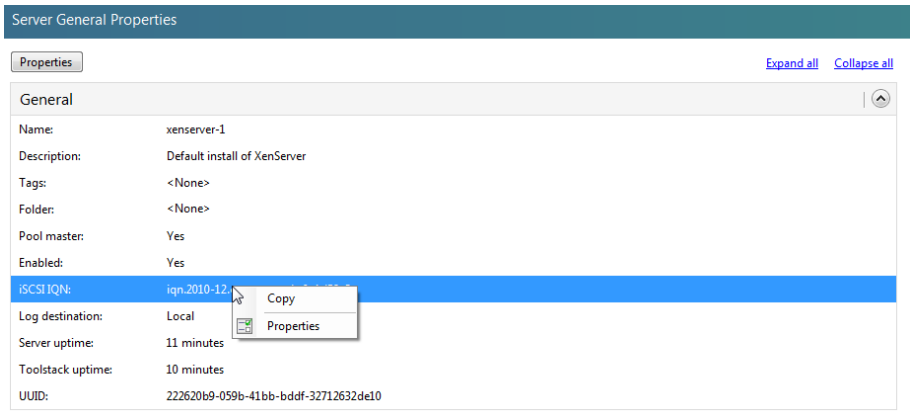
Name	Alias	Status	Mode	Type
22-FE-00-30-D9-EC-30-C0	Loopback Port	Connected	Initiator/Target	Loopback
iqn.1991-05.com.microsoft:dcr02	Microsoft iSCSI Initiator	Connected	Initiator	iSCSI
iqn.2000-08.com.datacore:dcr02-1	Server iSCSI Port 1	Ready	Target	iSCSI
iqn.2000-08.com.datacore:dcr02-2	Server iSCSI Port 2	Ready	Target	iSCSI

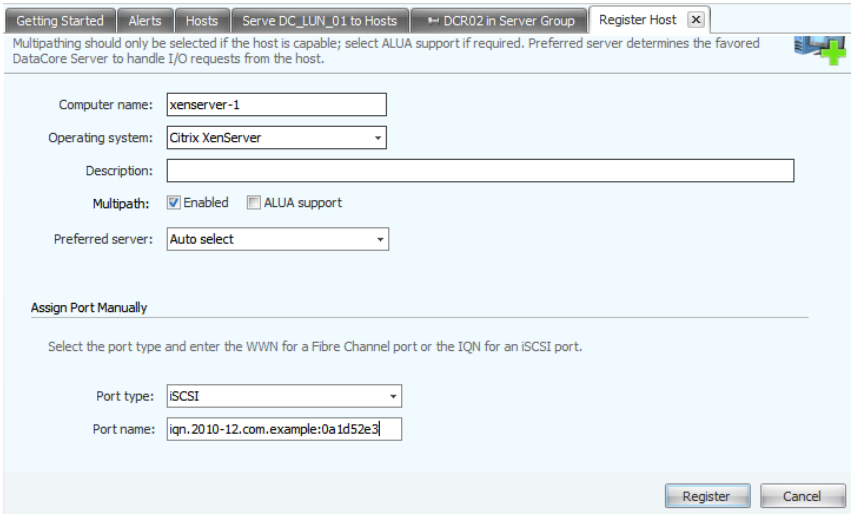
On DataCore side a LUN should be created in advance for XenServer's storage repository.



2 Preparation for storage connection

As first process the XenServers have to be created in the DataCore configuration as “registered hosts”. Copy the initiator names of the XenServers and register them as hosts in the DataCore configuration as outlined in the screenshots below. Run the steps for all XenServers available in the pool.

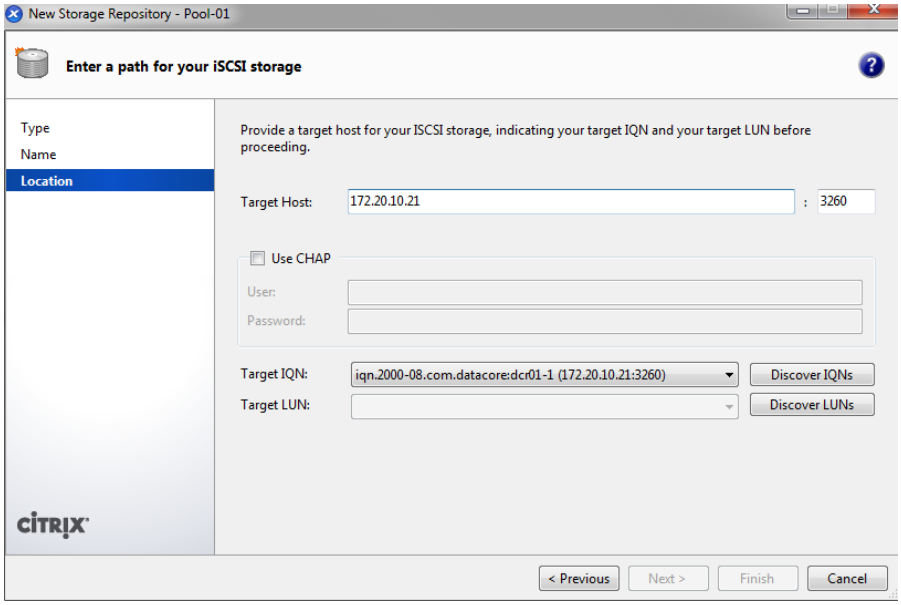




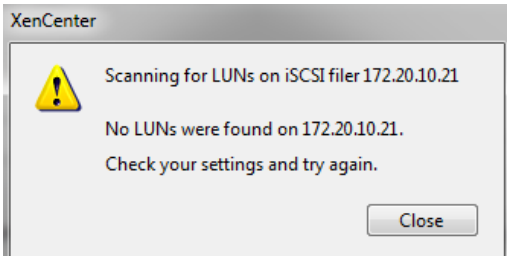
3 Establishing a single path connection to the DataCore LUN

3.1 Creating a first session to the DataCore server from the master

The DataCore servers only can serve LUNs to a host when the host port has successfully established an iSCSI connection to the DataCore server. XenServer by default does not create an iSCSI session without having a storage repository created. This makes it necessary to establish a dummy iSCSI session by running through the SR wizard as outlined below. As a consequence DataCore is able to serve a LUN to the master host.



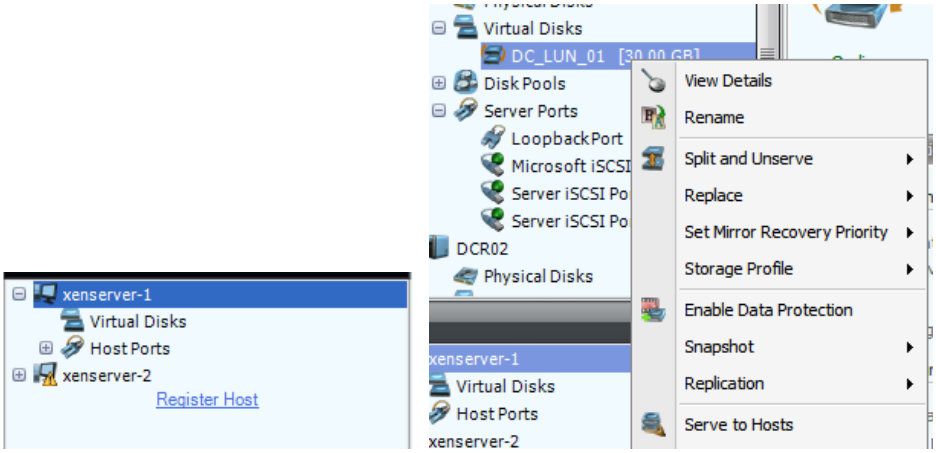
When trying to discover LUNs an error message comes up as no LUNs are assigned yet. Even without having a LUN assigned XenServer now registers the iSCSI path in XenServer database.

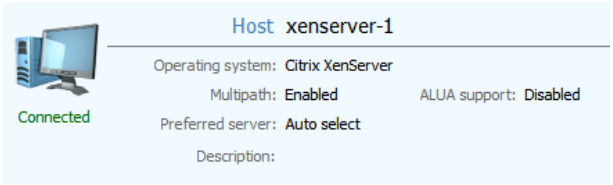


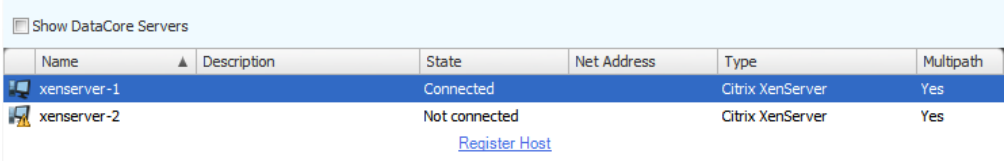
As a result we are now able to establish an iSCSI session to the DataCore server without further specifying the target IP address by issuing the command “iscsiadm –m node –l”

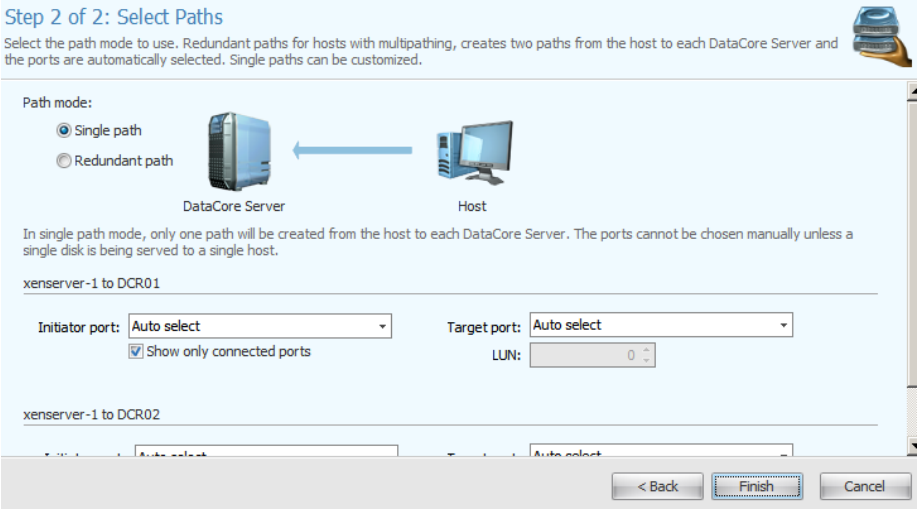
```
[root@xenserver-1 ~]# iscsiadm -m node -l
iscsiadm: no records found!
[root@xenserver-1 ~]# iscsiadm -m node -l
Logging in to [iface: default, target: iqn.2000-08.com.datacore:dcr01-1, portal: 172.20.10.21,3260]
Login to [iface: default, target: iqn.2000-08.com.datacore:dcr01-1, portal: 172.20.10.21,3260]: successful
[root@xenserver-1 ~]#
```

The host port now shows up as “connected” in the DataCore management and the LUN can be served to the master host in a single path configuration.



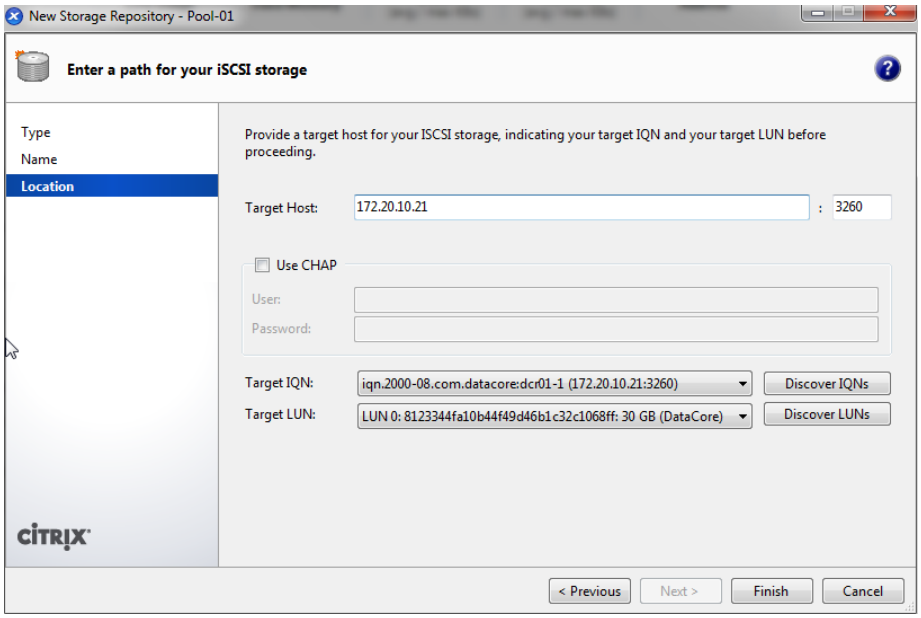




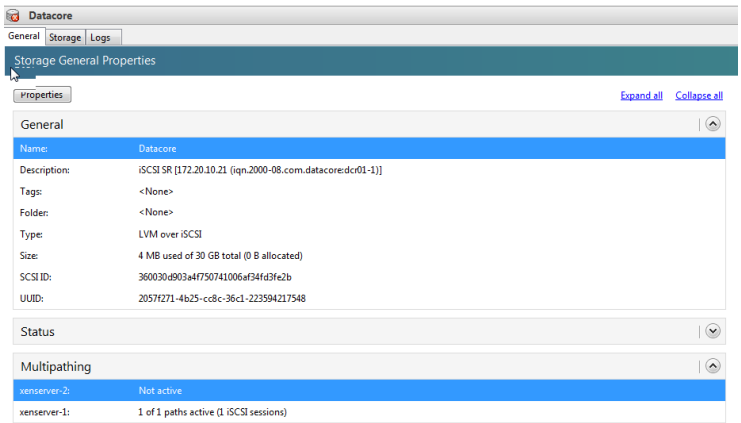


3.2 Creating a session to the DataCore server from all XenServer pool members

As 2nd step an iSCSI session from all XenServer pool members to the DataCore server can be established. To do this the storage repository has to be detached and re-attached again with connection to the previously used DataCore server IP.



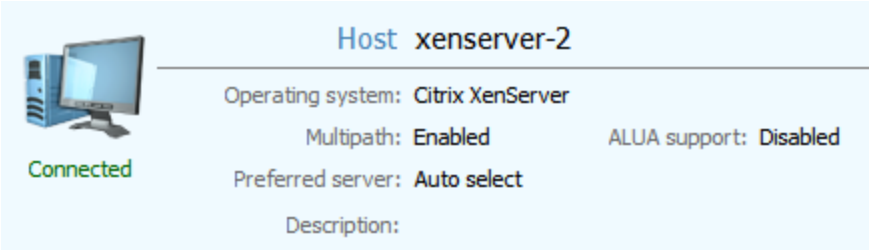
This step will take some time as not all iSCSI connections are available yet and communication cannot take place in every direction. However as a result similar to the master connection the iSCSI connections are now stored in the XenServer database for the member hosts and can be established by running the very same iscsiadm command as before, now on all member hosts.

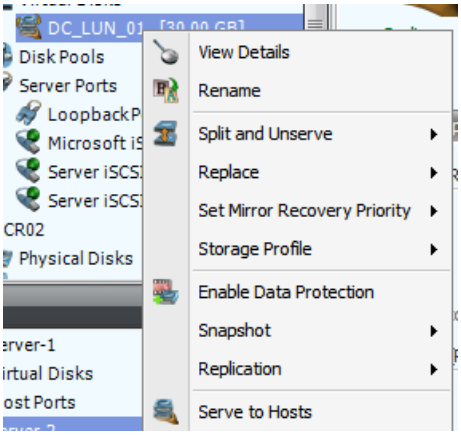


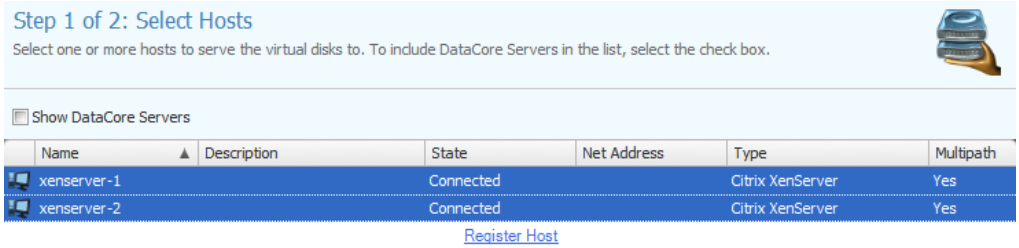

```
[root@xenserver-2 ~]# iscsiadm -m node -l
Logging in to [iface: default, target: iqn.2000-08.com.datacore:dcr01-1, portal: 172.20.10.21,3260]
Login to [iface: default, target: iqn.2000-08.com.datacore:dcr01-1, portal: 172.20.10.21,3260]: successful
[root@xenserver-2 ~]#
```

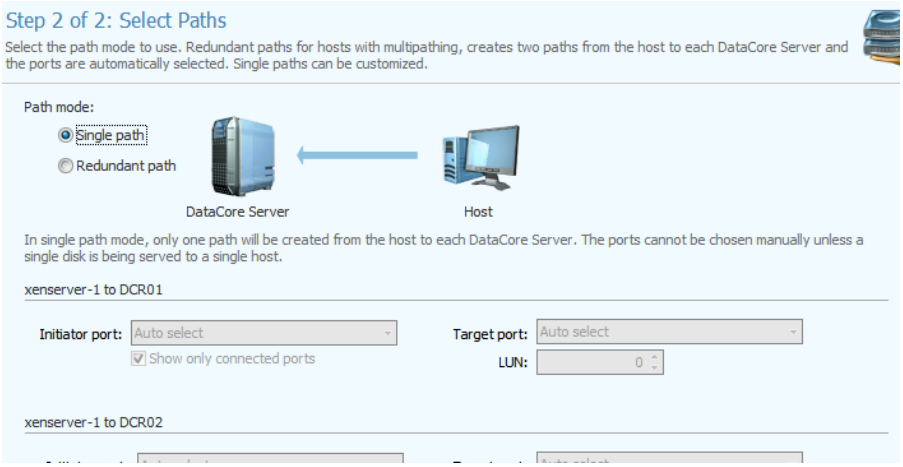
3.3 Serving the LUN to all XenServer pool members

All member XenServers should now show up as connected on the DataCore server. Now the LUN can be served to all pool members in a single path configuration as DataCore has connected ports from all servers.

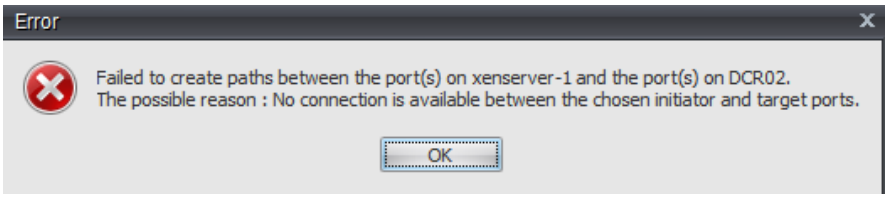




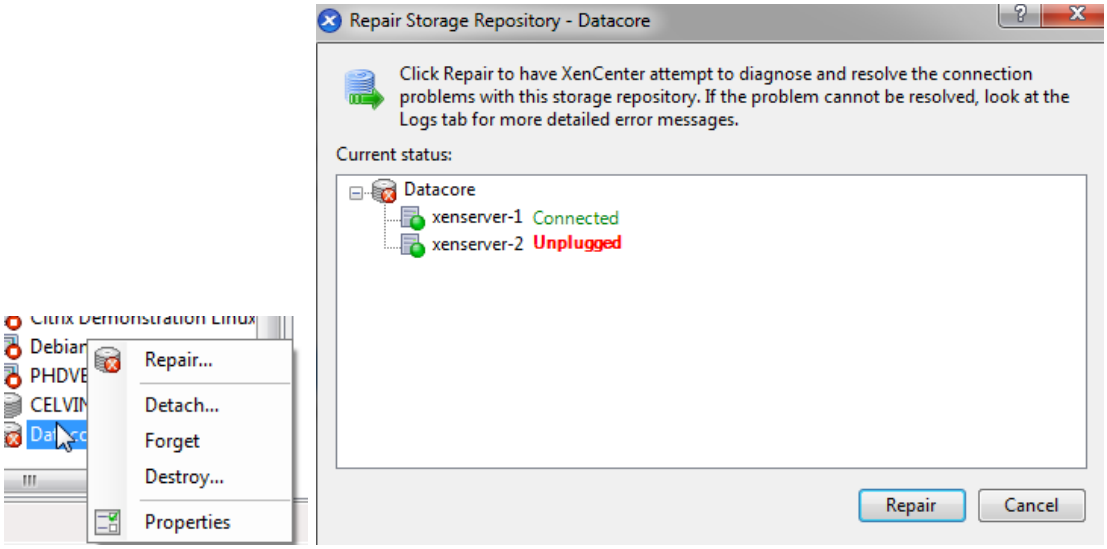




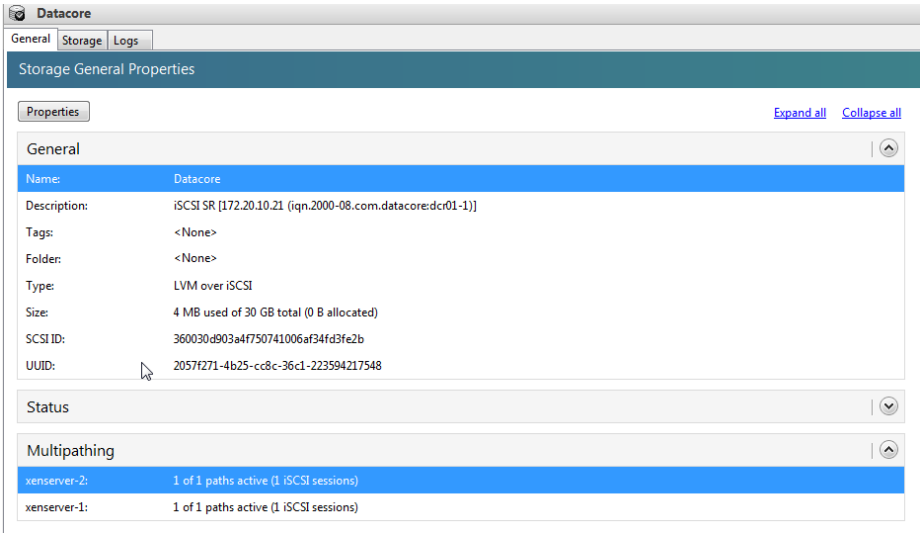
Don’t mind about the error message below. As soon as we configure all paths in XenServer this message won’t come up anymore.



Now repair the storage repository on XenServer side.

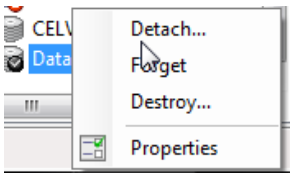


The storage repository should be connected successfully with 1 path from all pool members.

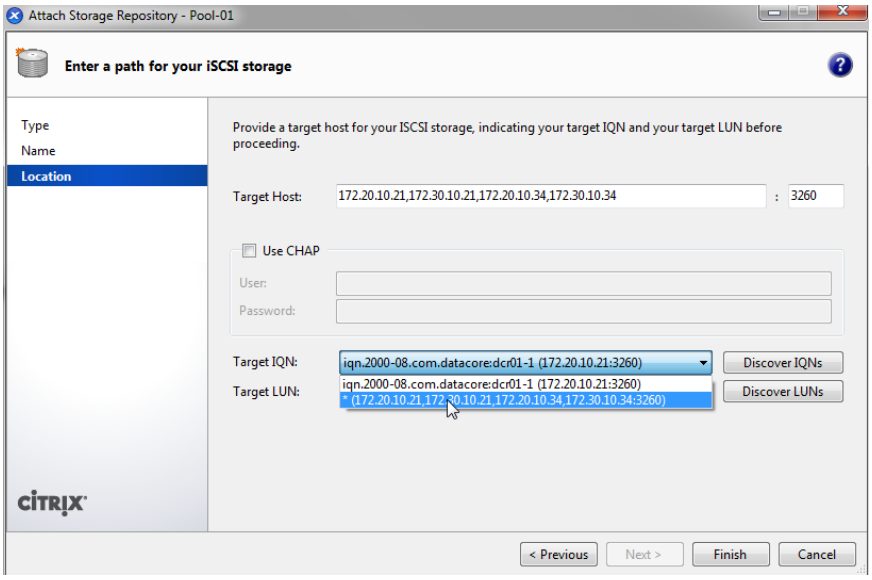


4 Establishing a multipath connection to the LUN

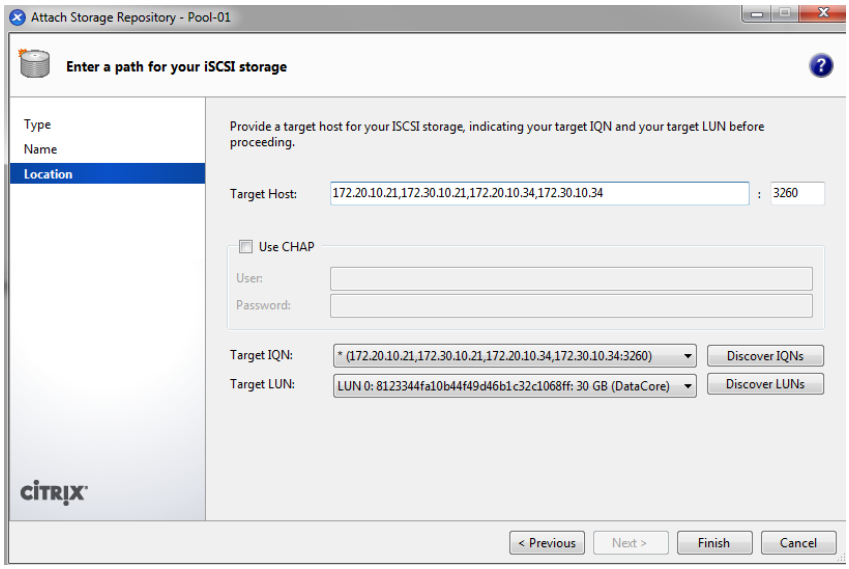
As next step we want to connect all available paths to the existing LUN making the multipath configuration complete. To get this we first have to detach the storage repository in XenCenter.



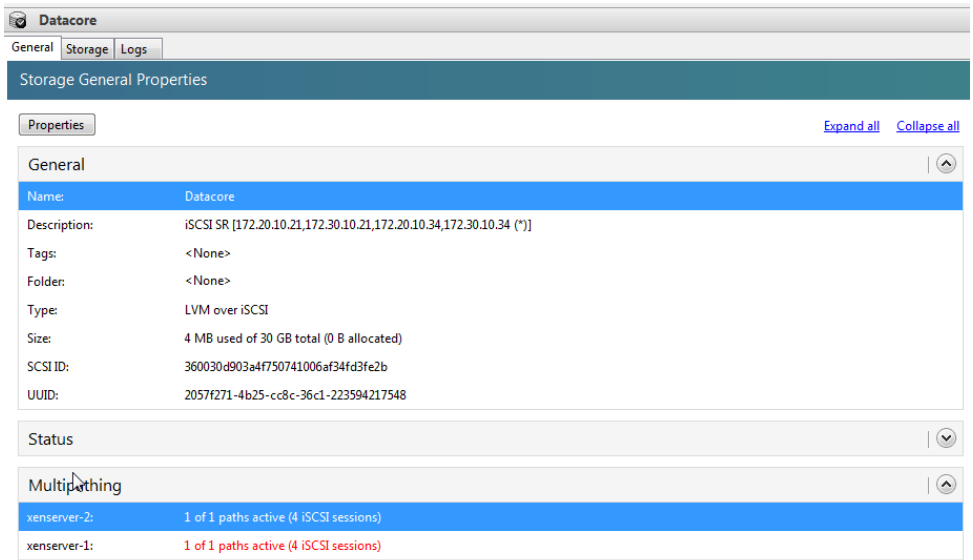
Now the storage repository has to be re-attached again. In this step we specify all available DataCore target ports separated by comma as “target host” in the storage repository wizard. Using this syntax XenServer establishes an iSCSI connection to all specified targets. This especially is required in case a storage system (like DataCore) uses separate IQNs for each iSCSI target.



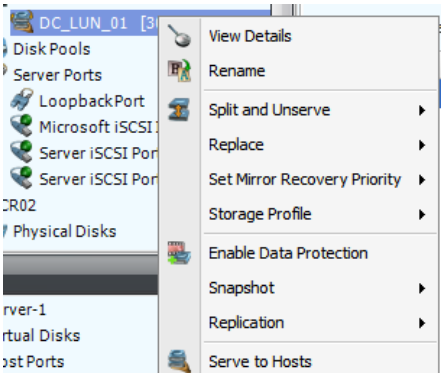
Make sure to select the value marked with “*” in the target IQN drop down menu. Without this selection XenServer wouldn’t connect to all available IQNs.

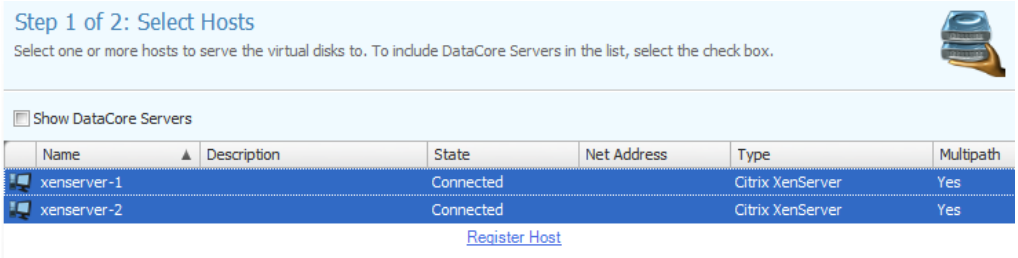


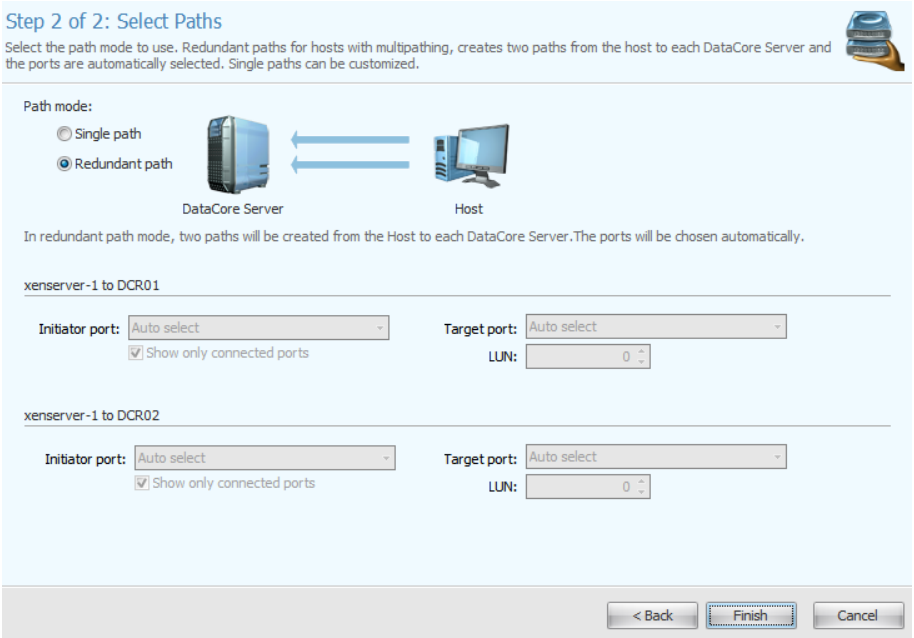
Having finished the wizard we should see 1 path connected per hosts, but 4 known iSCSI sessions. This is because the paths haven't been assigned yet in DataCore and the LUN is only presented as a single path LUN.



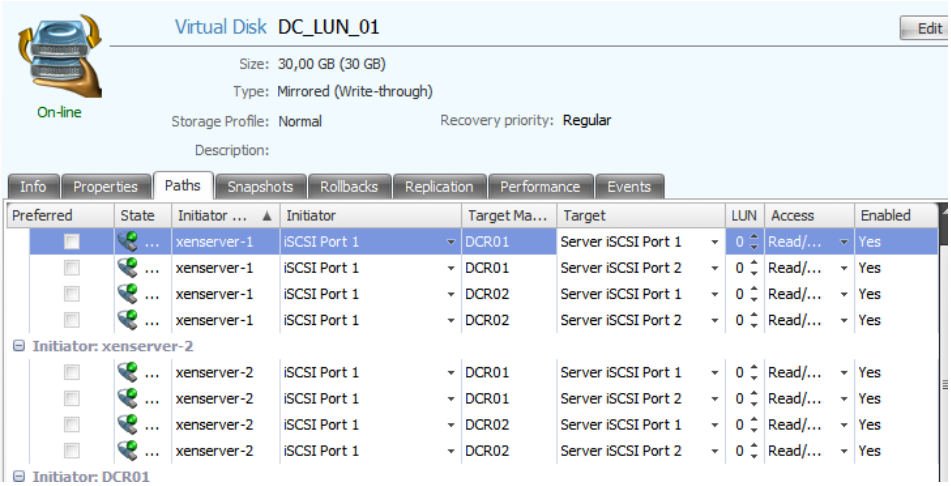
On DataCore side now again serve the LUN to the hosts. As difference to the previous steps now the LUN is served with "redundant paths" like shown below.



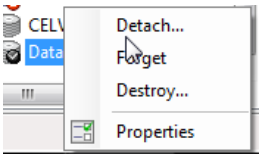


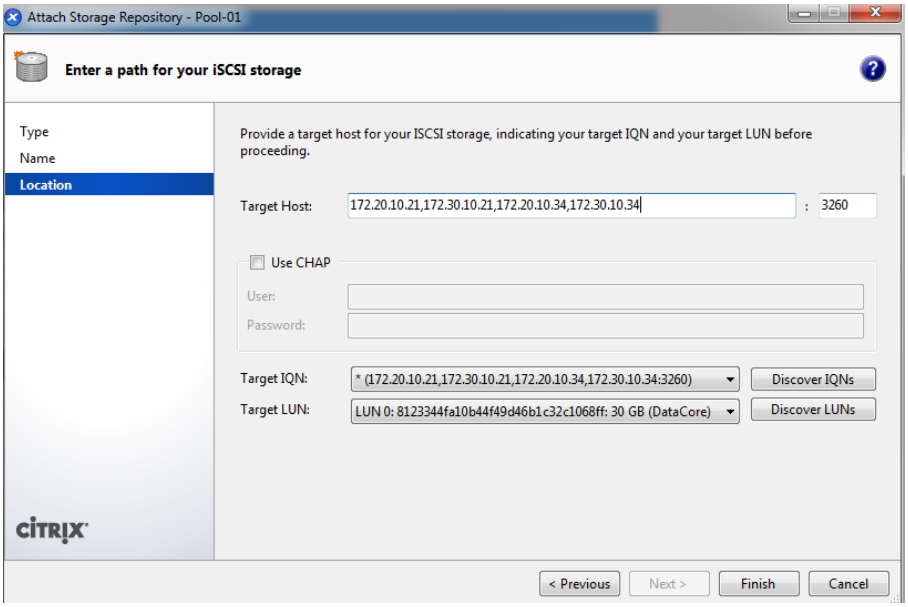


As a result all paths from the XenServers should be listed in the “paths” view when looking at the LUN options.

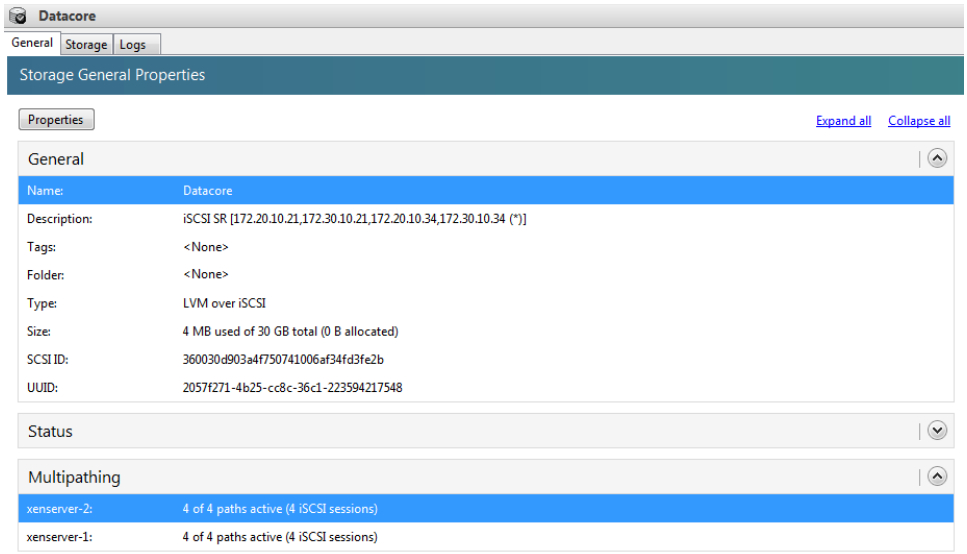


To reflect the changes on XenServer and make the configuration complete it's recommended to detach and re-attach the storage repository again the same way as in the previous steps.





After running through these steps XenServer should show up 4 connected paths to the LUN for each pool member server.


Datacore
General
Storage
Logs
Storage General Properties
Properties
Expand all
Collapse all
General
Name: Datacore
Description: iSCSI SR [172.20.10.21,172.30.10.21,172.20.10.34,172.30.10.34 (*)]
Tags: <None>
Folder: <None>
Type: LVM over iSCSI
Size: 4 MB used of 30 GB total (0 B allocated)
SCSI ID: 360030d903a4f750741006af34fd3fe2b
UUID: 2057f271-4b25-cc8c-36c1-223594217548
Status
Multipathing
xenserver-2: 4 of 4 paths active (4 iSCSI sessions)
xenserver-1: 4 of 4 paths active (4 iSCSI sessions)

5 Multipath options for DataCore

XenServer as well as DataCore can support native DMP multipathing as well as ALUA in addition. According to the officially DataCore TB15 document ALUA is only supported for iSCSI connections:

ftp://support.DataCore.com/psp/TBs/TBulletin15c_Citrix_XenServer_56_6x.pdf

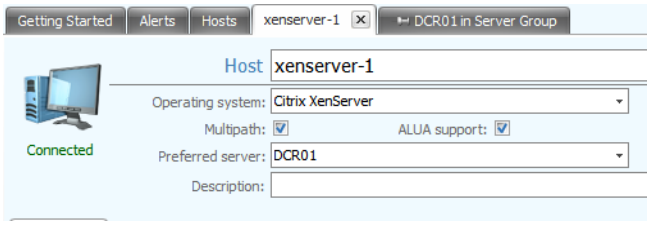
Please contact DataCore for details regarding supported configurations.

Find below 2 possible multipath.conf configurations related to XenServer 6.0.2. SAN-Symphony-V represents LUNs as product “Virtual Disk”. In XenServer 6.0.2 the default section for DataCore mentions “SAN*” as product which has to be changed for SAN-Symphony-V.

DMP multipathing	**DMP multipathing with ALUA**

device {
vendor "DataCore"
product "**Virtual Disk**"
path_checker tur
path_grouping_policy failover
failback 30
}
	device {
	vendor "DataCore"
	product "**Virtual Disk**"
	path_checker tur
	prio_callout "/sbin/mpath_prio_alua %d"
	path_grouping_policy group_by_prio
	failback 30
	}

Comment: *default multipath.conf in XenServer with changed product name to “Virtual Disk”*	

When using ALUA as multipathing technology, DataCore sends path priorities to XenServer which enable it to use the most appropriate path from bandwidth and latency perspective. This e.g. could make sense in a geographically dispersed configuration where customers want to make sure that XenServers on site 1 connect primarily to the DataCore server on site 1.

If ALUA should be used it has to be configured on XenServer side as well as on DataCore side, see below. After changing the configuration as a whole the XenServer have to be rebooted to apply the new settings.