

WHITE PAPER

How to Configure Fedora Virtual Machine as iSCSI Target for Global-Active Device Quorum

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Executive Summary

This guide provides instructions to configure a Fedora Linux virtual machine as an iSCSI Target.

Introduction

This guide provides instructions to configure a Fedora Linux virtual machine as an iSCSI Target. We will use the Linux package “targetcli” to create and manage SCSI devices on the Fedora virtual machine. The end objective is to leverage volumes from the iSCSI Target virtual machine as quorum volumes for Hitachi Global-Active Device (GAD).

- Volumes from an iSCSI Target virtual machine should only be used for GAD quorums. Do not use them as data volumes.
- This whitepaper assumes the reader is familiar with the Fedora OS. Instructions for installing Fedora is not a part of this document. The OS installation media and documentation are available at <https://getfedora.org/en/server/download/>.

Intended Audience

This document is intended for Hitachi Vantara International Sales Force representatives who need a foundation of knowledge on this product to best represent it to potential buyers.

Document Revisions

Revision	Date	Description
0.1	March 2019	Initial release of the document for internal review
0.2	March 2019	Initial release of the document for PM review
1.0	April 2019	Public release

Contributors

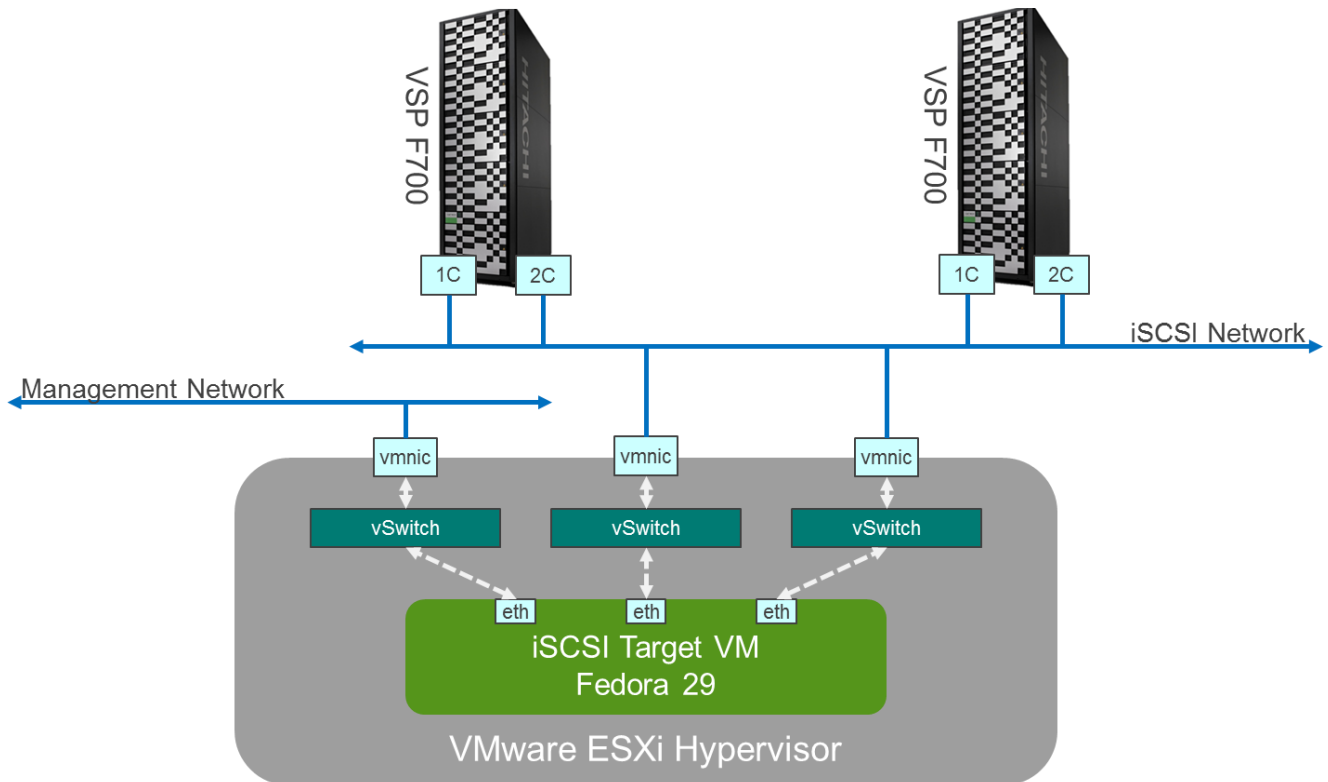
The information included in this document represents the expertise, feedback, and suggestions of several skilled practitioners. The author would like to recognize and sincerely thank the following contributors and reviewers of this document (listed alphabetically by last name):

- Paul Romero (Engineering Operation Services)
- Manoranjan Rout (Engineering Operation Services)

Configuration and Specifications

Diagram

Figure 1. below shows a high-level view of the test environment.



Virtual Storage Platform F700

- Microcode: SVOS RF 8.3.1 88-03-21-60/00
- iSCSI Ports: 10iSCSI2o(CHB)
 - The Virtual Storage Platform F700 is used as an example in this whitepaper. The iSCSI Target VM is supported on all storage platforms.

Hypervisor

- Dell R710
 - (1) Intel Xeon E5649 @ 2.53GHz, 96GB memory
 - Network: Qlogic NetXtreme II BCM5709 1000Base-T
 - OS: VMware ESXi 6.7.0 (Build 8169922)

Virtual Machine

- Fedora 29 (Server Edition)
 - (4) Virtual CPUs, 16GB memory
 - Kernel: 4.18.16-300.fc29.x86_64
 - Targetcli: targetcli-2.1.fb48-6.fc29.noarch

Instructions

Installation

The targetcli package is available from the standard Fedora repositories so the user can simply install it using yum.

1. Install the package: **yum install targetcli -y**. The output looks like below.

```

Fedora Modular 29 - x86_64                395 kB/s | 1.5 MB    00:03
Fedora Modular 29 - x86_64 - Updates      2.3 MB/s | 1.9 MB    00:00
Fedora 29 - x86_64 - Updates              1.7 MB/s | 20 MB     00:11
Fedora 29 - x86_64                       11 MB/s | 62 MB     00:05

```

Last metadata expiration check: 0:00:01 ago on Mon 14 Jan 2019 03:02:50 PM MST.

Dependencies resolved.

```

=====
Package                               Arch             Version          Repository       Size
=====
Installing:
Targetcli                             noarch          2.1.fb48-6.fc29 fedora           65 k
Installing dependencies:
Cairo                                  x86_64          1.16.0-3.fc29   updates         676 k
cairo-gobject                          x86_64          1.16.0-3.fc29   updates         18 k
fontconfig                             x86_64          2.13.1-3.fc29   updates         235 k
libX11                                  x86_64          1.6.7-1.fc29    updates         593 k
libX11-common                          noarch          1.6.7-1.fc29    updates         155 k
dejavu-fonts-common                    noarch          2.35-7.fc29     fedora          65 k
dejavu-sans-fonts                      noarch          2.35-7.fc29     fedora          1.5 M
fontpackages-filesystem                noarch          1.44-22.fc29    fedora          7.7 k
libXau                                  x86_64          1.0.8-14.fc29   fedora          29 k
libXext                                 x86_64          1.3.3-10.fc29   fedora          38 k
libXrender                              x86_64          0.9.10-8.fc29   fedora          26 k
libxcb                                   x86_64          1.13.1-1.fc29   fedora          201 k
python3-cairo                           x86_64          1.17.1-2.fc29   fedora          85 k
python3-configshell                    noarch          1:1.1.fb24-5.fc29 fedora          69 k
python3-gobject                         x86_64          3.30.1-1.fc29   fedora          15 k
python3-kmod                            x86_64          0.9-20.fc29     fedora          88 k
python3-pyparsing                      noarch          2.2.0-3.fc29    fedora          138 k
python3-pyudev                          noarch          0.21.0-8.fc29   fedora          79 k
python3-rtslib                          noarch          2.1.fb67-5.fc29 fedora          89 k
python3-urwid                            x86_64          2.0.1-4.fc29    fedora          779 k
target-restore                          noarch          2.1.fb67-5.fc29 fedora          15 k

```

Transaction Summary

```

=====
Install 22 Packages

```

Total download size: 4.9 M

Installed size: 17 M

Downloading Packages:

```

(1/22): cairo-gobject-1.16.0-3.fc29.x86_64.rpm      14 kB/s | 18 kB    00:01
(2/22): fontconfig-2.13.1-3.fc29.x86_64.rpm       178 kB/s | 235 kB  00:01
(3/22): libX11-common-1.6.7-1.fc29.noarch.rpm      2.0 MB/s | 155 kB  00:00
(4/22): cairo-1.16.0-3.fc29.x86_64.rpm            478 kB/s | 676 kB  00:01
(5/22): libX11-1.6.7-1.fc29.x86_64.rpm            2.1 MB/s | 593 kB  00:00
(6/22): dejavu-fonts-common-2.35-7.fc29.noarch.rpm 390 kB/s | 65 kB   00:00
(7/22): libXau-1.0.8-14.fc29.x86_64.rpm           646 kB/s | 29 kB   00:00
(8/22): libXext-1.3.3-10.fc29.x86_64.rpm          494 kB/s | 38 kB   00:00
(9/22): fontpackages-filesystem-1.44-22.fc29.noarch.rpm 51 kB/s | 7.7 kB  00:00
(10/22): libXrender-0.9.10-8.fc29.x86_64.rpm      337 kB/s | 26 kB   00:00
(11/22): python3-cairo-1.17.1-2.fc29.x86_64.rpm   1.0 MB/s | 85 kB   00:00
(12/22): python3-configshell-1.1.fb24-5.fc29.noarch.rpm 841 kB/s | 69 kB   00:00
(13/22): python3-gobject-3.30.1-1.fc29.x86_64.rpm 190 kB/s | 15 kB   00:00
(14/22): python3-kmod-0.9-20.fc29.x86_64.rpm      1.1 MB/s | 88 kB   00:00
(15/22): python3-pyparsing-2.2.0-3.fc29.noarch.rpm 1.7 MB/s | 138 kB  00:00
(16/22): python3-pyudev-0.21.0-8.fc29.noarch.rpm   974 kB/s | 79 kB   00:00
(17/22): libxcb-1.13.1-1.fc29.x86_64.rpm          351 kB/s | 201 kB  00:00
(18/22): python3-rtslib-2.1.fb67-5.fc29.noarch.rpm 1.1 MB/s | 89 kB   00:00
(19/22): target-restore-2.1.fb67-5.fc29.noarch.rpm 203 kB/s | 15 kB   00:00
(20/22): targetcli-2.1.fb48-6.fc29.noarch.rpm      1.2 MB/s | 65 kB   00:00
(21/22): dejavu-sans-fonts-2.35-7.fc29.noarch.rpm 1.3 MB/s | 1.5 MB  00:01
(22/22): python3-urwid-2.0.1-4.fc29.x86_64.rpm    553 kB/s | 779 kB  00:01

```

```

-----
Total                               945 kB/s | 4.9 MB    00:05

```

```

warning: /var/cache/dnf/updates-0b4cc238d1aa4ffe/packages/cairo-1.16.0-3.fc29.x86_64.rpm:
Header V3 RSA/SHA256 Signature, key ID 429476b4: NOKEY
Fedora 29 - x86_64 - Updates                                1.6 kB/s | 1.6 kB      00:01
Importing GPG key 0x429476B4:
  Userid      : "Fedora 29 (29) <fedora-29@fedoraproject.org>"
  Fingerprint: 5A03 B4DD 8254 ECA0 2FDA 1637 A20A A56B 4294 76B4
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-fedora-29-x86_64
Key imported successfully
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                                    1/1
Installed: fontpackages-filesystem-1.44-22.fc29.noarch
  Installing     : fontpackages-filesystem-1.44-22.fc29.noarch          1/22
Installed: fontpackages-filesystem-1.44-22.fc29.noarch
Installed: dejavu-fonts-common-2.35-7.fc29.noarch
  Installing     : dejavu-fonts-common-2.35-7.fc29.noarch              2/22
Installed: dejavu-fonts-common-2.35-7.fc29.noarch
Installed: dejavu-sans-fonts-2.35-7.fc29.noarch
  Installing     : dejavu-sans-fonts-2.35-7.fc29.noarch                 3/22
Installed: dejavu-sans-fonts-2.35-7.fc29.noarch
Installed: fontconfig-2.13.1-3.fc29.x86_64
  Installing     : fontconfig-2.13.1-3.fc29.x86_64                     4/22
  Running scriptlet: fontconfig-2.13.1-3.fc29.x86_64                   4/22
Installed: fontconfig-2.13.1-3.fc29.x86_64
Installed: python3-urwid-2.0.1-4.fc29.x86_64
  Installing     : python3-urwid-2.0.1-4.fc29.x86_64                   5/22
Installed: python3-urwid-2.0.1-4.fc29.x86_64
Installed: python3-pyudev-0.21.0-8.fc29.noarch
  Installing     : python3-pyudev-0.21.0-8.fc29.noarch                  6/22
Installed: python3-pyudev-0.21.0-8.fc29.noarch
Installed: python3-pyparsing-2.2.0-3.fc29.noarch
  Installing     : python3-pyparsing-2.2.0-3.fc29.noarch                7/22
Installed: python3-pyparsing-2.2.0-3.fc29.noarch
Installed: python3-configshell-1:1.1.fb24-5.fc29.noarch
  Installing     : python3-configshell-1:1.1.fb24-5.fc29.noarch         8/22
Installed: python3-configshell-1:1.1.fb24-5.fc29.noarch
Installed: python3-kmod-0.9-20.fc29.x86_64
  Installing     : python3-kmod-0.9-20.fc29.x86_64                     9/22
Installed: python3-kmod-0.9-20.fc29.x86_64
Installed: python3-rtslib-2.1.fb67-5.fc29.noarch
  Installing     : python3-rtslib-2.1.fb67-5.fc29.noarch                10/22
Installed: python3-rtslib-2.1.fb67-5.fc29.noarch
Installed: target-restore-2.1.fb67-5.fc29.noarch
  Installing     : target-restore-2.1.fb67-5.fc29.noarch                11/22
  Running scriptlet: target-restore-2.1.fb67-5.fc29.noarch             11/22
Installed: target-restore-2.1.fb67-5.fc29.noarch
Installed: libXau-1.0.8-14.fc29.x86_64
  Installing     : libXau-1.0.8-14.fc29.x86_64                          12/22
Installed: libXau-1.0.8-14.fc29.x86_64
Installed: libxcb-1.13.1-1.fc29.x86_64
  Installing     : libxcb-1.13.1-1.fc29.x86_64                          13/22
Installed: libxcb-1.13.1-1.fc29.x86_64
Installed: libX11-common-1.6.7-1.fc29.noarch
  Installing     : libX11-common-1.6.7-1.fc29.noarch                    14/22
Installed: libX11-common-1.6.7-1.fc29.noarch
Installed: libX11-1.6.7-1.fc29.x86_64
  Installing     : libX11-1.6.7-1.fc29.x86_64                           15/22
Installed: libX11-1.6.7-1.fc29.x86_64
Installed: libXext-1.3.3-10.fc29.x86_64
  Installing     : libXext-1.3.3-10.fc29.x86_64                         16/22
Installed: libXext-1.3.3-10.fc29.x86_64
Installed: libXrender-0.9.10-8.fc29.x86_64
  Installing     : libXrender-0.9.10-8.fc29.x86_64                      17/22

```

```

Installed: libXrender-0.9.10-8.fc29.x86_64
Installed: cairo-1.16.0-3.fc29.x86_64
  Installing      : cairo-1.16.0-3.fc29.x86_64                                18/22
Installed: cairo-gobject-1.16.0-3.fc29.x86_64
  Installing      : cairo-gobject-1.16.0-3.fc29.x86_64                        19/22
Installed: cairo-gobject-1.16.0-3.fc29.x86_64
Installed: python3-cairo-1.17.1-2.fc29.x86_64
  Installing      : python3-cairo-1.17.1-2.fc29.x86_64                        20/22
Installed: python3-cairo-1.17.1-2.fc29.x86_64
Installed: python3-gobject-3.30.1-1.fc29.x86_64
  Installing      : python3-gobject-3.30.1-1.fc29.x86_64                    21/22
Installed: python3-gobject-3.30.1-1.fc29.x86_64
Installed: targetcli-2.1.fb48-6.fc29.noarch
  Installing      : targetcli-2.1.fb48-6.fc29.noarch                          22/22
Installed: targetcli-2.1.fb48-6.fc29.noarch
  Running scriptlet: targetcli-2.1.fb48-6.fc29.noarch                        22/22
  Running scriptlet: fontconfig-2.13.1-3.fc29.x86_64                        22/22
  Verifying        : cairo-1.16.0-3.fc29.x86_64                             1/22
  Verifying        : cairo-gobject-1.16.0-3.fc29.x86_64                    2/22
  Verifying        : fontconfig-2.13.1-3.fc29.x86_64                        3/22
  Verifying        : libX11-1.6.7-1.fc29.x86_64                             4/22
  Verifying        : libX11-common-1.6.7-1.fc29.noarch                      5/22
  Verifying        : dejavu-fonts-common-2.35-7.fc29.noarch                 6/22
  Verifying        : dejavu-sans-fonts-2.35-7.fc29.noarch                  7/22
  Verifying        : fontpackages-filesystem-1.44-22.fc29.noarch            8/22
  Verifying        : libXau-1.0.8-14.fc29.x86_64                           9/22
  Verifying        : libXext-1.3.3-10.fc29.x86_64                          10/22
  Verifying        : libXrender-0.9.10-8.fc29.x86_64                       11/22
  Verifying        : libxcb-1.13.1-1.fc29.x86_64                           12/22
  Verifying        : python3-cairo-1.17.1-2.fc29.x86_64                    13/22
  Verifying        : python3-configshell-1:1.1.fb24-5.fc29.noarch          14/22
  Verifying        : python3-gobject-3.30.1-1.fc29.x86_64                 15/22
  Verifying        : python3-kmod-0.9-20.fc29.x86_64                       16/22
  Verifying        : python3-pyparsing-2.2.0-3.fc29.noarch                 17/22
  Verifying        : python3-pyudev-0.21.0-8.fc29.noarch                  18/22
  Verifying        : python3-rtslib-2.1.fb67-5.fc29.noarch                 19/22
  Verifying        : python3-urwid-2.0.1-4.fc29.x86_64                    20/22
  Verifying        : target-restore-2.1.fb67-5.fc29.noarch                 21/22
  Verifying        : targetcli-2.1.fb48-6.fc29.noarch                      22/22

```

Installed:

```

targetcli-2.1.fb48-6.fc29.noarch
cairo-gobject-1.16.0-3.fc29.x86_64
libX11-1.6.7-1.fc29.x86_64
dejavu-fonts-common-2.35-7.fc29.noarch
fontpackages-filesystem-1.44-22.fc29.noarch
libXext-1.3.3-10.fc29.x86_64
libxcb-1.13.1-1.fc29.x86_64
python3-configshell-1:1.1.fb24-5.fc29.noarch
python3-kmod-0.9-20.fc29.x86_64
python3-pyudev-0.21.0-8.fc29.noarch
python3-urwid-2.0.1-4.fc29.x86_64
cairo-1.16.0-3.fc29.x86_64
fontconfig-2.13.1-3.fc29.x86_64
libX11-common-1.6.7-1.fc29.noarch
dejavu-sans-fonts-2.35-7.fc29.noarch
libXau-1.0.8-14.fc29.x86_64
libXrender-0.9.10-8.fc29.x86_64
python3-cairo-1.17.1-2.fc29.x86_64
python3-gobject-3.30.1-1.fc29.x86_64
python3-pyparsing-2.2.0-3.fc29.noarch
python3-rtslib-2.1.fb67-5.fc29.noarch
target-restore-2.1.fb67-5.fc29.noarch

```

Complete!

2. Start the application: **systemctl start target.**
3. Set the application to start automatically for future reboots: **systemctl enable target.**

Firewall Exemption

Targetcli serves iSCSI traffic on port TCP 3260 so the next step is to configure the OS firewall to allow traffic on this port.

1. `firewall-cmd --permanent --add-port=3260/tcp`
2. `firewall-cmd --reload`

Configuration

The final step is to configure targetcli. This section demonstrates how to configure the application to serve one 13GB volume over two iSCSI interfaces.

1. Log in to the application: `targetcli`.

```
Warning: Could not load preferences file /root/.targetcli/prefs.bin.
targetcli shell version 2.1.fb48
Copyright 2011-2013 by Datera, Inc and others.
For help on commands, type 'help'.
```

2. Create a 13GB file-based device in the folder “/quorums”.

```
/> backstores/fileio create volume1 /quorums/volume1 13G
Created fileio volume1 with size 13958643712
```

3. Create a custom iSCSI Qualified Name. This step is optional. User can simply use the default IQN.

Note: we are creating two IQNs because we are using two network interfaces.

```
/> cd /iscsi
/iscsi> create iqn.2019-01.linux-iscsi.vml-iscsi:port1
Created target iqn.2019-01.linux-iscsi.vml-iscsi:port1.
Created TPG 1.
Global pref auto_add_default_portal=true
Created default portal listening on all IPs (0.0.0.0), port 3260.
/iscsi> create iqn.2019-01.linux-iscsi.vml-iscsi:port2
Created target iqn.2019-01.linux-iscsi.vml-iscsi:port2.
Created TPG 1.
Global pref auto_add_default_portal=true
Created default portal listening on all IPs (0.0.0.0), port 3260.
```

4. Change the listening IP address from ALL to a specific IP address. This step is optional but recommended, for example, on an OS with multiple IP addresses.

```
/iscsi> cd iqn.2019-01.linux-iscsi.vml-iscsi:port1/tpg1/portals/
/iscsi/iqn.20.../tpg1/portals> delete 0.0.0.0 3260
Deleted network portal 0.0.0.0:3260
/iscsi/iqn.20.../tpg1/portals> create 192.168.100.65 3260
Using default IP port 3260
Created network portal 192.168.100.65:3260.
/iscsi> cd /iscsi/iqn.2019-01.linux-iscsi.vml-iscsi:port2/tpg1/portals/
/iscsi/iqn.20.../tpg1/portals> delete 0.0.0.0 3260
Deleted network portal 0.0.0.0:3260
/iscsi/iqn.20.../tpg1/portals> create 192.168.100.66 3260
Using default IP port 3260
Created network portal 192.168.100.66:3260.
```

5. Map volume1 created earlier as LUN 0.

```
/iscsi/iqn.20...rt1/tpg1/luns> create /backstores/fileio/volume1
Created LUN 0.
/iscsi/iqn.20...pg1/luns/lun0> cd /iscsi/iqn.2019-01.linux-iscsi.vml-iscsi:port2/tpg1/luns/
/iscsi/iqn.20...rt2/tpg1/luns> create /backstores/fileio/volume1
Created LUN 0.
```

6. Mask the initiator IQNs of the storage system so the Virtual Storage Platform F700 could discover LUN 0.

```
/> cd iscsi/iqn.2019-01.linux-iscsi.vml-iscsi:port1/tpg1/acls
```

```

/iscsi/iqn.20...rt1/tpg1/acls> create iqn.1994-04.jp.co.hitachi:rsd.h8m.i.123ac1.1a
Created Node ACL for iqn.1994-04.jp.co.hitachi:rsd.h8m.i.123ac1.1a
Created mapped LUN 0.
/iscsi/iqn.20...rt1/tpg1/acls> cd /iscsi/iqn.2019-01.linux-iscsi.vml-iscsi:port2/tpg1/acls
/iscsi/iqn.20...rt2/tpg1/acls> create iqn.1994-04.jp.co.hitachi:rsd.h8m.i.123ac1.2a
Created Node ACL for iqn.1994-04.jp.co.hitachi:rsd.h8m.i.123ac1.2a
Created mapped LUN 0.

```

7. Save the configuration.

```

/iscsi/iqn.20...rt2/tpg1/acls> cd /
/> saveconfig
Configuration saved to /etc/target/saveconfig.json

```

8. The completed targetcli configuration will look like below.

```

/> ls
o- / ..... [....]
  o- backstores ..... [....]
    | o- block ..... [Storage Objects: 0]
    | o- fileio ..... [Storage Objects: 1]
    | | o- volume1 ..... [/quorums/volume1 (13.0GiB) write-back activated]
    | | | o- alua ..... [ALUA Groups: 1]
    | | |   o- default_tg_pt_gp ..... [ALUA state: Active/optimized]
    | o- pscsi ..... [Storage Objects: 0]
    | o- ramdisk ..... [Storage Objects: 0]
  o- iscsi ..... [Targets: 2]
    | o- iqn.2019-01.linux-iscsi.vml-iscsi:port1 ..... [TPGs: 1]
    | | o- tpg1 ..... [no-gen-acls, no-auth]
    | |   o- acls ..... [ACLs: 1]
    | | | o- iqn.1994-04.jp.co.hitachi:rsd.h8m.i.123ac1.1a ..... [Mapped LUNs: 1]
    | | | | o- mapped_lun0 ..... [lun0 fileio/volume1 (rw)]
    | | | | o- lun0 ..... [fileio/volume1 (/quorums/volume1) (default_tg_pt_gp)]
    | |   o- portals ..... [Portals: 1]
    | |     o- 192.168.100.65:3260 ..... [OK]
    | o- iqn.2019-01.linux-iscsi.vml-iscsi:port2 ..... [TPGs: 1]
    | | o- tpg1 ..... [no-gen-acls, no-auth]
    | |   o- acls ..... [ACLs: 1]
    | | | o- iqn.1994-04.jp.co.hitachi:rsd.h8m.i.123ac1.2a ..... [Mapped LUNs: 1]
    | | | | o- mapped_lun0 ..... [lun0 fileio/volume1 (rw)]
    | |   o- luns ..... [LUNs: 1]
    | | | o- lun0 ..... [fileio/volume1 (/quorums/volume1) (default_tg_pt_gp)]
    | |   o- portals ..... [Portals: 1]
    | |     o- 192.168.100.66:3260 ..... [OK]
  o- loopback ..... [Targets: 0]
  o- vhost ..... [Targets: 0]
/>

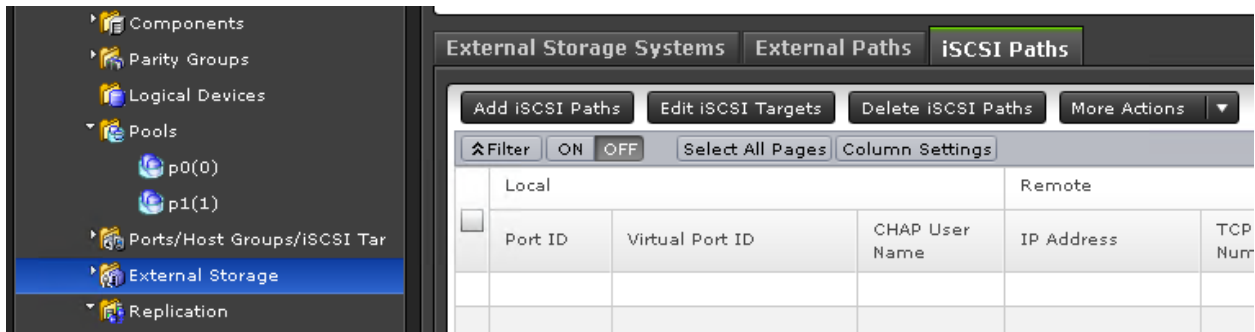
```

Example of Virtualizing iSCSI Target

The process to virtualize the iSCSI Target virtual machine from the Virtual Storage Platform F700 is the same as it is to virtualize a regular FC or iSCSI storage system. The section below demonstrates how it is done and shows what the result looks like.

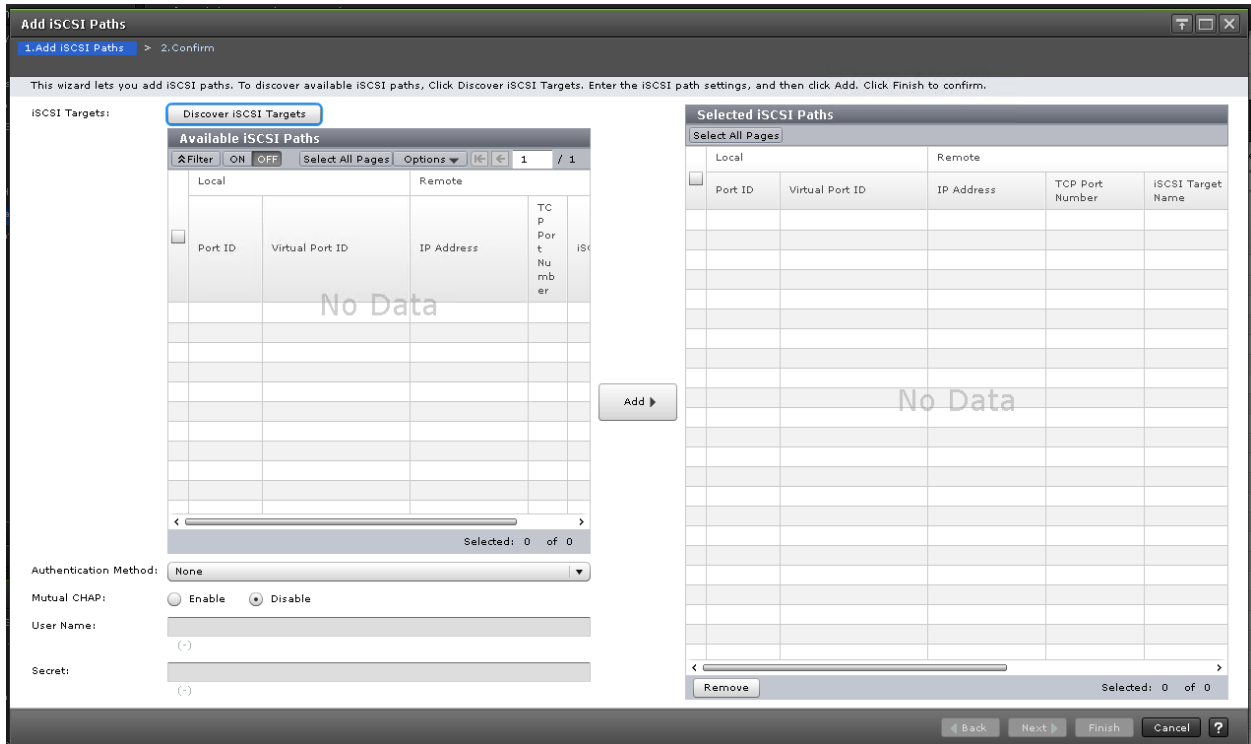
1. The first step is to establish the iSCSI paths between the iSCSI Target and the storage system. In Storage Navigator, go to External Storage, iSCSI Paths tab, and click Add iSCSI Paths.

Figure 2. Steps to add iSCSI paths



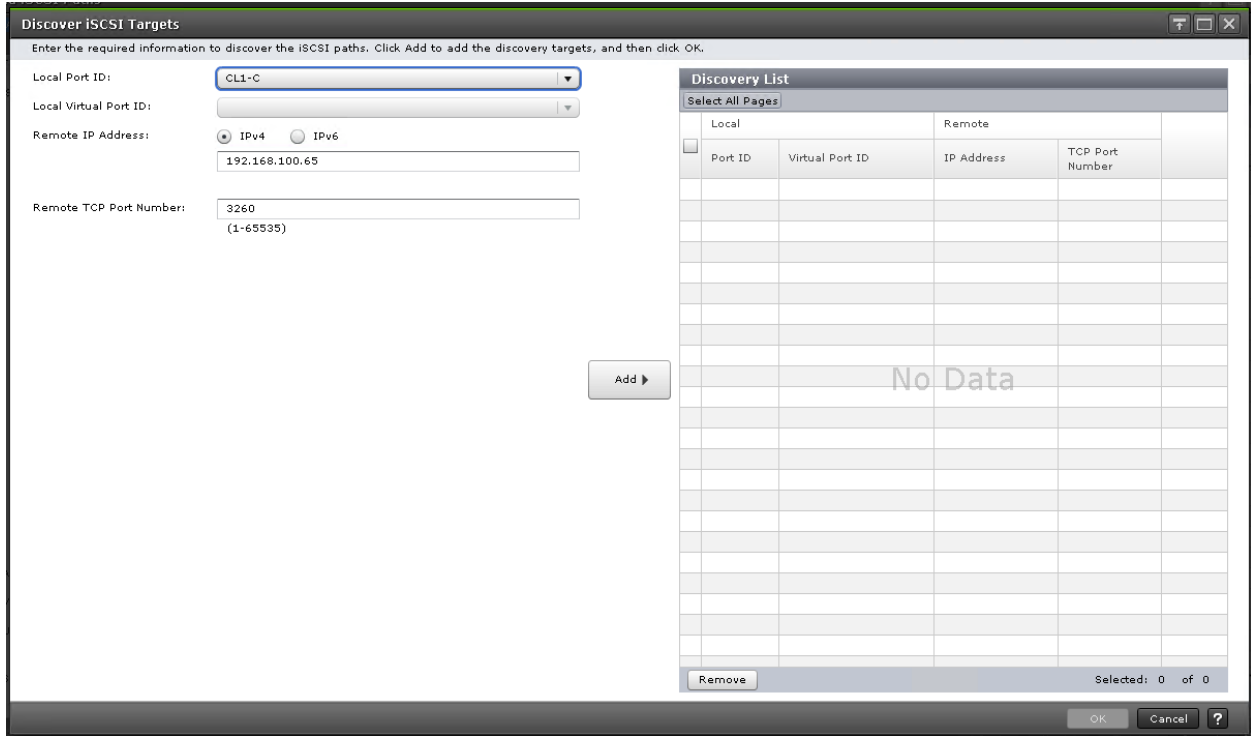
2. On the Add iSCSI Paths screen, click Discover iSCSI Targets.

Figure 3. Discover iSCSI targets

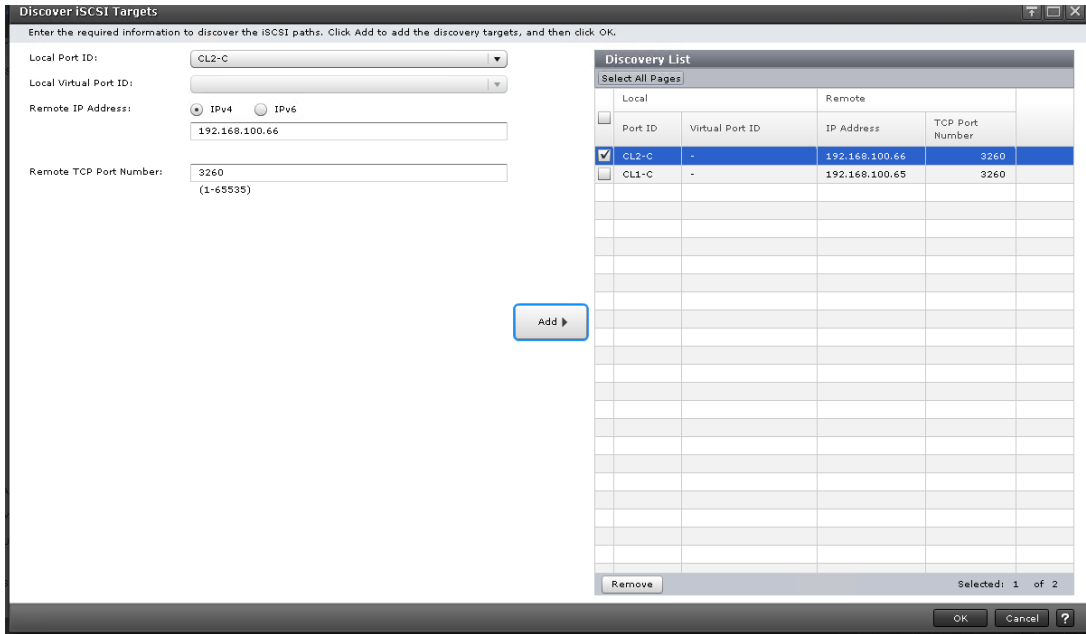


- On the Discover iSCSI Targets screen, select the local port from the dropdown. Then enter the corresponding IP address of the iSCSI Target and TCP Port (3260).

Figure 4. Add paths

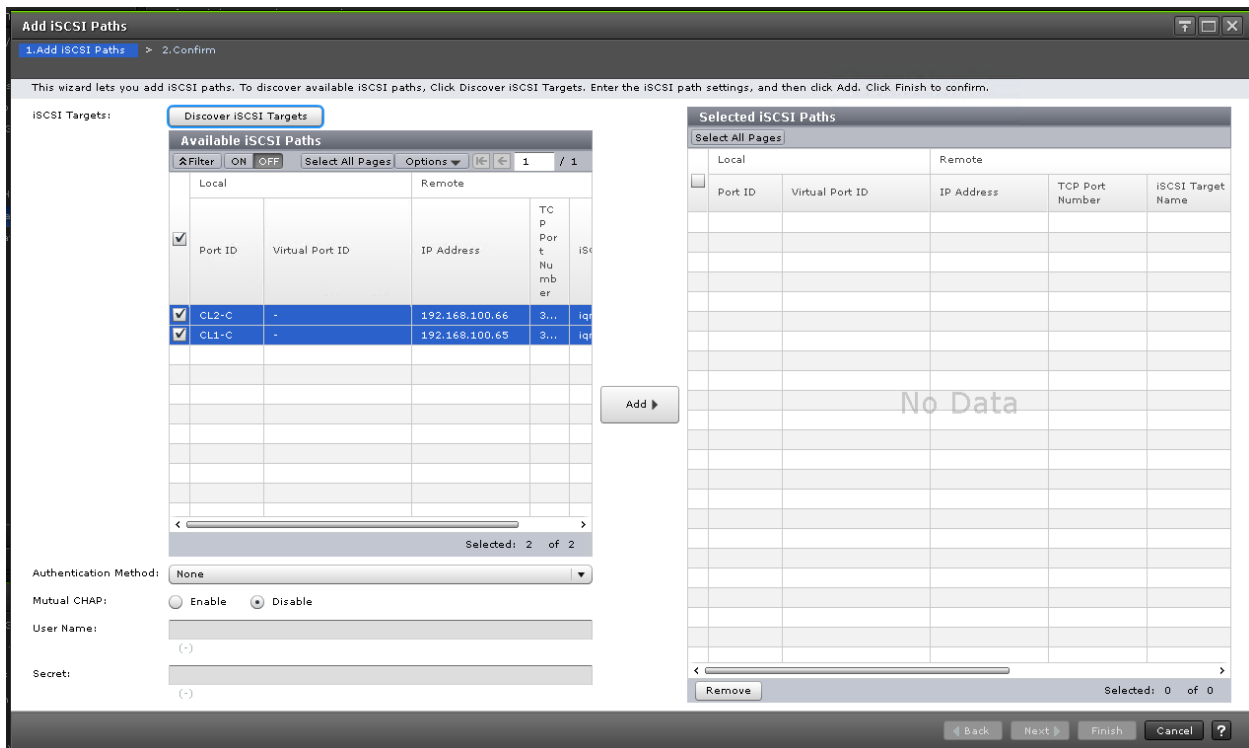


- Click Add.
- Repeat the previous steps for additional paths.



6. Click OK.
7. Back on the Add iSCSI Paths screen, select the paths under Available iSCSI Paths and click Add.

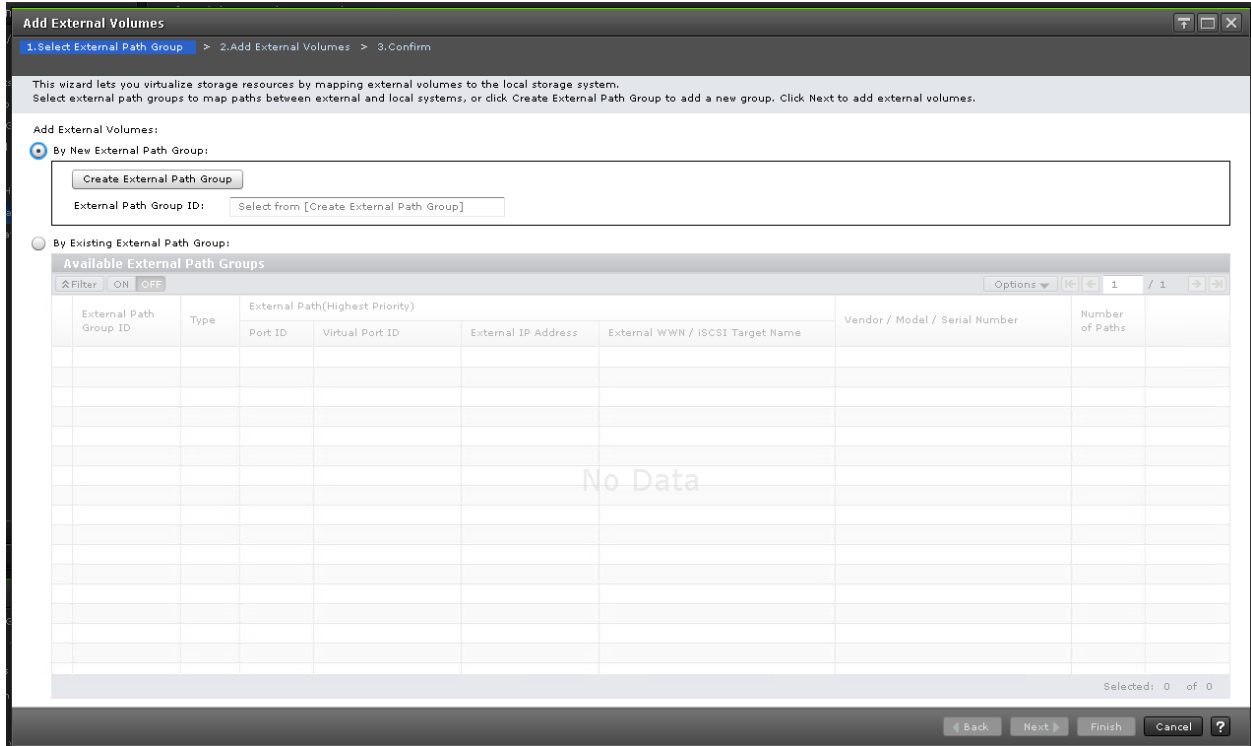
Figure 6. Add paths



8. Click Finish and then click Apply.

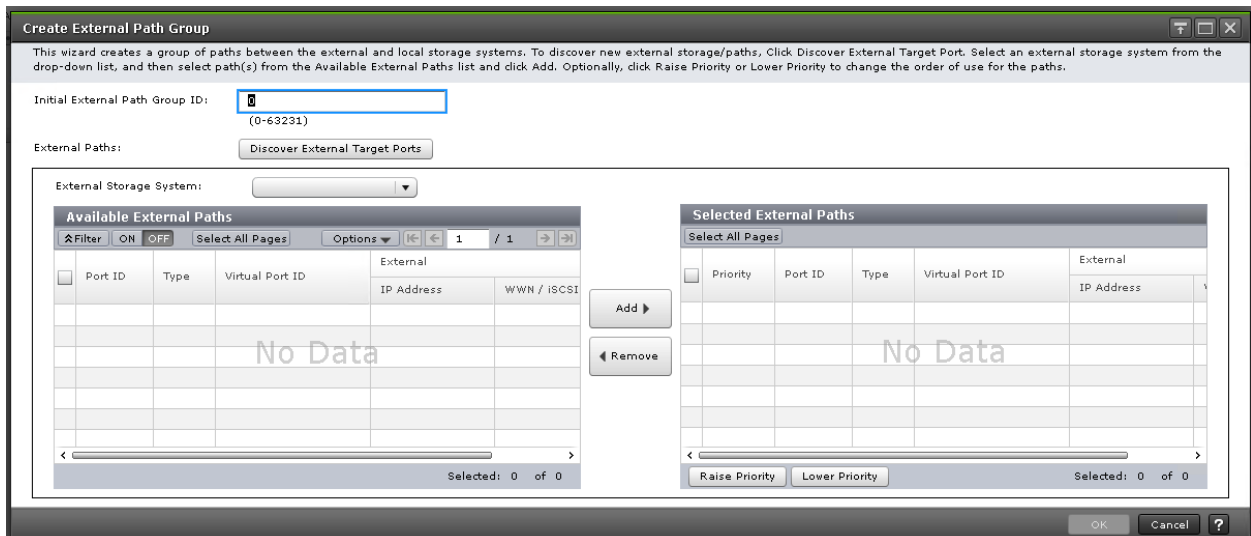
9. Once the iSCSI paths have been created, the next step is to virtualize the external volume(s). Go to External Storage and click Add External Volumes.
10. Click Create External Path Group.

Figure 7. Create External Path Group.



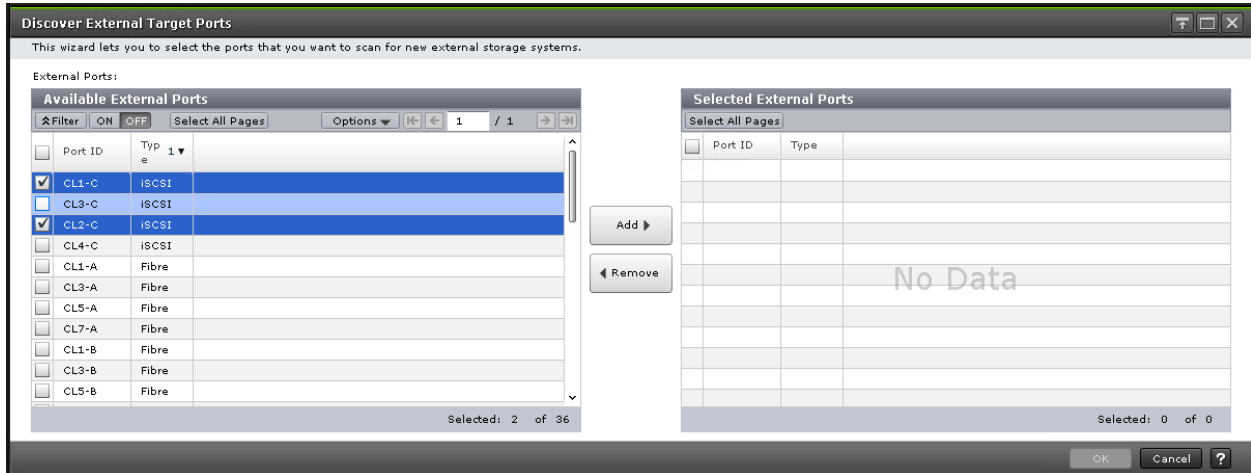
11. Click Discover External Target Ports.

Figure 8. Discover External Target Ports



12. Select the iSCSI ports to be used for the iSCSI paths and then click Add.

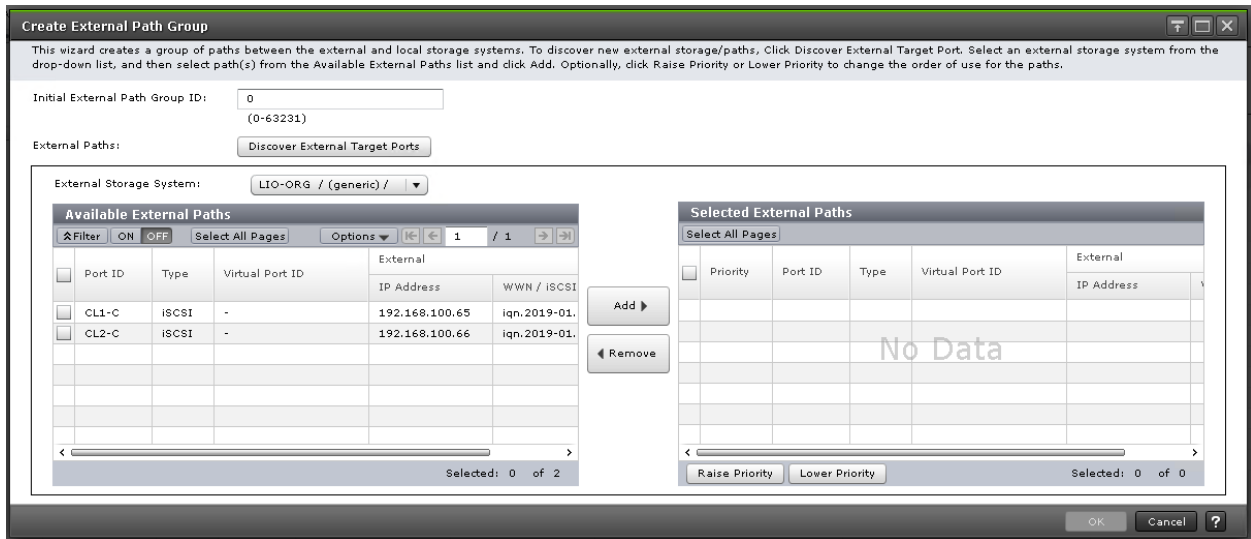
Figure 9. Add iSCSI ports



13. Click OK.

14. The iSCSI target should show up as “LIO-ORG”. Select the paths under Available External Paths and click Add.

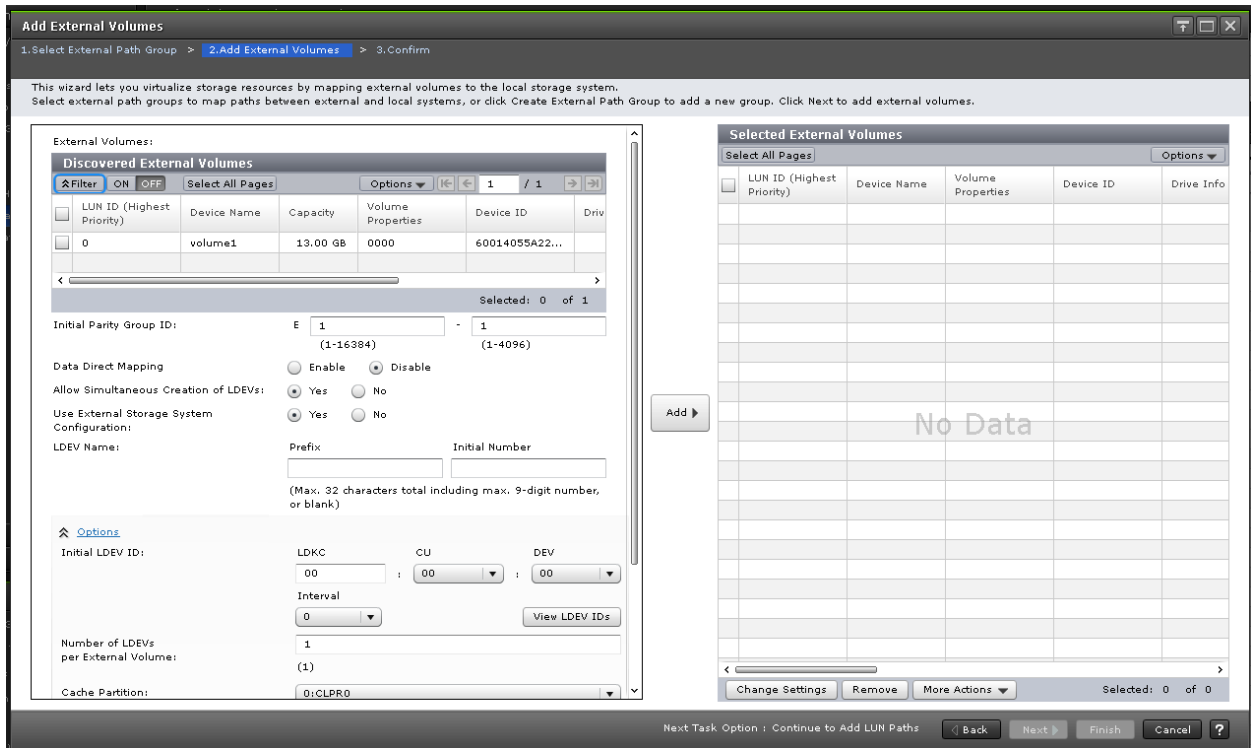
Figure 10. Add Available External Path



15. Click OK.

16. Select the discovered external volume(s) to virtualize. Make sure to change “Use ALUA as Path Mode” to Disable, “Load Balance Mode” to Round-robin, and then click Add.

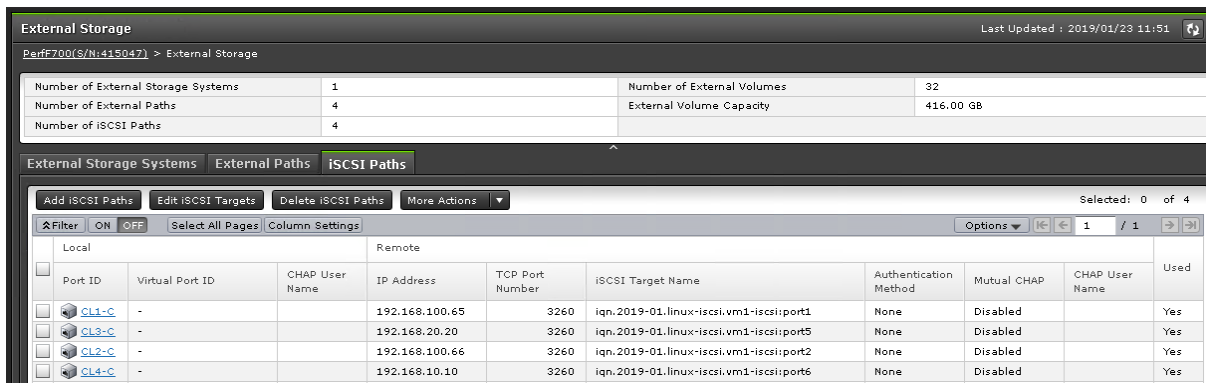
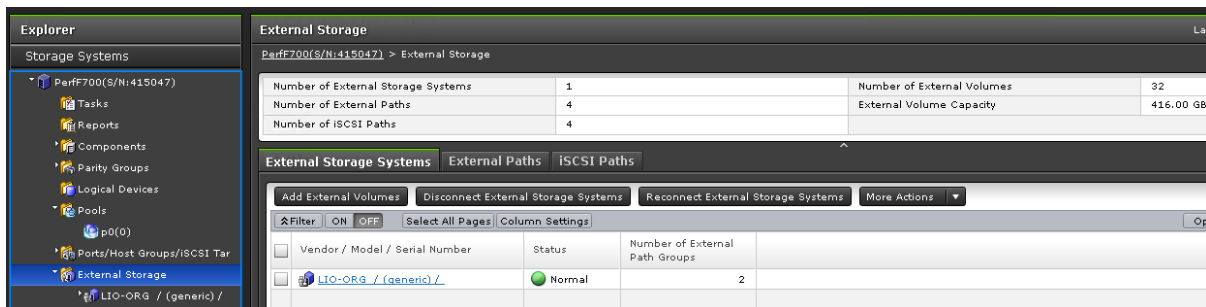
Figure 11. Select volume



17. Click Finish and then Apply.

18. The virtualized iSCSI Target will show up like below.

Figure 1. Completed virtualized iSCSI target



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19. The remaining steps to turn the virtualized iSCSI Target volume(s) into GAD quorums are the same as setting up GAD quorums with a virtualized storage system.



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