Application Note

Install and Manage iSCSI Volumes Using Solaris 10 Initiators

Abstract

This document describes how to enable the access to Infortrend's iSCSI storage using Solaris's iSCSI initiators.

Infortrend® Technology, Inc.

Networked Storage Solution Provider

Revision 1.0

October, 2008

Using Solaris Initiator with EonStor iSCSI Arrays

Enable Required Package

Solaris iSCSI Software and Hardware Requirements

- Solaris iSCSI software and devices

  TheSolaris101/06 or later release for Solaris iSCSI initiator software

  TheSolaris108/07 or later release for Solaris iSCSI target software

- The following software packages:
  - SUNWiscsir–Sun iSCSI Device Driver(root)
  - SUNWiscsiu–Sun iSCSI Management Utilities(usr)
  - SUNWiscsitgtr–Sun iSCSI Target Device Driver(root)
  - SUNWiscsitgtu–Sun iSCSI Target Management Utilities(usr)
  - Any supported NIC

Please visit http://docs.sun.com/app/docs/coll/47.16 for **System Administration Guide: Devices and File Systems** - **Chapter 14** for details about Solaris 10 system administration.

To verify availability of initiator and target service:

- Become super user.
- Verify that the iSCSI software packages are installed.
- # pkginfo SUNWiscsiu SUNWiscsir

  System SUNWiscsiu Sun iSCSI Device Driver (root)

  System SUNWiscsir Sun iSCSI Management Utilities (usr)

- Verify that you are running a Solaris101/06 or later release.
- Confirm that your TCP/IP network is setup by telneting an iSCSI target using port 3260. Also check related settings in your EonStor system firmware.

Update iSCSI Patches

Download and install the latest patches:
http://sunsolve.sun.com/search/document.do?assetkey=119090

Configure iSCSI Target Discovery

- Become super user.
- To configure the target device to be discovered dynamically or statically:

  - Configure the device dynamically discovered (SendTargets).

    # iscsiadm add discovery-address10.0.0.1:3260

    The iSCSI connection is not initiated until the discovery method is enabled. See the next step.
- Configure the device statically discovered.

  # iscsiadm add static-config eui.5000ABCD78945E2B,10.0.0.1

  The iSCSI connection is not initiated until the discovery method is enabled. See the next step.
- Enable the iSCSI target discovery method using one of the following:

  If you have configured a dynamically discovered (SendTargets) device, enable the Send Targets discovery method.

  # iscsiadm modify discovery --sendtargets enable
- If you have configured static targets, enable the static target discovery method.

  # iscsiadm modify discovery --static enable
- Create the iSCSI device links for the local system.

  # devfsadm –i iscsi

NOTE:

The MCS (Multiple Connections per Session; also known as Grouping on Infortrend's array interfaces) is not supported with the configuration discussed in this document.

Configure Authentication in iSCSI-based Storage Network

CHAP (Challenge-Handshake Authentication Protocol) uses the notion of a challenge and response, which means that the target challenges the initiator for its identity. The target must know the initiator's secret key (or password) and the initiator must know how to respond to a challenge. Please refer to the EonStor firmware manual for how to configure the CHAP authentication on the system. Both EUI and IQN node names apply with the configuration commands.

How to Configure CHAP Authentication:

- Become superuser
- Determine whether you want to apply unidirectional or bidirectional CHAP.

Configure CHAP for Initiator

- Unidirectional:

  # iscsiadm modify initiator-node --CHAP-secret

  If you need to change the CHAP name, (node name is the default),

  # iscsiadm modify initiator-node --CHAP-name new –CHAP-name

  # iscsiadm modify initiator-node --authentication CHAP

  (The CHAP name can be set to any length of text less than 512 bytes long)

- Bidirectional CHAP:

  # iscsiadm modify target-param --B enable eui.5000ABCD798E6D

  To disable bidirectional CHAP:

  # iscsiadm modify target-param --B disable eui.5000ABCD798E6D

  Set authentication method on the target.

  # iscsiadm modify target-param --authentication CHAP eui.5000ABCD798E6D

  Use the following command to open a dialogue to configure a CHAP secret key,

  # iscsiadm modify target-param --CHAP-secret eui.5000ABCD798E6D

  Set CHAP name on the target,

  # iscsiadm modify target-param --CHAP-name target-CHAP-name

Associated target name and target password (outbound from the EonStor system) are configured on the EonStor system. Identical user name and user password (for unidirectional CHAP) should also be configured on the EonStor. A sample screen is listed below.

Array-related Configuration

1. Discover targets.
2. Automate target logins for future system reboots.
3. You also need to obtain iSCSI username, password, and storage host port IP addresses.

Configuration Steps：

1. svcadm enable avc:/network/iscsi_initiator (enable initiator)
2. iscsiadm list target (if your storage volumes have already been mapped to host ports and iSCSI targets are found, proceed with the following)

   cd /etc/iscsi

   rm –rf *

   iscsiadm list target

   reboot

3. iscsiadm -? (displays all available commands)
4. iscsiadm add static-config iqn.2002-10.com.infortrend:raid.sn7534118.001,10.20.9.88:3260

   (Repeat this process as many times as how many iSCSI targets you present to host; e.g., AID and BID will appear as two devices)

NOTE:

- You can scan the storage devices and see its IQN name through the initiator HBA utility or initiator software running on the host side, e.g., Microsoft iSCSI initiator.
- You can use the LCD keypad to find the serial number of a system. Find it in “**Main Menu**” –> “**System Information**” -> “**Serial Number.**”

  Infortrend’s storage IQN is composed of the system serial number and another 3 digits. The IQN always looks like the following:

  Iqn.2002-10.com.infortrend:raid.snXXXXXX.XXX

  The 6 digits following the “sn” is the system’s serial number.

  The last 3 digits show variables in the following order:

  “channel number” - “host ID” - “LD ownership”

  The LD ownership digit shows either “1” or “2:” where “1” indicates Controller A and “2”

indicates the LD ownership by the Controller B. Controller A is by default the dominating Primary controller. The IQN is in accordance with how you map your logical drive to the host ID/LUN. For example, if you map a logical drive to host channel 0 and AID1, the last 3 digits will be 011.

- The EonStor iSCSI single-controller systems running firmware versions before rev. 3.64 will only show **2** digits; channel and ID numbers.

5. iscsiadm remove static-config (if you need to remove some targets)
6. iscsiadm list static-config (list configured targets)
7. iscsiadm modify discovery –s enable (enable the discovery option for scanning new devices)
8. format (proceed with formatting these volumes)
9. If you are running a redundant-controller Eonstor subsystem, disable Solaris' embedded multi-pathing utility:

   cd /kernel/drv

   vi iscsi.conf > mpxio-disable="yes"

10. Install Infortrend's EonPath driver for Solaris to manage the multi-pathing configuration. Below is a sample procedure. You may refer to EonPath User Manual for more details.

Installation sample:

```
Bash-22.05b# pkgadd –d EonPath-1.0.1.3-sparc.pkg

        The following packages are available:

        1. EonPath          EonPath – Infortrend multipath package (sparcv9) 1.0.1.3

        Select package(s) you wish to process (or 'all' to process all packages). (default: all)
        [?,??,q]: all

        Processing package instance <EonPath> from </test/ EonPath-1.0.1.3-sparc.pkg>

        EonPath - Infortrend Technology, Inc.

        (C) 2006 Infortrend Technology, Inc.
        Using </> as the package base directory.
        # # Processing package information.
        # # Processing system information.
         5 package pathnames space requirements.
        # # Verifying disk space requirements
        # # Checking for conflicts with packages already installed.
        # # Checking for setuid / setgid programs.
```

This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of <EonPath> [y,n,?] y

Installing EonPath – Infortrend multipath package as <EonPath>

Installing part 1 of 1.

/kernel/drv/iftmd.conf

/kernel/drv/sparcv9/iftmd

/usr/bin/EonPath

[Verifying class]

Executing postinstall script.

Installation of <EonPath> successful.

bash-2.05b# cd /usr/bin/

bash-2.05b# ./ EonPath

"list lun" to check all volumes correctly appear as storage targets:

```
EonPath>>EonPath>>list lun
EonPath>>Idx     Device              Device S/N                       Size
EonPath>>------------------------------------------------------------------------------
EonPath>>#0   /dev/dsk/c2t5d0s7   0x080021000000000098BF59   140000(MB)
EonPath>>#1   /dev/dsk/c2t0d0s7   0x080021000000005F6AA7A5   150000(MB) (passive)
EonPath>>#2   /dev/dsk/c2t3d0s7   0x080021000000048BA53AA   180000(MB)
EonPath>>#3   /dev/dsk/c2t4d0s7   0x080021000000000B457342   160000(MB) (passive)
EonPath>>#4   /dev/dsk/c2t6d0s7   0x080021000000000098BF59   140000(MB) (passive)
EonPath>>#5   /dev/dsk/c2t7d0s7   0x080021000000005F6AA7A5   150000(MB)
EonPath>>#6   /dev/dsk/c2t8d0s7   0x080021000000048BA53AA   180000(MB) (passive)
EonPath>>#7   /dev/dsk/c2t9d0s7   0x080021000000000B457342   160000(MB)
```

NOTE:

The Active or Passive path status is automatically determined by firmware's TPGS (Target Port Group Service) algorithm, and by the configuration which RAID controller owns a storage volume.

make md:

This command combines multiple port/targets into specific Multipath device configuration. A volume appearing through multiple routes will become a multipath device.

Example:

```
EonPath: make md
Idx         Device                  Device S/N          Paths
-------------------------------------------------------------------------------
#0          N/A                0x0888882238B47500  2
Select Multipath Device Index [Input '-1' for Cancel]: [0] 0
EonPath: Device /dev/dsk/c179t179dls0 create success.
```