



# HP-UX 11i v3 (11.31) Native Multi-Pathing for Use with Infortrend Storage Arrays

## Application Note

### ***Abstract***

This application note examines the native multi-pathing feature available on HP-UX 11i v3 (11.31). HP-UX 11i v3 (11.31) is supported by a large number of Infortrend storage arrays, and the native multi-pathing feature can help users of these storage arrays to optimize performance. The application note explains how to verify that the native multi-pathing feature is working properly.



## **Native Multi-Pathing Feature in HP-UX 11i v3 (11.31)**

HP-UX 11i v3 (11.31) includes native multi-pathing functionality, which is available without any special configurations. HP-UX 11i v3 (11.31) is supported by a large number of Infortrend storage arrays, including models from the EonStor and ESVA families.

Multi-pathing offers the ability to manage data paths to a LUN device. When operating Infortrend storage arrays together with the HP-UX 11i v3 (11.31) operating system, this functionality can generate significant benefits for users of these storage arrays.

Key features of the native multi-pathing functionality on HP-UX 11i v3 (11.31) include:

- Dynamic I/O load distribution
- Automated failover
- Automatic discovery of newly available LUN paths

Benefits of using multi-pathing can be summarized as follows:

- Improved I/O path selection for optimized data throughput; multiple data paths work together to enhance system performance with consolidated throughput.
- Eliminate system downtime caused by data path failure; in the event of cabling component failure, I/Os will be automatically directed to alternate data paths to ensure non-disruptive operations.



## Verifying Multi-Pathing Settings in HP-UX 11i v3 (11.31)

For users of Infortrend storage systems that adopt the HP-UX 11i v3 (11.31) operating system, the following step-by-step instructions can help to verify whether the native multi-pathing settings are working properly.

In this application note, Infortrend's EonStor S16F-R1840 storage array is used as an example.

**Step 1.** Create two mappings from your storage array, for example by using Infortrend's SANWatch storage management software.

**Step 2.** Check the disk devices in the HP-UX OS.

Use the following commands to gain an overview of the disk devices recognized by the OS:

- **# ioscan**
- **# ioscan -funC disk**

HP-UX lists two disk devices, as shown below:

```
bash-4.1# ioscan -funC disk
Class   I  H/W Path      Driver          S/W State   H/W Type    Description
-----
disk    2  0/0/2/1.0.16  UsbScsiAdaptor CLAIMED      DEVICE      USB SCSI Stack Adaptor
          /dev/deviceFileSystem/Usb/MassStorage/dsk/disk@hp-1008+294=A60020000001
          /dev/deviceFileSystem/Usb/MassStorage/rdisk/disk@hp-1008+294=A60020000001
disk    4  0/1/1/0.0.0.0.0  sdisk          CLAIMED      DEVICE      FUJITSU MAY2073RC
          /dev/dsk/c0t0d0      /dev/dsk/c0t0d0s2  /dev/rdisk/c0t0d0    /dev/rdisk/c0t0d0s2
          /dev/dsk/c0t0d0s1    /dev/dsk/c0t0d0s3  /dev/rdisk/c0t0d0s1  /dev/rdisk/c0t0d0s3
disk    6  0/3/1/0.8.0.255.7.0.0  sdisk          CLAIMED      DEVICE      IFT          S16F-R1840-4
          /dev/dsk/c2t0d0      /dev/rdisk/c2t0d0
disk    9  0/3/1/1.8.0.255.7.1.0  sdisk          CLAIMED      DEVICE      IFT          S16F-R1840-4
          /dev/dsk/c1t1d0      /dev/rdisk/c1t1d0
```

**Step 3.** Verify the multi-pathing functionality.

Use the following command

- **# ioscan -m dsf**

The list that appears (see below) shows that the two disk devices are combined into **/dev/[r]disk/disk11**, indicating that the multi-pathing function is working properly. A file system can be created on the **/dev/[r]disk/disk11**.



```
bash-4.1# ioscan -m dsf
Persistent DSF          Legacy DSF(s)
=====
/dev/rdisk/disk0       /dev/rdisk/c0t0d0
/dev/rdisk/disk0_p1   /dev/rdisk/c0t0d0s1
/dev/rdisk/disk0_p2   /dev/rdisk/c0t0d0s2
/dev/rdisk/disk0_p3   /dev/rdisk/c0t0d0s3
/dev/rdisk/disk11     /dev/rdisk/c2t0d0
                       /dev/rdisk/c1t1d0
```

**Step 4. Check the LUN path**

If you wish to see the full LUN path, use the following command:

- **# ioscan -kfnNC lunpath**

The full data paths are highlighted by the red box below:

```
bash-4.1# ioscan -kfnNC lunpath
Class   I  H/W Path  Driver S/W State  H/W Type  Description
=====
lunpath 0  0/1/1/0.Ox500000e011a0f952.0x0  eslpt  CLAIMED  LUN_PATH  LUN path for disk0
lunpath 6  0/3/1/0.Ox210000d02308010f.0x0  eslpt  CLAIMED  LUN_PATH  LUN path for disk11
lunpath 7  0/3/1/1.Ox210000d02318010f.0x0  eslpt  CLAIMED  LUN_PATH  LUN path for disk11
```



## **Infortrend Storage Arrays Supporting HP-UX 11i v3 (11.31)**

Currently, HP-UX 11i v3 (11.31) is supported by the EonStor and ESVA product families. For detailed compatibility details, please contact Infortrend sales representatives.

### **More Information:**

For more information on HP-UX 11i v3 (11.31), please refer to the HP website:

<http://h71028.www7.hp.com/enterprise/w1/en/os/hpux11i-overview.html>

For more on information on Infortrend and its products, please visit Infortrend's website:

<http://www.infortrend.com>

