HP-UX

SAN hosts and cloud clients

NetApp
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Use HP-UX 11i v3 with ONTAP

You can use the ONTAP SAN host configuration settings to configure HP-UX 11i v3 with ONTAP as the target.

Install the HP-UX Host Utilities

You can download the compressed file containing the Host Utilities software packages from the NetApp Support Site. After you have the file, you must uncompress it to get the software packages you need to install the Host Utilities.

Steps

1. Download a copy of the compressed file containing the Host Utilities from the NetApp Support Site to a directory on your host.
2. Go to the directory containing the download.
3. Uncompress the file.

   ```
   gunzip netapp_hpux_host_utilities_6.0_ia_pa.depot.gz
   ```

4. Enter the following command to install the software:

   ```
   swinstall -s /netapp_hpux_host_utilities_6.0_ia_pa.depot NetApp_santoolkit
   ```

5. Reboot the host.

SAN Toolkit

The tool kit is installed automatically when you install the NetApp Host Utilities package. This kit provides the `sanlun` utility, which helps you manage LUNs and HBAs. The `sanlun` command returns information about the LUNs mapped to your host, multipathing, and information necessary to create initiator groups.

Example

In the following example, the `sanlun lun show` command returns LUN information.

```
#sanlun lun show

controller(7mode)/                            device
host     lun
vserver(Cmode)    lun-pathname               filename
adapter protocol  size  mode
------------------------------------------------------------------------
------
sanboot_unix      /vol/hpux_215_boot_en_0/goot_hpux_215_lun
/dev/rdsk/c11t0d0 fcd0   FCP      150g   C
sanboot_unix      /vol/hpux_215_boot_en_0/goot_hpux_215_lun
/dev/rdsk/c24t0d0 fcd1   FCP      150g   C
sanboot_unix      /vol/hpux_215_boot_en_0/goot_hpux_215_lun
/dev/rdsk/c21t0d0 fcd1   FCP      150g   C
sanboot_unix      /vol/hpux_215_boot_en_0/goot_hpux_215_lun
/dev/rdsk/c12t0d0 fcd0   FCP      150g   C
```

SAN Booting

What you'll need

If you decide to use SAN booting, it must be supported by your configuration. You can use the NetApp Interoperability Matrix Tool to verify that your OS, HBA, HBA firmware and the HBA boot BIOS, and ONTAP version are supported.

SAN booting is the process of setting up a SAN-attached disk (a LUN) as a boot device for a HP-UX host. The Host Utilities support SAN booting with FC and FCoE protocols in HP-UX environments.

Multipathing

Multipathing allows you to configure multiple network paths between the host and storage system. If one path fails, traffic continues on the remaining paths. For a host to have multiple paths to a LUN, multipathing must be enabled. The HP-UX Host Utilities support different multipathing solutions based on your configuration. The following is for the Native Multipathing solution.

Non-ASA configurations

For non-ASA configurations, there should be two groups of paths with different priorities. The paths with the higher priorities are Active/Optimized, meaning they are serviced by the controller where the aggregate is located. The paths with the lower priorities are active but are non-optimized because they are served from a different controller. The non-optimized paths are only used when no optimized paths are available.

Example

The following example displays the correct output for an ONTAP LUN with two Active/Optimized paths and two Active/Non-Optimized paths:

```
# sanlun lun show -p vs39:/vol/vol24_3_0/lun24_0
                    ONTAP Path: vs39:/vol/vol24_3_0/lun24_0
                           LUN: 37
                      LUN Size: 15g
                   Host Device: /dev/rdisk/disk942
                          Mode: C
              Multipath Policy: A/A
            Multipath Provider: Native
------- ---------- ------ ------- ---------- ---------- --------------
host    vserver     /dev/dsk                             HP A/A
path    path        filename          host    vserver   path failover
state   type        or hardware path adapter    LIF     priority
------- ---------- ------ ------- ---------- ---------- --------------
up       primary    /dev/dsk/c39t4d5   fcd0    hpux_3     0
up       primary    /dev/dsk/c41t4d5   fcd1    hpux_4     0
up       secondary  /dev/dsk/c40t4d5   fcd0    hpux_3     1
up       secondary  /dev/dsk/c42t4d5   fcd1    hpux_4     1
```

All SAN Array configurations

In All SAN Array (ASA) configurations, all paths to a given LUN are active and optimized. This improves performance by serving I/O operations through all paths at the same time.

Example

The following example displays the correct output for an ONTAP LUN:

> All SAN Array (ASA) configurations are supported beginning in ONTAP 9.8 for HP-UX 11iv3

```
# sanlun lun show -p vs39:/vol/hpux_vol_1_1/hpux_lun

                    ONTAP Path: vs39:/vol/hpux_vol_1_1/hpux_lun
                           LUN: 2
                      LUN Size: 30g
                   Host Device: /dev/rdisk/disk25
                          Mode: C
            Multipath Provider: None
-------- ---------- -------------------- ------- --------------
host     vserver    /dev/dsk
path     path       filename             host    vserver
state    type       or hardware path     adapter LIF
-------- ---------- -------------------- ------- --------------
up       primary    /dev/dsk/c4t0d2      fcd0    248_1c_hp
up       primary    /dev/dsk/c6t0d2      fcd0    246_1c_hp
up       primary    /dev/dsk/c10t0d2     fcd1    246_1d_hp
up       primary    /dev/dsk/c8t0d2      fcd1    248_1d_hp
```

Recommended Settings

Following are some recommended parameter settings for HPUX 11i v3 and NetApp ONTAP LUNs. NetApp uses the default settings for HP-UX.

Parameter	Uses Default Value
transient_secs	120
leg_mpath_enable	TRUE
max_q_depth	8
path_fail_secs	120
load_bal_policy	Round_robin
lua_enabled	TRUE
esd_secs	30

Known issues

The HP-UX 11i v3 with ONTAP release has the following known issues:

NetApp Bug ID	Title	Description	Partner ID
1447287	AUFO event on the isolated master cluster in SM-BC configuration causes temporary disruption on the HP-UX host	This issue occurs when there is an automatic unplanned failover (AUFO) event on the isolated master cluster in the SnapMirror Business Continuity (SM-BC) configuration. It might take more than 120 seconds for I/O to resume on the HP-UX host, but this might not cause any I/O disruption or error messages. This issue causes dual event failure because the connection between the primary and the secondary cluster is lost and the connection between the primary cluster and the mediator is also lost. This is considered a rare event, unlike other AUFO events.	NA
1344935	HP-UX 11.31 Host intermittently reporting path status incorrectly on ASA setup.	Path reporting issues with ASA configuration.	NA
1306354	HP-UX LVM creation sends I/O of block size above 1MB	SCSI Maximum Transfer Length of 1 MB is enforced in ONTAP All SAN Array. To restrict the Maximum Transfer Length from HP-UX hosts when connected to ONTAP All SAN Array, it is required to set the Maximum I/O size allowed by the HP-UX SCSI subsystem to 1 MB. Refer HP-UX vendor documentation for details.	NA

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