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Application Note

iSCSI Hardware Initiator Performance Tuning on HPE 578*xx* Converged Network Adapters in ESXi 6.5

Products Affected

HPE® Model	Part Number
HPE Synergy 2820C 10Gb Converged Network Adapter (CNA)	794538-B21
HPE Synergy 3820C 10/20Gb CNA	777430-B21
HPE Ethernet 10Gb 2-port SFP+ 57810S Adapter	652503-B21
HPE Ethernet 10Gb 2-port BASE-T 57810S Adapter	656596-B21
HPE FlexFabric 10Gb 2-port FLR-T 57810S Adapter	700759-B21
HPE FlexFabric 10Gb 2-port FLR-SFP+ 57810S Adapter	700751-B2
HPE FlexFabric 10Gb 4-port FLR-T 57840S Adapter	764302-B21

1
Introduction

Customers have many choices when attaching a VMware® ESXi system to external storage. One such choice is iSCSI.

The easiest way to use iSCSI external storage is to use the software iSCSI that is inherent in VMware ESXi. When you use a software iSCSI initiator in your infrastructure, it requires CPU resources to process the packets going across the wire. In some cases, within a large cluster, extensive amounts of data are being processed, using a huge amount of CPU resources.

The alternative for running iSCSI in an ESX cluster is to use a hardware iSCSI initiator. In this case, the iSCSI packets are offloaded onto the NIC, which does all the processing. Consequently, the CPU is freed up for more important tasks.

2
Issue

When using hardware offload iSCSI in an ESXi environment, some tuning may be required. Each environment is different, so the performance varies.

Two areas that can impact the hardware offload performance in the VMware ESXi 6.5 environment are the time stamp and delayed acknowledge functions with distributed virtual switch settings. Following are some tuning options that may improve hardware offload performance with HPE's 578*xx* CNAs from Marvell.

3
Tuning Options

Following are two tuning options that may improve performance.

3.1
Disable the Time Stamp and Delayed Acknowledge

To disable the time stamp and delayed ACK:

1. Issue the following command to disable the time stamp and delayed ACK:

   ```
   > esxcfg-module -s 'time_stamps=0 en_tcp_dack=0' qfle3i
   ```

2. Reboot the system.

3. Verify that the parameters are persistent by issuing the following command:

   ```
   >exscli system module parameters list -m qfle3i
   ```

3.2
Creating a Standard vSwitch for the iSCSI Interface

Creating a *standard* vSwitch for the iSCSI interface (versus *distributed*) may improve performance.

The remaining vSwitches can still be configured as distributed.

Instructions for creating a vSphere standard switch can be found here:

https://docs.vmware.com/en/VMware-vSphere/7.0/com.vmware.vsphere.networking.doc/GUID-DAF824CD-104D-4ED7-8BA3-D769DF688CEB.html

Document Revision History
Revision 1, July 28, 2020
Changes
Initial release of new application note.

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