Network Executive Software, Inc. (NetEx)
## HyperIP

Testing Template:

This document will be used to describe, from a technical perspective, the elements that were included as part of the IBM TotalStorage Proven testing. It is intended to give an overall picture of the technical elements of the configuration, with a brief description of the results of the testing including any specific highlights of the interoperability results.

High-level architecture/description, include a list of products that meet the compatibility requirements ("Approved Product(s)") as well as a list of the IBM storage products with which the Approved Products meet the compatibility requirements ("Qualified IBM Storage Products"):

NetEx's HyperIP is an appliance that provides application acceleration for storage networking applications that use TCP transport services. HyperIP overcomes performance issues with TCP due to latency, packet loss, jitter, congestion and other network disruptions. HyperIP aggregates data from multiple TCP applications, and provides high-speed block level compression.

HyperIP was tested with a DS4300 (FAStT600) storage device, and a NAS500 Network Attached Storage (NAS) device for iSCSI and CIFS protocol validation.

The TotalStorage Proven test configuration was as follows:

NAS & iSCSI Over Distance
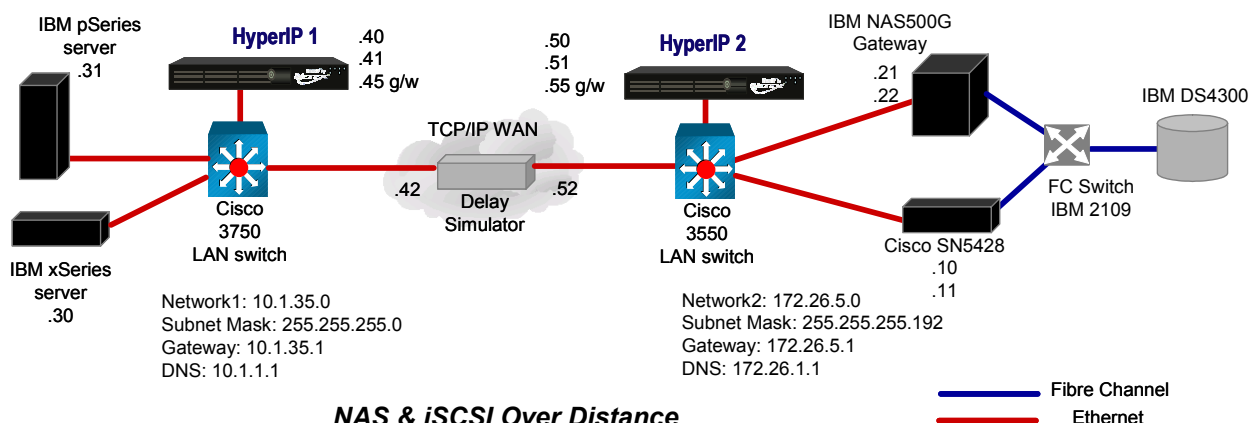
Testing level achieved: Comprehensive TotalStorage Proven
This included creating packet loss conditions during data transfer, verifying the integrity of the data written to storage, and running a 72 hour stress test.

Specific tests:
The test objectives were to validate iSCSI and NAS connectivity and functionality with HyperIP. An iSCSI workload was generated from a pSeries P610 server. A NAS workload was generated from an xSeries x335 running Windows XP. In each of these configurations, the IP traffic from the servers was routed through HyperIP. A NIST Net delay simulator was running on a Linux server to simulate the WAN between the HyperIP appliances. NIST Net was used to simulate latency and create packet loss conditions. On the storage side of the network, the iSCSI traffic went through a Cisco 5428 Storage Router, then to the DS4300 storage; the NAS traffic went through the IBM NAS500 gateway, then to the DS4300 storage.

HyperIP can be used to enhance the TCP network performance of the following types of solutions:
- Storage networking over IP (e.g. Tivoli Storage Manager backup/restore)
- Bulk data transfer between mission critical applications
- Check image, medical images and digital video files
- High performance technical computing
- Server to server file transfers
- Email database replication

Specific versions of products included in the testing:

Hardware Details:
1. Server type(s) and quantity: x335 (1), ep610(1)
2. Host Bus Adapter (HBA) vendor model(s): NA
3. x335 Network Interface Card (NIC) vendor: Broadcom
    Model(s): NetXtreme Gigabit Ethernet
    Driver levels: 7.33
4. ep610 Network Interface Card (NIC) vendor: IBM
    Model(s): Gigabit Ethernet

Storage Product(s) Used:
1. Vendor: IBM
2. Model Name and Number: NAS500
3. Version: 1.1
4. Vendor: IBM
5. Model Name and Number: DS4300
6. Number of Drives: 8
7. Drive Type: 15KRPM
8. Capacity: 64GB
9. Microcode Level: 6.10.06
10. Comments: See Spreadsheet for Logical Disk Assignment

Server	Connectced to:	Logical Disk	Number of Disks	Capacity (GB)	LUN
x335	nas500	netex_win_nas500	2	67	0
x335	nas500	netex_aix_nas500	2	67	1
p610	Cisco5428	netex_win_iscsi	2	67	0
p610	Cisco5428	netex_aix_iscsi0	2	30	1
p610	Cisco5428	netex_aix_iscsi0	2	37	2

Raid 1

Switch(es):
1. Vendor: IBM
2. Model Name and Number: 2109
3. Vendor: Cisco
4. Model Name and Number: 5428 Storage Router
5. Version: 3.4.2-K9

HyperIP:
Vendor: Network Executive Software (NetEx)
Version: 5.2.27

Description of the testing results obtained:
HyperIP was tested at the IBM Solution Partnership Center in San Mateo, California from Dec 13 through Dec 20, 2004. It was easily installed in the test network by following the provided HyperStart installation steps.

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