Test Report

Product: Phobos ipXpress

Test Highlights

- Provides Near Linear Scalability
- Four 10/100 ports for High Speed Switching
- Flexible Network Deployment

"The Tolly Group verified that ipXpress provides near-linear scalability as up to six servers are added to the network, nearly increasing by six times the throughput of a single server without ipXpress."

Tolly Verified #200307

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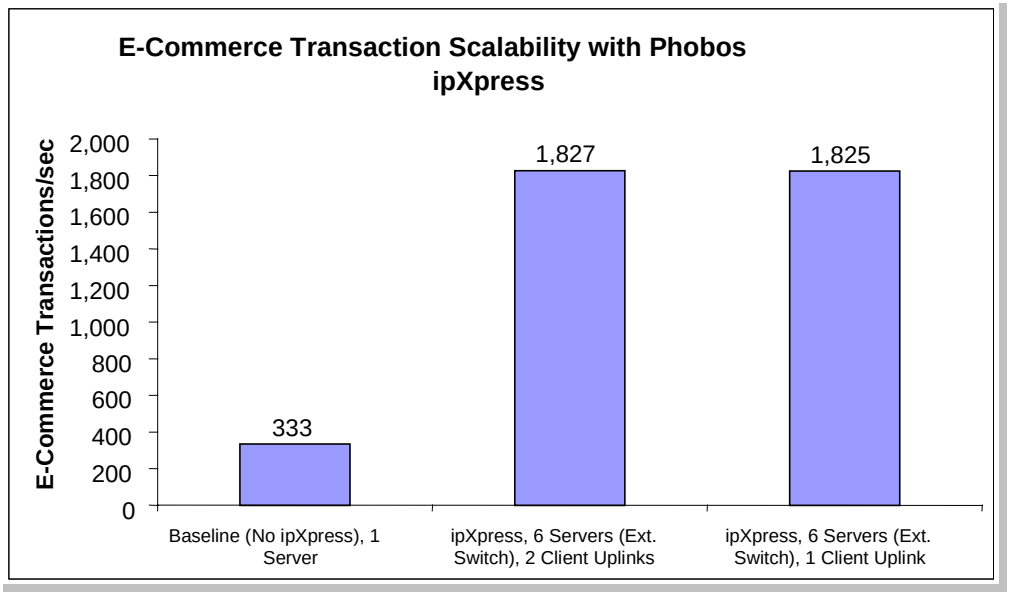
Overview

Layer 4 and Web switches provide scalability when the addition of servers results in a linear increase in throughput. The Tolly Group verified that ipXpress provides near-linear scalability as up to six servers are added to the network, nearly increasing by six times the throughput of a single server without ipXpress. (The ipXpress is a standalone version of IN-Switch.)

The following chart illustrates the linear scalability of the ipXpress.



Throughput tests with six servers demonstrated approximately three and six times the throughput of a single Web server. The chart above illustrates the linear scalability of the ipXpress.

The left-most column depicts the throughput of 40 WebBench clients accessing a single Web server without ipXpress.

The second column illustrates the throughput of the same 40 clients accessing six servers across ipXpress. The servers connected to two ports on ipXpress via an Intel Express 510T Layer 2 Fast Ethernet switch (see Test Methodology, below). Clients connected to ipXpress via a pair of ports on the ipXpress. The measured throughput of 1,827 transactions per second represents 91% scalability over the target, single-server throughput (i.e., 91% of 333 transactions per second multiplied by six servers).

The third column represents a similar test, except that the clients accessed the servers over one, not two, ports on ipXpress. The measured throughput of 1,825 transactions per second represents 91% scalability over the target, single-server throughput (i.e., 91% of 333 transactions per second multiplied by six servers).

Test Methodology

The Tolly Group configured 40 PCs as ZD Inc. WebBench 3.0 Clients. The workstations ran Microsoft Corp. Windows NT Workstation 4.0 Service Pack 4 or 5 (depending upon the workstation) and were equipped with either 500-MHz Intel Corp. Celeron processors or 400-MHz Intel Pentium II processors, 64 Mbytes of RAM and a Phobos Corp. P100 Fast Ethernet NIC.

The Tolly Group also configured eight PCs as Web servers. The servers ran Microsoft Windows NT Server 4.0 Service Pack 4 and Microsoft Internet Information Service 4.0, and were equipped with 550-MHz Intel Pentium III processors, Intel PRO/100+ Management Adapters and 128 Mbytes of RAM. The WebBench controller ran Windows NT Workstation 4.0 Service Pack 4 and was equipped with 64 Mbytes RAM and an Intel PRO/100+ Management Adapter.

The Tolly Group connected 20 clients to each of two Intel Express 510T Switches (40 clients total). For tests in which clients connected to the system under test over a single Fast Ethernet uplink, The Tolly Group connected the two switches together via a Gigabit Ethernet uplink and connected only one of the Intel Express switches to the system under test. For tests in which clients connected to the system under test over two Fast Ethernet uplinks, The Tolly Group disconnected the Gigabit Ethernet uplink between them and connected both Intel Express switches directly to the system under test. All ports on both Intel Express switches were configured for full-duplex Fast Ethernet.

The Tolly Group then executed ZD Inc.'s E-Commerce suite for a duration of five minutes and recorded transaction rates as reported by WebBench. The Tolly Group performed three iterations of each test and reported the average. If at least one of the WebBench clients failed to complete the test, The Tolly Group repeated the test to obtain three iterations during which no failures occurred.

The Tolly Group began by conducting a baseline in which all WebBench clients connected to a single WebBench server without the benefit of the ipXpress. The Tolly Group performed three iterations of this baseline and reported the average.

The Tolly Group then connected the clients to six servers across an ipXpress. The Tolly Group maintained the connections to the clients on one port of the ipXpress, and maintained the connection to the server on another port. However, in place of two other direct connections to servers, The Tolly Group connected five servers to an Intel Express 510T Switch which, in turn, connected to a third port on the ipXpress. The Tolly Group performed three iterations of this test and reported the average.

Finally, The Tolly Group repeated the configuration above, but replaced the single Fast Ethernet uplink to the clients with a pair of Fast Ethernet uplinks.

The Tolly Group also captured sample network traces with a DominoFastEthernet for analysis of content and verification of transactions but did not use this information in the calculation of throughput results.

Configuration

Test Suite Description

The e-commerce test suites use a blend of secure and unsecure requests (both static and dynamic) that access the main tree. The e-commerce that was built models the traffic received by real world web sites. These sites included Dell, Netsales, Patagonia, ZDNet, Microsoft, and USA Today. The test includes the following components:

- Files size distribution
- Workload task per request
- Storing and retrieving database entries
- 81% of requests are dynamic and 19% are static
- 8% of requests are secure and 92% are unsecure
- 99% of all requests are GET requests

Notes

IpXpress was configured with a single external IP address.

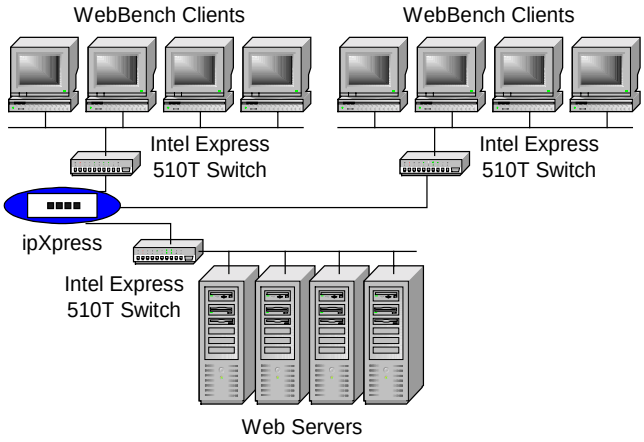
WebBench was configured to execute for 5 minutes.

All Fast Ethernet ports were configured for either (a) autonegotiation of speed and duplex, in which case they effectively negotiated full-duplex Fast Ethernet, or (b) full-duplex Fast Ethernet (no autonegotiation).

Test Bed Diagram

ipXpress Product Specifications

- Four 10/100 Ethernet ports
- Stackable
- Ideal for Web Center Cages
- Fail-over via Serial Cable and Ethernet
- 6 Load Balancing Algorithms
- Active Content Verification
- Supports up to 8,192 Physical Servers
- Supports up to 250 virtual IP addresses
- Works with any server operating system
- Price: $3,495



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