

BROCADE IP VALIDATION AND OPTIMIZATION SERVICES



PROFESSIONAL SERVICES

Testing IP Networks to Gauge Maximum Traffic Levels

HIGHLIGHTS

- Helps maximize network performance and ROI by uncovering bottlenecks and problem points
- Maximizes existing data center resources by establishing a network performance baseline
- Assesses viability of existing IP network for storage traffic
- Speeds implementation of IP storage
- Leverages in-depth Brocade expertise to build best-in-class data center systems and facilities
- Helps establish end-to-end services for data center or mission-critical facility upgrades, as well as new construction projects

IP networks carrying point-to-point storage traffic are extremely vulnerable to inconsistencies in the network itself. These inconsistencies—such as packet loss and latency—can significantly degrade the performance of a high-speed network.

Brocade® IP Validation and Optimization Services test IP networks to understand how much traffic they can handle. Quantitative results from the assessment provide organizations with the information they need to deploy new technology faster, avoiding last-minute implementation surprises. Organizations can use these results to optimize their network infrastructures and to plan for future network capacity.

NOT ALL NETWORK TRAFFIC IS CREATED EQUAL

Business applications generally use normal IP protocols for day-to-day client/server communications. This traffic is usually sparse, intermittent, and brief. As such, this traffic is relatively impervious to congestion, packet loss, latency instability, and other issues commonly inherent in IP networks.

Storage traffic, on the other hand, consists of large chunks of densely packed data moving over long periods of time. These characteristics make storage traffic (backup data or storage replication data) susceptible to network inconsistencies such as congestion, packet loss, and latency instability—all of which can dramatically decrease data throughput. If the affected storage traffic shares the same network with normal IP communications, both types of network traffic are negatively impacted.

MAXIMIZING NETWORK BANDWIDTH

Brocade IP Validation and Optimization Services test the health of IP networks by measuring latency, data integrity, packet loss, and out-of-sequence packets—common foes of a healthy network. By injecting a continuous stream of IP data packets and measuring the transmission delay and data integrity between endpoints on the network, Brocade experts can determine whether the network will perform satisfactorily at the desired throughput. If there are issues, Brocade can help identify network bottlenecks and problem points. After these issues are identified, Brocade experts will work with organizational staff to improve network performance, getting the network—and the business—back up to speed.

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INTEGRATE TESTING AND ANALYSIS INTO A SINGLE TESTING CHASSIS

Brocade IP Validation and Optimization Services integrate testing and analysis functions into a self-contained testing chassis. Typically, one chassis is connected at each end of the network data path. Data is generated at one end, and its receipt is measured and recorded on the other chassis, providing a complete end-to-end analysis of the network's ability to carry the required throughput.

These services measure and analyze the following network performance criteria when a predetermined throughput of IP packets is sent through a network data path:

- **Latency:** Measures the minimum, maximum, and average latency for streams of IP packets sent through a network data path.
- **Data integrity:** Calculates the checksum of packets prior to transmission and verifies the checksum of packets upon receipt at the network endpoint.
- **Packet loss and sequencing:** Measures the percentage of packets lost and out of sequence.

MEET BANDWIDTH REQUIREMENTS AND OPTIMIZE NETWORK PERFORMANCE

Organizations that want to use their IP networks for storage traffic, such as data replication, backup, or offsite storage, can use these services to ensure that their networks meet bandwidth requirements. Organizations that already move storage traffic over IP can use the services to optimize network performance, reduce the implementation timeframe, and establish a network performance baseline to optimize network resources.

IDENTIFY NETWORK STORAGE PERFORMANCE ISSUES

The following storage networking participants can all benefit from Brocade IP Validation and Optimization Services:

- **Business users:** Can now move data at the full bandwidth allocated to their job.
- **Storage managers:** Can eliminate a network problem and move data at the rate it is supposed to move.
- **Network managers:** Can conclusively prove that the network is not the problem.
- **Storage providers:** Can prove that the storage packet is not the problem.

UNCOVER THE SOURCE OF PACKET LOSS

One organization used Brocade IP Validation and Optimization Services to test the actual throughput of its network, which was experiencing problems. Figure 2 shows the testing output of the network problem area before and after making changes to the network.

The initial one-hour test at 11 a.m. showed that data traveling in one direction had a packet loss far below 1.0 percent, an acceptable level. However, it uncovered an intermittent 3.5 percent to 8.0 percent packet loss for data traveling in the other direction. This caused the network to move data at a sluggish rate of 5 to 10 Mbps, although it had 18 Mbps allocated.

After remediation based on recommendations from Brocade, the network was tested again that afternoon. The follow-up test showed that the network was in good health and running faster than expected, with practically no packet loss.

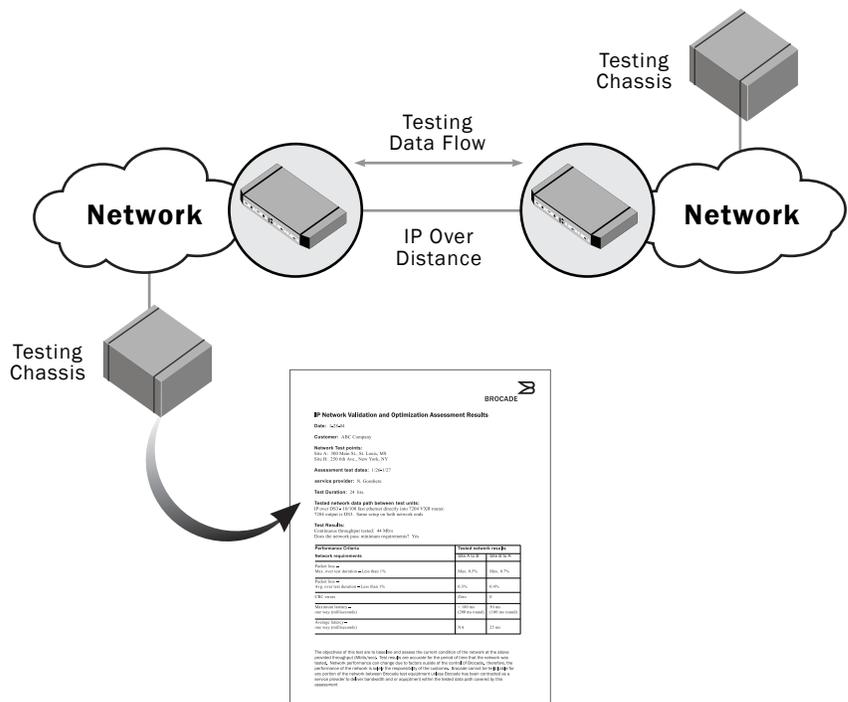
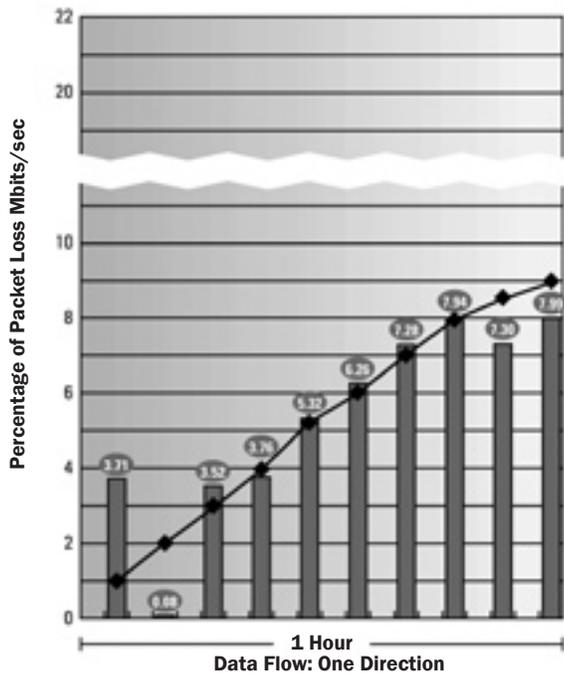
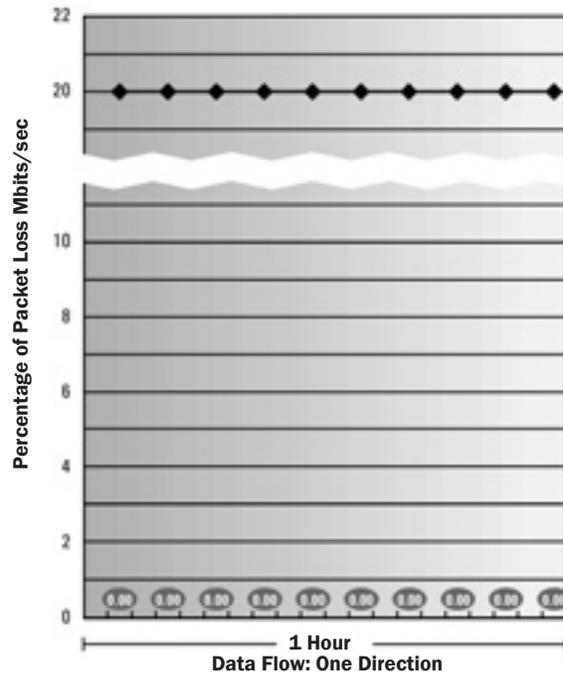


Figure 1.
A simplified representation of the Brocade IP Validation and Optimization Services.

Figure 2.
Highlighted portion of initial test at 11 a.m..



Follow-up test at 4 p.m. the same day, after identifying and resolving problems.



■ = % Packet Loss (Acceptable Level is <1.0%)
◆ = Mbits/sec Network Traffic

THE BROCADE ADVANTAGE

Brocade fully understands the critical necessity of IP network analysis and management for the successful deployment and reliability of data over IP networks. As the storage networking expert and a leader in storage-over-distance solutions, Brocade pioneered FC-to-IP storage replication over distance, and has delivered hundreds of such solutions.

MAXIMIZING INVESTMENTS

Brocade and its partners offer complete data center solutions to meet a wide range of technology and business requirements. These solutions include education and training, services, and support to help optimize data management investments. For more information, contact an authorized Brocade sales partner or visit www.brocade.com.

“We were able not only to identify problems in the client’s network, but also worked with them on resolutions. By 4 p.m., the network was flawlessly pushing traffic at a rate of 20 Mbps in both directions! The client was extremely impressed with our ability to both identify the overall deficiencies in their network beyond ‘poor performance,’ and also quickly and reliably identify the failure points.”
—Brocade Consultant

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