Network Capacity Planning Project for a Fortune 500 Company

Background

One of Shunra's customers - a Fortune 500 multi-industry company – wanted to impartially evaluate the existing WAN capacity in conjunction with the existing file transfer process between the company's U.S. data center and its Global Technology Center (GTC) in India. This project was commissioned to discover why the existing transfer process and supporting network infrastructure have been unable to meet the business service level objectives. The goal of the engagement was to develop empirical results that would enable this Fortune 500 Company to decide the future technical direction that best meets its current and future file transfer needs.

Challenge

The company was experiencing problems with existing transfers not meeting throughput objectives. The production environment included: 4xE1 Network Capacity into India (GTC) with 50% CIR, custom developed file transfer method using imbedded "rsync" and newly deployed Wide Area Network (WAN) Acceleration products. The ultimate goal of the project was to determine the best combination of network capacity and file transfer process to meet the stated transfer objective of 1GB per hour.

Solution

To address their concerns, this Fortune 500 Company engaged Shunra's Professional Services to leverage Shunra's Virtual Enterprise (VE) Suite. Shunra's consultants created an exact, lab-based replica of the customer's production WAN environment, emulating network connectivity from the U.S. location to the GTC in India.

Highlights

Challenge

The existing file transfer process and supporting network infrastructure have been unable to meet the business service level objectives.

Solution

Shunra's consultants created an exact, lab-based replica of the customer's production WAN environment using Shunra's Network Catcher and VE Appliance. These tools enabled various methodologies of file transfers to be tested.

Results

The network proved to be very robust. Armed with this information, our consultants were able to identify a file transfer method that meets business service level objectives

The first step in modeling the WAN characteristics of the company's production network was to understand the network components and conditions. A copy of Shunra's VE Network Catcher was installed on a PC within the GTC. This captured the network characteristics between India and the U.S.-based data center.

The VE Network Catcher results were then used to build the models for testing. Network templates were created using Shunra's VE Modeler to represent the production network. Equipped with these tools, Shunra's consultants tested various methodologies of file transfers to find the root cause of why the company was unable to meet the desired transfer rate of 1GB/Hour.

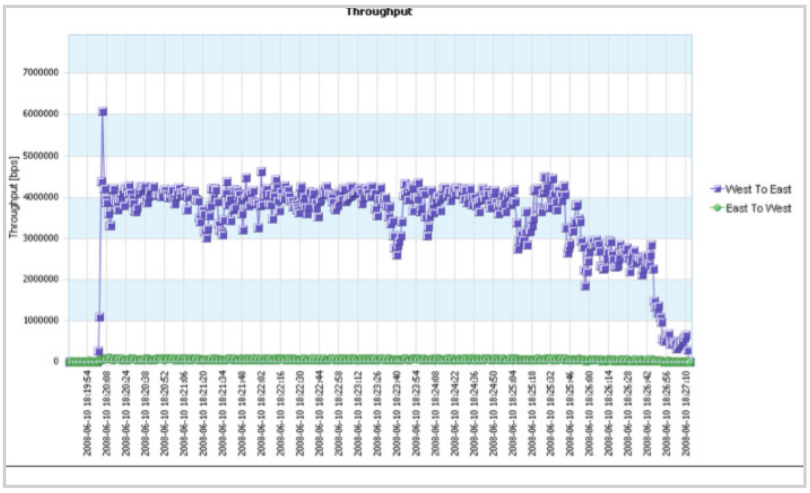

Figure 1 - Network Throughput for Zipped Multi-Threaded File Transfers

Results

To summarize the results: the network proved to be very robust, with exceptionally low packet loss (0.03%), and very stable latency. After careful mathematical/engineering analysis of the network architecture, Shunra's consultants were able to theoretically prove that the network infrastructure was more than capable of delivering data in excess of the desired transfer rate. Armed with this information, our consultants were able to identify a file transfer method that provided enough files to be successful with the multi-threaded technique (See Fig. 1). By compressing the data and providing fewer files to transfer, the zipped multi-threaded file transfers minimized overhead on the files system. This approach was able to sufficiently saturate the network, and deliver in excess of the mandatory transfer rate (See Fig. 2)

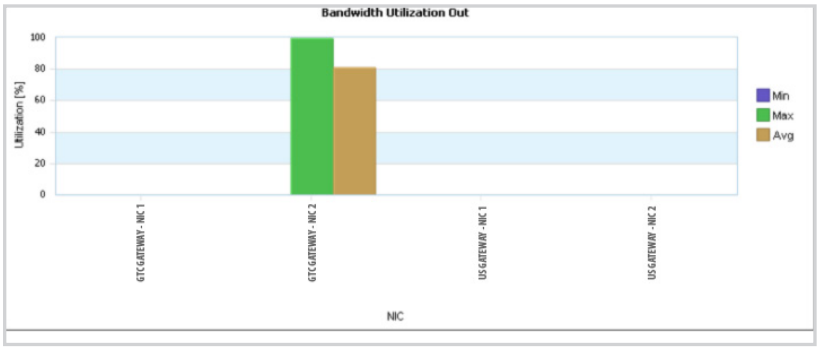

Figure 2 - Bandwidth Utilization for Zipped Multi-Threaded File Transfers

Results with WAN Acceleration

WAN accelerators had been added to the production network between the U.S. location and India. While the crafted solution works well without this technology, the accelerators were able to enhance the results, and decreased the transfer time by 1min. While uncommon to the expected process and dataflow, a warm cache (same data second time), the entire transfer took a mere 27 seconds.

Further Development

Realizing the value of Shunra's technology, this Fortune 500 Company invested in Shunra's Virtual Enterprise Appliance shortly after.

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