Big Data Company Builds High-Performance Development and Test Network

Customer Case Study

After building reliable 40-Gbps unified fabric using Nexus switches, Guavus needs only two management applications.

EXECUTIVE SUMMARY

Customer name: Guavus
Industry: Software Development
Location: R&D in Gurgaon, India; Headquarters in San Mateo, California;
Number of employees: 500

Challenge

- Build highly stable test network for big-data analytics software
- Simplify network management
- Minimize operational costs

Solution

- Built Cisco Unified Fabric with Cisco Nexus 6004 and 5596 Switches and fabric extenders
- Managed connections to Cisco Unified Computing System and other servers from one interface: Cisco Prime Data Center Network Manager

Results

- Increased customer satisfaction by eliminating testing delays caused by network outages
- Added 300 Cisco UCS Blade Servers without having to add IT staff
- Increased performance by increasing bandwidth to 40 Gbps and minimizing hops

Challenge

Guavus is a leading provider of big-data analytics solutions for communications service providers. Customers include some of the world's top managed service operators and wireless operators. These companies use Guavus applications to analyze real-time network data and make immediate decisions to provide a great customer experience, control costs, and increase profits.

As its business grew, Guavus needed to make its development and test network in India more stable, faster, and easier to manage. "For a software company, the lab network needs to be even more stable than the production network," says Ashwin Shah, director of IT for Guavus India. "Some of our tests run for weeks at a time. So even a momentary network outage means we have to start testing over again. This wastes hundreds of man-hours of work and can delay completion of big-data analytics solutions for our customers."

Network performance is also important to Guavus because analyzing and acting on big data in real time requires very low latency. Therefore, the company wanted to increase bandwidth in the lab network from 10 to 40 Gbps, and to minimize the number of hops.

Finally, Guavus wanted to keep operating costs down. One goal was to minimize rack count. The other was to simplify infrastructure management. Managing the previous 10-Gbps switches was very time consuming for the small IT team. "A single management view of network connections to all of our servers, from Cisco and other vendors, would simplify operations," Shah says.

Solution

Guavus met all of its business goals with a Cisco® Unified Data Center solution, including Cisco Unified Fabric, Cisco Unified Computing System™ (Cisco UCS®), and Cisco management applications.

"With our old switches, we lost months of man-hours each year while developers waited for network problems to be resolved. In the first six months of using the Cisco Nexus switches, we haven't lost any time due to network issues."

Ashwin Shah
Director of IT
Guavus

Unified Fabric

Guavus decided on a Cisco Nexus® switch architecture after also evaluating switches from several other vendors. The Cisco Unified Fabric converges the previously separate data and storage networks, simplifying management. "Manageability is the main we reason we chose Cisco Nexus switches," says Shah. "They were the only switches that would let us manage connections to all of our servers, from Cisco and other vendors, from the same interface."

To minimize latency, Guavus implemented the switches in a spine-leaf design. "With a distributed core architecture, we don't need a core switch," Shah says. "This reduces the number of hops, providing the low latency needed for big-data analytics." Redundant Cisco Nexus 6004 Switches form the spine. They connect to each other and to certain servers at 40 Gbps, and to Nexus 5596 Switches (the leaves) at 10 Gbps (see Technical Implementation). The leaves, in turn, connect to the other servers and to EMC storage.

If any network link goes down, the FabricPath feature in the Nexus switches quickly finds an alternative path, a capability called fast convergence. "We had redundancy before, but it was very difficult to manage," says Shah. "Troubleshooting took a few hours every week. Since we started using FabricPath, we haven't had to do any troubleshooting at all."

Management Applications

Guavus simplified server management using Cisco UCS Manager. One click applies a predefined service profile to any server in the domain. "With Cisco UCS Manager, provisioning 64 Cisco UCS Blade Servers to develop a new customer solution takes about an hour," Shah says. "Provisioning 64 of our other servers generally takes 8-16 hours of staff time. The reason it's so much faster with UCS Manager is that we can provision servers and VLANs from the same interface."

To provision switches and configure features such as Cisco FabricPath, Fibre Channel over Ethernet (FCoE), and virtual SANs, Guavus uses Cisco Prime™ Data Center Network Manager (DCNM).

Results

Increased Reliability to Avoid Testing Delays

Now Guavus can more quickly test its customized big-data analytics software. One reason is that failed links no longer interrupt weeks-long tests, forcing developers to start all over. Instead, the FabricPath feature automatically reroutes traffic over another link. "With our old switches, we lost months of man-hours each year while developers waited for network problems to be resolved," Shah says. "In the first six months of using the Cisco Nexus switches, we haven't lost any time due to network issues."

In addition, developers now have confidence in the network, so they know that slow application performance results from the code, not the network. That means they start working on performance problems right away, instead of waiting up to a day to rule out network issues.

Simplified Management

Switch management takes so little time with Cisco Prime DCNM that Guavus still has not had to hire a switch administrator. The software also makes it easy to monitor FabricPath. "Now we can see all connections from one management interface," Shah says. "We no longer need to look at the switch console to see what is connected to what."

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Server management is also simpler. The IT team was able to add 300 Cisco UCS Blade Servers without adding IT staff. One reason is the converged network adapter on the Cisco UCS, which halves the number of cables and adapters to manage.

Increased Performance, Contributing to Product Quality

Now Guavus developers can test big-data analytics applications on a 40-Gbps network. "If the application works on our network, it will work on our customer's network," Shah says. The high bandwidth reduced the oversubscription ratio, increasing performance.

Next Steps

As the business continues to grow, Guavus can scale the development and test infrastructure by adding more Cisco Nexus switches and Cisco UCS Blade Servers. The company expects to scale to 2000 servers in the near future. "The Nexus 6004 provides enough bandwidth capacity to support anticipated growth for a full year," Shah says. "Then we'll just add another switch."

Technical Implementation

In total, Guavus has 10 Cisco Nexus switches, providing ninety-six 40-Gbps and four hundred 10-Gbps ports.

Cisco Nexus 5596 Switches connect EMC storage, Cisco UCS, and other vendors' servers. EMC storage connects over FCoE. Other vendors' servers connect to the switch by way of Cisco Nexus B22 Fabric Extenders. Guavus manages the fabric extenders as part of the switch, so adding more servers does not increase management overhead. The switches connect to servers using Twinax cables, which have low latency and low power requirements.

Product List

Data Center

- Cisco Unified Computing System with Cisco UCS B200 M3 Blade Servers
- Cisco Nexus 6004, 5596T, 5596UP Switches
- Cisco Nexus 2248 Fabric Extenders
- Cisco Nexus B22 Fabric Extenders for HP and Dell blade servers

Management

- Cisco Prime Data Center Network Manager
- Cisco UCS Manager

More Information

- To learn more about Cisco Nexus Switches, visit www.cisco.com/go/nexus.
- To learn more about Cisco Unified Computing System, visit www.cisco.com/go/ucs.
- To learn more about Cisco Prime Data Center Network Manager, visit www.cisco.com/go/dcnm.

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