nexenta®
Global Leader in Software-Defined Storage.

Cox Communications
Case Study

Cox Communications Optimizes Its Network Testing with Nexenta

Atlanta, Georgia
www.cox.com
Telecommunications

Summary

Challenge: To support network engineers' growing need for servers and storage

Solution: NexentaConnect for VMware Virtual SAN

Platform: Supermicro, VMware

Use Case: High Performance and Availability

Benefits:
- Enabled more complete testing and more extensive data collection
- Reduced time spent provisioning storage from many hours a week to just a few
- Supported scale out of testing to accurately model real-world conditions
- Enabled reuse of existing hardware and delivered lowest-cost TCO

Business Overview

Networks are the heart of Cox Communications, a privately owned subsidiary of Cox Enterprises that provides digital cable television, telecommunications, and home automation services. The third-largest cable television provider in the United States, Cox Communications serves more than 6.2 million customers, including 2.9 million digital cable subscribers, 3.5 million Internet subscribers, and almost 3.2 million digital telephone subscribers, making it the seventh-largest telephone carrier in the country.

Challenges

To keep Cox Communications' networks delivering cutting-edge performance, several groups focus on design and engineering of the company's network infrastructure and service layers. Groups are dedicated to backbone and metro IP engineering, datacenter and network services, architecture R&D, Cox Business, and CDN. All rely on infrastructure managed from a large lab in Atlanta, which provides a shared compute storage infrastructure for their extensive testing of next-generation software defined networking, network service virtualization, and other capabilities.

> *Network engineers throughout Cox Communications were limited in the testing they could do because we lacked the flexible storage options to support it. Now, though, they can do what they think is best, running as many tests as they need. This helps ensure we provide our customers with the most reliable and best-performing network service available.*

Phil Bedard
Technical Director
Cox Communications

Visit us online at nexenta.com

Demands on the testing lab have changed during the past five years. Network testing used to focus on routers and switches, but now involves more software-based testing, which means a greater need for servers and storage. Unfortunately, the lab was set up to provide storage on local servers, which didn't allow for much flexibility in responding to changing capacity needs. Network testing groups were tied to specific hosts which sometimes ran out of storage capacity. In order to meet testing groups' need for faster access to more storage, the lab decided to shift from local servers to provisioning and managing storage from an easy-to-use centralized storage pool.

System Configuration

- NexentaConnect for VMware Virtual SAN
- Six Supermicro SSG-6047R-E1R72L2K servers with dual E5-2680 v2 CPUs @2.80Ghz and 10 cores, 40 logical processors, and 512GB of RAM each
- VMware vSphere cluster with a VSAN pool of 144TB across three servers
- Four 1TB SSD drives to each of the three servers, paired with 12 of the 4TB drives
- 30-40 servers from other groups using NFS mounts off the VSAN

Solution and Benefits

Solution

"My team and the network designers we serve, don't want to become storage experts," says Phil Bedard, principal network design engineer at Cox Communications. "Our real job is testing. While I have experience with storage, I was looking for a product that would be easy for my team of network experts to manage."

Bedard and his team began testing products that could help the group create a new shared network, compute, and storage infrastructure to better facilitate testing and collaboration. The group had certain constraints. First, it was inheriting a variety of hardware with large amounts of storage capacity to use as part of the storage pool. Second, Cox Communications planned to run VMware and leverage VSAN for fault tolerance, but the testing group had other servers – compute nodes – that it didn't want to have in the VSAN. And third, though Bedard's team already had a CIFS cluster, it didn't want to use that as a solution going forward.

Bedard evaluated both software-based approaches and storage appliances. "We would have had to pay more for appliance-based storage space than we'll pay with this Software-Defined Storage approach," says Bedard. "NexentaConnect for VMware Virtual SAN (VSAN)was the most cost-effective solution – and would have been the cost-effective choice even if we'd had to buy servers. More importantly, of all the solutions we considered, it was the most mature, the easiest to implement and use, and delivered the best performance."

Today, Cox Communications does its network testing on a pool of servers, with NexentaConnect for VMware VSAN making it easy for the team to carve up space among the different networking groups so that each has the storage it needs. Bedard's team uses NexentaConnect for VMware VSAN to manage the storage pool, which consists of six Supermicro servers in a shared cluster. Three of the servers make up a VMware vSphere cluster and run VSAN using a portion of the storage on each server. VSAN has a requirement for SSDs to use for read/write caching, so the team added four 1TB SSD drives to each of the three servers, and currently has them paired with 12 4TB drives for a VSAN pool of 144TB between the three servers.

Bedard's team began by giving each group 10TB each, but can set up new mounts in response to requirements. NexentaConnect for VMware VSAN enables the team to export storage off the VSAN pools as NFS to other servers in the lab. Bedard estimates there are approximately 30-40 servers and VMs from other groups using the NFS mounts off the VSAN, and those numbers are always growing.

Overall, implementation was a relatively painless process. After setting up the hardware, the team was able to rapidly download NexentaConnect for VMware VSAN and install VMware. NexentaConnect for VMware VSAN runs over the Cox Communications 10GB lab network, which is fast enough to deliver the performance that network engineers users need. Bedard did the initial installation, but other team members are now responsible for setting up mounts and shares for different groups. Bedard says he gave them each a two-minute explanation and that was all they needed to work effectively with NexentaConnect for VMware VSAN.

"If you've got a VSAN set up already, implementing NexentaConnect takes about ten minutes," says Bedard. "Full integration into our infrastructure was easy, too – as soon as I got everything upgraded to the right releases, we were all set to go. I didn't need much help, but the support people from Nexenta were great." Bedard and team did failure testing to make sure the solution was ready to go, and then completed their rollout.

Visit us online at nexenta.com

Benefits

With NexentaConnect for VMware VSAN, the Cox Communications network testing teams are able to do their jobs more quickly and thoroughly than before. Previously, when a proposed network test came up against storage constraints, Bedard's team had to hunt down space.

"I typically spend up to seven hours a week provisioning storage, and I think that's pretty much the case for every member of my six-person team," says Bedard. "Now, that same task takes almost no time – perhaps a couple of hours a week, total, for the entire group."

Also, storage limitations used to prevent network testers from collecting as much data as they wanted. Typically, they'd want to collect a month or so of data, but storage constraints limited them to three days' worth. Now with NexentaConnect for VMware VSAN, engineers can collect all the data they want, which helps them to get a more complete view of network performance and ultimately enables them to ensure Cox provides its customers higher-performing, more responsive networks. And if engineers want to scale up their tests – for example, if they want to see how well a virtualized network function performs at scale – Bedard's team leverages the NexentaConnect for VMware VSAN solution to provide the space they need to create and run tests that accurately reflect the scale of real-world operations.

"Network engineers throughout Cox Communications were limited in the testing they could do because we lacked the storage capacity to support it," says Bedard. "Now, though, they can do what they think is best, running as many tests as they need. This helps ensure we provide our customers with the most reliable and best-performing network service available."

nexenta®
Global Leader in Software-Defined Storage.

Final approved
August 24th 2015