

## County Agency Selects Data Center Switches to Solve Connectivity Issues

Wake County deploys Cisco Catalyst 4948-10GE Switches to address cabling and space issues in the data center.

### EXECUTIVE SUMMARY

#### WAKE COUNTY

- Government
- Raleigh, NC

#### BUSINESS CHALLENGE

- Increased performance to facilitate introduction of server virtualization
- Need to address cabling and space issues in the data center

#### NETWORK SOLUTION

- Upgrade to data center-level switching solution to address connectivity, cabling, and space issues with server virtualization solution for exceptional performance, bandwidth, and flexibility.

#### BUSINESS RESULTS

- Achieved flexibility by moving switches within the data center
- Satisfied lower latency requirements
- Addressed cabling issues

### Challenge

Wake County is the second-most populous county in North Carolina and consists of 12 municipalities that include Cary and Raleigh, the county seat and state capital. The county has a population of more than 850,000 residents and a unique mix of urban and rural small towns and cities that distinguishes it from other counties, and provides something for every lifestyle. Wake County's general fund budget is US\$970 million with a seven-year capital plan totaling US\$1.2 billion and grants in excess of US\$100 million per year.

The IT charter for Wake County is to manage all network infrastructure including all of the County's internal departments, board of elections, revenue department, finance, and human resources. The IT group also is responsible for serving public libraries

throughout the county, as well as fire/emergency medical services stations and law enforcement. All of IT for Wake County is managed internally and operates in multiple designated teams that include network infrastructure, server, security and mainframe teams. The county has a centralized data center that consists of 250 Dell servers, which are a combination of blade, rack mounted, and stand-alone servers that are 95 percent Windows-based. Forty percent of the servers operate in the VMware environment.

According to Brian McKenzie, supervisor of network infrastructure, the IT group found themselves facing challenges with server connectivity issues as they began deploying more in the VMware environment.

"Our server team was concerned with bandwidth and latency as they began deploying more and more in the VMware environment," says McKenzie. "We were also running into cabling and space issues with all the cabling coming back from the data center, which drove us to make a decision about moving the ports closer to the servers. We also wanted to obtain wire and line rate speeds to each server, whether through gigabyte or 100 megabyte connections."

“All the performance features we were already getting with the Catalyst 6500s we wanted to continue with, but kick the performance up a notch with the 10gig configuration. We were so impressed with the single Catalyst 4948-10GE that we tested on a subset of servers for a few months, that we decided to redo our entire configuration and purchased six more Catalyst 4948-10GE switches.”

—Brian McKenzie, Supervisor of Network Infrastructure, Wake County

### Solution

Because Wake County had already deployed several Cisco® products within their infrastructure and were successfully using Cisco Catalyst® 6500 Series Switches, they decided to evaluate Cisco Catalyst 4948-10 Gigabit Ethernet (10GE) Switches.

“Ideally we were looking for consistency and didn’t want a solution that would require us to do any retraining,” says McKenzie. “All the performance features that we were already getting with the Catalyst 6500s, we wanted to continue with, but kick the performance up a notch with the 10gig configuration. We were so impressed with the single Catalyst 4948-10GE that we tested on a subset of servers for a few months, that we decided to redo our entire configuration and purchased six more Catalyst 4948-10GE switches.”

McKenzie says the Cisco Catalyst 4948-10GE provides Wake County with flexibility in moving the switches within the data center.

“We really like the fact that the Catalyst 4948-10GE gives us incredible flexibility to move any one of the switches as we purchase new ones, and we can place them anywhere in the data center even if it’s in the top of a rack,” says McKenzie. “We’re redesigning our data center, making modifications to our fire suppression, HVAC and UPS systems, and the Catalyst 4948-10GE gives us the ability to perform the necessary tasks whether it’s in the middle or the top of the rack or in the middle of a row.”

McKenzie says the Cisco Catalyst 4948-10GE also addresses the IT groups cabling and space challenges.

“Addressing the cabling issues and getting the ports closer to the servers to help our server team perform their moves, adds and changes was one of our main drivers for this upgrade to the 4948s,” says McKenzie. “When everything collapsed back to our Catalyst 6509, the network team had to perform the moves for the server team. With the Catalyst 4948-10GE, we push the switches closer to the servers where the server team can perform moves, adds, and changes themselves, and if they need to switch VLANs or something along those lines, we can change the ports without having to perform the cabling ourselves.”

According to McKenzie, the Cisco Catalyst 4948-10GE has enabled the IT group to better virtualize servers.

“Because we are doing a lot more these days with virtualization in our servers with VMware, we were looking for a switching solution that offered more horse power and bandwidth than the Catalyst

4948-10GEs give us,” says McKenzie. “As an added bonus, the ability to utilize virtualization has helped us better address environmental issues, as well as our cabling challenges.”

## Results

Lower latency was one of the requirements that McKenzie says the Cisco Catalyst 4948-10GE switches have helped the IT group meet.

“Our server group has requirements for how quickly an application should be able to be accessed and with no downtime, as well as transit times that require as low latency as possible,” says McKenzie. “The Catalyst 4948-10GEs have helped us satisfy these low latency requirements.”

McKenzie says the Cisco Catalyst 4948-10GE switches have provided the IT group at Wake County with flexibility and has helped them to fulfill the requirements of the original IT plan and design that was presented to senior management.

“The Catalyst 4948-10GEs have given us great flexibility in how easy it was to integrate into our infrastructure and to make changes in real time,” says McKenzie. “Our original plan and design that we presented to the overall organization was to bring in the most bandwidth, low latency, and wire-speed connectivity to each server. We also wanted a design that would last us for the next few years regardless of any upgrades we may apply to the infrastructure. The Catalyst 4948-10GE has helped us to satisfy those business requirements.”

PRODUCT LIST
<p><b>Cisco Application Networking Services:</b></p> <ul style="list-style-type: none"> <li>• Cisco Catalyst 4948 10 Gigabit Ethernet Switch</li> <li>• Cisco Catalyst 6500 Series Switches</li> </ul>

The success of their projects can really be measured by the lack of impact on their customers, according to McKenzie

“We know the upgrade to the Catalyst 4948-10GE switches has been successful because we have not received any complaints since the implementation,”

says McKenzie. “The silence is understood as good news by the network team. The upgrade was transparent and largely unnoticed by our end users, and that is the biggest measure of our success.”

In terms of next steps in Wake County’s expansion plans for their data center, McKenzie says he and the IT group are considering ways of deploying the Cisco Catalyst 4948-10GE switches into their backup data center.

“We’ve been discussing how we can deploy more Catalyst 4948-10GEs in our backup data center and deploying the same configuration that we have in our primary data center,” says McKenzie. “Because our backup data center is growing, we’re keeping in mind new ways of using the Catalysts to get the same positive results that we’ve received in our primary data center.”

## For More Information

Find out more about Cisco switches and routers, please visit:

- <http://www.cisco.com>
- <http://www.cisco.com/en/US/products/ps6021/index.html>
- <http://www.cisco.com/en/US/products/ps6026/index.html>
- <http://www.cisco.com/en/US/products/hw/switches/ps708/index.html>



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