



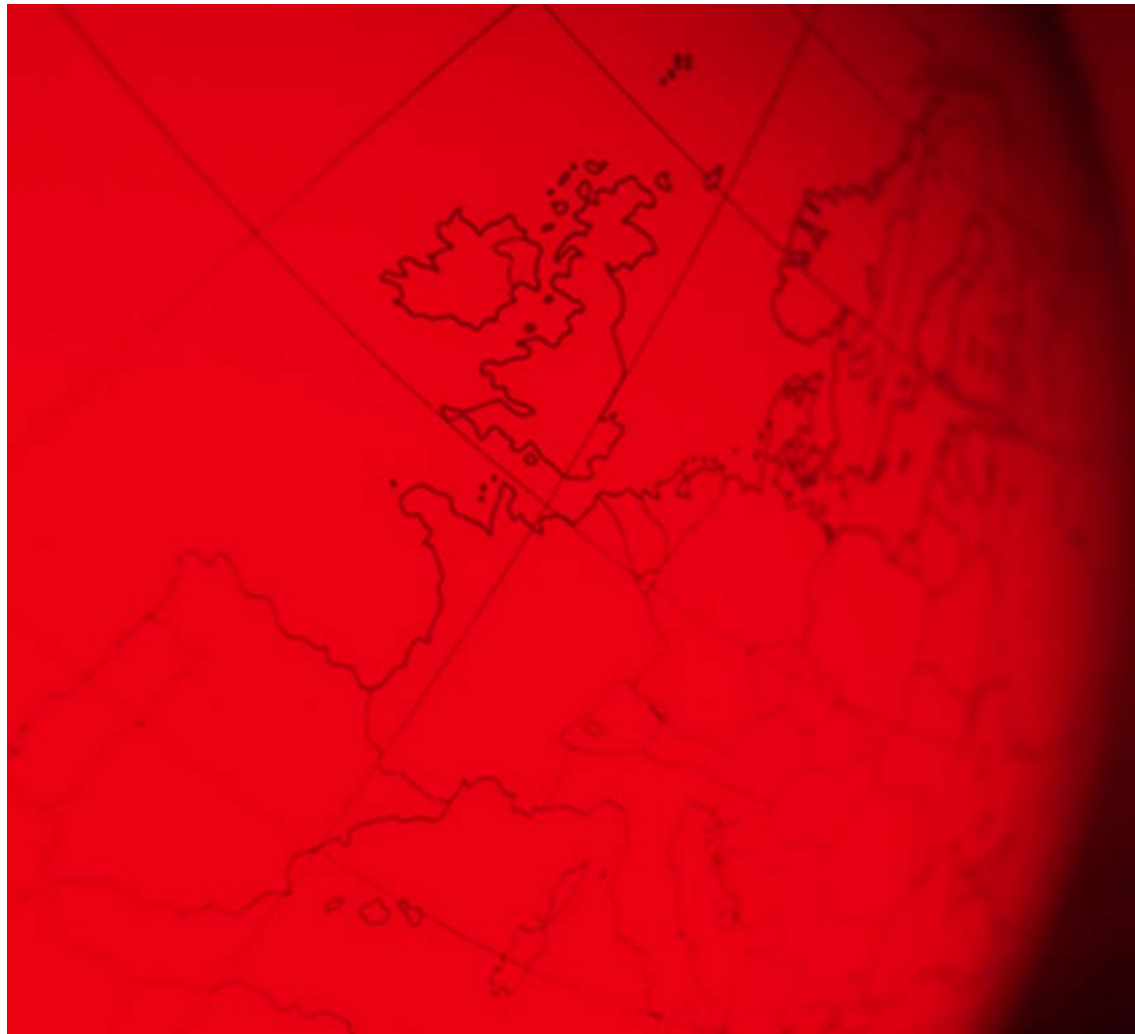
**NUCLEUS
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ROI EVALUATION REPORT

CISCO CATALYST FIXED CONFIGURATION SWITCHES



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TOPICSIT Management &
Operations**THE BOTTOM LINE**

Because of their flexibility Cisco Catalyst Fixed Configuration switches enable companies to improve network uptime, increase productivity, reduce costs, and avoid or delay switch purchases.

SITUATION

Companies often find it difficult to maximize the returns on investments that they have made in their local and wide-area networks. Some of the challenges include:

- Support costs. Companies typically have deployed a variety of switches from different vendors. Troubleshooting, upgrading, and enhancing these networks becomes more difficult as their size and complexity increases.
- Rapidly evolving functionality requirements. Switches are typically purchased with the anticipation of three to five year useful life. This can be problematic, because at the time of any network purchasing decision, IT staff cannot predict what functionality or applications they will be deploying on that equipment in four years. As a result, companies often retire switches before their useful life is up in order to utilize new technologies such as voice over Internet protocol (VoIP), unified communications (UC), or video conferencing.
- Increasing needs for bandwidth. End users are continually adopting new applications such as video sharing that require significant bandwidth. In addition to being unable to predict increases in bandwidth demands, network managers are not always able to predict where on their network demand will occur.
- Reductions to IT budgets. IT budgets are typically tightening, making it harder for companies to have adequate staffing, software, and hardware to meet the networking demands of the line of business.

Cisco Catalyst Fixed Switches have the following features and functionality:

- Stackability. Some of the Cisco Catalyst Fixed Configuration switches are designed so they can be combined into stacks and function as one switch, which enables companies to combine multiple switches in to a group with a single IP address as well as shared capacity and functionality. This is important because it improves network resiliency, localizes points of failure for troubleshooting, distributes functionality across a network, and makes it easier for administrators to upgrade and troubleshoot switches.
- Availability. Cisco has designed its Catalyst Fixed Switches to maximize system uptime. For example, stackability results in redundancies that enable availability even if one of the switches malfunctions. In addition, power supplies and fans are field-replaceable, eliminating a source of downtime.
- Expandability. The switches are designed to enable rapid and low-cost changes in functionality and bandwidth. Backward compatibility enables the addition of new switches to a stack without disruption. Companies can, without any programming or additional cost, upgrade a switch to 10 Gigabit Ethernet from one Gigabit Ethernet connections. The switches are also optimized for one-to-many applications such as video or phone conferencing.

To analyze the benefits of deploying Catalyst fixed-configuration switches, Nucleus research analyzed deployments at Hospital Corporation of America, Sanford Health, and Plymouth University in the United Kingdom.

BENEFITS OF CISCO CATALYST FIXED-CONFIGURATION SWITCHES

Nucleus finds using Cisco Catalyst Fixed Configuration switches to direct traffic over an organization's network translated into a number of benefits, including:

- Extended Service Life
- Increased employee productivity
- Improved network administrator productivity
- Improved network flexibility
- Reduced power, ventilation, and space costs
- Reduced training

Extended Service Life

Companies often replace switches well before the end of their useful lives because they eventually become incompatible with applications required by the line of business, such as VoIP, UC, or one-to-many applications such as video conferencing.

One organization was able to extend the average useful life of their switches by 20% and reduce the cost to purchase new switches by £100,000 annually.

Cisco Catalyst fixed-configuration network switches are designed to host a broader range of applications and media, enabling companies to both delay new switch purchases and operate their switches for a longer portion of their useful lives. The switches have converter modules that enable a rapid upgrade to ten Gigabit Ethernet. Most of the users Nucleus spoke to used software available from Cisco to expand the types of functionality possible over their switches and avoid the purchase of new switches. The switches are also capable of simultaneously providing both user access and data distribution, which is an important source of flexibility when supporting a distributed network in a campus-like setting.

Companies readily identified the cost savings from this flexibility:

- *"I know I'm eventually going to deliver gigabit volumes to people's desktops. I can do this over the Cisco switches because of their flexibility. If I hadn't bought them, I'd probably have to go out and spend another \$200,000 on new switches."*

One university used the flexibility of the switches to reduce the cost of wiring its campus and said, *"We stack these switches and the entire stack not only distributes content but also provides access. They also connect the middle of a network to the outside. Without this, you need separate servers for these functionalities. To get this, we would have spent an additional \$400,000 on equipment."*

- *"We can easily upgrade to have security on a per-port basis on these switches, which is important for HIPAA compliance. With other switches, you'd have to buy new equipment."*
- *"The new Cisco switch gives us an easier way to migrate to things like 10 gigabit Ethernet or 802.11n – a wireless protocol."*

Improved employee productivity

Most of the customers Nucleus spoke to said that deploying Cisco Fixed Switching Switches enabled system uptime increases to approximately 99.99 percent. Increased uptime is largely the result of stackability, which results in redundancy of networking paths, which improves availability. Uptime is also higher because the switches are built with field replaceable fans and power supplies, allowing replacement without taking users offline. Although the companies Nucleus spoke to had migrated from different switches which had various uptime rates, all of the users stated there was a significant improvement in employee productivity as the result of more continuous network traffic availability:

- *"We've turned around what was a very unreliable network where failures happened all the time. Before we were at about 97.5 percent uptime. Now we are in the high nines. Our goal is 99.999 percent, and that's now realistic."*
- *"The care and feeding is a lot less with these switches because they are so reliable."*
- *"We've gone from 99 percent uptime to high nines for a network that supports 13,000 employees."*

Improved network administrator productivity

Cisco Catalyst fixed-configuration network switches have features and functionality that enable less labor intensive installation, management, upgrade, and troubleshooting. By deploying these switches in stacks, multiple switches are managed on one Internet protocol address, which makes the deployment of upgrades, patches, and modifications faster and accelerates troubleshooting because there is only one point of failure to be investigated. The switches have streamlined configuration and installation functionality that eliminate labor-intensive workflows typically completed by network administrators. Network administrators are also able to manage the switches remotely, because diagnostic data for monitoring and troubleshooting switches is transmitted by the devices over the Web.

Using Cisco Catalyst Fixed Switches to improve system uptime from 99.5 percent to only 99.9 percent can reduce the amount of uptime-related troubleshooting by up to 80 percent, enabling administrators to spend more time on tasks such as network design and functionality.

Companies readily identified how these features, combined with increased system uptime, made network administrators more productive:

- *"Because of all the stacking and no single point of failure at each stack, my administrators spend a lot less time on things like upgrades and troubleshooting."*

One user said, *"I spend less time on maintenance and troubleshooting, and more time on improving system configuration so that we are always getting the maximum functionality out of our switches"*.

- *"We can stack them and have one IP address for up to nine switches, which makes administration easier. If we are upgrading our VoIP, then we do it once for the nine-switch stack, instead of nine times for every switch. This makes my administrators a lot more productive."*

Improved network flexibility

Having switches that are easily converted for new types of transmission, deployment, or media is about more than avoiding the purchase of new switches. Flexibility of switches means that a broad range of projects become simpler and less costly. It also means that organizations can provide their own telecommunications capacity, build their networks more cost effectively, and extend the value of the investments they've made in other technologies. Organizations using Cisco Catalyst fixed-configuration network switches readily identified the advantages of broader switch functionality and being able to do more with their existing networks:

- *"We used Cisco Fixed Switching to replace our old PBX-based phone system with VoIP, and to move our video feeds for security from coaxial to closed-circuit TV (CCTV). These projects saved us money because other servers aren't flexible enough for this."*
- *"We have put 30 employees' cell phone traffic over the Cisco-based network, which reduces the amount of local calling costs they expense. We are going to expand this to a lot more employees."*

"These switches can run layer 2 or layer 3 switching easily. I use this to keep a lot of traffic localized in clusters, so now I don't need as much capacity for other parts of the network."

- *"There is a much easier migration to new protocols. You just upgrade the SFP instead of completely gutting the existing switches."*
- *"With these switches, I've basically prebought lots of other functionalities."*

Less training

Organizations that took advantage of the flexibility of their Cisco Catalyst Fixed Configuration switches also used them to get the most out of their existing network administrators and avoid additional training costs:

- *"I can run over the switches the applications or protocols that my staff already knows."*
- *"I configured the switches on HSRP, which is a routing protocol. I already have the software for this, and my people know it."*

Reduced power, ventilation, and space costs

Cisco's stacking switches have achieved industry awards for power efficiency, resulting in less power draw and lower costs. This is particularly important for organizations that have campus-like structures such as universities, hospitals, and corporate headquarters.

One user said, "Because we're able to deploy the switches in stacks, we set aside fewer closets at each location, and switches require less space, heating, ventilation, and cooling. We have 280 switches in about 13 stacks. That saves us a lot of money."

Another organization integrated its Cisco Catalyst fixed-configuration network switches with its Cisco phones. As a result, the switches use a Cisco-based discovery protocol to determine whether a phone on the network needs full power or not and reduce power costs by allocating the proper amount of power to each phone rather than the maximum amount.

CONCLUSION

Companies should consider Cisco Catalyst Fixed Configuration switches as a way to reduce costs and extend the value of their existing infrastructure investments. Deploying these switches can result in improved network administrator productivity as the result of switch stacking, improved performance, and ease of troubleshooting. Deploying these switches also enables companies to reduce capital expenditures because they can run a broad variety of protocols and functionality, which results in both avoided switch replacement costs and projects that extend the value of other deployed assets.

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