

## WHITE PAPER

# The ROI of Converged Networking Using Unified Fabric

Sponsored by: Cisco

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## EXECUTIVE SUMMARY

For years, organizations have been running separate, parallel networks in their datacenter: an Ethernet-based LAN to connect servers, clients, and the broader Internet and a storage area network (SAN) to connect servers to the storage pool. The rise of protocols such as Fibre Channel over Ethernet (FCoE) enables companies to collapse these networks down to a single common network infrastructure, thus saving capital costs by eliminating redundant switches, cables, and networking cards and adapters and saving operating costs by simplifying administration of these networks.

With its Unified Fabric, Cisco has taken this concept a step further. Unified Fabric offers the following primary benefits over initial product introductions:

- ☒ While early FCoE products targeted only the access layer, Unified Fabric can be deployed across the end-to-end networked environment (i.e., it enables elimination of redundant protocols and hardware at the core layer, thus driving greater cost savings and higher ROI than FCoE can alone at the access layer).
- ☒ It provides benefits in terms of I/O and server virtualization, bringing greater scalability and intelligence into the network and extending benefits to servers, storage, and networking.
- ☒ It enables customers to seamlessly scale all types of content, either block or file based.

This next-generation approach brings three sets of benefits to the organization:

- ☒ **Efficiency.** By eliminating a greater amount of infrastructure redundancy across the network rather than just at the access layer, it can drive a greater ROI.
- ☒ **Agility.** It provides the ability to set up, move, and change both physical and virtual servers faster to more easily respond to changing business needs. The approach is designed to provide the ability to adjust based on capacity needs — regardless of protocol.
- ☒ **IT transformation.** By providing a simpler, more homogeneous infrastructure to manage, enabling datacenter consolidation, and supporting a capacity demand model, Unified Fabric can help IT organizations do more with less.

To better understand the benefits of consolidating storage and server networks using Unified Fabric, IDC conducted interviews with six Cisco customers who have experience with real-world implementations of the technology. Our study debunks the sometimes-made claim that there is little or no advantage in terms of cost savings associated with network convergence. Instead, IDC estimates that these businesses can achieve up to a 492% ROI by fully converging their network at both the access layer and the storage layer. This ROI has a five-year net present value of \$179,673 per 100 users and provides a payback on the customer's initial investment within 11 months. Annual cost savings is 34% higher than if these companies had implemented FCoE at the access layer alone.

## **SITUATION OVERVIEW**

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### **IT Balancing Act: Efficiency and Growth**

IT executives have a new set of priorities that will be realized only through greater operational efficiency and increased responsiveness to the business. From an IT perspective, this translates to continued consolidation of servers, storage, and network assets through the use of technologies such as virtualization (for server and storage) and unified networks (based on 10 Gigabit Ethernet). In addition, executives seek to improve the availability of business-critical applications and the ability to quickly and easily meet regulatory mandates. This operational transformation of IT can achieve cost savings and make it easier for organizations to react quickly to major positive or negative changes in the business environment.

At the same time, business units within organizations are demanding ubiquitous and constant access to information in order to propel the business forward. This is placing significant strain on IT organizations that must contend with silos of infrastructure that are not in harmony with each other. This is particularly problematic for the network because it is the lifeblood of the datacenter and interconnects all entities in the datacenter.

The datacenter network must help solve the efficiency problem of both physical and virtual server sprawl. Today, more new virtual servers are provisioned than physical servers, and the installed base of virtual servers will grow at a CAGR of 28%.

As the number of servers in the datacenter has increased, there has been a corresponding increase in storage and storage networks. As enterprise applications and services require ever greater amounts of data, the amount of storage required by datacenters continues to rise.

To provide servers with required access to this storage pool, organizations have implemented SANs. Different technologies have arisen over the past decade to facilitate SANs, including iSCSI and Fibre Channel. These standards provide high performance, low latency, and traffic isolation for storage traffic, but they are specialized for storage I/O and not client-to-server or server-to-server networking traffic. While these networks have been optimized for separate workloads, they contribute to an inflexible, costly, and inefficient IT environment.

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## **Maintaining Separate Server and Storage Networks Is Costly and Inefficient**

One of the challenges of these storage-specific networking protocols is that they are incompatible with the dominant server networking protocol in the market today, namely Ethernet. This means that organizations must deploy two entirely separate physical networks in their datacenters: an Ethernet LAN for server connectivity and a SAN. Although SANs and Ethernet networks perform substantively the same function, they are entirely separate physical networks, with separate switches, cabling, networking hardware (such as NICs, HBAs, etc.), and connections into each server.

Further, because they use different protocols, SANs and Ethernet networks need to be maintained by entirely separate network management staffs with different skill sets. Not only is this inefficient in that it necessitates potentially redundant network management teams, but adding, moving, or changing physical servers and connections now requires that server administrators coordinate with each of the two networking groups, which adds cost and complexity to the process. This situation is costly and inefficient and reduces the organization's flexibility to adapt to changing business requirements.

The challenge posed by having separate storage and server networks was noted by one storage manager, who stated, "My IP pals don't use my cables, and I don't use their cables. We have independent switches sitting next to each other. So it costs twice as much power, twice as much cooling, twice as much rack space, twice as much cable infrastructure, twice as much labor because we're maintaining parallel infrastructures."

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## **Fibre Channel over Ethernet at the Access Layer Solves Only Part of the Problem**

To help companies address these challenges, industry standards have recently emerged to combine core server and storage networks over a single unified fabric. Prominent among these standards is Fibre Channel over Ethernet (FCoE), which brings many of the storage-specific benefits of Fibre Channel and allows it to be transported over Ethernet, the most ubiquitous networking technology in the enterprise.

Under FCoE, both the Ethernet and the Fibre Channel protocols themselves are merged, meaning that organizations can deploy a single, converged infrastructure over which both SAN traffic and server traffic are carried. It allows an evolutionary approach to I/O by preserving all Fibre Channel constructs, providing reliable (lossless) delivery, while preserving and interoperating with the organization's investment in Fibre Channel SANs, equipment, tools, and training.

Unfortunately, most current FCoE products focus only on the access layer, meaning they address only a subset of the redundancies posed by separate LAN and SAN networks. Further, they focus strictly on the network/switching layer, thus missing out on the opportunity to provide even greater benefits to the organization in terms of improving agility and enabling IT transformation through I/O and server virtualization.

## UNIFIED FABRIC IMPROVES UPON ACCESS LAYER CONVERGENCE

Cisco has taken Fibre Channel over Ethernet to the next level with its Unified Fabric technology. Unified Fabric builds on top of the converged networking benefits of FCoE, enabling the separate networks to gradually morph and evolve into a single end-to-end network (i.e., to the core layer as well as the access layer), thus increasing the efficiency savings beyond that provided by access layer convergence. Further, Cisco has added significant scalability and intelligence capabilities as well, which brings greater agility to IT organizations and acts as an enabling technology for IT transformation efforts.

### Improved Efficiency

One of the main benefits of Unified Fabric is the ability it provides for organizations to realize greater efficiency in their IT operations and reduce redundancy between their LANs and SANs. This reduces total cost of ownership and drives improved ROI.

#### ***SAN/LAN Consolidation Benefits***

Since Unified Fabric is based on FCoE technology, one of the more obvious benefits to consolidating the two types of networks is reduction in duplicative infrastructure and staffing needs. Reducing redundant infrastructure reduces capital expense in switches, cables, and networking equipment, while consolidation and simplification of network infrastructure reduces operating expense to manage and maintain the network.

Respondents strongly echoed this point, as every one of them had a story to tell of how their Unified Fabric implementations allowed them to eliminate redundancy and streamline operations. Consolidation benefits include:

- ☒ **Cables.** At \$500–1,000 lifetime costs per cable, the ability to consolidate and eliminate redundancy can be quite significant. One respondent in this study has about 100 cables in his network and estimates that a traditional architecture would have required 400 cables.
- ☒ **Switches and I/O infrastructure.** Respondents told us how they replaced their SAN switches with Ethernet switches and consolidated networking adapters and HBA ports.
- ☒ **Power and cooling.** Savings in physical equipment also translate to savings in the power and cooling budget. "I do know we've greatly reduced [our power consumption]," said one respondent. "We had three air handlers that could barely handle the datacenter, and now they've shut one completely off."
- ☒ **Staff.** With fewer ports to manage and one less hardware platform to stay current on, the IT organization can reduce staffing requirements and reallocate network managers to more strategic tasks.

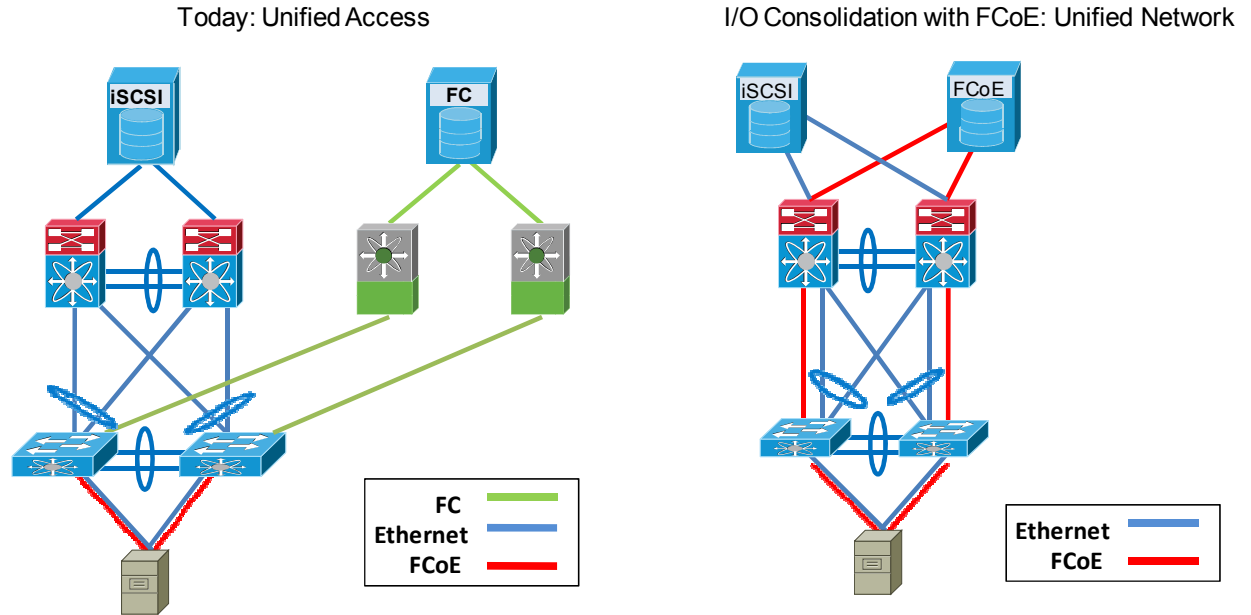
"I do know we've greatly reduced [our power consumption]. We had three air handlers that could barely handle the datacenter, and now they've shut one completely off."

## Ethernet Everywhere

With Unified Fabric, customers can now realize the benefits from one end of their network to the other. They can realize savings in cables, switches, power and cooling, and staff costs at the core layer as well as the access layer (see Figure 1).

**FIGURE 1**

### Unified Fabric Consolidates End-to-End Network Infrastructure



Source: IDC, 2011

Further, users of a converged network can capitalize on advances in both Ethernet and FC SAN technologies in the future without having to choose between them. Advancements in FC SAN technologies can still be implemented within an Ethernet-based solution, which means that customers do not have to forgo technological improvements simply because they move to Ethernet. With multiple vendors jockeying for a leadership position in Ethernet networking, vendors are constantly investing in new solutions and technologies, and customers are benefiting from a wave of new standards, greater bandwidth solutions, and specific feature sets in terms of management, security, and applications supported.

The wealth of resources focused on Ethernet is an advantage in future development. While the Ethernet road map is clear, one customer reported limited visibility around the Fibre Channel road map at higher speeds: "Fibre Channel does 2, 4, 8, and a road map for 16 and nothing beyond that. Ethernet is 1 Gig, 10 Gig, and 40 and 100 Gig are on the road map. So there's more bandwidth available in the Ethernet road map than the Fibre Channel road map." This respondent pointed out that once he gets 100 Gigabit Ethernet in his datacenter, why would it make sense for him to maintain a separate 16 Gig SAN network?

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## Increased Agility

Cisco Unified Fabric also supports increased business agility in a variety of ways. It supports a virtual paradigm for servers and storage and enables cloud computing. Servers can now be added, moved, or changed more easily and rapidly while reducing the need to coordinate with two separate sets of network administrators. IT users can scale up/scale down servers without cabling issues and can rapidly enable server moves, adds, and changes in a virtualized environment. By treating consolidated computing, storage, and network resources as shared pools, IT teams can more dynamically respond to requirements and more rapidly provision application and infrastructure services.

Multiple respondents pointed out the increased ability to respond to changing business requirements provided by their Cisco Unified Fabric implementations. One respondent believes this greatly facilitates application time to market. "Prior to this converged infrastructure, it would take an average of 3 days, 10–12 hours of staff time, to implement a new VMware host. And now it takes 4–6 hours for one person." Another respondent had a similar result, enabling it to move from a 6- to 8-week deployment cycle to a 15-minute infrastructure deployment cycle. The customers view a unified fabric as the necessary building block to achieving business agility. The use of unified fabric enables the use of next-generation provisioning tools and systems. Additionally, the reduction in cabling and the need to reduce the number of switches in the provisioning cycle further unified fabric's ability to respond to changing business demand.

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Scalability is another key advantage. By eliminating the number of ports required per server, deploying a Unified Fabric can increase the scalability of the overall system. In the words of one respondent, "[Converged networks] scale up better. If you have two [separate] stacks of infrastructure, suddenly you can hit some limit. You run out of ports or something because you're adding servers. When you hit that limit, you have to add stuff to both stacks. Whereas if you have only one stack, you only have to add half as much stuff."

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## Supports IT Transformation

Businesses are attempting to get more out of their IT organizations with smaller staffs, fewer resources, and less money. These pressures are especially acute in today's challenging business and budget environments. The Unified Fabric can be an enabling component of an IT transformation effort designed to help IT do more with less.

IT staffs have a simpler, more homogeneous infrastructure to manage with fewer physical cards and connections and fewer protocols to support. Simplifying server I/O requirements can reduce the interface cost per server and allow the provisioning of smaller, less expensive server form factors with fewer slots to support.

Unified Fabric supports datacenter consolidation. Customers can implement converged networking without disrupting the current storage architecture or having to replace existing servers, switches, or routers. Unified Fabric can also increase network stability and reduce disruptions. One respondent stated that "reliability has jumped through the roof, and availability has jumped through the roof" since its deployment.

One respondent commented that Cisco Unified Fabric allowed it to move from a "justify and buy" model to a "capacity demand" model. Previously, it would have been cost-prohibitive to purchase the infrastructure capacity prior to it being required and have it sit there idle, but with Unified Fabric, this respondent can align demand with capacity much more granularly than it could in the past. "I used to worry about end-to-end provisioning including network, server, and storage," stated this respondent. "In our new business model, I don't break things out by network versus storage. It's just capacity."

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The flip side of this point is that getting the most out of a Unified Fabric could require an IT transformation/reorganization. One interviewee remarked, "The biggest advice I can give customers is at the end of the day, it's about business process and your architecture. If you align your process and architecture for a unified fabric, you'll see phenomenal results. But if you do things the old-fashioned way and just install the technology, you're only going to see about 10% of what I've been telling you."

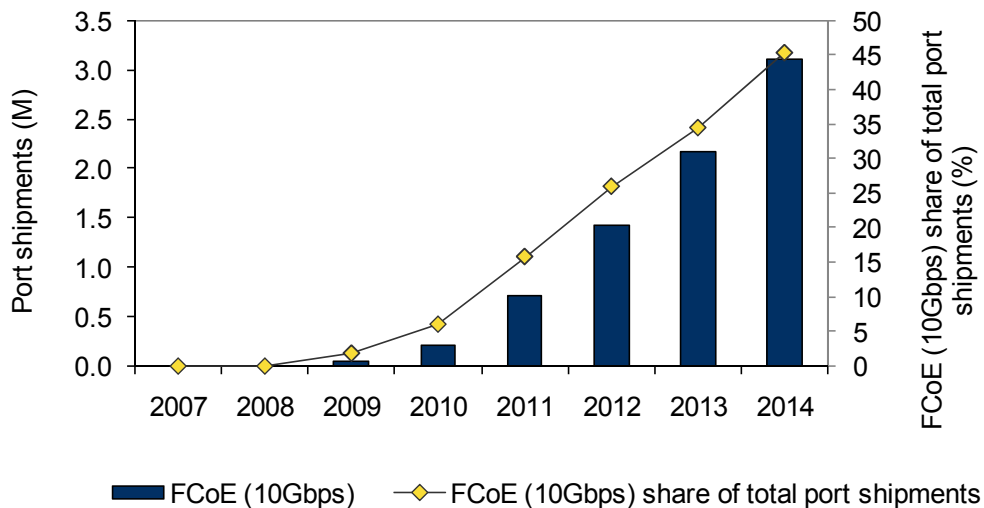
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## ROI OF CONVERGED NETWORKING USING UNIFIED FABRIC

To assess the potential financial impact of migrating to a converged network, IDC interviewed six companies that were implementing the initial phase of collapsing the access layer. We then modeled the impact of the complete convergence using the rate of replacement of FC by FCoE as a proxy for the likely extent of convergence over the next five years. The customers' projected growth rate in storage compares favorably with the industry trend, which adds credibility to this important extrapolated dimension (see Figure 2).

**FIGURE 2**

Fibre Channel Storage Interconnect: Port Shipments and FCoE Share of Total Ports



Source: IDC, 2011

The six companies interviewed are profiled in Table 1.

**TABLE 1**

Respondent Demographics

	Average
Employees	6,600
IT users	4,713
IT staff	
Managing the total IT environment	262
Managing the storage environment	10
Managing the server environment	31
Managing the network environment	8
Cabling	4
Industries	Data processing, manufacturing, healthcare, technology

Source: IDC, 2010

**The Benefits of Convergence**

Companies in our study were able to immediately recognize benefits in their operations. Within the first year of converging the access layer, they achieved the following:

- Created a more efficient networking environment, reducing their hardware and supporting infrastructure costs by 21%
- Improved network agility, scalability, and reliability
- Transformed the IT staff, reducing labor costs by 20%

***Building a More Efficient Environment***

Simplifying the network using Nexus 5000 series switches allowed companies to streamline their core layer and led to more efficient server usage, reducing server growth. In all areas of storage/server/networking infrastructure, these organizations experienced significant savings (see Table 2):



- ☒ Using Nexus 5000 series switches to collapse the infrastructure enabled a strategy to bring more of the server infrastructure into the datacenter and leverage higher utilization rates. This approach was an antidote to the server sprawl that had been the response to workload growth. By reducing the need for some remote branch and distributed servers, companies were able to avoid server replacement and affect future planning. The Nexus 5000 series collapsed infrastructure contributes to a more efficient use of server resources.
- ☒ Replacing more expensive switches with the Nexus switches reduced switch costs.
- ☒ Switch and server reductions led to reductions in racks and floor space requirements.
- ☒ Consolidating with FCoE eliminated the need for multiple NICs, reduced the number of HBAs, and provided a more centralized operating environment.
- ☒ Reduced cabling was the most immediate benefit because cable costs were reduced by almost 75%. In a fully converged environment, cable costs will be reduced another 6% (86% overall).
- ☒ As a result of lowering cable volume and in turn opening overhead space, demand for cooling was reduced, lowering overall power costs by 34%.

**TABLE 2**

Cost Reduction per 100 Users (\$)	
	Five-Year Savings
Server cost avoidance	26,260
Cable savings	26,994
Networking savings (switching, NICs, HBAs)	118,315
Datacenter infrastructure (racks, space)	891
Power savings (cooling)	44,510

Source: IDC, 2010

***Building a More Agile Environment***

The initiative to converge networks is an outgrowth of the endless demand to reduce the costs of IT. The resulting benefits are more long term and profound. Building a more direct, simple, and efficient network enables the IT environment to become a more agile implementer of corporate strategy. While improving businesses' agility has many benefits, measuring the impact is more elusive. In this study we looked at the time to deploy applications as a proxy for measuring how these organizations were able to increase their agility (decrease the total time to market for a new application) by 79%. A secondary measurement, less indicative of business initiatives but very

important to IT, is the time required to provision a virtual server. Because all of these companies had virtualization initiatives under way in parallel with their convergent activities, reducing the time (and effort) required for provisioning by 58% was very important. Looking forward in time, we note that the more efficient and agile network will continue to affect business value long after cost savings have been recognized (see Table 3).

<b>TABLE 3</b>			
Agility Key Performance Indicators (KPIs)			
	Before	After	Change (%)
Time to deploy a new application (days)	6.0	1.3	79
Time to deploy a new server (days)	5.5	2.5	58

Source: IDC, 2010

Along with being more agile, the converged infrastructure is more reliable. Consolidating the core means reducing the number of switches, distributed servers, and connections and reducing the problems of congestion and heterogeneous technologies. Some companies were able to add redundancy using the additional resources freed up from convergence. With fewer moving parts, an integrated and homogeneous network, and server redundancy, companies were able to reduce downtime by 68%. As one interviewee said, "Reliability has jumped through the roof, and availability has jumped through the roof."

### ***Transforming the IT Environment***

IT's most important and sustainable resource is people — the highly trained staff who envision how best IT can leverage technology to implement corporate strategy. This is the same resource that also must support the various technologies that make up the datacenter — server, storage, and networking hardware and the software (operating system, applications, and middleware) that automates business processes. The goal of every company is to optimize this resource. This is done by reducing or eliminating the manual support and trouble response-type activities and freeing up the staff for planning and implementing new business initiatives.

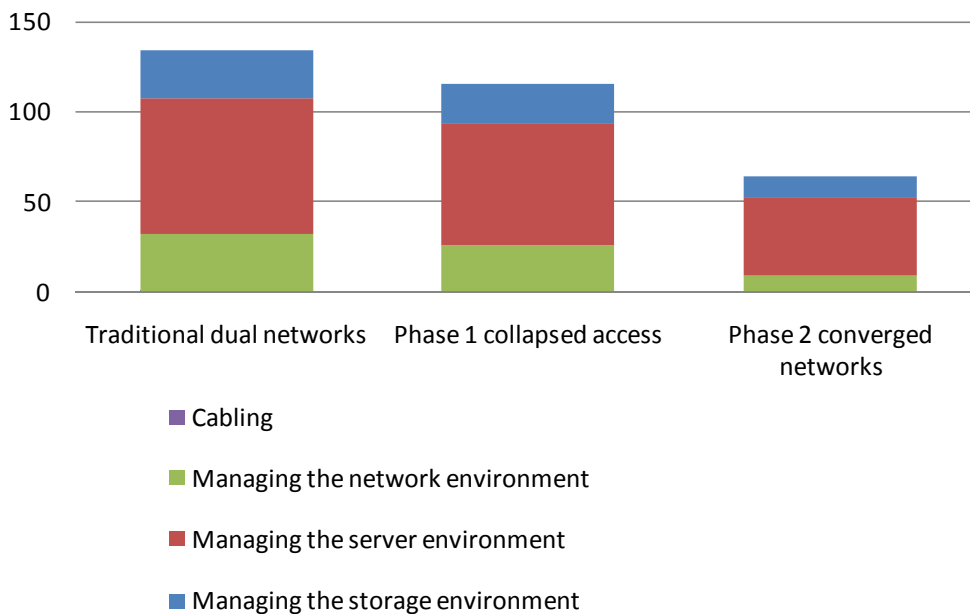
Network convergence is transformative in that it reduces the complexity of the network, transforming the IT support activities and the makeup of the staff. Replacing multiple complex technologies with an integrated converged solution means that an organization can use fewer IT staff to manage converged resources (see Figure 3). Five out of six companies realized savings in networking. Four out of six realized savings in storage, and three out of six realized savings in server staff. In all cases, cabling was reduced, resulting in reduced staff or reduced costs for outsourcing. Other than cabling, the companies did not reduce staff but rather benefited from more flexibility in dealing with application growth and the 30+% annual growth in storage.

Companies in the study were able to scale and manage growth by redeploying trained, existing staff to support new opportunities. Overall, companies experienced savings in their combined server/storage/networking staff. In a completely converged network, the transformation continues.

**FIGURE 3**

IT Staff Comparison: Traditional Dual Networks Versus Collapsed Access Layer Versus Fully Converged Network Environments

**(IT Staff Transformation for a 10,000-User Company)**



Source: IDC, 2011

**The Future: The Completely Converged Environment**

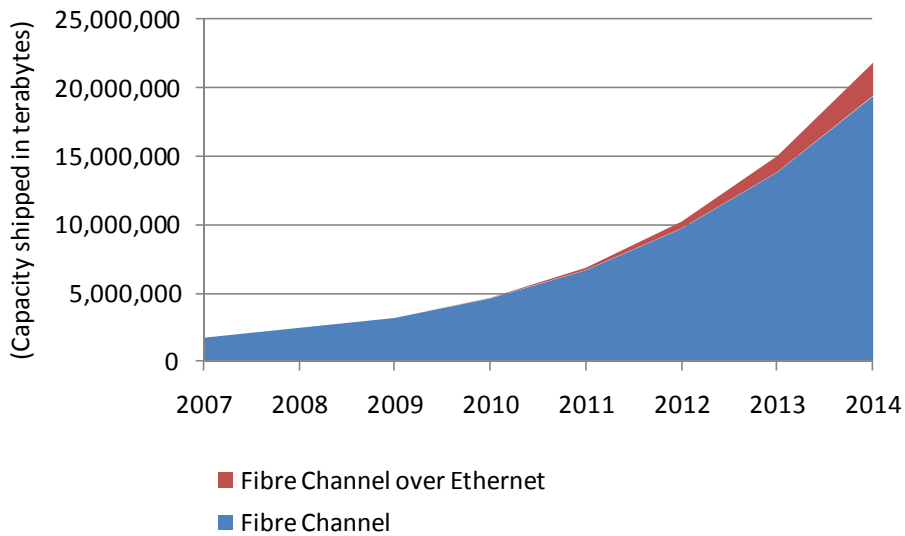
Today, we are only partway to a fully converged network. We have examined companies' success with collapse at the access end, but how would the costs and benefits associated with a completely converged environment look?

Modeling the converged environment to project what the typical completely converged environment would look like in five years, we took the progress made to date by our companies as a baseline and created a forecast given their expected storage growth rate and the rate at which FCoE is replacing Fibre Channel. The customers' projected rate of storage growth is in line with overall industry trends (see Figure 4). Additionally, we used the growth in 10GB networking to model the

additional investment (hardware, software, consulting, training, and staffing) required to collapse the core environment.

**FIGURE 4**

Storage Capacity Shipped in Terabytes, 2007–2014



Source: IDC, 2011

Server avoidance continues as physical servers are reduced to the absolute minimum and then further reduced through virtualization (companies in the study plan on increasing the density from 14 virtual servers per physical server to 33 over the next five years). In this analysis, we are looking at server consolidation outside of virtualization. Switching efficiency extends to the edges (actually, it is all edge or no edge, depending on your view). With a completely converged environment, cabling is further reduced, affecting power (cooling) as well. Staffing transformation is complete such that one FTE does the work of two.

Annual costs for the server, storage, and networking environment are reduced from \$2,489 per user to \$1,322 per user despite continuing growth in users, storage, and applications (see Table 4). Table 5 shows the cost/benefit analysis by phase.

**TABLE 4**

## Annual Costs per User (\$)

	Traditional Dual Networks	Phase 1 Collapsed Access	Phase 2 Converged Networks
Server hardware	545	524	434
Networking (switches, NICs, etc.)	143	33	19
Cabling	82	20	12
Power	341	224	202
Staff	1,377	1,187	655
<b>Total</b>	<b>2,489</b>	<b>1,988</b>	<b>1,322</b>

Source: IDC, 2010

**TABLE 5**

## Cost/Benefit Analysis by Phase (\$)

	Initial	Year 1	Year 2	Year 3	Year 4	Year 5
Phase 1 convergence benefits	0	955,373	1,307,085	1,788,279	2,446,619	3,347,323
Phase 1 and 2 convergence benefits	0	955,373	2,732,900	5,390,094	9,407,494	15,528,153
Phase 1 convergence costs	(751,257)	(803,254)	(813,858)	(824,461)	(835,064)	(845,667)
<b>Total Phase 1 and 2 convergence costs</b>	<b>(751,257)</b>	<b>(803,254)</b>	<b>(868,109)</b>	<b>(922,549)</b>	<b>(962,976)</b>	<b>(1,033,027)</b>

Source: IDC, 2010

**ROI Analysis**

The companies in our study have experienced significant benefits from the phase 1 convergence, reducing the total costs of their networking server and storage environments by 20% despite storage growth of 37%.

However, if over the next four to five years the products to support a complete convergence become available and they execute in a similar fashion, these companies could reduce their costs another 27% per user (47% overall) and realize

total benefits (discounted) of \$216,181 per 100 users at a cost of \$36,508 per 100 users, yielding a five-year net present value of \$179,673 per 100 users, a 492% ROI, and a payback period of just under 11 months (see Table 6). For a company of 5,000 users, this means a return of \$8.98 million on an investment of \$1.83 million.

<b>TABLE 6</b>	
ROI Analysis per 100 Users	
	Average
Benefits (discounted)	\$216,181
Investment	\$36,508
Net present value	\$179,673
ROI = NPV/investment	492%
Payback	10.7 months
Discount rate	12%

Source: IDC, 2010

## CHALLENGES/OPPORTUNITIES

IDC sees a number of challenges and opportunities for customers as they look to adopt and for Cisco as it brings to market products that take advantage of Unified Fabric. Opportunities include:

- ☒ **Piggybacking Unified Fabric deployments onto planned technology refreshes.** For customers looking to do a planned technology refresh anyway, "piggybacking" a Unified Fabric deployment can give them the opportunity to gain the benefits of the Unified Fabric while reducing the switchover costs (i.e., since they are reconfiguring servers and cabling anyway, they will minimize the switchover costs to FCoE).
- ☒ **Battling the misperception that converged networks don't provide cost savings.** There is a perception in some quarters of the marketplace that converged networks do not result in cost savings to an organization. IDC is not intimately familiar with the rationale behind such claims; however, based on our own in-depth conversations with customers who have implemented this technology, it is very clear that significant cost savings do indeed exist. Cisco and other vendors have an opportunity to educate the market on the underlying factors behind these cost savings and the benefits customers can obtain by reducing two sets of networks to one.

Challenges include:

- ☒ **As an emerging best practice, unified fabric has yet to be adopted by companies.** Many companies have made significant investments in storage networking standards such as Fibre Channel and iSCSI and may be under the misconception that they have to make a hard cutover to a new technology, particularly one that they may perceive to be relatively early in its adoption cycle. Cisco and other vendors will have to educate the market on the benefits of a unified fabric for server and storage connectivity, the methodologies for gradually morphing their current separate networks into a converged infrastructure, and the ways this unified fabric can save costs in order to pay for itself.
- ☒ **Companies may be hesitant to switch to a new technology during a soft economy.** While organizations may well see the benefits of deploying a Unified Fabric, they may be hesitant to make the required investments to switch over under the current economic conditions. Cisco and other vendors will have to make a strong economic case in terms of ROI and TCO and demonstrate that the benefits will greatly outweigh the initial investment and that there will be a reasonably quick payback period.
- ☒ **FCoE is still gaining traction in terms of vendor support.** Because FCoE is an emerging standard, not all products from all storage vendors currently support it. "When we originally bought our [storage vendor product], they didn't have a Fibre Channel over Ethernet option," noted one respondent. "We had to spend \$5,000 in interface cards to do it." Of course, as the standard continues to gain traction, a greater number of products will be released in the future with native FCoE support. Cisco needs to help customers understand that FCoE storage products are not a prerequisite for converging networks, that Nexus-MDS networks can support both Fibre Channel and FCoE storage concurrently, and that servers can access both types of storage regardless of their type of connection. Evolution is not a leap to "FCoE everywhere"; it is a gradual evolution of existing LANs and SANs by deploying "FCoE anywhere."

"When we originally bought our [storage vendor product], they didn't have a Fibre Channel over Ethernet option. We had to spend \$5,000 in interface cards to do it."

## CONCLUSION

Fibre Channel over Ethernet enables businesses to eliminate the need to deploy and manage two side-by-side networks — LANs and SANs — and replace them with a single network handling both server traffic and storage traffic over Ethernet. Cisco has taken this a step further with its Unified Fabric, bringing the benefits of Ethernet everywhere to the end-to-end network and incorporating technology designed to improve agility and laying the groundwork to implement IT transformation.

Unfortunately, confusion still exists in the market about the level of economic returns companies can achieve through network consolidation. To determine the cost savings in the real world, IDC conducted an ROI study of six companies that have implemented Cisco Unified Fabric. The benefits of implementing Cisco Unified Fabric were determined to be greater than the benefits of implementing FCoE alone, partly because of the ability to deploy these products from one end of the network to the

other and thus realize benefits at the core layer as well as the access layer and partly because of the greater benefits in terms of improved agility and staff efficiency.

Overall, IDC found that the five-year ROI associated with a Unified Fabric deployment was 492% with a total net present value of \$8.5 million (or \$179, 673 per 100 users) and a payback period on the initial investment of less than 11 months. Further, implementing a fully converged, end-to-end network resulted in a 34% lower annual cost per user than collapsing the LAN/SAN access layer only.

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