

Debunking the Myth of the Single-Vendor Network

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We have collected information from hundreds of client interactions and have performed detailed interviews of nine organizations that have introduced a second vendor into their network environments. Our findings show that most organizations should consider a dual-vendor or multivendor solution as a viable approach to building their network, as significant cost savings are achievable with no increase in network complexity, while improving the focus on meeting business requirements.

Key Findings

- Introducing a second vendor into the network infrastructure will have no long-term impact on operational costs for organizations following best practices.
- Introducing a second networking vendor will reduce total cost of ownership (TCO) for most organizations by at least 15% to 25% over a five-year time frame.
- We did not encounter one example where operational cost savings would offset the equipment cost premium that Cisco generally charges.
- Most organizations that introduced a second vendor report a lasting decrease in network complexity, compared with an all-Cisco network.
- Network operations teams that are already using some form of multivendor management tools for fault alerting, configuration management or performance management are well-positioned to take advantage of the second-vendor opportunity.

Recommendations

- Network architects and CIOs must consider alternative network vendors to ensure that they deliver a functional network solution at an appropriate cost point.
- Network operations teams should invest in multivendor-capable tools to help enable the organization to deal with a second vendor in their infrastructure, and to improve the operational capabilities with their incumbent solution.

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STRATEGIC PLANNING ASSUMPTION(S)

Through 2015, Cisco will be unable to make sufficient changes to deliver a lower five-year TCO for network infrastructure and operations, as compared with alternative, dual-vendor approaches.

ANALYSIS

What You Need to Know

The idea of a single-vendor network has been promoted by Cisco (just like strong vendors in other market areas) as a way to simplify operations, ensure reliability and lower the TCO for a network infrastructure. However, after interviewing various organizations that have introduced a second vendor into their Cisco infrastructures, it is clear that in most cases today there is no financial, operational or functional basis for this argument. The reality is that a single-vendor Cisco network isn't necessarily less complex, easier to manage or more reliable than a network with multiple vendors when implemented with best practices. In every case we reviewed, organizations did not need additional staff to manage a dual-vendor network, compared with a Cisco network, and the total initial capital costs and ongoing maintenance expenses of the environment were clearly higher in a Cisco-only network. Network architects and CIOs who don't re-evaluate long-held incumbent vendor decisions (with any vendor) on a periodic basis are not living up to fiduciary responsibilities to their organization.

As the enterprise network equipment market continues to evolve away from one dominant vendor with a number of small tertiary players to one where there is increasing competition from strong, clearly committed alternatives, clients ask:

- What vendors should I consider as an alternative to Cisco?
- Is it possible to (or should I, or how can I) integrate another vendor into my Cisco architecture?

Research Approach

The foundation of this research is the hundreds of client inquiries we receive in the network equipment marketplace from clients looking at how to manage their existing environments to those looking at major project upgrades. These inquiries represent a significant portion of the competitive marketplace for network infrastructure. To supplement these client interactions, we requested reference accounts from three vendors (Cisco, HP and Juniper Networks) for representative customers that had either decided to remain in a single-vendor (Cisco) environment, or had introduced a competitive product (HP or Juniper) into their environment.

We conducted nine in-depth interviews to ensure that their experiences matched the findings from our client base. The interviewed organizations ranged in size from roughly 1,000 users up to Fortune 500 organizations with more than 1,000 locations and more than 10,000 employees. Interviews were conducted with private and public sector organizations. We asked about their past and current environments, and specifically about changes in costs and processes in the following areas: staff training, operations and network management, network management tools and maintenance services. We also looked at the changes that took place in interoperability, failure rates and network complexity.

When researching this study, and from our hundreds of inquiry calls every year on this topic, Cisco is the predominant incumbent vendor mentioned when looking to pursue an alternative vendor strategy. This is due to a number of reasons, including:

- Dominant market share (with more than 70% revenue share in switching and routing, Cisco is an incumbent vendor in the majority of the market)
- Breadth of product offerings (Cisco often is the primary vendor for switching, wireless LAN [WLAN], WAN routing, IP telephony (IPT), network security and other network-related products within an organization)
- Premium-priced products and maintenance services
- Lack of management integration (Cisco product families generally have separate command-line interfaces, management tools and consoles with little or no integration among product areas)

Due to the overwhelming interest from Cisco customers and Cisco's market share, a number of our recommendations and findings are Cisco-centric. However, we do talk with clients that are longtime buyers of other networking vendors (and we interviewed one organization that introduced a second vendor into a non-Cisco environment as a specific part of this research) and much (though not necessarily all) of the research and findings in this analysis apply to network organizations that find themselves with any long-standing and well-entrenched incumbent vendor. All vendors can find themselves falling into the following reasons why network organizations are considering a change in their approach:

- Vendor complacency — over time, vendors can take customers for granted, and the level of attention and service can drop off.
- Less-competitive pricing — vendors and their customers will rely on long-standing relationships, and possibly older contracts, to end up with noncompetitive pricing.
- Single-vendor-focused element management tools encourage lock-in and limit alternatives.

The concerns expressed by our clients when they start to consider looking for alternative vendors center around:

- The training required and the availability of skilled talent to deal with a different vendor
- The level of interoperability among different vendor solutions, and possible finger-pointing between two competing network infrastructure vendors
- The complexity multiplier of introducing operational difficulties related to managing a two-vendor or multivendor environment
- The increased staffing required to deal with extra vendors in the network
- The risk and inherent reliability of the infrastructure
- Whether the savings can really offset the extra work involved
- The cost and complexity of the additional network management tools required

At a high level, we addressed many of these issues in "Introducing a Second Vendor Saves Money, Improves Operations," published in May 2009. This research takes the topic further and explores the issue with more-specific quantitative analysis taken from our hundreds of annual inquiries related to this topic, and our specific and more-extensive interviews with organizations that have stayed with one network vendor, or have made the transition toward introducing an alternative or second vendor into the network environment. Our interviews focused on organizations that have introduced HP or Juniper into the environment, as these are the most

common transitions we observe among our clients today; however, many of the findings and recommendations will apply to other vendor transitions as well.

Training and Talent Myth: The market is filled with Cisco Certified Internetwork Expert (CCIE) and other Cisco accredited network professionals, while finding certified staff for other vendors is much more difficult.

This myth is often cited as a major impediment to dealing with an additional vendor. It is challenging to get network management staff members to change their minds and get over their fears when they believe that Cisco certification is more marketable than other skills. What we have found is that the transfer of skills from Cisco to other vendors' products is a relatively easy one, since the majority of knowledge is about network technology, which is completely transferable among vendor environments.

According to the interviewed organizations, there was some initial grumbling; however, their fears disappeared as they quickly felt adept with the new equipment. Most organizations tend to invest three to five days of incremental training when they transition to another vendor. This results in a one-time, 1% to 2% incremental cost to the labor budget, based on an incremental time investment with the new vendor (assuming *all* operations staff takes three to five days of extra training). In nearly all cases, there was no cost to the actual training programs, as this was included for free by the various vendors. However, the next statements of nearly every organization we talked to were "this was a waste of time," "my team picked it up on the fly with little difficulty" and "my staff didn't need as much formal training as expected to get up to speed." In reality, rather than a one-time 1% to 2% incremental cost, it should be less than 1% for those being trained on the new vendor solutions.

Recommendation: We encourage organizations to take advantage of the "delta" training offered by many network vendors that takes into consideration the pre-existing certifications and focuses on what's different about their solution. This training has been reduced to a couple days in most cases, and most vendors will waive the cost of training as an incentive to ease the introduction of a second vendor. We are also seeing more vendors offer online training so that it can be done in the office, incrementally, as required.

Interoperability Myth: It's impossible to get two vendors' products reliably working together in a network.

Interoperability has proved to be a minor issue for all the organizations we interviewed during our research. Yet, consistent with all references is that they followed a number of best practices (largely described in our earlier research), including:

- Having well-defined boundaries around the new solution, often taking advantage of the concept of network building blocks to define major components within the network (for example, edge switching, core switching and WAN routing are often considered building blocks in an enterprise network).
- Reducing interface points to a minimum and not randomly mixing products of various vendors. Introducing a second vendor into the network is easier when you do it systematically. For example, one vendor for workgroup switching, the other for the core network; or one vendor in Region A, with the other vendor in Region B.
- Ensuring that you use standards as much as possible, especially interfaces between building blocks within the network.
- Regularly engage in network "hygiene" activities (especially when upgrading hardware or software components) to ensure that old prestandard or proprietary protocols are reduced or eliminated from use in the network.

- Ensuring that the new vendor provides transition help during the implementation phase (especially for more-complex data center and core deployments).
- Perform proof-of-concept testing when introducing a new technology into the network. This should be done when introducing new products from your incumbent vendor, and from any new vendor.

Recommendation: Follow the best practices described above to make sure you have reduced potential interoperability issues, and establish well-understood troubleshooting and escalation processes with your vendors.

Complexity Myth: Adding another network infrastructure vendor more than doubles the complexity of the architecture.

One surprising benefit from our investigation was that for most organizations interviewed, the complexity of the network was reduced when they introduced another network vendor. This may seem counterintuitive; one would expect going from one vendor to multiple network infrastructure vendors to increase complexity. However, reference customers were able to take advantage of the transition to introduce more standardization in the network architecture. The network had a more-consistent set of devices and was running fewer OS releases, and configurations were more consistent. This is often a normal outcome of updating the network infrastructure, and would have also been the case with an all-new Cisco (or other vendor) infrastructure.

However, what was different from the vast majority of Cisco installations we encounter was that the effect was longer-lasting. For example, one organization was running one release of Junos across the entire edge routing infrastructure nearly five years after converting from Cisco to Juniper. On the other hand, another organization we interviewed (in the same vertical market with similar requirements) that had remained with Cisco on its WAN (running the similar Integrated Services Router [ISR] in all remote locations) recently completed an extensive consolidation project, but only managed to reduce the number of Internetwork Operating System [IOS] versions to four. This is consistent with the feedback we receive from large Cisco shops where it is not uncommon to hear of enterprises using more than 100 versions of Cisco IOS in their networks.

Recommendation: As part of any network update, target reduced complexity as an operational goal, and ensure that the benefits are likely to continue. Evaluate vendors on how they control software releases, and how hardware releases are coupled with software. Also, give credit to vendors that help rightsize the network and focus on meeting your specific requirements.

Staffing Myth: Double the number of network infrastructure vendors means increasing the number of network staff.

Our research found that not one organization needed to add staff or increase its labor budget to add the new vendor to the network. This dispels the popular vendor myth that over the life of the network, the operational savings will more than make up for the increased cost of the equipment. For the purposes of estimating labor costs when adding a new vendor, we recommend no change to the expected full-time equivalents (FTEs) required to manage and operate the network. We see no scenario where the operational savings can offset the premium price we often see from some vendors in the marketplace. One example was interesting, since management of the network was part of an outsourced arrangement. When migrating the LAN infrastructure from Cisco to HP Networking, the service provider took this completely in stride, and made no comments about a shift in cost or complexity. The vendor shift was completely covered by the existing contract.

Recommendation: From our experience with clients and detailed interviews, there is no reason to budget for staff increases when considering adding a vendor to your network. If you rightsize the

network, reduce complexity and follow recommended best practices for network design and management, there is the possibility of reducing operational costs when going through the evaluation and redesign.

Equipment and Maintenance Cost Myth: Loyalty to the incumbent vendor provides an opportunity to negotiate the best deals and keep costs under control.

This is a major misconception, and we continued to be surprised at the large number of clients we deal with that have little or no idea of the magnitude of the premium they are paying their incumbent networking vendor. Depending on the vendors and type of equipment involved, the interviewed organizations achieved capital cost savings of 30% to 50% less than competitive bids from Cisco. This is completely consistent with what we have observed over the past two to three years in reviewing hundreds of proposals for our clients.

However, market dynamics change over time as product offerings are upgraded, vendors introduce different sales, and channel incentive programs and corporate philosophy shifts in response to competitive pressures. Cisco has responded to these changes in a number of ways, including deeper discounting for specific customers and projects, introducing new products that are more price competitive, and making adjustments to maintenance programs. In some cases, Cisco made a final, last-minute offer to "match the price" of a competitive bid, sometimes by rightsizing the proposal with lesser capabilities so that the comparisons were not equivalent. Even when quotes for capital costs were brought closer to competitive alternatives, Cisco did not address the significant variance in ongoing maintenance costs.

The ranges provided help set the possible savings achievable when competition is introduced into an account. Cisco has become much more aggressive (reference Cisco's FY10 second-quarter and third-quarter earnings calls where Cisco stated that decreases in product margins were driven by pricing and higher discounts, partially offset by cost savings and higher volumes). In some cases, the delta between Cisco and other vendors has been reduced due to Cisco's competitive responses. However, you can only achieve these new Cisco price points by a proper competitive evaluation of alternative vendors. Without considering alternatives, you will default to Cisco's standard pricing methodologies.

Maintenance Services: The cost of maintenance is highly variable among vendors, and the mission-critical nature of the products involved. From our interviews, it is clear that savings on maintenance are readily achievable as organizations take advantage of other vendors' offerings that include more-comprehensive lifetime warranties and site license maintenance that takes into consideration the economies of scale when servicing high-volume products within an infrastructure. The savings we observed ranged from roughly 40% to as much as 95% less than what was previously paid for Cisco's SmartNet services for similar infrastructure and coverage. Programs and coverage will change to meet market conditions. For example, since some of the evaluations and decisions were made by the interviewed organizations, Cisco has introduced better limited lifetime warranty coverage across a broader range of products, as well as other service options to help in competitive situations.

Recommendation: When analyzing long-term maintenance costs, look at the specific numbers from the competitors bidding on your specific project. To receive competitive market pricing from your incumbent vendor, it is mandatory that network organizations seriously consider and evaluate competitive offerings from other vendors. Sole-sourcing with any vendor will cost a minimum 20% premium, with potential savings generally reaching 30% to 50% or more of capital budgets when dealing with premium-priced vendors.

Network Management Myth: Adding a second vendor will require the purchase of a lot of extra management tools.

This myth does have a grain of truth running through it, as we often observe additional management tools in organizations with multiple vendors. However, in many cases, the network operations group had already invested in additional tools to manage the single-vendor network more efficiently. Nearly all the customer references interviewed for this research owned the element management tool from their network equipment manufacturers (NEMs). Although some element management tools provide basic support for any Simple Network Management Protocol (SNMP)-enabled network device, they generally only provide the full or enhanced set of capabilities for the NEM's own proprietary devices. Examples include Cisco's CiscoWorks, F5's Enterprise Manager, HP's ProCurve Manager and Juniper Network's Network and Security Manager (NSM). Even in single-vendor Cisco environments, we commonly see additional element management systems tied to individual building blocks increasing management complexity. In all the reference organizations, the element management tool was used to back up network device configurations. In some cases, it was also used to push out configuration updates and patches, although many continue to use manual telnet procedures to make configuration changes.

When adding a second network infrastructure vendor, organizations considered whether to purchase the vendor-specific element management system offered by the new vendor, or whether it was time to invest in a network configuration and change management (NCCM) product that would operate in a multivendor environment, enable automated configuration management and provide a compliance audit capability. Since the second network vendors generally sweetened the deal by offering their element management system free of charge and included training to familiarize the staff with the new tools, the references implemented the second vendor's element management system, rather than taking the plunge with a multivendor NCCM tool.

In addition to element management tools, nearly every network management team we interviewed used a variety of vendor-neutral network management tools prior to adopting the second vendor. These tools included:

- CA Spectrum
- Dartware InterMapper
- EMC Ionix (Smarts)
- HP Network Node Manager
- Ipswitch WhatsUp Gold
- MRTG
- Paessler PRTG
- Solarwinds Orion
- Statseeker

These tools use industry-standard, vendor-independent SNMP, so no additional investment was required when introducing a second network infrastructure vendor. Tools used by the references provided features such as discovery and mapping of network topology, up/down status monitoring, fault alerting and performance trend graphs. When the customer references did purchase new network management tools, it was due to the growth of the network and the company's increasing dependence on the communication infrastructure, rather than the addition of a second network vendor.

Recommendations: Organizations wanting to take advantage of the benefits of introducing additional vendors into their environment should start by introducing industry-standard tools for alerting, performance and network performance, and change management. Not only will these tools improve the management of the existing single-vendor network, but they will also make the transition to other vendors or adding new technologies much easier. These tools will help reduce unplanned outages and the complexity of network operations.

Net Results

Our research found that the perceptions concerning adding a vendor to a single-vendor network are unfounded. From the hundreds of client interactions and the detailed interviews conducted, we find no need to add staff, retraining is a minor issue, and interoperability and complexity are easily managed, in some cases, depending on the exact transition, and will make the network easier to deal with in the long run.

Based on these findings, we have created a high-level TCO sensitivity model. To summarize our findings for this research, Table 1 represents typical and aggregated results from client discussions and interviews. The chart would be representative of an organization replacing a network with 100 to 200 access switches and associated aggregation or core switches. Maintenance would be the next business day for edge products with an on-site, four-hour response for the core network. In the chart, we have shown three operational outcomes, based on adding 5% more staff, keeping staffing at current levels (consistent with our findings) and decreasing staff by 5%. TCO savings range from 21% to 26% of total capital, maintenance and operational costs over a five-year period. Depending on specific circumstances and changing vendor approaches, the TCO delta will range higher and lower from these guidelines.

Table 1. Typical and Aggregated Results for Replacing a Network With 100 to 200 Access Switches

Item	Incumbent: Vendor A	Added: Vendor B
Projected Capital Cost	\$ 1,500,000	\$ 800,000
Annual Maintenance Services	\$ 150,000	\$ 60,000
Network Management Systems	\$ 40,000	\$ 40,000
Annual Labor Cost	\$ 500,000	
Labor Change Required for New Vendor	Five-Year TCO Savings	
5%	21%	
0%	24%	
-5%	26%	

Source: Gartner (November 2010)

Strategic Planning Assumption: Through 2015, Cisco will be unable to make sufficient changes to deliver a lower five-year TCO for network infrastructure and operations, as compared with alternative dual-vendor approaches.

Why we believe the assumption will be true: For Cisco to make significant progress on its TCO, it needs to make changes across a number of fronts. Most critical, it needs to make operational efficiency and integration across diverse portfolios a primary design criteria. It also needs to make large investments in management tools, or to acquire a portfolio of management

tools. Cisco has been working on these issues for more than five years, with more than 1000 development staff dedicated to the network management function. Little substantial progress has been made so far, and most strategic network management functions are delivered via OEM agreements with Cisco partners. Finally, even if Cisco makes these foundational technology changes, we believe that this alone does not move the TCO equation strongly enough to Cisco's favor. To make Cisco's TCO equivalent to other vendors solutions (either alone or as part of a Cisco network), Cisco must reduce both capital and ongoing maintenance costs to more competitive levels. The resulting drop of corporate margins (nearly 70% of Cisco's current revenue stream still comes from network infrastructure and related services) means that Cisco would be forced to go through a fundamental shift in its approach to traditional and emerging markets.

What could make the assumption not come true: Cisco may recognize that it is more important to preserve market share against major competitors like HP, IBM and Juniper than preserving its current margin structure. This would allow customers to purchase products and services at a significantly lower price point with a likely reduction in total market size of at least 25%. Cisco could also plug its gaps in operational tools through acquisition. Organizational and process changes within Cisco's development organization could lead to better integration and consistent management interfaces among various product lines. However, even if this is declared a priority by Cisco internally, we believe it would take a minimum of two to three years to make noticeable progress.

RECOMMENDED READING

Some documents may not be available as part of your current Gartner subscription.

"Introducing a Second Network Vendor Saves Money and Solidifies Operations"

"Vendor Rating: Cisco"

"MarketScope for Network Configuration and Change Management"

"Magic Quadrant for Enterprise LAN (Global)"

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