The True Cost of Voice Over IP

As VOIP Becomes Mainstream, Costs Level Out, Benefits Increase

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Executive Summary

The majority of companies are doing something—ranging from pilots to full deployments—with Voice Over IP. At the same time, nearly 80% of IT professionals say it's vital to build a business case for any technology deployment, particularly given macro-economic problems, reduced IT budgets, and smaller IT staffs. It's often difficult to build the business case, though, since it's hard to judge how much implementation and ongoing operations will cost prior to actually deploying the technology. VOIP represents a new paradigm for real-time communications—it's different from expanding TDM by adding a new PBX or a network with new routers. For six years, Nemertes has tracked how much companies spend on their IP telephony deployments within the LAN and VOIP across the WAN. This paper reviews the latest deployment trends and costs associated with VOIP for midsize and large rollouts.

The Issue

The best way to protect any new IT investment from the axe that often hits during an economic downturn is to make it difficult for that axe to swing. Building a compelling business case from Day One—one that demonstrates cost savings, improved productivity, or even increased revenue—makes it tough to put that project in the stack of projects that business leaders cancel or postpone during the downturn.

If the project is generating positive returns, it would be fiscally irresponsible to cut it. What's more, the continuance of the project could be crucial to saving jobs associated with it.

The key, then, is to arm yourself with information. Nemertes' VOIP figures are based not on vendor or reseller pricing, but on how much companies *actually spent* on their deployments. We conducted one-on-one interviews with 200 IT practitioners and gathered cost and deployment data from another 1,393 via an

electronic survey. The cost figures come from the combined research of the two groups.

VOIP Market Overview

Aside from the need to develop a business case and distinguish cost-benefits by vendor, a few key findings emerged from our VOIP research. First, deployment is impressive in terms of the number of companies deployed; penetration within companies has plenty of room for growth. Second, VOIP is commonly the first phase of a multi-application unified-communications strategy. Finally, management and interoperability remain a concern—which helps explain why managed services continue to be on the rise.
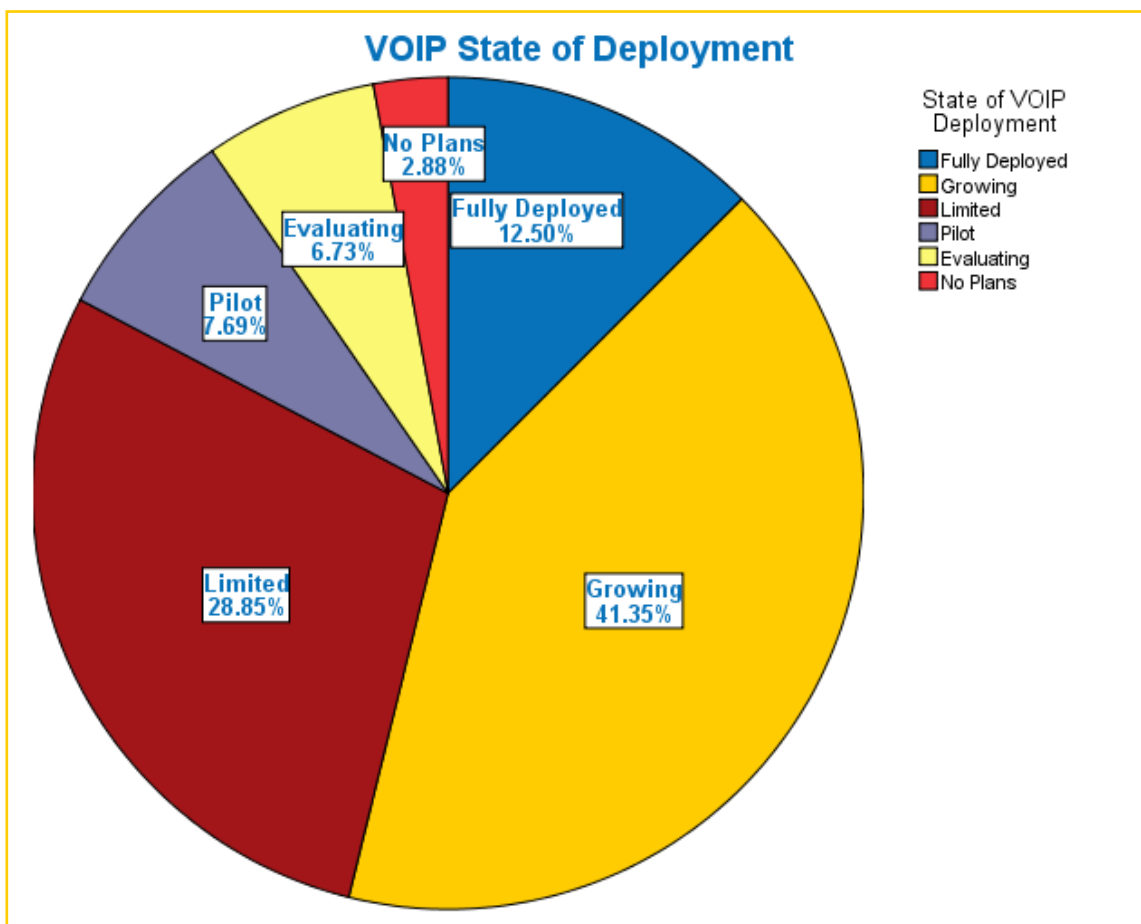
Figure 1: VOIP State of Deployment

VOIP deployment has stayed fairly constant in the past year. Only about 3% of the organizations in Nemertes' benchmark are doing nothing right now with VOIP. More than half (53.85%) are either fully deployed (12.5%) or in the process of deploying the technology to the entire organization (41.35%). Another 28.85%

are engaged in a limited deployment, meaning they have the technology rolled out in a tactical way—for specific job functions, applications, or types of locations. The balance (14.42%) are evaluating the technology and vendors or conducting pilots. (Please see Figure 1: VOIP State of Deployment, Page 2.)

Though IT staffs once viewed their VOIP projects in isolation, now it's a part of a broader Unified-Communications (UC) initiative. Included in that UC strategy is any combination of instant messaging, presence, conferencing (Web, audio, video), unified messaging, social networking, and other applications. The starting point for UC often is VOIP, and comparing capital and operational costs of various vendors provides criteria for the vendor-selection decision.

Cost/Benefit Analysis

When conducting a VOIP analysis, there are several costs and benefits that apply to most organizations and others that are industry- or company-specific.

First, engage non-IT employees to determine benefits the technology can bring. Interview business-unit leaders, managers, and staff to determine the business problems that exist. Then, use IT expertise (or better yet, business-technology liaisons) to determine how VOIP can help resolve business problems, ultimately leading to increased revenue, improved productivity, or decreased costs.

Second, determine the straight-forward IT costs, such as implementation, capital, and IT training—against which the cost benefits will be weighed. Determine the period of time for the cost analysis, as well as the depreciation schedule and the Net Present Value percentage.

On the cost side, companies must consider:

- *Implementation* – Typically, companies spend about 20% more in the first two years of their VOIP deployments on the actual implementation than they would have spent in TDM. After they gain expertise, implementation costs are equivalent to TDM rollouts.

- *Switches* – This covers the cost of IP PBXs or the cost to IP-enable an existing PBX.

- *Handsets/End-Unit Devices or Applications*– This includes IP hardphones or softphones.

- *Gateways* – Often, companies require gateways for TDM-to-IP traffic, unless they're using SIP trunking throughout the organization (which is rare still).

- *LAN upgrades* – VOIP requires Power-Over-Ethernet switches, and most companies provide Uninterrupted Power Supplies to provide for backup. When organizations upgrade their LANs, the costs account for

32% to 47% of an overall VOIP project. (Please see Figure 2: LAN Upgrade Costs, Page 4.) These figures include the POE switches, UPS, management tools, and staffing costs, as well as first year of maintenance.

| IP Telephony Implementations				
Capital Costs Per Person				
	Number of End Units			
Cost per end unit*	Less than 500	501-5,000	More than 5,000	All sizes
IPT Hardware	$667	$411	$342	$554
LAN Upgrade	$553	$280	$159	$421
LAN Upgrade: Total Average Capital	$1,220	$691	$501	$975
LAN Upgrade: % of Overall Capital	45%	41%	32%	43%
*End unit is IP handset, audio bridge, softphone or other end-user device.				

Figure 2: LAN Upgrade Costs

- *Management/monitoring tools* – Many companies don't budget for management and monitoring tools, which is a mistake. Acquisition costs range from free (with open-source tools) to several million dollars. On average, small and midsize companies spend about $20,000 for each third-party monitoring tool, and large companies spend about $200,000 per tool.

- *Training* – Many vendors are including training with the sale of equipment. But when they don't, companies spend between $1,000 and $5,000 per IT staff member for training, and they find the most success by training their end users with internal IT staff.

- *Equipment licensing & maintenance* – Vendors are shifting more to a software model in which the initial acquisition cost is lower, but maintenance and licensing is higher. Whereas vendors once charged about 10% to 14% for maintenance, those fees now are 16% to 22%.

- *Ongoing WAN costs* – This includes the cost of the converged WAN. Typically, this includes the circuit costs for services such as MPLS, Ethernet, and/or SIP trunking.

- *Ongoing operational costs* – This includes the cost to manage and maintain the network from a staff perspective. It includes the total compensation of internal staff members devoted to VOIP, plus the cost of any third-party MSPs managing the VOIP system. Also included are power and cooling costs.

On the benefit side, IT staffs should calculate:

✦ _Cabling costs_ – With IP telephony, there is no longer a need for three to four drops (two Ethernet; two RJ-11) per desktop. Companies typically save about 40% on cabling costs in new buildings (and average spend per drop is about $140).

✦ _Sofphones vs. hardphones_ – There is a small but growing trend among companies to continue using existing analog or digital handsets with their IP or hybrid switches and move directly to IP softphones. Licenses for softphones range from about $50 to $150, compared to a range of $100 to $450 IP hardphones, so companies can save money with this approach. Among companies using softphones, 53.6% are using them as an adjunct to hardphones, and 35.7% are using them as a replacement to softphones. The balance are in pilot phase. The average number of employees with softphones is 430, up from about 100 last year.
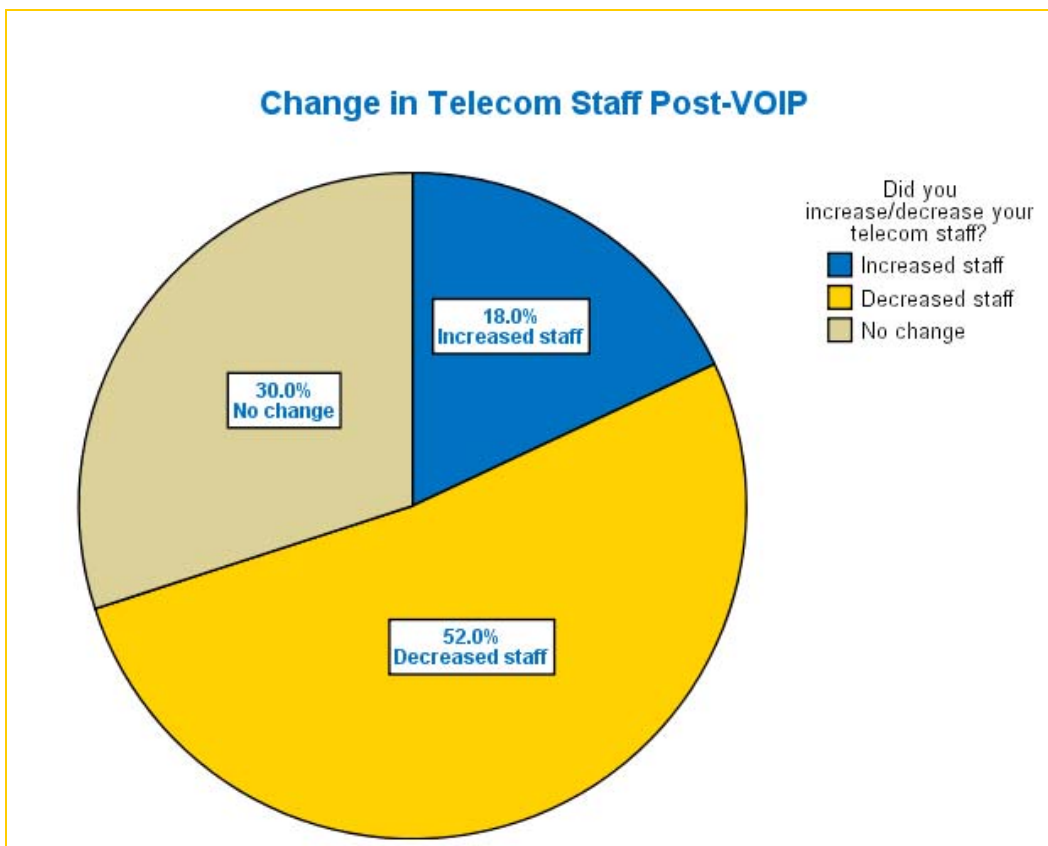
Figure 3: Staff Changes with VOIP

✦ *Centralizing servers* – By centralizing servers at the data center, organization report savings in the number of servers they need to buy, along with reduced tools and resources to manage applications such as unified messaging, conferencing, and even the IP PBX itself. By using fewer servers than would be used in a distributed model, companies can save on power and cooling costs, as well.

✦ *Audio conferencing* – By replacing audio-conferencing services with an internal audio-conferencing bridge, companies can eliminate their monthly charge for audio-conferencing services. For organizations with limited audio conferences, most vendors offer bridges that are integrated with the IP telephony system (albeit limited to the number of participants).

✦ *Hosted services* – Companies concerned about capital outlay find savings through the use of hosted services. They eliminate the up-front costs of the IP PBXs and handsets because they are included in the monthly service fee. But, the overall service may or may not be less expensive. The point here is that hosted services eliminates the up-front capital cost and depreciation but typically costs more monthly to operate than in-house deployments.

✦ *Moves, Adds, and Changes* – Many companies have justified their entire IP telephony rollout though MAC savings alone. Externally provide MACs cost $65 to $400, depending on the city. Internally managed IP telephony MACs cost about $10, based on average telecom salaries.

✦ *Staff changes (IT)* – Though we do not see huge reductions in the staff required to manage VOIP vs. TDM environments, more companies decrease their staff than increase it. Among those who decrease the telecom staff, they lose about 2.8 people on average. Attrition is more common than layoffs; IT staffs frequently reassign their telecom staff to other areas of IT or don't replace retirees. Those who increase their staff do so by one person. (Please see Figure 3: Staff Changes with VOIP, Page 5.)

✦ *Staff changes (non-IT)* – Some companies are able to reduce staff in other areas because of VOIP. For example, one receptionist can handle multiple locations when he or she can transfer calls and intercom between locations, rather than having to tell a caller to hang up and dial a different number. Or, by using automated attendant, companies have been able to reduce the need for a receptionist at every location, as well. This typically translates into a $40,000 to $50,000 annual savings.

- *Turnover Rates* – By allowing employees to work from home, particularly those who work in a contact center, companies are reducing turnover rates. Typical contact-center turnover rates are 35% to 45%, but by giving those employees more flexible work schedules from their home offices, they are dropping turnover rates to 10% to 20%. VOIP allows companies to do this cost-effectively by paying for just a broadband access line ($25 to $45 per month, depending on service level) and eliminating the $50 to $70 monthly POTS charge for voice service.

- *Ongoing network costs* – Companies that have not converged voice and data traffic onto a single WAN can save money by eliminating idle capacity and combining access lines. The typical savings is 23%.

- *Savings from SIP trunking* – Replacing PRI lines with SIP trunks can save about 40% off the monthly circuit costs.

- *Fixed Mobile Convergence* – Companies with many mobile employees eliminate costly roaming charges by moving mobile calls to the corporate IP backbone (calling a local number and routing the call from the IP PBX through the corporate WAN).

In addition to the quantifiable benefits of VOIP (and moving forward, an integrated unified-communications architecture), there are many "soft-dollar" benefits to consider. The most common benefit is staff productivity. For example, by adding unified messaging, employees can quickly read voicemail or listen to email, depending on whether they are in a meeting or driving a car. How much does this really affect the bottom line? Most companies don't calculate this, but they have a "gut sense" it helps employee productivity. Some companies, though, do put a dollar figure to that benefit, measuring sales before and after the implementation. Other benefits include better customer responsiveness, which they achieve by integrating IP telephony with instant messaging and presence, and by extending call history and directories to mobile devices. By using VOIP and UC applications to enable telecommuters, marketing departments highlight the company's green initiative by keeping more cars of the streets. And, finally, by extending VOIP to the contact center and enabling virtual agents, companies report drastic improvements in retention rates. Though some companies view this as a soft-dollar benefit, it's fairly straight-forward to turn it into a hard-dollar benefit for companies that have a per-hire recruitment cost, as discussed.

Getting Specific: Actual Cost Figures

Nemertes has gathered data about what companies actually spend for their VOIP projects, based on the spending for their primary IP telephony provider. On average, organizations evaluate 2.66 vendors, which is too low. Ideally, they should evaluate four vendors to get a solid assessment of the capabilities in the market. We divide the cost data into three distinct areas:

1.) *Implementation Costs* – This includes planning, installation, and troubleshooting the initial implementation.
2.) *Capital Costs* – This includes the IP PBX and the handsets and/or softphones. Though we gather data on gateways and other equipment, for consistency between vendors, the figures forthcoming only include IP PBX and handset/softphone acquisition costs.
3.) *Ongoing operational costs* – This includes the staff resources (internal or external) to operate the VOIP network. Additional operational costs, such as maintenance fees to vendors, are not included in the forthcoming costs, though we do include those in our cost models.

VOIP Costs Per Unit, 2009		
Implementation	$	135
Capital	$	408
Operational	$	570
First-year costs	$	1,113

Figure 4: Average VOIP Costs Per Unit, 2009

With all three cost categories, we calculate the total cost for each company and divide by the number of end-units connected to the IP telephony system. That provides us an average cost per end-unit. We then correlate that figure by vendor and size of rollout.

On average, companies spend $1,113 per end unit to implement and operate VOIP in the first year of operation. This includes the implementation, capital, and operational costs for the first year. (Please see Figure 4: Average VOIP Costs Per Unit, 2009, Page 8.) The figures cover all sizes of companies and nearly three dozen vendors or service providers companies cited in the Nemertes 2009 Benchmark. These figures do not include the LAN upgrade costs. Those add another $421 per user onto the total costs.

Vendor Details

The figures in Figure 5: IP Telephony Costs, 2009, Page 9, represents midsize and large rollouts, with breakouts for two rollout sizes and an average for all rollouts greater than 250 end units. We also break down the data by vendor. We received data for dozens of vendors. Four IP telephony vendors received enough response to be counted individually. Those vendors are Avaya, Cisco, Nortel, and ShoreTel. We examined rollouts with a minimum of 250 end units. The rollout sizes are: 250 – 1,000 end units and greater than 1,000 end units. In parsing the data, we did not have enough valid data to evaluate start-up costs by vendor and rollout segmentation, so the chart shows capital and operational costs.

Midsize & Large Rollout IP Telephony Costs, Per Unit, 2009						
	Capital Costs			Annual Operating Costs		
	250-1000	>1000	Average (>250)	250-1000	>1000	Average >250)
Avaya	$ 290	$ 253	$ 266	$ 279	$ 149	$ 187
Cisco	$ 497	$ 350	$ 411	$ 397	$ 222	$ 295
Nortel	$ 506	$ 276	$ 442	$ 439	$ 150	$ 345
ShoreTel	$ 392	N/A	$ 400	$ 183	NA	$ 194
*Figures are cost per unit, rollout sizes >250.						

Figure 5: IP Telephony Costs, 2009

Avaya and ShoreTel have the lowest costs in the midsize category. Avaya is least expensive than all providers when it comes to the largest rollouts, or those with more than 1,000 end units. For midsize rollouts (250-1,000 endpoints), Avaya has the lowest capital costs; ShoreTel has the lowest operational costs. On average, a midsize Avaya rollout costs $569 for capital and the first year of operational costs; ShoreTel costs $575. For large rollouts, Avaya costs $402 per unit.

Cisco and Nortel rollouts are most expensive. For midsize rollouts, Nortel is most expensive in both capital and operational staffing costs. For large rollouts, Cisco is the most expensive in both areas. On average, midsize Cisco costs $894 for capital and first year staffing costs; Nortel costs $945. For large rollouts, Cisco and Nortel cost $572 and $442, respectively.

Average Capital & Staffing Costs: 3 Years				
	Year 1	Year 2	Year 3	Total
Avaya	$ 453	$ 187	$ 187	$ 827
Cisco	$ 706	$ 295	$ 295	$ 1,296
Nortel	$ 787	$ 345	$ 345	$ 1,477
ShoreTel	$ 594	$ 194	$ 194	$ 982
*Costs are per unit, rollout sizes > 250				

Figure 6: Average Three-Year Costs

In a typical three-year evaluation of rollouts greater than 250 units, then, Figure 6: Average Three-Year Costs, Page 9, shows the cost per unit, including just capital and ongoing staffing costs, as described above. Avaya's average three-year cost for this size rollout is lowest, at $827. ShoreTel's is next, at $982, but it's important to note the figures don't contain a large number of rollouts greater than 1,000 end units. Avaya costs 36% less than Cisco ($1,296) over three years, and 44% less than Nortel ($1,477), on average. The actual percentage differences change based on the actual size of each rollout (as we'll discuss shortly with examples).

Overall, costs are going down as vendors become more competitive and IT staffs gain more expertise in operating IP telephony. From a capital standpoint, Avaya customers tend to adopt a centralized architecture more frequently than competitors. So companies may buy a large IP PBX for the data center and attach to it thousands of handsets in multiple locations, reducing the cost per unit significantly as the number of handsets increases without having to add many PBXs. In a Cisco or Nortel environment, distributed or regional architectures are more common, so companies use more equipment to serve the same number of end devices. ShoreTel's architecture is distributed, but it's priced the equipment to be comparable to a centralized architecture.

Average Number of IT Staff Members Managing VOIP

	Avaya	Nortel	Cisco
Value	5	7	9
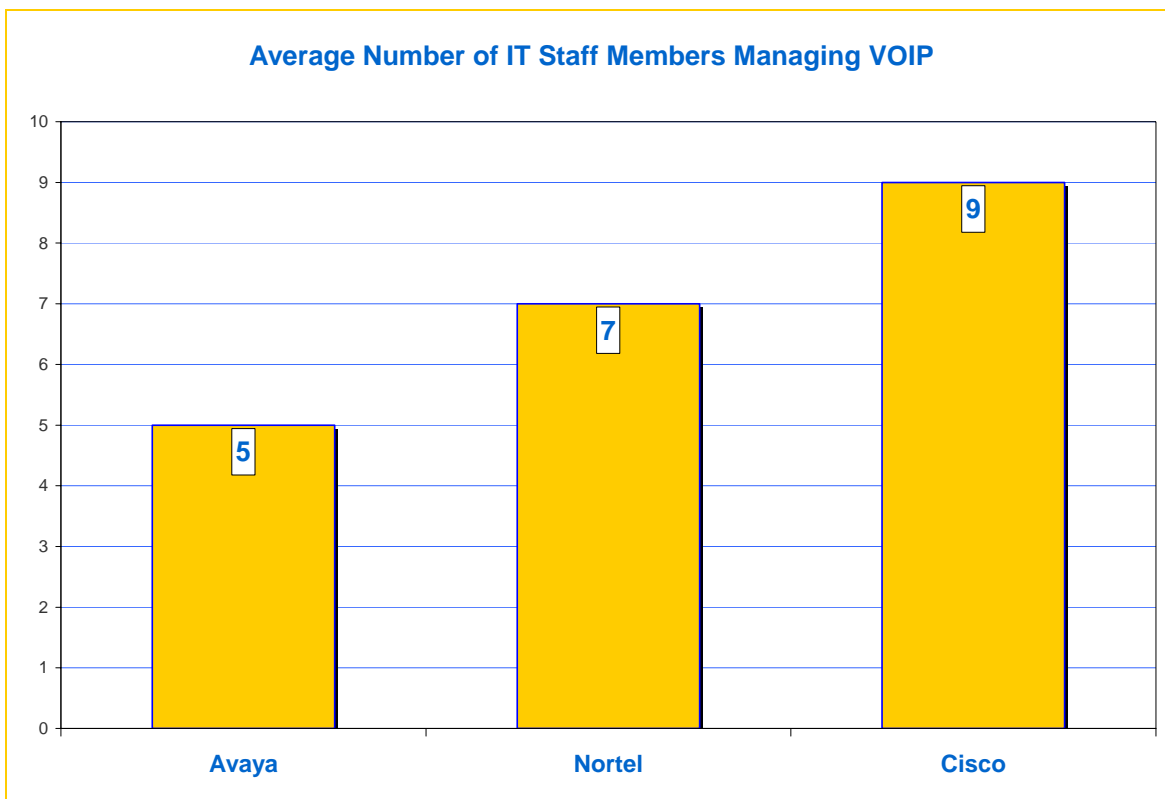
Figure 7: Average Number of VOIP Managers

What's more, with Avaya and Nortel deployments (and ShoreTel to a lesser extent), companies tend to use existing digital or analog handsets in a hybrid environment, reducing their overall capital spend on the most costly part of a rollout—the IP hardphone. Contributing to Cisco's higher capital costs is the fact that its customers typically buy IP handsets because Cisco designed its IP telephony systems to be IP end-to-end. Companies sometimes use digital phones (typically via Citel gateways) with Cisco IP PBXs, but this is more the exception than the rule.

Operational costs have several factors, including the level of internal staff expertise, the amount of training received, and the use of third-parties to assist with operations.

For midsize and large rollouts, Avaya, Cisco, and Nortel had enough data in our study to evaluate independently. On average, Avaya rollouts required five full-time-equivalents to monitor and manage the system, compared to seven for Nortel and nine for Cisco. (Please see Figure 7: Average Number of VOIP Managers, Page 10.)Looking at just raw numbers only tells part of the story, though, because what really matters is how extensive of a rollout each of these teams manages. The three vendors had similar average rollout sizes, which makes these figures more meaningful. But we also correlated the number of VOIP managers with the number of end units to level-set the figures.

Average Number of End Units Managed Per IT Staff Member

Vendor	Value
Avaya	1,920
Nortel	1,436
Cisco	1,150
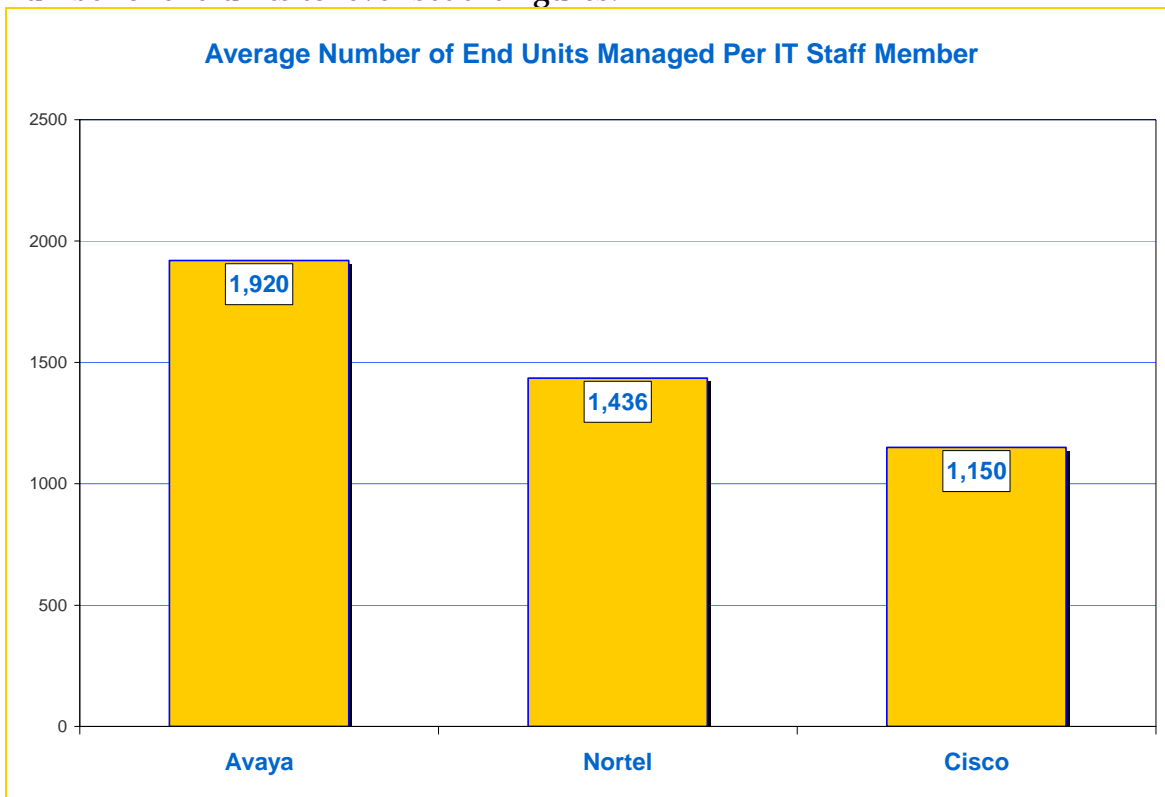
Figure 8: End Units Managed Per FTE

Here again, the results were similar, and they demonstrate that Avaya rollouts have the lowest personnel management costs. One VOIP manager in a typical Avaya implementation manages 1,920 end units, while a single full-time-equivalent in a Nortel implementation manages only 1,436 and only 1,150 in a Cisco rollout. (Please see Figure 8: End Units Managed Per FTE, Page 11.)

Another factor in operational costs is who is managing the system. A growing number of companies evaluate Managed Service Providers (MSPs) to offload the burden of equipment maintenance and/or performance monitoring and troubleshooting. VOIP deployments alone can be challenging, simply because IT staffs are accustomed to the TDM world. There is a learning curve to operate in the voice/data/video converged world—and that curve generally lasts two to three years. Consequently, we recommend companies scrutinize their implementation partners and MSPs to make sure they are experienced in the integration challenges that lie ahead for your particular application. Further, companies must evaluate management tools if they don't select third-party services to manage the technology.

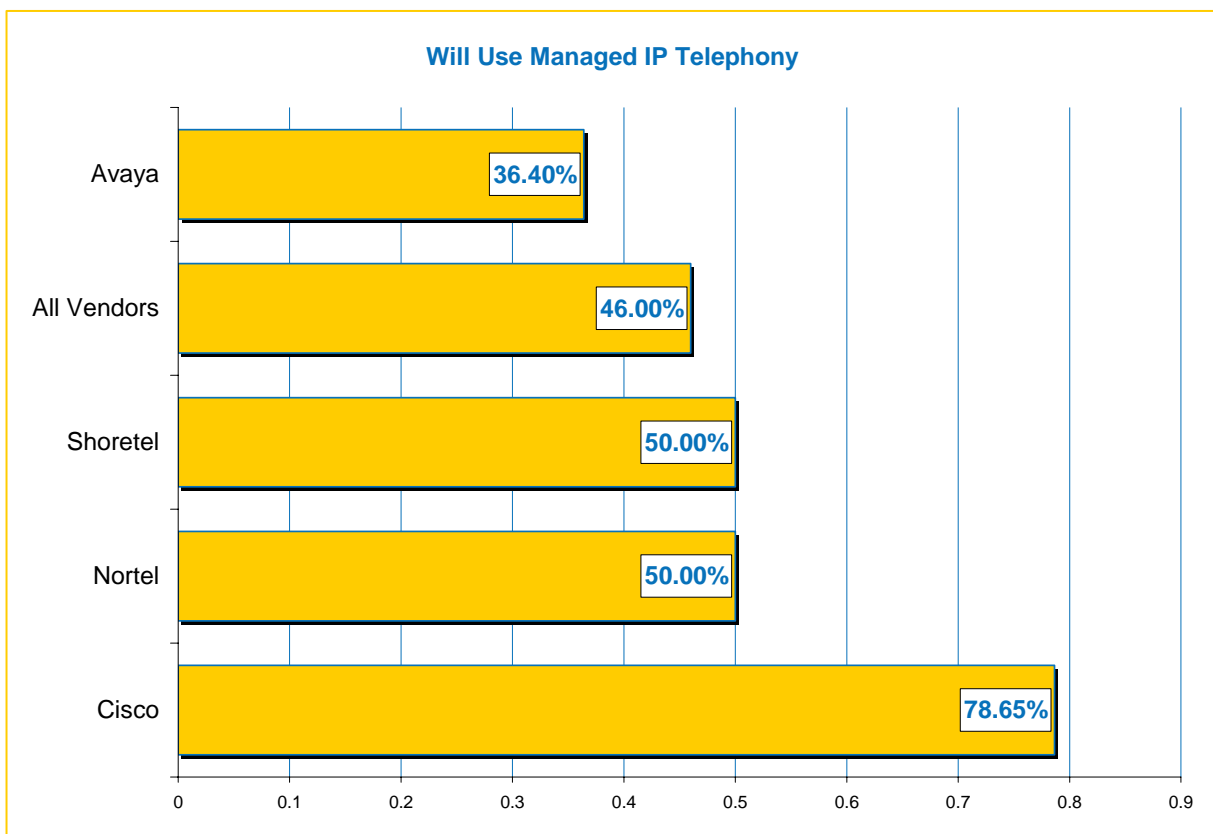**Managed VOIP Services Adoption, 2005-2011**
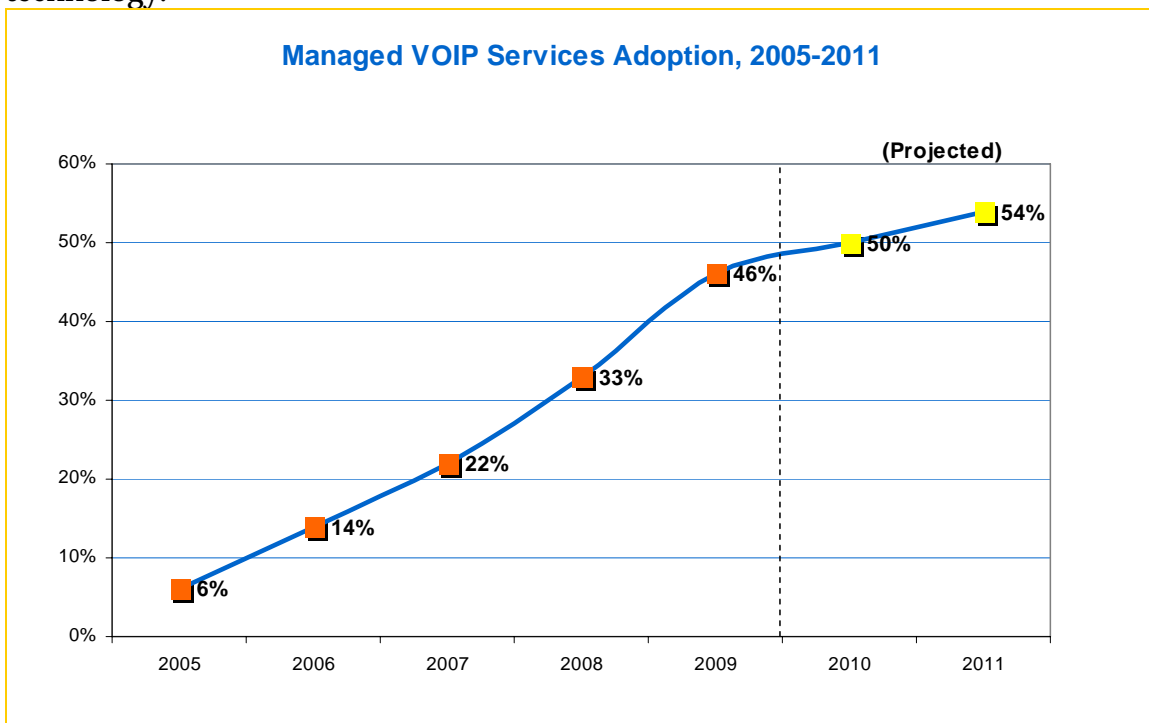
Figure 9: Managed VOIP Services Adoption, 2005-2011

Nearly half (46%) of all companies with VOIP deployments already using managed services in some capacity. (Please see Figure 9: Managed VOIP Services Adoption, 2005-2011, Page 12.) The growth has been fairly steep for the past four years, and will continue mild growth for the next two years (mild only because

many companies have slowed the pace of their deployments in response to economic conditions). Companies move to MSPs for various reasons. In some cases, they are augmenting their own lack of internal expertise. In others, they want their internal folks to focus on more strategic projects rather than the nuts-and-bolts of managing VOIP. And in other cases, the technology works so well that they can't justify devoting a full-time staff member to VOIP and don't want to reduce it to a part-time position.

Avaya customers were the least likely to use third-party managed services (36.4% use them); Cisco customers were the most likely (78.65% use them). (Please see Figure 10: Managed Services, by Vendor, Page 13.) The underlying message here may be that Avaya is easier to manage than Cisco, that its customers are better trained, or both. Whether Cisco customers count on internal staff to manage the system or use third parties (or a combination), the bottom line is they're paying more to operate than Avaya.

Will Use Managed IP Telephony

Vendor	Value
Avaya	36.40%
All Vendors	46.00%
Shoretel	50.00%
Nortel	50.00%
Cisco	78.65%

Figure 10: Managed Services, by Vendor

Nortel and ShoreTel, on the other hand, see the same level of usage for managed services (50%). ShoreTel customers who use managed services typically are small to midsize companies, who say the system actually is *too* easy to monitor and maintain. Rather than devote only a part-time employee to the task, they

outsource it to a 24 x 7 partner. Nortel customers typically use MSPs to augment the existing staff. Often, the rollouts include both TDM and IP running simultaneously, so Nortel customers often outsource the IP part while they run TDM internally and train staff on the IP systems.

Nemertes Cost Model

Nemertes' TCO calculator is a model that figures total cost of ownership by vendor over a specified period of time. For each example, we assessed a five-year TCO with the following costs, using real data from the research participants:

- Operational startup
- Capital startup
- Ongoing operational
- Software maintenance fees
- VOIP management tools
- Network upgrades (if applicable)
- Training (IT staff only)

The calculator contains pricing for various vendors, but we mirrored the vendors the companies in our examples actually assessed. In some cases, they may have assessed additional vendors, for which Nemertes does not have price points.

We entered the number of end stations each company planned to implement in each of the five years. The calculator adds both one-time costs, such as capital and training, and repetitive costs, such as ongoing operational costs and licensing fees.

Most of the scenarios we ran show at least some cost savings regardless of vendors. For midsize and large rollouts, Avaya shows the best cost savings and payback period when compared to Cisco and Nortel. Cisco's cost savings becomes less compelling as the rollout size increases. In the midsize example, with 800 handsets, Avaya's annualized cost savings is about 31% higher than Cisco's and 41% higher than Nortel's.

In the large and very large examples, the disparity between Avaya and Cisco gets broader, while the gap between Avaya and Nortel narrows. (This is because the cost per unit for Nortel rollout declines for larger companies.) The large financial-services company shows a 51% better annual savings with Avaya than Cisco, and Avaya has three times more savings with the very large hospitality company. It's important to point out that all three vendors still show a compelling payback period of less than six months (without a LAN upgrade factored). Cisco's cost savings becomes less compelling than its competitors primarily because its operational costs are higher and, to a lesser extent, its capital costs. These figures are based on actual costs, calculated into per-unit costs. As companies do vendor-by-vendor comparisons, there often is room for negotiation when the disparity becomes so significant.

Midsize Company

This example is from a university with $58 million in annual revenue and four locations. The company has 700 employees and implemented 800 handsets, along with a full LAN upgrade.

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TCO Overview for IP Telephony

Prepared for: IT Staff   Midsize University   Headquarters   Analysis

Cost Analysis
The Nemertes Cost Analysis Tools has calculated the following results for your organization. This section provides an overview of the cost benefits of this technology.

Your annual IP telphony savings with Avaya:	$539,837
Your annual IP telephony savings with Cisco:	$409,465
Your annual IP telephony savings with Nortel:	$382,590
Years for cost analysis:	7

Five-year financial gain	**$2,699,186**	with Avaya
Percentage of revenue	0.92%	
Percentage of IT budget	26%	

Annualized VOIP Cost Savings

Avaya	$539,837
Cisco	$409,465
Nortel	$382,590

Cost Analysis

Legend: Avaya, Cisco, Nortel, Existing TDM — across Year 1 through Year 7

Benefit Highlights
The Nemertes Cost Analysis Tools has calculated the following annual savings with an Avaya solution:

- Your MAC Costs will be reduced by……………..…… $107,429
- Your Voice trunks will be reduced by…..………… $493,071
- Your Equip Maintenance will be reduced by…….…. $14,286
- Your Local Loops will be reduced by……..……… $30,343

Additionally
The Nemertes Cost Analysis Tools has calculated the following productivity benefits with an Avaya solution:

- You can establish 5-digit dialing, intercom, transfer calls, and implement other features between sites.
- Standardizing on a VOIP product family will prepare your network for collaborative applications.
- Your mobile workers can 'log on' to phones in any office, receive calls & voicemail there.
- Your mobile workers can use wireless VOIP phones to enable mobility within the corporate LAN.

Large Company

This example is from a financial-service company with $5 billion in annual revenue and 500 locations. The company has 20,000 employees and implemented 15,000 handsets, and it did not require a LAN upgrade

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TCO Overview for IP Telephony

Prepared for: IT Staff   Large Global Company   HQ & Branch   Analysis

Cost Analysis
The Nemertes Cost Analysis Tools has calculated the following results for your organization. This section provides an overview of the cost benefits of this technology.

Your annual IP telphony savings with Avaya:	$3,003,840
Your annual IP telephony savings with Cisco:	$1,978,447
Your annual IP telephony savings with Nortel:	$2,907,905
Years for cost analysis:	7

Five-year financial gain   **$15,019,199**   with Avaya
Percentage of revenue   0.06%
Percentage of IT budget   1%

Annualized VOIP Cost Savings

Avaya: $3,003,840   Cisco: $1,978,447   Nortel: $2,907,905

Cost Analysis

Legend: Avaya · Cisco · Nortel · Existing TDM — Year 1 through Year 7

Benefit Highlights
The Nemertes Cost Analysis Tools has calculated the following annual savings with an Avaya solution:

✦ Your MAC Costs will be reduced by…………..……	$1,502,514
✦ Your Voice trunks will be reduced by…..………	$75,262
✦ Your Equip Maintenance will be reduced by…….....	$171,429
✦ Your Local Loops will be reduced by……..……..	$52,185

Additionally
The Nemertes Cost Analysis Tools has calculated the following productivity benefits with an Avaya solution:

✦ You can establish 5-digit dialing, intercom, transfer calls, and implement other features between sites.
✦ Standardizing on a VOIP product family will prepare your network for collaborative applications.
✦ Your mobile workers can 'log on' to phones in any office, receive calls & voicemail there.
✦ Your mobile workers can use wireless VOIP phones to enable mobility within the corporate LAN.

Very Large Company

This example is from a hospitality company with $12.8 billion in annual revenue and 3,800 global locations. The company has 150,000 employees and implemented 350,000 handsets, along with a full LAN upgrade.

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TCO Overview for IP Telephony

Prepared for: IT Staff   Hospitality   Headquarters   Analysis

Cost Analysis The Nemertes Cost Analysis Tools has calculated the following results for your organization. This section provides an overview of the cost benefits of this technology.

Your annual IP telphony savings with Avaya:	$32,664,517
Your annual IP telephony savings with Cisco:	$10,478,003
Your annual IP telephony savings with Nortel:	$31,258,745
Years for cost analysis:	7
Five-year financial gain	**$163,322,585** with Avaya
Percentage of revenue	0.26%
Percentage of IT budget	5%

Annualized VOIP Cost Savings

Avaya: $32,664,517
Cisco: $10,478,003
Nortel: $31,258,745

Cost Analysis

Avaya · Cisco · Nortel · Existing TDM

Year 1 · Year 2 · Year 3 · Year 4 · Year 5 · Year 6 · Year 7

Benefit Highlights The Nemertes Cost Analysis Tools has calculated the following annual savings with an Avaya solution:

- Your MAC Costs will be reduced by……………..…. $47,908,571
- Your Voice trunks will be reduced by…….…….. $137,408
- Your Equip Maintenance will be reduced by….……. $4,285,714
- Your Local Loops will be reduced by…….……….. $12,111

Additionally The Nemertes Cost Analysis Tools has calculated the following productivity benefits with an Avaya solution:

- You can establish 5-digit dialing, intercom, transfer calls, and implement other features between sites.
- Standardizing on a VOIP product family will prepare your network for collaborative applications.
- Your mobile workers can 'log on' to phones in any office, receive calls & voicemail there.
- Your mobile workers can use wireless VOIP phones to enable mobility within the corporate LAN.

Conclusion

Though VOIP is widespread among most businesses, IT staffs must understand the costs and benefits of a new deployment or the resurgence of a stalled deployment. In doing so, it's important to evaluate the factors common to most companies, as well as those specific to the company or the industry in question. By evaluating the return-on-investment, net present value, and total cost of ownership, it will be much easier to secure funding for the project—and to keep it safe during economic downturns.

Moving forward, examine vendors' roadmaps to determine how they align with your plans. For example, some questions to ask include:

--To what extent do single products provide multiple unified-communications applications? Do you need to add new servers, appliances, or equipment to acquire new capabilities, or are they rolled into a single platform?

--Are they supporting virtualization? Can you use the applications in virtual servers in the data center? What is the plan to extend communications and collaboration applications to a virtual desktop? Do they have virtual machines running on their appliances, making it easier for customers to add applications?

--What architectures do they support? Is there flexibility to use either a distributed or centralized approach?

--How easy is it to increase the size of the deployment? Are there numerous products, or a fairly smooth migration either within a product family or between a small number of them?

--What kind of expertise does the vendor and its partners have in your particular industry, company size, or solution requirement?

With any vendor selection, though, the key business issue is to know your numbers. Vendors and their resellers often provide you with their best figures available, but operational costs are extremely variable and are based on your internal expertise. What's more, vendors may provide capital estimates for IP telephony equipment but ignore the fact that you need a LAN upgrade. Make sure to include the LAN upgrade in your IP telephony project costs if it's required.

Finally, make sure your team evaluates all potential savings with VOIP, including replacement of hardphones with softphones, network consolidation, and staff reductions, among other areas.