

Assessing IP Telephony Total Cost of Ownership

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Executive Summary

Understanding total cost of ownership (TCO) of IP telephony (IPT) and unified communications (UC) implementations is critical to sound decision-making. Enterprises typically buy IPT platforms or hosted services based on requests for proposals that include capital costs and technical evaluations. However, implementation and operational costs are harder to identify and therefore, IT leaders often ignore them in the decision process. Nemertes recently gathered cost data from 211 enterprises for seven leading IPT and UC vendors: Alcatel-Lucent, Avaya, Cisco, Microsoft, NEC, ShoreTel and Siemens. We then used this data to determine total cost of ownership (TCO) for each vendor across a range of implementation sizes. The results show that it is critical for IPT buyers to consider all areas of cost, particularly because ongoing operational costs often change which vendor emerges as the low-cost leader.

The Issue

Enterprises typically buy IPT platforms or hosted services based on RFPs that include capital costs and technical evaluations. Nemertes believes that enterprises should evaluate a number of other factors in making IPT and UC vendor and product decisions. In addition to the technical capabilities of the proposed solution, IT should consider existing relationships with vendors, customer-service capabilities, and referrals from their customers. And, though initial capital costs are clearly important, the lowest initial price doesn't always mean the best value. Implementation costs and ongoing operational costs are harder to identify but often dominate the TCO over the life of technology deployments. Nemertes recommends that IT leaders adopt a TCO approach that includes capital, implementation, and operational costs as the basis for IPT and UC decisions.

Definitions and Methodology

In support of TCO decision-making, Nemertes regularly benchmarks real-world spending on IPT and UC. To obtain the 2012-13 cost data, Nemertes conducted detailed interviews with IT professionals representing 31 end-user organizations across a range of sizes and industries. We used that information to establish high and low parameters for each of the costs we analyzed. We then conducted online surveys of several hundred IT professionals which stringent data validation and integrity checks winnowed down to 180 valid responses.

Nemertes used the following definitions of cost data and formulas for calculation of costs per endpoint in the data collection and analysis.

- **Capital Cost:** Includes PBX, endpoint devices and licenses, servers and other hardware required for IPT. For UC, it includes any hardware, servers, gateways and licenses. In some cases, bundled licenses for IP telephony include certain UC applications.
 - The formula we use is (total capital costs / number of endpoints)
- **Implementation Cost:** Includes staff time and third-party consultants or integrators
 - The formula we use is ((Staff time * loaded hourly rate)+third-party costs)/ number of endpoints
- **Operational Cost:** Includes staff time, equipment maintenance costs, third-party managed services, training and certification costs. We gathered four types of operational data:
 - **Internal staff** – Includes the total loaded cost of internal staff (measured as full-time equivalents) divided by the number of endpoints
 - **Annual equipment maintenance** – Includes the amount the organization pays to the vendor or VAR for annual maintenance of equipment
 - **Third-party services** – Includes any third-party partners, systems integrators, or consultants who help with ongoing operations of the system
 - **Training** – Includes training costs for IT staff only (not end users)
 - The formula we use is ((Number of FTEs * average annual loaded salary) +(equipment maintenance + managed services + training+ /certification)) / number of endpoints

Using these definitions and formulas, Nemertes calculated mean and median total costs per end point in each of the categories. Because of outliers, both on the high and low end of the cost spectrum, we typically use medians for cost data.

Discussion of Key Findings: IP Telephony Results

Total First-Year Costs

The overall median of all IP telephony (IPT) costs, regardless of vendor, is \$1,305 per endpoint. (Please see Figure 1.) We derived this cost by adding the median of all capital, implementation, and operational costs. IPT capital and implementation costs are fairly consistent across vendors. Operational costs, however, vary significantly around a median of \$704 per endpoint, per year.

NEC and ShoreTel post the lowest total first-year costs at \$830 and \$903, respectively. Siemens and Microsoft show the highest total first-year costs at \$1,961 and \$2,482, respectively.

	Capital	Implementation	Operational	Total 1st Year
NEC	\$ 292	\$ 96	\$ 442	\$ 830
ShoreTel	\$ 544	\$ 54	\$ 305	\$ 903
Cisco	\$ 524	\$ 55	\$ 505	\$ 1,084
Avaya	\$ 727	\$ 75	\$ 322	\$ 1,125
Alcatel Lucent	\$ 500	\$ 94	\$ 841	\$ 1,435
Siemens	\$ 546	\$ 146	\$ 1,268	\$ 1,961
Microsoft	\$ 480	\$ 90	\$ 1,912	\$ 2,482
Overall MEDIAN	\$ 540	\$ 61	\$ 704	\$ 1,305

Figure 1: Median First Year IP Telephony Costs

From a size of deployment perspective, ShoreTel, Avaya, Cisco and NEC deliver competitive results across the range studied, with ShoreTel providing the lowest TCO when the data is cut by 350+ endpoints in both the 1000+ and 350+ endpoint size ranges. The ShoreTel deployments included in the analysis ranged from 85 to 1850 endpoints. (Please see Figure 2.)

	Capital		Implementation		Operational		Total 1st Year	
	<1000	1000+	<1000	1000+	<1000	1000+	<1000	1000+
ShoreTel	\$ 568	\$ 540	\$ 130	\$ 17	\$ 401	\$ 58	\$ 1,099	\$ 614
Avaya	\$ 1,000	\$ 310	\$ 105	\$ 65	\$ 837	\$ 285	\$ 1,941	\$ 659
Cisco	\$ 625	\$ 441	\$ 86	\$ 29	\$ 1,100	\$ 243	\$ 1,811	\$ 713
NEC	\$ 250	\$ 633	\$ 83	\$ 109	\$ 678	\$ 150	\$ 1,011	\$ 891
Microsoft	\$ 480	\$ 512	\$ 112	\$ 10	\$ 2,314	\$ 699	\$ 2,906	\$ 1,221
Alcatel Lucent	\$ 800	\$ 363	\$ 82	\$ 105	\$ 780	\$ 903	\$ 1,662	\$ 1,370
Siemens	\$ 546	NA	\$ 146	NA	\$ 1,268	NA	\$ 1,960	NA
Overall MEDIAN	\$ 600	\$ 444	\$ 87	\$ 40	\$ 1,113	\$ 238	\$ 1,799	\$ 723

	Capital		Implementation		Operational		Total 1st Year	
	<350	350+	<350	350+	<350	350+	<350	350+
ShoreTel	\$ 536	\$ 564	\$ 54	\$ 80	\$ 640	\$ 81	\$ 1,231	\$ 725
Cisco	\$ 600	\$ 505	\$ 81	\$ 46	\$ 1,396	\$ 289	\$ 2,077	\$ 840
Avaya	\$ 1,000	\$ 699	\$ 86	\$ 87	\$ 1,125	\$ 320	\$ 2,211	\$ 1,107
Microsoft	\$ 471	\$ 45	\$ 151	\$ 45	\$ 2,500	\$ 1,254	\$ 3,122	\$ 1,344
Siemens	\$ 893	\$ 200	\$ 1,094	\$ 107	\$ 2,042	\$ 1,225	\$ 4,029	\$ 1,532
NEC	\$ 208	\$ 1,317	\$ 232	\$ 57	\$ 689	\$ 178	\$ 1,130	\$ 1,552
Alcatel Lucent	\$ 238	\$ 721	\$ 25	\$ 105	\$ 684	\$ 841	\$ 946	\$ 1,667
Overall MEDIAN	\$ 888	\$ 790	\$ 125	\$ 198	\$ 823	\$ 1,559	\$ 1,836	\$ 2,547

Figure 2: Total First Year Costs by Size of Deployment

Operational Costs

Operational costs show the greatest variability among the three cost components studied. ShoreTel and Avaya are significantly lower than the \$704 median, at \$305 and \$322, respectively, while Microsoft and Siemens are significantly higher than median, at \$1,912 and \$1,268, respectively. (Please see Figure 1.) Operational costs are the prime factor in Microsoft’s high first-year costs, \$2,482 per endpoint. Microsoft’s costs are triple NEC’s costs and more than double first-year costs for Avaya, Cisco, and ShoreTel.

Organizations that use Microsoft spend more than the median in all categories and the highest in each category with the exception of annual equipment maintenance, where Alcatel-Lucent is highest. (Please see Figure 3.) Avaya and NEC share the lowest costs—Avaya in human management, including internal staff and third parties, and NEC in annual equipment maintenance and training. ShoreTel is competitive, either at or below the median for everything but training, where it’s slightly higher than median. Cisco is below median in all areas but equipment maintenance, which adds up quickly with the larger rollouts. Enterprises deploying Siemens are spending more on human costs than median in all areas—internal staff, third parties, and training. But they are spending less for annual equipment maintenance.

IPT Per-Unit Costs/Overall Operational Costs (Median)				
	Internal Staff	Annual equipment maintenance	Third parties	Training
Avaya	\$ 176.44	\$ 66.67	\$ 25.00	\$ 7.56
ShoreTel	\$ 251.38	\$ 66.67	\$ 50.00	\$ 32.50
Cisco	\$ 333.33	\$ 155.36	\$ 27.50	\$ 19.10
Alcatel-Lucent	\$ 338.82	\$ 210.29	\$ 75.00	\$ 30.00
NEC	\$ 434.26	\$ 18.79		\$ 4.36
Siemens	\$ 936.25	\$ 24.83	\$ 70.33	\$ 65.16
Microsoft	\$ 1,411.76	\$ 123.08	\$ 86.32	\$ 81.66
Other	\$ 2,406.25	\$ 555.73	\$ 123.21	\$ 82.01
Overall MEDIAN	\$ 400.00	\$ 100.00	\$ 48.98	\$ 24.50

Figure 3: IPT Per-Unit Costs/Overall Operational Costs (Median)

Enterprises are becoming more concerned with operational costs than capital costs. IT professionals rightly argue that they can effectively negotiate with vendors to reduce capital costs and include implementation support. Ongoing operational costs are more difficult to identify and manage. In the Nemertes measurements, Avaya and ShoreTel showed the lowest operational costs; Microsoft the highest; the rest somewhere in between.

Staff expenses are a key component of operational costs. ShoreTel requires the least staff (as measured by full-time equivalent employees or FTEs) for ongoing management of deployments. (Please see Figure 4.)

Number of FTEs Managing, by Product		
Vendor	Product	FTEs
Avaya	IP Office	2.50
Avaya	Aura	6.50
Cisco	Business Edition 3000	2.00
Cisco	Business Edition 6000	3.00
Cisco	Unified Communications 500	4.00
Micorsoft	Lync 2010	6.00
Microsoft	OCS Voice	4.00
ShoreTel	Shoregear	1.00

Figure 4: Number of FTEs Managing, by Product

What’s especially impressive for ShoreTel is that its low staffing requirements translate across various deployment sizes. (Please see Figure 5.) ShoreTel customers rely on one FTE for fewer than 1,000 endpoints, and .58 for deployments of greater than 1,000, indicating that ShoreTel management complexity does not increase as rollout sizes grow. In fairness, though, the sample size for those with greater than 1,000 endpoints was not as large as those with less than 1,000 endpoints.

How many FTEs Manage? (<i>median</i>)			
	Rollout size		
	All sizes	<1000 endpoints	>1000 endpoints
Alcatel-Lucent	3.5	2	10
Avaya	4	2	5
Cisco	3	2	4
Microsoft	5	6	4
NEC	3	3	NA
ShoreTel	1	1	0.58
Siemens	1.75	1.75	NA

Figure 5: How Many Full-Time Equivalents Manage? (*median*)

Unified Communications Mobility

Moving forward, Nemertes expects tablet adoption and overall mobility growth to affect how organizations approach unified communications. Nemertes annual benchmark research shows that the percentage of workers that use wireless connectivity only, completely forgoing wired connections, will almost double from 2013 to 2015. As a result, UC architects must increasingly extend features such as voice, messaging, presence, and video to a variety of mobile devices and to work just as well as with laptops, desktops, and phones using WiFi. Already, 49% of enterprises have deployed UC-mobile integration to varying degrees to provide services such as mobile-enabled audio, video and Web conferencing (64.1%), IM and presence (59.1%), click-to-call (36.9%) and single number reach (34.4%). As enterprises evaluate UC rollouts, the timetable and priority of vendors’ mobile UC capabilities will become more critical. The major IP telephony vendors, including Avaya, Cisco, and ShoreTel, already offer mobile UC clients.

Although there was variability in cost among the vendors in other areas of IP telephony and UC, there was very little difference in costs for mobile-enabled features. Vendors typically charge \$10 per device for voice extension to mobile devices, and between \$30 and \$35 for other features including access to web conferencing and video. For those who desire a full suite of mobile-enabled features, vendors also offer bundled packages. (Please see Figure 6.)

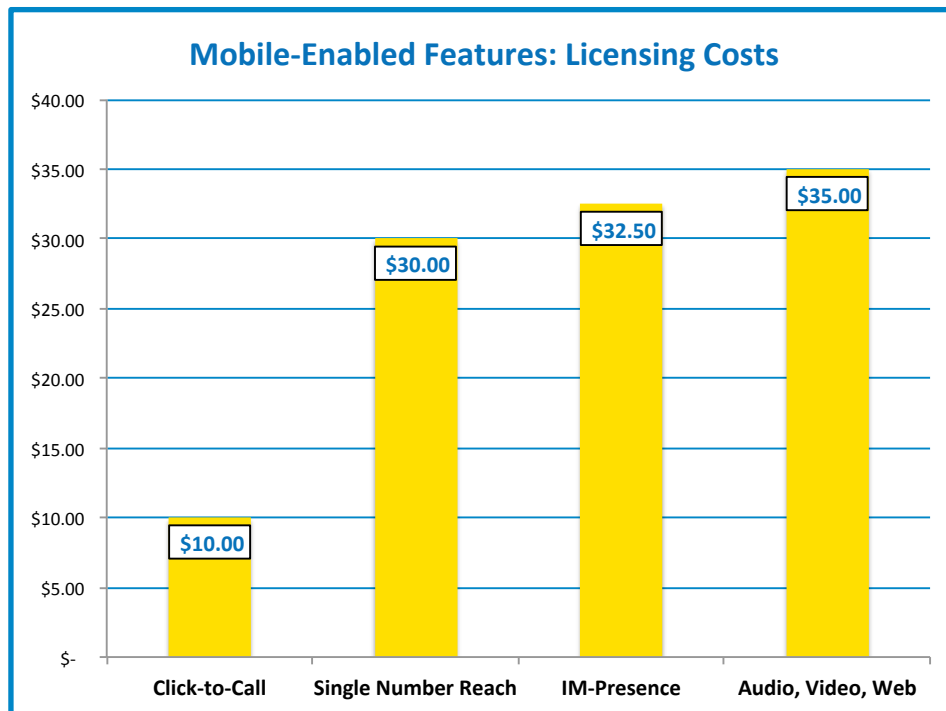


Figure 6: Mobile-Enabled Features: Licensing Costs Per Device

Conclusion and Recommendations

For those considering/using Avaya – Avaya delivers competitive total first-year costs (lower than median and fourth lowest overall), but it has the highest initial capital costs. The high initial capital costs are offset by low operational costs (lower than median and second overall).

For those considering/using Cisco – Cisco delivers competitive total first-year costs (third overall) with lower-than-median results in all three cost categories.

For those considering/using Microsoft – Microsoft delivers the highest total first-year cost with low initial capital costs offset by the highest operational costs.

For those considering/using NEC – NEC delivers the lowest total first-year cost and initial capital costs with competitive implementation and operational costs.

For those considering/using ShoreTel – ShoreTel delivers competitive total first-year cost (second overall) and lowest implementation costs, operational costs and staff requirements.

Although each enterprise will place different emphasis on each area of cost, it is important for enterprises to consider all—capital, implementation and ongoing operational—when making decisions concerning IPT and/or UC deployments. Nemertes research indicates that capital and implementation costs are highly negotiable, and enterprise IT leaders should be aggressive in their dealings with vendors. Operational costs are more difficult to identify but have greater impact on total cost of ownership. Enterprise IT leaders should invest the necessary time and care to make sure they understand these costs. We also recommend the following:

- ⊕ **Build a business case.** Too many organizations are bypassing the important step of building a business case because it's difficult. Having one, however, hedges against losing funding for the project when money becomes tight.
- ⊕ **Demand referrals, and call them.** Once organizations have arrived at a short list of two to three vendors, it's imperative to call references and understand not only what they paid for the capital and implementation, but also the ongoing operational costs. Tap into peer networks and ask vendors for references.
- ⊕ **Don't underestimate.** Most organizations say rollouts take two to three times longer than they estimated (and that translates into higher costs).
- ⊕ **Carefully evaluate operational costs.** Operational costs vary widely from vendor to vendor and tend to dominate multi-year TCO.
- ⊕ **Evaluate staffing requirements.** Different platforms require different staff resources; make staffing needs (both for implementation and on-going support) a key part of your buying criteria.

About Nemertes Research: Nemertes Research is a research-advisory and strategic-consulting firm that specializes in analyzing and quantifying the business value of emerging technologies. You can learn more about Nemertes Research at our Website, www.nemertes.com, or contact us directly at research@nemertes.com.