

Lowering Wireless TCO with Cisco Motion

Executive Summary

Customers are rushing to embrace collaboration as a way to accelerate decisions, gain productivity, and strengthen competitive advantage. With time and distance separating people in the global market, communication can be difficult and decision-making slow. People are constantly in motion, increasingly relying on untethered and unassociated devices to make business decisions. The use of these devices and the information they convey further complicates the simple task of connecting. People become the middleware between devices, and meaningful information is lost at every step. All of these gaps—between devices, people, and time—slow innovation and increase cycle time, cost, and errors.

Organizations want to close the gaps by networking disconnected workspaces. Once connected, people can communicate with each other and with business systems, enabling collaboration.

Collaboration enables businesses reap operational efficiencies that can be invested elsewhere. They can unlock employee potential by giving context to data and making it actionable. Collaboration also enables companies to get closer to customers, bringing customers into the product development delivery process, or taking the product delivery process to the customer. Mobile technologies enable companies to move to borderless organizations where teams and processes expand and contract to meet the needs of the business, in real time. Together, the transformational power of collaboration enables businesses to thrive as slower competitors struggle.

Delivering the mobility experience to support collaboration requires IT to give careful consideration to how the network is architected. The proliferation of mobile devices, the need to unify multiple access networks, and the demand for mobility applications drains IT resources. And in this economic climate, few IT organizations will see an increase in the resources required to meet the demands of mobility. Yet a new approach to architecting the mobility network will simplify the delivery of business mobility without requiring a significant increase in IT resources to get the job done.

This paper explores Cisco's delivery of an integrated mobility platform. We will analyze the total cost of maintaining a legacy Wi-Fi network and compare it to the cost of maintaining an integrated mobility architecture, which is significantly lower. The objective of this total cost of ownership (TCO) model is to analyze the total cost of ownership and potential return on investment (ROI) that companies can realize by adopting a mobility platform.

Cisco's mobility solution is based on a service-oriented architecture that uses a centralized services engine, the Cisco® 3350 Mobility Services Engine to streamline service delivery and lower ongoing network operations costs.

Cisco Motion and the Cisco Mobility Services Engine (MSE) provide the following services that integrate with the wired and wireless networks to meet business demands:

- The context-aware service to track the location or condition of a person or asset
- The mobile intelligent roaming (MIR) service to provide seamless roaming between public and private networks
- The adaptive wireless intrusion prevention system (wIPS) to provide unparalleled visibility and control of the wireless network

Research Findings

This research study used a model to assess the potential capital and operational expense savings of moving to a secure, mobility-aware architecture such as Cisco's versus an overlay set of security, content, and mobile voice roaming solutions for another vendor. The study revealed the following results about the Cisco MSE and Cisco Motion platform:

- Provides upfront capital expense savings.** The Cisco Motion solution can save the composite company 12 to 26 percent in upfront capital expenses, depending on which WLAN competitor the customer selects to review. The capital expense calculation reviews the expense of the WLAN controllers, access points, and management licenses but also includes spending variances based on the new software modules, appliances, and sensors that would be required to achieve the same functionality using another WLAN vendor. The model revealed a potential capital cost savings of \$265,436 or approximately 10 percent over the composite competitor.
- Reduces operating expense.** In addition to the capital expense savings, the model also revealed significant operational expense savings opportunities. The model highlights savings based on the incremental cost to purchase and integrate disparate products into a unified network and to train IT staff. The model also revealed savings opportunities by diverting help desk calls and providing troubleshooting efficiencies through single-vendor management. The three-year operating expense savings of using Cisco versus the competition is \$4.6 million.
- Delivers a lower TCO.** In addition to savings in the first year, Cisco Motion provides a lower three-year total cost of ownership than its competitors. The estimated total cost savings of using Cisco instead the composite competitor is \$4.9 million over three years based on a 10 percent discounted cash-flow rate.
- Offers rapid ROI.** The Cisco Motion solution pays for itself in approximately a year and a half. With an original investment of \$2.37 million in capital expenses, the composite company received a 106 percent return on its investment when the Cisco solution was used. The breakeven point or (payback period) is reached after a deployment of 17 months with the Cisco solution.

Methodology

Composite Organization and Composite Competitor

To evaluate the impact that implementing a mobility services framework can have on an organization, Cisco constructed a fictional, composite company. We postulated a mid-sized organization of 9500 employees that would be using the WLAN for both data and voice services (Table 1). The composite company resides on a campus that consists of three buildings. Approximately 2500 employees would be using some form of voice-over-wireless LAN (VoWLAN). The company would require approximately 1500 802.11n access points. The organization expects to use a wireless intrusion prevention system as well as context-aware (location) services in the future. The length of analysis for this financial model is three years, with an estimated discount rate of 10 percent used in the net present value calculations.

Table 1. Defining the Composite Corporation

Category	Composite Corporation
Number of employees	9500
Size of campus	Three building campus needing approximately 1500 access points
Type of install	A Greenfield wireless LAN with 802.11n
Type of applications used	<ul style="list-style-type: none"> • Expects 20 percent of employees to use WLAN-based voice • Plans to add WIPS and context-aware services such as asset tracking and asset condition

To capture the variances in its competitor's approaches, Cisco constructed a composite competitor from three vendors that support 802.11n WLANs with a controller-based architecture. Cisco gathered data from existing market research, its customers, and internal resources to define the potential time and expense associated with installing and operating these technologies (Table 2).

Table 2. Defining the Composite Competitor

Category	Cisco	Composite Competitor
Network architecture	Uses controller-based architecture that supports 802.11n and VoWLAN	Uses a controller-based architecture that supports 802.11n and VoWLAN
Support for wIPS	Uses the Mobility Services Engine and existing access points	Uses an overlay architecture for wIPS that may include sensors
Support for context-aware services and mobile intelligent roaming (MIR)	Built into the solution	Requires a third-party solution with appliance to support context aware services. It may require additional management for mobile roaming
Network management	Integrated management support via the Cisco Wireless Control System (WCS)	Multiple consoles to manage the WLAN, wIPS, context-aware services, and MIR
Network integration	Fully tested and integrated solutions for wIPS, context-aware services, and MIR	Minimal testing and integration of wIPS, context-aware services, and MIR

Total Cost of Ownership Model

This model derives a TCO from comparing capital expense and operating expense savings but doesn't track improvements in employee productivity. The capital equipment expense is based on the list price of Cisco equipment and equipment from its competitors. The model reviewed list prices from three competitors and devised a composite list price per component based on the median.

The two exceptions are that the model assumes the composite competitor's solution requires a wIPS appliance and sensors. In some cases, a competitor's solution may require just one of the two, neither, or both.

The operating expenses are calculated based on the hourly rate of level 1 and level 2 network administrators, which are defined in Table 3. With the exception of appliances to run the context-aware and mobile roaming solutions, the model excludes capital expenses for third-party items that are not directly provided by a WLAN vendor, such as location licenses, tags, or fixed mobile convergence or mobile intelligent roaming software.

Table 3. Salary Assumptions

Metric	Network Administrator Level 1	Network Administrator Level 2
Hours per week	40	40
Weeks per year (less two weeks vacation)	50	50
Hours worked per year (excluding vacation)	2000	2000
Fully loaded annual salary	100,000	140,000
Hourly rate	\$50	\$70

Equipment Costs and Savings Opportunities

This portion of the model explores the capital costs associated with a solution that will support the composite company. Capital equipment costs for the model include: 1) access points and Access point licenses if required; 2) WLAN controllers or controller blades; 3) Cisco WCS or other network management licenses; and 4) wIPS appliance, associated licenses, and sensors if required. The Cisco mobility solution uses the Cisco Mobility Services Engine (MSE), which is used in place of a wIPS appliance and is also used as the appliance that hosts the location and mobile intelligent roaming software. In the case of the composite competitor's solution, the company would need to purchase at least one appliance to support a location solution—for example, from Aeroscout or Ekahau. Additionally, the customer may need an appliance to support wIPS and would need two or three appliances to support mobile intelligent roaming using a solution like Divitas or Agito Networks.

Total Access Point Costs

For the model, we assumed the composite organization would need to purchase 1500 access points, regardless of vendor. These access points support 802.11n and range from the list price of \$960 to \$1495. Several vendors, including Cisco, have a list price of \$1295, which we selected for both Cisco and its composite competitor. As a result, the cost of the access points for both Cisco and the composite competitor is \$1,942,500 (\$1295 x 1500). Cisco doesn't require access point licenses but the competitor's price for access point licenses ranged from \$28,000 to \$68,000. For the model, we assumed an average license price of \$50,000.

Total Controller Costs

The composite company must also purchase either Cisco Wireless Service Modules (WiSMs) and/or Cisco Wireless LAN Controllers. The Cisco WiSM can manage up to 300 access points and has an average list price of \$45,995. The composite organization would need five WiSMs to support 1500 access points at a total cost of \$229,975.

To assess the costs of competitor's controller implementation, we reviewed the various configurations of four vendors. To support the same number of access points, the company would need to purchase three to six controllers and associated hardware. The list price for this ranged between \$110,000 and \$150,000. We used an average of \$130,000 for the controllers.

Total Network Management Costs

The Cisco Wireless Control System (WCS) product will be used to manage and control the WLAN and wIPS as well as certain aspects of location and roaming. To derive the cost of network management for the composite competitor, we gathered the associated management license fees required to support the WLAN and wIPS, which ranged from \$65,000 to \$150,000. We used the average of \$107,500 as the composite competitor's cost.

Table 4 presents the base WLAN CapEx cost for Cisco and its competitors.

Table 4. WLAN Capital Expense Before wIPS and Mobility Services

Capital Expense Type	Cisco	Composite Competitor
Access points	\$1,942,500	\$1,942,500
Access point licenses (if required)	\$0	\$50,000
WLAN controllers/WiSM	\$229,975	\$130,000
Network management software	\$133,569	\$107,500
Base WLAN CapEx	\$2,306,044	\$2,230,000

Total wIPS Costs

Cisco's Adaptive Wireless Intrusion Prevention System (wIPS) is used to protect against rogue access points and clients, network reconnaissance, eavesdropping, authentication and encryption cracking, man-in-the-middle attacks, wireless denial-of-service (DoS) attacks, and zero-day unknown attacks. It also provides automated wireless vulnerability and performance monitoring. It uses the network's existing 802.11n access points instead of dedicated sensors. The Cisco solution uses the Mobility Services Engine (MSE) to support wIPS, location, roaming, secure client management, and other future services. The MSE is priced at \$19,995 and the wIPS licensing fee for the composite company is \$51,000, for a total list price of \$70,995 for Cisco's wIPS solution. The list price of the competitor's offerings ranged from \$128,000 to \$367,000. The main difference in expense is that the competitor's solutions have higher wIPS licensing fees and require sensors. We used the average of \$247,480 for licensing fees and derived the sensor cost by using a list price of \$400 per sensor (see Table 5).

Table 5. Wireless Intrusion Prevention Capital Expense

Capital Expense Type	Cisco	Composite Competitor
wIPS appliance (if required)	\$19,995	\$11,995
wIPS sensors (400 if required)	\$0	\$120,000
wIPS software licenses/modules (if required)	\$51,000	\$247,480
wIPS CapEx	\$70,995	\$379,475

Mobile Intelligent Roaming and Location Costs

Cisco uses the Mobility Services Engine (MSE) and context-aware mobility software to gather contextual information about mobile assets and users, such as location, temperature, and availability. The composite company can also use the MSE to support the Cisco mobile intelligent roaming (MIR) solution. MIR is software on the MSE that delivers reliable and consistent voice access as mobile workers travel between cellular and Wi-Fi coverage areas. The MSE integrates with third-party application partners via an open API and a variety of mobile devices to enable seamless roaming of business applications across networks and devices.

Unlike other vendors' solutions, Cisco does not require an additional appliance to support context-aware services or intelligent roaming between cellular and Wi-Fi networks. Depending on the vendor, the composite solution would require two or three appliances to support 2500 voice users, and at least one appliance to support context-aware services. This results in an addition capital expense of \$36,000 to \$48,000. For the purposes of this model, we used the lower of the two figures (see Table 6).

The capital expense model excludes the cost of tags and software for the third-party location services because the deployments will vary according to the individual firm's needs for asset tracking. The model also excluded the cost of third-party roaming software since it would result in the same cost for either Cisco or any of its competitors.

Table 6. Mobility and Context-Aware (Location) Services Capital Expense

Capital Expense Type	Cisco	Composite Competitor
Context-aware services appliance (if required)	\$0	\$12,000
Mobile intelligent roaming appliance (if required)	\$0	\$24,000
Total context-awareness and mobility services CapEx	\$0	\$36,000

Total Capital Costs

The total capital expenditures for the base WLAN network, wIPS, context-aware services, and mobile intelligent roaming is \$2.3 million for the Cisco solution and \$2.6 million for the composite competitor (see Table 7).

Table 7. Total Capital Expense including wIPS, Context-Aware Services, and MIR

Capital Expense Type	Cisco	Composite Competitor
Access points	\$1,942,500	\$1,942,500
Access point licenses (if required)	\$0	\$50,000
WLAN controllers/WISM	\$229,975	\$130,000
Network management software	\$79,500	\$107,500
Base WLAN CapEx	\$2,306,044	\$2,230,000
wIPS		
wIPS appliance or Cisco's MSE (if required)	\$19,995	\$11,995
wIPS sensors (400 if required)	\$0	\$120,000
wIPS software licenses/modules (if required)	\$51,000	\$247,480
wIPS CapEx	\$70,995	\$379,475
Context-aware and mobility services		

Capital Expense Type	Cisco	Composite Competitor
Context-aware appliance (if required)	\$0	\$12,000
Mobile intelligent roaming appliance (if required)	\$0	\$24,000
Total context-aware and mobility services CapEx	\$0	\$36,000
Total CapEx	\$2,377,039	\$2,645,475

Operating Expense Costs and Savings Opportunities

The model also provides a framework for understanding the operational costs and savings opportunities that can be gained by moving to a mobility framework with the MSE. It reviews the following operating expense categories: 1) time associated with evaluating and purchasing a solution: 2) time spent installing equipment: 3) time spent in testing, configuration and integrating a mobility solution; 4) training; and 5) help desk costs.

Operating Expense Savings Opportunity: Purchasing

This portion of the model reviews the time associated with vendor discovery, reviewing RFP responses, and setting a new vendor up in the enterprise's purchasing system. It excludes any time the company spends in evaluating the equipment in a test bed. Our model assumes the composite company is already familiar with Cisco's WLAN offering and will require roughly half the time to review its wIPS solution versus the competitors. In this case, the composite company spends half a day reviewing the available Cisco solutions and a full day for the other vendors in the evaluation. Regardless of the vendor selected, the composite corporation would need to perform a separate detailed review of a location and mobility solution. As a result, it is not included as part of the vendor discovery or RFP calculation for Cisco or its competitors.

In the RFP process, the model assumes that the composite company would spend two weeks per vendor to review and modify the proposals in the wIPS space. Finally, the model looks at the potential cost associated with adding a new vendor into the firm's purchasing process. We conservatively assumed that it takes a day of active interaction between IT and purchasing to get the vendor into the system. In many cases, this would take more than several days of active participation. The model reveals that the Cisco solution provides several opportunities for savings in the purchasing area (see Table 8).

Table 8. Estimate of Costs Associated with Product Purchasing

Vendor Discovery	Cisco	Composite Competitor
Hours spent gathering data on wIPS (one-half day Cisco, full day competitor)	4	16
Total hours spent	4	16
\$ per hour per senior IT staff	\$50	\$50
# of senior IT staff (assumes one head per company reviewed)	1	1
Labor on vendor discovery	\$200	\$800
% dollar savings for the Cisco solution	75%	
Vendor RFP Process for wIPS	Cisco	Composite Competitor
Hours spent evaluating wIPS RFP (assumes two weeks)	80	160
Total hours spent	80	160
\$ per hour per senior IT staff	\$50	\$50
# of senior IT staff	2	2
Labor spent on vendor RFPs	\$8000	\$16,000
% dollar savings for the Cisco solution	50%	
Procurement Savings for Vendor and Order Approval	Cisco	Composite Competitor
Hours spent on approval for a new wIPS vendor and order	0	8
Hours spent on approval for a new location vendor and order	0	8
Hours spent on approval for a new MIR appliance vendor	0	8

Total hours	0	24
\$ per hour per IT staff	\$50	\$50
Total IT labor dollars spent	0	\$1200
Spending on purchases	\$12,400	\$25,200
% dollar savings for the Cisco solution	51%	

Equipment Installation

Cisco's solution also helps companies save money by minimizing installation expense. The model estimates the time installing additional components to support wIPS, context-aware services, and mobile intelligent roaming services. In the case of Cisco, all of these can be achieved with the installation of the MSE while the composite competitor's solutions would require additional time to install location and cellular to Wi-Fi roaming appliances as well as sensors for wIPS. The model assumes that the composite company has the proper wiring installed and needs to perform a site survey to determine where to place the appliances.

It is estimated that it would take at least six days to install the competitor's solution for wIPS and MIR. It is assumed that all vendors would need to deploy MIR clients and thus no vendor has a cost advantage in this realm. For wIPS support, we assumed the composite company would need at least 400 sensors. Given the complexity of a new location services deployment, the model assumes it takes more time to perform a site survey and install at least one appliance. The model does not include the time to deploy tags because the number of assets tagged may vary widely from one company to another. With this in mind, Cisco's install cost for location, mobile roaming, and wIPS are 75 percent less than the competition (see Table 9).

Table 9. Estimates of Equipment Installation Costs

Vendor Discovery	Cisco	Composite Competitor
Hours spent gathering data on wIPS (one-half day Cisco, full day competitor)	4	16
Hours spent gathering data on client security (one-half day Cisco, full day competitor)	4	16
Total hours spent	8	32
\$ per hour per senior IT staff	\$50	\$50
# of senior IT staff (assumes one head per company reviewed)	1	1
Labor on vendor discovery	\$400	\$1600
% dollar savings for the Cisco solution	75%	
Vendor RFP Process for wIPS and Wireless Security	Cisco	Composite Competitor
Hours spent evaluating wIPS RFP (assumes two weeks)	80	160
Hours spent evaluating on client security (assumes one week per vendor)	40	80
Total hours spent	120	240
\$ per hour per senior IT staff	\$50	\$50
# of senior IT staff	2	2
Labor spent on vendor RFPs	\$12,000	\$24,000
% dollar savings	50%	
Procurement Savings for Vendor and Order Approval	Cisco	Composite Competitor
Hours spent on approval for a new wIPS vendor and order	0	8
Hours spent on approval for a new location vendor and order	0	8
Hours spent on approval for a new MIR appliance vendor	0	8
Total hours	0	32
\$ per hour per IT staff	\$50	\$50
Total IT labor dollars spent	0	\$1,200 600
Spending on purchases	\$12,400	\$25,200

% dollar savings	51%	
Equipment Installation	Cisco	Composite Competitor
wIPS		
Time to install wIPS or MSE appliance including site survey (a)	12	12
Number of appliances (b)	1	1
Cost per labor hour	\$50	\$50
Total appliance cost of install ((a*b)*c)	\$600	\$600
Hours to install a sensor	0	1.5
Number of sensors	0	400
Cost per labor hour	0	\$50
Total sensor cost of install	0	\$30,000
Total wIPS install costs	\$600	\$30,600
Context-Aware Services (Location)	Cisco	Composite Competitor
Time to install appliance (a)	0	16
Number of appliances (b)	0	1
Cost per labor hour	\$50	\$50
Total appliance cost of install ((a*b)*c)	0	\$800
Mobile Intelligent Roaming	Cisco	Composite Competitor
Time to install appliance (a)	0	8
Number of appliances (b)	0	1
Cost per labor hour	\$50	\$50
Total appliance cost of install ((a*b)*c)	0	\$400
Site Survey Costs	Cisco	Composite Competitor
Number of annual WLAN site surveys	1	1
Number of annual location site surveys	0	1
Number of annual MIR site surveys	0	1
Total annual surveys	1	3
Cost per survey	\$10,000.0	\$10,000.0
Number of sites	3	3
Annual site survey expense	\$30,000	\$90,000
Total install cost for Cisco MSE vs. appliances	\$30,600	\$121,800
% dollar savings for the Cisco solution	75%	

Configuration and Network Integration Expense

Today, IT is forced to integrate disparate solutions to form a mobility offering. The time to integrate multiple technologies into a mobility solution can vary greatly by the number of products that the company is integrating, the complexity of the products, and IT's experience with the technologies. This model provides a conservative estimate of the time it would take to integrate wIPS, context-aware services, and mobile intelligent roaming services into one unified network architecture. Cisco's mobility solution provides IT with a faster, smoother installation than its competitors because it has already tested and verified configurations for these components. The estimates of hours spent on labor are based on Cisco's internal research and discussions with IT professionals. From these discussions, we estimated the results are as follows (see Table 10).

Table 10. Estimates of Configuration and Network Integration Expenses

Time to Test and Tune Up a Valid wIPS configuration	Cisco	Composite Competitor
Hours spent testing wIPS configuration and integrating it into network (one week vs. three weeks full time)	40	120
Cost per labor hour	\$70	\$70
Labor spending per head	\$2800	\$8400
Number of heads	2	2
wIPS labor expense	\$5600	\$16,800
Time to Integrate with Context-Aware Services	Cisco	Composite Competitor
Hours testing context aware configuration and integrating it into network (two weeks vs. four weeks full time)	80	160
Cost per labor hour	\$70	\$70
Labor spending per head	\$5600	\$11,200
Number of heads	3	3
Location labor expense	\$16,800	\$33,600
Time to Integrate MIR	Cisco	Composite Competitor
Hour spent testing MIR configuration and integrating it into network	40	80
Cost per labor hour	\$50	\$50
Labor spending per head	\$2000	\$4000
Number of heads	2	2
Labor spending for MIR	\$4000	\$8000
Site Survey Costs	Cisco	Composite Competitor
Number of annual WLAN site surveys	1	1
Number of annual location site surveys	0	1
Number of annual MIR site surveys	0	1
Total annual surveys	1	3
Cost per survey	\$10,000.0	\$10,000.0
Number of sites	3	3
Annual site survey expense	\$30,000	\$90,000
Site survey, configuration and network integration expense	\$56,400	\$148,400
% dollar savings for the Cisco solution	62%	

Training

While IT staff must be trained on solutions from either Cisco or its competitors, it will take less time to train a company's staff on a single tool that can manage security, context-aware services, and mobile intelligent roaming. This model compares the time spent learning a new module for WCS versus learning an entirely new console for wIPS, context-aware services, and mobile intelligent roaming services as well as secure client access. The base assumption is that it will take four hours to train an IT staff member on a new Cisco module but up to two days of train IT on a new console. The model includes training time, but does not include the cost of the training course, because this ranges from free to fee-based. Table 11 outlines these costs.

Table 11. Estimates of Training Time for New Management Consoles

Expense Category	Cisco	Competitor
Hours training on wIPS mgmt.	4	16
Hours training on context-aware services management	6	16
Hours training on MIR management	4	16
Total additional training hours	1418	48

Expense Category	Cisco	Competitor
Hourly wage of senior IT employee trained	\$70	\$70
Hourly wage of junior IT employee trained	\$50	\$50
# senior employees trained	5	5
# of junior IT employees trained	8	8
Senior IT labor dollars spent on training	\$4900	\$16,800
Junior IT labor dollars spent on training	\$5600	\$19,200
Training expense	\$10,500	\$36,000
% dollar savings for the Cisco solution	71%	

Single-Vendor Versus Multivendor Troubleshooting for Quarterly Software Updates

The benefits of an integrated mobility platform extend beyond the original installation to include simplifying the provisioning and management of mobility services while reducing the time it takes to troubleshoot problems that result from frequently scheduled software updates. This portion of the model reviews a scenario where IT experiences at least one issue per quarter as a result of a software or configuration updates in each of the mobility categories, including wIPS, context-aware services, and cellular to Wi-Fi roaming. Depending on the potential complexity of the problem, the model assumes it takes the IT staff at least a day to solve an issue that requires reviewing management data from multiple vendor solutions. Since Cisco's WCS combines the network management of these elements, IT will experience faster time to resolution and savings in help desk costs, as illustrated in Table 12.

Table 12. Estimates of Single-Vendor Versus Multivendor Troubleshooting Costs for Quarterly Updates

Expense Category	Cisco	Composite Competitor
Number of wIPS software incidents per year	4	4
Hours to resolve wIPS incident	4	12
Hours spent on wIPS incidents		
Total wIPS hours	16	48
IT labor rate	\$70	\$70
Labor spent on wIPS	\$1120	\$3360
Number of location software incidents per year	4	4
Hours to resolve location incident	8	16
Hours spent on wIPS incidents	32	64
IT labor rate	\$70	\$70
Labor spent on location	\$2240	\$4480
Number of MIR software incidents per year	4	4
Hours to resolve a MIR incident	4	8
Hours spent on MIR incidents	\$16	\$32
IT labor rate	\$70	\$70
Labor spent on MIR	\$1120	\$2240
IT labor spent on troubleshooting single versus multivendor	\$4480	\$10,080
% dollar savings for the Cisco solution	56%	

Help Desk Calls Diverted

The benefits of an integrated mobility platform also allow companies to significantly reduce their help desk support costs within their organizations. The average help desk calls range from four to six calls per user per year, according to sources such as the Help Desk Institute. For the model, we assumed the high end of the range as the number of calls is likely to increase as firms add more services such as mobile roaming and location.

To calculate this benefit, we estimated the number of help desk calls IT would field with a Cisco solution versus a competitor's solution. Primary and secondary data sources reveal that 35 to 40 percent of the help desk calls can be resolved by level 1 support, 45 to 50 percent are level 2, and 15 percent are resolved with level 3 support. We assumed the more conservative figures of 40 percent of the calls can be resolved with level 1 support, 45 percent with level 2 support, and the remaining 15 percent are level 3 calls.

The costs to resolve a trouble by level are as follows: \$25 for level 1 (up to 30 minutes), \$100 for level 2 (up to 2 hours), and \$275 for level 3 (up to 5 hours). We assumed the composite organization responded to six incidents in the first year for each of its 9600 users ($6 \times 9600 = 57,600$) prior to adopting Cisco's mobility framework. It is expected that without the Cisco solution, call volume would decline by one call per user in the second year and by an additional call in the third year. As IT becomes more familiar with the issues and solutions, the mix of calls that could be supported by level 1 would also increase from 40 to 45 percent in year two while the number of level 3 support calls would drop by a third in year three from 15 to 10 percent. The result is help desk expense of \$5,544,000 in year one, \$4,440,000 in year two, and \$3,216,000 in year 3 (see Table 13).

Table 13. Help Desk Spending Before the Cisco Solution

Help Desk Spending Before Cisco Solution	Year 1	Year 2	Year 3
Average number of help desk calls per user per year (a)	6	5	4
Number of users (b)	9600	9600	9600
Total estimate of mobility related calls (a*b=c)	57,600	48,000	38,400
% of level 1 calls @30 min (d)	40%	45%	45%
% of level 2 calls @ 2 hours (e)	45%	40%	45%
% of level 3 calls @ 5+ hours (f)	15%	15%	10%
Total help desk calls	100%	100%	100%
G. Estimate of level 1 calls (c*d)	23,040	21,600	17,280
H. Estimate of level 2 calls (c*e)	25,920	19,200	17,280
I. Estimate of level 3 calls (c*f)	8640	7200	3840
Total estimate of mobility related calls	57,600	48,000	38,400
J. Cost per level 1 call	\$25	\$25	\$25
K. Cost per level 2 call	\$100	\$100	\$100
L. Cost per level 3 call	\$275	\$275	\$275
Cost per level 1 call (G*J)	\$576,000	\$540,000	\$432,000
Cost per level 2 call (H*K)	\$2,592,000	\$1,920,000	\$1,728,000
Cost per level 3 call (I*L)	\$2,376,000	\$1,980,000	\$1,056,000
Total help desk spending with competitor	\$5,544,000	\$4,440,000	\$3,216,000

The preintegration and manageability of the Cisco mobility solution provides a distinct advantage over competitor solutions in eliminating help desk calls and reducing the time it takes IT to resolve a mobility-related issue. With previous product introductions, Cisco customers have seen a 40 percent drop in level 1 help desk calls. Cisco has taken a more conservative approach in this model and assumes the composite company can eliminate a third of the level 1 calls, which equates to four calls per user, instead of six, in the first year. As in the first scenario, IT will also

gain efficiencies in the managing the network, which will allow them to eliminate another call per user in the second year and experience flat call volume in the third year. The benefits of a preintegrated solution will make it possible to minimize the time IT spends troubleshooting context-aware services and mobile intelligent roaming issues. These management efficiencies shift the mix of calls that could be supported by level 1 from 40 to 45 percent in year one, while the number of level 3 support calls would also drop by a third in year one from 15 to 10 percent. The model assumes the mix of calls would remain constant in years two and three. This shift in the mix of call types coupled with a drop in call volume produces a three-year savings opportunity of roughly \$4.3 million in net present value (\$5.1 million in savings at a 10 percent discount rate over three years = \$4.3 million) in reduced help desk costs (see Table 14).

Table 14. Help Desk Spending Using the Cisco Mobility Solution

Help Desk Spending Using the Cisco Mobility Solution	Year 1	Year 2	Year 3
Average number of help desk calls per user per year (a)	4	3	3
Number of users (b)	9600	9600	9600
Total estimate of mobility related calls (a*b=c)	38,400	28,800	28,800
% of level 1 calls @30 min (d)	45%	45%	45%
% of level 2 calls @ 2 hours (e)	45%	45%	45%
% of level 3 calls @ 5+ hours (f)	10%	10%	10%
Total help desk calls	100%	100%	100%
G. Estimate of level 1 calls (c*d)	17,280	12,960	12,960
H. Estimate of level 2 calls (c*e)	17,280	12,960	12,960
I. Estimate of level 3 calls (c*f)	3840	2880	2880
Total estimate of mobility related calls	38,400	28,800	28,800
J. Cost per level 1 call	\$25	\$25	\$25
K. Cost per level 2 call	\$100	\$100	\$100
L. Cost per level 3 call	\$275	\$275	\$275
Cost per level 1 call (G*J)	\$432,000	\$324,000	\$324,000
Cost per level 2 call (H*K)	\$1,728,000	\$1,296,000	\$1,296,000
Cost per level 3 call (I*L)	\$1,056,000	\$792,000	\$792,000
Help desk spending with Cisco	\$3,216,000	\$2,412,000	\$2,412,000

Conclusions

By standardizing on Cisco Motion and the Cisco Mobility Services Engine as a platform to deliver mobility services, organizations will improve network security, minimize and shorten downtime, reduce ongoing administrative efforts, and decrease help desk support costs while aligning the wireless network to better meet business demands.

As outlined by the model, Cisco's mobility framework can provide both capital and operating expense savings opportunities. The results of this study revealed that with the Cisco solution, our composite company would realize a 106 percent return on investment and a 17 percent payback period. In addition to quantifiable cost benefits, the Cisco Motion solution and Mobility Services Engine enables future return on investment and investment protection opportunities by offering a consistent framework for introducing new services and APIs for working with third parties.



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