

A Forrester Total Economic
Impact™ Study
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The Total Economic Impact™ Of IBM Intelligent Networking Support (INS) Cost Savings And Business Benefits

Table Of Contents

Executive Summary	3
Disclosures	4
TEI Framework And Methodology	5
Analysis	6
Financial Summary	20
IBM Intelligent Networking Support (INS): Overview	21
Appendix A: Composite Organization Description	22
Appendix B: Total Economic Impact™ Overview	24
Appendix C: Glossary	25

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Executive Summary

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by using Intelligent Networking Support (INS). The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of INS on their organizations.

To better understand the benefits, costs, and risks associated with an INS implementation, Forrester interviewed several customers with multiple years of experience using INS. INS is a zero-cost feature of IBM's Cisco Managed Maintenance Solution (MMS) offering that enables organizations to collect and analyze Cisco network device details to provide accurate inventory listings, coverage status, hardware and software alerts, and visibility into security and network vulnerabilities.

Prior to INS, the interviewed customers relied primarily on manual processes to perform inventory audits and assessments. With between 400 and 900 devices to track and frequent changes, these processes were time-intensive and resulted in a number of inaccuracies that caused longer outages, more frequent support issues, additional costs, unaddressed security vulnerabilities, and reactive inventory planning and problem resolution. These issues threatened business continuity and affected end users. With INS, the organizations are able to take a more proactive approach to inventory and network management. The organizations receive accurate inventory listings with key metrics, prioritized security and OS vulnerabilities, and links to documentation to resolve vulnerabilities before problems occur. They can use the reports to ensure complete support coverage and plan for future inventory upgrades and replacements far in advance. The result is a healthier, more reliable network to support the business, as well as key efficiencies and cost savings.

INS ENABLES INVENTORY/NETWORK MANAGEMENT EFFICIENCIES, COST SAVINGS, END USER PRODUCTIVITY

Our interviews with three existing customers and subsequent financial analysis found that a composite organization based on these interviewed organizations experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1. See Appendix A for a description of the composite organization.

The composite organization analysis points to benefits of \$192,428 over three years versus costs of \$41,120, adding up to a net present value (NPV) of \$151,308. In addition to these quantified benefits, interviewees noted other potential benefits, including additional cost savings related to decommissioning redundant devices, additional labor cost savings associated with improved inventory planning, and a reduction in lost revenue due to improved outage resolution. Organizations that realize these benefits and are able to quantify them will see further ROI uplift.

“INS gives us simplicity in the network moving forward. It gives us that view where we can look at things holistically, and it helps us better plan projects and upgrades. We can look at everything together — security, access, wireless. It’s such a catch-all.”

~Technology operations manager

FIGURE 1

Financial Summary Showing Three-Year Risk-Adjusted Results

**ROI:
368%**

**NPV:
\$151,308**

**Payback:
< one month**

**Time savings:
50% to 70%**

Source: Forrester Research, Inc.

› **Benefits.** The composite organization experienced the following risk-adjusted benefits that represent those experienced by the interviewed companies:

- **The composite was able to save 310 to 328 hours per year on inventory listings and planning.** The organization was able to see an almost 50% time savings on inventory list management with INS compared with previous manual processes, and the organization was able to streamline inventory planning and budgeting.
- **The composite saved 84 to 88 hours per year on OS and security assessments.** The organization reduced time spent on OS-level assessments by 70% and time spent on security vulnerability assessments by 50%.
- **The organization saved time on outage resolution and OS support issues.** The organization was able to ensure all devices were covered by support, reducing mean-time-to-repair during outages, and was able to save up to 148 hours and up to \$9,500 per year in overtime related to OS support and downtime.
- **The organization was able to achieve over \$37,000 in annual cost savings.** The organization decommissioned 25 redundant devices, saving over \$30,000 per year in support costs, and was able to eliminate a prior network tool.
- **INS also boosted end user productivity.** In the prior environment, branch offices would occasionally experience outages, resulting in 10 end users on average not having access to key applications. With INS, the organization recaptured 800 hours of end user time.

› **Costs.** The composite organization experienced the following risk-adjusted costs:

- **Resource costs to implement INS of \$2,090 and ongoing costs of \$23,606 in Year 1 and \$10,406 in following years.** These are mostly indirect costs that include time spent on implementation, 250 total hours spent on upfront rationalization and standardization, and 20 hours per year on INS report use. The only hard cost associated with INS is the procurement of one virtual machine (VM) to support the INS tool.
- **Minimal upfront training.** IBM provided an optional 1.5-day upfront training to two members of the composite organization, though some interviewees noted that they spent as little as 1 hour on training.

Disclosures

The reader should be aware of the following:

- › The study is commissioned by IBM and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.
- › Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in INS.
- › IBM reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.
- › IBM provided the customer names for the interviews but did not participate in the interviews.

TEI Framework And Methodology

INTRODUCTION

From the information provided in the interviews, Forrester has constructed a Total Economic Impact (TEI) framework for those organizations considering implementing INS. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

APPROACH AND METHODOLOGY

Forrester took a multistep approach to evaluate the impact that INS can have on an organization (see Figure 2). Specifically, we:

- › Interviewed IBM marketing, sales, and/or consulting personnel, along with Forrester analysts, to gather data relative to INS and the marketplace for INS.
- › Interviewed three organizations currently using INS to obtain data with respect to costs, benefits, and risks.
- › Designed a composite organization based on characteristics of the interviewed organizations (see Appendix A).
- › Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews as applied to the composite organization.
- › Risk-adjusted the financial model based on issues and concerns the interviewed organizations highlighted in interviews. Risk adjustment is a key part of the TEI methodology. While interviewed organizations provided cost and benefit estimates, some categories included a broad range of responses or had a number of outside forces that might have affected the results. For that reason, some cost and benefit totals have been risk-adjusted and are detailed in each relevant section.

Forrester employed four fundamental elements of TEI in modeling INS's impact: benefits, costs, flexibility, and risks.

Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix B for additional information on the TEI methodology.

FIGURE 2
TEI Approach



Source: Forrester Research, Inc.

Analysis

COMPOSITE ORGANIZATION

For this study, Forrester conducted a total of three interviews with representatives from the following companies:

- › A multinational services organization based in the United States with over \$100 million in annual revenue and over 200,000 employees. The organization has been using INS for one year, primarily for inventory management and end-of-life planning. The organization tracks over 900 devices with INS.
- › A water and sewer services organization based in the Asia Pacific region with 2,000 employees. The organization has been using INS for 1.5 years, primarily for inventory management and internal audits. The organization tracks about 400 devices.
- › A property management company based in the Asia Pacific region with approximately 1,500 employees. The organization has been using INS for two years, primarily for inventory management and OS-level management. The organization tracks about 500 devices.

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization that Forrester synthesized from these results represents an organization with the following characteristics:

- › Has approximately 1,800 employees.
- › Has been using INS for 1.5 years and receives quarterly reports.
- › Has 450 devices in Year 1, which are mostly switches as well as some routers, firewalls, and access points. By Year 3, the organization has 477 devices.
- › Was previously using smaller network and device management tools, but most inventory and network management processes were manual.
- › Is focused on using INS for inventory management and planning, OS-level management, and security assessments.

“Before we had INS, everything was manual. We had to compile all the device information manually, which usually took several days each month to compile and check and recheck. With INS, it takes less than half of the time it took before.”

~ Senior network engineer

INTERVIEW HIGHLIGHTS

Situation

Prior to using INS, the interviewed organizations were all primarily reliant on manual processes (via spreadsheets) to perform inventory audits and security assessments and for future inventory planning. Some of the organizations also had small tools in place for minimal device/network management, though these tools could be inaccurate. All of the organizations had over 400 devices that needed to be tracked, so manual processes resulted in a number of challenges, including:

- › Very time-consuming and inefficient processes for inventory and network management tasks.

- › Inaccuracies in audits and assessments, leading to unknown devices in the environment, devices without support coverage, and devices reaching end of life without planned replacements.
- › An increase in support issues and inefficient mean-time-to-repair, leading to increased costs as well as end user and business impacts.
- › An incomplete view of security vulnerabilities, backdated software and firmware, and inefficient vulnerability resolution.
- › Various OS levels and conflicting OS ware.

Solution

The composite organization selected INS for its ability to provide accurate inventory listings, end-of-life and end-of-coverage updates, identification and prioritization of security and OS-level vulnerabilities, proactive notifications of new vulnerabilities, links to documentation to address vulnerabilities, and a simple interface with useful graphs and charting. As one organization noted, “I haven’t seen anything like it in the marketplace.”

After an extensive evaluation, the composite organization chose INS and began deployment:

- › Implementation took 25 hours to complete and included installation, firewall modifications, testing, and deployment.
- › The organization spent 250 hours following implementation on making several upgrades and improvements to its environment, as well as ensuring proper support for all devices and decommissioning redundant devices.
- › Following this initial upgrade, the organization was able to proactively and quickly address new vulnerabilities based on quarterly INS reports. The organization was also able to use INS reports to help with end-of-life planning and other project planning needs.

Results

The interviews revealed the following key results:

- › **Enhanced network visibility.** Prior to INS, manually kept spreadsheets and small tools resulted in several inaccuracies in inventory listings. The organizations struggled to account for all of the devices in their environment, where those devices were located, when they were going to reach end of life, whether or not they were properly supported, and what key vulnerabilities needed to be addressed. With INS, the organizations are all able to significantly cut the amount of time they spend on these processes and get a highly accurate report that provides a number of inventory details and metrics, prioritized recommendations, and links to easy problem resolutions.

“It’s just hard with 500 devices; you don’t have that view, even with some of the third-party products. What we found, the biggest thing, is that INS is very accurate. With other tools, the serial number is not accurate, or the model number is not accurate. What INS has is accuracy of data.”

~ Technology operations manager

“With INS, we get a list of devices that are running on really old code, or the code they are running has known security or other issues. This allows us to resolve or upgrade to the next recommended code quickly and smartly.”

~ Senior network engineer

- › **Increased network stability.** The organizations are able to utilize their enhanced network visibility to make key changes and simplifications to their environment to reduce the number of support issues and the impact of support issues. This provides efficiencies for the support team and greater reliability to the business end users who were previously affected by outages.
- › **Proactive network management.** Prior to using INS, the organizations had a lack of visibility that resulted in a reactive approach to problem management. Devices would go down without support or would reach end of life, and the organizations would have to scramble to address these issues in planning and coverage that they were not aware of. Additionally, the organizations would have backdated software and firmware and OS-level complexity that were not being addressed. With INS, the organizations have all of the information they need to identify and address vulnerabilities and planning long before the need occurs, creating efficiencies and cost savings and providing greater stability to the business.

BENEFITS



Inventory Management Time Savings

The composite organization indicated that a key benefit from the INS implementation was the reduction in time spent on inventory tracking and the improved accuracy of inventory listings. Prior to using INS, the organization's inventory tracking was primarily manual. Not only was this process time-consuming, requiring about 480 total hours per year, but it also suffered from several inaccuracies. A few small tools were also being used, but those suffered from inaccuracies as well. Devices existed within the environment that were not being tracked, and they would reach end of life or would be missing proper support coverage without the organization knowing. When devices went down, sometimes the organization didn't know where they were located. These incomplete listings led to several issues (resolved in the following benefit categories) like increased mean-time-to-repair, unnecessary costs, and end user impacts. With INS, the organization receives a quarterly report with all of its inventory details, including serial numbers, location, coverage status, end-of-life status, and other metrics. And the report is very accurate. Now, the organization only needs to spend a small amount of time on inventory reconciliation each quarter, resulting in over 50% time savings, or 270 hours saved in Year 1. As the number of devices grows in years 2 and 3, the organization saves more time compared with its prior state.

This improved inventory visibility also helped the organization save time in end-of-life planning, which was previously a manual process. Additionally, inventory planning changed from a rushed, last-minute, reactive process to a proactive process done several months in advance, furthering improving the time to get budgets approved. In total, 40 hours were saved in inventory planning in Year 1, up to 42 hours by Year 3 due to device growth. An additional impact from switching to a more proactive approach was that better-planned projects could result in cost and labor efficiencies. The organization was able to switch from doing small, last-minute projects to larger, better-planned projects. The organization estimates it achieved a 30% savings on implementation fees and labor costs, as well as internal project management efficiencies, though this could not be quantified for this analysis.

In order to calculate the value of these time savings, we assume the fully loaded compensation for affected employees averages about \$100,000 per year, or \$48 per hour. Additionally, we assume a 75% productivity factor, which accounts for the natural inclination to use some saved time (in this case, about 25% of time) for nonproductive activities like additional coffee breaks or leaving early for the weekend. This helps our model be more realistic and conservative. The total impact of these time savings is approximately \$10,600 to \$11,200 per year.

Interviewed organizations provided a range of inventory management time savings, since this is dependent on prior processes and the ability to influence those processes using INS. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from inventory management time savings over the three years was \$27,082. See the section on Risks for more detail.

TABLE 1
Inventory Management Time Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Time savings on inventory audit (hours)		270	278	286
A2	Time savings on inventory planning (hours)		40	41	42
A3	Productivity capture		75%	75%	75%
A4	Average hourly fully loaded compensation		\$48	\$48	\$48
At	Inventory management time savings	$(A1+A2)*A3*A4$	\$11,160	\$11,484	\$11,808
	Risk adjustment	↓5%			
Atr	Inventory management time savings (risk-adjusted)		\$10,602	\$10,910	\$11,218

Source: Forrester Research, Inc.



OS-Level And Security Assessment Time Savings

In addition to inventory tracking and planning savings, the organization was able to save time on OS-level and security assessments. The organizations did these assessments manually prior to using INS, which could be very time-intensive. With INS, the organization receives quarterly reports with lists of devices and the ability to filter which devices had known code issues or OS conflicts. The INS reports significantly reduced the time spent on these assessments. The organization realized 70% time savings for OS assessments and 50% time savings on security assessments. This resulted in a total of 84 hours saved in Year 1, increasing up to 88 hours saved in Year 3.

Interviewed organizations provided a range of time savings, since this is dependent on the prior environment. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from assessment time savings over the three years was \$7,304. See the section on Risks for more detail.

TABLE 2
OS-Level And Security Assessment Time Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	Time savings on OS-level assessments (hours)		43	44	45
B2	Time savings on security assessments (hours)		41	42	43
B3	Productivity capture		75%	75%	75%
B4	Average hourly fully loaded compensation		\$48	\$48	\$48
Bt	OS-level and security assessment time savings	$(B1+B2)*B3*B4$	\$3,024	\$3,096	\$3,168
	Risk adjustment	↓5%			
Btr	OS-level and security assessment time savings (risk-adjusted)		\$2,873	\$2,941	\$3,010

Source: Forrester Research, Inc.



Reduction In Mean-Time-To-Repair

The composite organization saw immediate impact to its mean-time-to-repair with the use of INS. The first area of impact was to outages where devices were not covered by a support contract. Due to errors in manual tracking, some devices were not covered, and the organization would not realize this until the device went down. This significantly increased the overall resolution time and the total number of hours needed to resolve the issue. These types of outages would occur four times per year on average, and without support, they would take from three days to over a week to fix. With support, the issue can be resolved in less than a day. On average per outage, the organization is saving 7 hours of repair time. With INS, it is easy to verify that every device is covered, completely eliminating this problem.

Additionally, the organization saw a significant decrease in the number of support calls related to OS issues and a decrease in the time to resolve these issues. With INS, the organization is able to reduce OS complexity and ensure software and firmware are up to date, reducing the number of calls. Further, most issues can be resolved within hours by doing minor patching remotely. Prior to INS, it could take over a day to resolve issues, and the organization would have to schedule downtime on weekends to upgrade firmware and perform other support tasks. The result is that the organization saved approximately 12 hours per month related to OS support. It also saved \$9,000 on weekend overtime costs in Year 1, increasing up to \$9,500 in Year 3. Years 2 and 3 factor in increased time savings compared with prior process as the number of devices grows over time.

Interviewed organizations provided a range of time savings, since this is dependent on the prior environment. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from a reduction in mean-time-to-repair over the three years was \$36,423. See the section on Risks for more detail.

TABLE 3
Reduction In Mean-Time-To-Repair

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
C1	Number of outages per year where device did not have support		4	4	4
C2	Time savings to repair with support (total FTE hours)		7	7	7
C3	Total hours saved per year on outage resolution	C1*C2	28	28	28
C4	Time savings to resolve OS-level support issues (total FTE hours)		140	144	148
C5	Productivity capture		75%	75%	75%
C6	Reduction in weekend overtime costs for OS-level support		\$9,000	\$9,250	\$9,500
C7	Average hourly fully loaded compensation		\$48	\$48	\$48
Ct	Reduction in mean-time-to-repair	$((C3+C4)*C5*C7)+C6$	\$15,048	\$15,442	\$15,836
	Risk adjustment	↓5%			
Ctr	Reduction in mean-time-to-repair (risk-adjusted)		\$14,296	\$14,670	\$15,044

Source: Forrester Research, Inc.



Support Contract And Tool Cost Savings

The organization realized hard cost savings in two areas: 1) support contract savings and 2) elimination of prior tools. When the organization first started using INS, it noted that there were several redundant devices within its environment that were switched on but not being used. Due to errors in manual inventory tracking, the organization wasn't aware that these devices were there. Further, a significant portion of those devices were covered by support contracts. The organization was able to decommission 25 devices, cutting over \$30,000 per year in support costs that were not needed. Readers should also note that there could be additional cost savings for those 25 devices in overhead and maintenance, but those savings could not be estimated for this analysis.

In addition to removing redundant devices, the organization was able to eliminate use of small device/network management tools that were used in the prior environment. The total license cost savings from eliminating these tools was about \$10,000 per year.

Interviewed organizations provided a range of cost savings, since this is dependent on the prior environment. To compensate, this benefit was risk-adjusted and reduced by 10%. The risk-adjusted total benefit resulting from support and tool cost savings over the three years was \$92,324. See the section on Risks for more detail.

TABLE 4
Support Contract And Tool Cost Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
D1	Number of devices with support contracts that were decommissioned		25	25	25
D2	Average annual support cost per device		\$1,250	\$1,250	\$1,250
D3	Prior network/device tool license cost savings		\$10,000	\$10,000	\$10,000
Dt	Support contract and tool cost savings	$(D1 \times D2) + D3$	\$41,250	\$41,250	\$41,250
	Risk adjustment	↓10%			
Dtr	Support contract and tool cost savings (risk-adjusted)		\$37,125	\$37,125	\$37,125

Source: Forrester Research, Inc.



End User Productivity Improvement

One important outcome from the use of INS is the impact on the reliability of the network. Previously, when devices went down, the resulting outage could affect a small branch office. Within the branch office, an average of 10 end users would not have access to key applications, significantly hurting their productivity for an average of 20 hours. These types of incidents would happen four times per year. With INS, the organization is able to ensure proper support for all devices to reduce mean-time-to repair, accurately plan for end of life, and build redundancy for key network components. The result is that outages no longer completely shut down access to applications, enabling \$11,780 in productivity benefits.

Interviewed organizations provided a range of end user impacts, since this is dependent on the prior environment and presence of outages, the number of users affected, and the length of outages, among other factors. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from end user productivity over the three years was \$29,295. See the section on Risks for more detail.

TABLE 5
End User Productivity Improvement

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
E1	Number of outages		4	4	4
E2	Number of end users affected per outage		10	10	10
E3	Hours of downtime per outage		20	20	20
E4	Productivity capture		50%	50%	50%
E5	Average hourly fully loaded compensation		\$31	\$31	\$31
Et	End user productivity improvement	$E1 * E2 * E3 * E4 * E5$	\$12,400	\$12,400	\$12,400
	Risk adjustment	↓5%			
Etr	End user productivity improvement (risk-adjusted)		\$11,780	\$11,780	\$11,780

Source: Forrester Research, Inc.



Qualitative Benefits

While not experienced by the composite organization, an additional area of end user impact could be in revenue generation. One of the interviewed organizations was able to tie network reliability to the ability to deliver revenue-generating services. Prior to using INS, the organization incurred about 20 days per year in downtime. The organization improved its support coverage, resolved OS issues, and built additional redundancy with INS. This resulted in at least \$60,000 per year in additional revenue.

With INS, the organization is able to more quickly and accurately assess security vulnerabilities (see Table 2), and it is provided with recommendations and documentation that enable it to proactively resolve important vulnerabilities. Having an accurate security assessment and proactively managing top vulnerabilities reduce the security risk that the organization faces. This could be quantified by measuring loss of business due to prior security breaches or measuring time and cost savings associated with resolving security breaches, factoring in the frequency of vulnerabilities that could lead to this type of impact. Qualitatively, by proactively managing security risk, the organization achieves improved peace of mind by knowing the network is safer.

Total Benefits

Table 6 shows the total of all benefits across the five areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than \$192,000.

TABLE 6
Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Year 1	Year 2	Year 3	Total	Present Value
Atr	Inventory management time savings	\$10,602	\$10,910	\$11,218	\$32,729	\$27,082
Btr	OS-level and security assessment time savings	\$2,873	\$2,941	\$3,010	\$8,824	\$7,304
Ctr	Reduction in mean-time-to-repair	\$14,296	\$14,670	\$15,044	\$44,010	\$36,423
Dtr	Support contract and tool cost savings	\$37,125	\$37,125	\$37,125	\$111,375	\$92,324
Etr	End user productivity improvement	\$11,780	\$11,780	\$11,780	\$35,340	\$29,295
Total benefits (risk-adjusted)		\$76,675	\$77,426	\$78,176	\$232,278	\$192,428

Source: Forrester Research, Inc.

COSTS



Implementation And Management Of INS

The composite organization incurred several costs associated with the implementation and use of INS. INS is a zero-cost feature of IBM's Cisco Managed Maintenance Solution (MMS) offering. In order to access the tool, organizations must have at least one support contract in place. While the interviewed organizations had support contracts in place prior to using INS, this could present an additional cost to those organizations that do not.

Implementation of INS required 25 total hours for one employee to engage in pre-planning and planning meetings and assessments, receive approvals, install the tool, adjust firewall settings to allow data to flow to the portal, test the tool, and put it into production. In order to support INS, the organization also had to procure a VM. The total cost for the VM is estimated at \$8,500 per year. One of the interviewees also had to procure a physical server at a cost of \$5,000, though this was not included in the composite analysis.

Following implementation, the composite spent a total of 250 hours on initial rationalization and standardization of its environment. The organization obtained support for uncovered devices, decommissioned redundant devices, built redundancy for core devices to ensure greater reliability, updated software and firmware, and resolved key OS-level issues. While this time investment is not required with the use of INS, the organization felt strongly that by prioritizing these changes, it was able to accrue benefits faster and spend less time on changes each year. On an ongoing basis, the organization spends 20 hours per year reviewing the quarterly INS reports and making quick upgrades and modifications to protect against top vulnerabilities.

Time spent on implementation and issue resolution will be very dependent on the complexity of the organization's prior environment, the extent of issues or vulnerabilities, and the amount of support for proactive issue resolution. To compensate, this cost was risk-adjusted up by 10%. The risk-adjusted cost of implementation and management over the three years was \$39,968. See the section on Risks for more detail.

TABLE 7
Implementation And Management Of INS

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
F1	Total implementation hours		25			
F2	Total hours spent on issue resolution			250		
F3	Cost to provision one VM		\$700	\$8,500	\$8,500	\$8,500
F4	Total hours spent on ongoing INS report use			20	20	20
F5	Average hourly fully loaded compensation		\$48	\$48	\$48	\$48
Ft	Implementation and management of INS	$((F1+F2+F4)*F5)+F3$	\$1,900	\$21,460	\$9,460	\$9,460
	Risk adjustment	↑10%				
Ftr	Implementation and management of INS (risk-adjusted)		\$2,090	\$23,606	\$10,406	\$10,406

Source: Forrester Research, Inc.



Training Costs

The composite organization also incurred minimal training costs as part of the INS implementation. Shortly after the tool was implemented, two team members spent 1.5 days on an optional training session with IBM to learn how to use the INS reports. While this is an average across the interviewees, some interviewees chose to spend as little as 1 hour on training and instead opted to use the online resources provided by IBM. Organizations that are smaller than the composite may utilize less training time as well. For the composite, training resulted in an upfront resource cost of \$1,152 for time spent. Due to consistency across the study interviewees, there is no risk adjustment applied.

TABLE 8
Training Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Total training hours		24			
G2	Average hourly fully loaded compensation		\$48			
Gt	Training costs	$G1*G2$	\$1,152	\$0	\$0	\$0

Source: Forrester Research, Inc.

Total Costs

Table 9 shows the total of all costs as well as associated present values, discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of a little more than \$41,000.

TABLE 9
Total Costs (Risk-Adjusted)

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Ftr	Implementation and management of INS	\$2,090	\$23,606	\$10,406	\$10,406	\$46,508	\$39,968
Gtr	Training costs	\$1,152	\$0	\$0	\$0	\$1,152	\$1,152
Total costs (risk-adjusted)		\$3,242	\$23,606	\$10,406	\$10,406	\$47,660	\$41,120

Source: Forrester Research, Inc.

FLEXIBILITY

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the “right” or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement INS and later realize additional uses and business opportunities, including using INS reports to justify additional inventory upgrades, OS standardization, or security projects that could lead to further improvements to the environment. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix B).

RISKS

Forrester defines two types of risk associated with this analysis: “implementation risk” and “impact risk.” Implementation risk is the risk that a proposed investment in INS may deviate from the original or expected requirements, resulting in higher costs than anticipated. Impact risk refers to the risk that the business or technology needs of the organization may not be met by the investment in INS, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

TABLE 10
Benefit And Cost Risk Adjustments

Benefits	Adjustment
Inventory management time savings	↓ 5%
OS level and security assessment time savings	↓ 5%
Reduction in mean-time-to-repair	↓ 5%
Support contract and tool cost savings	↓ 10%
End user productivity improvement	↓ 5%
Costs	Adjustment
Implementation and management of INS	↑ 10%

Source: Forrester Research, Inc.

Quantitatively capturing implementation risk and impact risk by directly adjusting the financial estimates results provides more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as “realistic” expectations since they represent the expected values considering risk.

The following impact risks that affect benefits are identified as part of the analysis:

- › Many benefits are dependent on the prior environment and the ability to effect change in management processes and vulnerability reduction. The complexity of that prior environment, the number of devices that need to be monitored, the number of people involved in affected processes, and the number of end users affected by outage events can all have an impact on the ability to realize benefits.
- › The composite’s decision to devote 250 hours to upfront improvements based on INS report recommendations is a very important factor in the ability to recognize benefits quickly and at the magnitude reported. Additionally, the use of INS on an ongoing basis to continuously understand and manage vulnerabilities ensures that benefits continue over time.

The following implementation risk that affects costs is identified as part of this analysis:

- › Time spent on implementation and issue resolution will be very dependent on the complexity of the organization’s prior environment, the extent of issues or vulnerabilities, and the amount of support for proactive issue resolution.

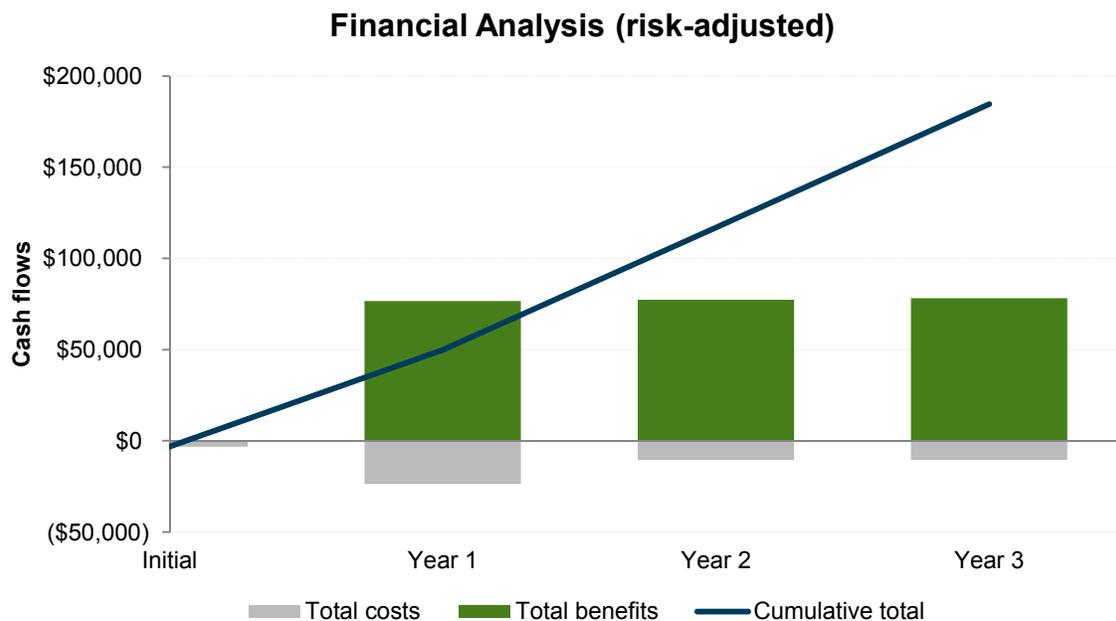
Table 10 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the composite organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment in INS.

Table 11 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 10 in the Risks section to the unadjusted results in each relevant cost and benefit section.

FIGURE 3
Cash Flow Chart (Risk-Adjusted)



Source: Forrester Research, Inc.

TABLE 11
Cash Flow (Risk-Adjusted)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Costs	(\$3,242)	(\$23,606)	(\$10,406)	(\$10,406)	(\$47,660)	(\$41,120)
Benefits	\$0	\$76,675	\$77,426	\$78,176	\$232,278	\$192,428
Net benefits	(\$3,242)	\$53,069	\$67,020	\$67,770	\$184,618	\$151,308
ROI						368%
Payback period						0.7 months

Source: Forrester Research, Inc.

IBM Intelligent Networking Support (INS): Overview

The following information is provided by IBM. Forrester has not validated any claims and does not endorse IBM or its offerings.

IBM INS discovers, collects, and analyzes your Cisco network to provide you with an action plan for:

- › Increased network stability.
- › Strengthened network security.
- › Inventory management.
- › Current and future planning.

FIGURE 4
INS Screenshots



Source: IBM

Appendix A: Composite Organization Description

For this TEI study, Forrester has created a composite organization to illustrate the quantifiable benefits and costs of implementing INS. The composite company is intended to represent an organization with 1,800 employees and is based on characteristics of the interviewed customers. The composite has 450 Cisco devices in Year 1 and 477 devices by Year 3.

The composite company has mostly manual processes for inventory management along with the use of a few small device and network management tools. The organization struggled to keep up with frequent changes in its inventory, resulting in inaccuracies and process inefficiencies. This led to numerous problems, including lengthy outages, frequent support calls, and a support and planning model that was focused on putting out fires instead of prevention.

In using INS, the composite company had the following objectives:

- › Gain complete inventory visibility. Know which devices were in the environment, where they were, when they would reach end of life, and whether they were properly covered. Rationalize and simplify the environment and build redundancies where they are lacking.
- › Address key security and OS vulnerabilities, and simplify OS-level complexity. Continue to monitor and address vulnerabilities as they arise.
- › Achieve operational efficiencies, and devote time saved back to further improvements to the environment to better support the business.

For the purpose of the analysis, Forrester assumes that the composite organization understands the important role of the network in providing services to support the business and customers, and that the organization is willing to devote time upfront to make improvements that prevent problems from occurring. Further, we assume the organization is receiving quarterly INS reports and spends time each quarter on reviewing inventory lists, updating software and firmware, and using reports as part of inventory planning processes.

FRAMEWORK ASSUMPTIONS

Table 12 provides the model assumptions that Forrester used in this analysis.

The discount rate used in the PV and NPV calculations is 10%, and the time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

TABLE 12
Model Assumptions

Ref.	Metric	Calculation	Value
X1	Hours per week		40
X2	Weeks per year		52
X3	Hours per year (M-F, 9-5)		2,080
X4	Hours per year (24x7)		8,736
X5	Average IT salary		\$100,000
X6	Hourly IT salary	(X5/X3)	\$48
X7	Average end user salary		\$65,000
X8	Hourly end user salary	(X7/X3)	\$31

Source: Forrester Research, Inc.

Appendix B: Total Economic Impact™ Overview

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders. TEI assists technology vendors in winning, serving, and retaining customers.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, flexibility, and risks.

BENEFITS

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often, product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

COSTS

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the form of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

FLEXIBILITY

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point. However, having the ability to capture that benefit has a PV that can be estimated. The flexibility component of TEI captures that value.

RISKS

Risks measure the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections and 2) the likelihood that the estimates will be measured and tracked over time. TEI risk factors are based on a probability density function known as "triangular distribution" to the values entered. At a minimum, three values are calculated to estimate the risk factor around each cost and benefit.

Appendix C: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Companies set their own discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organizations to determine the most appropriate discount rate to use in their own environment.

Net present value (NPV): The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

Payback period: The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A NOTE ON CASH FLOW TABLES

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in years 1 through 3 are discounted using the discount rate (shown in the Framework Assumptions section) at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations are not calculated until the summary tables are the sum of the initial investment and the discounted cash flows in each year.

Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

TABLE [EXAMPLE]
Example Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3

Source: Forrester Research, Inc.