The Total Economic Impact™ Of IBM Netcool® Operations Insight (NOI)

Cost Savings And Business Benefits Enabled By Netcool® Operations Insight

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ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

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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 deploying Netcool® Operations Insight (NOI). The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of NOI on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed and surveyed several customers with years of experience using NOI. IBM NOI enables IT and network operations teams to increase their efficiency by providing both a consolidated view across environments and cognitive analytics capabilities to identify, isolate, and resolve problems quickly.

Prior to using NOI, most of these customers were using a competitive manager-of-managers tool to manage risk and ensure the availability of key business services. These tools provided some help in consolidating events, but operators still struggled with event noise, lack of automation for basic tasks, poor event enrichment, and few integrations with other systems. This created a lot of manual work for operators who were struggling to keep up with growing complexity and a rapidly increasing number of events. With a limited budget to expand the operations team, these organizations needed to find a more efficient and effective way of handling events that could reduce the risk of service impacting incidents.

With NOI, customers can create a single view into the health of systems, using integrations to bring all of their infrastructure and application environment into one consolidated dashboard. Event filters, deduplication, correlation, and event grouping reduce the number of actionable events presented to operators to facilitate quick problem detection. Event history, event enrichment, and integration with service desk systems allow for faster problem diagnosis and escalation to subject matter experts (SMEs). Instead of focusing on basic tasks that can be automated, operators can discover new insights with a consolidated view, analytics capabilities, and additional tools, like Predictive Insights, to identify problems before they impact services. NOI enables operations teams and SMEs to manage events and incidents cost-effectively and to improve availability for key business services.

Key Findings

Quantified benefits. The interviewed and surveyed organizations experienced the following quantified benefits:

› **Operations staff save time with NOI by handling 30% fewer events 3 minutes faster compared to previous competitive solutions.** Key NOI features like deduplication, event grouping, and event enrichment through integrations help to streamline and organize the events presented to operations staff. Staff in the NOC no longer spend time on duplicate events and save time isolating and diagnosing events.

› **Automation within NOI saves 10 minutes per ticket, organizations have fewer events become incidents, and up to five outages are avoided per year compared to previous competitive deployments.** Event enrichment and integrations with ticketing systems reduce the amount of time spent on opening and routing tickets. More effective event management and the use of Predictive Insights result in a 13% reduction in the number of events that become incidents, allowing for

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ROI
126%

Benefits PV
$4.4 million

NPV
$2.45 million

Payback
11 months

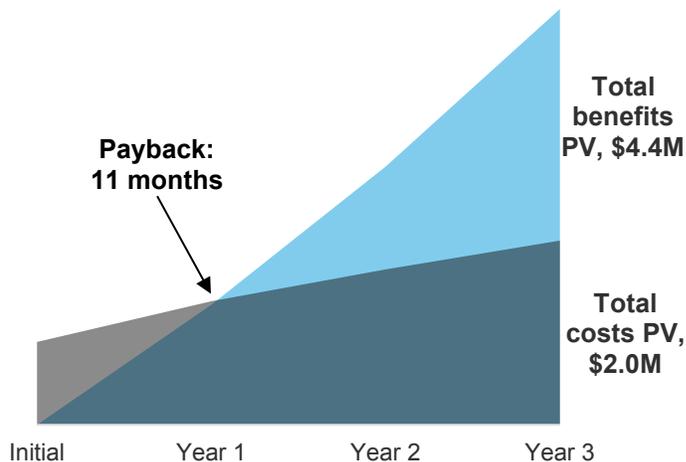more cost-effective event resolution, and prevent up to five outages per year.

› **Organizations can retire previous event manager-of-manager tools, eliminating associated license costs, and save time on administration.** While previous tools perform similar functions as NOI, organizations can achieve a higher level of automation, integration, and event organization with NOI. To achieve similar benefits as experienced with NOI, the organizations would have needed twice as much administration time, on average.

Costs. The interviewed and surveyed organizations experienced the following risk-adjusted costs:

› **License costs for NOI and add-on products.** Organizations pay a license cost that's based on the number of managed devices in their environment and added costs for products such as Predictive Insights.

› **Implementation and deployment efforts.** Internal staff spent time over a six-month implementation period, partnering with IBM services to deploy NOI. During this time, administrators and operations staff also participated in training. Following the initial implementation, a second smaller deployment effort was completed to build out additional NOI functionality and deploy Predictive Insights.

› **Administrators manage NOI on an ongoing basis.** On average, interviewees require two full-time equivalents (FTEs) to manage NOI.

Forrester's analysis of three existing customers and survey of 32 customers found that a representative organization, making conservative assumptions on benefit impacts and pricing, experienced benefits of $4.4 million over three years versus costs of $1.95 million, adding up to a net present value (NPV) of $2.45 million and an ROI of 126%.

Financial Summary
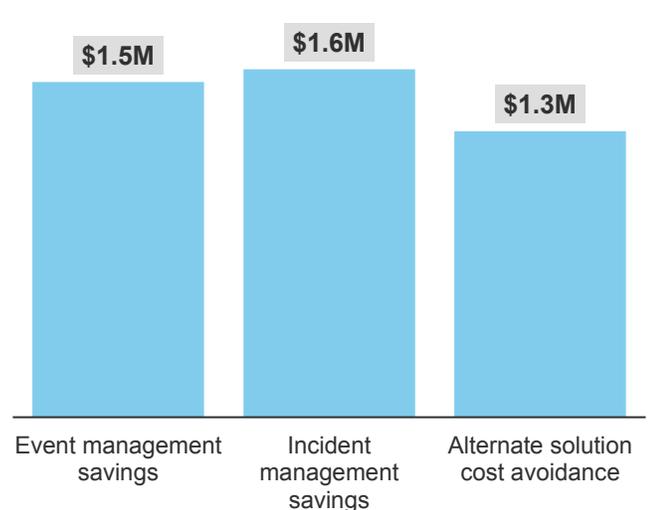
Payback:
11 months

Total benefits PV, $4.4M

Total costs PV, $2.0M

Initial   Year 1   Year 2   Year 3

Benefits (Three-Year)

$1.5M $1.6M

$1.3M

Event management savings | Incident management savings | Alternate solution cost avoidance

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TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing IBM Netcool Operations Insight.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that IBM Netcool Operations Insight can have on an organization:

The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

DUE DILIGENCE
Interviewed IBM stakeholders and Forrester analysts to gather data relative to Netcool Operations Insight.

CUSTOMER INTERVIEWS AND SURVEY
Interviewed three organizations and surveyed 32 organizations using Netcool Operations Insight to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION
Designed a composite organization based on characteristics of the interviewed and surveyed organizations.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews and survey using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed and surveyed organizations.

CASE STUDY
Employed four fundamental elements of TEI in modeling IBM Netcool Operations Insight'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 A for additional information on the TEI methodology.

DISCLOSURES

Readers should be aware of the following:

This 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 IBM Netcool Operations Insight.

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.

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The NOI Customer Journey
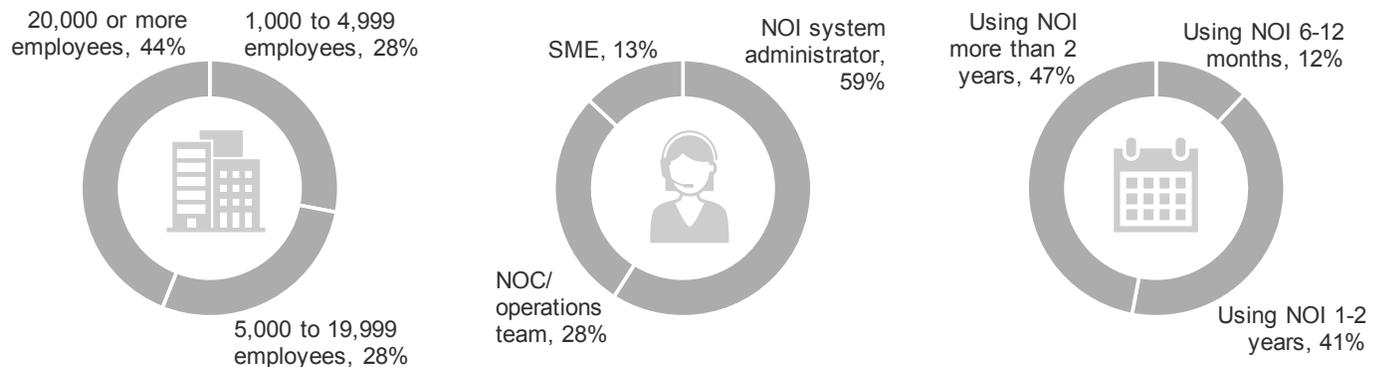
BEFORE AND AFTER THE NOI INVESTMENT

Interviewed Organizations

For this study, Forrester conducted three interviews with IBM NOI customers. Interviewed customers include the following:

INDUSTRY	REGION	INTERVIEWEE	NOI DEPLOYMENT
Government	Netherlands	Product manager, IT architect, system engineer	Using NOI for over two years, 16,500 managed devices
Wholesale	United States	Two systems administrators	Using NOI for two years, 2,300 managed devices
Telecommunications	United States	Manager of network surveillance	Using NOI for over two years, 13,000+ managed devices

Surveyed Organizations

For this study, Forrester conduct a survey of 32 organizations in the United States with over 1,000 employees:

20,000 or more employees, 44%

1,000 to 4,999 employees, 28%

5,000 to 19,999 employees, 28%

SME, 13%

NOI system administrator, 59%

NOC/ operations team, 28%

Using NOI more than 2 years, 47%

Using NOI 6-12 months, 12%

Using NOI 1-2 years, 41%

Key Challenges

The interviewed and surveyed customers mentioned several key challenges prior to the NOI investment, including:

› **Previous event management processes were reactive and inefficient, and a growing number of events meant critical alerts could get lost in the noise.** The increasing complexity and size of the data center and application environments put additional pressure on event management processes. With previous competitive tools, operators had to invest time sifting through noise, manually enriching events with data from other systems, and figuring out which SMEs to route tickets to. These manual steps were inefficient and could result in critical information or correlations being missed.

› **Event management challenges resulted in service impacting incidents.** With event noise and longer times to isolate and diagnose problems, the probability of service degradation or an outage became higher. One interviewee said, "We wanted to be more aware of when services are down, whether it's application or infrastructure services, and troubleshooting in the old method was tough."

"What event management tool(s) were you using before NOI?"

16% NOI is our first event mgmt. tool

84% Competitor(s) tool

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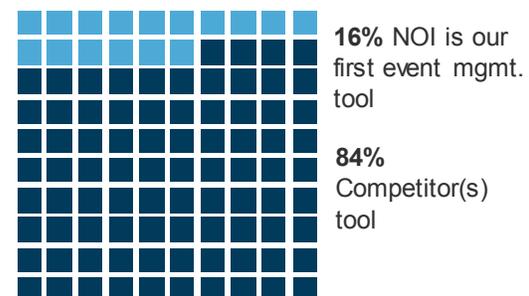
› **Prior event management tools did not effectively resolve these growing challenges while also being harder to administer.** Interviewed organizations made investments in other manager-of-manager tools prior to the NOI investment to move away from siloed, vendor-specific tools. These competitive manager-of-manager tools operated in a similar way to NOI, but had limitations in the ability to integrate with other tools. This reduced the ability to consolidate and connect all of the tools in the data center to a single console and limited how events could be enriched, resulting in longer mean-time-to-repair (MTTR). Administrators would have to invest more time to try to create these automations with scripting or more complex programming.

"What organizational goals did you have for your investment in NOI?"
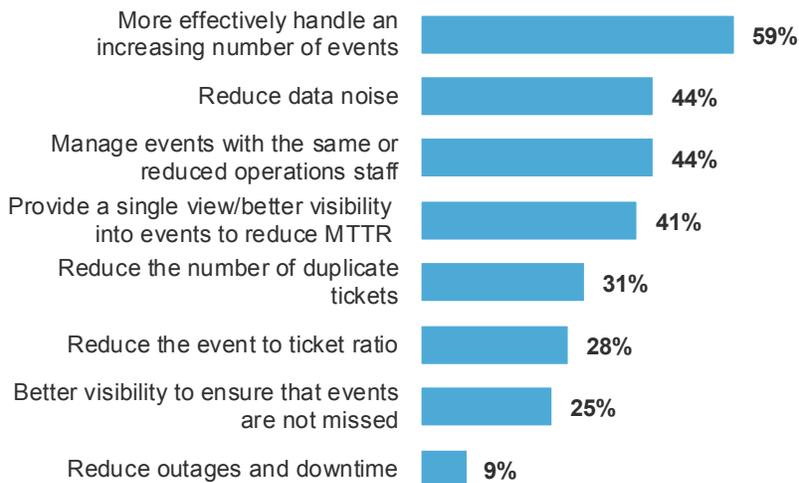
Goal	
More effectively handle an increasing number of events	59%
Reduce data noise	44%
Manage events with the same or reduced operations staff	44%
Provide a single view/better visibility into events to reduce MTTR	41%
Reduce the number of duplicate tickets	31%
Reduce the event to ticket ratio	28%
Better visibility to ensure that events are not missed	25%
Reduce outages and downtime	9%

Base: 32 event management decision makers in the United States

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2017

Key Results

The interviews revealed key results from the NOI investment including:

› **Improved visibility and insight into the health of infrastructure from one console.** Compared to previous competitive tools, NOI can monitor more of the organizations' environments due to ease of integration with other systems. Additionally, all information is presented on one dashboard, instead of on multiple separate dashboards as with previous tools. Improved ability to consolidate information and present it in an easily understood manner surfaces additional insights about the health of the environment that the organizations didn't have previously.

› **More efficient event analysis reduces mean-time-to-repair.** The functionality within NOI, including event history, analytics, and integrations, helps operators know where to look to resolve an event. Additionally, fewer events are presented to operators as events are grouped and deduplicated, minimizing the chance of duplicate workstreams or missing critical events. One interviewee said: "Operators want to know what's behind the event. They say, 'I notice that this event — I saw it once or twice before. Can I make sure that it

"One prior tool, we were very limited in the number of information fields in the alert database. So as our company was growing and we were adding more and more devices to monitor, it just would not scale. We needed to be able to enrich alarms when they came in so our operators could make a quicker and more informed decision about what to do next. One of our tools, you could do that to a small degree, but it required a lot of complex scripting and programming. The other tool, it was a swivel chair solution. We would have to use both together to be able to provide the functionality that we can get with NOI."

Manager of network surveillance, telecommunications

"If you look at the event grouping, you can prevent a lot of events storms. Also, correlation is very nice because, once you understand which events are correlated, you cannot avoid it. And instead of looking at 10 different things, you just get one event and you know what to do. That's great."
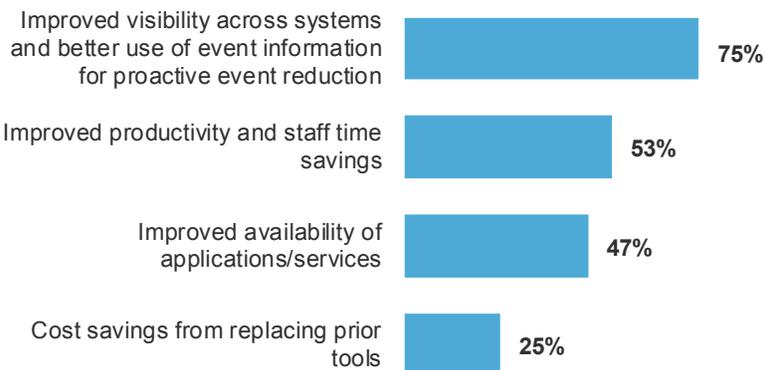
Product manager, government

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won't happen again? How can I automate that?' These questions are asked more and more. I think that's a very good power of Netcool.'"

> **Improved incident prevention and reduced downtime.** Reducing service disruptions is a key outcome for many organizations. The analytics capability and consolidated dashboards provided through NOI surface insights that operators can use to proactively prevent incidents. Several interviewees also use Predictive Insights to increase the probability of being alerted before any impact to service can occur. Many interviewees and survey respondents noted significant reductions in the number of outages that occur each year after the NOI investment.

> **Ease of administration improves the adoption of key NOI functionality.** Administrators can more easily integrate new systems into NOI, create new rules or policies to automate actions or filter events, and update NOI to the most recent release. This ease of use increases the effectiveness of NOI in delivering the benefits above.

> "In the industry that I'm in and our geographic location, we are susceptible to hurricanes and tornadoes, which cause widespread power outages. Based on the alarming that we have, the surveillance we have set up with NOI, and the enrichments that we have with NOI, we are able to manage power outages to a degree like never before. We can maintain power service to our customers, and that's all due to NOI."

> *Manager of network surveillance, telecommunications*

"Please indicate which benefits your organization has experienced due to the investment in NOI, compared to your prior environment:"

Benefit	Percentage
Improved visibility across systems and better use of event information for proactive event reduction	75%
Improved productivity and staff time savings	53%
Improved availability of applications/services	47%
Cost savings from replacing prior tools	25%

Base: 32 event management decision makers in the United States

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2017

Composite Organization

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 is representative of the three companies that Forrester interviewed and 32 companies surveyed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. The composite organization is a very large, global organization with a 16-person NOC. The composite was using a competitive event manager-of-managers tool prior to NOI to help its operators more effectively handle a growing volume of events, but the organization still suffered from duplicate events and noise, difficulty integrating other tools, and difficulty enriching events.

Deployment characteristics. The composite deployed NOI to 10,000 managed devices across its data center environment, covering 80% of

✓

Key assumptions

10,000 managed devices

80% of the datacenter managed by NOI

Three connections

Using Predictive Insights

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the components supporting the organization's services and applications, including 42% of its mission-critical applications, by Year 3. The organization intends to expand use of NOI to 100% of mission-critical applications. With NOI, the organization presented 975 events to its NOC per day, on average, in Year 1, and up to almost 1,200 events per day by Year 3. The organization has deployed three connections to ticketing and event enrichment systems. The organization started using Predictive Insights during Year 1, helping the organization avoid additional outages.

Financial Analysis

QUANTIFIED BENEFIT AND COST DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Event management savings	$456,917	$604,469	$809,922	$1,871,308	$1,523,447
Btr	Incident management savings	$420,993	$641,671	$890,915	$1,953,579	$1,582,385
Ctr	Alternate solution cost avoidance	$522,500	$522,500	$522,500	$1,567,500	$1,299,380
	Total benefits (risk-adjusted)	$1,400,410	$1,768,640	$2,223,337	$5,392,387	$4,405,212

Event Management Savings

Interviewed and surveyed customers experienced the following benefits related to event management:

› Organizations can eliminate duplicate events and reduce the number of actionable events presented to operators with event correlation and event grouping. With prior tools, some organizations could have multiple operators working on the same problem but via different events, or duplicate events could lead to duplicate tickets. Event noise made it hard for operators to detect and isolate problems.

› NOI functionality like event or log search, real-time and historical event history, and event grouping provides the context operators need to accelerate problem identification and diagnosis. Operators find it much easier to highlight where actual events are occurring.

› Integrations with other systems provide improved event enrichment, which reduces the "swivel chair" challenges previously faced by operators as they worked with multiple tools to diagnose a problem.

› Operators work with administrators to figure out new ways to add automation to speed event resolution or further streamline the number of events presented to operators.

For the composite analysis, Forrester assumes that:

› The composite organization reduces the number of events presented to operators by 30% by Year 3, compared to its prior competitive deployment, due to the increasing use of analytics functionality and the increasing number of devices managed by NOI.

› In Year 1 the organization presents 975 events to operators per day, up to almost 1,200 per day on average in Year 3.

› In Year 1, the NOC resolves 85% events. By Year 3, the NOC solves 87% of events, increasing the rate of first contact resolution to reduce the burden on SMEs (see next benefit for calculation details).

› With NOI, operators can resolve events on average 3 minutes faster than with prior competitive tools, due to NOI's event enrichment, correlation, and grouping. Operators can isolate problems faster with all relevant data and context in one system.

The table above shows the total of all benefits across the areas listed below, 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 $4.4 million.

Additional 30% reduction in the number of events presented to operators compared to prior competitive tools

$1.5 million
three-year benefit PV
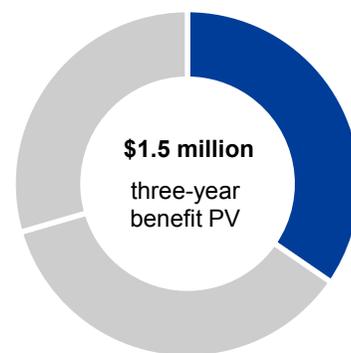
Event management savings: 35% of total benefits

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- Operators avoid spending time addressing duplicate events. On average, operators save 5 minutes per event avoided, though this is considered a conservative estimate.

Risks that could affect the realization of this benefit include:

- Interviewed organizations achieved differing rates of event reduction with NOI, dependent on the extent to which these organizations leveraged analytics capabilities.

- Time avoided due to event reduction may be higher due to the frequency of event storms or similar more time-consuming incidents.

- Time saved per event due to faster problem isolation and diagnosis will depend on the extent of integrations to boost event enrichment and the use of event analytics.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of $1.5 million.

> Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Event Management Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of presented events, pre-NOI		395,417	489,328	615,155
A2	Reduction in number of events presented to the NOC due to NOI		10%	20%	30%
A3	Number of presented events, with NOI	A1*(1-A2)	355,875	391,463	430,609
A4	Percent of presented events resolved in the NOC, pre-NOI		85%	86%	87%
A5	Total events resolved in the NOC, with NOI	A3*A4	302,494	336,658	374,630
A6	Time saved per event due to NOI, hours	3 min/event	0.05	0.05	0.05
A7	Total events avoided by the NOC	(A1*A4)-A5	33,610	84,164	160,556
A8	Time avoided addressing duplicate events, hours per event	5 min/event	0.08	0.08	0.08
A9	Average hourly fully loaded wage, NOC		$27	$27	$27
At	Event management savings	((A5*A6)+(A7*A8))*A9	$480,965	$636,283	$852,550
	Risk adjustment	↓5%			
Atr	Event management savings (risk-adjusted)		$456,917	$604,469	$809,922

Incident Management Savings

Interviewed and surveyed customers experienced the following benefits related to incident management:

- When events are promoted to incidents, organizations use NOI to streamline the first few steps of incident resolution. Some organizations use automation and integrations with service desk systems to speed the time it takes to create a ticket. Organizations also note that by being able to isolate the problem faster, operators can much more quickly identify the correct SME to resolve the issue.

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Some organizations automatically create tickets from certain events or automatically assign tickets to a team.

› Organizations also note that, in the past, more events were directly promoted to incidents. With NOI, they have more automated handling and better event diagnosis, reducing the number of events that are promoted to incidents. Increases in first contact resolution lessen the burden on SMEs.

› Several interviewees note that the analytics insights provided through NOI are allowing operators to be more proactive about preventing incidents. In addition, several interviewees also use Predictive Insights to amplify proactive operations and further reduce the risk of outages. Predictive Insights learn application and infrastructure behavior over time and alert operators before potential issues impact services.

For the composite analysis, Forrester assumes that:

› In Year 1, 15% of events become incidents, going down to 13% by Year 3.

› Operators save 10 minutes per ticket due to automation and integration with their ticketing or incident management system. Operators are also more easily able to route tickets to the correct SMEs.

› In Years 2 and 3, fewer events are becoming incidents as more events are resolved in the NOC. In Year 3, almost 9,000 potential incidents are resolved in the NOC instead of by SMEs, resulting in more cost-effective remediation.

› In Year 1, the organization deploys Predictive Insights. As the organization grows its Predictive Insights deployment, it is able to use Predictive Insights, in conjunction with base NOI functionality, to avoid service impacting outages. In Year 1, three outages are prevented, and in Year 3, five outages are prevented. Forrester assumes 33% of the ability to avoid these outages is due to the NOI investment directly. Each outage lasts on average 1.5 hours, and each hour of downtime costs the business $150,000 on average.

Risks that could affect the realization of this benefit include:

› Time savings in creating and routing tickets is dependent on the use of integrations and automation to reduce the amount of time spent by operators on this task.

› It can be difficult to attribute the prevention of outages to specific technology investments. Forrester assumes that some of this outage reduction was due to improved skills, processes, and other tool investments.

› The average cost per hour of downtime can vary significantly from organization to organization.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $1.6 million.

Up to $370,000 of additional downtime avoided per year due to NOI, compared to prior tools

"The people in our NOC are not only working on a reactive mode, reacting to events, but they are also analyzing events to prevent incidents in the future and to prevent problems in the future, so improving the use of analytics is a main goal for us."

Product manager, government

$1.6 million

three-year benefit PV
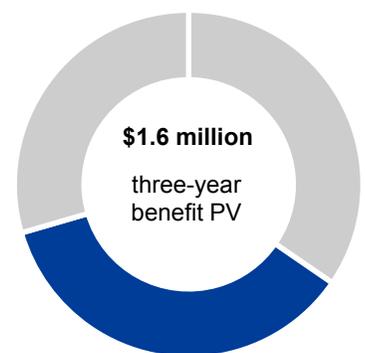
Incident management savings: **36%** of total benefits

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Incident Management Savings: Calculation Table

| REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of incidents, with NOI	A3*(1-A4)	53,381	54,805	55,979
B2	Automation time savings per incident, hours	10 min/ticket	0.17	0.17	0.17
B3	Number of incremental incidents resolved in the NOC	A3*(A4-0.85)	0	3,915	8,612
B4	Average time to resolve an incident, hours		2	2	2
B5	Average hourly fully loaded compensation, NOC		$27	$27	$27
B6	Average hourly fully loaded compensation, SME		$48	$48	$48
B7	Outages avoided after NOI investment		3	4	5
B8	Percent of outage avoidance attributable to NOI		33%	33%	33%
B9	Average hours of downtime per outage		1.5	1.5	1.5
B10	Average cost per hour of downtime		$150,000	$150,000	$150,000
Bt	Incident management savings	(B1*B2*B5)+(B3*B4*(B6-B5))+(B7*B8*B9*B10)	$467,770	$712,968	$989,906
	Risk adjustment	↓10%			
Btr	Incident management savings (risk-adjusted)		$420,993	$641,671	$890,915

Alternate Solution Cost Avoidance

Interviewed and surveyed customers experienced the following benefits related to replacing prior manager of manager tools:

› Organizations using a manager-of-manager tool prior to NOI completely replaced that previous tool as part of their investment.

› Organizations found it easier to connect new technology domains to NOI than with the previous tools, which could sometimes require building customized scripts.

› Organizations also found it easier to define rules, filters, and event suppression with NOI versus their previous tools.

For the composite analysis, Forrester assumes that:

› The prior event management solution cost $450,000 over three years for a similar deployment size as the NOI investment.

› To achieve the same level of automation and integration that drives the benefits of the NOI investment, the composite organization would have needed twice the number of FTEs to manage its previous tool.

› Forrester includes the entire cost avoidance of the previous solution as a benefit. This offsets the NOI license cost and two FTEs needed to manage NOI on the cost side of the financial model (detailed in the cost categories below).

$1.3 million

three-year benefit PV
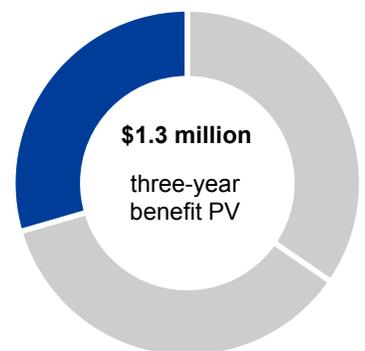
Alternate solution cost avoidance: **29%** of total benefits

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Risks that could affect the realization of this benefit include:

› Prior solution license and hardware costs can be variable dependent on the prior event management tool.

› Interviewed and surveyed organizations discussed a wide range of administration FTE savings, dependent on the limitations of the prior tool compared to NOI functionality.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of $1.3 million.

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
Alternate Solution Cost Avoidance: Calculation Table					
C1	Cost savings from retiring prior solution		$150,000	$150,000	$150,000
C2	Number of admin FTEs needed to manage prior solution		4	4	4
C3	Average annual fully loaded compensation, admin		$100,000	$100,000	$100,000
Ct	Alternate solution cost avoidance	C1+(C2*C3)	$550,000	$550,000	$550,000
	Risk adjustment	↓5%			
Ctr	Alternate solution cost avoidance (risk-adjusted)		$522,500	$522,500	$522,500

Unquantified Benefits

Interviewed and surveyed organizations realized additional benefits due to NOI that were not able to be quantified for this study, including:

› **Reduction in duplicate tickets.** Some organizations reduced the number of duplicate tickets, saving SME time spent on addressing multiple tickets for the same event.

› **Ability to fully automate remediation of an event with NOI.** Some interviewees fully automated the remediation of an event in specific cases. This would often function as a temporary fix while the underlying problem was being resolved, but typically only impacted a very small percent of total events.

Flexibility

The value of flexibility is unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement NOI and later realize additional uses and business opportunities, including:

› **Greater use of analytics.** Several organizations expressed a goal of increasing the use of analytics functionality to further streamline event management and gain additional insights to boost proactivity.

› **Expanding the use of NOI to more of the environment.** Many organizations were still deploying NOI to additional parts of their data center or application environment.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

> Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a 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.

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Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Dtr	NOI license, implementation, and deployment costs	$876,964	$255,706	$187,000	$187,000	$1,506,670	$1,404,465
Etr	Ongoing management of NOI	$0	$220,000	$220,000	$220,000	$660,000	$547,107
	Total costs (risk-adjusted)	$876,964	$475,706	$407,000	$407,000	$2,166,670	$1,951,573

NOI License, Implementation, And Deployment Costs

For the composite analysis license cost, Forrester assumes that:

› The organization licenses 10,000 managed devices over the three-year contract as well as three connections.

› The organization also incurs license costs for Predictive Insights starting in Year 1.

› The organization has an on-premises deployment.

Risks that could affect the magnitude of this cost include:

› Software license costs are variable depending on volume, the mix of network and server devices, and other discounts as well as other products licensed with the vendor.

› NOI costs will be dependent on the scope of deployment, including number of managed devices, number of connections to other systems, and the extent to which any add-on products, like Predictive Insights, are used.

For the composite analysis implementation and deployment costs, Forrester assumes that:

› The initial implementation spans six months. The composite uses internal staff and IBM services. Four employees spend on average 50% of their time on this effort. The goal of this initial deployment was to completely migrate from the previous event management tool and establish the same level of functionality with NOI.

› At the end of the implementation and deployment period, administrators and operations staff spent 2 hours on training.

› The organization requires eight virtual machines to support its deployment, which results in a $20,000 cost per year.

› While two administrator FTEs manage the NOI environment and additional small deployments on an ongoing basis, the organization underwent a second deployment cycle during Year 1.

› The second deployment period was also six months long, but required less internal effort and IBM services. Two internal employees spent 25% of their time over the six months on the deployment. The second deployment expanded the functionality of NOI and deployed Predictive Insights for a small subset of its environment.

Risks that could affect the magnitude of this cost include:

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of more than $1.95 million.

$1.4 million

three-year cost PV
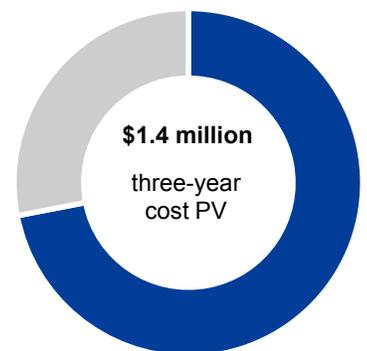
License, implementation, and deployment costs: **72%** of total costs

Six months
Initial implementation and deployment time

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- › Interviewed organizations differed in their approach to implementation and deployment, with some leaning more heavily on professional services while others completed the entire effort internally.

- › The amount of time and cost associated with the implementation and deployment will depend on several factors, including the scope of deployment, the difficulty of migration from the previous tool, internal skill, and unexpected challenges or bugs.

To account for these risks, Forrester adjusted license, implementation, and deployment costs upward by 10%, yielding a three-year risk-adjusted total PV of $1.4 million.

Ongoing Management Of NOI

For the composite analysis, Forrester assumes that:

- › A total of two FTEs are needed to administer NOI on an ongoing basis.

- › This FTE time is spent on patching and ongoing development and deployment of NOI functionality to more devices. It is also spent on building automations, adding new integrations, creating new rules or filters, and creating custom dashboards. Several interviewees described this as 50% of time spent on technical support and 50% of time spent on functional requests.

- › While the NOC will spend more time using NOI than its prior event management tool, this is due to better integrations between NOI and other systems. Forrester assumes that any incremental time spent by the NOC using NOI compared to its previous event management tool is offset by time eliminated using those now integrated systems.

Risks that could affect the magnitude of this cost include:

- › Organizations that have more complex implementations may spend more time than average on technical support, particularly on product updates, and those prioritizing expanding NOI functionality may spend more time on functional requests.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of $547,000.

> Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

Two FTEs spend their time on ongoing management of NOI.

Ongoing Management Of NOI: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Number of admin FTEs managing NOI			2	2	2
E2	Average annual fully loaded compensation, admin			$100,000	$100,000	$100,000
Et	Ongoing management of NOI	E1*E2	$0	$200,000	$200,000	$200,000
	Risk adjustment	↑10%				
Etr	Ongoing management of NOI (risk-adjusted)		$0	$220,000	$220,000	$220,000

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Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)
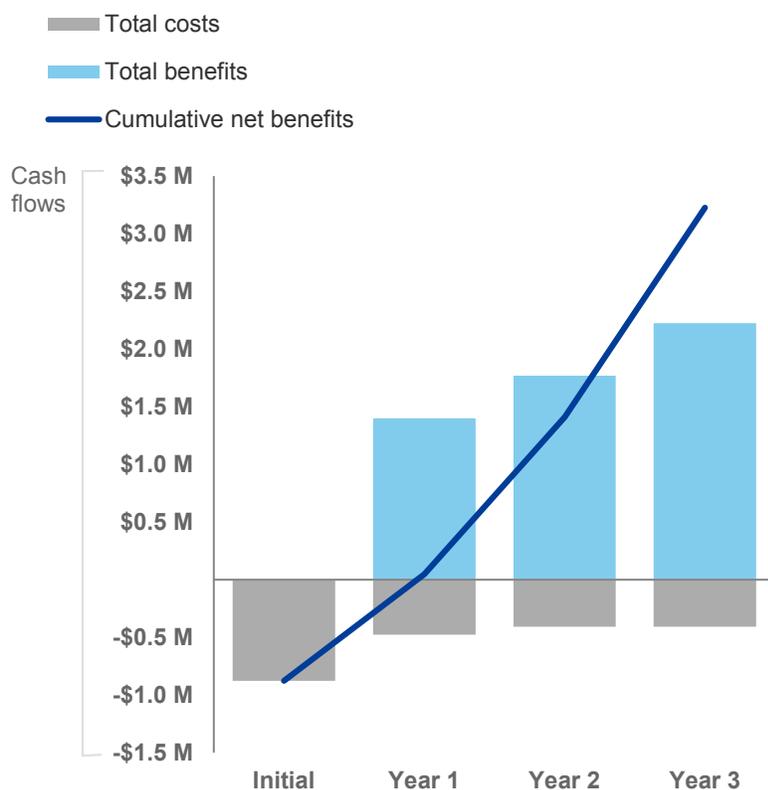
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

- Total costs
- Total benefits
- Cumulative net benefits

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	($876,964)	($475,706)	($407,000)	($407,000)	($2,166,670)	($1,951,573)
Total benefits	$0	$1,400,410	$1,768,640	$2,223,337	$5,392,387	$4,405,212
Net benefits	($876,964)	$924,704	$1,361,640	$1,816,337	$3,225,717	$2,453,640
ROI						126%
Payback period						11 months

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IBM Netcool Operations Insight: Overview

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

IBM Netcool Operations Insight is an analytics-driven operations center providing cross domain, correlation, and enrichment and consolidation of millions of alerts/alarms and operational data into a single operational view. IBM Netcool Operations Insight empowers operations teams through real-time and historical analytics that can help identify, isolate, and resolve problems before they affect business operations.

Powered by IBM Tivoli Netcool/OMNIbus and the transformative capabilities of cognitive analytics, Netcool Operations Insight can help boost operational effectiveness, efficiency, and reliability by accelerating the operations management life cycle. Through built-in expertise gained from decades of experience, Netcool Operations Insight can help improve the time it takes to detect problem events, remove irrelevant noise or events, and consolidate events into actionable insights. With this information, Netcool Operations Insight can help IT staff analyze and prioritize events based on their impact, delegate them to the right subject matter expert, or automate and fix when possible.

For more information, please visit www.ibm.com/cloud-computing/products/hybrid-it-management/it-operations-management/.

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Appendix A: Total Economic Impact

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.

Total Economic Impact Approach

Benefits represent the value delivered to the business by the product. The TEI methodology places 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.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in 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.

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.

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.

RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

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.

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