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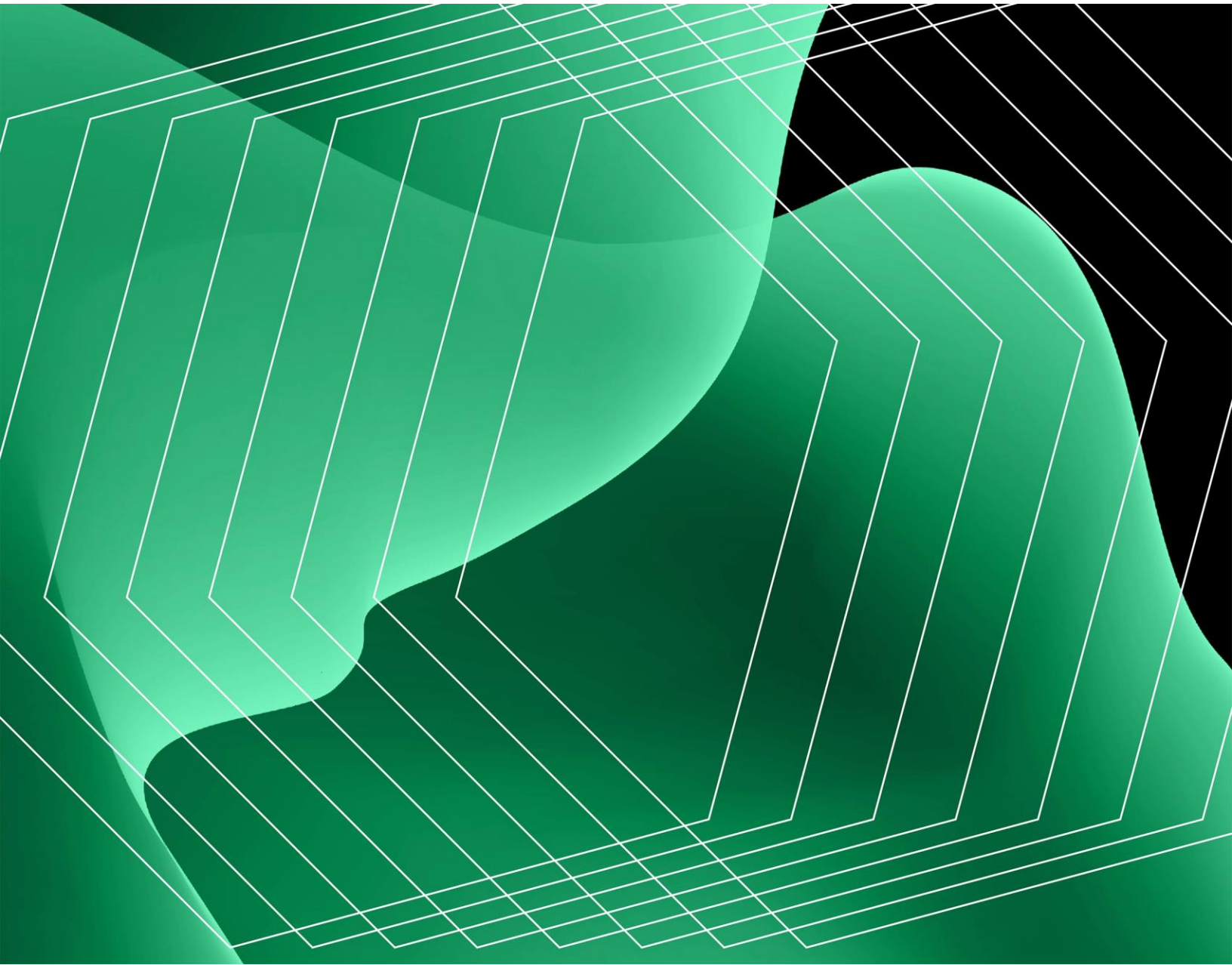
The Total Economic Impact™ Of VMware Cloud Foundation Network Operations

Business Benefits Enabled By VMware Cloud Foundation Network Operations

A Forrester Total Economic Impact™ Study Commissioned By VMware, April 2024



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ABOUT FORRESTER CONSULTING

Forrester provides independent and objective research-based consulting to help leaders deliver key outcomes. Fueled by our customer-obsessed research, Forrester's seasoned consultants partner with leaders to execute their specific priorities using a unique engagement model that ensures lasting impact. For more information, visit forrester.com/consulting.

Executive Summary

Managing a complex and ever-growing network requires a high degree of visibility into what changes and communications are occurring. Network engineers and administrators cannot strengthen, secure, and scale a network that they cannot see. VMware Cloud Foundation Network Operations monitors and maps overall network topology for VMware Cloud Foundation and VMware NSX to help organizations become less reactive and more forward-looking in their network management capabilities.

VMware Cloud Foundation Network Operations helps organizations gain end-to-end visibility across their virtual and physical networks. This increased visibility allows their customers to become more efficient in monitoring, optimizing, and securing network infrastructure across cloud environments. VMware Cloud Foundation Network Operations decreases the manual processes typically involved when managing and scaling an organization's network, facilitating activities such as application discovery, workload migration, troubleshooting, and network segmentation planning.

VMware commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the benefits and potential financial impact enterprises may realize by deploying VMware Cloud Foundation Network Operations.[1]

Benefits present value (BPV)

$3.86M

Reduction in network outages

50%

To better understand the benefits and risks associated with this investment, Forrester interviewed four representatives with experience using VMware Cloud Foundation Network Operations. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization.

VMware Cloud Foundation Network Operations

VMware Aria Operations for Networks – a component of VMware Cloud Foundation – provides Network Operations capabilities including network visibility, application discovery, and network troubleshooting. VMware Aria Operations for Networks works with VMware NSX, also a component of VMware Cloud Foundation, to build an optimized, highly available, and secure network infrastructure. VMware Cloud Foundation helps organizations modernize their infrastructure and implement a highly efficient cloud operating model that provides the scale and agility of public cloud with the security and performance of private cloud. VMware Cloud Foundation is designed to cater to a wide variety of business needs with a fully integrated set of capabilities delivered in a private cloud environment.

Prior to using VMware Cloud Foundation Network Operations, interviewees said that they struggled to understand how various parts of their network were “talking” to one another, which made segmentation planning and firewall rule creation difficult. Gaining this type of network visibility demanded many hours of work and, even after much time and effort, often yielded questionably accurate results. Troubleshooting network issues was also a challenge, since it was hard to pinpoint where a given issue was occurring within the network.

After the investment in VMware Cloud Foundation Network Operations, the interviewees cited how the overall improvement in network visibility — including visibility on VMware Cloud Foundation, VMware NSX, certified public clouds, and virtual and physical networks — helped their organizations become proactive in consolidating and

streamlining their network infrastructure. Notable improvements in time to resolution and troubleshooting were identified as key benefits of VMware Cloud Foundation Network Operations.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Increased network mapping efficiency by over 80%.** Before implementing VMware Cloud Foundation Network Operations, the composite organization spent a lot of time creating virtual machine (VM) topology to understand what was happening within its network. When the composite uses VMware Cloud Foundation Network Operations to visualize network connections with flow mapping, it significantly reduces the time needed to create affinity diagrams, which in turn helps it proactively address issues or security vulnerabilities. These increased network mapping efficiencies are worth $1.7 million over three years.
- **Decreased network outages by as much as 50%.** VMware Cloud Foundation Network Operations reduces outages at the composite organization. This solution allows the composite to improve the performance of its network and decrease outages, saving $1.1 million over three years.
- **Reduced time spent monitoring their network by over 75%.** The composite organization needs to monitor its network to optimize performance, understand application dependencies, improve security, and maintain compliance standards. By cutting down on the amount of effort needed for these activities, VMware Cloud Foundation Network Operations helps the composite save valuable time for its network engineers and administrators. Reducing the time spent monitoring its network provides the composite with $846,000 in value over three years.
- **Decreased troubleshooting time by 90%.** Identifying where a given network issue is occurring is often half the battle when it comes to troubleshooting. VMware Cloud Foundation Network Operations helped the composite organization root out issues quickly, cutting down on the time network engineers spent diagnosing problems by pinpointing the source of the network issue for a faster resolution. This provided $221,000 in value over three years.

> "Enablement of digital transformation is huge for us right now. We are working to digitally transform our infrastructure as a whole, whether it's virtual infrastructure, cloud infrastructure, or VMware services on the cloud. We are moving toward a 100% digital enterprise, and this product facilitates that."
>
> NETWORK ADMINISTRATOR AND ENGINEER, AVIATION

Unquantified benefits. Benefits that provide value for the interviewees' organizations but are not quantified for this study include:

- **Enabling digitization and workload migration.** Through mapping, application discovery, and an overall improved understanding of their network, interviewees' organizations migrated portions of their organizations' networks to the cloud in a smart and efficient way.
- **Breaking down siloes and improving collaboration.** Interviewees said that by providing visibility across different types of cloud environments, VMware Cloud Foundation Network Operations unified their disparate IT groups under a common network view. The platform gave users at the interviewees' organizations the ability to understand network overlaps and commonalities and allowed for equity in network visibility — executives, managers, and engineers all received access to the data within VMware Cloud Foundation Network Operations.
- **Forged a strong partnership with VMware.** Interviewees' organizations took advantage of VMware's openness to receiving feedback and engaging in a dialogue about challenges, product capabilities, and roadmaps for future product updates.

The representative interviews and financial analysis found that a composite organization experiences benefits of $3.86 million over three years.

Increase in network mapping efficiency

81%

Reduction in network monitoring time

75%

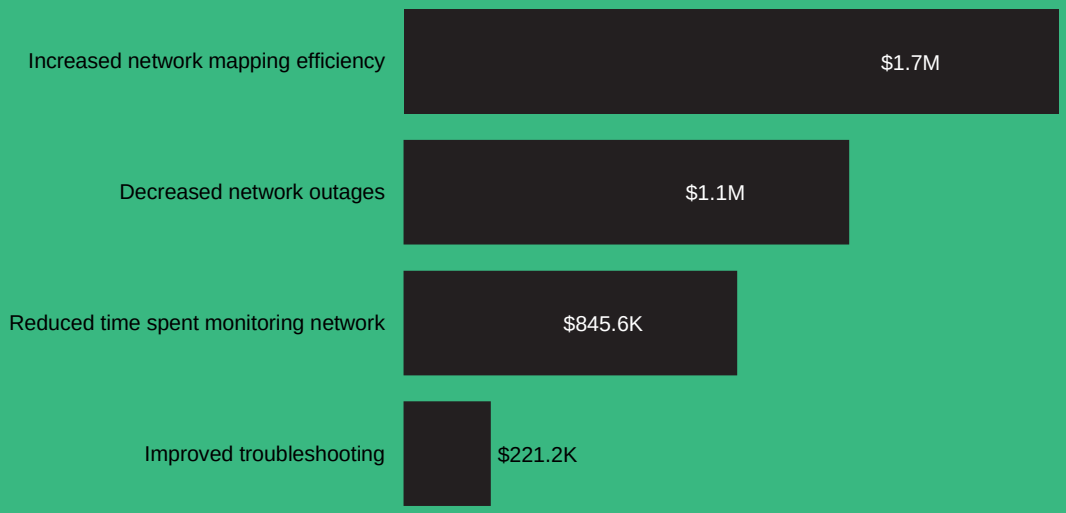
Reduction in network outages

50%

Reduction in troubleshooting time

90%

Benefits (Three-Year)



“It’s all about visibility. A lot of the time, when you’re dealing with a complex network, you don’t necessarily have a ton of visibility. But now we do. We’re able to run a query and say, ‘Hey, why can’t this device talk to this device?’”

IT INFRASTRUCTURE AND SECURITY MANAGER, CHEMICAL

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in VMware Cloud Foundation Network Operations.

The objective of the framework is to identify the benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that VMware Cloud Foundation Network Operations can have on an organization.

DISCLOSURES
Readers should be aware of the following:

This study is commissioned by VMware and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential benefits that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in VMware Cloud Foundation Network Operations.

VMware 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.

VMware provided the customer names for the interviews but did not participate in the interviews.

Due Diligence
Interviewed VMware stakeholders and Forrester analysts to gather data relative to VMware Cloud Foundation Network Operations.

Interviews
Interviewed four representatives at organizations using VMware Cloud Foundation Network Operations to obtain data with respect to benefits and risks.

Composite Organization
Designed a composite organization based on characteristics of the interviewees' organizations.

Financial Model Framework
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewees.

Case Study
Employed elements of TEI in modeling the investment impact: benefits, flexibility, and risks. Given the increasing sophistication of analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The VMware Cloud Foundation Network Operations Customer Journey

Drivers leading to the use of VMware Cloud Foundation Network Operations

Interviews			
Role	**Industry**	**Region**	**Markets Served**
Network engineer	Insurance	North America	North America
IT infrastructure and security manager	Chemical	North America	Global
Network administrator and engineer	Aviation	North America	Global
Lead IT architecture analyst	Healthcare	North America	North America

KEY CHALLENGES

One of the primary reasons that interviewed decision-makers invested in VMware Cloud Foundation Network Operations was to gain end-to-end visibility into their organizations' networks. Interviewees also cited security as another big driver for their organizations' VMware Cloud Foundation Network Operations investment. Their companies wanted to take a proactive posture with their security protocols, using network segmentation to define firewall rules and avoid being the next ransomware headline.

The interviewees noted how their organizations struggled with common challenges, including:

- **Gaining a holistic view of their complex networks.** A network administrator and engineer from an aviation company described this challenge, saying: "The biggest pain point for us is physical-to-virtual interfacing. Our physical infrastructure is pretty huge worldwide, especially when you layer on our virtual component; we needed a tool [like VMware Cloud Foundation Network Operations] that could bridge that gap and provide visibility there." With the increasingly dynamic application landscape, interviewed decision-makers needed

a platform that gave administrators a better view of application boundaries and dependences, which would help them plan and prepare for workload migrations and other projects.

> "We were looking for a tool that could give everybody the same visibility — not just a network tool. [VMware Cloud Foundation Network Operations] is about providing visibility into the entire infrastructure and then letting people add in whatever way that they need — whether it's through a device, a network-switch, a load balancer, or a firewall perspective."
>
> LEAD IT ARCHITECTURE ANALYST, HEALTHCARE

- **Improving security planning with network segmentation.** Interviewees discussed security planning as another key challenge they had before implementing VMware Cloud Foundation Network Operations. Without a network monitoring tool in place, especially one with segmentation capabilities, the interviewees said they struggled to outline what virtual machines (VMs) made up an application and how certain devices communicated with other devices and parts of the network. They wanted a tool that allowed them to proactively address security concerns by automatically recommending firewall rules and staying ahead of any issues.

> “One of the most valuable assets of [VMware Cloud Foundation Network Operations] is the ability to understand the virtualized environment that isn’t within your control. Our environment is so large, expanding and changing constantly, and I didn’t have a 100% view of what was happening everywhere. But [the platform] gives me the ability to see when things happen and then start to manage it and react to it.”
>
> NETWORK ADMINISTRATOR AND ENGINEER, AVIATION

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and a benefits analysis that illustrates the areas financially affected. The composite organization is representative of the four interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite organization is a large, global manufacturing company headquartered in the United States with factories and production facilities across the globe and an annual revenue of $1 billion. The composite organization has an expansive network with 3,000 virtual machines, 150 hosts, and three data centers.

Deployment characteristics. The composite organization has global operations and a complex network to monitor and manage. On average, the number of VMs in the network grows by 20% year over year, while number of hosts increases by 5% on an annual basis.

Key Assumptions

$1 billion revenue

3,000 VMs

Six active users of VMware Cloud Foundation Network Operations

Analysis Of Benefits

Quantified benefit data as applied to the composite

Total Benefits						
Ref.	**Benefit**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	Increased network mapping efficiency	$1,323,000	$264,600	$317,520	$1,905,120	$1,659,962
Btr	Decreased network outages	$357,000	$510,000	$510,000	$1,377,000	$1,129,204
Ctr	Reduced time spent monitoring network	$283,500	$340,200	$408,240	$1,031,940	$845,601
Dtr	Improved troubleshooting	$68,040	$89,775	$113,400	$271,215	$221,248
	Total benefits (risk-adjusted)	$2,031,540	$1,204,575	$1,349,160	$4,585,275	$3,856,015

INCREASED NETWORK MAPPING EFFICIENCY

Evidence and data. VMware Cloud Foundation Network Operations' network map provided the interviewees' organizations with improved visibility into their data sources and a centralized, easy-to-use interface for laying out the foundation for network monitoring activities. Interviewees noted that this benefit significantly impacted ROI and helped their organizations quickly lay the foundation for their network monitoring activities, representing a massive improvement to their prior processes.

- Interviewees emphasized that without any software tool in place, it was a very time-consuming, manual process to map network flows, understand VM relationships, and visualize VM activity across the network.
- Interviewees told Forrester that manual network mapping was not only tedious, but it also ran a high risk of being inaccurate. A network engineer from an insurance company said: "[Even after going through all of that manual work,] our information still wouldn't have been accurate. It would still require us to do a lot of firewall log review and network log review and then probably a lot of time spent working on resolving incidents because the information would've been wrong."

- As the interviewees discussed, the ability to do the upfront flow mapping work in an efficient, effective, and reliable way enabled them to take advantage of the other capabilities within VMware Cloud Foundation Network Operations.

> "To have had to manually go through and work with all of these developers to map out the flows or understand how to use firewall logs … I can't even begin to imagine how many hundreds of hours per month that we would've been putting into that if not for [Cloud Foundation Network Operations]."
>
> NETWORK ENGINEER, INSURANCE

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The network mapping process takes the composite organization roughly three to four months to complete in Year 1. Since this is one of the first steps the composite organization must take to reap the other benefits of VMware Cloud Foundation Network Operations, it is reflected in other Year 1 benefits discussed in the study.
- Because network topology is dynamic, the number of VMs within the composite organization starts at 3,000 in Year 1 and increases by 20% year over year.

Risks. Factors that could impact the size of this benefit for organizations include the following:

- Prior amount of manual mapping work required.
- Types of network environments.
- Number of applications within the network.
- Number of cloud vendors used by organizations.
- Growth rate of network.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.7 million.

Increased Network Mapping Efficiency					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
A1	Number of VMs in network	Composite	3,000	3,600	4,320
A2	Number of VMs actively mapping	Composite	3,000	600	720
A3	Network engineer FTE fully burdened hourly salary	TEI standard	$70	$70	$70
A4	Hours per VM needed for flow mapping without VMware Cloud Foundation Network Operations	Interviews	9	9	9
A5	Hours per VM needed for flow mapping with VMware Cloud Foundation Network Operations	Interviews	2	2	2
At	Increased network mapping efficiency	A2*A3*(A4-A5)	$1,470,000	$294,000	$352,800
	Risk adjustment	↓10%			
Atr	Increased network mapping efficiency (risk-adjusted)		$1,323,000	$264,600	$317,520
	Three-year total: $1,905,120			**Three-year present value: $1,659,962**	

DECREASED NETWORK OUTAGES

Evidence and data. Interviewees talked about how VMware Cloud Foundation Network Operations improved their organizations' network performance, in some cases helping to reduce network issues by 50% within data center network fabrics and between VMs in the virtual network, such as communication between two VMs on the same server.

- A network administrator and engineer from an aviation company described the following use case: "Prior to [VMware Cloud Foundation Network Operations], there were outages that were mistagged. Sometimes things were tagged as physical outages when really, they were virtual outages, and vice versa. So, not only does the platform help us to get to the right domain more quickly, but it also helps to accurately reflect where the outages are happening so that we can direct our spend to mitigate future outages."
- On top of the time savings that VMware Cloud Foundation Network Operations helped achieve by automating flow mapping, app discovery, and segmentation activities described in earlier benefits, interviewees' organizations also achieved notable performance improvements in doing these tasks with VMware Cloud Foundation Network Operations, which decreased outage frequency and improved network functioning and reliability.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite organization experiences approximately 80 hours of outages in various pieces of the network throughout each year with each hour of an outage costing the organization $300,000.
- Five percent of these outages occur in the data center section of the network, which is impacted by VMware Cloud Foundation Network Operations.
- The composite organization initially sees a 35% reduction in outages during network mapping in Year 1. This rises to 50% in Years 2 and 3.
- This benefit models the financial impact of the outage itself and does not include time savings that engineering teams receive through faster troubleshooting.

Risks. Factors that could impact the size of this benefit for organizations include the following:

- Different industries can have different costs for network outages.
- Percentage of outages impacted by VMware Cloud Foundation Network Operations.
- Structure of network.
- Total number of network outages.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.1 million.

> "A small outage to me is something that's down for a few minutes. But even a small outage has huge ramifications as far as the dollars and value associated with it."
>
> NETWORK ENGINEER AND ADMINISTRATOR, AVIATION

Decreased Network Outages					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
B1	Total hours of unplanned network outages per year	Interviews	80	80	80
B2	Cost per hour of network downtime	Interviews	$300,000	$300,000	$300,000
B3	Percent of relevant network outages	Interviews	5%	5%	5%
B4	Outage reduction after implementation	Interviews	35%	50%	50%
Bt	Decreased network outages	B1*B2*B3*B4	$420,000	$600,000	$600,000
	Risk adjustment	↓15%			
Btr	Decreased network outages (risk-adjusted)		$357,000	$510,000	$510,000
	Three-year total: $1,377,000			**Three-year present value: $1,129,204**	

REDUCED TIME SPENT MONITORING THE NETWORK

Evidence and data. Interviewees saw a reduction in time spent monitoring network infrastructure after implementing and performing flow mapping with VMware Cloud Foundation Network Operations.

- Interviewed decision-makers commonly used application discovery and segmentation capabilities in VMware Cloud Foundation Network Operations to define network policies and firewall rules. The newly added policies helped to improve network security and boost performance.

An IT infrastructure and security manager from a chemical company explained their use case: “[VMware Cloud Foundation Network Operations] has a very smart app discovery method where it can parse out from the name of the machine what application and what tier it is. So in the places we ran that, we’re now able to tier our applications and, if a new server gets spun up in the web tier for example, it automatically gets brought into that tier in the application discovery consult, and we’re able to classify the traffic and then put that into the firewall rules and NSX.”

- Automating this classification and segmentation process saved time and allowed network engineering teams at the interviewees’ organizations to become more proactive. One common way this was utilized was quickly isolating development servers from production servers without having to go through tedious manual processes. This segmentation reduced the potential for human error.
- Interviewees discussed the headcount that was saved through network segmentation with VMware Cloud Foundation Network Operations. In some cases, interviewees estimated that they would have had to hire one or two engineers without VMware Cloud Foundation Network Operations to solve critical segmentation and segregation tasks.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite organization begins Year 1 with 3,000 VMs, and that grows by an assumed 20% year over year.
- The fully burdened hourly compensation for a network engineer is $70.

Risks. Factors that could impact the size of this benefit for organizations include the following:

- Complexity of organizational networks.
- Growth rate of networks.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $846,000.

Reduced Time Spent Monitoring Network					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
C1	Number of VMs in network	Composite	3,000	3,600	4,320
C2	Network engineer FTE fully burdened hourly salary	TEI standard	$70	$70	$70
C3	Average hours per VM needed for ongoing monitoring before implementation	Interviews	2	2	2
C4	Average hours per VM needed for ongoing monitoring after implementation	Interviews	0.5	0.5	0.5
Ct	Reduced time spent monitoring network	C1*C2*(C3-C4)	$315,000	$378,000	$453,600
	Risk adjustment	↓10%			
Ctr	Reduced time spent monitoring network (risk-adjusted)		$283,500	$340,200	$408,240
	Three-year total: $1,031,940			**Three-year present value: $845,601**	

75%

Reduction in hours of monitoring required per VM

IMPROVED TROUBLESHOOTING

Evidence and data. The tediousness and frustration of performing network troubleshooting was a common cause of irritation among the interviewees, who appreciated how much easier it was to collect information with VMware Cloud Foundation Network Operations, as well as how much faster they could solve problems.

- The network engineer from the insurance company summarized a typical troubleshooting experience with VMware Cloud Foundation Network Operations, which was echoed by other interviewees: “I was once pulled in late in the game on an incident where one of our most critical applications was just not working. A team of about 20 of our developers and operations engineers had been trying to figure it out for 6 to 7 hours. So, I popped my head into the room and said, ‘Hey

give me this information.' Within 15 minutes, I could identify exactly where the problem was, and then had it fixed within the hour."

- The troubleshooting benefits of VMware Cloud Foundation Network Operations didn't apply only to the biggest network issues. The IT infrastructure and security manager at a chemical company described one of these smaller, but more frequent issues: "I have an alert set up on workstation networks where if it sees a printer traffic across the workstation subnets, I know that one of the help desk guys or printer technicians has put a printer on the wrong subnet. Within 3 minutes, I'm able to call him and say, 'Hey you need to fix this.'"
- Interviewees also saw notable reductions in the time it takes to uncover issues and route them to the problem-solver. When some interviewees tracked these figures pre- and post-implementation, resolution time was reduced by as much as 90%.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- Using VMware Cloud Foundation Network Operations to troubleshoot reduces the composite organizations' hours spent on troubleshooting by 60% in Year 1, 75% in Year 2, and 90% in Year 3.
- The number of hours spent on troubleshooting increases year over year to account for the composite organization's network growing by 20% each year.

Risks. Factors that could impact the size of this benefit for organizations include the following:

- Previous number of hours spent troubleshooting.
- Structure and complexity of network environment.
- Amount of work performed after implementation to segment and strengthen the network.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $221,000.

Improved Troubleshooting					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
D1	Hours spent troubleshooting before implementation	Interviews	1,800	1,900	2,000
D2	Hours spent troubleshooting after implementation	Interviews	720	475	200
D3	Annual hours saved using VMware Cloud Foundation Network Operations to identify network issues	D1-D2	1,080	1,425	1,800
D4	Network engineer FTE fully burdened hourly salary	TEI standard	$70	$70	$70
Dt	Improved troubleshooting	D3*D4	$75,600	$99,750	$126,000
	Risk adjustment	↓10%			
Dtr	Improved troubleshooting (risk-adjusted)		$68,040	$89,775	$113,400
	Three-year total: $271,215			**Three-year present value: $221,248**	

90%

Reduction in hours spent on troubleshooting by Year 3

UNQUANTIFIED BENEFITS

Interviewees mentioned the following additional benefits that their organizations experienced but were not able to quantify:

- **Enabling digitization and workload migration.** Interviewees spoke about how their work in VMware Cloud Foundation Network Operations streamlined their network in many places, including workload migrations. By gaining visibility into their organizations' network infrastructure, defining application boundaries, and improving understanding of network connections, interviewed decision-makers made progress in their digitization efforts and workload migration projects.
- **Breaking down siloes and improving collaboration.** Interviewees discussed how VMware Cloud Foundation Network Operations helped break down the siloed nature of their previous technical team structure. The lead IT architecture

analyst from a healthcare company described their issues before VMware Cloud Foundation Network Operations: “Back in the day, we were a very traditional big data center, managed service kind of infrastructure. We were very siloed — network, storage, security, and compliance all in these nice, neat little silos that weren’t good at talking to each other.” After implementation, interviewed decision-makers found that VMware Cloud Foundation Network Operations helped to break down these barriers by facilitating overall network visibility and communication between distinct groups.

- **Forged a strong partnership with VMware.** Interviewees commented on the partnership that they had with VMware, and how they found great value in working so closely with the VMware Cloud Foundation Network Operations team. A network engineer from an insurance company said: “The [VMware Cloud Foundation Network Operations] team is extremely responsive. From the beginning, they partner you up with their developers to ask questions. They’re consistently reaching out to you as a customer to get your feedback as to where they should grow and change the application, which has been pretty powerful.”

> “Through flow analysis, [VMware Cloud Foundation Network Operations] helps to identify the applications that we can move quickly — like the low-hanging fruit — and it helps to do dependency mapping to understand where the flows of traffic are going over our network and out of that data center. This is all crucial in helping to transition those workloads to the cloud or even to an on-prem virtualized VMware Cloud.”
>
> **NETWORK ENGINEER AND ADMINISTRATOR, AVIATION**

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement VMware Cloud Foundation Network Operations and later realize additional uses and business opportunities, including:

- **Expanding platform adoption to include more users.** Interviewees talked about how VMware Cloud Foundation Network Operations helped them break down silos and barriers within their organizations, and many wanted to build upon those efforts by giving even more people access to the platform, including developers, help desk technicians, and other technical teams who could benefit from this network visibility.
- **Continuing to virtualize the network.** Interviewees spoke about continuing and expanding upon current projects to migrate parts of their organizations' network to the cloud and build up their digital network infrastructure. They hope to take advantage of VMware Cloud Foundation Network Operations' capabilities that would facilitate cloud visibility even further to streamline processes and optimize capacity as much as possible going forward.

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

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, allowing for a full examination of the effect of the technology on the entire organization.

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 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."

BENEFITS 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.

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%.

APPENDIX B: ENDNOTES

[1] 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.

FORRESTER®