The ROI of a Network Digital Twin

The financial return on aligning your team, simplifying troubleshooting and avoiding outages
The Real Value of Forward Networks

We started our journey with Forward Networks defining success as lower operational costs. Once we began using it, we discovered so many other use cases. Embracing Forward Networks has enabled us to support business growth and new product offerings — things we wouldn’t have been able to do using our previous technology.

Managing Director, Technology
Multinational Investment Bank & Financial Services Company
Increased Network Complexity Creates Business Case For Visualization, Verification and Predict Technology

THE CURRENT STATE OF NETWORK OPERATIONS:

DOZENS
of vendors

THOUSANDS
of devices

MILLIONS
of rules

A FORTUNE 500 ENTERPRISE COMPANY HAS, ON AVERAGE,

>12,750
devices on their network

>3 BILLION
lines of code

>500
model and firmware combinations

100s
of changes each week
What Is a Network Digital Twin?

The network is the heart of a modern business. When it goes down, all work—and revenue generation—stops.

The Fortune 500 companies we work with have global networks with tens of thousands of devices from dozens of vendors running billions of lines of code spanning on-premises and multiple public clouds. At this scale, it’s impossible for any engineering team to keep “a mental map” of this environment.

That’s why Forward Networks created a “network digital twin” that immediately delivers actionable information in a vendor-agnostic format.

Using very complex math, we’ve simplified network troubleshooting and verification. Time-consuming processes such as trouble-shooting and path searches, can now be completed in seconds.

Also, because we have a comprehensive inventory of every device in the network and its state and configuration, we have a sandbox that operations engineers can use to predict how configuration changes will impact traffic before they’re pushed live.

To learn how our mathematical model based Digital Twin can help you, watch this video:
Forward Networks Features

**VISUALIZATION**
Get an always accurate, single-pane view of network topology for on-premises, Amazon Web Services (AWS), Microsoft Azure and Google Cloud Platform for Layers 2-4. Drill down to specific devices and traffic flows, including configuration and state data.

**SEARCH**
Use our browser-like search capabilities to achieve Mean Time to Resolution (MTTR) for network issues in seconds. Perform complete end-to-end path analyses across the network for both on-premises and cloud infrastructure.

**VERIFY**
Constantly monitor network behavior across on-premises, cloud and virtual overlay networks with purpose-built intent checks. Continuously audit the network and receive actionable alerts for noncompliance.

**PREDICT**
The network digital twin acts as a sandbox, so engineers can test configurations and determine their impact on traffic flow before pushing them live. That helps avoid outages or other unintended consequences.

**COMPARE**
The Forward Networks platform can be a powerful, historical forensic tool. At predefined times, the network collector scans the network to ensure configuration and state information and then stores the snapshots. See configuration changes between any points in time to identify which policy or rule behaviors impact traffic flow.
Outages Are Expensive

Twitter
In October 2020, an "inadvertent change to systems" compromised $250,000 in ad revenue at Twitter.

Amazon
In 2018, Amazon lost $100 million during a one-hour network outage.

5-10
The number of major outages a senior manager can expect to experience in their career.

$1 million
60% of network outages cost at least $1 million operational disruption, reputational damage, lost data and financial loss.

Facebook
In March 2019, Facebook experienced a 14-hour outage:
- 110 million in lost ad revenue
- $13.46 billion in lost market capitalization

3. Twitter experiences widespread outages in October 2020. https://variety.com/2021/digital/news/twitter-down-outage-1234937449 - (1 billion ad revenue per year; 8760 hours in a year; 1 B/8760 = $114,115 per hour)
4. https://uptimeinstitute.com/uptime_assets/7985d2e492e657a512dd5307413c60b20b1796d21b53e06f8a71092a5fc0e-annual-outage-analysis-2020.pdf
Networks are a complex web of devices, protocols, policies and services—and no one person can maintain expertise across this technical continuum.

When something goes wrong, the first step towards resolution is identifying the problem. Most engineers use their experience and gut instinct as a starting point and then begin a time-intensive path search to find the problem.

Because the issue is typically hidden somewhere in the billions of lines of network configuration, this analysis can take weeks. Meanwhile, productivity is compromised, and customers aren’t getting the best experience.

The prevalence of hybrid environments and the lack of visibility in the cloud make it even more complicated for engineers to resolve network issues swiftly.

Forward Networks provides end-to-end path analysis, including within AWS, Azure and Google Cloud Platform, in seconds.
A Platform That Pays for Itself

To err is human.

That's clear from a recent Uptime Institute study that found human error was the cause for 74% of the most severe network outages. Something as simple as a typo in a configuration can take down mission-critical traffic flows.

That's why we've built intent checks and predict functionality into the Forward Networks Platform. Engineers can use our platform to pinpoint issues before they impact the business.

“Had we been using Forward Networks one year prior, we could have prevented about 90% of our P1/P2 outages. That savings alone pays for the platform.”

Head of Operations for
Global Financial Services

“When evaluating potential ROI, we selected five outage tickets at random. Two were so significant that had either been avoided, our savings would have exceeded the cost of the platform.”

Fortune 60
Financial Services Company

CUSTOMER EXAMPLE:

7 outages were experienced by Acme Corporation over the past year

AVERAGE OUTAGE LENGTH:

200 minutes per week*

POTENTIAL SAVINGS:

$7,000,000

if Acme Corporation had invested in a Forward Networks Digital Twin

Try our ROI calculator to realize your potential savings implementing the Forward Networks platform:

TRY OUR ROI CALCULATOR
Reduce OPEX with Fewer Escalations

Equipment from dozens of vendors running billions of lines of configurations comprise today’s networks—which also likely include more than one cloud service provider.

IT pros can spend their entire career becoming an expert in specific network equipment or cloud profiles. The upshot: Troubleshooting network issues often requires multiple teams.

The Forward Networks Platform collects, parses and displays network configuration and state information in an actionable, vendor-agnostic format that allows a Tier 1 engineer to diagnose most issues and route them to the appropriate teams.

Reducing escalations means reducing costs. It also frees senior network architects to focus on projects that deliver business value.

"The amount of information available in the Forward Networks Platform means our Tier 1 and Tier 2 staff can troubleshoot faster without escalation."

Senior IT Leader, U.S. Government

The Forward Networks Platform collects, parses and displays network configuration and state information in an actionable, vendor-agnostic format that allows a Tier 1 engineer to diagnose most issues and route them to the appropriate teams.

Reducing escalations means reducing costs. It also frees senior network architects to focus on projects that deliver business value.

"The amount of information available in the Forward Networks Platform means our Tier 1 and Tier 2 staff can troubleshoot faster without escalation."

Senior IT Leader, U.S. Government

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Ticket received by Network Operations Team (Tier 1)

Network Ops Team tries to determine the issue by performing a manual path trace.

FOLLOW THE PATH OF A TICKET ON A COMPLEX NETWORK:

FOLLOW THE SAME TICKET USING A FORWARD NETWORKS DIGITAL TWIN:

Ticket received by Network Operations Team (Tier 1)

Network Ops Team runs a query on Forward Networks platform.

Network Ops teams receives instant results from query.

Network Ops forwards the ticket to responsible team, along with specifics on how to resolve it.

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Issue is now elevated to a Tier 2 Networks Ops Team member.

Expenses add up in time spent and higher paid talent.

Downtime continues while issue remains unresolved.

Lower level engineers can address more complex problems in minutes, not days.

Cost savings in time and manpower.

Reduce OPEX with Fewer Escalations

The Forward Networks Platform collects, parses and displays network configuration and state information in an actionable, vendor-agnostic format that allows a Tier 1 engineer to diagnose most issues and route them to the appropriate teams.

Reducing escalations means reducing costs. It also frees senior network architects to focus on projects that deliver business value.

“"The amount of information available in the Forward Networks Platform means our Tier 1 and Tier 2 staff can troubleshoot faster without escalation."

Senior IT Leader, U.S. Government

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Ticket received by Network Operations Team (Tier 1)

Network Ops Team tries to determine the issue by performing a manual path trace.

FOLLOW THE PATH OF A TICKET ON A COMPLEX NETWORK:

FOLLOW THE SAME TICKET USING A FORWARD NETWORKS DIGITAL TWIN:

Ticket received by Network Operations Team (Tier 1)

Network Ops Team runs a query on Forward Networks platform.

Network Ops teams receives instant results from query.

Network Ops forwards the ticket to responsible team, along with specifics on how to resolve it.

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Issue is now elevated to a Tier 2 Networks Ops Team member.

Expenses add up in time spent and higher paid talent.

Downtime continues while issue remains unresolved.

Lower level engineers can address more complex problems in minutes, not days.

Cost savings in time and manpower.

Reduce OPEX with Fewer Escalations

The Forward Networks Platform collects, parses and displays network configuration and state information in an actionable, vendor-agnostic format that allows a Tier 1 engineer to diagnose most issues and route them to the appropriate teams.

Reducing escalations means reducing costs. It also frees senior network architects to focus on projects that deliver business value.

“"The amount of information available in the Forward Networks Platform means our Tier 1 and Tier 2 staff can troubleshoot faster without escalation."

Senior IT Leader, U.S. Government

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Ticket received by Network Operations Team (Tier 1)

Network Ops Team tries to determine the issue by performing a manual path trace.

FOLLOW THE PATH OF A TICKET ON A COMPLEX NETWORK:

FOLLOW THE SAME TICKET USING A FORWARD NETWORKS DIGITAL TWIN:

Ticket received by Network Operations Team (Tier 1)

Network Ops Team runs a query on Forward Networks platform.

Network Ops teams receives instant results from query.

Network Ops forwards the ticket to responsible team, along with specifics on how to resolve it.

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Issue is now elevated to a Tier 2 Networks Ops Team member.

Expenses add up in time spent and higher paid talent.

Downtime continues while issue remains unresolved.

Lower level engineers can address more complex problems in minutes, not days.

Cost savings in time and manpower.

Reduce OPEX with Fewer Escalations

The Forward Networks Platform collects, parses and displays network configuration and state information in an actionable, vendor-agnostic format that allows a Tier 1 engineer to diagnose most issues and route them to the appropriate teams.

Reducing escalations means reducing costs. It also frees senior network architects to focus on projects that deliver business value.

“"The amount of information available in the Forward Networks Platform means our Tier 1 and Tier 2 staff can troubleshoot faster without escalation."

Senior IT Leader, U.S. Government

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Ticket received by Network Operations Team (Tier 1)

Network Ops Team tries to determine the issue by performing a manual path trace.

FOLLOW THE PATH OF A TICKET ON A COMPLEX NETWORK:

FOLLOW THE SAME TICKET USING A FORWARD NETWORKS DIGITAL TWIN:

Ticket received by Network Operations Team (Tier 1)

Network Ops Team runs a query on Forward Networks platform.

Network Ops teams receives instant results from query.

Network Ops forwards the ticket to responsible team, along with specifics on how to resolve it.

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Issue is now elevated to a Tier 2 Networks Ops Team member.

Expenses add up in time spent and higher paid talent.

Downtime continues while issue remains unresolved.

Lower level engineers can address more complex problems in minutes, not days.

Cost savings in time and manpower.

Reduce OPEX with Fewer Escalations

The Forward Networks Platform collects, parses and displays network configuration and state information in an actionable, vendor-agnostic format that allows a Tier 1 engineer to diagnose most issues and route them to the appropriate teams.

Reducing escalations means reducing costs. It also frees senior network architects to focus on projects that deliver business value.

“"The amount of information available in the Forward Networks Platform means our Tier 1 and Tier 2 staff can troubleshoot faster without escalation."

Senior IT Leader, U.S. Government

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Ticket received by Network Operations Team (Tier 1)

Network Ops Team tries to determine the issue by performing a manual path trace.

FOLLOW THE PATH OF A TICKET ON A COMPLEX NETWORK:

FOLLOW THE SAME TICKET USING A FORWARD NETWORKS DIGITAL TWIN:

Ticket received by Network Operations Team (Tier 1)

Network Ops Team runs a query on Forward Networks platform.

Network Ops teams receives instant results from query.

Network Ops forwards the ticket to responsible team, along with specifics on how to resolve it.

When Network Ops thinks they may have found the cause, ticket is forwarded to the responsible team.

Responding team researches the problem. If they disagree, the ticket goes back to the process starts over.

Issue is now elevated to a Tier 2 Networks Ops Team member.

Expenses add up in time spent and higher paid talent.

Downtime continues while issue remains unresolved.

Lower level engineers can address more complex problems in minutes, not days.

Cost savings in time and manpower.
A Single Source of Truth for the Entire Network

For most Ops teams, the idea of a current network inventory and topology is as realistic as having a pet dragon that shoots fire at annoying people.

In reality, the “inventory” is a series of outdated .CSV files and the “tribal knowledge” held sacred by the organization’s most seasoned IT staff.

That puts the entire team at a disadvantage, slowing ticket resolution, increasing the opportunity for errors, and creating potential security and compliance issues.

“Almost half of enterprises say that a single source of truth is essential to their network automation initiatives.”

Source: Enterprise Network Automation for 2020 and Beyond, EMA

“Having a single source of truth enabled us to switch data centers on a very tight deadline without a single business disruption.”

Fortune 25 Global Investment Company
Always-On Audit Ensures Network Correctness and Security Posture

Audits are inefficient.
Almost all the time in an audit cycle (95%) is spent inspecting network elements that aren’t exhibiting a problem — and only 5% of time is dedicated to remediating failed elements.

Using the intent verification function within the Forward Networks platform, network engineers can identify noncompliant configurations at a glance.

The platform also verifies that changes made to bring items into compliance are successful, which drastically reduces time to resolution.

Forward Networks reduces time to resolve our customer’s self-identified audit items by 95%.

A $9 billion banking company reduced audit time by 80% and proactively detected over 1,500 vulnerabilities in a two-year period using Forward Enterprise.

A 2020 report from Coalfire and Omdia found that for most organizations, growing compliance obligations are now consuming 40% or more of IT security budgets and threaten to become an unsustainable cost.

Read how a Financial Services Company used Forward Networks to prevent config drift and avoid outages.
Secure Automated Application Provisioning Increases Business by 10x

Applications drive the acquisition of new revenue, either by adding clients or entire service offerings.

Before applications are deployed, they must be assessed for connectivity and policy adherence. This process is often manual, requiring human intervention.

Forward Networks has worked with multiple customers to implement Slackbot-based automated queries that can verify an application’s safety in seconds using plain-language text searches.

Faster deployment = faster time to revenue.

A Fortune 200 payment processing company implemented the Slackbot verification solution and increased its ability to deploy applications by a factor of 10 — allowing the business to onboard customers faster.

A global financial services and investment company reduced the time to deploy new applications from 24 hours to one hour using Forward Networks. That’s helping the company meet its growth and revenue targets.
How Can Forward Networks Impact Your Business?

We all agree that saving money and time helps a business, but generalities aren’t compelling.

That’s why we’ve developed an ROI calculator that uses your data to estimate the financial impact of incorporating the Forward Networks platform into your Network Operations Center (NOC). Try it now:

TRY OUR ROI CALCULATOR >

Getting Started With Forward Networks

Are you ready to deliver new capabilities through the network, reduce outages, enhance security and save time?

Request a personal demo >

www.forwardnetworks.com