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GET STARTED

Proactively Manage your Modern Network with Business Intent

3 Use Cases for VMware vRealize Network Insight Assurance and Verification

Networking Challenges Inhibit Business Agility

Businesses depend on their *modern networks*. In today's distributed, digital-first experience world, there would be almost no collaborative work and transactional operations if it weren't for reliable and secure networks. They keep organizations running by getting workloads and data where they need to go to keep operations humming while keeping employees and customers connected and engaged.

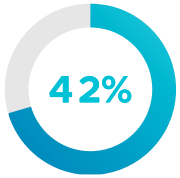
Modern networks consist of modern app connectivity services, multi-cloud network virtualization, physical network infrastructure. Although networks are arguably too critical to fail, application outages and vulnerabilities that lead to breaches happen all the time. That's because enterprise network performance and security management has traditionally been manual and reactive. So, when networks fail, network professionals scramble to troubleshoot and often are challenged to understand what's gone wrong, which frustrates IT staff and adds risk to their organizations.

How much more efficient and agile would businesses be if instead of having to respond to issues, infrastructure and operations (I&O) and security leaders could instead proactively:

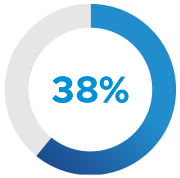
- View a comprehensive map of the entire network
- Verify that the network could perform reliably under all different possible conditions
- Predict what could happen to traffic flows when someone makes a change to the network infrastructure
- Know that the network will stay up no matter what attackers do, or what type of flow arrives

Read on to find out all the ways VMware vRealize® Network Insight Assurance and Verification™ (on-premises) and VMware vRealize® Network Insight Cloud Assurance and Verification™ (SaaS)—new VMware networking solutions based on university research—improve the resilience, uptime, and security of enterprise network infrastructure. Understand intent-based networking and how the vRealize solutions help you build networks that essentially manage themselves using intent-based networking principles. Then explore five use cases to discover how vRealize Network Insight Assurance and Verification works in real-world scenarios.

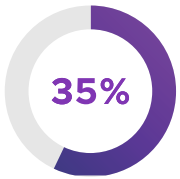
Network Professionals' Reality



Spend "too much time" troubleshooting the network and rate this issue as a "challenge" or "major challenge"



Cannot proactively identify network performance issues but are constantly putting out fires



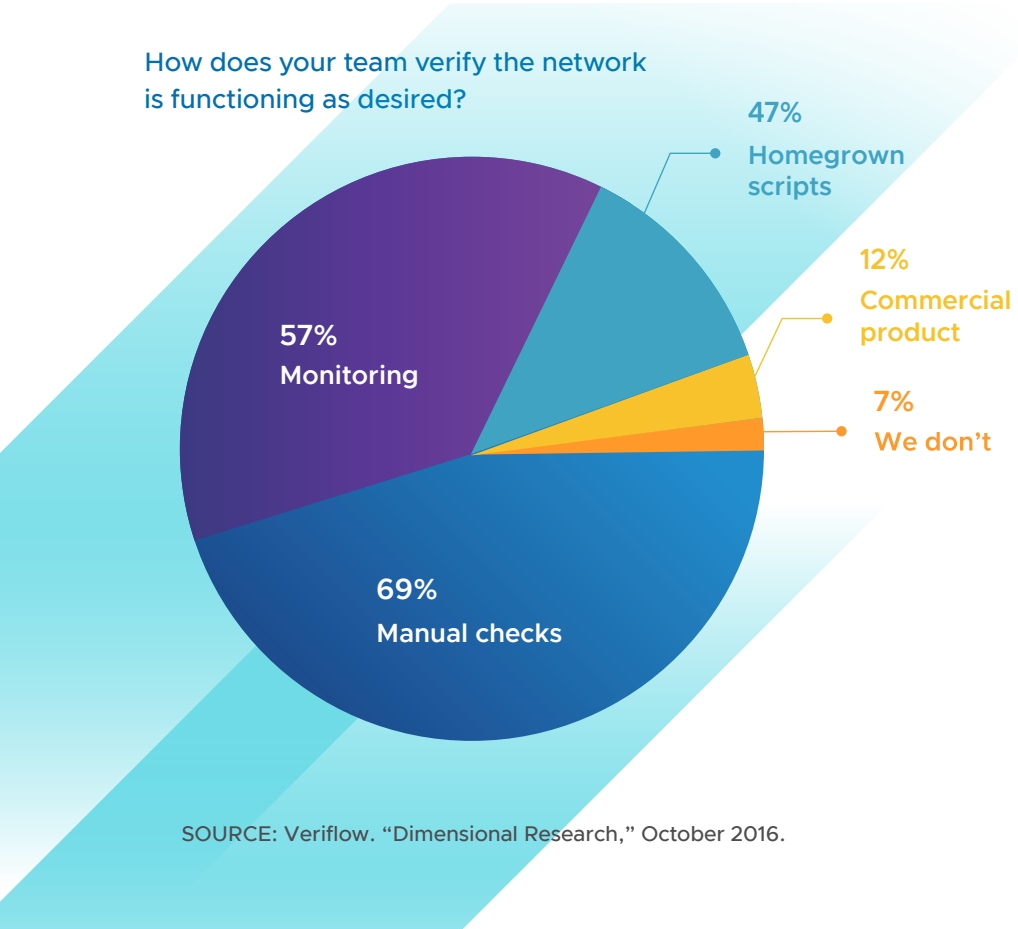
Have poor visibility into performance across the network

SOURCE: VMblog.com. "Is IT Spending Too Much Time Troubleshooting the Network? New Survey Suggests Yes," March 22, 2019

Intent-Based Networking: A New Solution to a Growing Challenge

Today's enterprise networks are complex and some are of critical national importance. Truly immense networks connect thousands of devices and dozens of device models under numerous different protocols. Then, the technologies introduced to improve them can actually make them even more difficult to manage.

For example, some enterprises have multiple virtual networks with multiple cloud providers. These virtual networks need to be stitched together along with the on-premises network—which hasn't gone away—in overlays that achieve rigorous security, availability, and performance goals. Trying to manage this manually is impossible. Moreover, this already taxing management is often coupled with requirements for a resilient network subject to compliance standards such as HIPAA and PCI.



SOURCE: Veriflow. "Dimensional Research," October 2016.

Ineffective Processes Compounded By Poor Tools

But until recently, networking professionals haven't had the right tools to proactively manage their networks. Manual checks like traceroutes, pings, and opening up browsers to try out services haven't provided strong assurances that the network will perform as required. Monitoring traffic and flows has proven useful, but only finds problems after the fact.

Given the challenging environments and the limitations of common tooling, it's not surprising that *59 percent of network professionals in a recent survey* said growing complexity in the network has led to more frequent outages. Managing networks effectively with all these points to a relatively new way of thinking about the network: *intent-based networking.*

What Is Intent-Based Networking?

Intent-based networking is not a product or a market, *according to Gartner*. Rather, it is a networking software that helps businesses plan, design, and operate networks with better availability, resiliency, and agility. It takes the "intent" of the business, and converts it into the appropriate network configuration. It deploys automatically and is always aware of the current state of the network. Indeed, it continually **verifies**—in real time—that the original business intent is being achieved, and performs remediation when it isn't.

Note the word *verified*. Intent-based networking depends on a function called **verification**, which ensures that business intent is being met. Verification is not the same as monitoring. Monitoring solutions gather observations of what *has* happened, but that is not the same as understanding what *should* happen. The idea of verification is to ensure an ultimate goal — the *intent* of the network designer—is being met. In fact, this ability to meet an ultimate goal is why verification has become a key part of intent-based networking.

This is where vRealize Network Insight Assurance and Verification comes in.

Introducing Network Assurance and Verification

vRealize Network Insight Assurance and Verification is a proactive and comprehensive approach to improve network reliability and security, or put another way, a solution that eliminates network outages and vulnerabilities.

vRealize Network Insight Assurance and Verification—whether used on-premises or in the cloud—ensures network verification by building a deep understanding of network infrastructure to model and mathematically verify network-wide policies. Its secret sauce is collecting data from each device in the network and then translating it into a network-wide model that predicts network data flow behavior system wide. It loosely uses intent-based networking to help model, analyze, and verify hybrid physical and virtual networks so IT teams can ensure that they remain resilient and secure.

What Makes VMware's Approach Unique?

It offers application-aware, network-wide modeling and verification. IT teams get a map of their entire network, and can query it interactively to do modeling of functional behaviors. And it mathematically ensures that everything is working based on business intent.

vRealize Network Insight Assurance and Verification uses a patented approach that builds a deep understanding of network devices down to the data plane, constructs a rigorous predictive model, and enables continuous verification against best-practice and custom policies via a simple and intuitive user interface.

How It Works

The technology first builds a formal model of the network, which represents all the ways that data can flow through it. Since the network depends on many devices working together, the verifier's model has to incorporate a variety of equipment (e.g., routers, firewalls, load balancers, virtual networks in the cloud, and so on) and many vendors, models, and protocols, to build a model of the whole network as one system. Next, the technology uses the model to verify that all possible data flow behavior matches the original business intent (Figure 1).

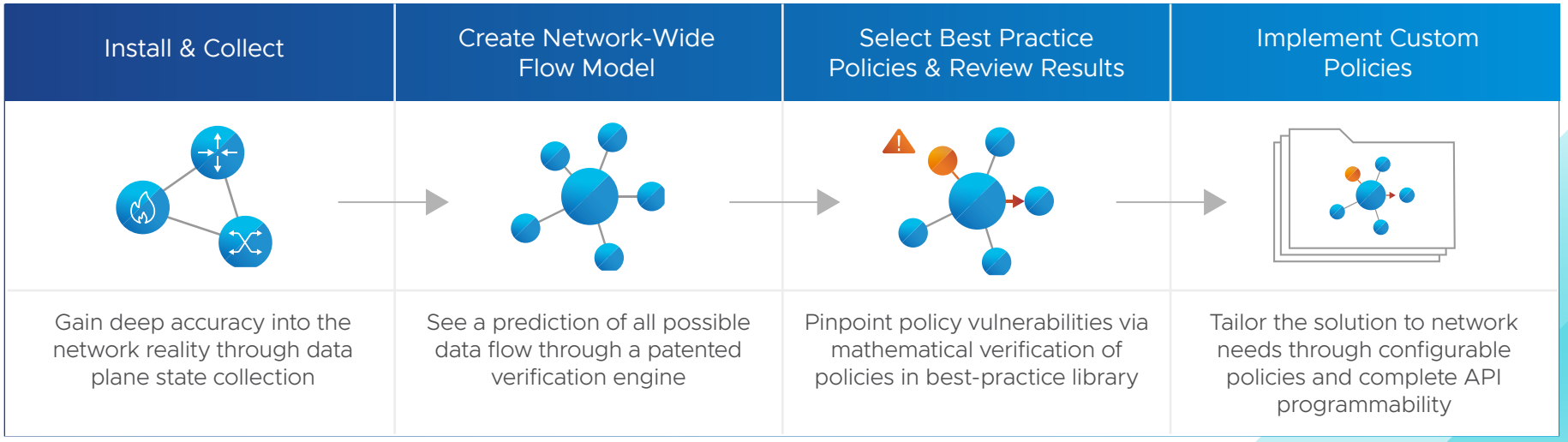


Figure 1

3 Use Cases for Network Assurance and Verification

Organizations looking to eliminate downtime and vulnerabilities will want to deploy vRealize Network Insight Assurance and Verification to perform:

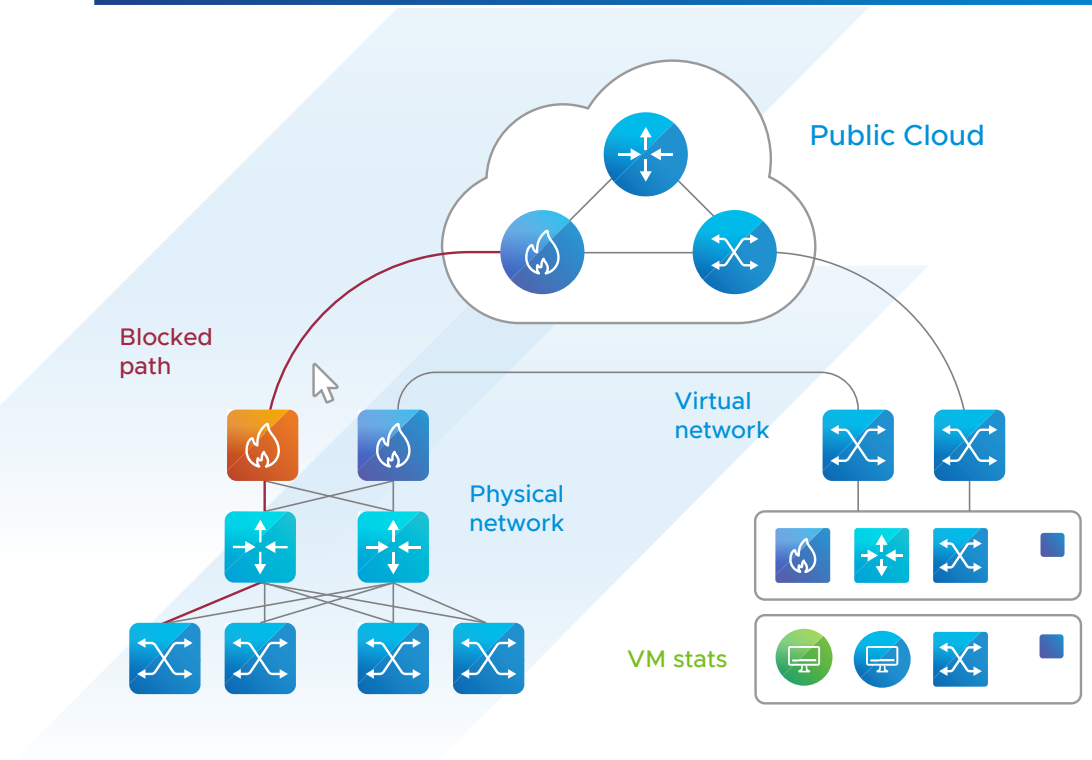
1. Topology visualization
2. Troubleshooting
3. Proactive problem detection

1. Topology Visualization

One of the biggest challenges with managing modern networks is the lack of visibility into them. Incomplete visibility increases risk, as it's harder to troubleshoot when something goes wrong or if the organization is being hit by a cyberattack.

With a visual representation of the network topology, networking staff can create and sustain a streamlined and efficient network design. A topology map also acts as a helpful reference point if teams are trying to find the root cause of errors. And it's also critical for having a complete understanding of network functionality.

vRealize Network Insight Assurance and Verification Features



A context-aware network map

vRealize Network Insight Assurance and Verification displays the topology of the physical and virtual network. It shows both overlay and underlay network connectivity, allowing IT professionals to auto-discover devices and links, and perform topology exports. There is also a full screen topology view available which is ideal for network operation center views.

Path visualization

Team members can see from Point A to Point B as well as many-to-many, and any-to-any paths. The solution also shows backup and equal cost multi-path (ECMP) routing paths.

Object visualization

vRealize Network Insight Assurance and Verification allows IT staff to view both physical and virtual components.

Problem visualization

The solution highlights both events and failures, and displays heat maps to show the extent of problems.

2. Troubleshooting

When IT professionals operate in reactive mode, they're always putting out fires. They don't have the time nor resources to proactively protect enterprise networks from disruption or breaches. Ultimately, this costs organizations more money as well as time, and limits IT agility to respond to business needs.

vRealize Network Insight Assurance and Verification is a single solution enabling networking staff to:

- Analyze problems in end-to-end network behavior
- Perform a root-cause analysis
- Understand the health of physical and virtual devices

Interactive search capabilities in vRealize Network Insight Assurance and Verification not only provide teams with root-cause analysis of network and device problems, they deliver actionable intelligence.

vRealize Network Insight Assurance and Verification Features

Interactive search

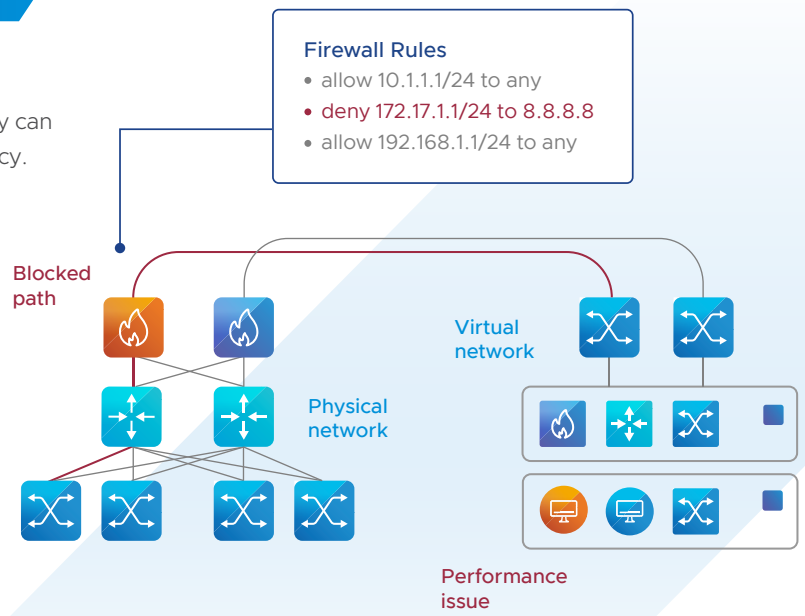
With robust search capabilities, teams always know whether critical services are reachable or not. They can segment sensitive resources, perform flow analyses, and understand network resiliency and consistency.

Issue correlation for actional insights

vRealize Network Insight Assurance and Verification allows IT staff to corelate issues from both network and application perspectives to get actionable insight into whether intents are being achieved. Although the entire library of business intents might be relevant in a search for the source of a problem, what's important is that team members can see intent violations that are relevant to the incident being fixed.

Physical and virtual device health checks

The solution allows IT staff to understand immediately if the organization has any performance issues across any of thousands of devices on the network.



3. Proactive Problem Detection

Unfortunately, most businesses today depend on manual troubleshooting and monitoring methods. Yet they are full of inaccuracies, and don't always catch network non-compliance to network intent. The result is teams spend the bulk of their time reacting to every networking problem as a one-off issue instead of building best practices for networking and compliance.

By incorporating industry best practices for network design and compliance with industry and government regulations, vRealize Network Insight Assurance and Verification enables teams to uplevel their ability to design a robust and reliable network.

vRealize Network Insight Assurance and Verification Features

Predictive outage detection

vRealize Network Insight Assurance and Verification can help predict when a network segment is going to have issues, giving teams sufficient time to address them before them becoming bigger problems. This supports greater network reliability and resilience.

Verification of business intent

The solution supports out-of-the-box and user-defined network intents. It verifies if the devices and network intents meet the configurations of the overlay and underlay networks, and supports both the devices and network intents.

Why Struggle With Networking When You Can Solve Issues Proactively?

Today's customers and employees require distributed digital experiences, making outages and data breaches unacceptable. And now, organizations have a solution to eliminate downtime and threats that interfere with engagement.

vRealize Network Insight Assurance and Verification is a unique solution that performs a rigorous, real-time analysis of an organization's network data plane. By taking an intent-based networking approach to designing, deploying, and operating the network, teams can dramatically improve network protection. They can make change-induced outages and security vulnerabilities a thing of the past.

Embrace a new approach with the leading solution: vRealize Network Insight Assurance and Verification available for deployment on-premises or SaaS.

Learn more on the *web.*

Experience a *Hands-On Lab.*

Try a 30-day *free trial* of vRealize Network Insight Cloud.

Look at the vRealize Network Insight Assurance and Verification *Infographic*

Learn more about *Modern Networks*

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