

Managing Application Delivery by Network Intent

Most large enterprise networks grow increasingly more complex over many years of change, so the end-to-end performance of applications residing upon the underlying connectivity may degrade, suffer, or become unmanageable. In Splunk's, The State of Observability 2022 survey of hundreds of enterprise IT professionals, respondents reported that 53% of their customer satisfaction issues were due to application performance issues¹. And not surprisingly, the most impacted services reported include QoS-dependent applications such as video-streaming and collaboration or those dependent on modern, complex network architectures like MACH (microservices, API-first, cloud-native, headless).

When user experience suffers, so does the business. In enterprises where poor documentation and brute-force support have been operational staples for years, today's businesses require a different approach. The directive for NetOps teams is clear: operate more efficiently, improve the balance between reactive and proactive efforts and focus on preserving and enforcing desired *behaviors* of the network, not just the health of their hardware components alone. Successful NetOps teams must have a clear understanding of the network requirements for every application and a means to ensure those applications are delivered over the network at a high quality.

Most network monitoring tools use network device health as a proxy for service delivery performance. This lack of application and business intent understanding leads to an inherent disconnect with the business needs. While scale and scope of network infrastructures have dramatically increased over time, these tools have continued to focus on aggregating device health.

This instills a myopic view of the network focusing only on hardware infrastructure using quantitative metrics to maintain network components.

Yet quantitative network device health alone is not enough to determine if the business services that reside upon the network are performing as the solutions and enterprise architects intended. This requires *qualitative* understanding of the hybrid network; with an end-to-end view of the capabilities, it offers and its ability to support all the design requirements each business application required at deployment. Only network management using Intent can deliver true application assurance.

Application Performance Begins with Network Intent

Most network operations solutions treat the network in a very binary fashion: links, paths, and devices are whether up or down.

¹ Source: www.splunk.com/en_us/pdfs/gated/research/state-of-observability-2022.pdf



Simply put, NetBrain's Application Assurance is the automated means to monitor and diagnose the hybrid network in the context of the applications it is intended to support, not the individual network devices

Most modern applications are comprised of multiple components, APIs and microservices which are located at various network locations each with a specific network path performance requirement. For example, an application server may be dependent on low-latency and high throughput access to shared network storage to fulfill front-end requests. Client requests to that same application may require address resolution from DNS located at a different point in the topology, and another set of micro-services may be providing customer account history needed to complete new transactions.

NetBrain's Application Assurance capability allows network support teams to better validate crucial application paths by visualizing all the individual network components involved in the delivery of each application and then verifying each of those components is providing the established Network Intents. Simply put, NetBrain's Application Assurance is the automated means to monitor and diagnose the hybrid network in the context of the applications it is intended to support, not the individual network devices.

Application Assurance continuously verifies Network Intents and notify ops teams of path changes or deviations. Application Manager, Application Assurance's consolidated dashboard, displays all the crucial application network paths along with history and status for a holistic view of the network state, topology, and performance.

NetBrain Application Assurance allows network ops teams to ensure ongoing application performance with 6 key capabilities:

1. Discover, calculate, and map each application's path across all hybrid network infrastructure (regardless of vendor) from edge to cloud
2. Set the baseline path or Golden Path for each application
3. Create Network Intents that verify the network performance needed to ensure each application performs as originally designed
4. Validate application paths during change management tasks
5. Automatic validations triggered by integrations with ITSMs like ServiceNow or proactively scheduled directly from NetBrain
6. View historical events like path changes or Intent results to query and review anomalies

Feature Highlights

Intent-based application path verifications

Identifying network paths is a great first step in validating application availability. NetBrain's built-in checklist automatically executes a comprehensive series of verifications to determine path integrity validating a litany of network states and conditions. End-to-end connectivity alone, however, does not indicate whether or how an application or IT service will perform. Application Assurance now includes Path Intents to allow engineers to pre-define additional parameters tailored to individual application requirements. Does an application path successfully traverse firewalls or load balancers? Is the latency of a specific path too high for a voice application? Is the established QoS policy in compliance? Is the application path reliant on redundant gateway protocols? In all these cases, NetBrain can verify connectivity *and* check for any drift in the intent of the network. Intents unlock a network administrator's ability to truly assess the health of the network in the context of application needs.

Validate the Golden Path

NetBrain automatically calculates possible traffic paths once a desired network path is defined and operators can manually designate or let NetBrain intelligently calculate one path out of the many potential paths as the “Golden Path”—the optimal and preferred path the application traffic should take. If the active path changes away from the Golden Path due to unexpected network failures or even change windows with unintended results, Application Assurance highlights the problem and notifies operators to take corrective action.

Automated monitoring and troubleshooting

With Application Assurance, network health verifications are executed regularly or as part of change management tasks or even when triggered by external monitoring tools like ServiceNow or Splunk. This proactive monitoring can be set to provide alerts or reports greatly reducing incident MTTR or preventing production incidents altogether.

Unified Dashboard

NetBrain’s Application Assurance’s dashboard, Application Manager, displays all your applications and their network paths and intents on one screen. All traffic paths are organized by applications or services. With NetBrain Application Assurance, you can view the status of path and intent checks, statistics on failed or changed paths, and filtered rows based on results. NetBrain enables operators to perform network investigations quickly with path calculations and mappings, creation of new applications and paths or importing and exporting of application and path data. The dashboard provides one place to ensure the network consistency required by applications.

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Application Manager Help

+ New Application + New Path Import Export Refresh

Total Entries: 1 Applications, 3 Paths Filtered by: Result Compare with Golden Compare with Last Search... Reset

Application	Path	Source	Destination	Destination Device	Protocol	Result	Intent Result	History	Compare with Golden ...	Compare with Last	Last Verified Time
Intranet											
	bos_intranet	10.10.4.44	172.24.101.33	172.24.101.33	IPv4	Succeeded	24 Alerts	12	No Change	No Change	7/26/2022, 8:21:35 PM
	tor_intranet	10.10.10.13	172.26.5.20	172.26.5.20	IPv4	Succeeded	16 Alerts	8	No Change	No Change	7/26/2022, 8:21:39 PM
	BJ-Core	10.10.7.253	172.24.101.21	BJ_Acc_SW1	IPv4	Succeeded	12 Alerts	1	N/A	N/A	7/29/2022, 10:31:39 ...

Historical Change Visibility

Application Assurance allows operators to see a complete history of all the automated checks that it continuously performs at regular intervals over time. This provides operators the ability to quickly troubleshoot and diagnose application performance at the traffic flow level.

Path History X

Path Name: **GCP-To-Azure(172.18.24.7 to 172.17.15.8)**

Last Verified Time	Path Type	Result Category	Last Verified Result	Set as Golden Path
5/6/2022, 2:36:31 PM	Live		Succeeded	
5/6/2022, 1:51:41 PM	Live		Succeeded with Warni...	
5/6/2022, 12:35:32 PM	Live		Succeeded with Warni...	
5/6/2022, 12:23:43 PM	Live		Succeeded with Warni...	Golden Path

About NetBrain Technologies

Founded in 2004, NetBrain is the market leader for NetOps automation, providing network operators and engineers with dynamic visibility across their hybrid networks and low-code/no-code automation for key tasks across IT workflows. Today, more than 2,500 of the world's largest enterprises and managed service providers use NetBrain to automate network problem diagnosis, generate real-time documentation, accelerate troubleshooting, and enforce enterprise architectural rules.

Benefits

Maintain network design compliance

NetBrain verifies the network and application architects' design intents to ensure the hybrid network is optimized for all application paths critical to the productivity of the business. Automatically maintain the compliance of the network by scheduling recurring application traffic path verifications to detect deviations from the Golden Path, changes from the previous state and deviations from Network Intents. Prevent configuration drift by verifying routing and security policies.

Preventive and proactive alerts

Application Assurance triggers alerts whenever it detects failures in end-to-end connectivity, any changes to traffic paths, or deviations from the established network intents. The alerts provide the errors detected and the applications those errors are associated with.

Scalability

Application Assurance enables easy monitoring of network behavior even as the network grows. It does so by organizing monitoring and troubleshooting processes around applications and their associated Intents, not network devices or individual network paths. Instead of monitoring and validating hundreds of unrelated network paths, NetBrain groups network paths with their associated application or services for quicker intent verification and richer problem diagnosis.

Flexibility

NetBrain's solution is vendor and technology agnostic. No matter the mix of vendors or devices installed on your network, nor technologies of the network itself— traditional, SDN, SD-WAN, cloud, or any hybrid combination—NetBrain abstracts the design and function of your network through its innovative use of network intents, to assure application performance is supported.

Summary

NetBrain's Application Assurance enables any network infrastructure to be continuously verified for compliance with your organization's application architectures and implementation plans. NetBrain uses its intent-based automation to encode the desired behavior of any network in the context of the applications it serves and then proactively verifies those application and business intents.

Application Assurance greatly reduces costly downtime and degradation of business-critical applications and services, ensuring maximum uptime and improving operational efficiency, productivity, and customer satisfaction. NetBrain's revolutionary automated Application Assurance technology assures that your hybrid network is fully compliant with your enterprise architects' application and design intents and directly supports the needs of your business, its applications, and your customers.