NetBrain

# Buying Guide for Network Automation

While production networks have grown in both scale and complexity over the past 25 years, the means to maintain these networks have largely remained tactical in approach and highly labor-intensive. Additionally, most large enterprises struggle to manage thousands of network service tickets per month to keep their production networks up and running at the level needed by the business. Putting these two facts together, the critical need for an entirely different approach is apparent.

A little-known fact is that while a huge volume of service tickets is generated each month, there are relatively few types of actual problems. If you take the concept of similar – it introduces an innovative approach that you could apply to solving many network problems of the same kind at scale.

And this fact is not lost on the industry analysts. According to Gartner's recent, "Market Guide for Network Automation Tools," they recognize the critical importance of addressing this problem along with the current tactical and inefficient nature of Network Operations by stating, "By 2025, 25% of enterprises will automate more than half of their network activities, an increase from less than 8% of enterprises from early 2022."

Scalable problem diagnosis automation remains the largest unsolved IT challenge today. And the tactical approach to NetOps is not just a philosophical issue, it prevents the business from growing. Truly supporting the business means changing this all-too-common brute-force NetOps paradigm to take a results-oriented and scalable view. While there are many tools that manage individual devices, those still suffer from the same traditional and code-based inefficient approach we have seen for decades.

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### Traditional "Code-based" Approach

- Applies to primarily fixed environments which can be specified precisely at the time of project commence – devices, connectivity, and application requirements identified
- Focuses on device health and connectivity, not aware of any details of applications or service delivery required to support them
- Rigid programming projects, with detailed functional specifications
- Limited device-level abstraction; every vendor, model, and version must be treated separately and uniquely and code revised as device configurations are changed
- Requires DevOps, SECops, WANops and DCOps engineers, and NetOps engineers to work together, long and costly development cycles, excessive costs, rigid deliverables
- Challenges to scale since every situation, no matter how similar, must be programmed individually
- Focuses on interactive usage, rather than responding to external events or prevention
- Considered for only the biggest and most well-defined tasks that rarely changed

Instead, current buyers should be looking for management solutions that focus on the delivery of network results. By taking a tops-down view of the network, you can verify conditions, diagnosis abnormalities and proactively enforce the production services it delivers. A no-code automation solution can streamline a variety of operational workflows including network performance and outage prevention, change management and problem diagnosis. Exploiting the management of many individual problems is done by treating them similarly with proper abstraction, network intelligence, and a means to re-use subject matter expertise. A solution like this would provide a concise understanding of how the network delivers 'intents' which are closely aligned with the needs of the business and its applications.

The best way to evaluate a NetOps solution is to qualify and quantify what you have today. Look at your Service Desk and see how the NetOps function is represented along with the volumes of tickets and the kinds of problems being seen. Above all, you need to understand your operational baseline and expectations when evaluating how network automation can help.

## Key capabilities to look for in a network automation solution:

- The ability to scale to any infrastructure size, including the edge and public cloud and everything in between. Support for major public cloud providers, traditional network infrastructures and software defined LAN and WAN. Support for all major vendor components.
- Provides operational scalability with automation by solving for similar problems across the entire infrastructure.
- Captures and shares SME knowledge across the organization without coding and programmers.
- Allows your experts in each scenario to capture their best practices and make them re-usable without coding.
- Auto-discovers details of the entire hybrid network infrastructure and knows the parameters for every device. This is in stark contrast to many of the early automation approaches that were unaware of their surroundings.
- Builds a live digital twin that includes not only the devices and topology, but also the network logic for all traffic flows and critical IT logic translated from business needs.
- Includes a pre-built automation library that can immediately solve your most common network issues out of the box and is extensible without the need for coding.
- Takes a proactive approach to automation and continuously assures preservation of network intentions and verifies the infrastructure can support your applications.
- The ability to interactively apply stored automation units for remedial purposes when operators and engineers are addressing network issues.
- The ability to execute automation in response to external events from third-party applications, including threat detection from SIEM systems, ITSM workflow managers and network monitoring consoles.

## Use Cases

1. Outage Prevention
2. Diagnosis Automation
3. Application Performance
4. Network Security
5. Protective Network Change

## Getting Started: Determine your most commonly occurring problems

The ability for your chosen network automation solution to quickly address your problems in your environment is the key to demonstrating value and gaining support throughout the organization. So, the best place to identify your needs is to start with the most valuable information available: Your top use case(s) and a dedicated automation engineer(s) to build automation.

## Creating Success: Scaling NetOps and Applying No-Code Network Automation

Automation projects over the last couple of decades have become mired in mis-set expectations, budget overruns, and unclear ROI. As NetOps scales in scope and complexity, IT has learned some valuable lessons regarding how to select and implement network automation that can be deployed immediately, increases in value over time, and quantifies ROI.

Here are common mistakes to avoid and mitigate for a successful problem diagnosis automation experience.

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## Intent Based No-Code Approach

- Applies to any hybrid multi-cloud, multi-vendor network
- Based on full stack Digital Twin, including devices, connectivity, real-time traffic flows and network intents
- Captures subject matter expertise through no-code to create desired network behaviors, replicate behaviors across the network, and then leverage that knowledge before, during, and after issues are detected
- Tackles all repetitive tasks throughout the lifespan of the infrastructure, from the smallest of tasks to the largest
- Scales expertise to provide solution consistency and reduced overhead and escalations
- Provides a robust change management platform to assure business services are preserved prior to making changes and after changes are complete, with roll-back as needed
- Provides a comprehensive collaboration platform where resources can resolve an operational issue that spans organizational responsibility
- Conserves engineering resources and reduces the staffing/skills needed for scale

### 1. Trying to scale NetOps through personnel to match business growth

As infrastructure scope and complexity expand, it is becoming impractical to simply hire more operational staff and train each of them in every network technology. While adding more service personnel is a common and tactical solution to this growing problem, it fails to achieve the desired results of lower operational costs, shorter task duration, and more consistent ticket resolutions. And the varying skill levels of operators and engineers negatively impact the ability to solve problems effectively and rapidly. The most successful IT leaders realize that their operational plan must not continue the labor-intensive model that has been in place for decades, but instead become smarter and transform knowledge into a re-usable asset.

### 2. Adding Another Tool or Point Solution

We all understand the value of documenting and mapping your network. You can identify where the root cause of the problem is faster, maintain compliance more easily and prepare for audits quickly. And the promise of a fancy new auto-discovery and mapping tool can be exciting. But if you stop there, you're overlooking the big picture. Tools are tactical. What you are really looking to do is change the approach. You are looking to change the workflows associated with Network Operations to re-use knowledge and automate the portions that are similar from ticket to ticket. Buying just another tool does nothing to change the trajectory of the problem.

### 3. Waiting for AIOps and ML tools

All AIOps and ML solutions take a black-box approach leveraging machine learning or traditional statistics-based AI functions to discover root causes from large amounts of machine data. But for most IT problems, a set of clean data is very hard to come by, on top of many other challenges including a PH. D to operate such a tool. Customers routinely state that AI and ML tools rarely meet the bar for success. These approaches are unaware of the infrastructure details and intents, so the observations they make are more theoretical or academic in nature. As such, they rarely produce results that have a material impact on the biggest challenge, which is solving a small number of similar problems at scale, using re-usable knowledge. And, since it's a really small number of similar problems, gaining the requisite knowledge is not really the NetOps scale issue. It automatically captures and applying automation to solve this set of problems again and again. When selecting a strategic network automation solution, look for solutions with the ability to apply knowledge and experience-based best practices proactively to prevent potential problems from impacting production.

The average network management team spends

**3/4**

of its time fixing problems, according to Enterprise Management Associates (EMA) research

### 4. Taking a reactive approach to network operations

Troubleshooting is the singular focus of most enterprise network managers today, and it is a fundamental problem. The average network management team spends three-quarters of its time fixing problems, according to Enterprise Management Associates (EMA) research.

Look for a solution that focuses on top-down, results-oriented management. This type of solution empowers you to spend less time on reactive problem solving and instead focus on making the infrastructure more robust, defendable, and reducing service outage risk. The best results-oriented Network Automation solutions will continuously look for the existence of the normal or expected "good" operating conditions (as defined by your business apps). A solution like this understands the intents of each component and how business applications are designed, and the characteristics of the network services each application requires.

### 5. Focusing only on Day 0 and Day 1 network operations

According to Enterprise Management Associates, most enterprises focus their automation efforts on Day 0 and Day 1 network operations, such as zero-touch provisioning and change and configuration management. However, addressing Day-0 and Day-1 is just a tiny part of the total operational lifecycle. Addressing Day-0 and Day-1 alone neglects the much larger and longer-term opportunity to automate Day 2 network operations in a defendable fashion. Remember, the solutions needed to manage Day-2 will be used thousands of times per month in a larger organization, so making the right choice of Network Automation that addresses this Day-2 part of the lifecycle will have a much greater impact on the bottom line.

Omitting the Day-2 requirement from your selection process will perpetuate the long-standing struggle for scalable network operations, leaving engineers struggling with operational inefficiency, each having to craft a random portfolio of generic tools, a lack of reliable network documentation, and a litany of on-going design compliance issues.


### 6. Personal libraries of generic scripts are not automation

According to Enterprise Management Associates, many early types of automation are created from the bottom up, with network engineers teaching themselves new scripting and coding languages and building themselves folders of single-use scripts, which may or may never be used again. These folders of scripts may amount to hundreds or thousands of scripts without any structure for re-use. So, while it may be theoretically possible to capture their expertise in these very rigid one-off scripts, there is also no system to leverage these efforts to be applicable to similar problems, nor make their knowledge accessible by a broader group of users with varying skills. The result is the same problem being addressed by two different network engineers will be handled independently, and inconsistently, with varying results.

## Choose NetBrain: Network automation the way it was meant to be

NetBrain Next-Gen is the answer to all these challenges. It addresses more than 95% of an enterprises service task needs and can even be applied proactively to prevent potential problems before they affect production needs.

Examples of Intents for Automation:

| Design-Level Enforcement | Event and Ticket Remediation |
|---|---|
| **Design / Feature / Technology / Security**<br>• Must-have or forbidden routes<br>• QoS, ACL, or multicast rules<br>• HA/failover/redundancy rules | **Network**<br>• Access errors<br>• Configuration errors and drift<br>• BGP or OSPF errors |
| **Incident & Feature Agnostic**<br>• Sufficient CPU, Memory, Power<br>• Link utilization, Latency, Interface status<br>• Device and service reachability | **Device**<br>• Host or Service Unreachable<br>• Printer/Database Device unavailable<br>• Permission restrictions |
| **Key Applications and Paths**<br>• Voice, Internet, VPN path availability and performance<br>• DCI Paths performance and quality<br>• Validating key application path availability and quality | **Application**<br>• Data unavailable<br>• Voice Choppy<br>• Slow App Response Times |

These automation units address the most common scenarios seen in most enterprises for event-driven responses, (such as those reported via a network helpdesk service ticket), as well as for proactive design-level compliance, security, and application performance support verifications.

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of an enterprises service task needs and can even be applied proactively to prevent potential problems before they affect production needs

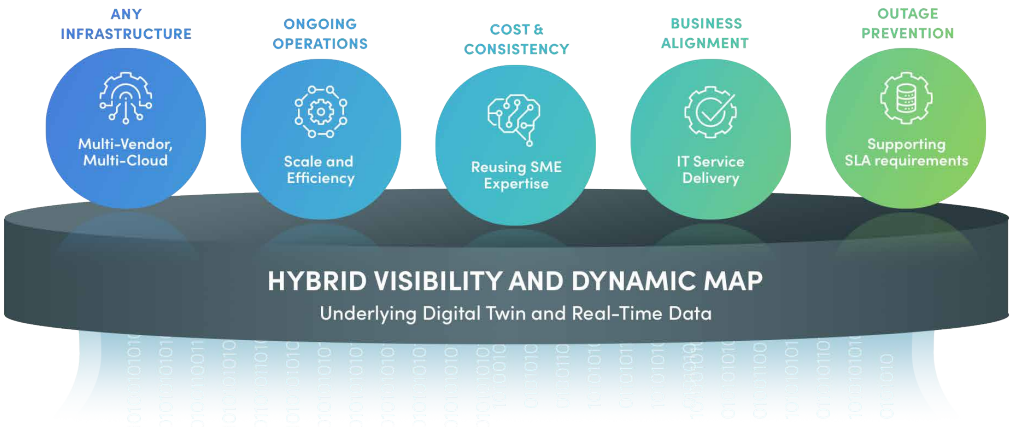
## What the Experts Say

According to Enterprise Management Associates, IT organizations should adjust their operational plan to be more strategic and forward-looking. They should leverage the combined knowledge and expertise of their own subject matter experts by adopting tools that take developers and coders out of the process and allow these experts to capture the application-centric intents of the business through no-code automation. This will allow users of network automation to clearly understand how to maintain the network in the context of critical business services. In other words, organizations should consider no-code, intent-aware network automation solutions.[1]

## NetBrain is Different

The days of maintaining individual siloed tools for individual tasks are over. Network operations teams must look for ways to combine automation tasks which span data centers, LANs, WANs, and the cloud. They should adopt automation platforms with visibility into the intent and the state of the network to minimize manual data gathering.

Look for automation solutions that are focused on the net-result of delivering the IT services needed by the business, rather than maintaining device-level health. The selected automation platform should capture the knowledge of the network team's experts without software development nor programming, to make it available to the entire network team.




## Get Started Today

NetBrain Next-Gen transforms your network operations plan from an inefficient and reactive one, to a proactive, streamlined approach that leverages the knowledge and expertise you already have. NetBrain supports what you already have, and what you'll have in the future, including all multi-vendor on-premises and public cloud components. It captures the expertise of your subject matter experts without any code whatsoever to allow their knowledge to be replicated across the network and shared with their peers. NetBrain automation scales NetOps more efficiently, at a level previously only associated with additional headcount, higher costs and increase business risk.

Assistance from our NetBrain Automation Center of Excellence (CoE) will help you select, adapt, and implement the latest in NetBrain automation tailored to your use cases while teaching you how to use the platform.

Through no-code mechanisms built, your engineers will be able to create additional situation and site-specific automation routines to be used by anyone, at any level to solve problems quickly and accurately when they re-occur. In effect, subject matter expertise becomes available when the subject matter experts are not!

Get started today

NetBrain Next-Gen transforms your network operations plan from an inefficient and reactive one, to a

**proactive, streamlined approach**

that leverages the knowledge and expertise you already have

[1] EMA Source: https://netbraintech.drift.click/88bcbfde-7951-4b46-b197-f1f63b23a7fd

[2] EMA: https://info.netbraintech.com/rs/943-NGR-529/images/White-Paper_The%20_Future_of_Network_Operations.pdf

## 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.



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