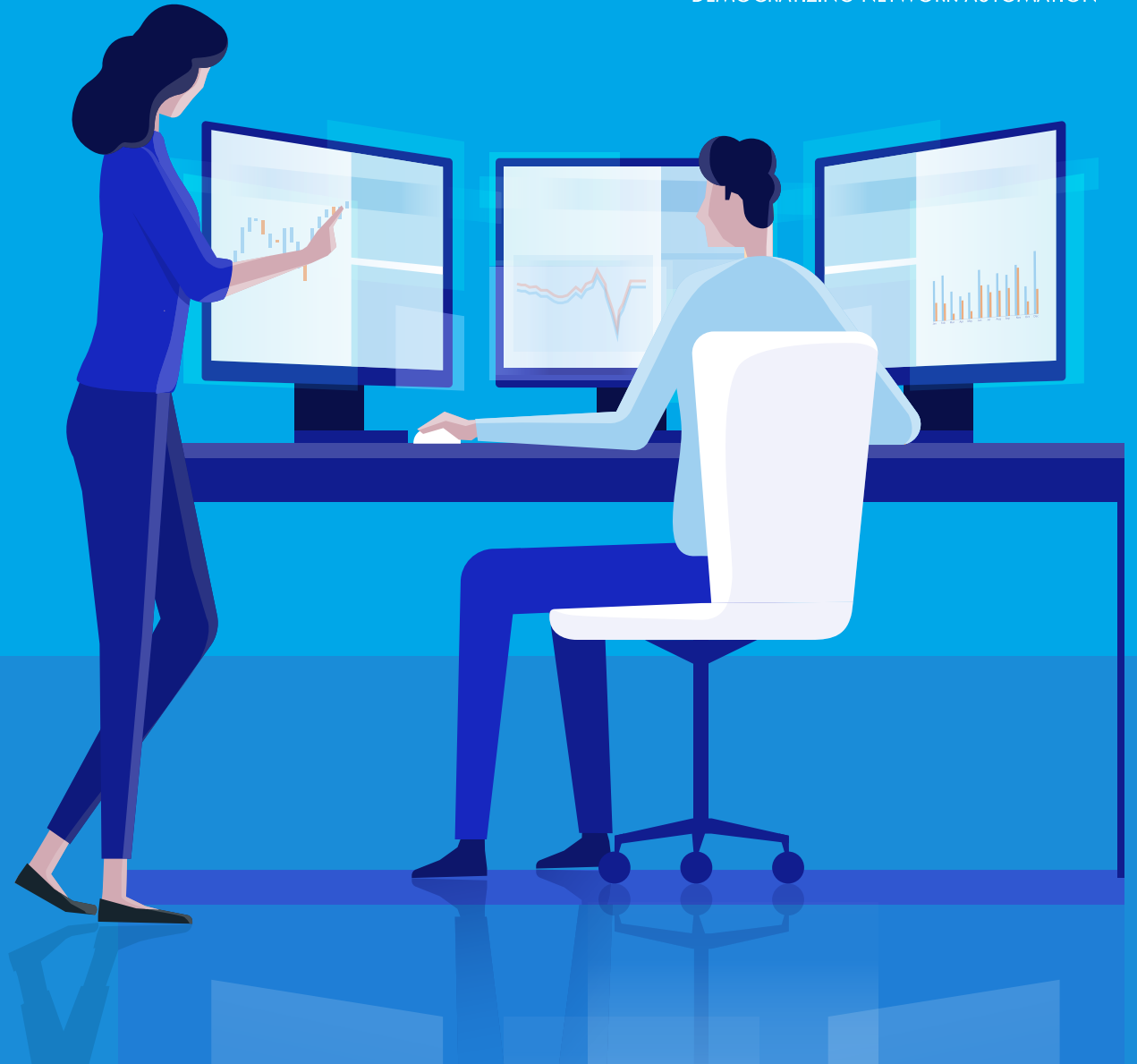


# Top-10 Continuous Assessment By Example



Build Automation for  
Proactive Network  
Management

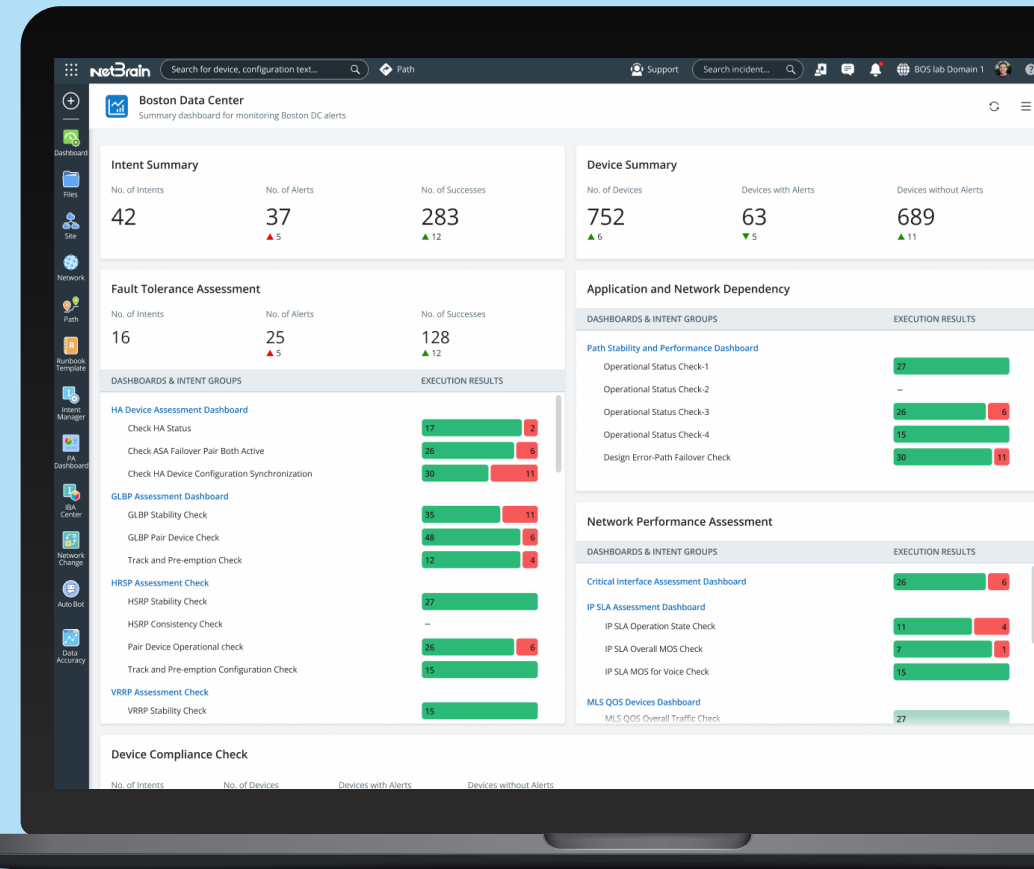
In today's digital age, maintaining optimal network performance is crucial for any organization. Network assessments play a vital role in identifying potential issues, optimizing performance, and ensuring compliance with industry standards. However, traditional manual assessment methods can be time-consuming and prone to human error.

This eBook explores the top 10 network assessments you can automate to achieve proactive and efficient network management. We will delve into each assessment, discuss its benefits, and provide practical guidance on how to automate it using available tools and technologies.



# Top-10 Continuous Assessment Dashboard Examples

1. **Change Assessment** – What's changed in my network?
2. **Anti-Drift Assessment** – Are there deviations from my config rules?
3. **Network Health Assessment** – Is my network 100%?
4. **Critical Applications** – Are my applications healthy?
5. **Security Assessment** – Am I vulnerable to known NIST standards and CVE bulletins?
6. **Life Cycle Management** – Is my hardware End of Life, End of Service?
7. **Hybrid Network Assessment** – Is my cloud, ACI, hybrid network healthy?
8. **Triggered Automation Assessment** – What issues occurred in the last hour, day?
9. **Past Outage Assessment** – Are known problems happening again?
10. **Capacity Assessment** – Is my network running out of bandwidth?

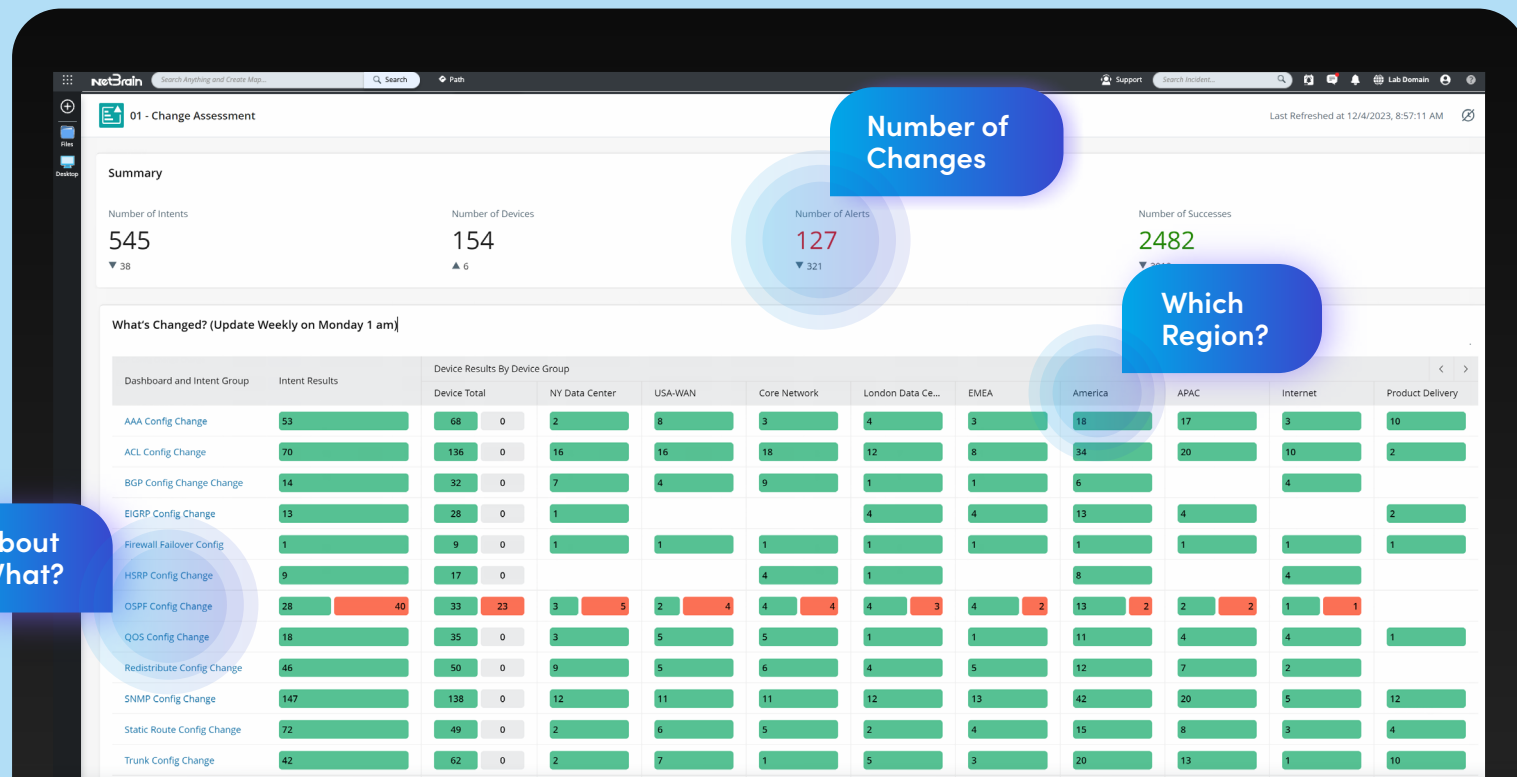


# 1

## Change Assessment – What’s changed in my network and where?

Monday morning, a few outages are reported...

You are wondering what’s changed over the weekend and where? Are they related?



# 2

## Anti-Drift Assessment – Are there violations to configuration rules?

Too many outages were caused by human errors...

Enforcing three types of rules via automation can cut down human errors drastically...

Part 3: Adopted Best Practice Rule

Number of Devices: 129

Number of Alerts: 7

Number of Successes: 1339

Dashboard and Intent Group	Device Total	Global-Core-WAN	America	APAC	Product Delivery	EMEA-WAN	EMEA	Core Network	New York All Dev...	Internet
BGP Network Rules										
IBGP Neighbor Should Sou...	37	9	7			5	2	9	1	4
BGP Referenced AS Path U...	0	0								
Device Hostname Compliance	42	14	11	8	1	4	1	7	2	2

3. Best Practice Rules

02 - Configuration Drift Assessment (Monday 1 am Weekly)

Summary

Number of Intents: 1072

Number of Alerts: 726

Part 1: Golden Config Rule

Number of Devices: 129

Number of Alerts: 40

Dashboard and Intent Group	Device Total	Distribution-WAN	Global-Core-WAN	APAC	USA-WAN	EMEA-WAN	NY Data Center	Int...
ACL Golden Check	0	34	11	7	7	6	2	1
QOS Golden Check	0	0						
Telnet_SSH Golden Check	0	6	3	3				
Total Alert Count ↓					6	2	1	

Part 2: User Submitted Rule(Folder: Public(Design Rule Check))

Number of Devices: 8

Number of Alerts: 9

1. Golden Config Rules

2. User Submitted Design Rules

# 3

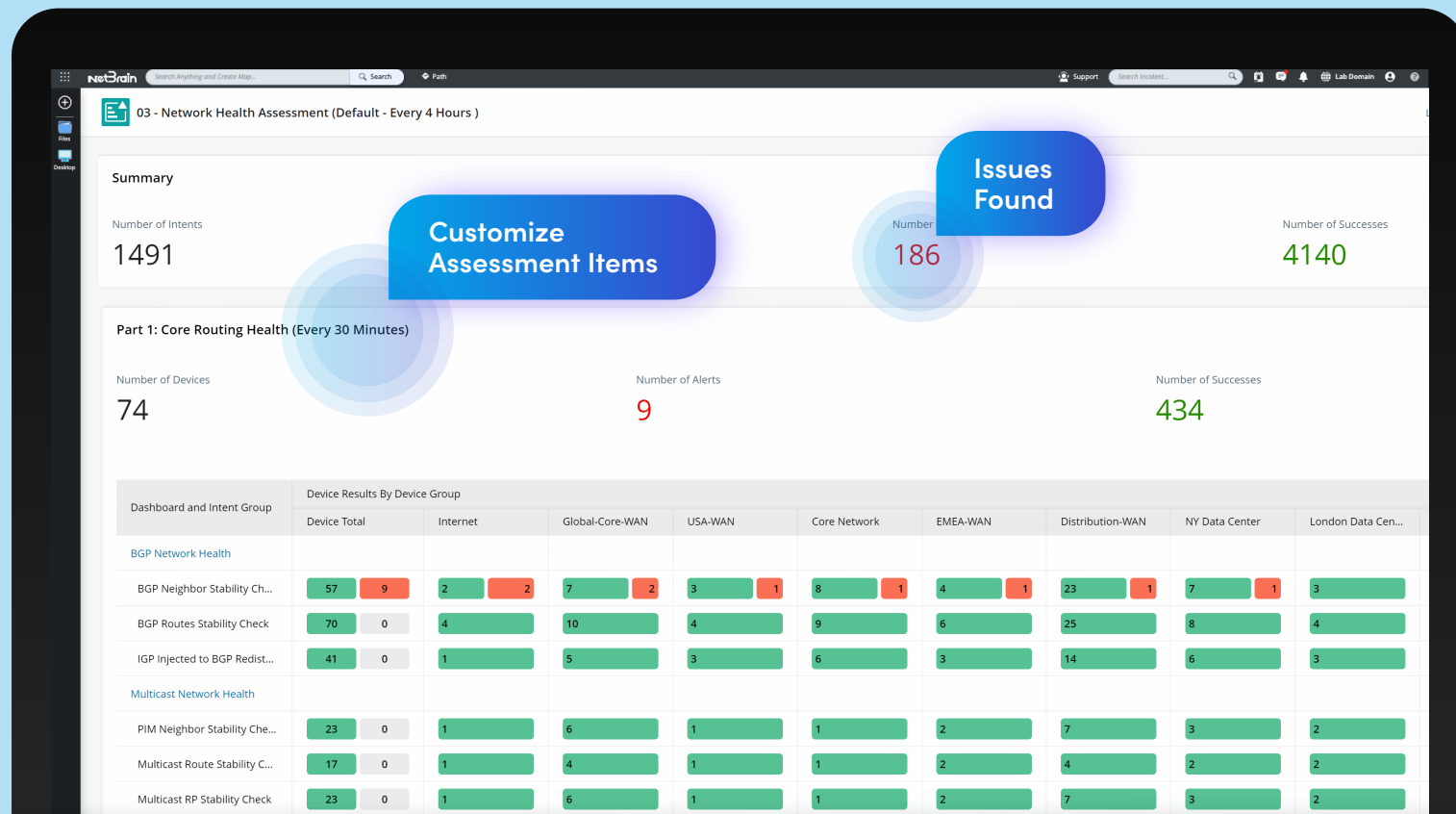
## Network Health Assessment – Is My Network 100%?

Networks are designed with many features and redundancy: are they functioning?

Continuously Assess:

- L3 Routing
- L2 Switching
- Failover
- VPN
- Wireless
- Error log
- ...

Across entire network.

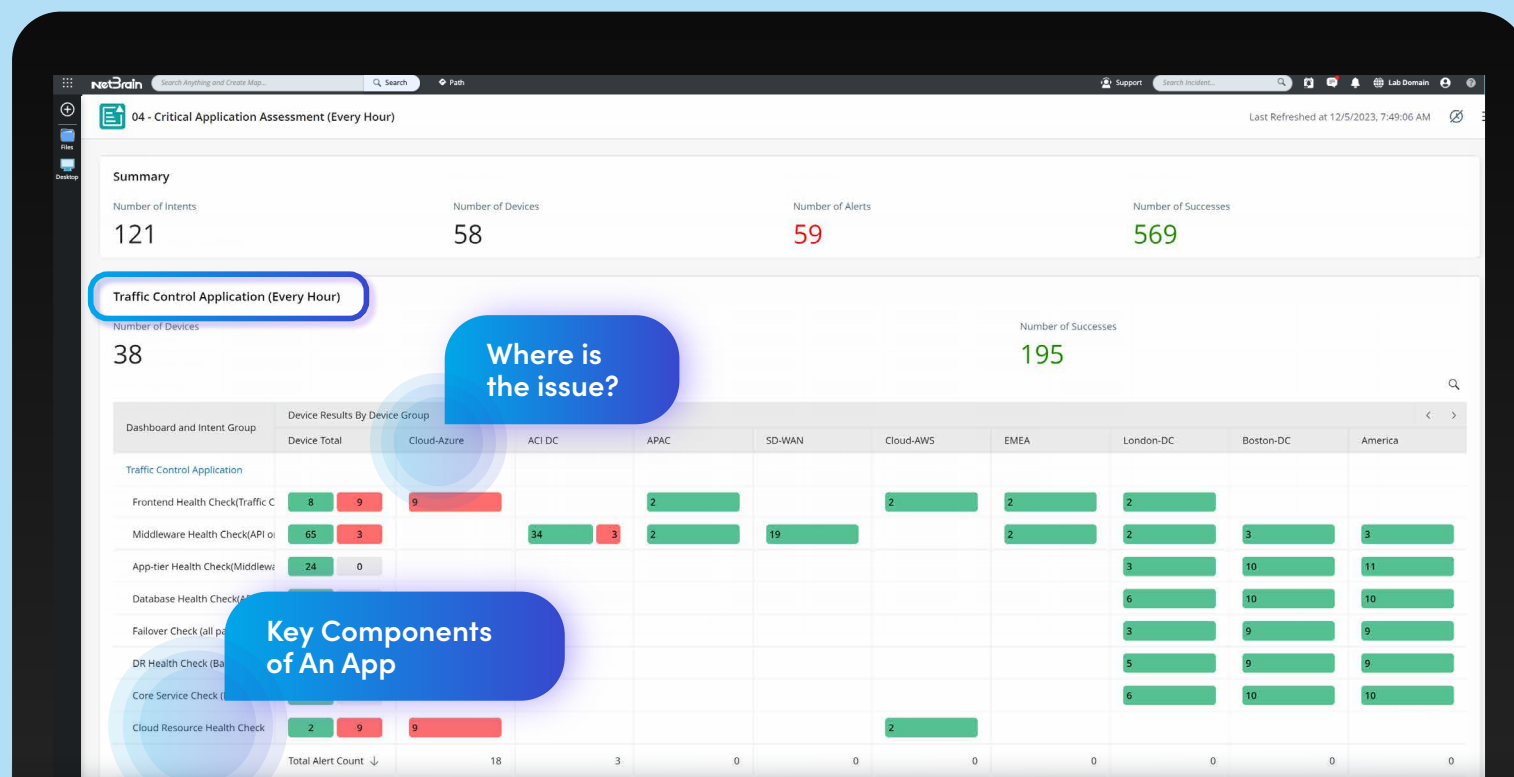


# 4

## Critical Application Assessment – Is My Application Running Healthy?

For both simple and complex applications, the only way to ensure their health is to have full visibility of underlying components and continuously assess their health.

Build automation to achieve this goal for all critical applications.



Where is the issue?

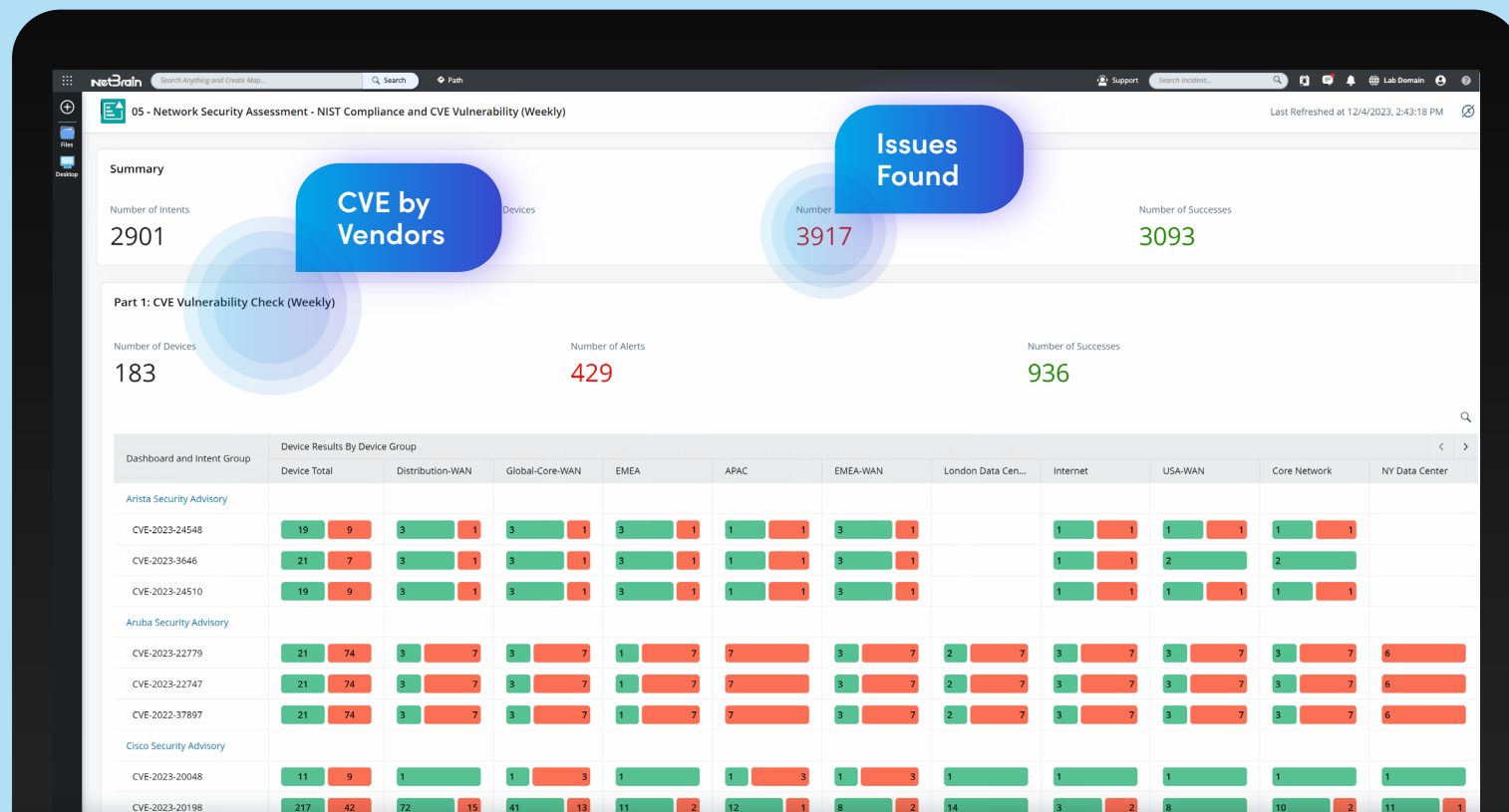
Key Components of An App

# 5

## Security Assessment – Is My Network Vulnerable According to NIST Standard and CVE Bulletin?

Industries are working together to enhance network security. NIST publishes a set of configuration standard for security, and CVE shares vendor reported vulnerability and exposure.

Apply automation to check your network against those standards.

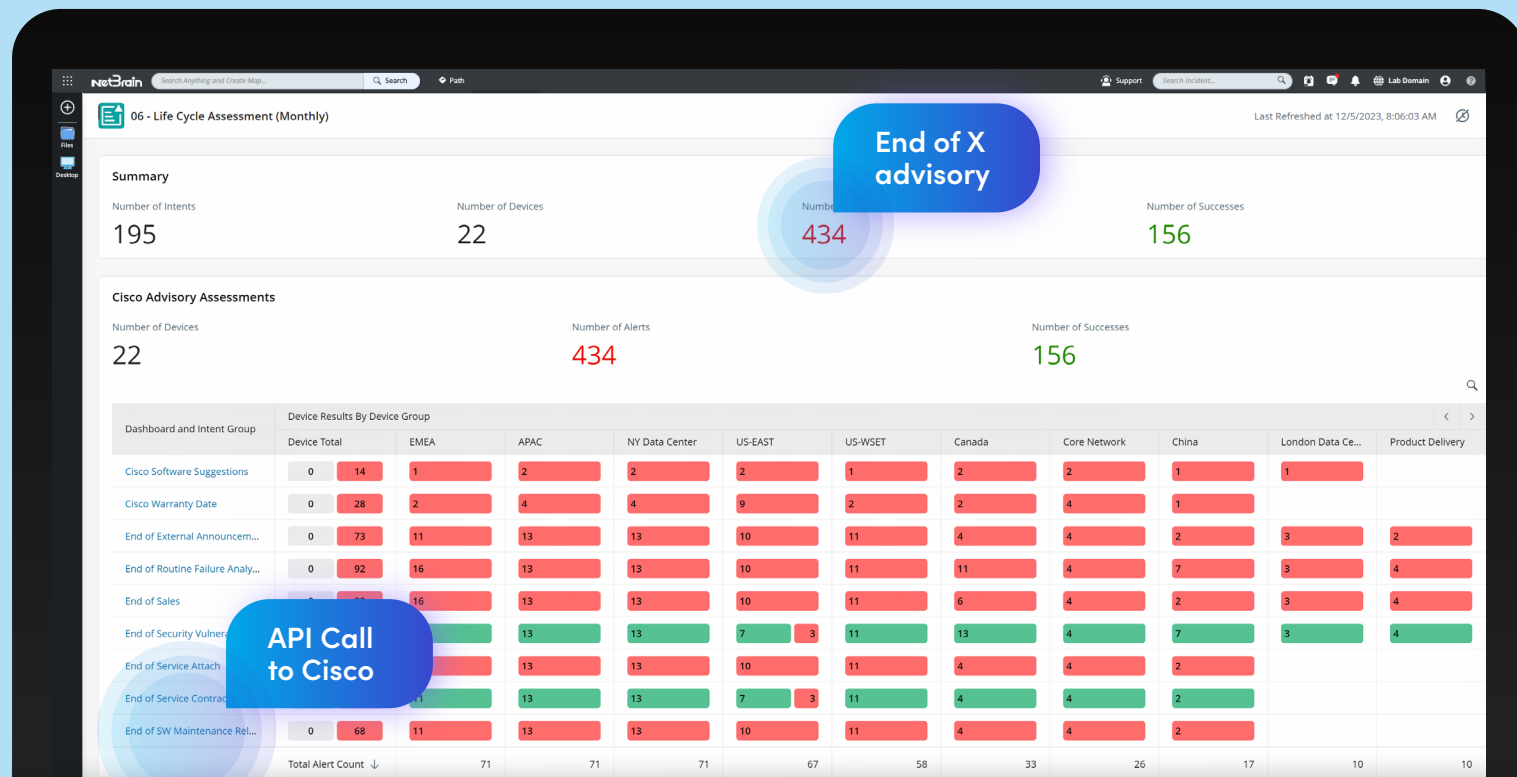




# 6

## Life Cycle Assessment – Is My Hardware End of Life, Out of Maintenance...?

Automatically make API calls to hardware vendors (like Cisco) to get up-to-date advisory of end of life, maintenance, service, warranty information of your network.



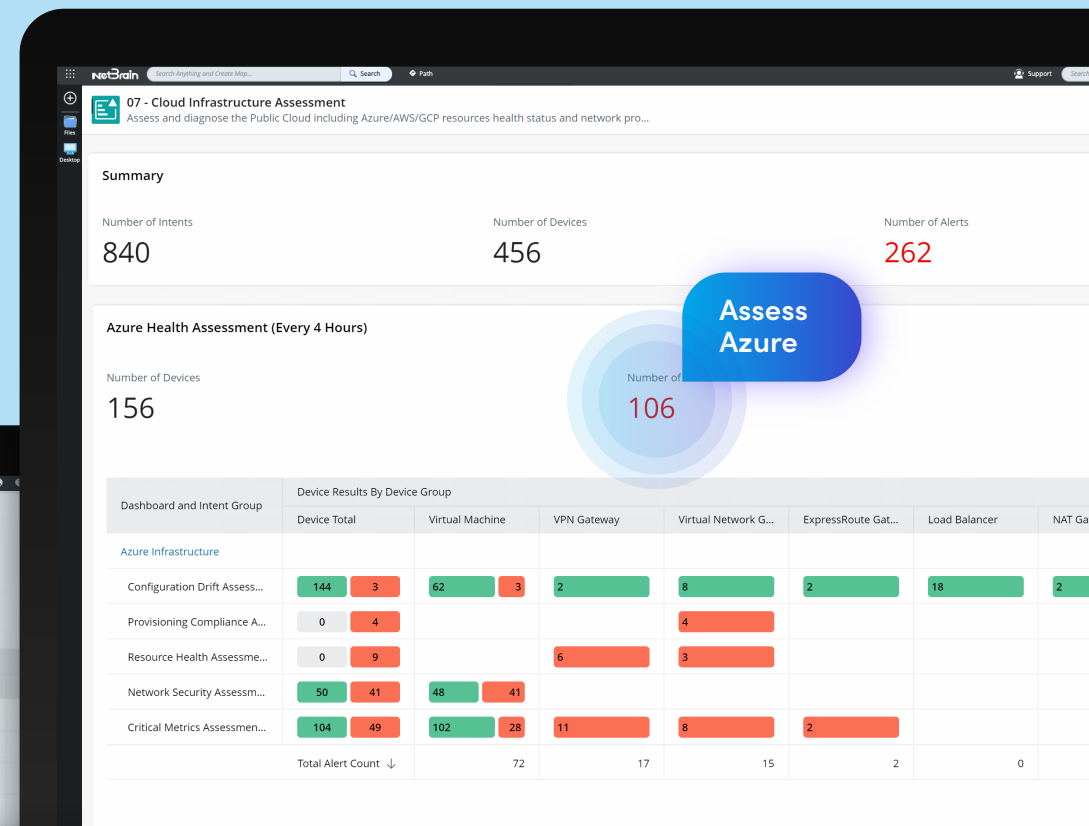
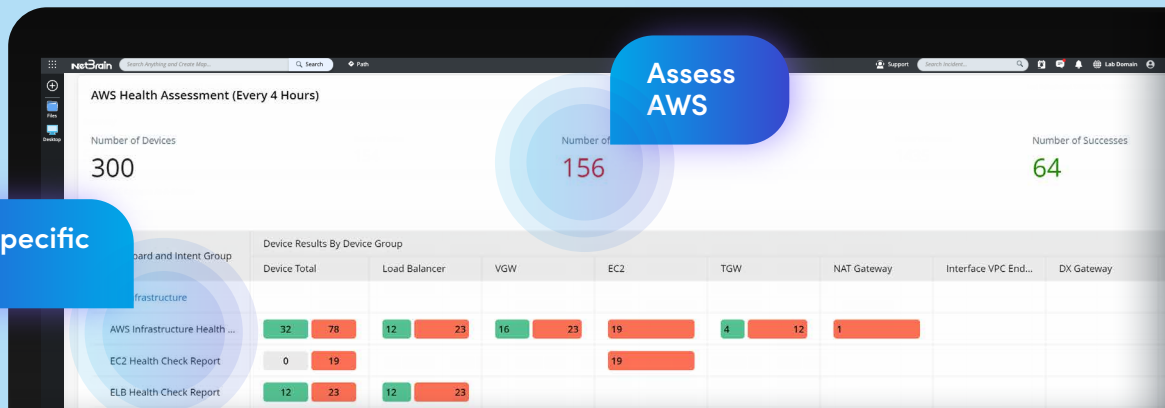
# 7

## Hybrid Network Assessment – Is My Cloud Healthy?

Cloud networks are virtual, but its problems are not.

Apply automation to continuously assess your cloud network:

- Microsoft Azure
- Amazon AWS
- Google Cloud

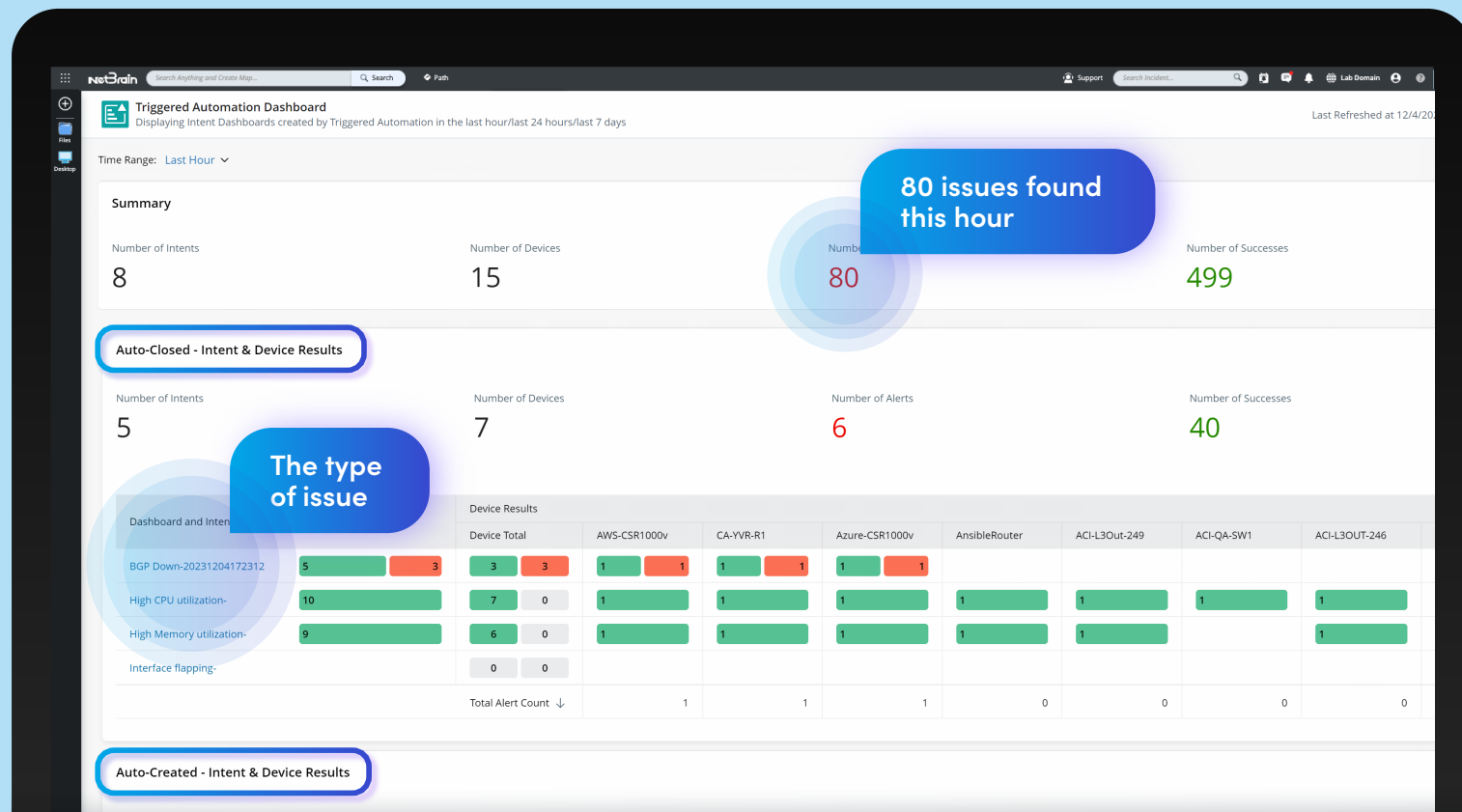


# 8

## Triggered Automation Assessment – What are the issues found at this hour?

Apply auto-diagnosis to incoming incident via API, leading to:

- Auto-closing ticket if problem is a noise
- Auto-opening if issues are found
- Auto-priority if impact is high

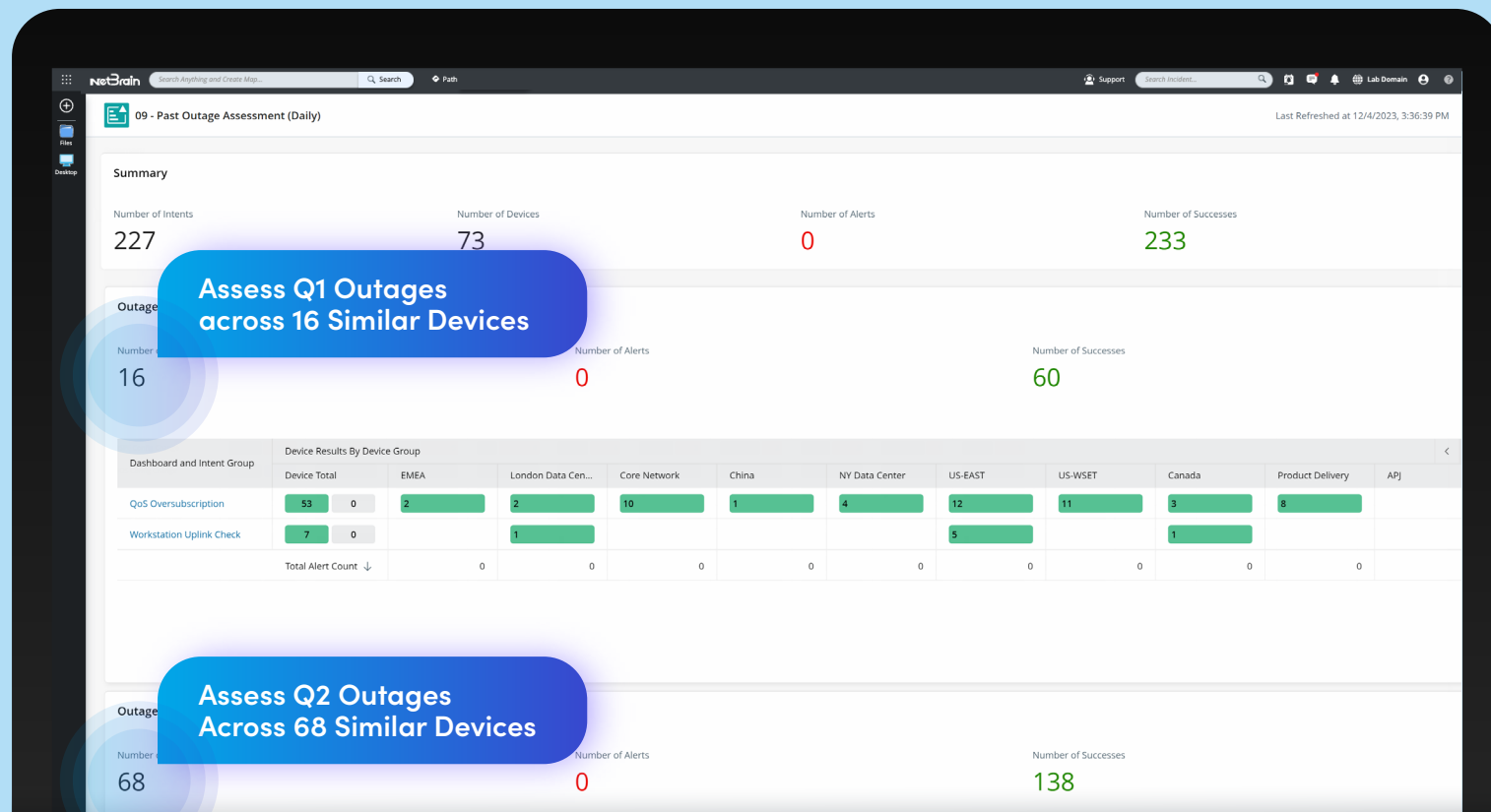


# 9

## Past Outages Assessment – Are Known Problems Happening Again?

For every problem that happened in your network before, could it happen again? In other part of network?

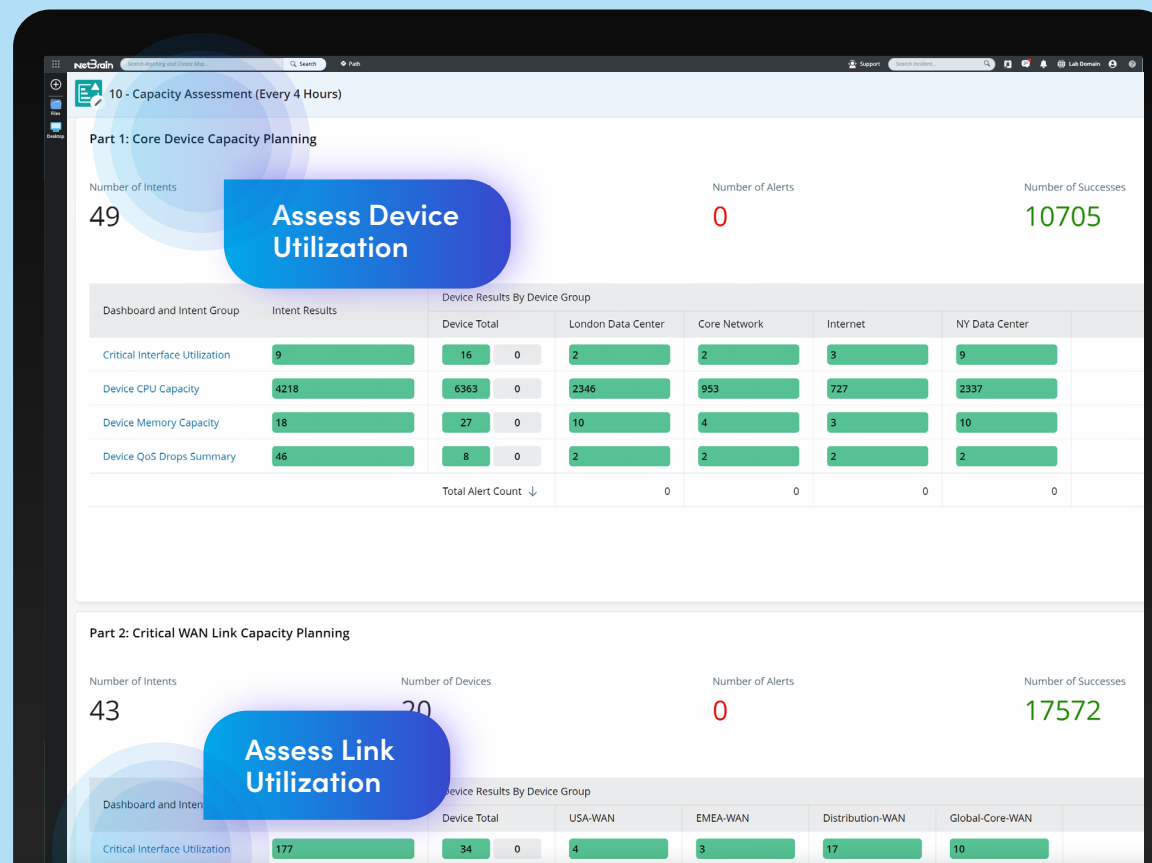
It could. Apply problem-based assessment across your network and monitor the results continuously...



# 10

## Capacity Assessment – Is My Network Running Out of Bandwidth?

Continuous capacity assessment reduces the risk of over-utilization and under-utilization across network...



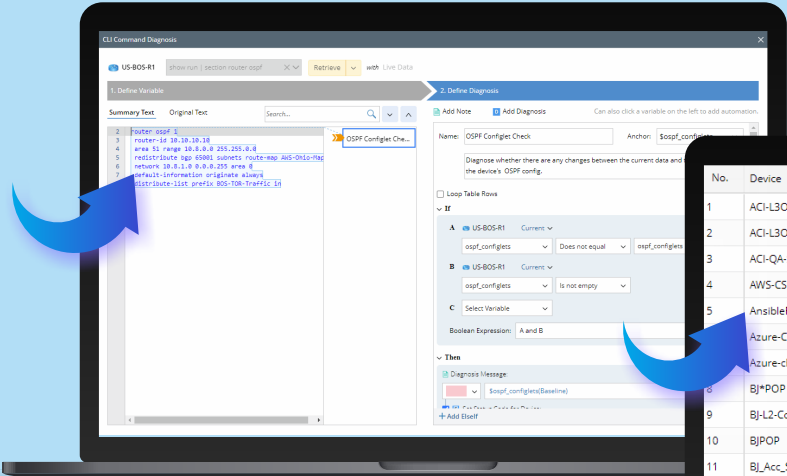
# From an Idea to a continuous assessment – No-Code Automation

1 No-Code Automation

Continuous Assessment

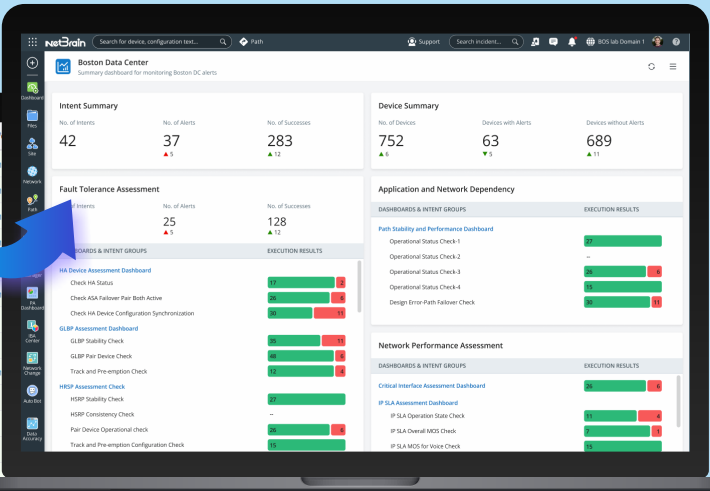


1 Idea



Replicated Network Wide

No.	Device	Device Type	Line Access Mode Ch...	Unused P
1	ACH-L3OUT-246	Cisco IOS Switch	Device access mode con...	Device un
2	ACH-L3Out-249	Cisco IOS Switch	Device access mode con...	Device un
3	ACI-QA-SW1	Cisco IOS Switch	Device access mode con...	Device un
4	AWS-CSR1000v	Cisco Router	Device access mode con...	Device un
5	AnsibleRouter	Cisco Router	Device access mode con...	Device un
6	Azure-CSR1000v	Cisco Router	Device access mode con...	Device un
7	Azure-cEdge	Cisco Router	Device access mode con...	Device un
8	BJ*POP	Cisco Router	Device access mode con...	Device un
9	BJ-L2-Core-A	Cisco IOS Switch	Device access mode con...	Device un
10	BJPOP	Cisco Router	Device access mode con...	Device un
11	BJ_Acc_SW6	Cisco IOS Switch	Device access mode con...	Device un
12	BJ_L2_Core_3	Cisco IOS Switch	Device access mode con...	Device un
13	BJ_L2_Core_4	Cisco IOS Switch	Device access mode con...	Device un
14	BOS-cEdge-01	Cisco Router	Device access mode con...	Device un
15	BUR12-LAB-SW1	Cisco IOS Switch	Device access mode con...	Device unused ports co...



<1 hour

# Drill-down to Detail Dashboard and Map Intent

Drill down to assessment over time in detail dashboard

Drill down alert to map and automation

**ACL Config Change**

Summary: 36 Intents, 86 Times Executed, 4 Intent-level Alerts

Device Information: Cisco Router, Cisco IOS Switch, Cisco ASA Firewall

Intent Result History: Sum of Intent Alert Status Code Count, Sum of Intent Success Status Code Count

Intent Name	Map	Execution Time	Intent Alert Status Code Count	Intent Success Status Code Count	Intent Status Code Summary
ACL Config 69	View Map	11/30/2023, 9:16:15 PM	2	0	US-LAX-R1:The standard
ACL Config 51	View Map	11/30/2023, 9:16:09 PM	1	1	CA-TOR-R1:The standard
ACL Config 45	View Map	11/28/2023, 9:26:47 PM	1	1	BJ-L2-Core-A:The standard
ACL Config 70	View Map	11/28/2023, 9:28:14 PM	0	2	US-SFO-R2:The standard

US-BOS-R1 prefix-list same as baseline 1

```

show access-list 195 1 Diagnosis
10 permit udp any any eq domain
20 permit udp any eq domain any
30 permit tcp any any eq domain
40 permit tcp any eq domain any

```

Configuration 1 Diagnosis 2 Successes

```

ip prefix-list BOS-TOR-Traffic seq 2 permit 10.8.1.0/24 L
ip prefix-list BOS-TOR-Traffic seq 5 permit 10.8.2.0/24 L
ip prefix-list BOS-TOR-Traffic seq 6 permit 10.8.20.0/24 L
ip prefix-list BOS-TOR-Traffic seq 10 permit 10.8.3.0/24 L
ip prefix-list BOS-TOR-Traffic seq 12 permit 10.8.30.0/24 L
ip prefix-list BOS-TOR-Traffic seq 15 permit 10.8.4.0/24 L
ip prefix-list BOS-TOR-Traffic seq 20 permit 10.8.5.0/24 L
ip prefix-list BOS-TOR-Traffic seq 25 permit 10.8.7.0/24 L
ip prefix-list BOS-TOR-Traffic seq 30 permit 10.8.8.0/24 L
ip prefix-list BOS-TOR-Traffic seq 31 permit 10.8.80.0/24 L
ip prefix-list BOS-TOR-Traffic seq 35 permit 10.8.9.0/24 L
ip prefix-list BOS-TOR-Traffic seq 40 permit 108.1.1.0/30 L
ip prefix-list BOS-TOR-Traffic seq 41 permit 10.201.1.0/24 L
ip prefix-list BOS-TOR-Traffic seq 42 permit 10.8.35.0/24 L
ip prefix-list BOS-TOR-Traffic seq 50 deny 0.0.0.0/0 le 32

```

BOS Site WAN Router Design Rule Check

Design Rule Details

Rule ID	Design Rule Details	Reference Link
107	Prefix list BOS-TOR-Traffic should be same as baseline	<a href="http://www.netbraintech.com/netbrain/designrule/107">http://www.netbraintech.com/netbrain/designrule/107</a>
105	ACL 195 should be consistent between Primary/Backup Devices	<a href="http://www.netbraintech.com/netbrain/designrule/105">http://www.netbraintech.com/netbrain/designrule/105</a>

Design Change Log

Modified by	Modified Time	Change Log
Eddy	12/1/2023	Modified Configlet for Rule107
Chris	11/27/2023	Added Rule107
Danny	10/23/2023	Added Rule105

Network Diagram: BOS Site WAN Router Design Rule Check showing devices like DMVPN, CA-TOR-R1, US-BOS-R1, US-BOS-R2, US-ANY-R1, and Demo-Vlan3.

Rule105 - ACL Consistency: ACL195 should be consistent between US-BOS-R1 and US-BOS-R2 with contents: 10 permit udp any any eq domain, 20 permit udp any eq domain any, 30 permit tcp any any eq domain, 40 permit tcp any eq domain any.

Rule107 - Prefix list Check with Baseline: Prefix list BOS-TOR-Traffic should be same as baseline data for WAN devices as they control traffic between Toronto and Boston site.

# 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.

