Reverse Engineering and Assessment Service

Most enterprise networks have been undergoing continuous evolution and change over multiple decades. In the process, they have accumulated remnants from legacy technologies, designs and configurations from multiple generations of engineers and architects that are scattered inconsistently throughout the environment. These inconsistencies result in failed changes, unseen faults that result in outages and prolonged troubleshooting efforts that span multiple teams.

NetBrain's Reverse Engineering discovers configuration standards and intended functionality by reverse engineering the production network. This process helps customers codify their standards, but also identifies legacy configurations or drift from baseline configurations that are present in the environment.

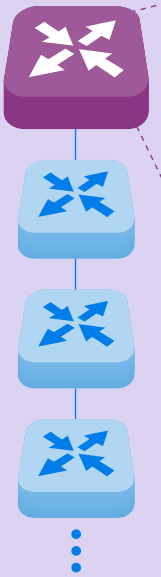
In the Reverse Engineering and Assessment Service, NetBrain Automation Architects and Engineers partner with customers to execute the reverse engineering process and prevent future drift. At the conclusion of an engagement, customers will have:

- Enhanced visibility into configuration drift from key rules and golden configurations
- Insights into network deviations from the intended operating state for essential features and technologies
- Automated solutions to consistently protect golden configurations and critical network states
- Dashboards for ongoing validation of compliance with golden configurations and intended operating states

Representative Devices

Identify list of representative devices in network

Key Customer Devices



Reverse Engineer

Read config, identify config templates, features implemented

Config

ACL config should be consistent between HSRP pairs

BOGON **security filter** must exist inbound for all Internet interfaces

Outbound QoS policy drops VOIP traffic last

SNMP traffic should be disallowed on WAN interfaces

State

VLAN100 interface should be **HSRP state** standby

QoS drops should be 0 or not increasing

BGP neighbor should be **stable**

HSRP state between pairs should not be same

Assess Day 1 Issues

Find immediate **critical** issues, and auto-remediate

Sample Results:
6 variations of device access found in network (should only be **1**)

Sample Results:
9 out of 61 pairs of redundant switches had missing config (single point of failure)

31 out of 267 pairs had inconsistent security policies

Sample Results:
25 variations of security access-lists found on customer internet facing routers (should only be **1**)

75% of firewalls had incorrect firewall policy (should only be **1**), drift from many years of operations

With Golden defined, the NetBrain Automation Expert helps ensure that these configurations and feature designs are exposed for ad hoc validation and protected from Day 2 drift using preventative, scheduled automation.

Improvement Through Observation

As part of the **Reverse Engineering and Assessment Service**, our NetBrain Automation Experts will spend a portion of the time on-site with your engineers.

As part of this on-site initiative, the NetBrain Automation Expert will:

- Meeting with key engineers, architects, and network operations leaders
- Identify representative devices within your environment
- Read and identify key configs and designs in the network from these representative devices
- Apply reverse engineering to discover golden configs and existing variations
- Identify day 1 issues and build day 2 observability dashboards
- Observing new incident intake, triage, and escalation processes
- Reviewing existing SOPs for diagnostic troubleshooting with your engineers
- Shadowing the entire L1 / L2 / L3 Engineering escalation workflow
- Transforming SOPs, key diagnosis steps into re-usable Automation

NetBrain On-site Visit 4-Day Agenda

DAY 1 — OBSERVATION AND INTERVIEW

Kickoff
- Team Introductions
- Agenda Review and Planning
- Align on Goals and Objectives

Network Operations Center Walk-Thru, Shadowing and Interviews
- Observe New Incident, Triage, and Escalation
- Review Existing SOPs for Diagnostic Troubleshooting
- Shadow the Escalation Workflow
- Identify Diagnostic Gaps and Pain Points and their Impact

Identify Scope for Reverse Engineering
- Representative Network Devices
- Standard Features, Protocols and Capabilities
- Configuration Targets

Day 1 Wrap-Up and Review

DAY 2 — REVERSE ENGINEERING OF NETWORK CONFIGURATION

For each feature in scope for reverse engineering:
- Identify template configuration sections and commands
- Identify relevant configuration variations in production
- Design Golden Config templates and parameters
- Identify non-compliant production configurations

Document Day-1 Issues (non-compliant configurations) for remediation

Develop Golden Intents to validate compliance with Golden Configurations

Customer Architect and Engineer Review
- Review Development Progress and Findings
- Identify "Golden" Reverse Engineered Network Designs

Day 2 Wrap-Up and Review

DAY 3 — GOLDEN FEATURE DESIGN

Define and discover golden features and intended states

Develop Golden Intents for discovered features

Publish Automation to Observability Dashboards

Identify and document deviations from intended state

Enable Automation Support for NetBrain Dynamic Maps

Customer Architect and Engineer Review
- Review Development Progress and Findings
- Establish and Refine Golden Intent Diagnostic Messages

Day 3 Wrap-Up and Review

DAY 4 — ENABLEMENT AND DELIVERABLES REVIEW

Finalize Deliverables

Additional Engineering Shadow Session(s)

Automation Enablement Workshop

Evaluate NetBrain Platform with NetBrain Administrator
- Validate State of Digital Twin
- Review Deployed and Active Automation Units
- Determine Overall Platform Usage

Review Assessment Findings with Engineering Leaders

On-site Visit Wrap-Up and Next Steps