NetBrain

# Hybrid Network Auto-Discovery, Mapping and Documentation

Modern IT infrastructures are no longer monolithic entities but intricate, multi-layered jigsaw puzzles. The foundational pieces—hardware from Cisco, Juniper, and Fortinet—form the stable, on-premises corners. To this, dynamic cloud pieces from AWS, Azure, and GCP are constantly added and reconfigured. These are connected by virtualized, software-defined pieces (SDN, SD-WAN), while container orchestration platforms like Kubernetes act as self-contained micro-puzzles, moving and changing at an incredible pace.

This hybrid reality has created a profound operational crisis for network teams. With fragmented toolsets and no unified view, organizations face crippling inefficiencies: documentation is perpetually out-of-date or missing entirely, problem resolution is delayed, audits fail, and operational overhead becomes unsustainable. According to Gartner®, "As organizations accelerate cloud and hybrid infrastructure adoption, the ability to map component relationships and dependencies accurately becomes essential to minimize unplanned outages, track availability and enable effective service delivery."[1] Teams are struggling not just to manage this complexity, but to simply see it.

# Discover Your Network's DNA: The Intent-Based Digital Twin

NetBrain directly addresses this crisis by creating a live, comprehensive Digital Twin of your entire hybrid network. This is not a static diagram or a theoretical model; it is a dynamic, always-accurate software replica that automatically synchronizes with your production network in real-time. Gartner states that such a twin "provides a model that can be used for validation of the configuration or policies of either a single network component or the entire network."[2]

This innovative approach unifies visibility, automation, and proactive assurance across traditional, virtual, and cloud infrastructures within a single platform. The magic lies in understanding the network's "DNA"—its intent. Just as DNA contains the foundational instructions that define a human, intent is the unique set of instructions that define a network's purpose and function, governing its behavior and predicting its outcomes.

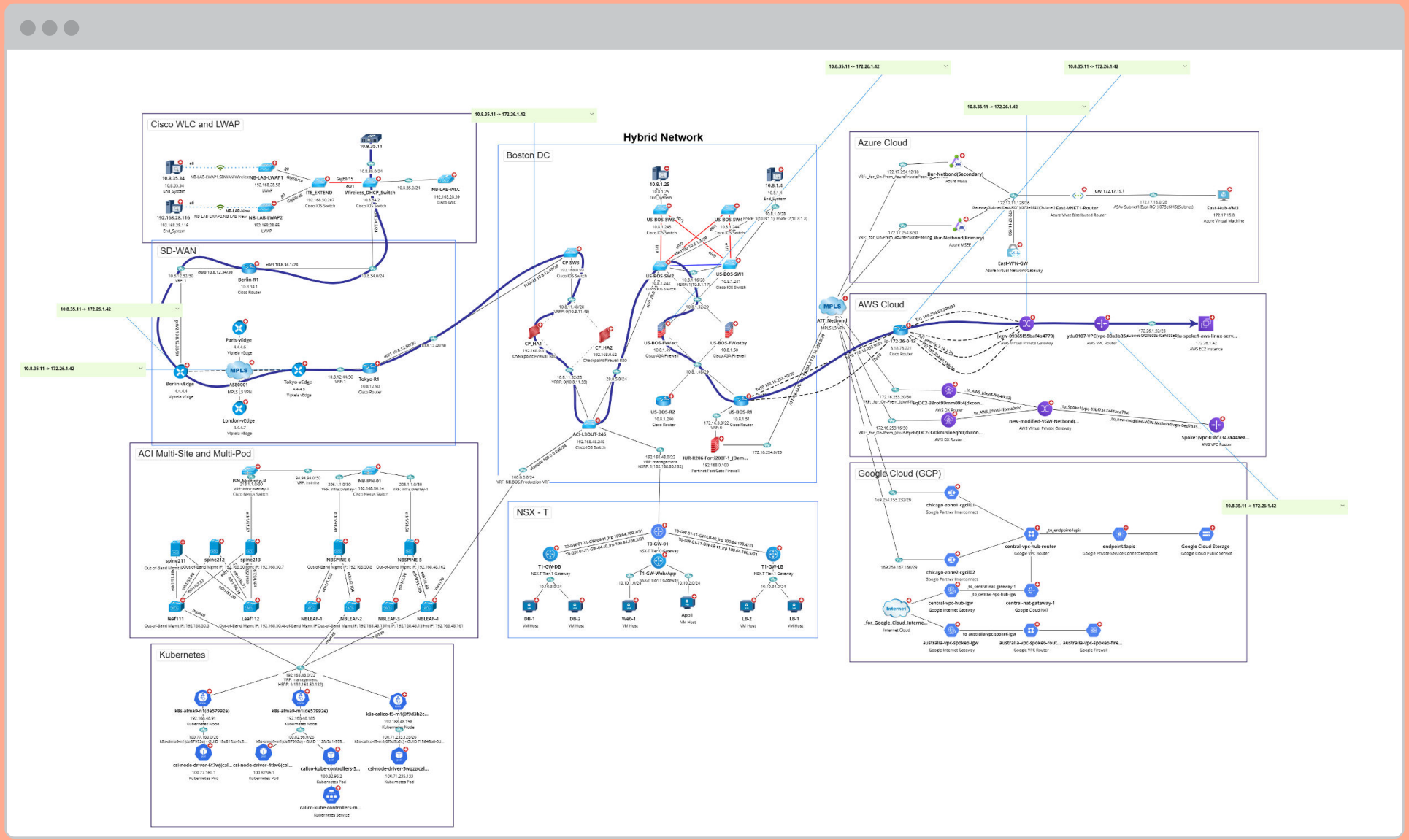
**The Intent Layer consists of:**

- Network designs and architectural plans.
- Configuration compliance and security policies.
- Operational states and performance baselines.
- Industry and security standards.

NetBrain's auto-discovery engine decodes your network's desired state by reverse-engineering device configurations, generating a foundational set of these intents. These intents power the Digital Twin, transforming it from a simple model into a dynamic blueprint of your ideal network—a "gold standard" architectural plan. Continuous automation then compares the live network against this twin in real-time, identifying any deviation and leveraging agentic AI to trigger self-healing actions that maintain peak efficiency and compliance. This moves network management from reactive troubleshooting to proactive, intent-based assurance.

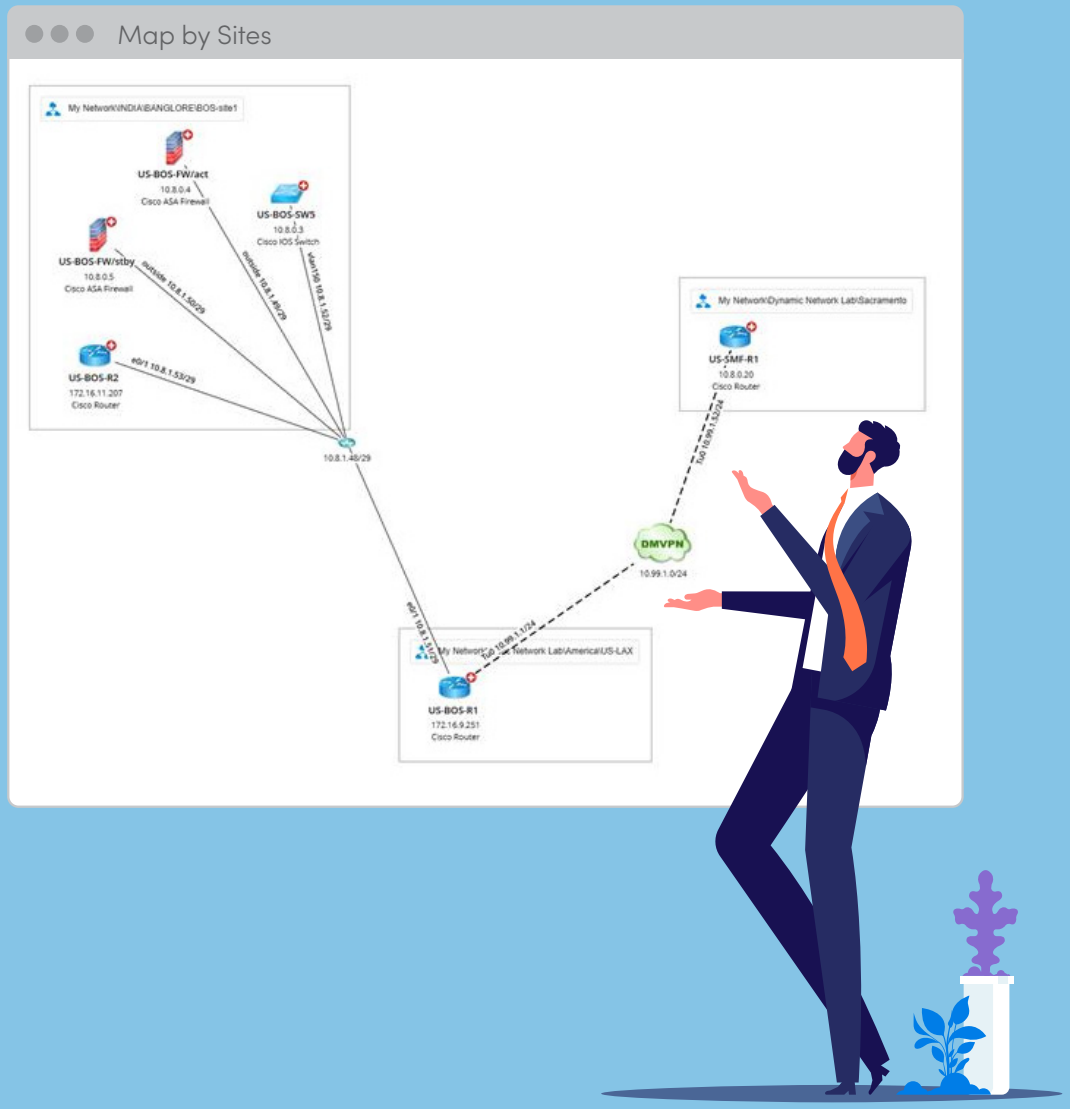
# Digital Twin Capabilities & Benefits

Gartner research indicates that “a network digital twin can improve delivery times for requests by 20% across the network.”[3] NetBrain delivers this through several core capabilities:



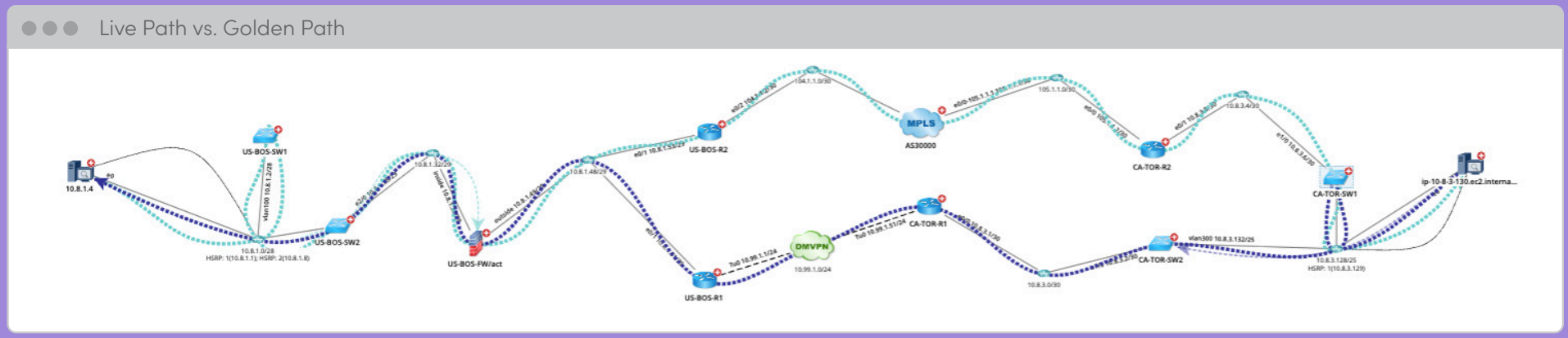
## Automated Holistic Network Discovery & Mapping:

- **How it Works:** The system performs deep, reverse engineering of the network. It discovers devices and their configuration rules across traditional devices via CLI, SSH, SNMP and seamlessly integrates with hybrid and cloud environments via RESTful APIs for platforms like Cisco ACI, Amazon AWS, Microsoft Azure, and Kubernetes. Its rule discovery engine pinpoints which devices leverage unique network rules, allowing you to detect issues caused by configuration drift on Day 1.
- **The Benefit:** This eliminates information silos, providing a single pane of glass for entire network visibility and significantly reducing the time engineers spend correlating data from multiple tools. It creates the foundational data layer for all advanced automation and AI.



## Dynamic Path Discovery and Analysis:

- **How it Works:** The platform calculates true hybrid application paths end-to-end, from on-premises devices through SD-WAN and data centers, all the way to cloud-based resources. It automatically gathers critical pathing information like VRF and VPC routing tables via both API and CLI.
- **The Benefit:** This capability accelerates troubleshooting by instantly pinpointing the exact location of performance bottlenecks or connectivity issues across these complex hybrid paths, replacing hours of manual tracing.




## Actionable Maps & Collaboration:

- **How it Works:** Dynamic maps can be exported to Microsoft Visio, Word, or image formats, effectively replacing static documentation. Users can easily drill down into errors and anomalies identified during automated assessments directly from the map view.
- **The Benefit:** This enhances collaboration between network, security, and cloud teams by providing a shared, accurate, and up-to-date visual context for decision-making, drastically reducing MTTR by eliminating reliance on outdated network diagrams.

## Agentic AI-Driven Documentation and Reporting:

- **How it Works:** NetBrain leverages agentic AI and robust automation to continuously capture and maintain accurate network data, forming a dynamic **Network Source of Truth (NSoT)**. This includes granular inventory, detailed configurations, precise topology, and real-time operational state. Engineers can generate custom reports using natural language input (e.g., “create a summary of all core switches for the CFO”), and the AI will refine and tailor the output.
- **The Benefit:** This completely eliminates manual documentation updates, drastically reduces reliance on tribal knowledge, and provides streamlined, centralized, and accessible network intelligence for improved operational efficiency, faster audits, and confident planning.

# From Static Maps to Intent-Driven Operations

NetBrain transforms your digital twin from a static map into an intelligent, interactive operations console. Engineers often waste critical time piecing together information from disparate tools to answer a simple question: Is the network behaving as intended?

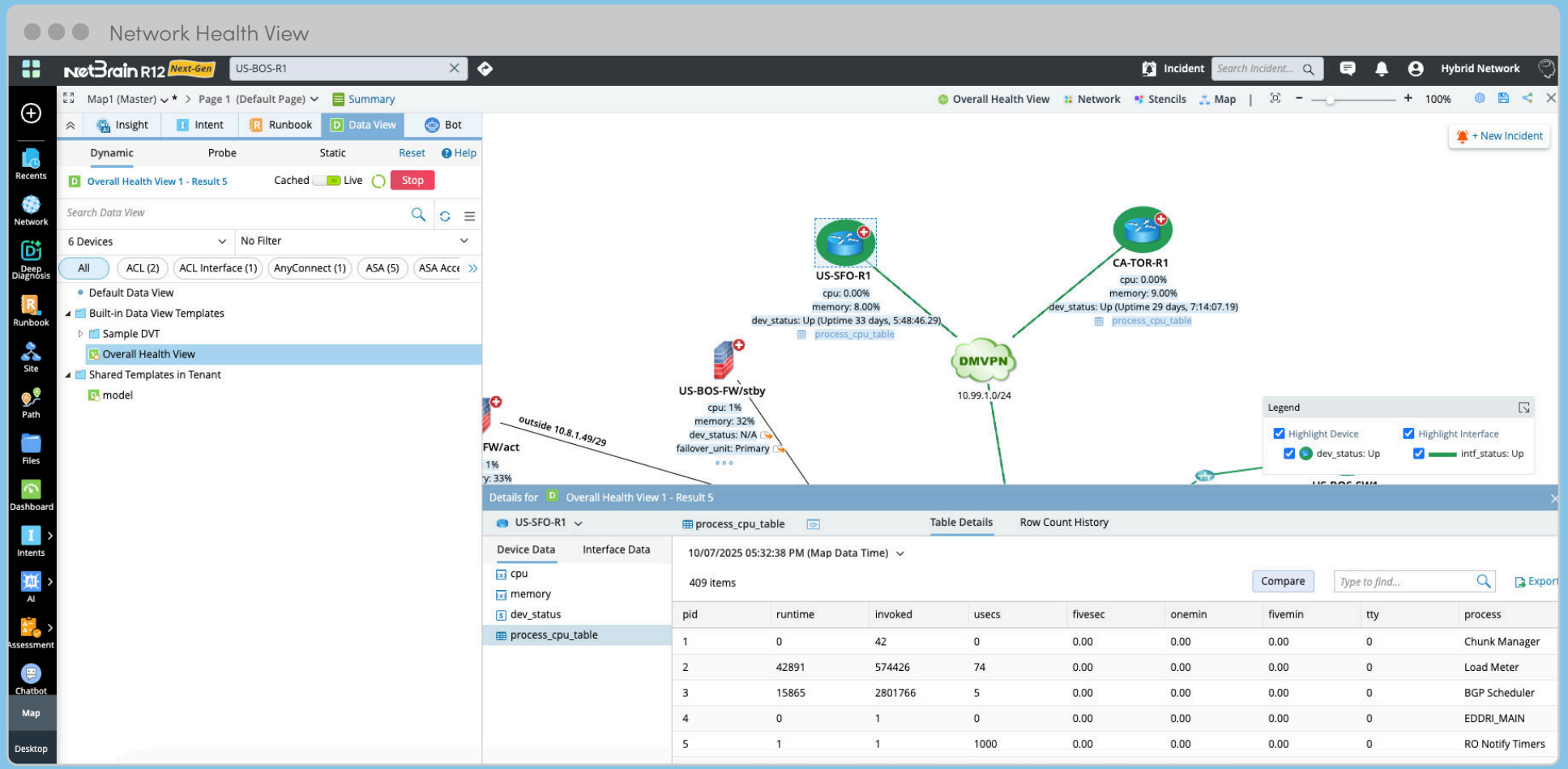
### How Intent-Driven Maps Work:

1. **Intent-Driven Context:** When any intent—a pre-built use case or a custom investigation—is executed, NetBrain automatically generates a tailored Intent Data View (intents on a map of devices).
2. **Automated Discovery of State:** This view pulls real-time and historical data precisely related to the task, displaying it directly on the map, including performance metrics for targeted devices and the paths between them.
3. **Instant Deviation Detection:** The results are rendered atop the digital twin, providing an instant visual comparison between intended design and operational reality.

**Key Benefit:** Engineers can immediately spot deviations without manual data correlation, accelerating Mean Time to Resolution (MTTR) from hours to minutes and ensuring continuous design compliance.

# Unifying the IT Ecosystem: A True Single Pane of Glass

Critical data resides in an ecosystem of third-party tools—from SIEM systems and performance monitors to cloud platforms and ITSM systems like ServiceNow. Manually correlating this data is slow and error prone.



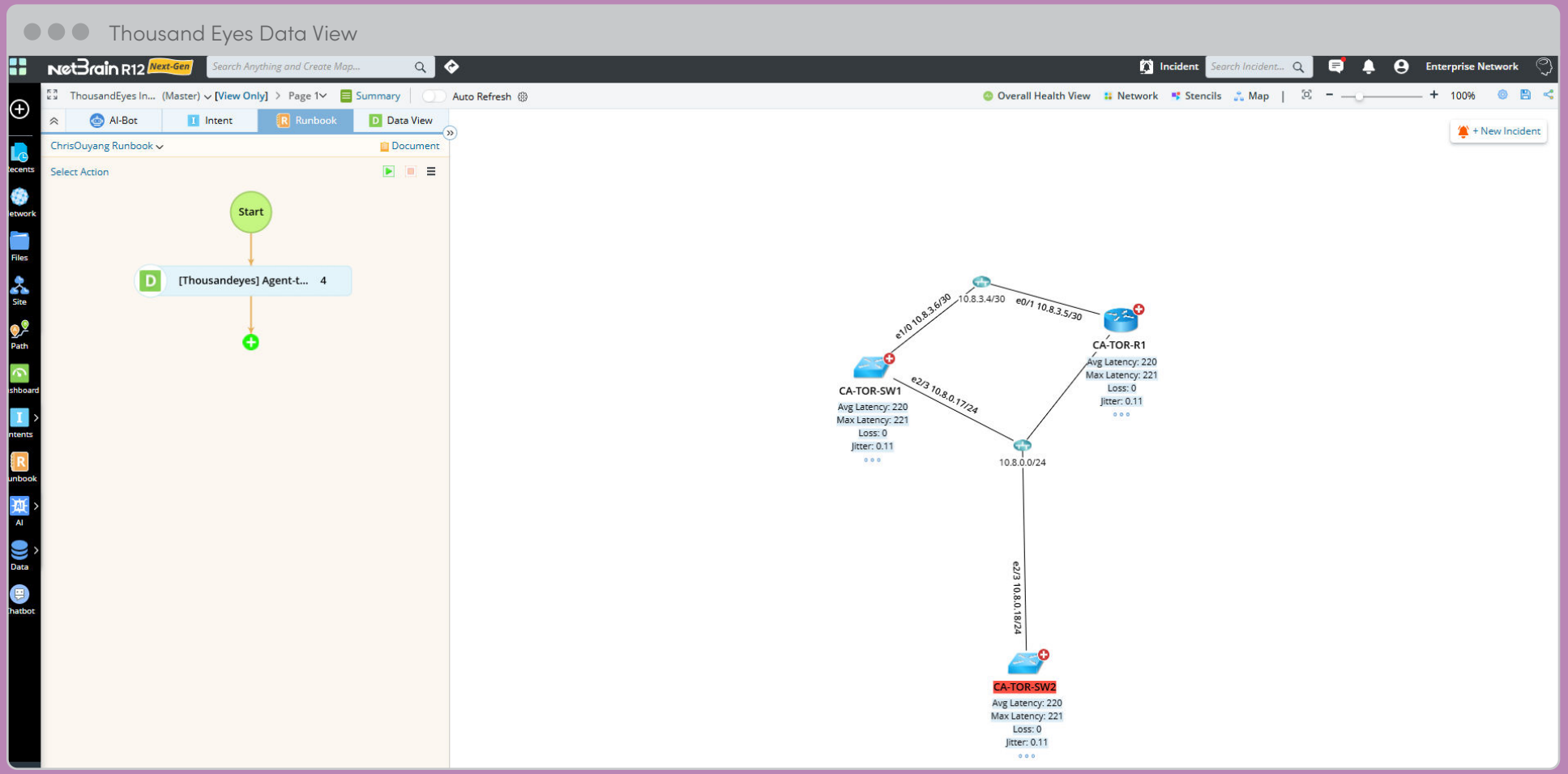
## How it Works:

1. **Extensible Integration:** Pre-built or custom templates pull specific data from any tool with APIs.
2. **Contextual Overlay:** With a click, these templates apply to any device or link on your live digital twin. The platform calls the external API and displays the data directly on the map.

**Key Benefit:** Create a true Single Source of Truth. Correlate firewall policies, ticket history, server health, and threat intelligence directly with the network infrastructure. This radically accelerates cross-domain troubleshooting and enhances security response by giving teams a shared, contextualized view.

### For example:

- Apply a **ServiceNow Template** to a device to see all related incident tickets and change records without leaving the map.
- Use a **Palo Alto Networks or Check Point Template** to visualize firewall rule hits and security policy status for a specific subnet.
- Drag a **Datadog or AppDynamics Template** onto a path to overlay application performance metrics atop the network route.




# Conclusion: Mastering Hybrid Complexity

NetBrain's live hybrid network digital twin empowers organizations to master the complexities of their evolving IT landscapes. By unifying discovery, mapping, path analysis, and proactive assurance across traditional and cloud environments, NetBrain delivers unparalleled visibility, automates routine tasks, and ensures the continuous health and performance of your entire network. The result is a fundamental shift in network operations—saving time, reducing costs, and transforming IT from a cost center into a strategic driver of business efficiency.

## Try AI-Powered Network Automation, Risk-Free

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## Sources:

[1] Gartner, ***How to Successfully Choose an IT Dependency Mapping Tool, Ankita Hundal***, Roger Williams, 3 Sep 2025

[2] Gartner, ***Leverage Network Digital Twins to Increase Agility and Lower Risk***, Tim Zimmerman, Andrew Lerner, Mike Leibovitz, 14 Apr 2025

[3] Gartner, ***Hype Cycle for Enterprise Networking***, 2025, Mike Leibovitz, Andrew Lerner, Jonathan Forest, Karen Brown, 30 Jun 2025

## GARTNER Disclaimer: