The Insight Console:
Update on current status and work in progress.

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- Insight Architecture
- Insight Console
- Virtual Networks
- The Migration (Oct 2023)
- Since Then
The Insight Architecture
The Insight Architecture

- The Insight architecture is **layered**, **extensible**, and **microservice**-based.

- Managed infrastructure:
  - Optical and packet gear in the Internet2 core network.
  - Multi-vendor: Ciena, Cisco, Juniper, and Arista.
  - Other devices types can be added in the future.

- Configuration management:
  - Applications providing modeling and automation for managed infrastructure.
  - Includes off-the-shelf (Ciena MCP, Cisco NSO) products as well as customized open source (NTC Nautobot) and locally-developed code (Insight Reconciler).
  - Other applications can be added in the future.

- Unified API microservices ("Insight API"):
  - A locally-developed API providing unified, functional, vendor-neutral access to configuration management.
  - Other microservices can be added in the future.

- Tools & Interfaces:
  - Currently includes the Insight Console (more later).
  - Other tools can be added in the future.
The Insight Console
The Insight Console

- A web-based tool for visualizing, managing, and troubleshooting all Internet2 network services.
- The most visible part of the Insight architecture.
- Authentication and authorization integrated with Internet2 Identity Services (a.k.a. “InCommon SSO”).
- Functions delivered in 2023:
  - **Looking Glass**: Run commands (in a safe and secure environment) against our production devices and get live results.
  - **Community**: Self-management of organizations, people, and roles.
  - **Interfaces**: Visualization of network ports and services.
  - **Virtual Networks**: Creation and management of L2 and L3 overlay networks, including CloudConnect.
- Functions planned for 2024:
  - **Routing Intentions**: Visualization and management of I2RE and I2PX routes and routing policy.
Virtual Networks
Virtual Networks

- **Visualization, management, and troubleshooting** for L2 and L3 overlay networks; a re-implementation and enhancement of similar functionality previously delivered via OESS/CloudConnect.
- **Virtual spaces** provide a canvas within which different organizations can collaborate on building overlays.
- **Virtual devices** (switches and routers) can be added to spaces to establish L2 and L3 overlays.
- **Virtual connections** can be added to devices to connect the overlays to interesting places: other Internet2 members or downstream sponsored parties, government and industry partners, cloud partners (AWS, Azure, GCP, OCI), etc.
- Provisioning of the overlay networks on Internet2’s production network is handled via Insight API calls, with backend automation provided through NTC Nautobot, Cisco NSO, and other supporting tools.
The Migration
(October 2023)
Migration to Virtual Networks

- Officially maintenance window Fri 10/27 5pm - Mon 10/30 8am.
  - Unofficially we were all done after about four hours on Saturday morning.
  - Remainder of the weekend was spent verifying functionality and fixing a couple of bugs.
  - “Five minutes of typing and a few hours of watching things migrate.”

- Some numbers:
  - ~2,200 total connections migrated
  - ~800 ACLs migrated
  - ~2-3 that needed special attention due to bespoke configuration
  - Entirely hitless, no service degradations or outages

- The advantages of automation/structured data:
  - Migration becomes an ETL exercise.
  - Algorithmic: scriptable, less prone to human error.
  - Repeatable: you can practice ahead of time.
  - Predictable: you know the end result before you start, and can compare against that.
Since Then
From October Until Now

Trailing tasks:

- Decommissioning and cleanup.
- Finishing up cloud automation.
- Squashing bugs.
- Improving a few things.

Adjusting to operational cadence:

- New products mean new support requirements:
  - Figuring out process, workflow, and handoffs.
  - Operational load and how it integrates into development work.
- Influx of tickets immediately after migration:
  - Mostly around organizations and affiliations.
  - Many requests for demos and walkthroughs.

More numbers (2024 year-to-date):

- ~130 unique Insight Console users per week
- ~48k Looking Glass queries (!!!)
- > 100 connections added to L2 overlays
- > 1000 connections added to L3 overlays (!!!)
Q&A