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From Brownfield to Automated Networks

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VINCI ENERGIES

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Steps to Automate the ISP Network

Agenda

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- Phase 1: Assessment & Standardization
- Phase 2: Introducing the Single Source of Truth (SSoT)
- Phase 3: Infrastructure as Code (IaC) & Abstraction
- Phase 4: Intent-Based Networking (IBN)
- Phase 5: The Path to AI-Driven Operations (AIOps)
- Summary: The Roadmap
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Status Quo: The Brownfield Challenge

Before we can automate, we must understand where we stand.
A typical ISP network today consists of:

- Mixed Infrastructure: A mix of classic MPLS (Core) and modern VXLAN/EVPN fabrics (Edge/Datacenter)
- Silos: Configurations reside locally on devices or within various collections of scripts
- Snowflake Configurations: Manually configured devices that deviate from the standard
- Risk: High error rates during manual changes and slow deployment of new services

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Phase 1: Assessment & Standardization

The first step isn't the software; it’s the structure.

- Inventory Audit: Recording all physical and logical resources
- Definition of Blueprints: Creating standardized configuration patterns for MPLS services (L3VPN, L2VPN) and VXLAN VTEPs
- Decommissioning Legacy Burdens: Cleaning up unused configurations to reduce complexity for automation

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Phase 2: Introducing the Single Source of Truth (SSoT)

This is the heart of automation. Without a central, authoritative data source, AI-supported automation is impossible.

- Central IPAM & Inventory: Implementing tools like NetBox or Infrahub
- Data Modeling: Mapping the network as code (YAML/JSON) – The SSoT defines how the network should look (Intended State), not just how it currently looks
- Benefit: "Stale data" is eliminated; all automation scripts pull their information exclusively from this source

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SSoT Tools in Practice: NetBox vs. Infrahub

NetBox

- Mature IPAM & DCIM platform
- Strong ecosystem and community
- Widely adopted in network automation projects

Infrahub

- Git-native, schema-driven SSoT
- Strong focus on data modeling and relationships
- Built for automation pipelines and CI/CD workflows

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Phase 3–4: IaC & Intent-Based Networking — Powered by the SSoT

Infrastructure as Code (IaC)

- Configurations are generated from SSoT data
- No manual device configuration
- Abstraction via templates and models

Intent-Based Networking (IBN)

- Define what the network should achieve, not how
- SSoT represents the intended state
- Continuous validation against the live network

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Phase 5: The Path to AI-Driven Operations (AIOps)

AI requires high-quality, structured, trusted data

- The SSoT provides contextual network knowledge

Enables:

- Intelligent anomaly detection
- Predictive change impact analysis
- Assisted troubleshooting

→ Automation + SSoT = foundation for AIOps

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Summary: The Roadmap

Brownfield

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Single Source of Truth (SSoT)

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Automation & Intent

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AI-Driven Operations

Closing Thought

- The path from brownfield to automated networks doesn’t begin with a big transformation, but with a single, deliberate step — built on a trusted Single Source of Truth
- No SSoT → No reliable automation → No real AIOps

Thank you very much for your time and attention.

I’m happy to take any questions.