



>>>network.toCode()

# Nautobot | Version Control Demo

December 2021

Tim Fiola  
[tim.fiola@networktocode.com](mailto:tim.fiola@networktocode.com)

Tim Schreyack  
[tim.schreyack@networktocode.com](mailto:tim.schreyack@networktocode.com)

Bryan Daddio  
[bryan.daddio@networktocode.com](mailto:bryan.daddio@networktocode.com)

# >>> Agenda - Topics We Will Discuss Today

1. **Introduction:** Network to Code
2. **Network to Code | Version Control:** Nautobot Integration Overview
3. **Live Demo:** Nautobot
4. **Question and Answer**





# >>> Introduction



# >>> Who is Network to Code



## Network Automation Solutions Provider

Founded in 2014, we help companies transform the way their networks are deployed, managed, and consumed using network automation and DevOps technologies.



## A Diverse Team, with Deep Expertise

Engineers and developers in network automation, software and security, with leadership from vendors, integrators, and top tier consulting firms - all drive value to our clients.



## Vendor-Neutral Community

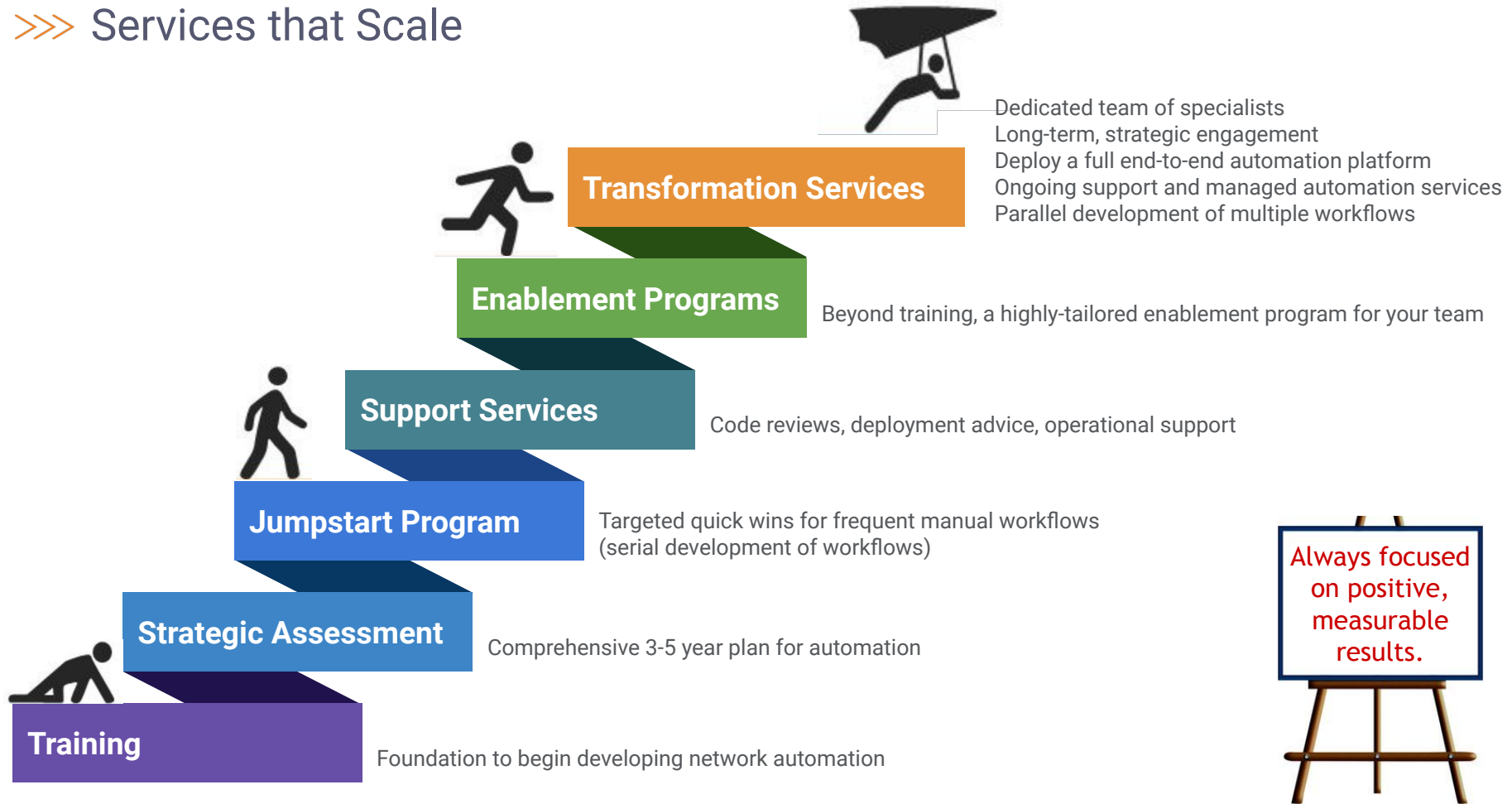
Partner with all OEMs, develop solutions with commercial and open source components. Host 20,000+ members and 300+ channels at [slack.networktocode.com](https://slack.networktocode.com)



## Industry-Recognized Thought Leaders

Working with clients across all industries and geographies, we promote a vendor- and tool-agnostic approach, making automation a reality for any network.

# >>> Services that Scale



## 2021 Annual Nautobot User Survey

<https://www.surveymonkey.com/r/BTPNQRR>

Help shape the future of Nautobot!



>>> network.toCode()

# Nautobot and Source of Truth Overview

Tim Schreyack, Solution Architect

>>> nautobot

## >>> Source of Truth

*If all of an organization's data is accessible from a Source of Truth (SoT), there is the opportunity to not only drive network automation, but also perform richer capacity planning, trending, and business impact analysis.*

By 2023, **40%** 

of enterprises will maintain an accurate Network Source of Truth within network operations to enable automation initiatives.

– Gartner

**63%** 

of enterprises have multiple authoritative data repositories for different classes of information.

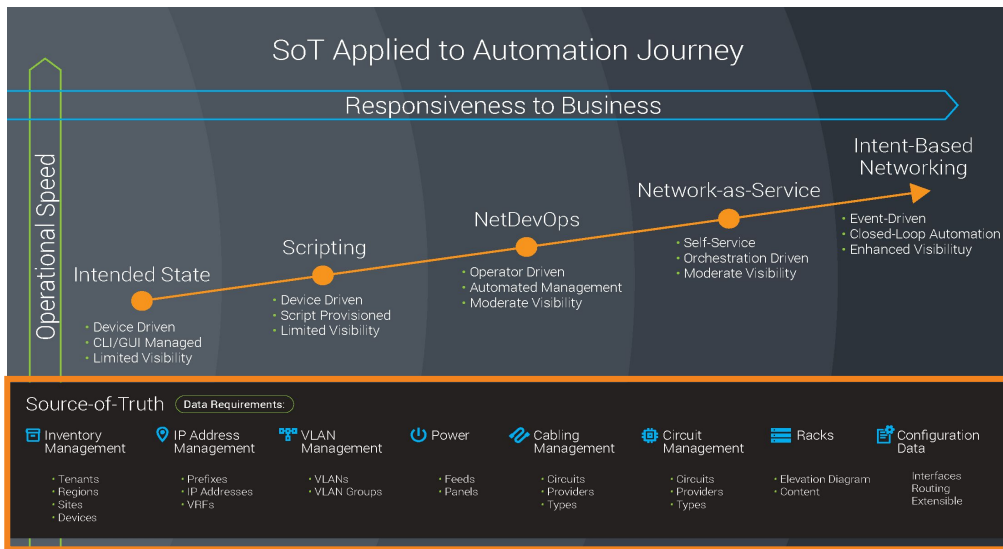
– EMA Research



# >>> Source of Truth is the Foundation

- Enables data-driven network automation
- De-couples CLI syntax and API calls from data
- Enables vendor neutral network automation
- Allows architects and engineers to focus on network designs
- Provide traceability and history of the data changes

More data, more insights.

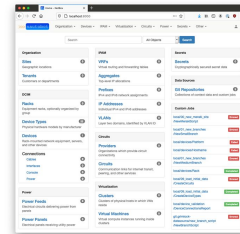


# >>> Nautobot Use Cases

## 1 Flexible Source of Truth for Networking



- Devices
  - IP Addresses
  - VLANs
  - ASN
  - ...
  - Custom
- User-Defined Relationships
  - Custom Fields
  - Data Validation



## 2 Extensible Data Platform for Network Automation

{ REST }



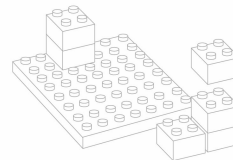
GraphQL



webhooks



git



Extensible Plugin System

## 3 Platform for Network Automation Apps



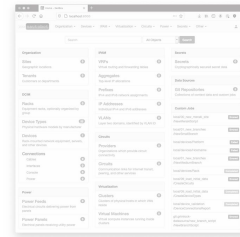
- Use Open Source Apps
- Build Custom Apps
- Save 70% development time using the platform

# >>> Nautobot Use Cases

## 1 Flexible Source of Truth for Networking



- Devices
  - IP Addresses
  - VLANs
  - ASN
  - ...
  - Custom
- User-Defined Relationships
  - Custom Fields
  - Data Validation



## 2 Extensible Data Platform for Network Automation

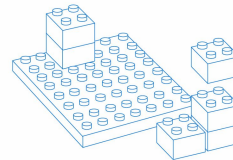
{ REST } GraphQL



webhooks



git



Extensible Plugin System

## 3 Platform for Network Automation Apps



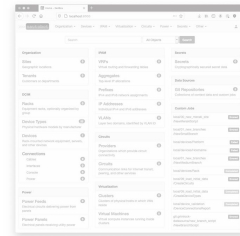
- Use Open Source Apps
- Build Custom Apps
- Save 70% development time using the platform

# >>> Nautobot Use Cases

## 1 Flexible Source of Truth for Networking



- Devices
- IP Addresses
- VLANs
- ASN
- ...
- Custom
- User-Defined Relationships
- Custom Fields
- Data Validation



## 2 Extensible Data Platform for Network Automation

{ REST }



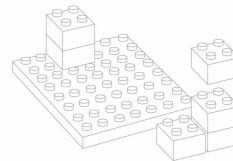
GraphQL



webhooks



git



Extensible Plugin System

## 3 Platform for Network Automation Apps



- Use Open Source Apps
- Build Custom Apps
- Save 70% development time using the platform

>>> network.toCode()

# Implementing Safer Network Automation

## Nautobot's *Version Control* App Demonstration

Dec 16, 2021

Tim Fiola - Developer Advocate

>>> nautobot



## >>> Terms

dolt

- *Dolt* is a versionable, open source **database**
- Nautobot runs a Dolt database when running the Version Control app

dolthub

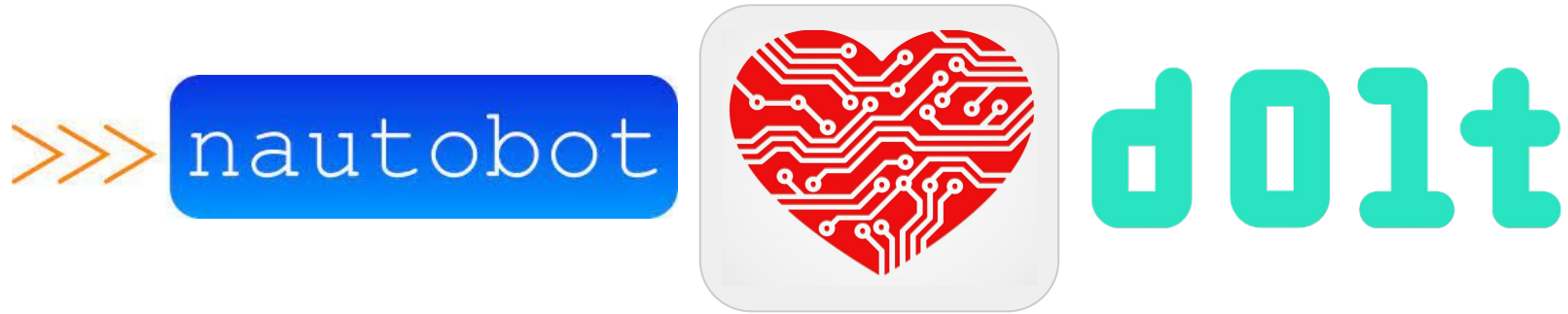
- *DoltHub* is the **company** behind Dolt
- <https://www.dolthub.com/> is the **place to share** Dolt repositories

**Dolt is to Git as DoltHub is to GitHub**

**Dolt versions SQL data (tables) as Git versions files**

# >>> What are we building?

*Adding Git and GitHub-like workflows to Nautobot using Dolt*



**Nautobot App (plugin) that brings version control to Nautobot's database**

## Better Data Hygiene

### Safer Network Automation

Commits

Pull Requests

Continuous  
Improvement (CI)  
Testing Pipelines

Peer Review

Rollback

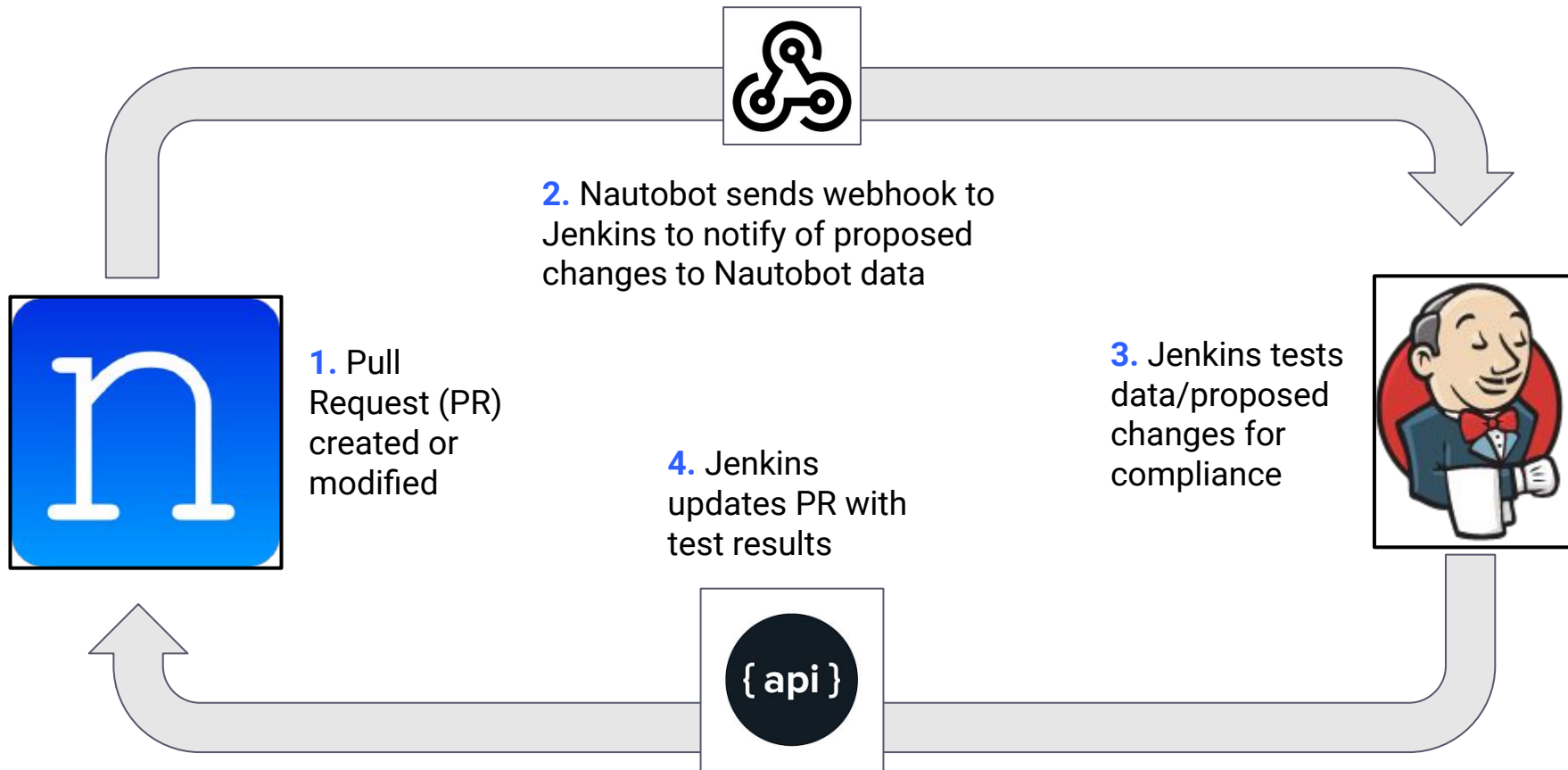


## Workflow Features

- Safeguards to keep Nautobot's production automation data clean
  - Explicit checkpoints for human review of proposed changes
  - Use of webhooks to trigger automated test pipelines against proposed changes
- Stage pending data changes without affecting production data
- Partial/wholesale rollbacks of changes if something breaks once new data is in production
- A history of all changes to production data for audit and/or accountability purposes

We will demo all of these features today!

## >>> High Level Action Diagram





## >>> Highlights

Nautobot running the Version Control app brings a versionable *Dolt* database to Nautobot

A version control environment in Nautobot allows workflows similar to those found in Git and GitHub

- Explicit checkpoints for human review
- Automated testing/CI pipelines
- Partial or *en masse* rollbacks of changes
- A history of all changes to production data

Ability to stage pending data changes without affecting production data

Quickly revert changes

These version control workflows make it safer to change production automation data in Nautobot



# >>> The Nautobot Version Control App

## *Introductory video series*

Unit 1: Defining the problem at hand

Unit 2: Bringing version control to Nautobot's database

Unit 3: Navigating the top-level Version Control menu

Unit 4: Managing Pull Requests with the Version Control App

## *Demo series*

Unit 1: Setting up a demo environment

Unit 2: Version Control enabled workflow demo

Unit 3: Version Control: Jenkins CI Pipeline added

Unit 4: Using the Version Control API

<https://www.youtube.com/playlist?list=PLjA0bhxgryJ2oTSwPNX7djwAuL7NOYCVD>

# >>> Nautobot User Survey - Don't Forget!

## 2021 Annual Nautobot User Survey

<https://www.surveymonkey.com/r/BTPNQRR>

Help shape the future of Nautobot!



>>>network.toCode()

Thank You!

*Nautobot Version Control App Demo*

>>>nautobot