

# Network Test Automation on Steroids: NetBox + Netpicker



netpicker

netbox labs

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# Agenda

- **Part 1**
  - Introducing NetBox Labs
  - Introducing NetBox
  - A Network Automation Reference Architecture
- **Part 2**
  - Introducing Netpicker
  - Demo of Netpicker and integration with NetBox



**We make it  
easier to build  
and manage  
complex  
networks**

**netbox** labs

- Founded in 2023 in NYC
- Commercial steward of NetBox OSS
- World class team Built & lead NS1, founded the NetBox project
- World Class investors & customers

# Automation requires a Network Source of Truth (NSoT)

NSoT: representation of the intended **configuration and state of the devices, connections, and services of the network**

Captures **intended state** - different than operational state

**Structured, cohesive, comprehensive data model** for network intent - forces completeness & correctness in design, planning, configuration management, operations

# The Journey to Network Automation Starts with Implementing a NSoT

## Document

Converge legacy sources of truth

Discovery or manual capture of additional network data

Change operational processes to start with documentation

## Model

Connect network data through cohesive models

Enforce consistency across models

## Automate

Implement change management starting with NSoT / intent

Generate configs from model data

Drive automations from dynamic inventory

Assurance to identify/resolve operational drift

# NetBox is the world's most popular network source of truth

## Comprehensive network data model

From ASNs to VPNs, and everything between

## API & integration first

REST, GraphQL, Event Streams, Webhooks

## Massive extensibility

Plugins, Device Types, Custom Scripts, Custom Fields, ...

## Enormous ecosystem

Everything works with NetBox

The screenshot displays the NetBox web interface for a site named 'Amsterdam'. The interface is organized into several sections:

- Organization:** A sidebar menu on the left with categories like SITES, RACKS, TENANCY, CONTACTS, DEVICES, CONNECTIONS, and WIRELESS. The 'SITES' category is expanded, showing sub-items like Regions, Site Groups, Locations, Racks, Rack Roles, Reservations, Elevations, Tenants, and Tenant Groups.
- Site Details:** The main content area shows the 'Amsterdam' site configuration. It includes a search bar at the top, a breadcrumb trail (Sites > Europe > Netherlands), and a header with the site name 'Amsterdam' and a 'Created' timestamp. Below this are tabs for 'Site', 'Contacts', 'Journal', and 'Changelog'. The 'Site' tab is active, displaying a list of key-value pairs for site attributes such as Region, Group, Status, Tenant, Facility, Description, Time Zone, Physical Address, Shipping Address, and GPS Coordinates. Each attribute has a corresponding value and a 'Map It' button.
- Related Objects:** A section on the right side of the page lists various objects related to the site, including Locations, Racks, Devices, Virtual Machines, Prefixes, ASNs, VLAN Groups, VLANs, and Circuits. Each object has a count next to it.
- Tags:** A section below the site details shows a list of tags, including 'consulting' and 'europe'.
- Comments:** A section at the bottom of the page for adding comments, with an 'Attach an image' button.



# NetBox is Powered by a Massive Community


**5000+**

Networking pros building,  
helping, sharing - 24x7

**10K+**

Global deployments

**15k+**

GitHub   
Widely loved by  
networking teams

**11k+**

Software commits  
Feature complete,  
battle tested



# Which NetBox Is Right For You

## NetBox OSS

- ✓ Most widely used Network Source of Truth - by far
- ✓ Massive & active community = product & ecosystem velocity

## NetBox Enterprise

- ✓ All capabilities of NetBox OSS
- ✓ Deploy on your own infrastructure
- ✓ Enterprise class features
- ✓ Integrate your IT stack
- ✓ NetBox experts in your corner
- ✓ NetBox Labs supported plugins

## NetBox Cloud

- ✓ All capabilities of NetBox OSS and Netbox Enterprise
- ✓ SaaS edition of NetBox
- ✓ Fully-hosted on NetBox Lab's rock-solid platform
- ✓ secure, easy to use, and ready for scale.
- ✓ Customizable cloud isolation, redundancy and performance
- ✓ Push button lifecycle operations
- ✓ Zero administrative overhead

# Which NetBox Cloud Plan Is Right For You

## NetBox Cloud - Free Plan

Perfect for small networks, lab environments, and targeted use cases

- ✓ 100 devices, 500 IP addresses, 10k API requests/month
- ✓ Eliminate operational burden
- ✓ Get started instantly
- ✓ Fully hosted & secure
- ✓ Single tenant isolated deployment
- ✓ Push button backup & lifecycle operations

**Available  
Now!**

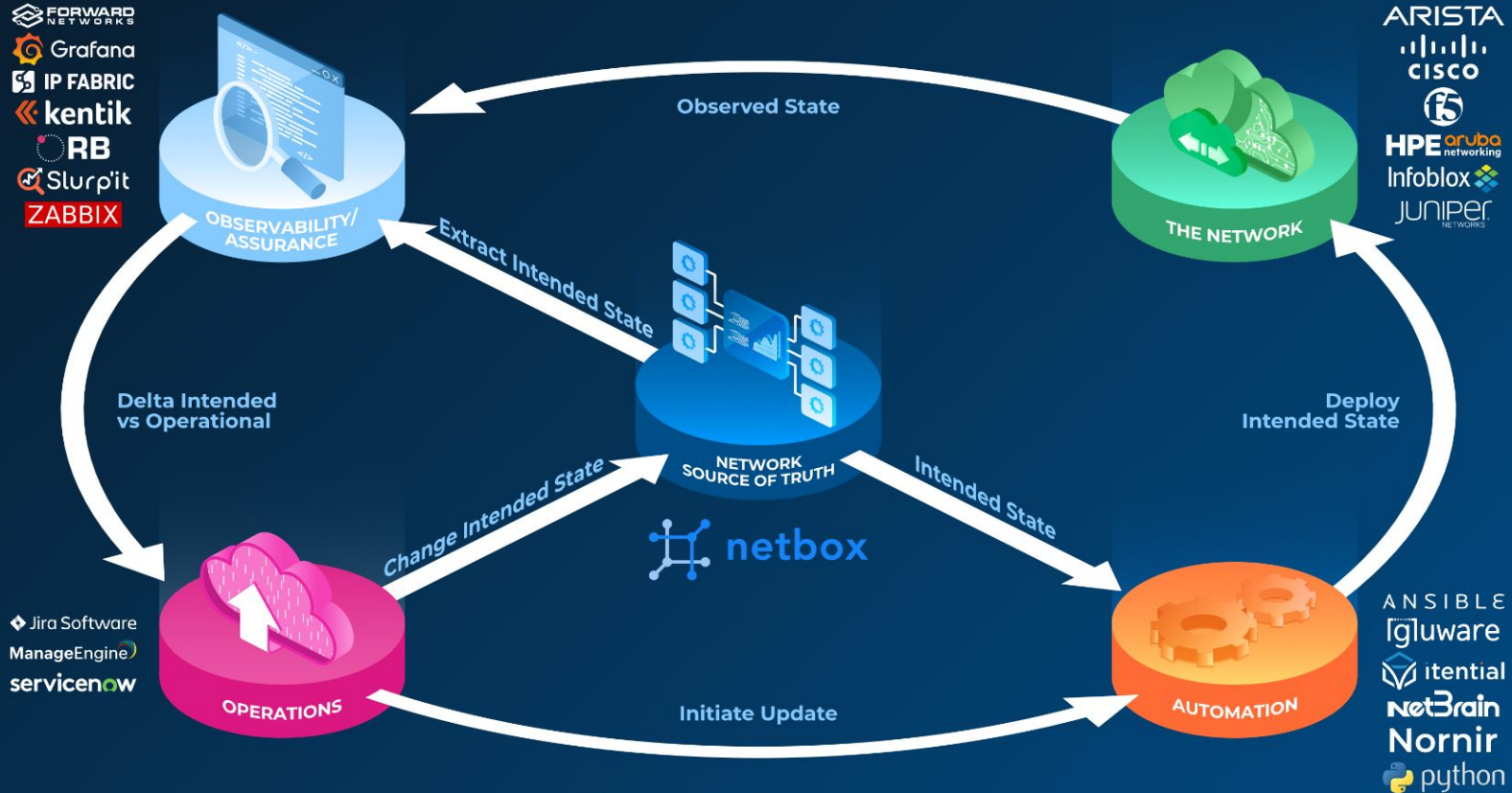
<https://netboxlabs.com/free-netbox-cloud/>

## NetBox Cloud - Paid Plans

Production scale, fully supported, with a host of enterprise-grade features and benefits

- ✓ Plans for every network, starting at 2k devices, 10k IP addresses, 40k API requests/month
- ✓ Vast array of security & convenience features - SSO, custom isolation, connectivity options & controls, backup management, lifecycle operations & validation
- ✓ Tuned for reliability & performance - seamless redundancy & scalability
- ✓ Support for dozens of NetBox Labs certified plugins
- ✓ Advanced features for automation & data management
- ✓ Supported integrations - ServiceNow, network discovery, and many more
- ✓ 24x7 Support

# Modern Network Automation Architecture



Closed-Loop Network Automation Stack

# Thank you!

The logo for NetBox Labs, featuring the text "netbox labs" in a white, lowercase, sans-serif font. The word "netbox" is in white, and "labs" is in a light blue color. The logo is centered on a dark blue background with abstract white and light blue circular patterns and dots.

NetBox Cloud Free Plan:  
<https://netboxlabs.com/free-netbox-cloud/>

[sales@netboxlabs.com](mailto:sales@netboxlabs.com)



netbox



netpicker

# Webinar

Network test automation on steroids

# About us

## Timeline



netYCE  
2010 - 2022



In house platform development led by team of external consultants (BT/INS).

Spin-off from Rabobank. Direct sales at (M)SP and Enterprise accounts

180% shift in technology & GTM model. Product lead sales strategy with hybrid model of opensource & enterprise software.

Gartner  
COOL  
VENDOR  
2020

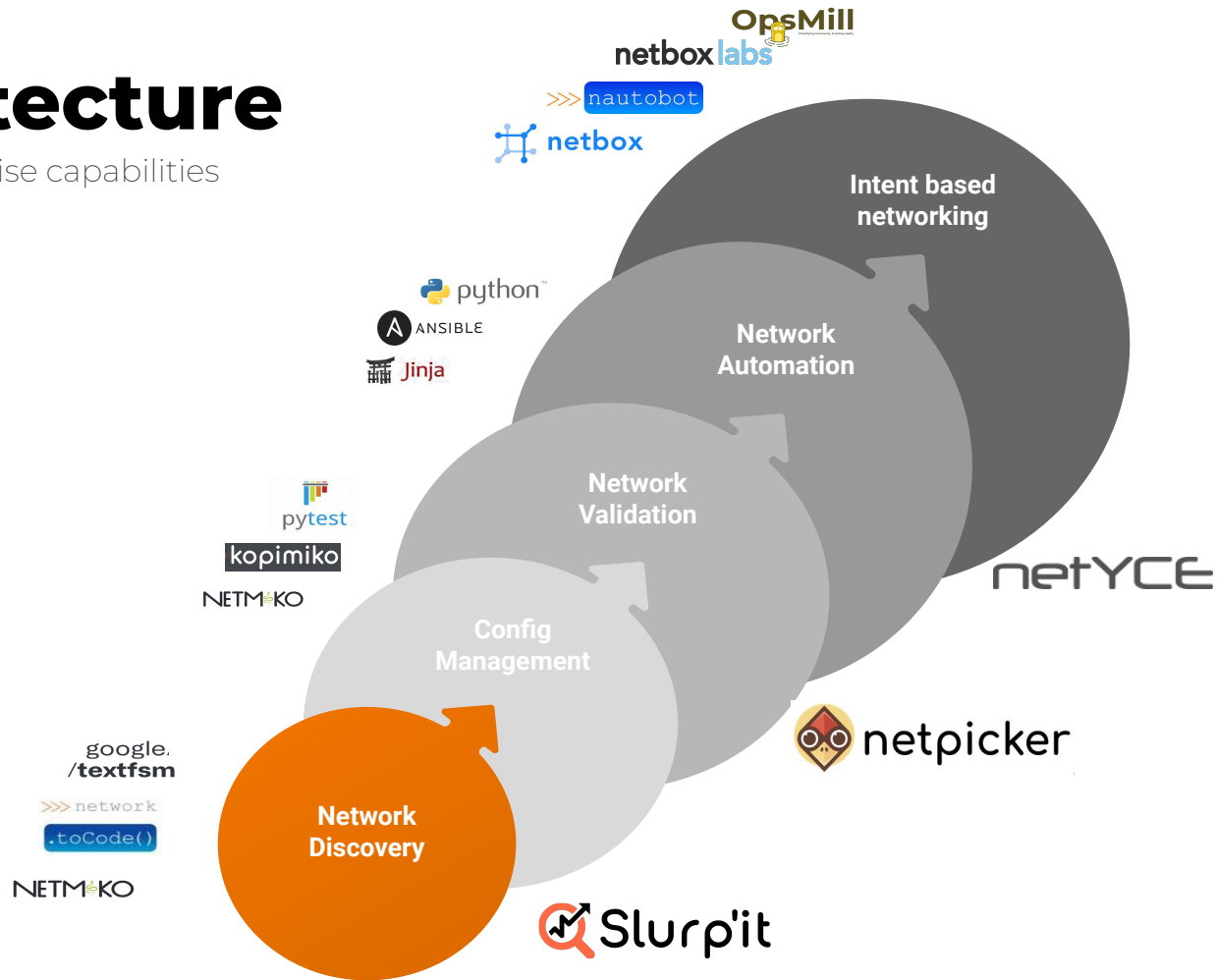
netYCE

# Modern architecture

Bundling Open Source with Enterprise capabilities

## Design principles:

- Open Source where possible
- Community libraries
- Docker containers
- Easy integrations
- Cloud ready
- GIT (CICD)
- Rest API



# Key problems to solve

to succeed with Network Automation

## 1. Discover

- Onboard your NSOT
- Reconcile state vs intent

## 2. Validate

- Current vs intended state
- Pre- deployment

## 3. Automate

- Deploy changes
- Ongoing monitoring



# Reference architecture

to succeed with Network Automation

## 1. Discover

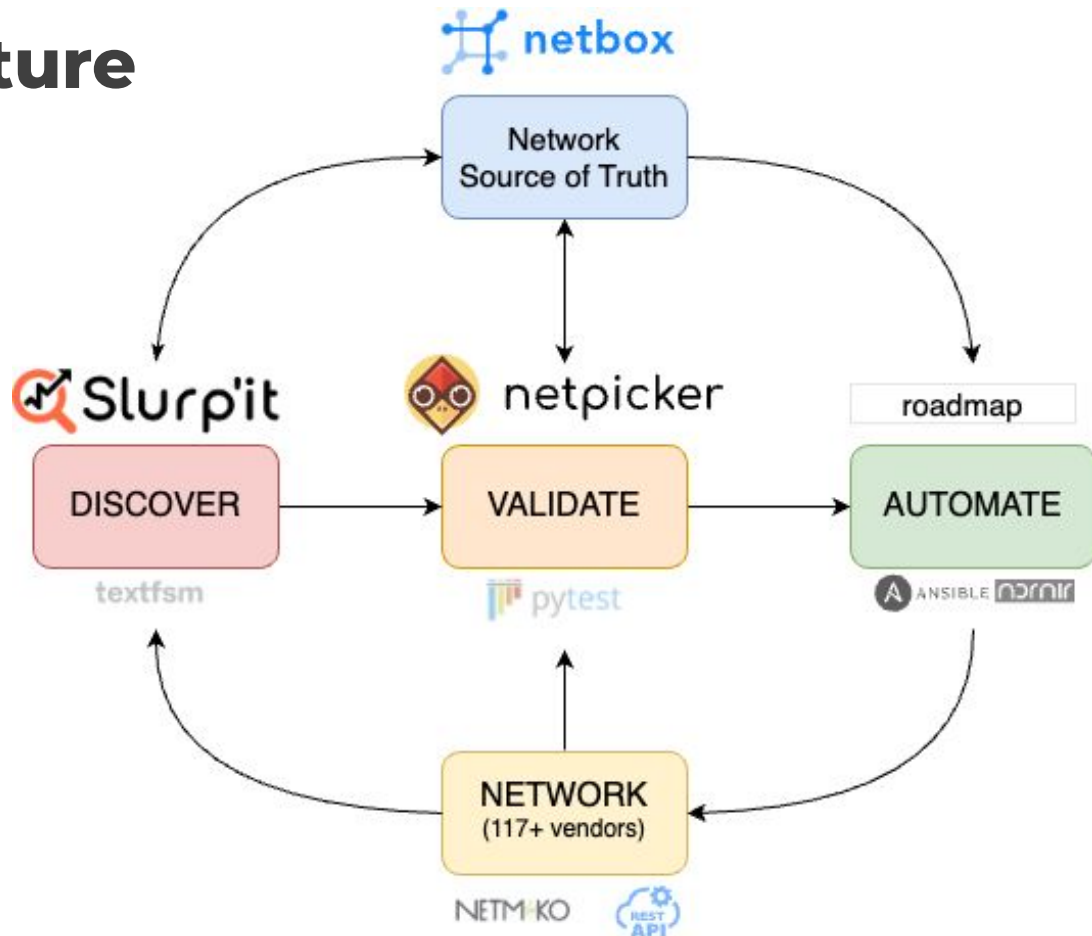
- Onboard your NSOT
- Reconcile state vs intent

## 2. Validate

- Current vs intended state
- Pre- deployment

## 3. Automate

- Deploy changes
- Ongoing monitoring





# netpicker

Python based network testing

A smarter way to validate  
the **design, compliance** and **security** of your network



# netpicker

Python based network testing

- Pytest based validation for Compliance, CVE, Security, design, etc
- Based on Config, Command, Multi device, API, Data sources (eg. NetBox, slurp'it).
- Live & stored data
- Fully API based
- Integrated config backup & change
- Stored in Git repositories
- Community libraries
- Managed service for CVE's a.o. (optional)

```
1 """
2 Rules in the Local authentication, authorization and accounting (AAA)
3 configuration class enforce device access control, provide a mechanism for
4 tracking configuration changes, and enforcing security policy.
5 """
6 import pytest
7 from comfy.compliance import Severity, Source, rule, rx
8
9 pytestmark = pytest.mark.series('Cisco_IOS')
10
11
12 @rule(
13     severity=Severity.MAJOR,
14     name="1.1.01 Enable 'aaa new-model'",
15 )
16 def rule_1343_1_1_01_enable_aaa_new_model_(source: Source):
17     """
18     This command enables the AAA access control system.
19     """
20     assert 'aaa new-model' in source.lines
21
22
23 @rule(
24     severity=Severity.MAJOR,
25     name="1.1.02 Enable 'aaa authentication login'",
26 )
27 def rule_1345_1_1_02_enable_aaa_authentication_login_(source: Source):
28     """
29     Sets authentication, authorization and accounting (AAA) authentication at
30     login
31     """
32     assert rx('aaa authentication login (default|.* ) passwd-expiry') in source.lines
33
```





Dashboard

Devices

Network Health

Policies

Policy / Cis

Rule / rule\_1067\_enhanced\_password\_security



Properties **Conditions** Results

```
1 @low(  
2     name='Enhanced Password Security',  
3     platform=['cisco_ios', 'cisco_nxos'],  
4     kind=Kind.configuration  
5 )  
6 def rule_1067_enhanced_password_security(source: Source):  
7     assert rx('username .* secret .*') in source.lines
```

Rules (5)

Rule name

Name

+ rule\_1

+ rule\_1

+ rule\_1

+ rule\_c

+ rule\_c

**Sample config** Result

Paste a sample of the config here...

or select a device...

Test

Delete

Cancel

Save





**Let's demo**

# Pricing

Affordable, transparent

FREE alternative for  
Rancid or Oxidized



## Free for life

Unlimited backup of your device configs + run as much automated tests as you want for 10 devices (Professional)

€0,-  
for life

Download

- Backup device configs – unlimited
- Automated testing – 10 devices

### Including

Full Netpicker functionality  
Unlimited policies & tests  
NetBox & Slurp'it integration  
Pytest for networking libraries  
RestFull API access  
Knowledge base  
Video courses  
Slack support

## Starter package

**Day-1 validation.** Experience the power of automated network testing. 2 month starter package including license and consultancy

from €3,000

<500 devices – €3,000

one time

Order now

- 2 month license for unlimited tests
- We (help) build the tests you want

### All in 'Free' plus

DevNet consultancy  
4 – 5 zoom sessions  
Use-case implementation  
Customer specific test and reports  
Training & support

## Professional

Ongoing testing. For compliance monitoring, design validation, network automation and observability

from €7,500

<500 devices – €7,500

yearly

Contact sales

- Unlimited tests & reports for # licensed devices

### All in 'Free' plus

Historical tests & data  
Third party integrations  
DevNet support  
Ticket support  
1:1 Zoom calls



# THANK YOU

Questions or wanna book a meeting?

go to [\*\*netpicker.io/get-started\*\*](https://netpicker.io/get-started)

or mail us at [\*\*support@netpicker.io\*\*](mailto:support@netpicker.io)

# Network Automation Journey

Proven methodology for success

- **DISCOVER** your network inventory
- **MANAGE** configs, backups and changes
- **VALIDATE** compliance, security & design
- **AUTOMATE** issues and network changes
- **DRIVE** intent with Source of Truth

