# Network Automation Tools Show Down

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# Moderator & Panelists

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# Comparing and contrasting automation tools

# Ansible is…

- Command line / YAML
- Default Source of Truth: flat file / git
- Written in python
  - Extensible with python jinja2
- Agentless
- Mostly imperative
- Free and open source

# Ansible

- Pros:
  - Very small barrier to entry
  - Widely used, easy to learn, plenty of resources
  - Used heavily for system configuration
  - Great for initial deployments
- Cons:
  - Can be tedious for what should be simple tasks without writing a lot of modules
  - Complex network configuration can be difficult
  - Starting to become dated, closer to the hardware in the stack - think VMs instead of containers

# Kubernetes is…

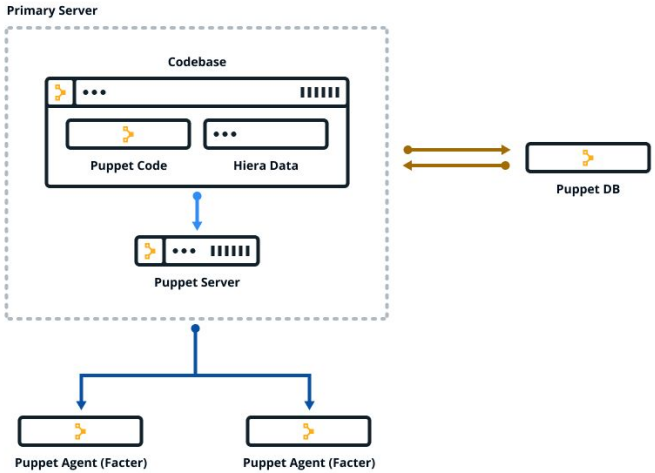
- Single, Resilient and Unified Orchestration platform for Automation
  - Closed loop orchestration for CNF Apps
- Multitenancy / Granular security
- Declarative configuration with active reconciliation for day1 and day2 (i.e. YANG/gnmi)
  - Configuration LifeCycle Management
- Machine manipulable configuration (i.e. CI/CD)
  - Changes in Single source of Truth can be managed using GitOps
- Reusable intents (i.e. Helm templates)
- Free and Open Source

# Kubernetes

- Pros:
  - Consolidated and Uniform Automation tool for Infra and Workloads
  - Resilient and scalable
  - Granular security, multitenancy
  - Intent based, declarative with active reconciliation
  - Support custom schemas and controllers
  - Strong extensibility (rich ecosystem)
- Cons:
  - More complex to set up, manage and support
  - New concept. No strong references.
  - Requires independent compute resources
  - Custom controllers have to be built or sourced by someone else
  - Active Reconciliation requires YANG/gnmi support

# Puppet is…

- Declarative (Desired State)
- Domain-Specific Language (DSL)
- Large collection of modules
  - Extensible with Ruby
- Default Source of Truth: PuppetDB
- Agent and Agentless
- Free and open source + Commercial



# Puppet

- Pros:
  - Widely used, easy to learn, plenty of resources
  - Used heavily for system configuration
  - Desired state handles config dependencies and reconciliation
  - Lots of existing content (batteries included)
  - Easily scales to large number of nodes
    - Inventory management is also flexible
- Cons:
  - Effectively dead for networking
  - Requires more components
  - Tasks are supported, but limited

# Salt is…

- Event-driven + Declarative (Desired State)
- Agent / Agentless
- Command line / YAML
- Default Source of Truth: flat file / git
- Python based
- Free and open source + Commercial

# Salt

- Pros:
  - Operational Tasks + Configuration Management
  - Flexible Networking modules
    - Vendor specific
    - NAPALM
    - Netmiko
    - Netbox
- Cons:
  - Less popular, limited resources
  - Velocity slowed since acquisition in 2020

# Nornir/Netmiko are…

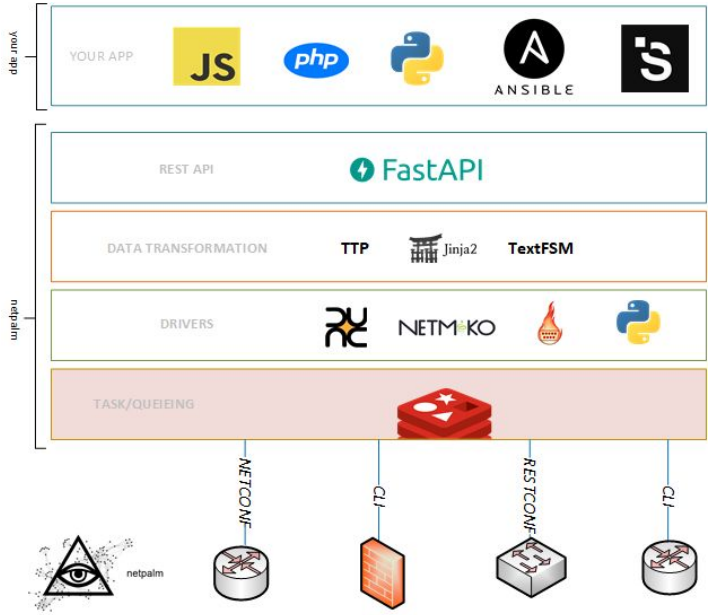
- Netmiko is a Python library to simplify connections to various network devices
- Nornir is a pure Python framework to handle automation with a bias towards network automation
- No pseudo-languages needed
- Nornir is flexible on inventory, transforms, connection, and runners (great integration with Netbox)
- Nornir is compatible with any Python applicable interface such as NAPALM, JunOS PyEz, Arista Pyeapi

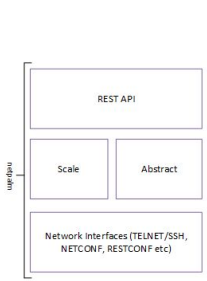
# Nornir/Netmiko

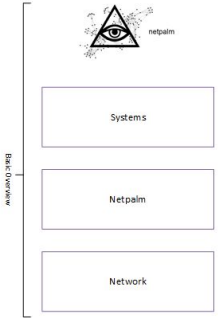
- Pros:
  - Easy to progress from command line to automation, great for simple or complex tasks
  - Python based allows easy usage of libraries, exception handling, and large amounts of flexibility
  - Multi-threaded out of the box
  - Great training sessions
- Cons:
  - Somewhat limited in pre-made tools
  - Some programming experience is helpful
  - Nornir thread handling requires some learning
  - Documentation occasionally lacking

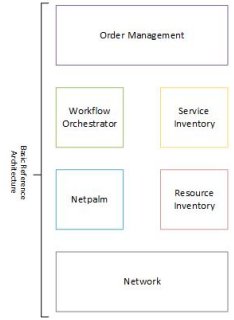
# Netpalm is…

- A REST API Abstraction Layer
  - NETCONF/RESTCONF
  - CLI
  - SNMP
- A Data Transformation Tool
  - TTP
  - Jinja
  - TextFSM
- Scalable
- A rollup of everything you need for a business ready API



# Netpalm

- Pros:
  - Produces an API that can be consumed by many other apps, business units, and processes.
  - Can supports and transform practically any device into a consistent format
  - Container based scale out architecture for every component
- Cons:
  - Requires more setup and development
  - There are no native or pre-built functions
  - Smaller community than some other tools

# Questions?

# Thank you

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