Peering Automation and Provisioning

Alexandre Corso – F5

Contents

1. AS35280 – F5 Network
2. Source of Truth
3. Automation architecture
4. Workflow – Add new IXP
5. Workflow – Add new peer
6. Summary

Our backbone – AS35280

- F5 backbone (formally Acorus Networks)
- Fully automated
  - We can overwrite the full configuration from our provisioning
- Juniper devices (MX and PTX)
  - 2 Core router per POP
  - Multiple QFX for service aggregation
- From 10G to 400G port for external connectivity

AS35280 – March 2022

- +12Tbps external capacity

- 22 Pops (2 in Australia)

- 48 IXP connections

- ~4000 BGP sessions
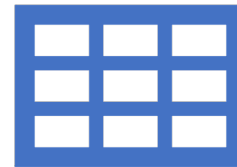
https://www.peeringdb.com/asn/35280

Our backbone

Source of truth

What is a source of truth (SOT)?

It's a datastore where you can find the information and it "should" be the truth. The data is the reference for all people.
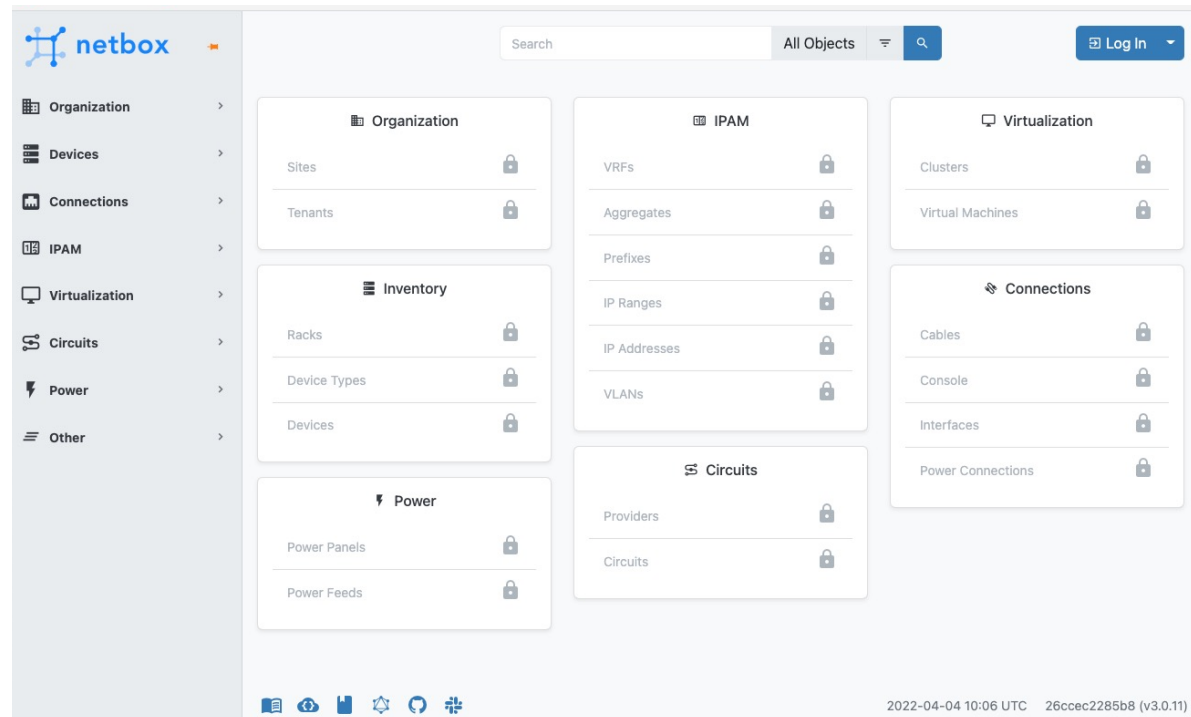
Why do we use them?

To create a unique truth and remove duplicate data.

Source of truth - Netbox

- Version 3
- IP Address Management (IPAM)
- Data Center Infrastructure Management (DCIM)
- Circuit
- Nice UI
- Open-source
- API (a must)

Source of truth - ACnet

- Own development
- Manage all BGP sessions (more eBGP than iBGP)
- Manage BGP policies
- Store contact network (for maintenance)
- Easy to use
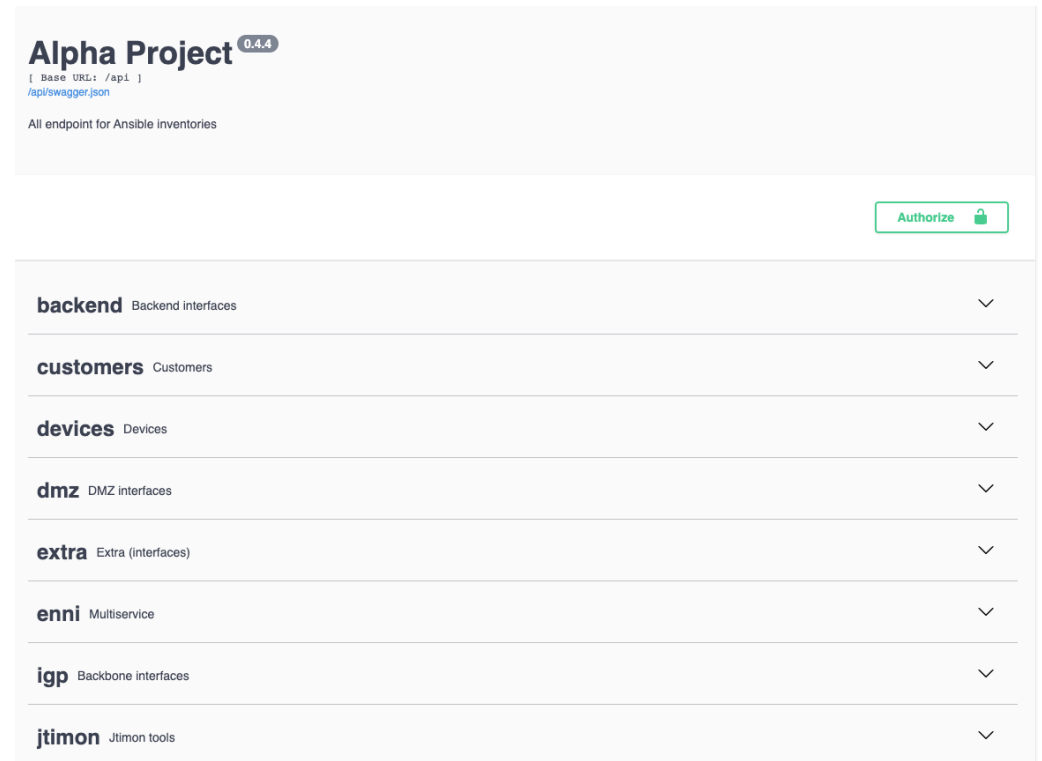- API (a must)

Source of truth - Gitlab

- Git directory
- Store inventory for Ansible (static)
- Store all playbook and template
- Can use branch for new feature and/or project
- Can blame someone

The brain - Alpha

Once all source of truth are available, how can use them?

Alpha

- Own development
- Data consolidation
- API
- Formatting – YAML / JSON / TXT / etc.

Alpha Project 0.4.4
`[ Base URL: /api ]`
/api/swagger.json

All endpoint for Ansible inventories

Authorize 🔒

backend Backend interfaces	⌄
customers Customers	⌄
devices Devices	⌄
dmz DMZ interfaces	⌄
extra Extra (interfaces)	⌄
enni Multiservice	⌄
igp Backbone interfaces	⌄
jtimon Jtimon tools	⌄

Orchestrator - Monitoring

Ansible

- Via CLI
- Via UI – AWX (open source of Tower – by Redhat)

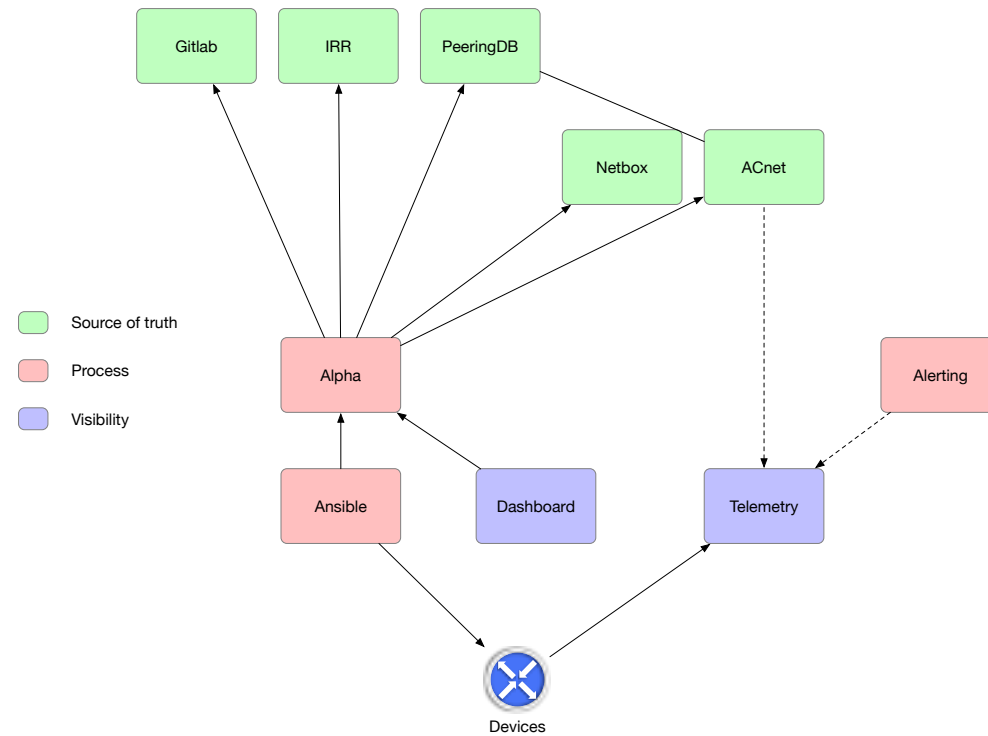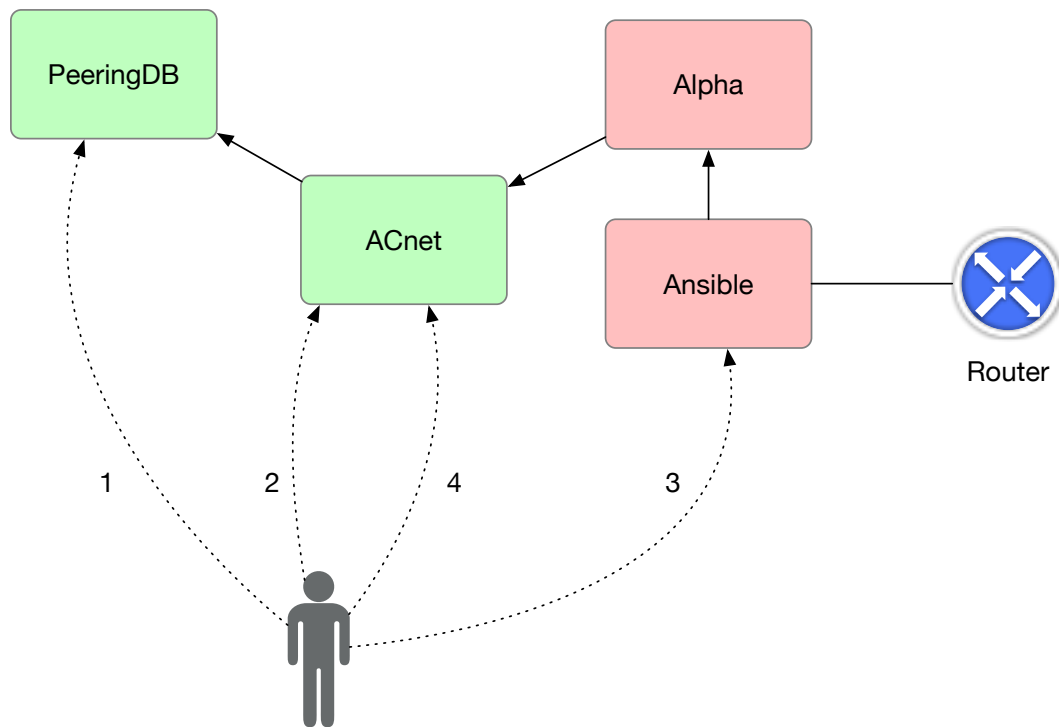## Telemetry

- Jtimon
- Prometheus

SNMP

- Observium
- RRD

Architecture

User can only change source of
truth, otherwise data will be
removed

We are looking for more visibility
(dashboard)

Source of truth

Process

Visibility

Gitlab

IRR

PeeringDB

Netbox

ACnet

Alpha

Alerting

Ansible

Dashboard

Telemetry

Devices

Workflow – Connect to a new IXP

1. Add new IXP on PeeringDB
2. Pull information from PeeringDB and add information
   - Attach the IXP to a router
   - Add IXP default policy
   - Add more attributes (tags/ID/etc.)
3. Launch Ansible playbook (CLI or UI)
   - Get information from ACnet (via Alpha)
   - Push data to the router
4. Get the status on ACnet (via telemetry)

Workflow – Connect to a new IXP

Workflow – Connect to a new peer

1. Add new session attached to IXP
   - Get AS peer information from PeeringDB
   - Get IP information from PeeringDB
   - Add BGP policies
   - Add more attributes (MD5/BFD/ID/etc.)
2. Launch Ansible playbook (CLI or UI)
   - Get information from ACnet (via Alpha)
   - Push data to the router
3. Get BGP status on ACnet (via telemetry)

Workflow – Connect to a new peer

Summary

Issue we met

- Netbox version – new feature but some break
- Ansible speed – Mitogen (https://mitogen.networkgenomics.com/)

What do we like

- Automation
- Idempotent
- We can use the workflow without fat finger

What is next

- Launch task based on network event
- More connectivity between telemetry and automated task

Questions?

acorso@f5.com

Twitter:
@CorsoAlexandre

LinkedIn:
alexandre-corso