

# Peering Automation and Provisioning

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# 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

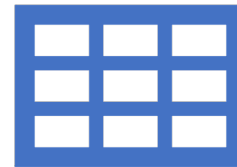


# Source of truth



## 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.

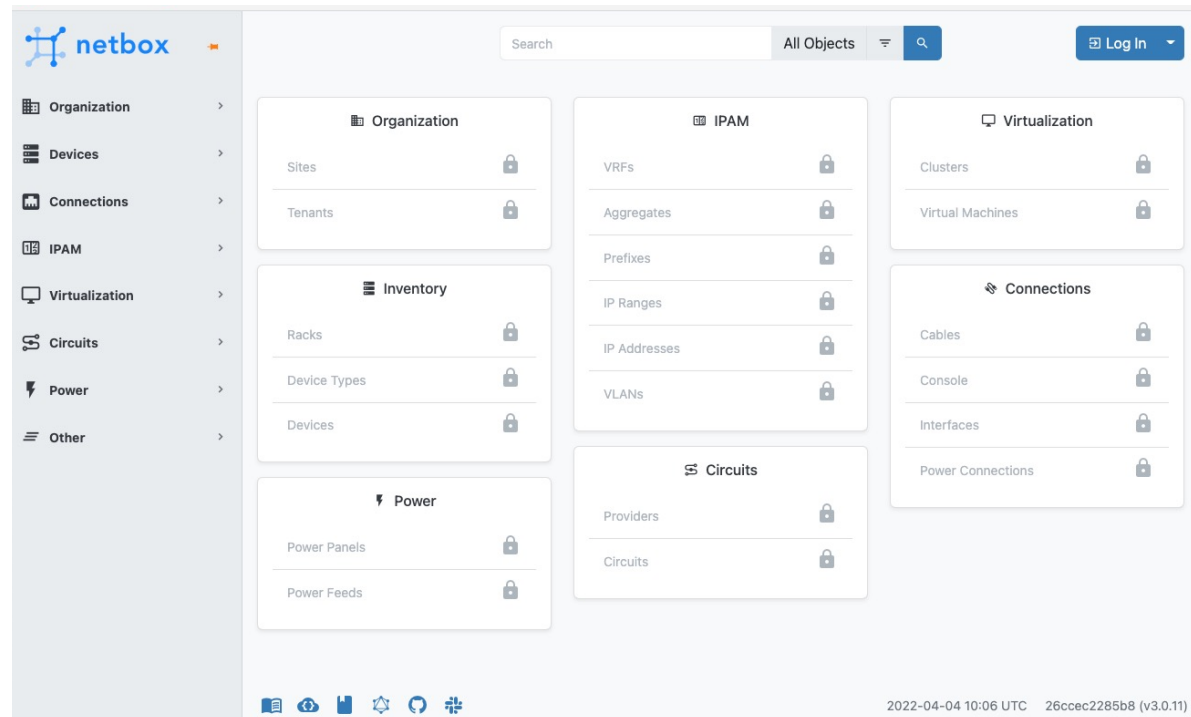


## Why do we use them?

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)

The screenshot shows the ACNet Home dashboard. On the left is a dark sidebar with navigation options: Resources (ASN, Router, BGP Types, Policies, Emails), Internet eXchange (IXP, Public Peering), Sessions (All peers, Upstreams, Private Peering, Paid Peering, Customers, Other sessions), and Others (PeeringDB Local, Updates). The main content area has a green header with 'ACNet Home' and a 'Login' button. Below the header is a search bar. The dashboard features several widgets: 'ASN', 'Peers', 'IXP', 'Routers', 'Policies', and 'Session type'. There is a search box for 'Search mutual IXP with an ASN' with the value '35280'. Below this are four summary tables: 'Last ASN update', 'Last Session update', 'Last IXP Session update', and 'Changelog'. The footer contains copyright information for Alexandre Corso and an API Admin link.

ASN	Name	Updated
-----	------	---------

ASN	IP	Type	Updated
-----	----	------	---------

IXP	ASN	IP	Updated
-----	-----	----	---------

Object	User	Updated
--------	------	---------



# Source of truth - Gitlab

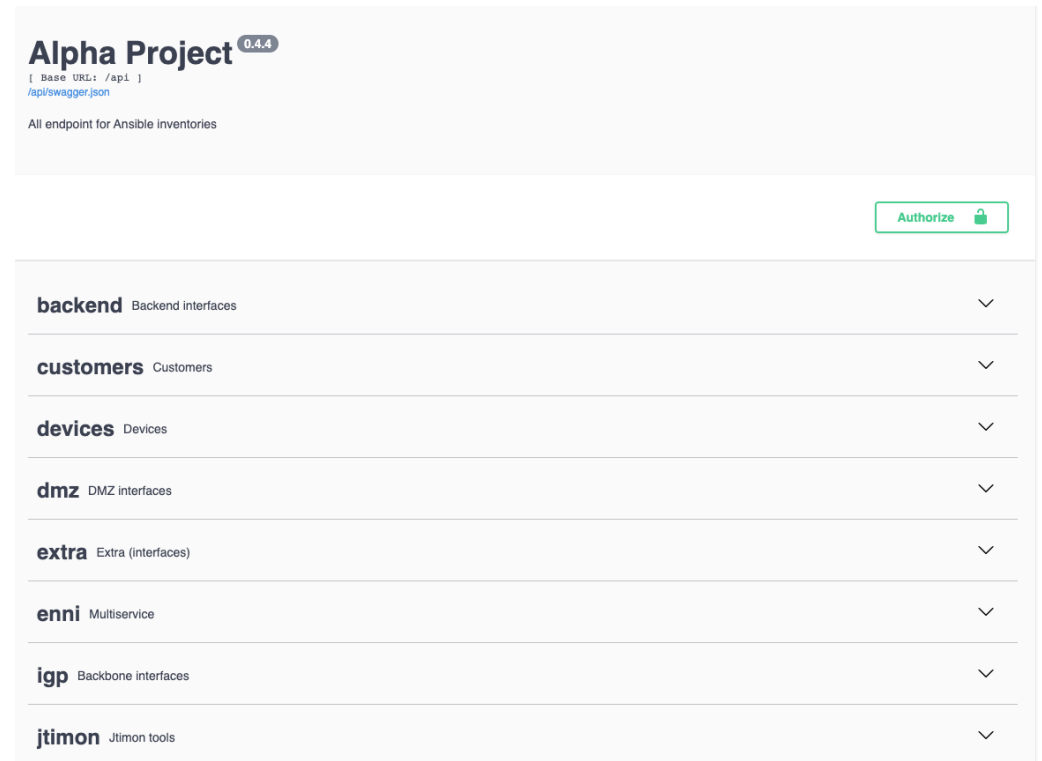
- Git directory
- Store inventory for Ansible (static)
- Store all playbook and template
- Can use branch for new feature and/or project
- Can blame someone

# 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.



The screenshot shows the Swagger UI for the Alpha Project API. At the top, it displays 'Alpha Project' with a version number '0.4.4' in a red badge. Below the title, there is a description: 'All endpoint for Ansible inventories'. A green 'Authorize' button with a lock icon is visible on the right. The main content is a list of API endpoints, each with a name, a description, and a dropdown arrow:

- 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

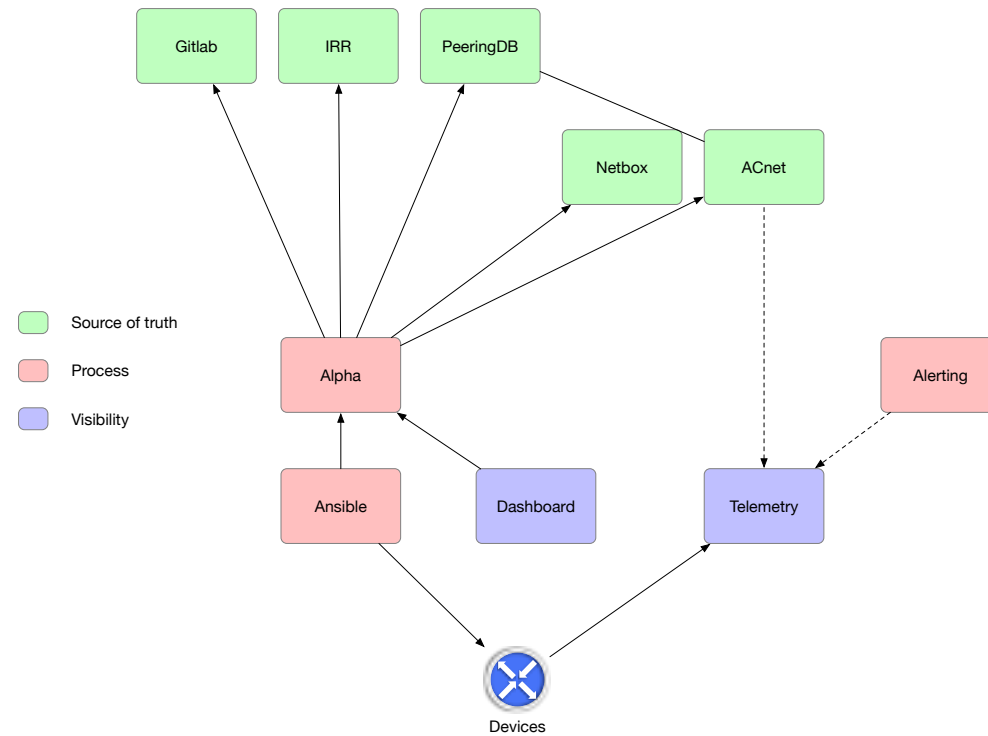
## SNMP

- Observium
- RRD

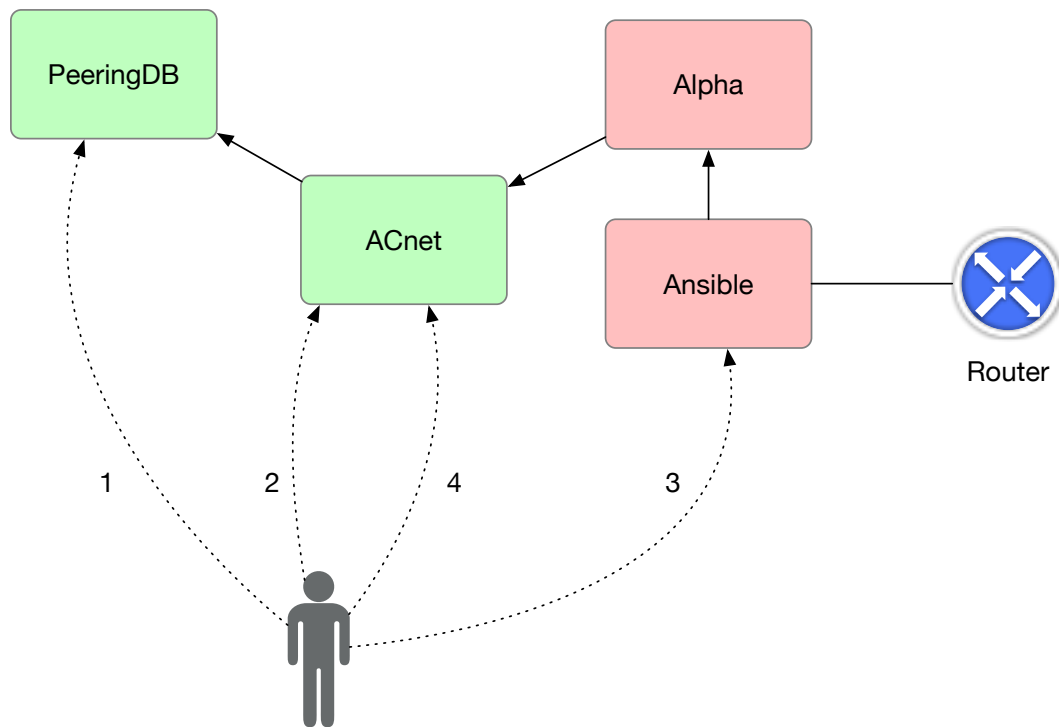
# Architecture

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

We are looking for more visibility (dashboard)



# 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

**ACNet** | **acorso** | **Logout**

**IXP: EdgelX - Sydney** | BGP / IXP / EdgelX - Sydney

**Properties** Created Wed, 18 Aug 2021 02:42:32 +0000, Updated Fri, 22 Oct 2021 01:52:13 +0000

<b>Name</b>	EdgelX - Sydney	<b>Sync</b>
<b>Slug</b>	edgeix-sydney	
<b>Enable</b>	<b>Enable</b>	
<b>IPv4 address</b>	202.77.88.79	
<b>IPv6 address</b>	2001:df0:680:5::4f	
<b>IXP IPv4 Network (sync)</b>	202.77.88.0/23	<b>Sync</b>
<b>IXP IPv6 Network (sync)</b>	2001:df0:680:5::/64	<b>Sync</b>
<b>IXP ASN</b>	24224	

**Dataset**

<b>Peering DB ID</b>	ID #66343
<b>Router</b>	Router: core02.sy5.syd
<b>Find more peers</b>	<b>IXP peers</b>
<b>IPv4 Import policy</b>	
<b>IPv4 Export policy</b>	
<b>IPv6 Import policy</b>	
<b>IPv6 Export policy</b>	

**Comment**

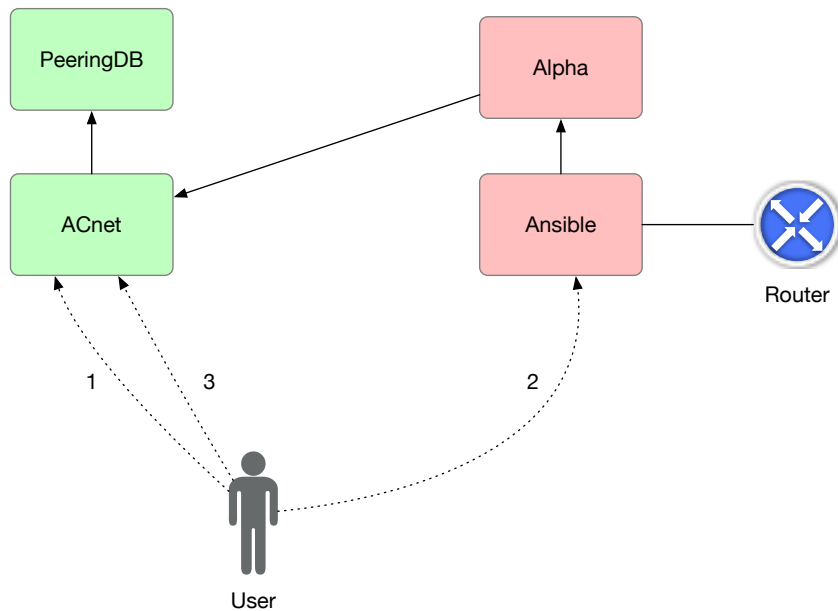
**IPv4 Sessions**

ASN	Name	IP	Status
			<b>established</b>

**IPv6 Sessions**

ASN	Name	IP	Status
			<b>established</b>

# 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

ACNet | acorso | Logout

Potential public peering sessions on IXP EdgeIX - Sydney

BGP / Internet eXchange Points / EdgeIX - Sydney / Peers

Public peering session list within IXP EdgeIX - Sydney

<input type="checkbox"/>	ASN	Name	IPv4	Configured	IPv6	Configured	Speed	Is RS peer
<input type="checkbox"/>	2906	Netflix	202.77.88.49	Create Session	2001:df0:680:5::31	Create Session	100.0 Gbps	Yes
<input type="checkbox"/>	2906	Netflix	202.77.88.50		2001:df0:680:5::32		100.0 Gbps	Yes
<input type="checkbox"/>	4764	Aussie Broadband	202.77.88.3		2001:df0:680:5::3		100.0 Gbps	Yes
<input type="checkbox"/>	4826	Vocus Communications	202.77.88.16		2001:df0:680:5::10		100.0 Gbps	Yes
<input type="checkbox"/>	4851	Host Networks	202.77.88.31		2001:df0:680:5::1f		10.0 Gbps	Yes
<input type="checkbox"/>	6507	Riot Games	202.77.88.10		2001:df0:680:5::a		10.0 Gbps	Yes
<input type="checkbox"/>	6939	Hurricane Electric	202.77.88.11		2001:df0:680:5::b		10.0 Gbps	Yes
<input type="checkbox"/>	7575	AARNet	202.77.88.26		2001:df0:680:5::1a		10.0 Gbps	Yes
<input type="checkbox"/>	7604	Zettagrid	202.77.88.17		2001:df0:680:5::11		10.0 Gbps	Yes
<input type="checkbox"/>	8075	Microsoft	202.77.88.54		2001:df0:680:5::36		100.0 Gbps	No
<input type="checkbox"/>	8075	Microsoft	202.77.88.55		2001:df0:680:5::37		100.0 Gbps	No
<input type="checkbox"/>	9268	Over The Wire	202.77.88.60		2001:df0:680:5::3c		10.0 Gbps	Yes
<input type="checkbox"/>	9280	Servers Australia AS9280	202.77.88.9		2001:df0:680:5::9		40.0 Gbps	Yes
<input type="checkbox"/>	9280	Servers Australia AS9280	202.77.88.37		2001:df0:680:5::25		40.0 Gbps	Yes
<input type="checkbox"/>	9500	Vodafone New Zealand Ltd.	202.77.88.40		2001:df0:680:5::28		20.0 Gbps	Yes
<input type="checkbox"/>	9507	nexthop	202.77.88.5		2001:df0:680:5::5		100.0 Gbps	Yes



# 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?



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