
DigitalOcean

NetBox and Peering Manager

a quick overview

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Who am I?

Network Developer @ DigitalOcean

Python, Ansible, FreeBSD, Juniper

2bithacker on Keybase/Twitter/GitHub

NetBox

- Python Django app
- DCIM / IPAM
- REST API
- Started in-house at DigitalOcean, open sourced, now a community driven project
- https://github.com/netbox-community/netbox

NetBox - Home screen

Search All Objects Search

Organization

Sites 1
Geographic locations

Tenants 0
Customers or departments

DCIM

Racks 1
Equipment racks, optionally organized by group

Device Types 11
Physical hardware models by manufacturer

Devices 10
Rack-mounted network equipment, servers, and other devices

Connections

- Cables 18
- Interfaces 11
- Console 0
- Power 5

Power

Power Feeds 1
Electrical circuits delivering power from panels

IPAM

VRFs 0
Virtual routing and forwarding tables

Aggregates 1
Top-level IP allocations

Prefixes 3
IPv4 and IPv6 network assignments

IP Addresses 11
Individual IPv4 and IPv6 addresses

VLANs 1
Layer two domains, identified by VLAN ID

Circuits

Providers 1
Organizations which provide circuit connectivity

Circuits 1
Communication links for Internet transit, peering, and other services

Virtualization

Clusters 0
Clusters of physical hosts in which VMs reside

Global Topology Maps

None found

Reports

None found

Changelog

Device hue01.us-mys01
chip - 2019-08-15 21:54

IP Address 192.168.0.36/24
chip - 2019-08-15 21:54

Cable #21
chip - 2019-08-15 21:54

Interface ge-0/0/2
chip - 2019-08-15 21:54

Interface Ethernet
chip - 2019-08-15 21:54

Interface ge-0/0/2
chip - 2019-08-15 21:54

Interface Ethernet

NetBox - Rack view

netbox | Organization | Racks | Devices | IPAM | Virtualization | Circuits | Power | Secrets | Search | chip

Racks / US MYS 1 / Office

Search racks

Previous Rack | Next Rack | Edit this rack | Delete this rack

Rack Office

Created Aug. 14, 2019 · Updated 1 month, 2 weeks ago

Rack | Changelog

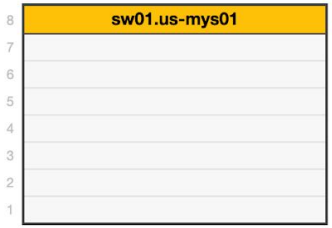
Rack

Site	US MYS 1
Group	None
Facility ID	—
Tenant	None
Status	Active
Role	None
Serial Number	—
Asset Tag	—
Devices	7

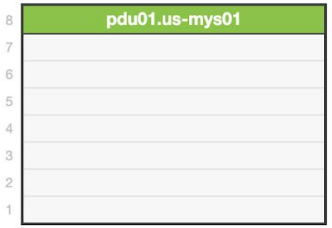
Dimensions

Type	4-post cabinet
Width	19 inches

Front



Rear



Non-Racked Devices

Name	Role	Type	Parent
hue01.us-mys01	Home Automation	Philips Hue Bridge	—
modem01.us-mys01	Modem	Arris SB6190	—
rtr01.us-mys01	Router	PC Engines apu2c4	—
sw02.us-mys01	Access Switch	Netgear ProSafe GS105Ev2	—
ups01.us-mys01	UPS	CyberPower CP1500AVRLCD	—

None

NetBox - Device view - Interfaces

Interfaces

Show IPs

Name	LAG	Description	MTU	Mode	Cable	Connection		
ge-0/0/0		—	—	—	—	Not connected		
ge-0/0/1		—	—	—	—	Not connected		
ge-0/0/2		—	—	—	#21	hue01.us-mys01	Ethernet	
ge-0/0/3		—	—	—	—	Not connected		
ge-0/0/4		—	—	—	—	Not connected		
ge-0/0/5		—	—	—	—	Not connected		
ge-0/0/6		—	—	—	—	Not connected		
ge-0/0/7		—	—	—	#19	chip-desktop	eth0	
ge-0/0/8	ae0	—	—	—	#14	sumo.2bithacker.net	igb0	
ge-0/0/9	ae0	—	—	—	#15	sumo.2bithacker.net	igb1	
ge-0/0/10		—	—	—	—	Not connected		
ge-0/0/11		—	—	—	#16	ap01.us-mys01	Uplink	
ge-0/1/0		—	—	—	#5	rtr01.us-mys01	igb1	
ge-0/1/1		—	—	—	—	Not connected		
ae0		—	—	Access	—	LAG interface ge-0/0/8, ge-0/0/9		
me0		—	—	—	#8	sw02.us-mys01	2	

IP Address	Status/Role	VRF	Description

NetBox Uses

- Source of Truth
  - Device configuration via Salt
  - DNS zones
  - Prometheus exporter configs
  - Oxidized config
  - IRR updates

Peering Manager

- Python Django app
- BGP / IX Session Manager
- REST API
- Config templates
- Imports data from PeeringDB
- https://github.com/respawner/peering-manager

Peering Manager - Home

Autonomous Systems
BGP Groups
Internet Exchanges
Policy Options
Deployment

Logged in as cmarshall.

Policy Options

Routing Policies
140
Routing policies used for routes filtering

Communities
0
Communities used to tag routes from or to Internet exchanges

Deployment

Templates
0
Templates used to generate configuration and emails

Routers
28
Network devices connected to Internet exchanges, generated configuration can be applied to these devices if they are running on a supported platform

Peering Data

Autonomous Systems
397
Autonomous systems peering with the local AS

BGP Groups
1
Groups of BGP sessions

Internet Exchanges
26
Internet exchanges that local AS is connected to

Peering Sessions
Direct 8
Internet Exchange 2757

Changelog

Internet Exchange DE-CIX Frankfurt
cmarshall - 09/27/2019 10:13 p.m.

Internet Exchange Peering Session DE-CIX Frankfurt - AS206313 - IP 80.81.195.172
cmarshall - 09/27/2019 10:13 p.m.

Internet Exchange Peering Session DE-CIX Frankfurt - AS47147 - IP 2001:7f8::a5e9:0:3
cmarshall - 09/27/2019 10:13 p.m.

Internet Exchange Peering Session DE-CIX Frankfurt - AS47147 - IP 80.81.195.166
cmarshall - 09/27/2019 10:13 p.m.

PeeringDB Synchronizations

Added 37, updated 51 and deleted 2 objects
10/01/2019 2:30 a.m.

Added 14, updated 18 and deleted 5 objects
09/30/2019 2:30 a.m.

Added 18, updated 19 and deleted 8 objects
09/29/2019 2:30 a.m.

Added 39, updated 66 and deleted 5 objects
09/28/2019 2:30 a.m.

Peering Manager - IX Sessions

Autonomous Systems
BGP Groups
Internet Exchanges
Policy Options
Deployment

Info | Peering Sessions | Available Peers | Sessions last updated: Oct. 1, 2019, 7:01 a.m.

AS	IP Address	Route Server	Enabled	State
AS42 - Packet Clearing House AS42	80.81.194.42	✗	✓	Established Routes: ↓161 ↑60
AS42 - Packet Clearing House AS42	2001:7f8::2a:0:1	✗	✓	Established Routes: ↓153 ↑1
AS286 - KPN	80.81.192.22	✗	✓	Established Routes: ↓11074 ↑60
AS286 - KPN	2001:7f8::11e:0:1	✗	✓	Established Routes: ↓1384 ↑1
AS680 - DFN Deutsches Forschungsnetz e.V.	80.81.192.222	✗	✓	Established Routes: ↓481 ↑60
AS680 - DFN Deutsches Forschungsnetz e.V.	80.81.193.222	✗	✓	Established Routes: ↓481 ↑60
AS680 - DFN Deutsches Forschungsnetz e.V.	2001:7f8::2a8:0:1	✗	✓	Established Routes: ↓38 ↑1
AS680 - DFN Deutsches Forschungsnetz e.V.	2001:7f8::2a8:0:2	✗	✓	Established Routes: ↓38 ↑1
AS714 - Apple Inc.	80.81.193.202	✗	✓	Established Routes: ↓743 ↑60
AS714 - Apple Inc.	80.81.193.223	✗	✓	Established Routes: ↓743 ↑60
AS714 - Apple Inc.	80.81.194.161	✗	✓	Established Routes: ↓744 ↑60
AS714 - Apple Inc.	80.81.194.171	✗	✓	Established Routes: ↓744 ↑60
AS714 - Apple Inc.	2001:7f8::2ca:0:1	✗	✓	Established Routes: ↓80 ↑1
AS714 - Apple Inc.	2001:7f8::2ca:0:2	✗	✓	Established Routes: ↓80 ↑1
AS714 - Apple Inc.	2001:7f8::2ca:0:3	✗	✓	Established Routes: ↓80 ↑1
AS714 - Apple Inc.	2001:7f8::2ca:0:4	✗	✓	Established Routes: ↓80 ↑1
AS2119 - Telenor (Norway/Sweden)	80.81.194.121	✗	✓	Active
AS2635 - Automattic	80.81.193.69	✗	✓	Established Routes: ↓16 ↑60
AS2635 - Automattic	2001:7f8::a4b:0:1	✗	✓	Established Routes: ↓5 ↑1
AS2818 - BBC	80.81.192.59	✗	✓	Established Routes: ↓5 ↑60

Search

Search

Autonomous System

Address family

All

Route Server

Enabled

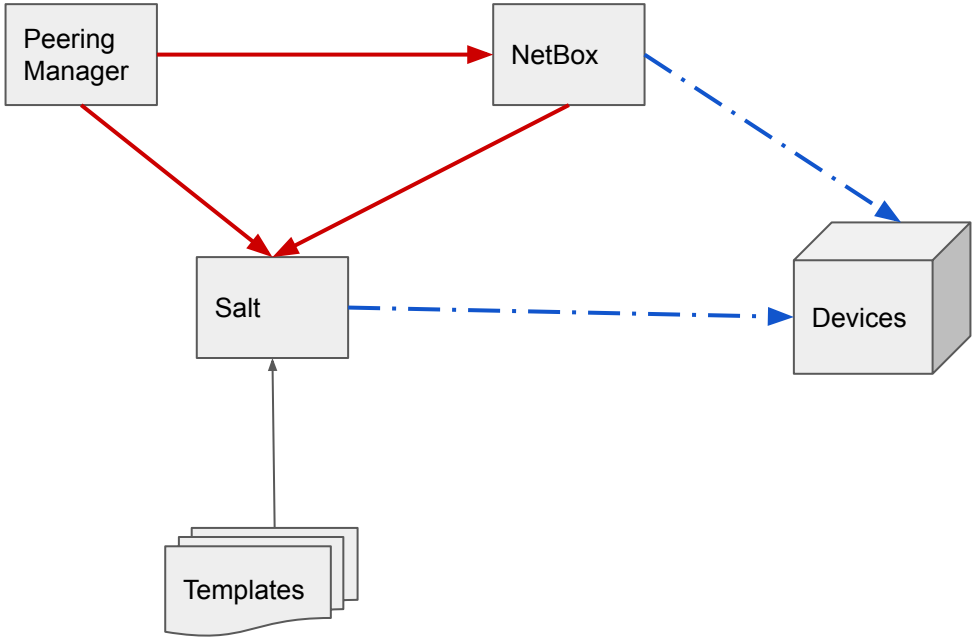
Apply | Clear

Peering Manager Normal Usage

- Session state directly from routers
- Internal templates pushed directly to routers
- Uses NAPALM libs

Peering Manager Our Usage

- Session state queried via NetBox's REST API
- REST API used to pull session info in Salt
- Templates live in Salt
- Salt pushes config to routers
- Peering Manager has no direct access to devices



NETCONF

REST

Community

Network to Code Slack

- https://www.networktocode.com/community/
- #netbox
- #peering-manager

Q&A

DigitalOcean