



Open Tech Meetup

7th May 2024





Agenda

1. The Association
2. IXP — Frontend
3. IXP — Backend
4. We need to go deeper...



The Association

Recent History

May 2022

Starting Point



Jumping into the
Rabbit Hole
RIPE 84 and RIPE 85

June 2023

People



Meeting the Local
Community

August 2023

Registration



Assignment of
AS57328

October 2023

Founding



Founding of the
Association

~ May 2024

Operations



Start Operations

Association model



- Members: individuals
(Companies as supporting members, only)
- Goals of the association:
 - Operating the IXP
 - Education/Outreach
 - Supporting Dresden/ Saxony Industry
- Fees:
 - Members €60 p.a.
 - Supporters ≥ €1.200 p.a.

Mind to grab an application form!

A Big Thanks to DD-IX Sponsors & Supporters!



BCIX

IBH
IT-SERVICE



**TECHNISCHE
UNIVERSITÄT
DRESDEN**

open for further supporters ;-)

IXP — Frontend

It is all about connectivity.

**The Internet enables
connectivity!**

Globally. Application-independent.

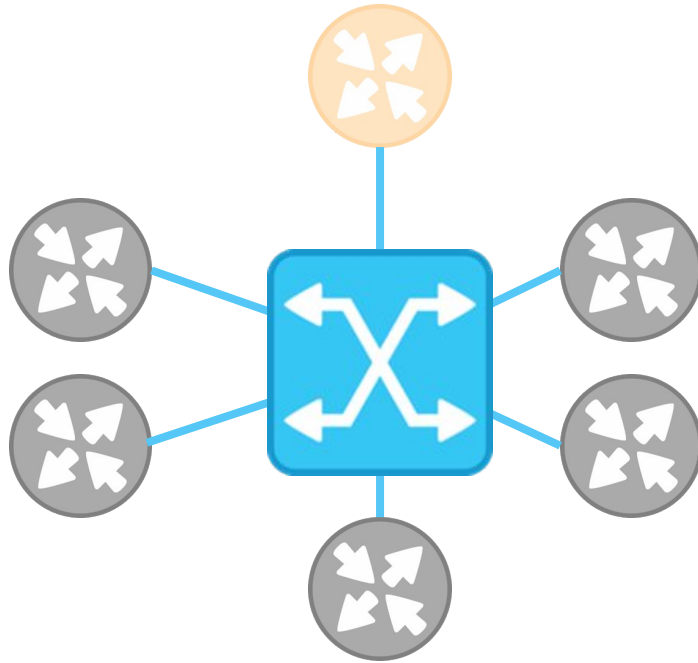
Where to peer? At IXPs!

Internet Exchange Points are a place where you can meet other networks to exchange Internet packets.

At IXPs you meet your peer group ;-)

IXPs help to reduce costs and latencies!

Internet Exchange Points



**Switching
infrastructure
+ route server
+ community**

PoPs

IBH Dresden C2 (available)

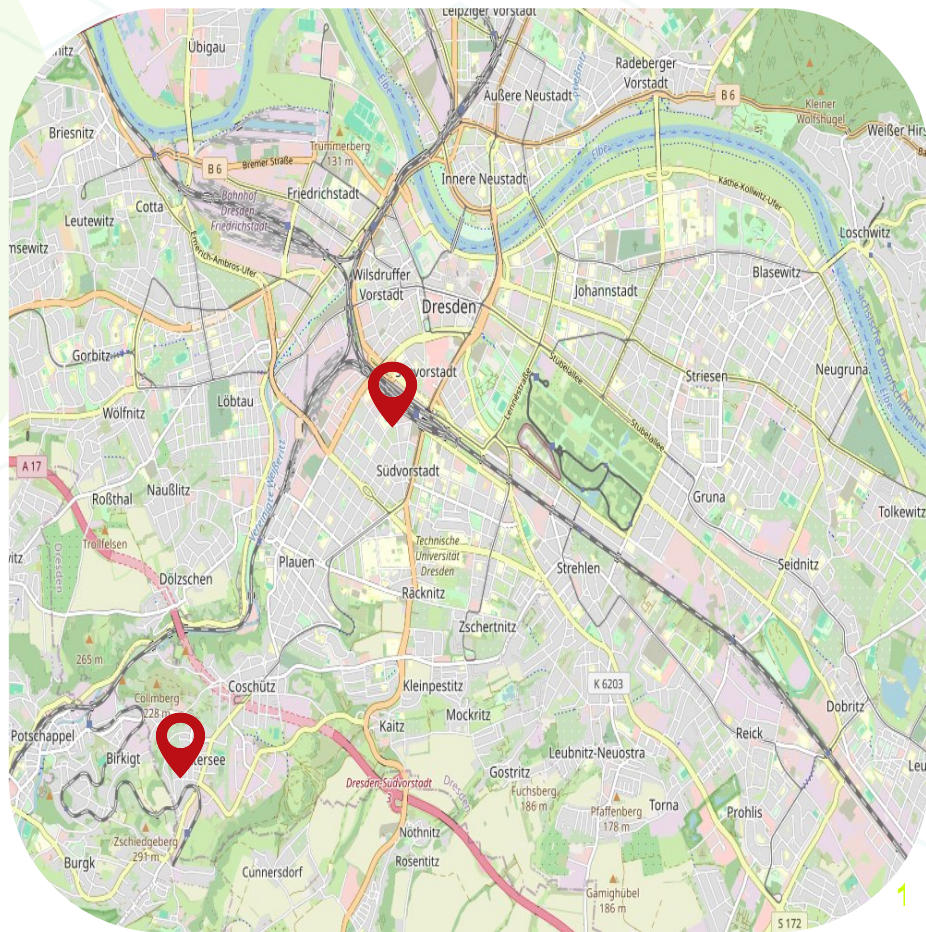
- Heilbronner Str. 20
01189 Dresden

SachenGigabit CityCenter (TBD)

- Friedrich-List-Platz 2
01069 Dresden

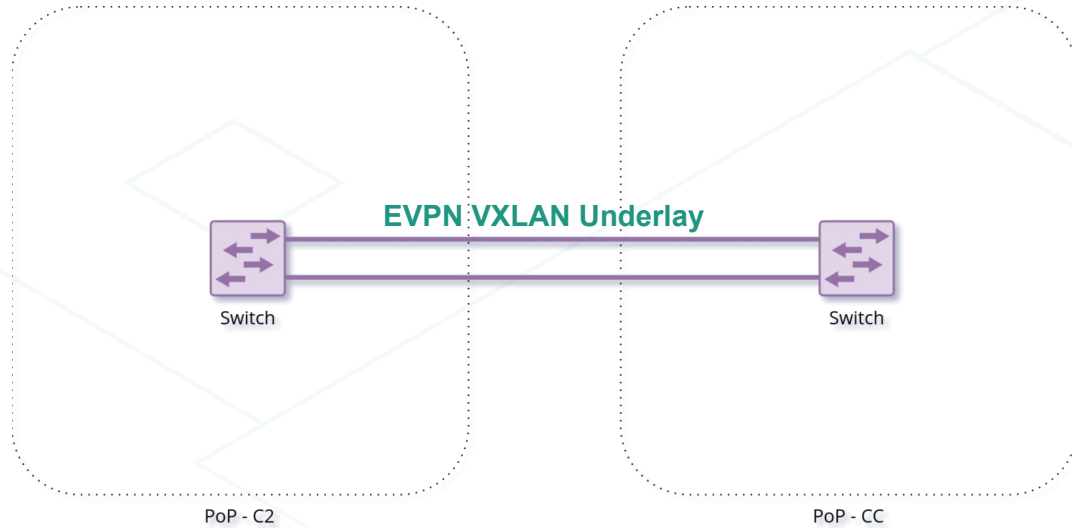
Peering Ports

- 10 GbE €150/mo. ▶



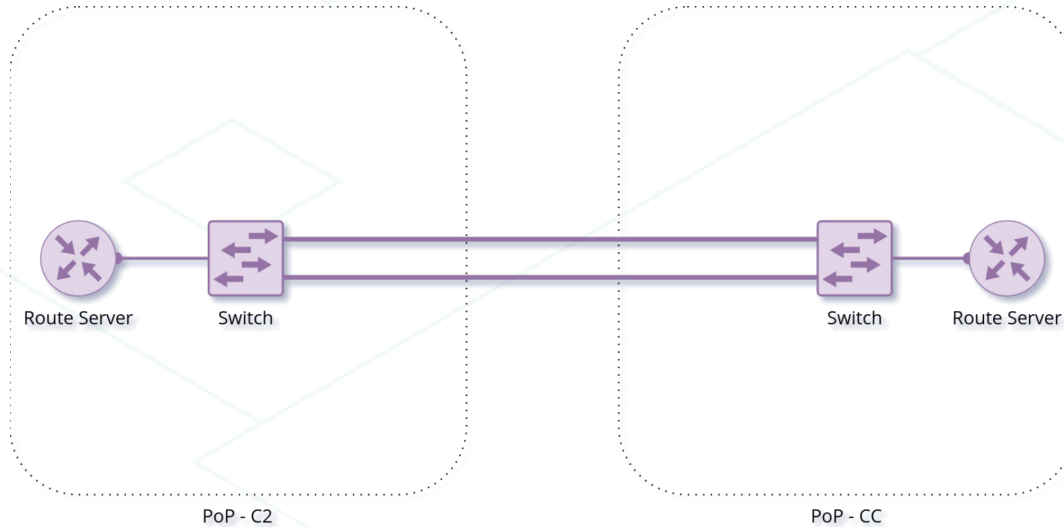
IXP — Backend

L2: Multiple switches. One core.



- Arista 7050SX
- 10/40GbE SFP+
- gift from unknown origin

L3: Caring about redundancy

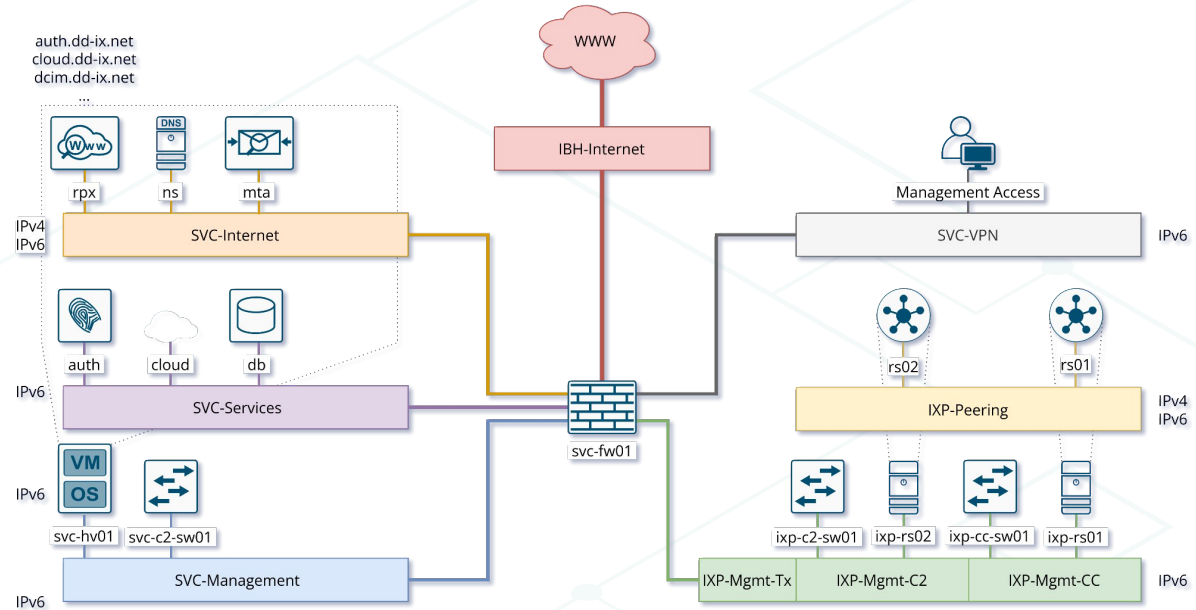


- HPE ProLiant DL20 Gen10 Server
- connected with 10GbE
- borrowed from IBH

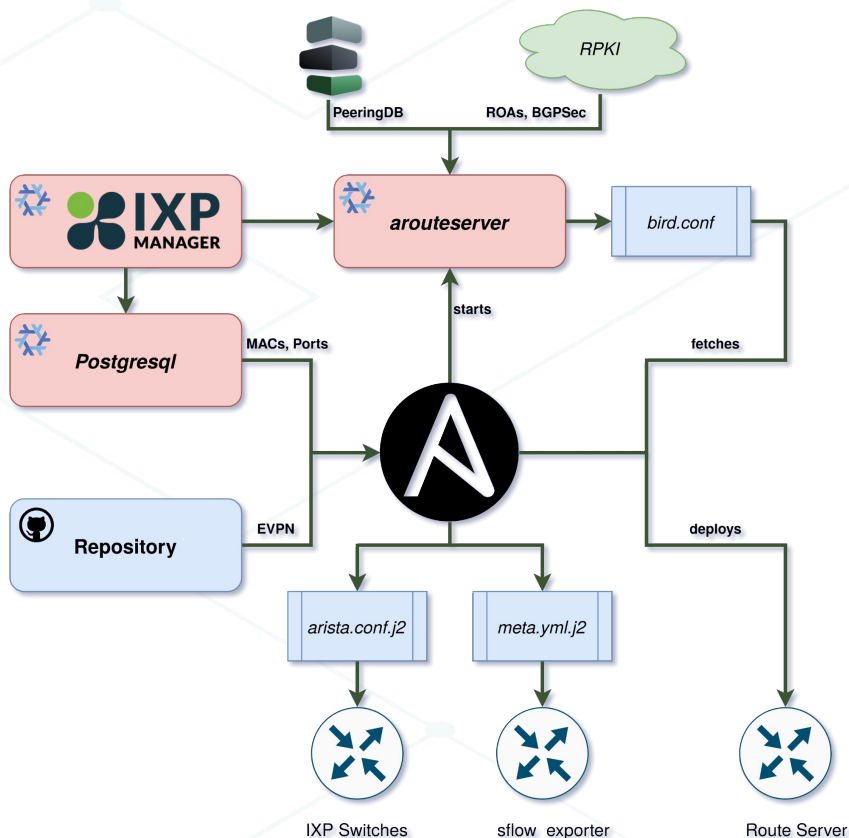
We run an infrastructure. For you.



- Lenovo x3650 M4
- 384GB RAM
- 2x10GbE in Bond
- [github:astro/microvm.nix](https://github.com/astro/microvm.nix)
- Wiki, Mail, Auth, Cloud, Automation, ...



Deployment automation



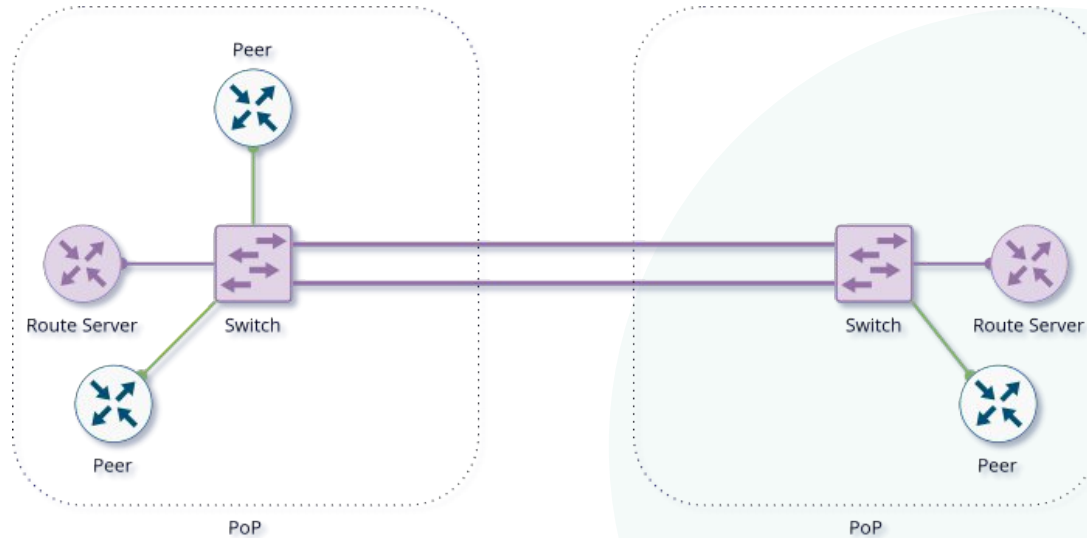
- INPUT SANITIZATION!
VALIDATION! VALIDATION!
- Redeployment is triggered every 6 hours in a special micro VM.
- Ansible for fetching all values, validating them and filling out the templates.
- Unattended reconfiguration of route servers & switches!

VALIDATION!

```
21 - name: validate peer configs
22   ansible.builtin.assert:
23     that:
24       - peer.asn|type_debug == 'int'
25       - (peer.asn > 0 and peer.asn < 64512) or (peer.asn > 131071 and peer.asn < 64512)
26       - peer.maxprefixes|type_debug == 'int'
27       - peer.maxprefixes > 0
28       - peer.status in ixp_manager_portstatus
29       - peer.custname is match('^[a-zA-Z0-9_ -]+$')
30       - peer.slug is match('^[A-Za-z0-9_ -]+$')
31       - peer.l2address == None or peer.l2address is match('^([0-9a-f]{12})$')
32       - peer.ipv4address|ansible.utils.ipv4('address') == peer.ipv4address
33       - peer.ipv4bgpmd5secret is match('^[a-zA-Z0-9]*$')
34       - peer.ipv4hostname is match('^((?!-))(\xn--|_)?[a-z0-9-]{0,61}[a-z0-9]{1,4}$')
35       - peer.ipv4peeringmacro == None or peer.ipv4peeringmacro is match('^([A-Z0-9-]{1,64})$')
36       - peer.ipv6address|ansible.utils.ipv6('address') == peer.ipv6address
37       - peer.ipv6bgpmd5secret is match('^[a-zA-Z0-9]*$')
38       - peer.ipv6hostname is match('^((?!-))(\xn--|_)?[a-z0-9-]{0,61}[a-z0-9]{1,4}$')
39       - peer.ipv6peeringmacro == None or peer.ipv6peeringmacro is match('^([A-Z0-9-]{1,64})$')
40       - peer.switchport is match('^Ethernet\d{1,2}$')
41       - peer.switchname in pop_switches
42       - peer.vlanid|type_debug == 'int'
43       - peer.vlanid == 600
44     msg: "validation failed at peer AS{{ peer.asn }}"
45     quiet: true
46   loop: "{{ ixp_manager_peers }}"
47   loop_control:
48     loop_var: peer
49     label: "{{ peer.switchname }} {{ peer.switchport }} AS{{ peer.asn }}"
```

- INPUT SANITIZATION!
VALIDATION! VALIDATION!
- Redeployment is triggered every 6 hours in a special micro VM.
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DD-IX. A peering infrastructure.



Future Work

- End to End Validation of Deployments
- Lab setup for (automatic) validation.

Open Source



dd-ix/sflow_exporter

- aggregates sflow data (RFC3176)
- exposes Prometheus metrics



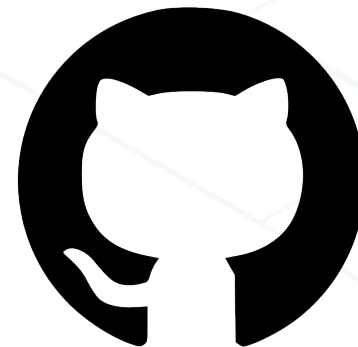
dd-ix/arouteserver.nix

- custom package
- builds bird configs



dd-ix/ixp-manager.nix

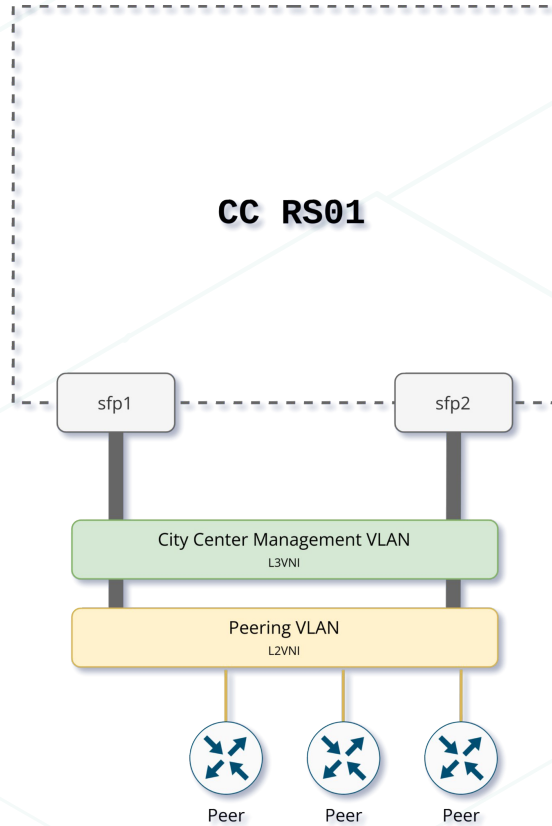
- custom package with nixos-options
- frontend for customers



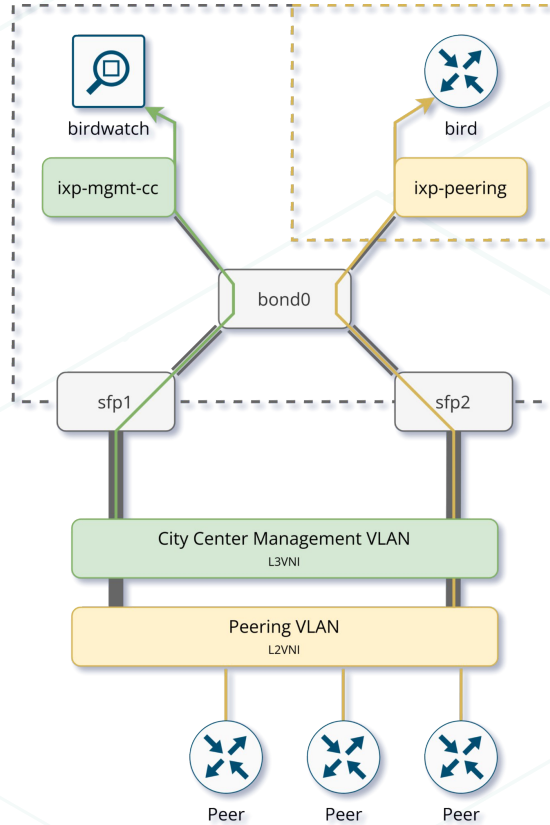
<https://github.com/dd-ix>

We need to go deeper...

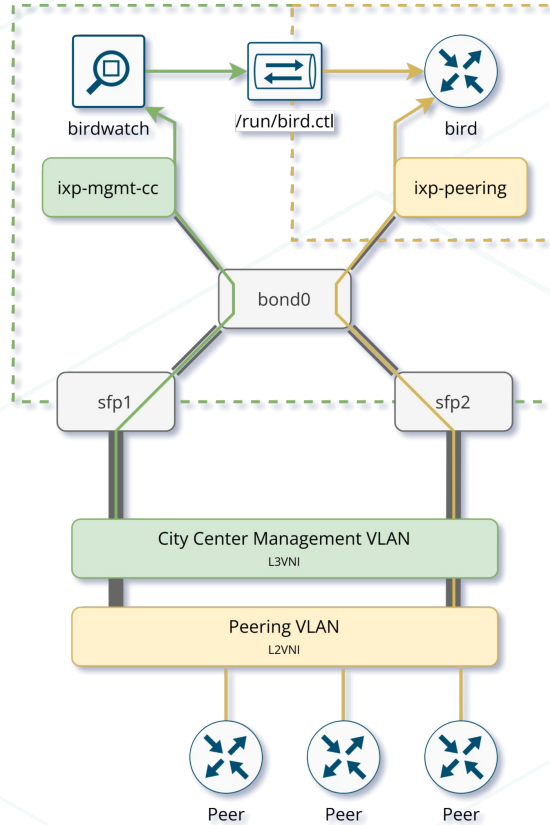
Route Server



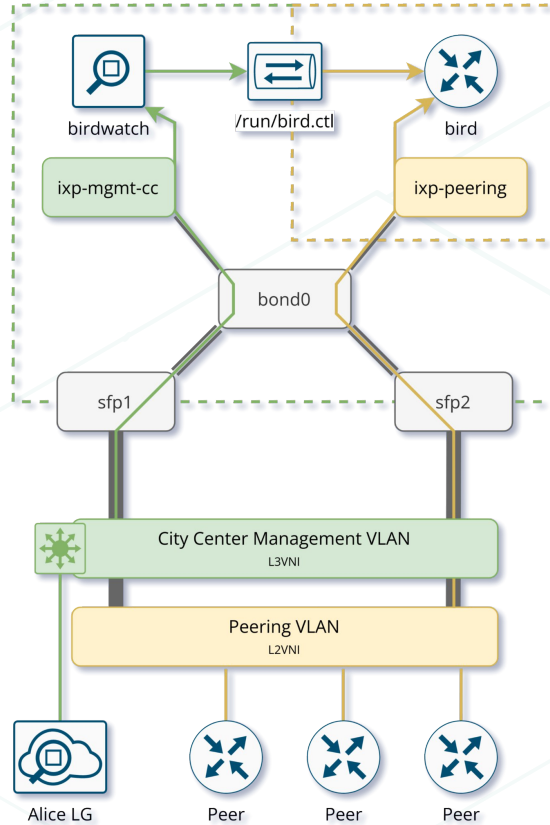
Route Server



Route Server



Route Server



Deployment



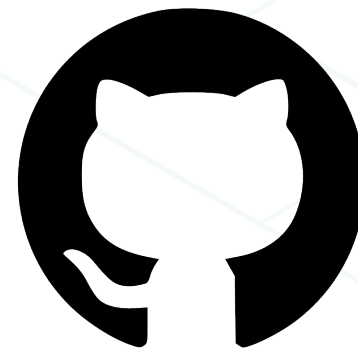
dd-ix/ddix-ansible-rs

- Alpine Linux based route servers
- deploys the static base configuration



dd-ix/ddix-ansible-ixp

- build switch config w/ atomic deployment
- bird config build & deployment w/ static RPKI



<https://github.com/dd-ix>



Keep Local Traffic Local



Contacts:

<https://dd-ix.net>

contact@dd-ix.net

News:



Join us!