DD-IX
Keep Local Traffic Local

3. Open Tech Meetup

6th May 2025

Agenda

1. DD-IX Peering Update

2. Project "audIX"

3. Backstage DD-IX Lab

4. ALASCA PoC

5. Open Discussion

6. Social: "Altes Wettbüro"

Orga

ALTES WETTBÜRO
Antonstr. 8 • Dresden • Ruf 0351 658 89 83
tischreservierung@altes-wettbuero.de

WOCHENKARTE

Mittwoch, 30. April - Dienstag, 13. Mai 2025

Montag - Samstag
Restaurant & Küche
ab 17 Uhr
Sonntags geschlossen
Feiertage
Restaurant & Küche
ab 17 Uhr

Für Kinder
Hähnchenragout mit Champignons, Möhren und Basmatireis
Chicken ragout with mushrooms, carrots, and basmati rice

Sp...
an gebackenen Tom...
Asparagus soup served...

**https://www.altes-wettbuero.de/speisekarte.html
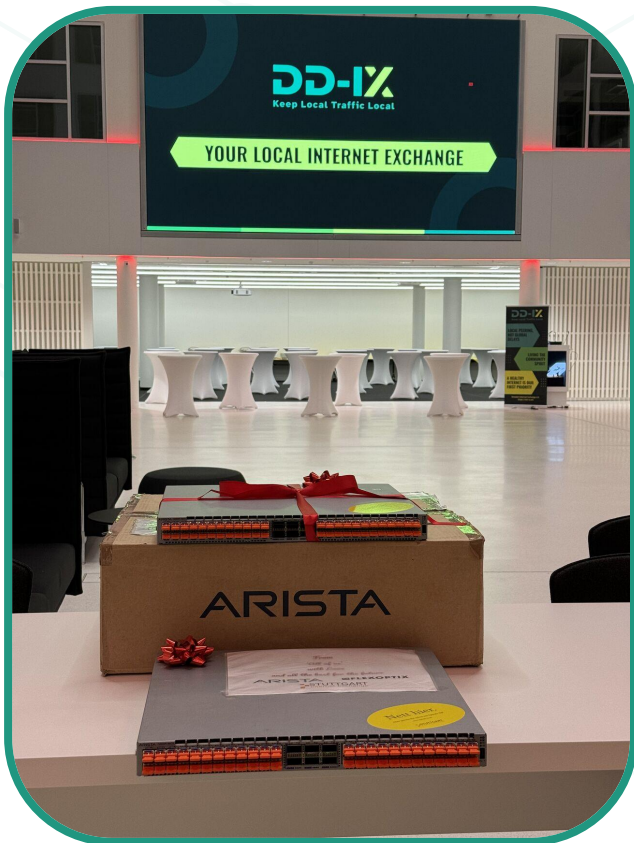(Bitte Namen neben das gewünschte Gericht schreiben)**

DD-IX Peering Update

Tassilo

A lot has happened since July 2024 ...

Updates since last OTM

Infrastructure Update

✔ Received 100G switches, which are currently being tested and automated.

Peers Update

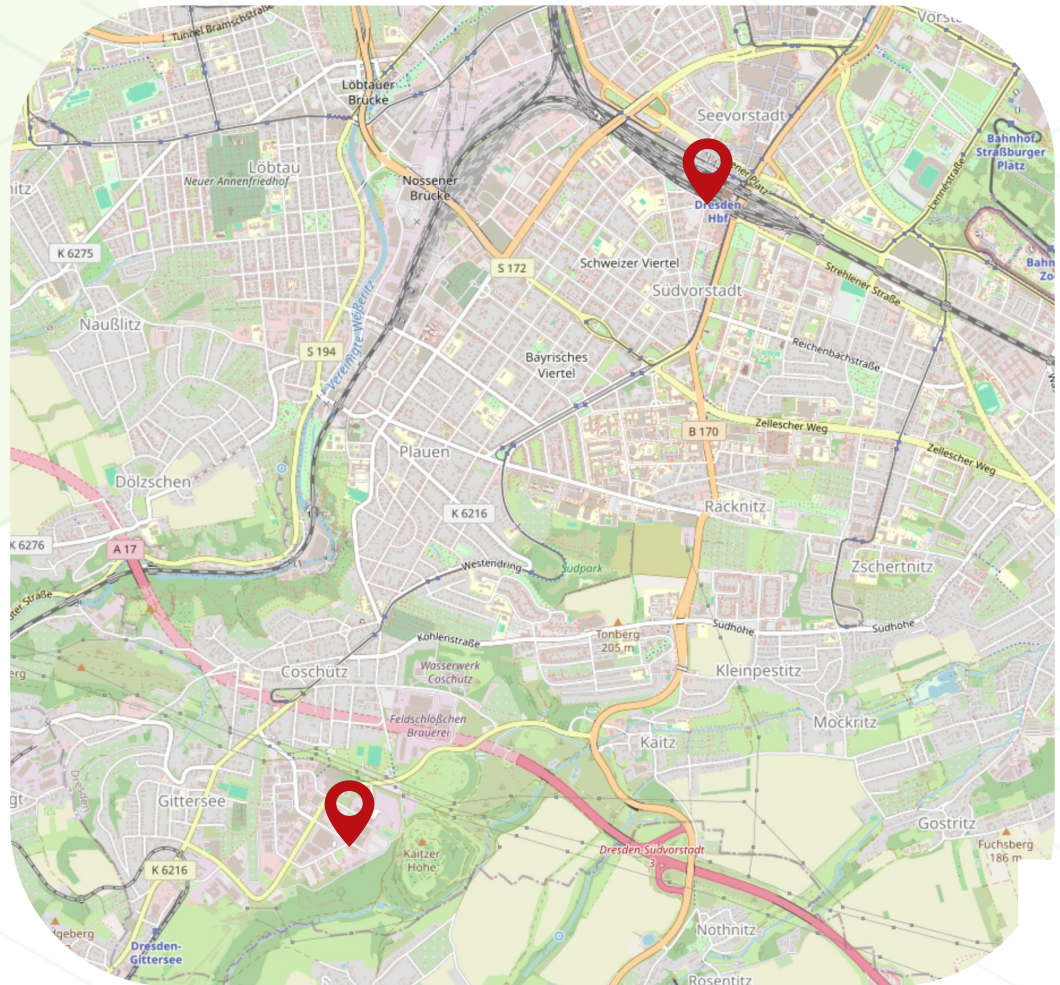|			
+	SachsenGigaBit	AS62365	*Connected*
+	*Landeshauptstadt*	*AS208508*	*Connected*
+	*BCIX Outreach*	*AS213973*	*Connected*
+	Dresden-IT	AS215556	*Awaiting X-Connect*
+	*PCH*	*AS42*	*Awaiting X-Connect*

... and more ;D

PoPs

SachenGigabit Center

- Friedrich-List-Platz 2
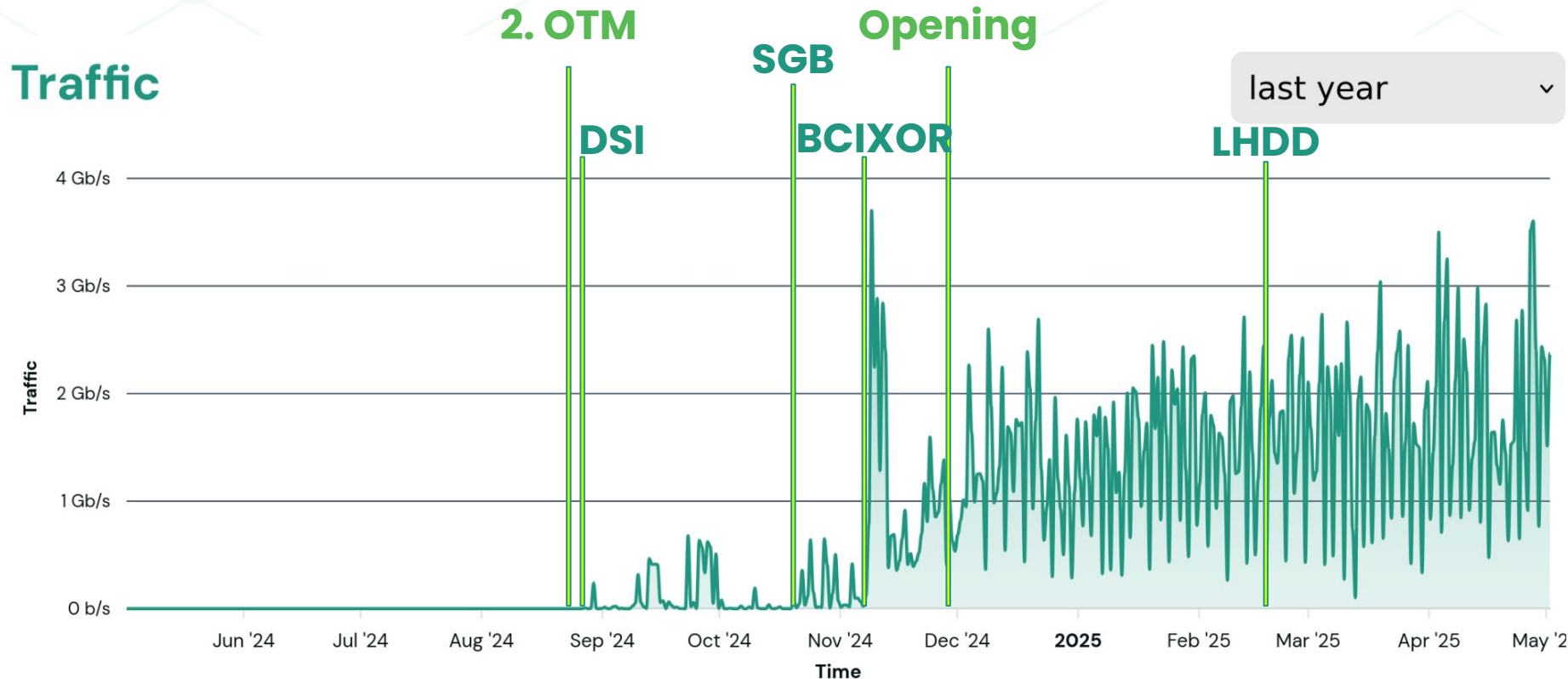- 01069 Dresden

IBH Dresden C2

- Heilbronner Str. 20
  01189 Dresden

Peering Ports

- 10 GbE €150/mo.
- 100 GbE €630/mo.

BCIX Outreach

| Name	IPv4	IPv6
BCIX-OR	16108	3849
Regular Peers	53	13

```
bird> show route table master4 count
16158 of 16158 routes for 16150 networks in table master4
bird> show route protocol AS213973_1 count
16103 of 16158 routes for 16150 networks in table master4
bird>
bird> show route table master6 count
3864 of 3864 routes for 3861 networks in table master6
bird> show route protocol AS213973_2 count
3849 of 3864 routes for 3861 networks in table master6
bird>
```

The purpose of BCIX-Outreach
Making smaller IXPs more attractive by providing an initial stock of routes from BCIX.

BCIX Outreach
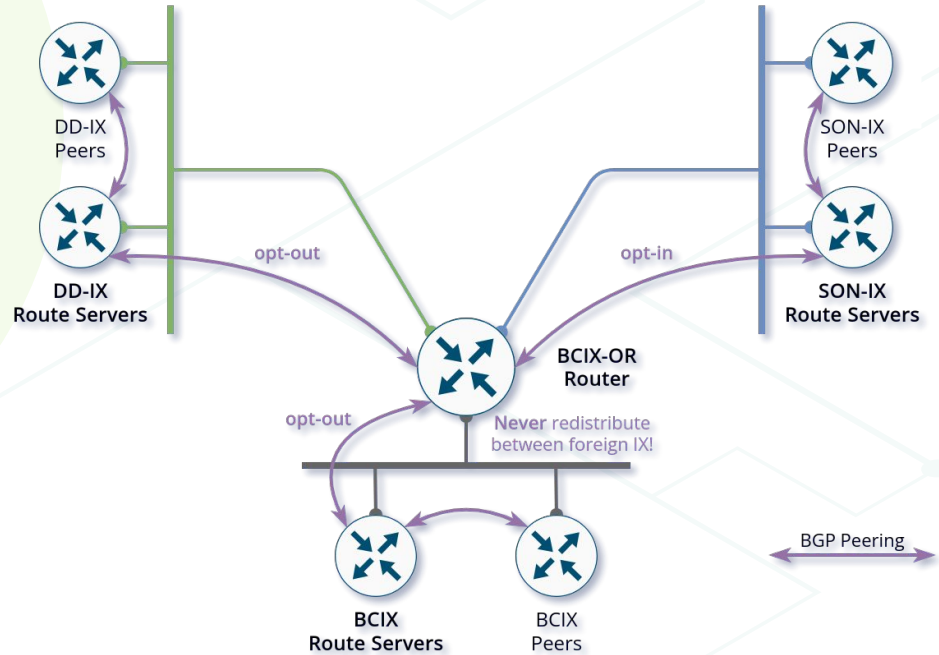
Implementation
BCIX Outreach peers with BCIX, DD-IX, and SON-IX. Routes announced from DD-IX via BCIX-Outreach are distributed to BCIX and vice versa. Transit is currently limited to 5GbE/s.
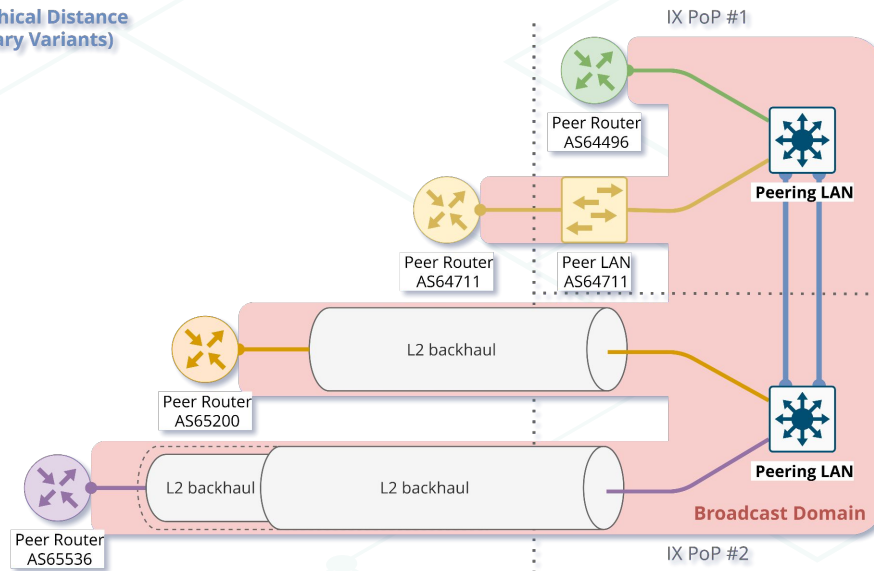
Project "audIX"

Marcel

Broadcast Domains are *Treacherous*

- L2 backhauls => very large broadcast domain
- routers can be (unintentionally) disruptive

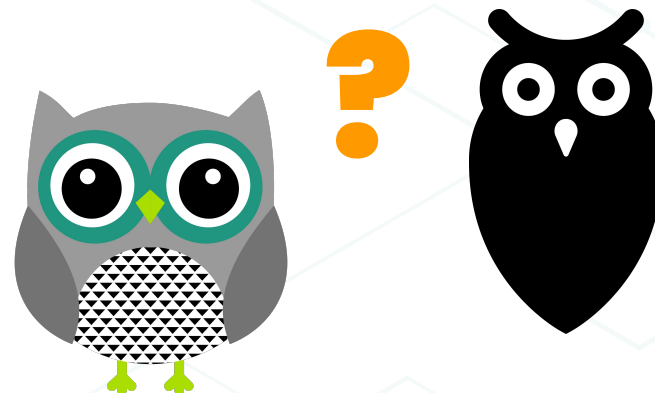https://labs.ripe.net/author/liske/ixp-from-scratch-the-peering-lan/

Our Guardian

Goal:

- continuously monitoring of IX peering LAN
- notifies on violations
- validates peer configuration

Name of the open-source project:

- **audIX?**
- **IXpect?**
- **PacketOwl?**

Current Alternatives

|	arpwatch	IXP-Watch	ndmon
Up to Date?	last release from 2006	last commit 2 years ago	last update 2013
Functionality	- detects ARP spoofing	- bum rates - STP - non-ipv4/6 traffic - stray SNMP	- detects NDP spoofing

Integration
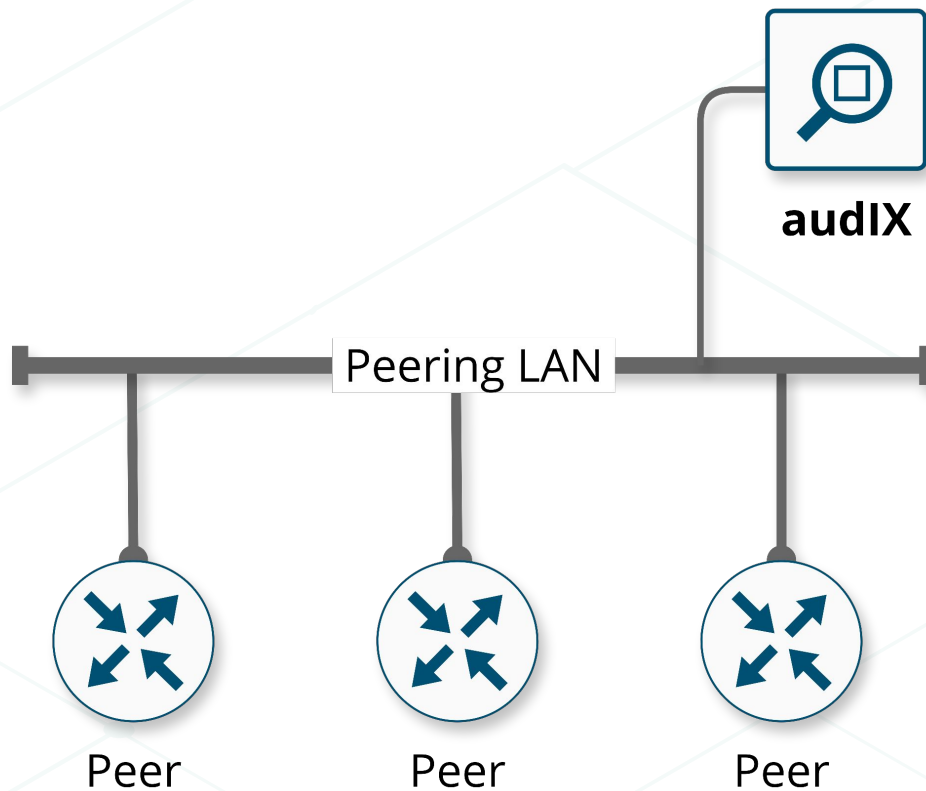
Probes

Name	Functionality
arp_bogon	detects usage of non-connected subnets
arp_monitor	validate mac => ip mappings
bum_rates	monitor bum traffic rates
ether_type_monitor	monitor ethernet types (only bum traffic)
stp_monitor	detects spanning tree traffic

Probes - work in process

Name	Functionality
arp_proxy	detects clients with ARP-proxy configuration
ipv6_nd	validate mac => ip mappings
ipv6_ra	detects ipv6 router advertisements
l4proto_monitor	detects potentially dangerous protocols like DHCP, OSPF, VRRP, ...
nd_bogon	detects usage of non-connected subnets
snmp_stray	detects open SNMP listeners

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Processing Pipeline
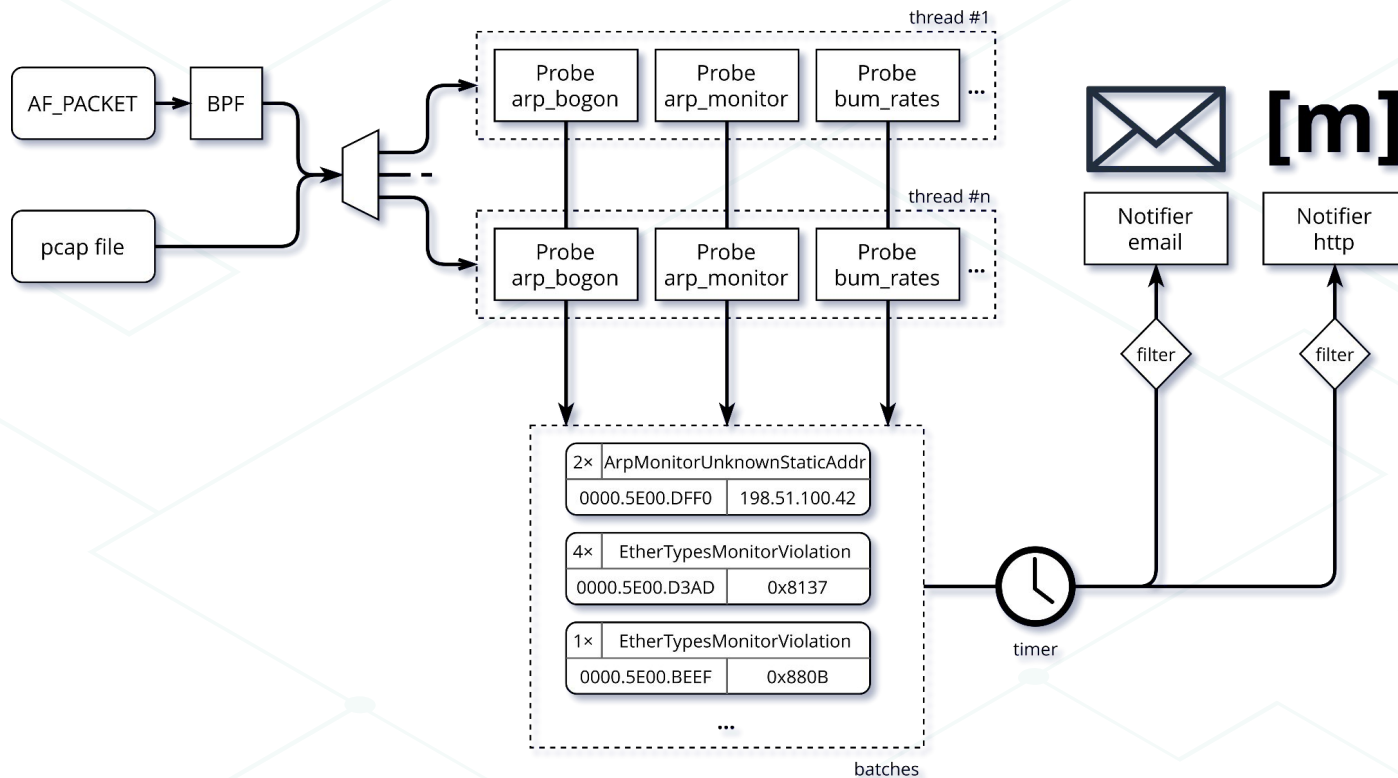
Notifiers

Name	Functionality
email	send e-mails for triggered events
http	send messages in e.g. Matrix, Slack, Zulip, ...
matrix	frontend of http

From: noreply@example.net
To: stfu@example.net
Subject: [audIX] ARP_BOGON_REQUEST triggered in 42 batches
Date: Sun, 4 May 2025 21:38:25 +0000 (*04.05.2025 23:38:25*)

ARP_BOGON_REQUEST triggered in 42 batches

Events	Timestamp	ID	Data
32	2025-05-04T21:37:25Z	66bc321a-49de-4689-beb0-d6e8730543ca	ip_addr_source: 172.22.99.3 ip_addr_requested: 172.22.99.139 mac_addr_source: 0a:14:48:01:21:03
58	2025-05-04T21:37:25Z	6755e535-bde8-4091-a514-74341ce7215f	ip_addr_source: 172.22.99.209 ip_addr_requested: 172.22.99.119 mac_addr_source: ec:a8:6b:fe:b4:cb
59	2025-05-04T21:37:25Z	a7d30aba-d3c9-43e4-9215-c1169dfe68b2	ip_addr_source: 172.22.99.209 ip_addr_requested: 172.22.99.192 mac_addr_source: ec:a8:6b:fe:b4:cb
34	2025-05-04T21:37:26Z	12749160-a8ee-46f1-b3b0-4c557f6d02a6	ip_addr_source: 172.22.99.4 ip_addr_requested: 172.22.99.139 mac_addr_source: 0a:14:48:01:21:05
1	2025-05-04T21:37:26Z	b99f500d-8b00-4f31-89c4-b1911119e531	ip_addr_source: 172.22.99.250 ip_addr_requested: 172.22.99.133 mac_addr_source: 0a:14:48:01:22:01
1	2025-05-04T21:37:27Z	ac751dfb-4cbb-41d6-9640-6afa73e02745	ip_addr_source: 172.22.99.190 ip_addr_requested: 172.22.99.190 mac_addr_source: f4:9d:8a:5a:8b:b5
1	2025-05-04T21:37:32Z	d7394102-1eaa-4b24-bd6e-3b305ad9b35b	ip_addr_source: 172.22.99.172 ip_addr_requested: 172.22.99.4 mac_addr_source: 74:da:88:14:37:a2

ip_addr_source: 172.22.99.1

▼ 𝒪 42 Attachments (4,2 kB)   Save All

```
 1 probes:
 2   arp_bogon:
 3     enable: true
 4     connected_prefixes:
 5       - 192.168.1.0/24
 6
 7   ether_type_monitor:
 8     enable: true
 9     allowed_ether_types:
10       - 0x0806 # ARP
11       - 0x0800 # IPv4
12
13   stp_monitor:
14     enable: true
15
16 event:
17   window: 1min
18
19   notifiers:
20     email:
21       enable: true
22       smtp_host: "mail.example.net:25"
23       from: noreply@example.net
24       template: email.html
25       channels:
26         - to: [ noc-critical@example.net ]
27           events:
28             - ARP_BOGON_DETECTED
29             - ARP_PROXY_DYNAMIC
30             - ARP_MONITOR_SPOOFED_DYNAMIC_ADDR
31         - to: [ noc@example.net ]
```

probes

notifiers

20
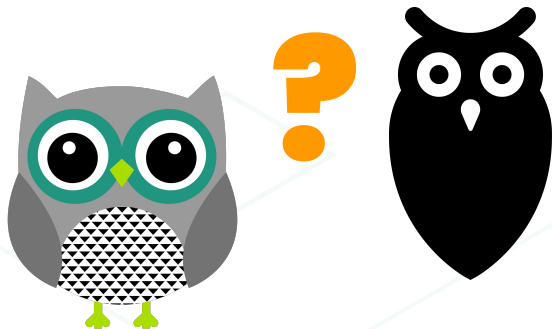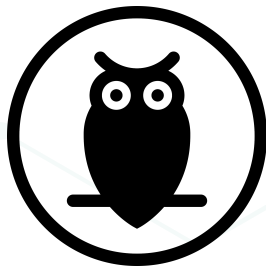
- **Looking for feedback & early testers/adopters**
- **Contributions are very welcome**

```
https://codeberg.org/dd-ix/audix
https://audix.dd-ix.net
        (subject to change)
```

Backstage DD-IX Lab

Thomas

Switching Hardware Lab

- testing new silicon platform
- T-CAM profile evaluation
- playground for
  - audIX devs
  - members

Lab Components

- Linux AIO router
  firewall, route servers, peers
- "media converter"
  1000BASE-T ⇔ n × 10GBASE-SR

- new PoP switches
  wired as in production

Lab Components
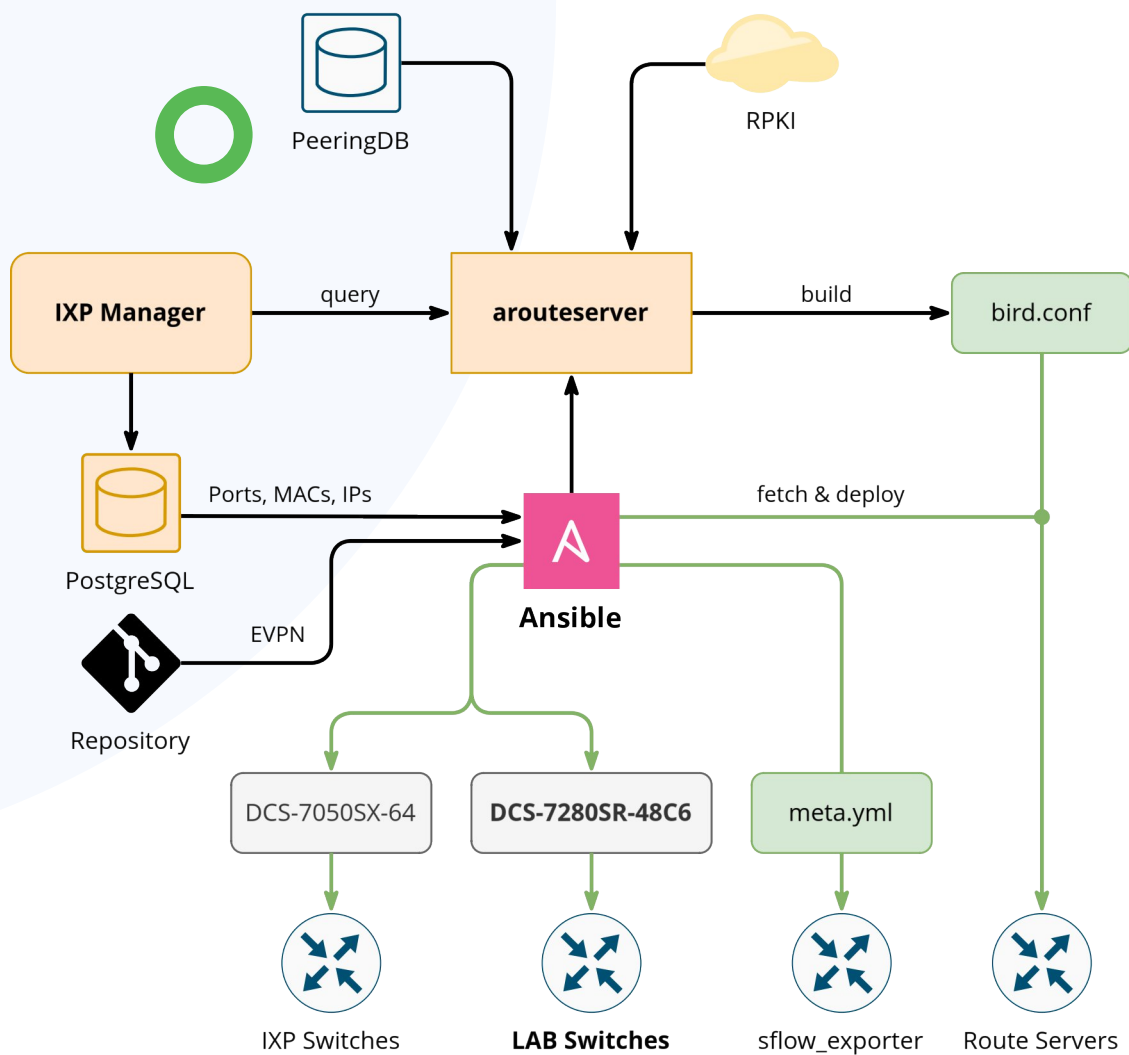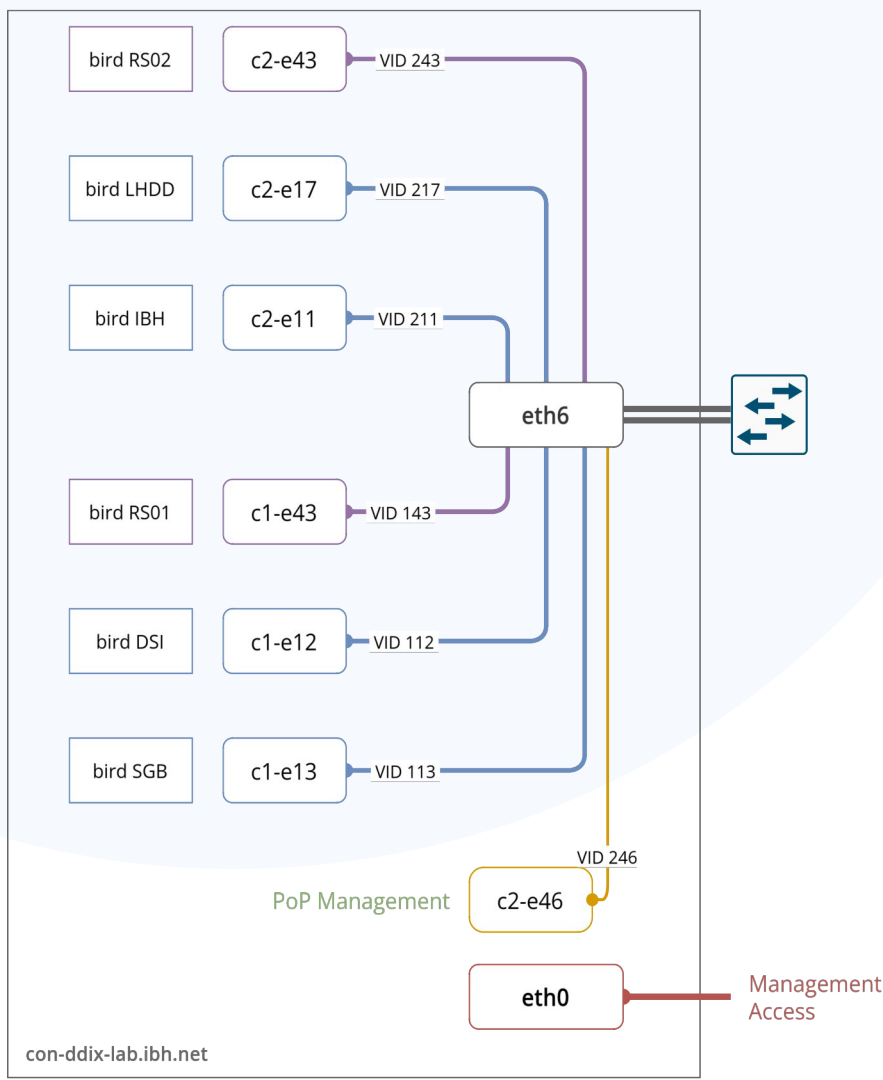
- Linux AIO router
  firewall, route servers, peers

- "media converter"
  1000BASE-T ⇔ n × 10GBASE-SR

- new PoP switches
  wired as in production

4

DD-IX
Keep Local Traffic Local

Automation
Prod

IXP Manager — query → **arouteserver**

PeeringDB

RPKI

arouteserver — build → bird.conf

IXP Manager → PostgreSQL

PostgreSQL — Ports, MACs, IPs → **Ansible**

Repository — EVPN → **Ansible**

Ansible — fetch & deploy →

bird.conf

Ansible → DCS-7050SX-64 → IXP Switches

Ansible → meta.yml → sflow_exporter

Route Servers

DD-IX
Keep Local Traffic Local

Automation
Prod & Lab

PeeringDB

RPKI

IXP Manager — query → arouteserver — build → bird.conf

PostgreSQL — Ports, MACs, IPs → Ansible — fetch & deploy →

Repository — EVPN → Ansible

DCS-7050SX-64   DCS-7280SR-48C6   meta.yml

IXP Switches   LAB Switches   sflow_exporter   Route Servers

Linux AIO Router

firewall, route servers, peers
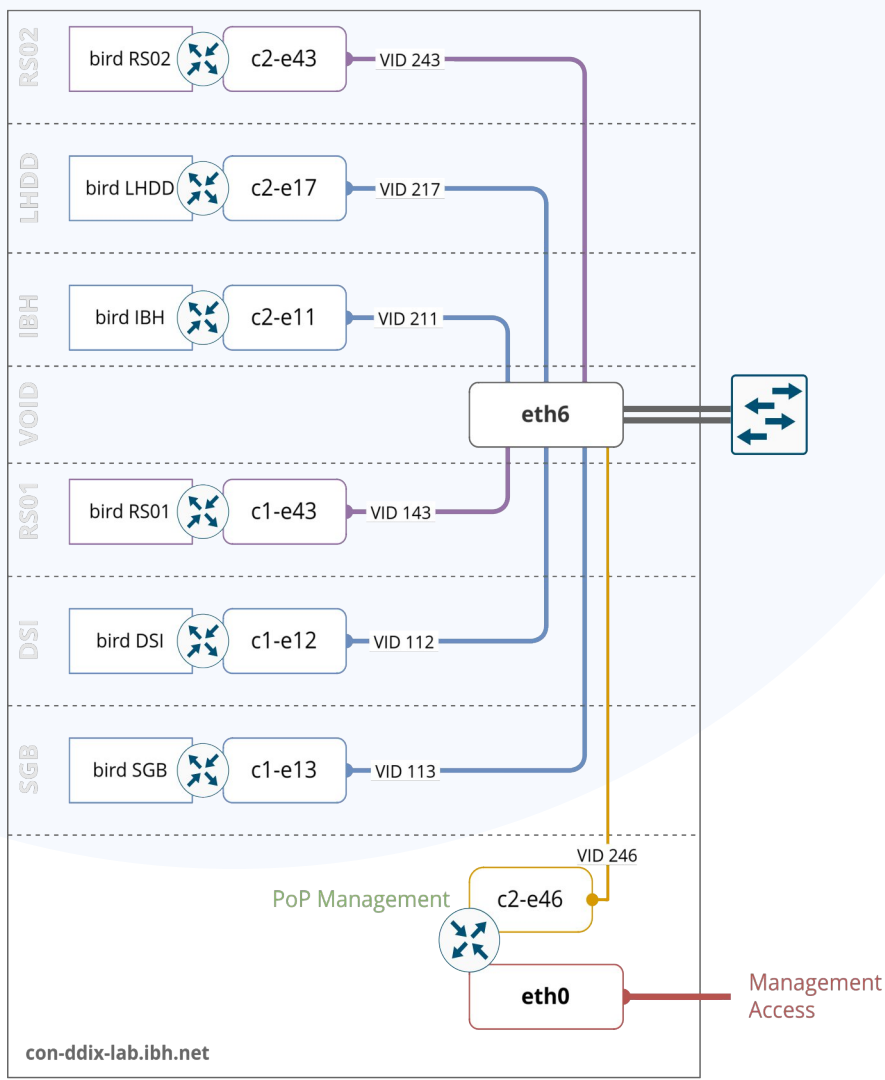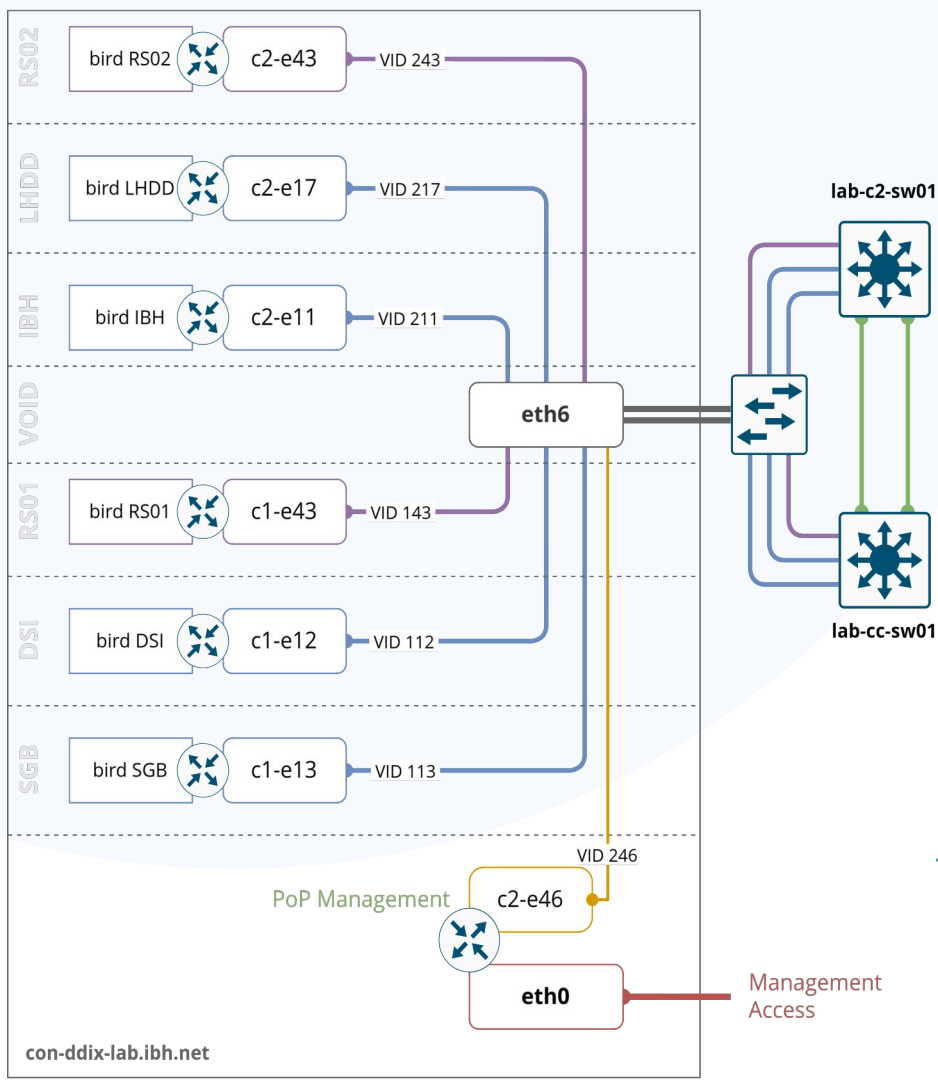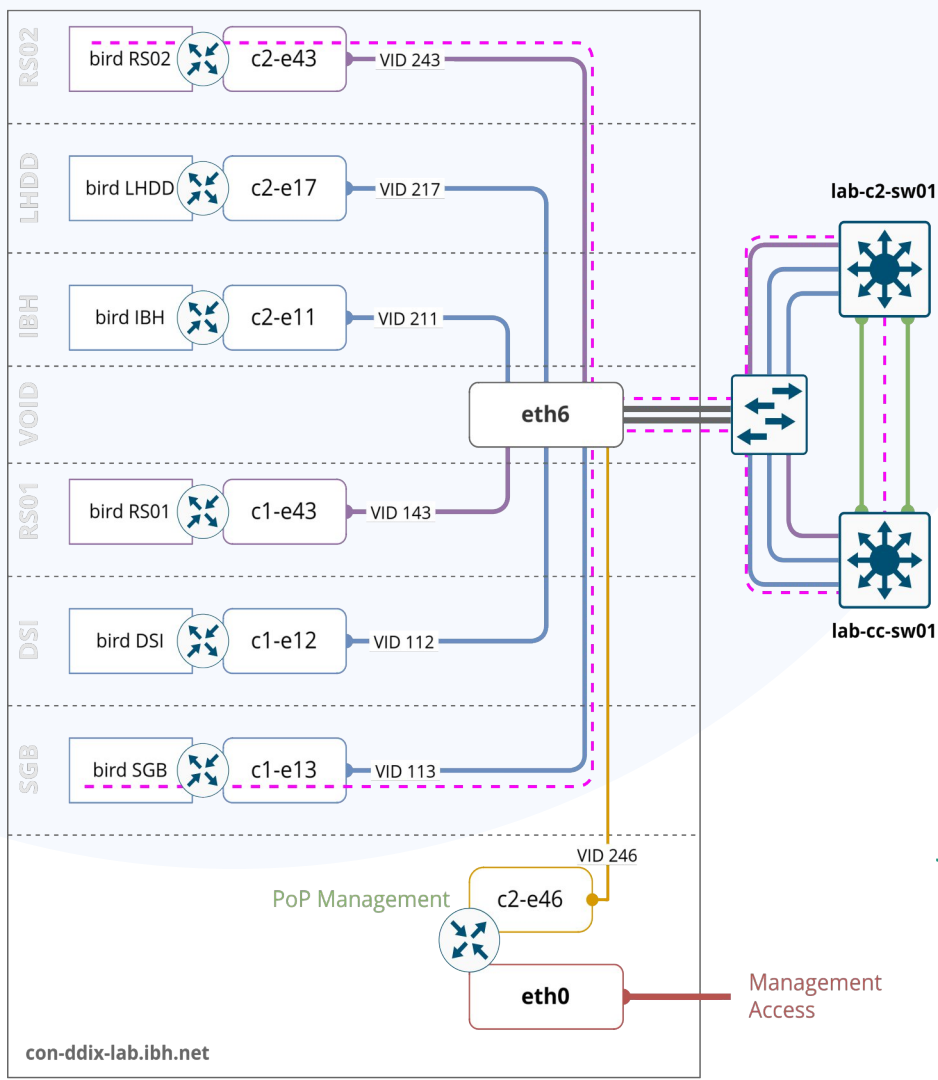
8

Linux AIO Router
firewall, route servers, peers

9

Linux AIO Router
firewall, route servers, peers

10

Linux AIO Router

firewall, route servers, peers

11
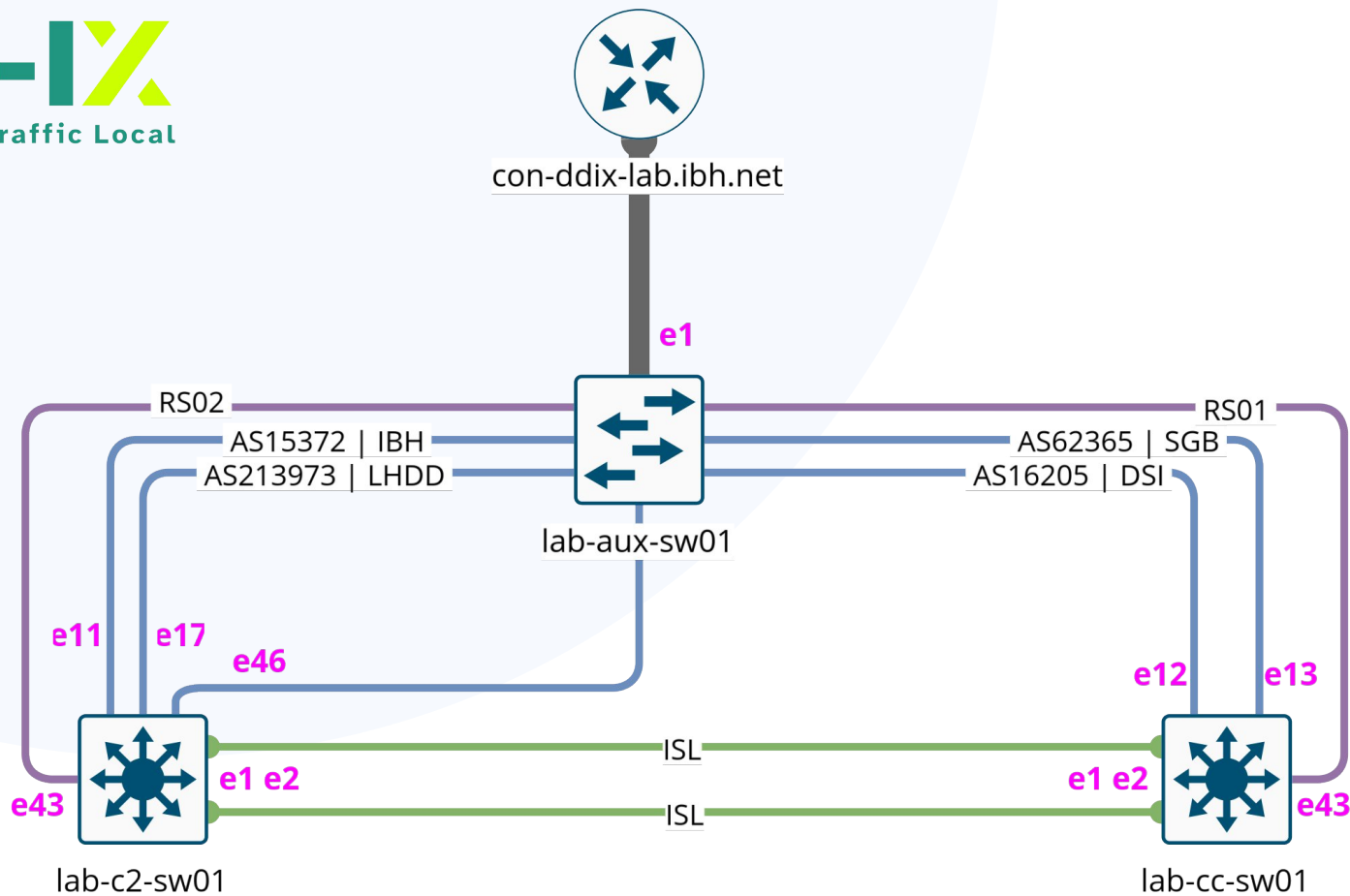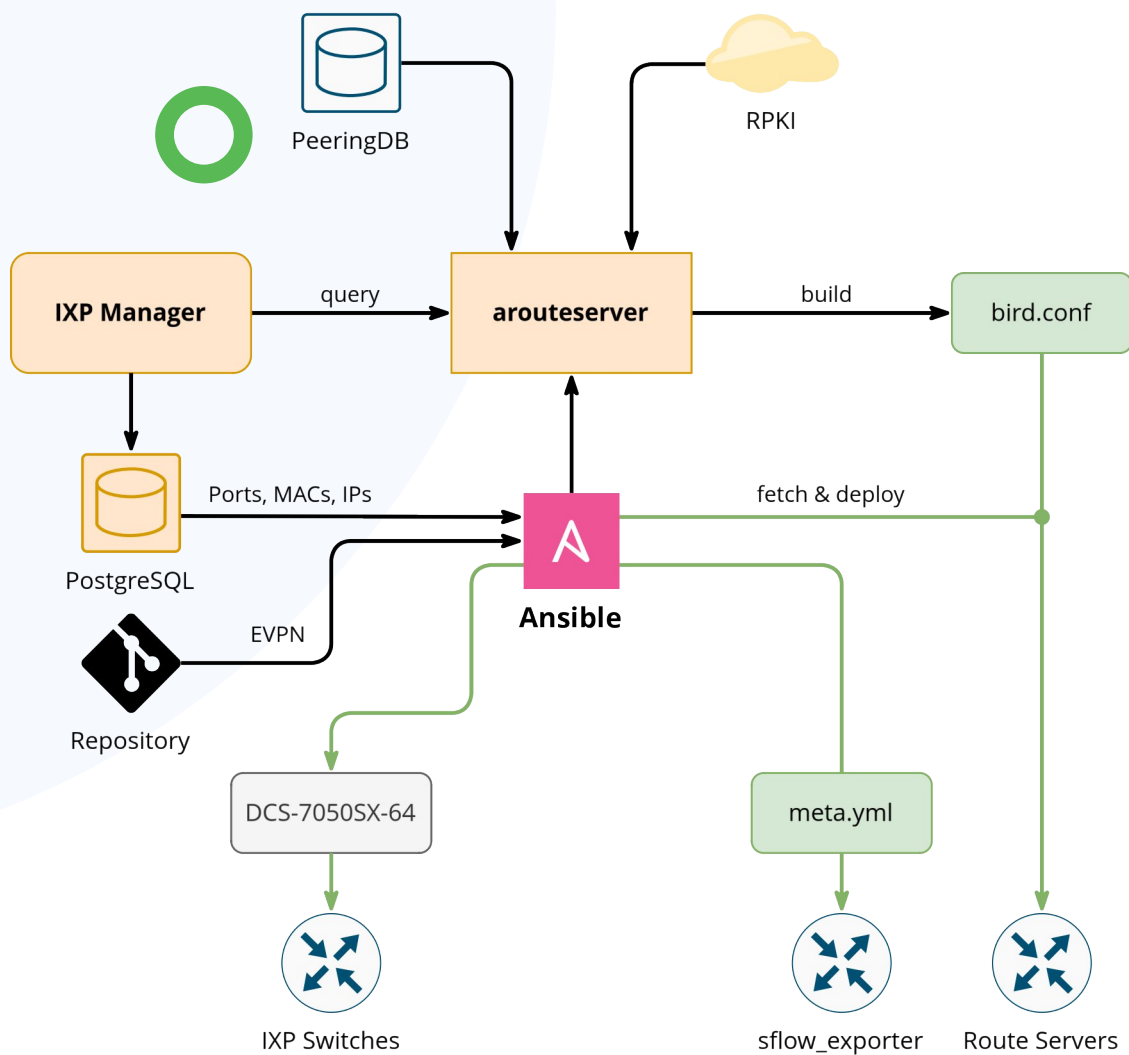
ALASCA PoC

Marius

ALASCA

Association for Operational, Open Cloud Infrastructures e.V.

ALASCA Tech Stack @DD-IX

Dresden, 6.5.2025

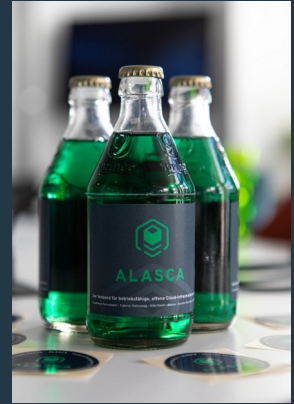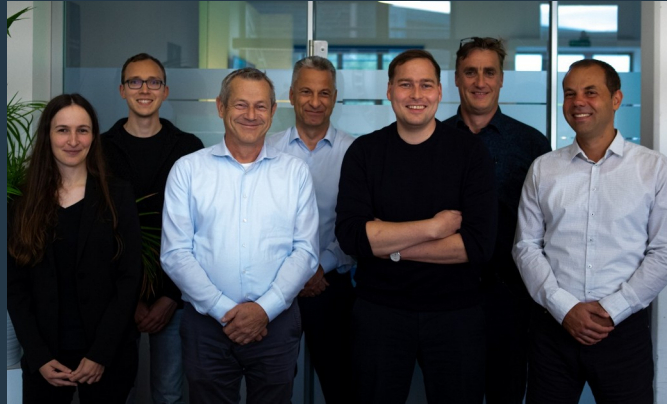# ALASCA's Foundation (Sept. 2022, Dresden)

Founding Members

CLOUD & HEAT

CYBERUS TECHNOLOGY

D3TN
COMMUNICATE BEYOND FRONTIERS

dNation
DevOps Nation

secunet

secustack

STACKIT

Vision: Digital Sovereignty

ALASCA contributes to foster digital sovereignty by...

Developing operational open-source cloud infrastructure technologies

For setting up and operating cloud infrastructures

YAOOK KRAKE YAKE

Transferring knowledge

ALASCA TECH-TALKS ALASCA SUMMIT

+ Round tables, Hackathons, ...

Strengthening communities related to open-source cloud infrastructures

Community activities with associated groups

Sovereign Cloud Stack

ALASCA: The Last Five Years On One Slide

2020

Starting the development of Yaook (initially by Cloud&Heat and STACKIT)
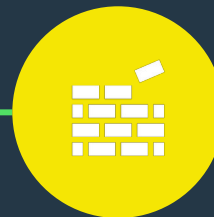
Provided under Apache License 2.0

2021

Growth of Yaook's community

Starting to work on Yaook's governance

2022

Foundation of ALASCA in September 2022 in Dresden

2023/24

Establishing processes and the structure of the association

Marketing & establishing different event formats

ALASCA TECH-TALKS

ALASCA SUMMIT

Today

17 members

4 open-source projects

Funding by Saxony for the project FOCIS

‹ ALASCA FOCIS ›

FOCIS

FOCIS - Free and Open Cloud Initiative Saxony

- FOCIS aims to advance the further development, piloting, and dissemination of open-source technologies and standards for cloud services within the Saxon ecosystem.

- The collaboration between ALASCA and the Sovereign Cloud Stack (SCS) project plays a strategically important role within the project, as the SCS has made significant contributions to the development of open-source cloud standards in Germany in recent years.

- Duration: November 2024 to July 2026

ALASCA
FOCIS

FOCIS: Activities

1 Push forward open-source technologies

2 Improve SCS cloud standards

3 Set up demonstrators based on the ALASCA Tech Stack

4 Improve documentation of ALASCA's projects

5 Networking & knowledge transfer

FOCIS: Activities

1 Push forward open-source technologies

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4 Improve documentation of ALASCA's projects

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DD-IX ALASCA STACK (DAS?)

Establishing an SCS-compliant cloud infrastructure and offer it to FOSS communities in Dresden

Foundation: Yaook-based OpenStack

Status: Currently struggeling to get Hardware

Second Demonstrator: Planned for 2026

Connected to DD-IX

Infrastructure for CI/CD pipelines
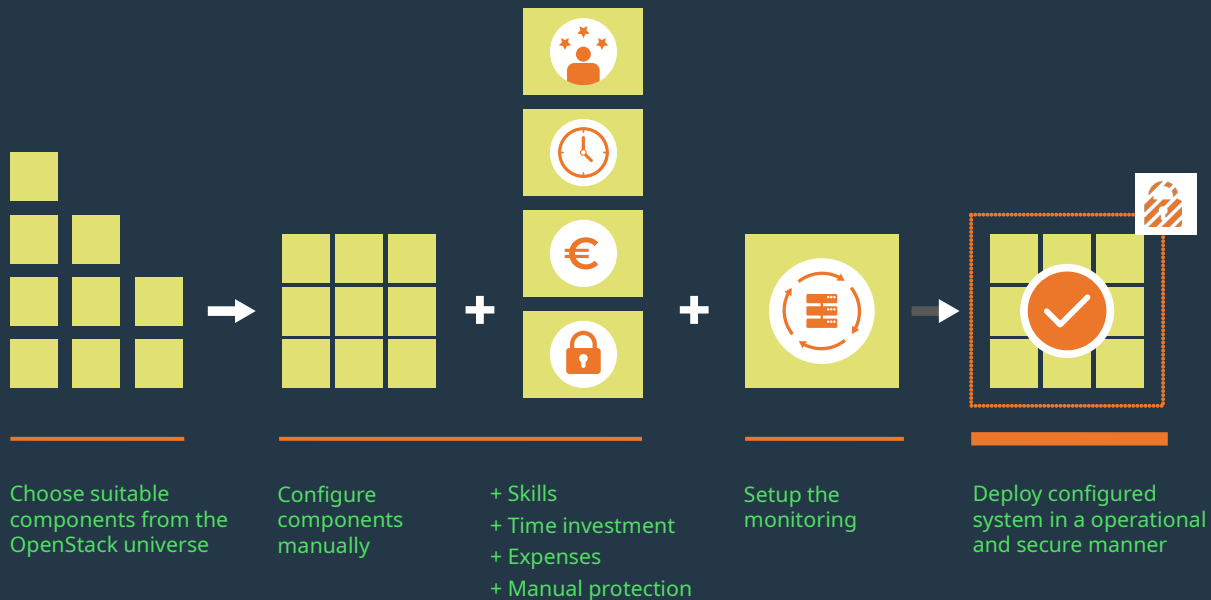
Piloting infrastructure for low-latency use cases

Exploring & improvement of ALASCA Tech Stack (and potentially SCS standards)
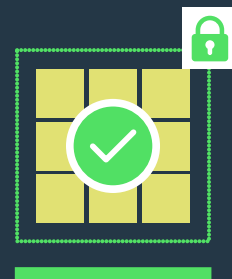
Overview Yaook

OpenStack

Choose suitable components from the OpenStack universe

Configure components manually

+ Skills
+ Time investment
+ Expenses
+ Manual protection

Setup the monitoring

Deploy configured system in a operational and secure manner

Yaook

Lifecycle management system for OpenStack

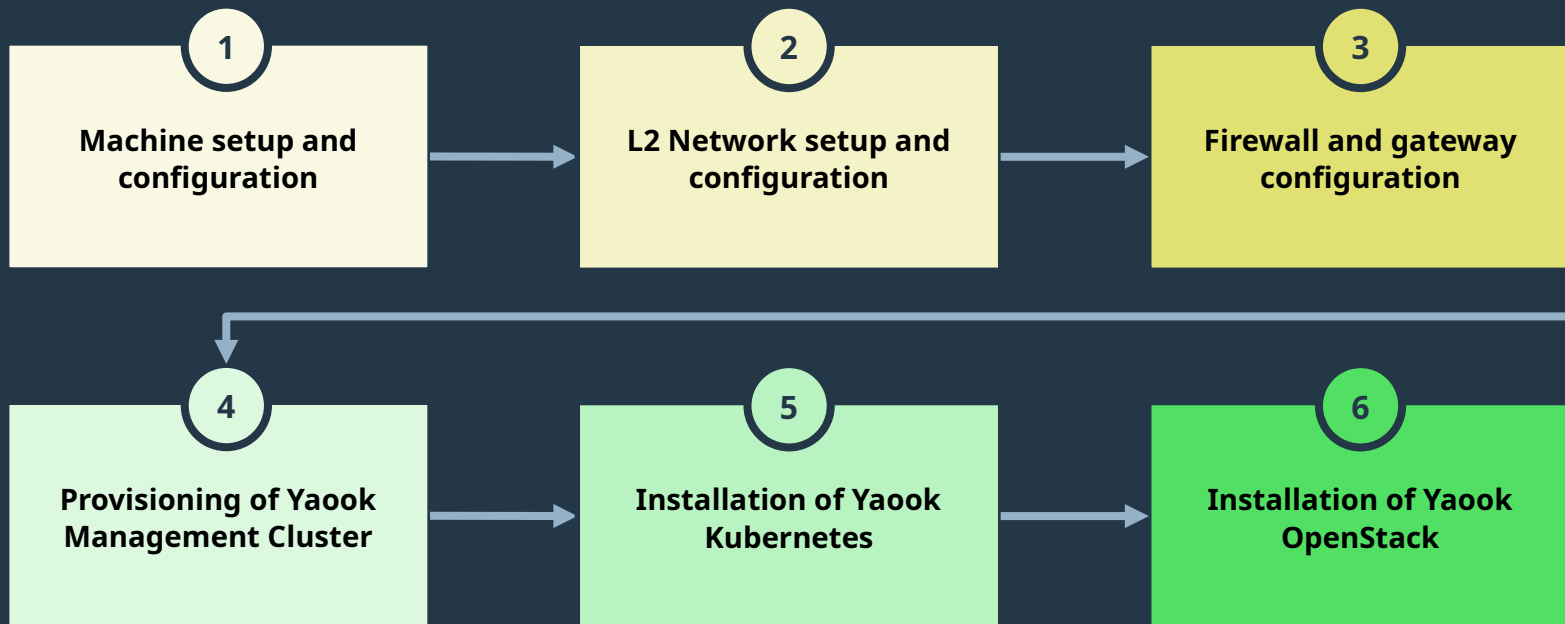Operational system with basic protection

Automated deployment and mechanisms for updates/upgrades
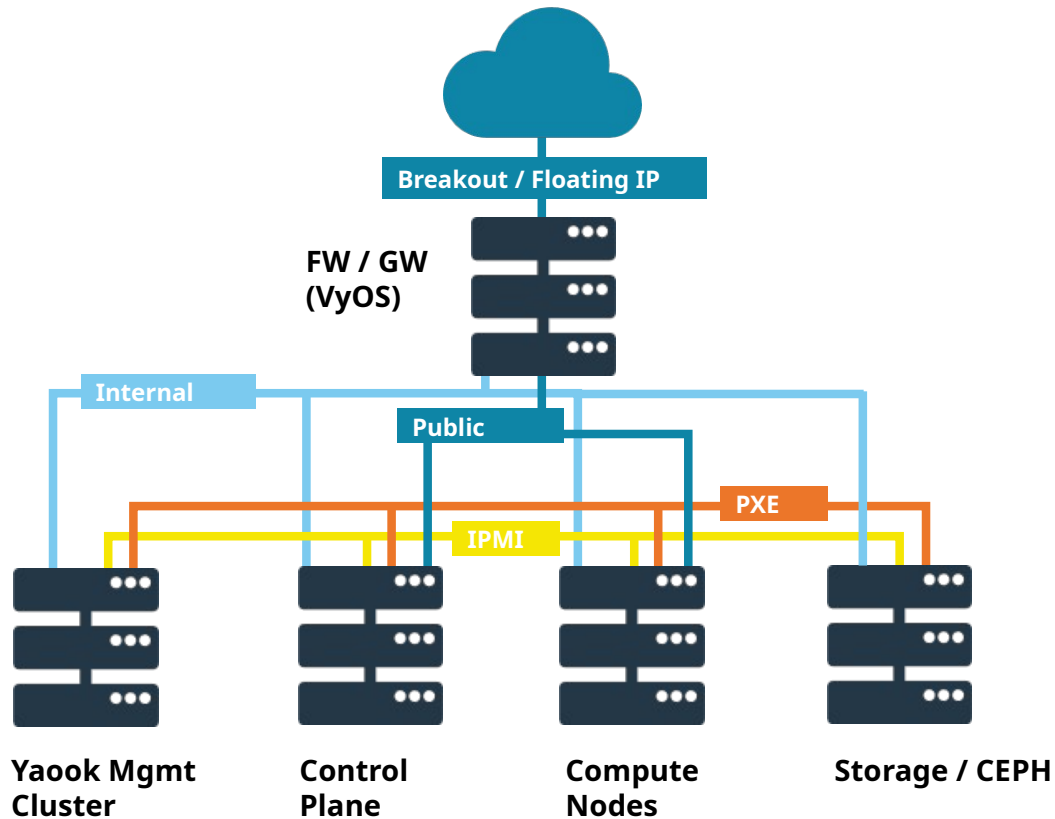
Overview Yaook Installation

Infrastructure setup phase

1	2	3
Machine setup and configuration	**L2 Network setup and configuration**	**Firewall and gateway configuration**

4	5	6
Provisioning of Yaook Management Cluster	**Installation of Yaook Kubernetes**	**Installation of Yaook OpenStack**

OpenStack installation phase

Infrastructure Overview

Infrastructure Overview

For a basic setup, the following configuration is necessary:

- 1 x Firewall / Gateway (using VyOS)

- 1 x Yaook Management Cluster node

- 3 x Control Plane nodes (K8S and OpenStack)
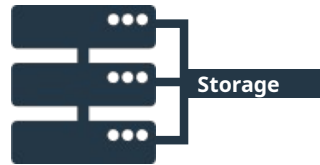
- 3 x Compute nodes

Yaook Mgmt Cluster

Control Plane

Compute Nodes

Storage / CEPH

Storage

Thank you for your attention ◀◀

ALASCA – Verband für betriebsfähige, offene Cloud-Infrastrukturen e.V.

Website: alasca.cloud

Mail: hello@alasca.cloud

[in]   www.linkedin.com/company/alasca-cloud

[▶]   @alasca_e.V.

Make sure to follow ALASCA on LinkedIn!

Miscellaneous

ff02::2

Upcoming Topics

- Organizing Initial Dresden Community Hosting Meetup

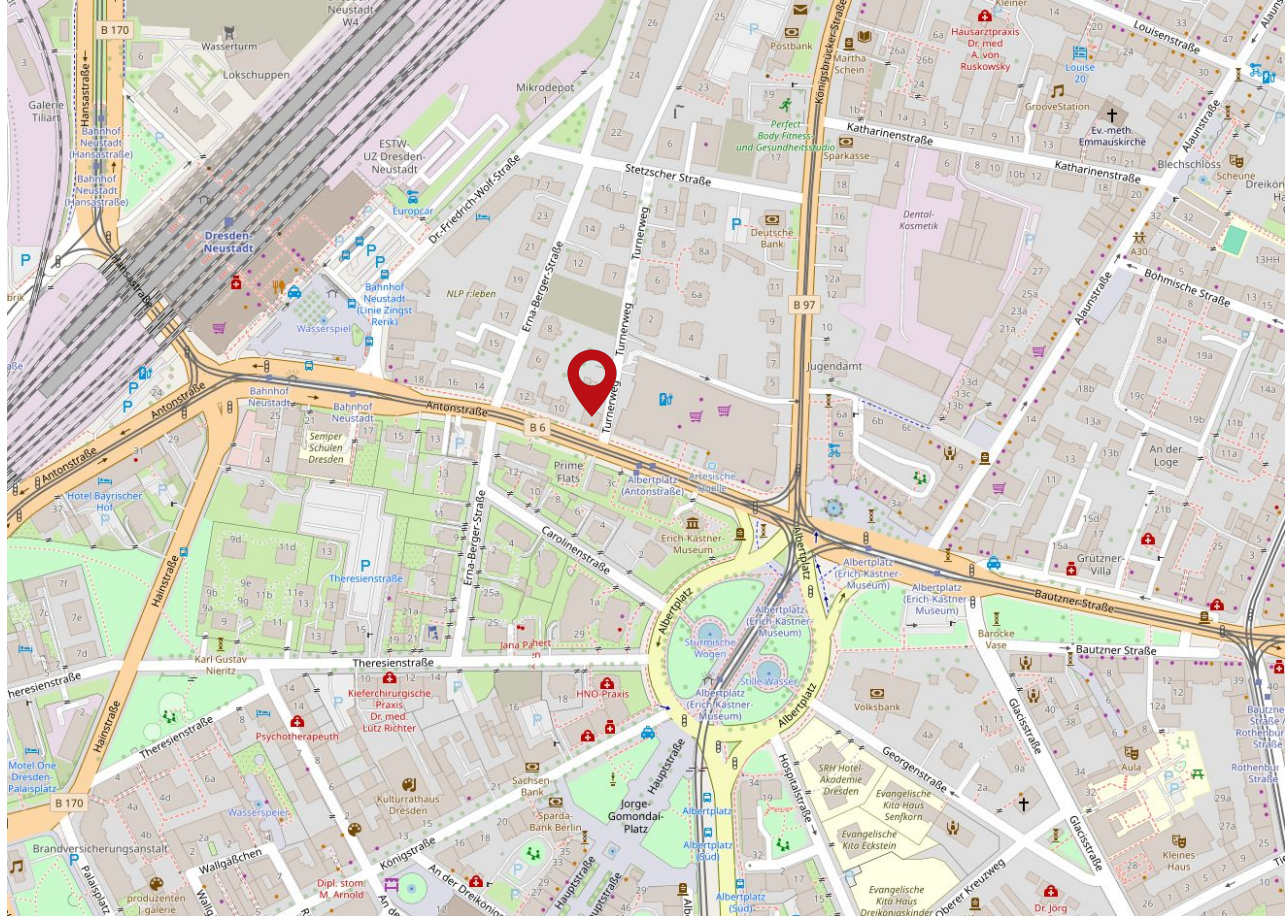- **YOUR** topic for the next OTM?

Open Discussion

ff02::1

DD-IX
Keep Local Traffic Local

Contacts:

https://dd-ix.net

contact@dd-ix.net

News:

20:15   Altes Wettbüro

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