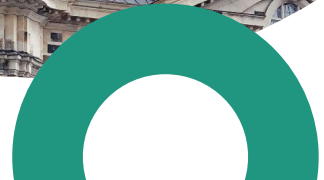


**DD-IX**  
Keep Local Traffic Local

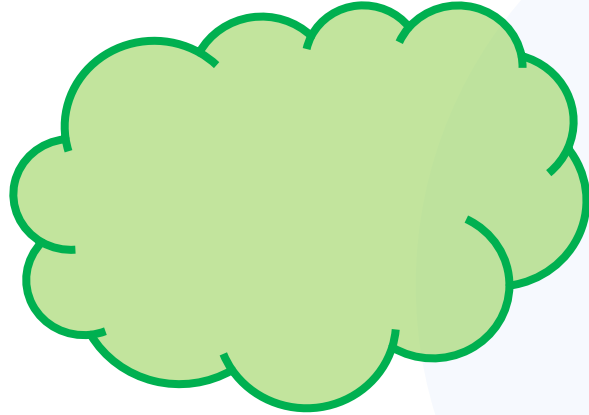


# DD-IX: A Local Infrastructure with Local Impact for You!

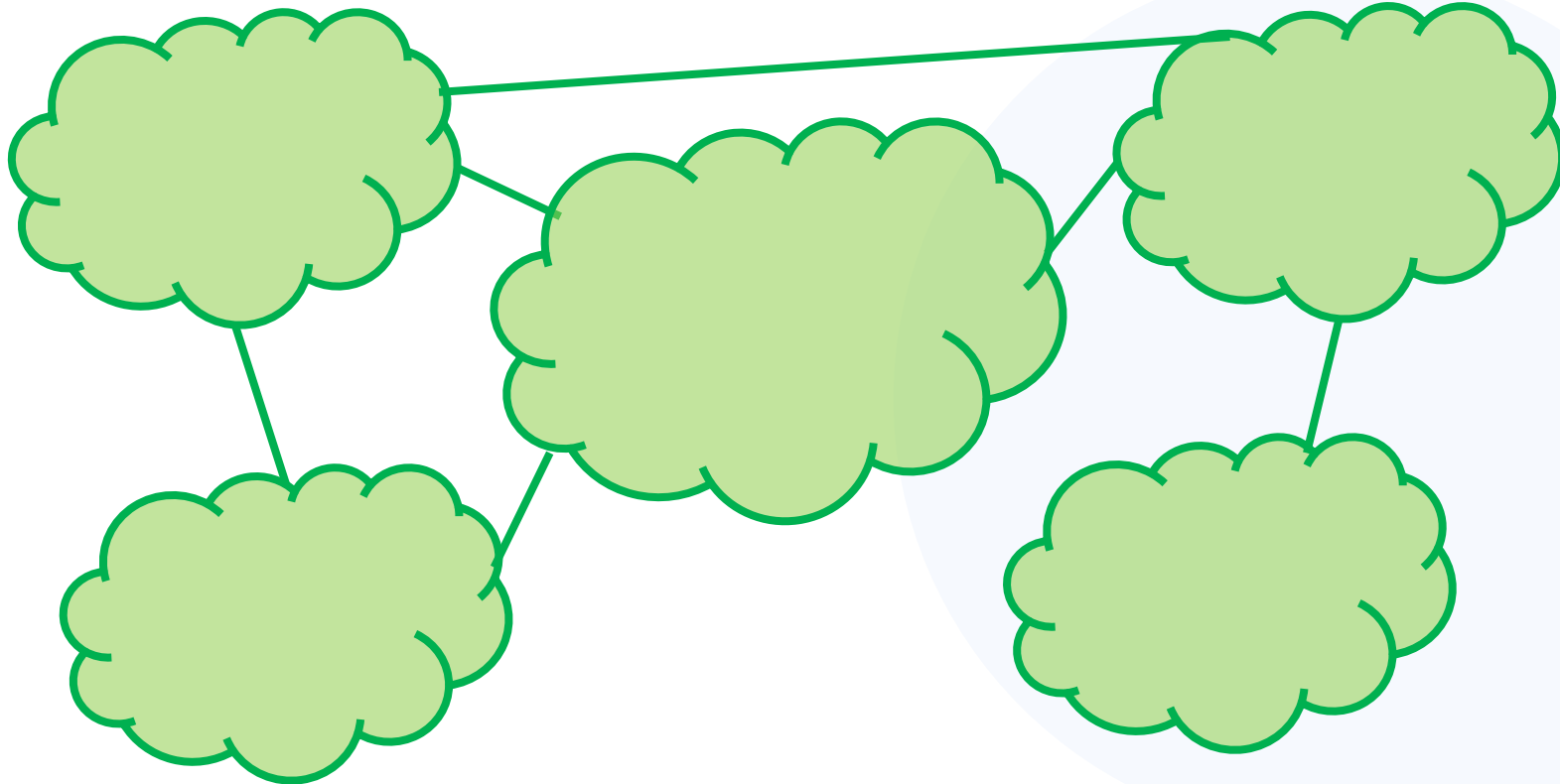
Tassilo Tanneberger, Matthias Wählisch



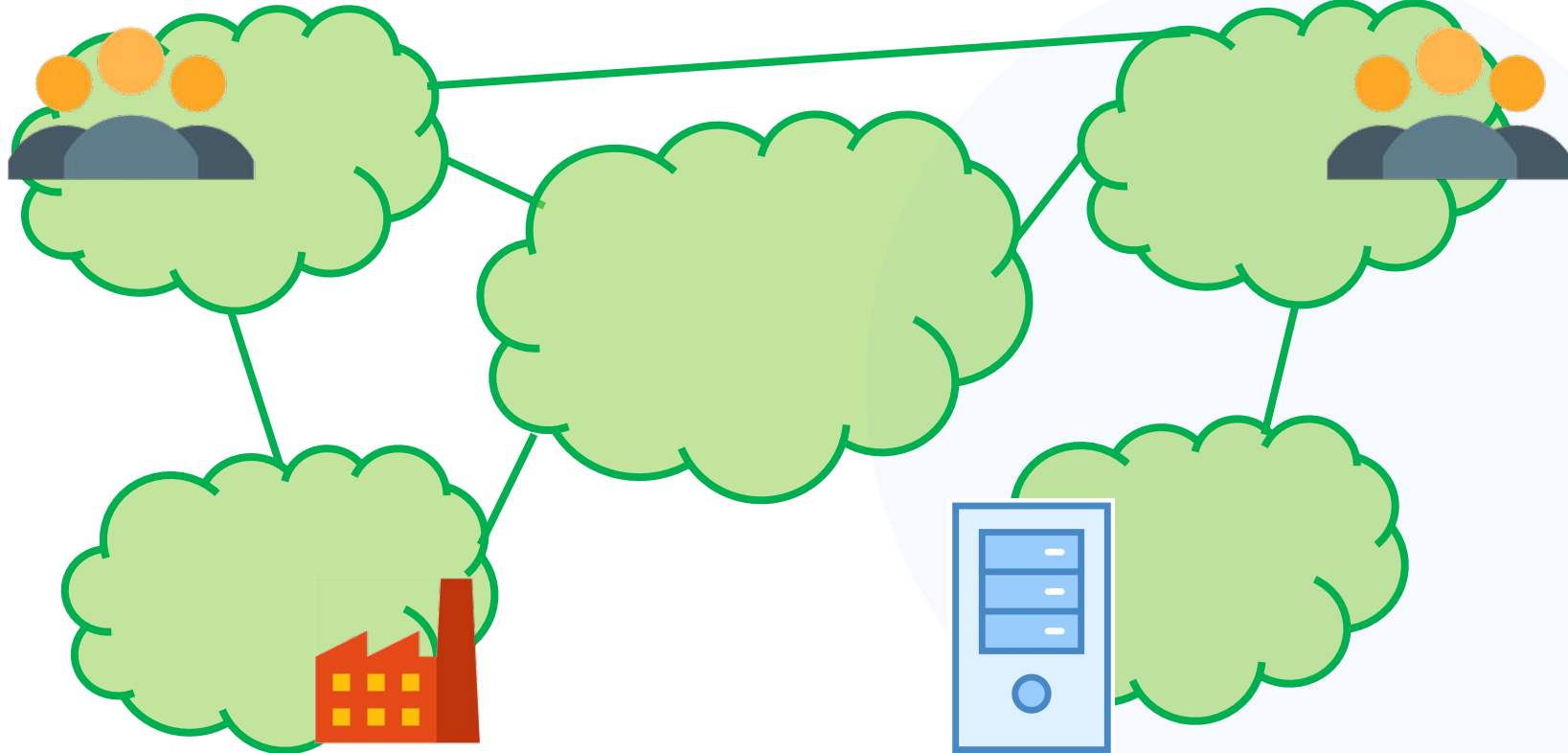
# What is the Internet?



# What is the Internet?



# What is the Internet?



**It is all about connectivity.**

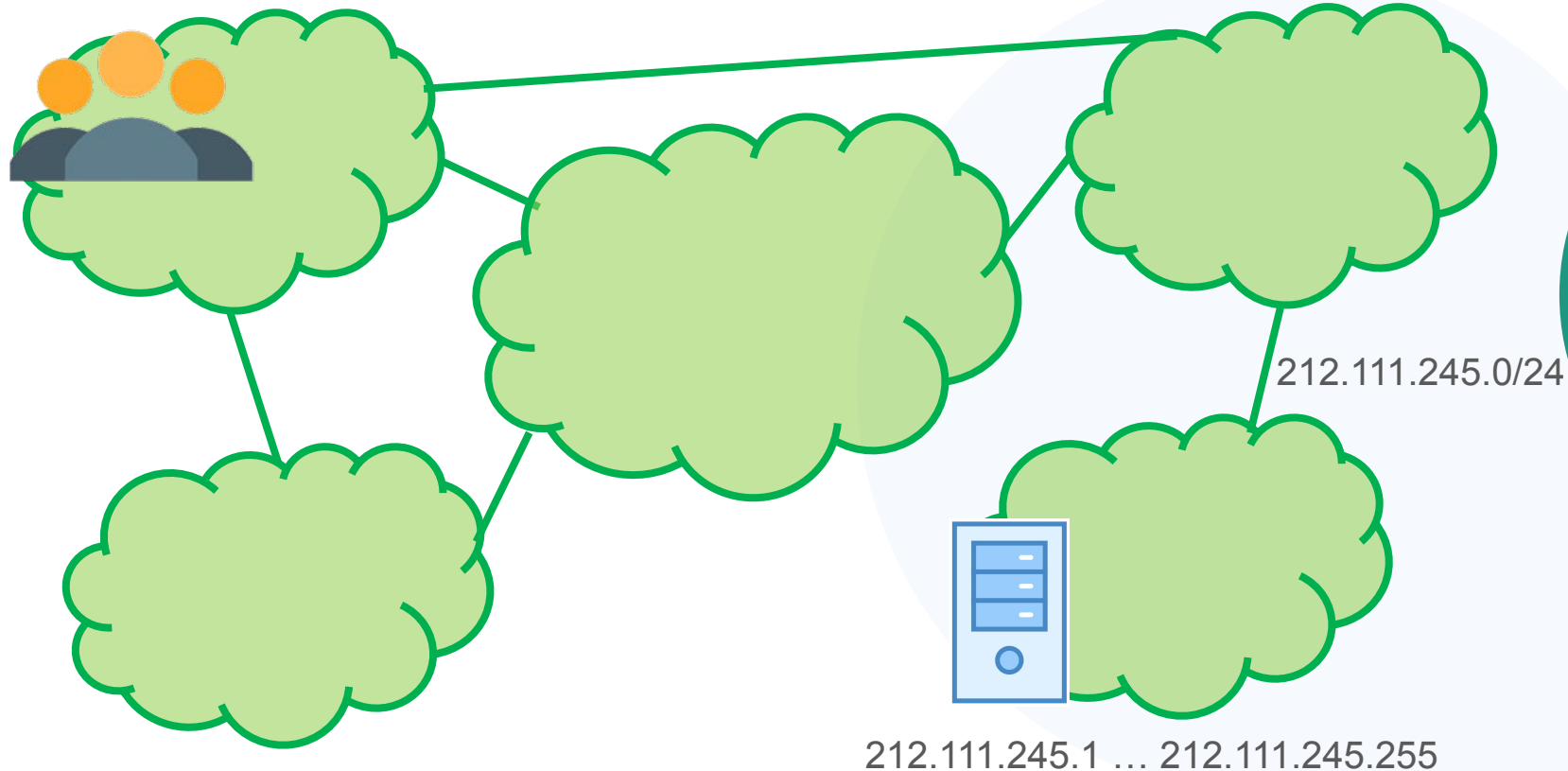
**The Internet enables  
connectivity!**

**It is all about connectivity.**

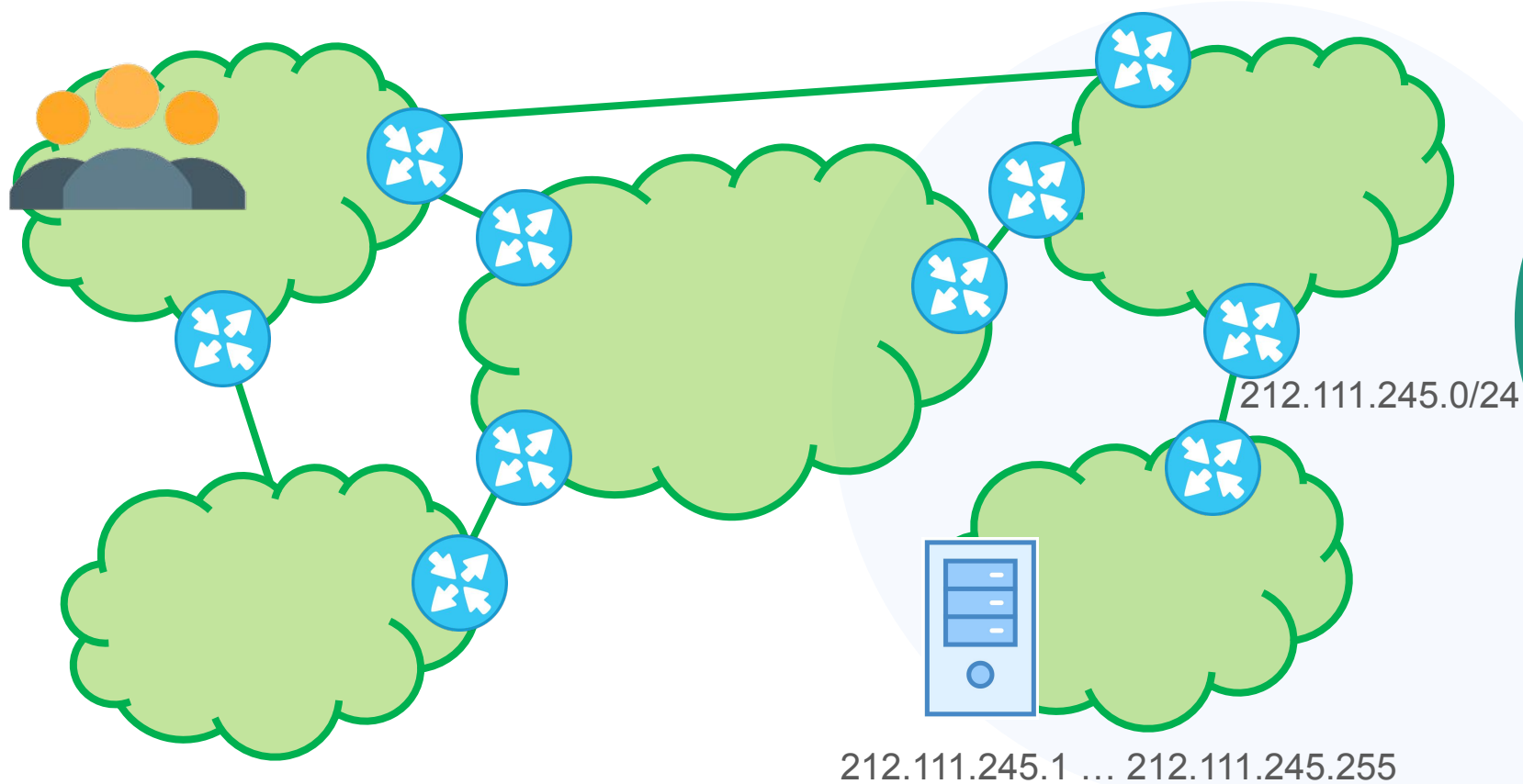
**The Internet enables  
connectivity!**

**Globally. Application-independent.**

# Aggregating IP addresses.

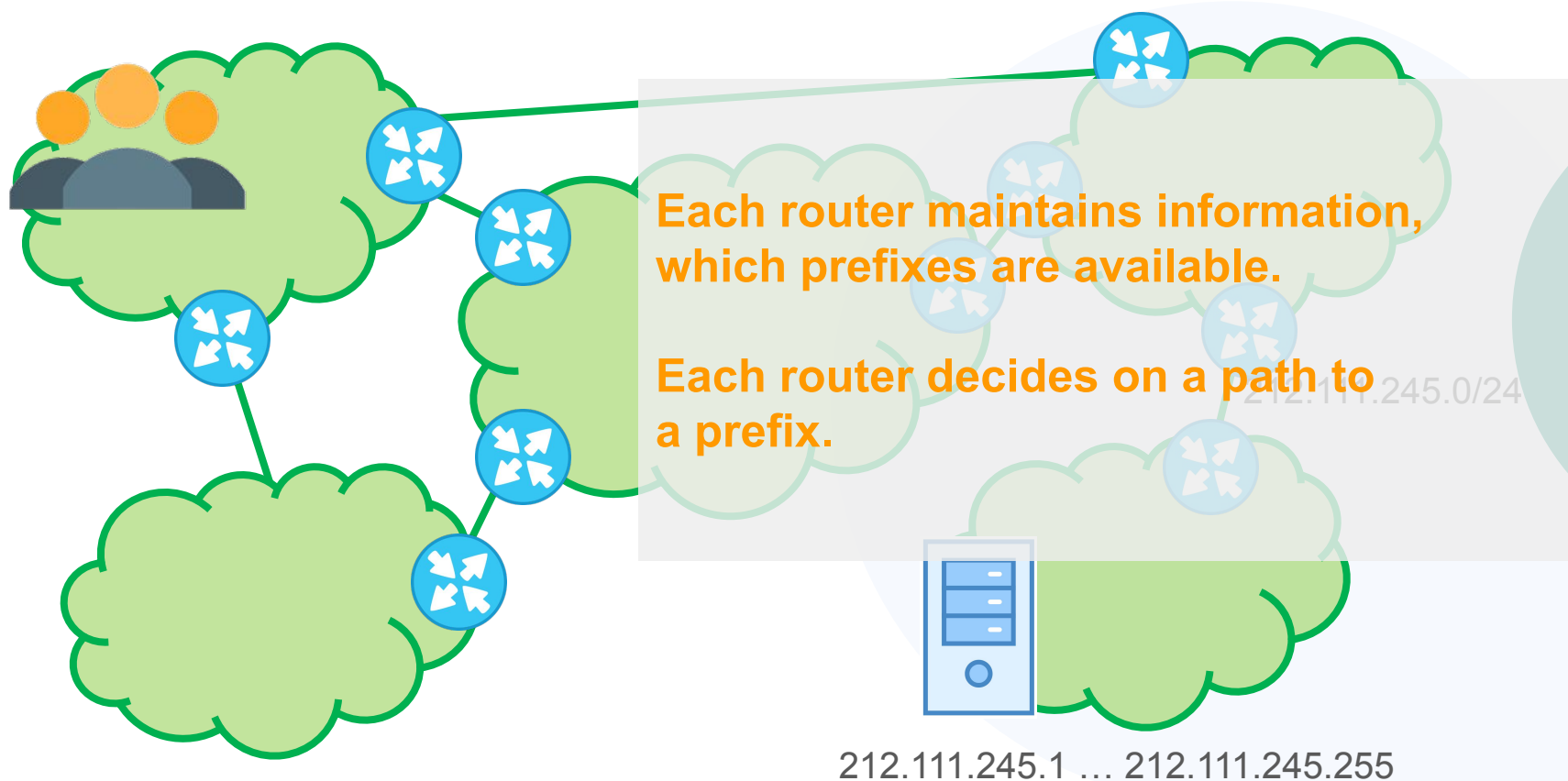


# Announcing IP addresses.





# Announcing IP addresses.

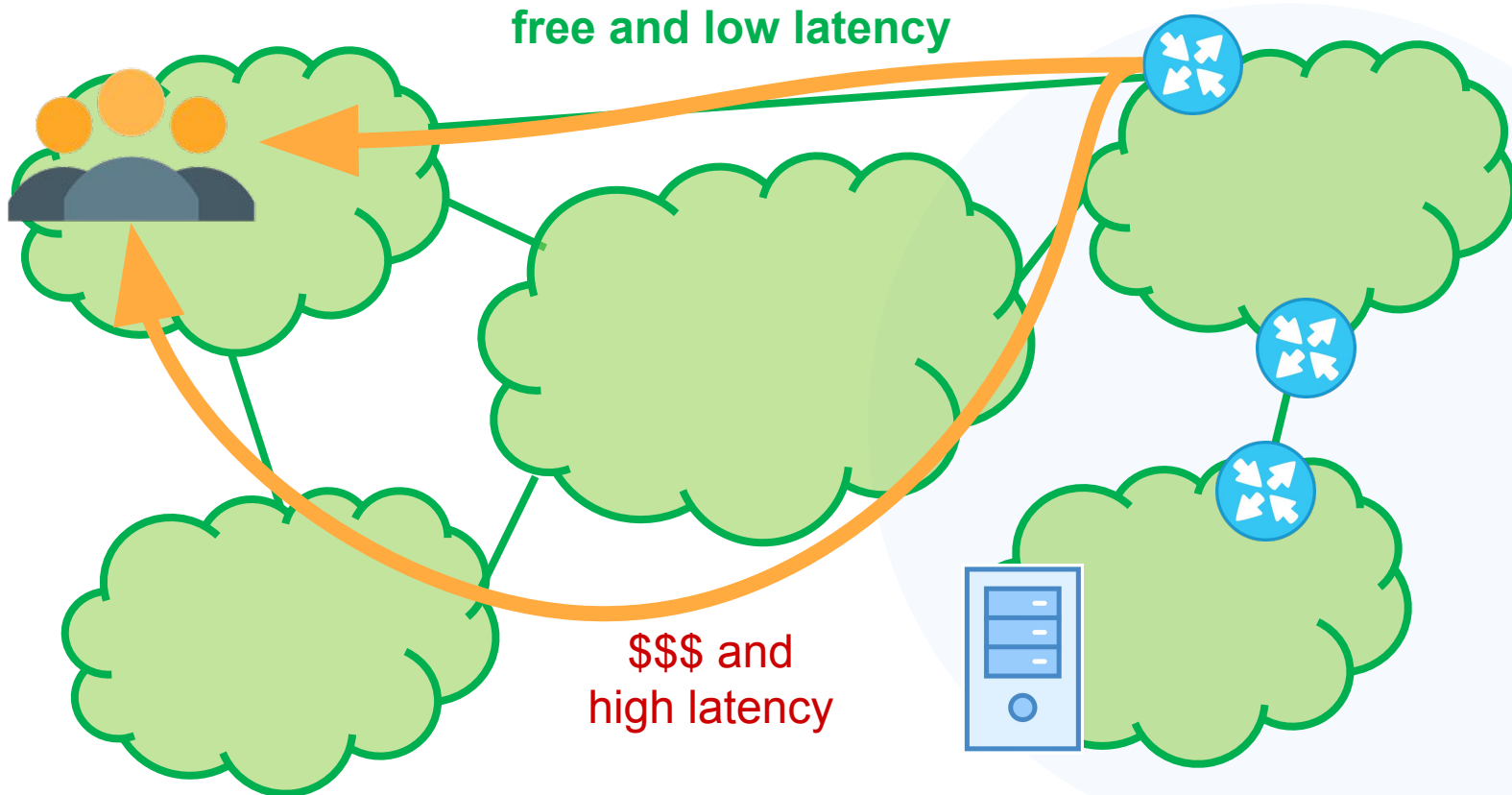


# BGP, Border Gateway Protocol

Enables autonomous systems\* (ASes) to **exchange IP prefix information** and to **configure individual policies** which path is preferred.

\*Running your own AS gives you independence.

# Which path do you choose?



# 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 ;).



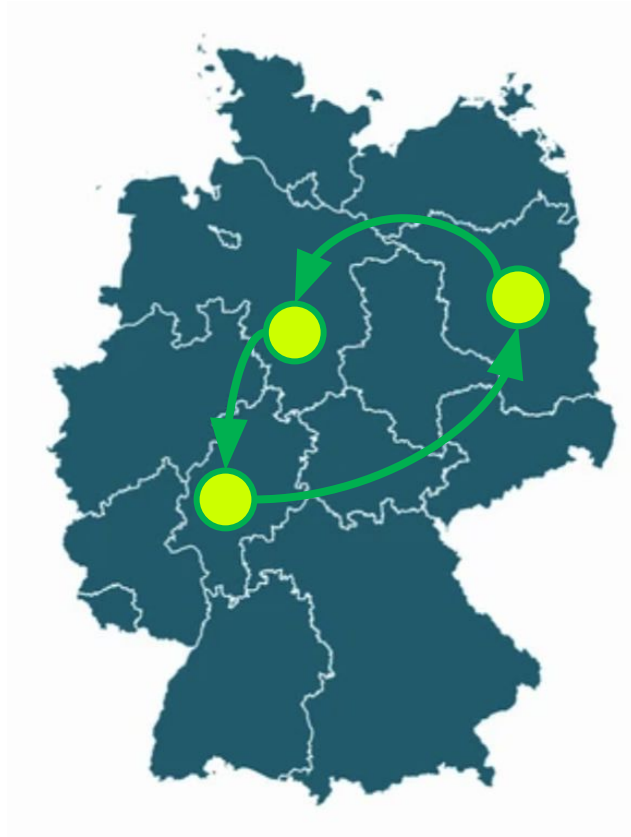
# Where to peer? At IXPs!

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!**

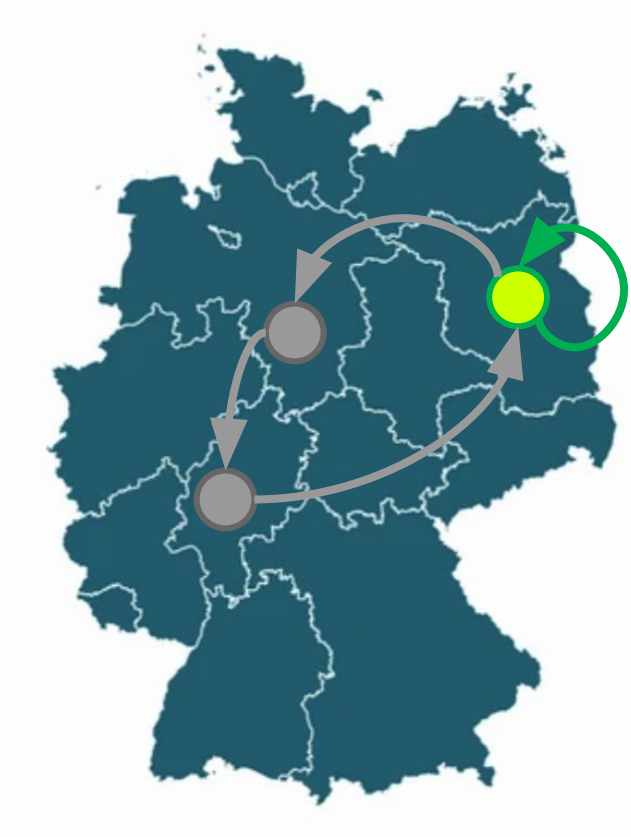
# An example of bad routing.



**Without IXP.**

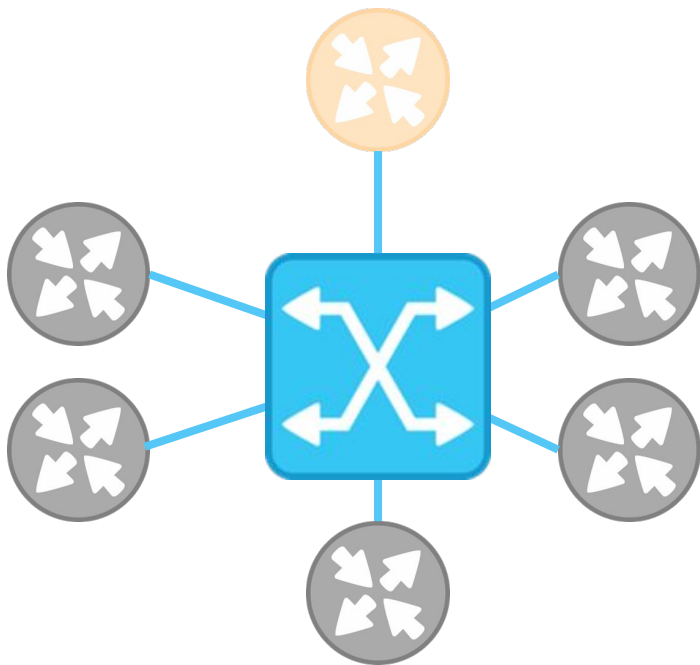


# Advantages of an IXP.



Without IXP.  
**With an IXP.**

# Internet Exchange Points

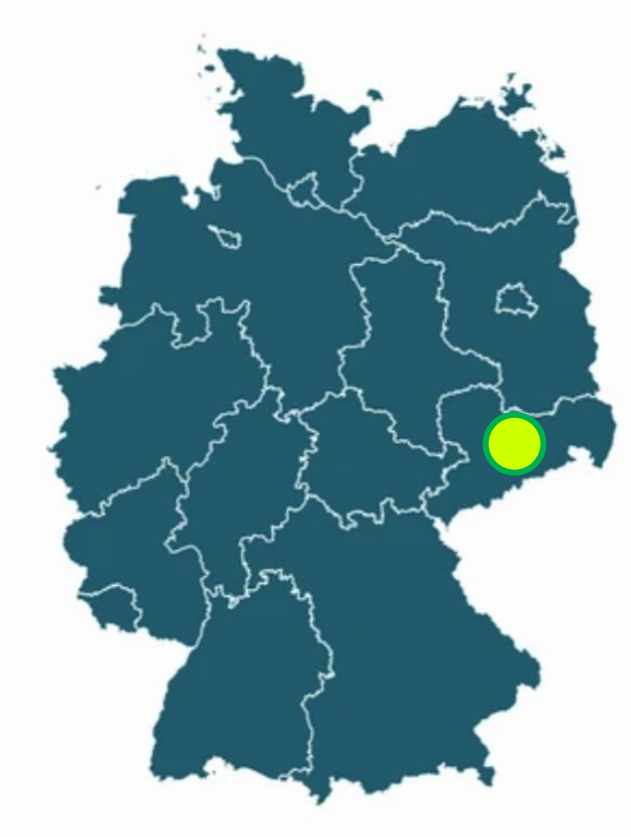


**Switching  
infrastructure  
+ route server  
+ community**



# We need an IXP in Dresden.

**DD-IX**  
Keep Local Traffic Local



dd-ix.net



# History



Mai 2022

## Starting Point



Jumping into the Rabbit Hole  
@ RIPE 84 and RIPE 85

June 2023

## People



Meeting the Local  
Community

August 2023

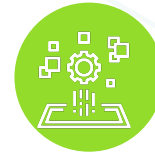
## Registration



Assignment of  
AS57328

October 2023

## Founding



Founding of the  
Association

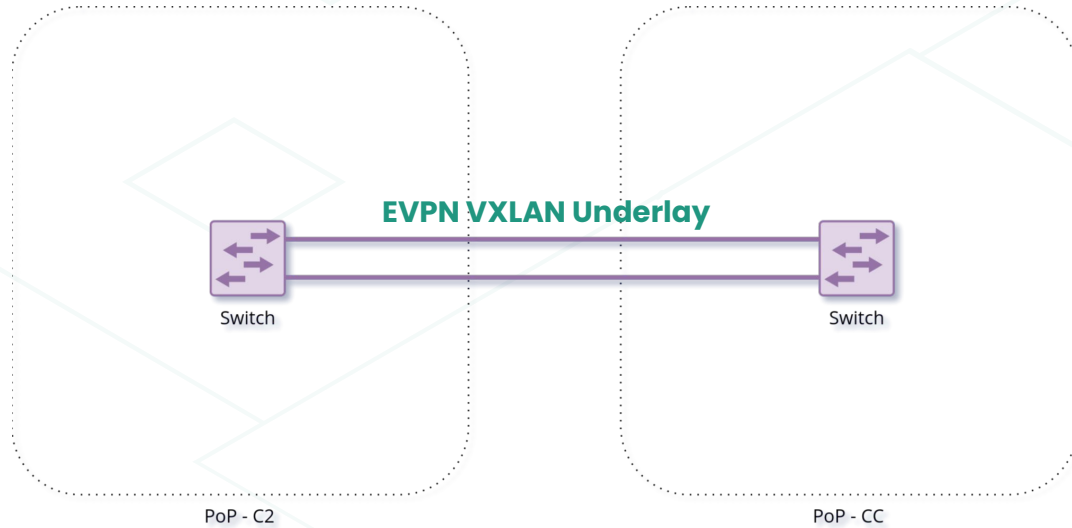
~ Mai 2024

## Operations



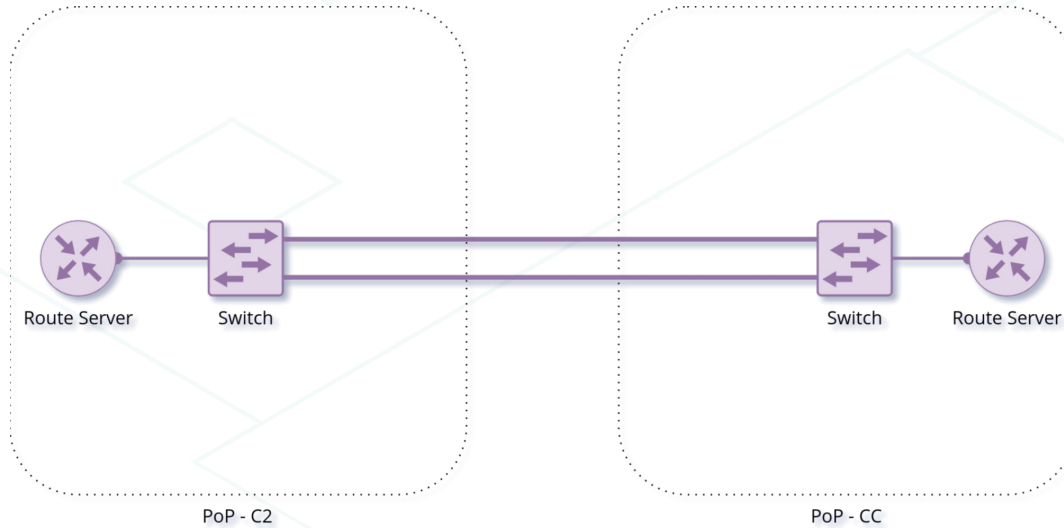
Start Operations

# 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

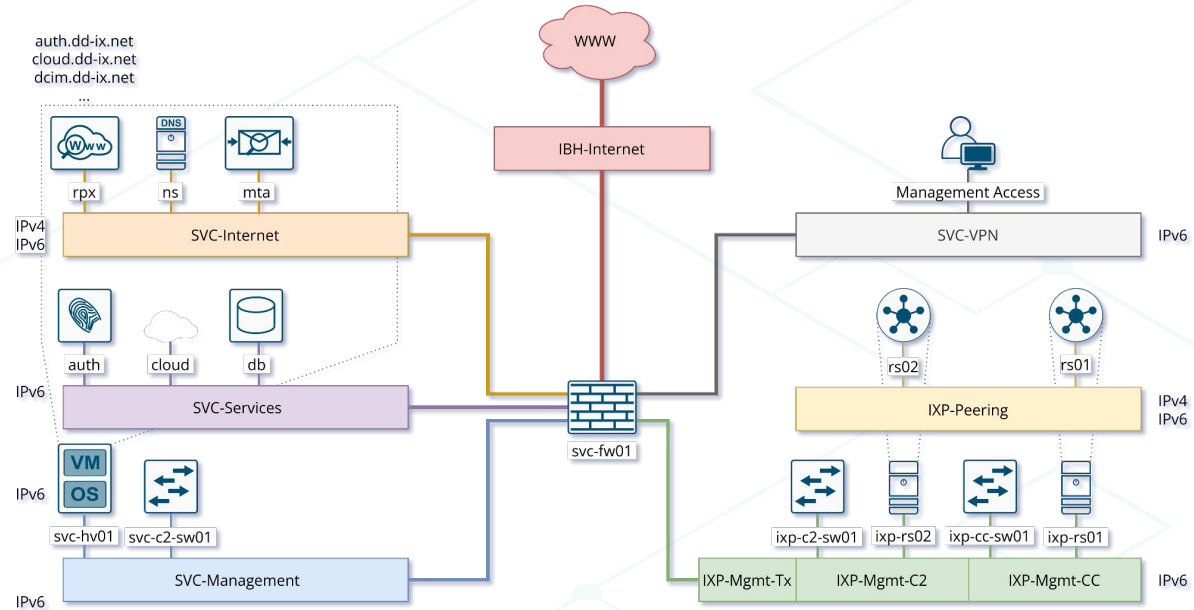
# Our first peers



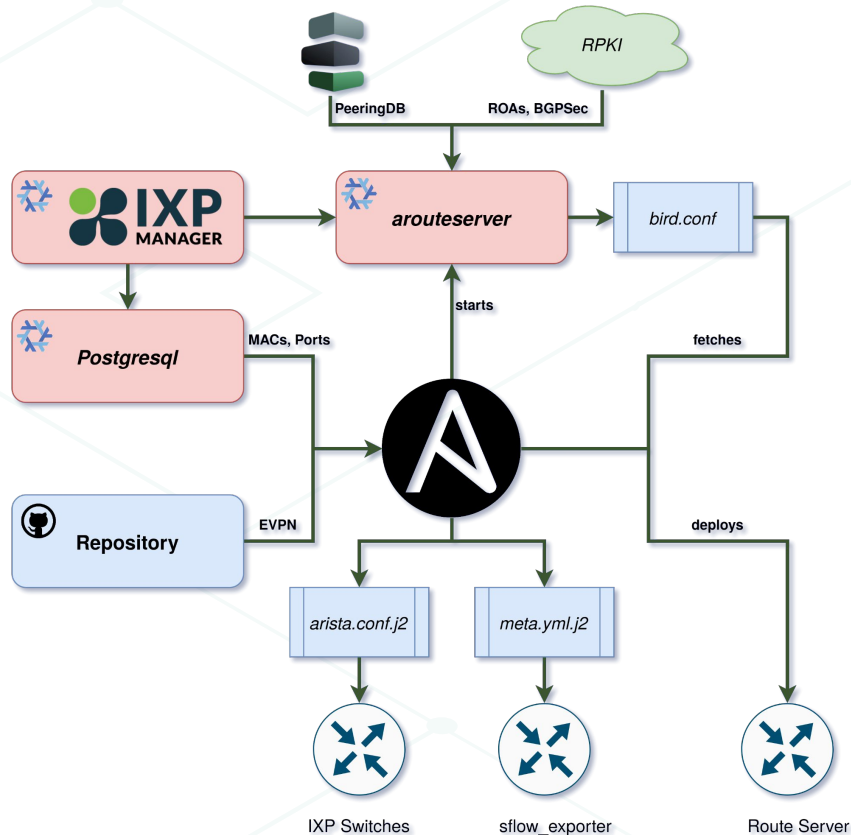
# We run an infrastructure. For you.



- Lenovo x3650 M4
- 384GB RAM
- 19Cores (38HW Threads)
- 2x10GbE in Bond
- github:astro/microvm.nix
- Wiki, Mail, Auth, Cloud, Monitoring, ...

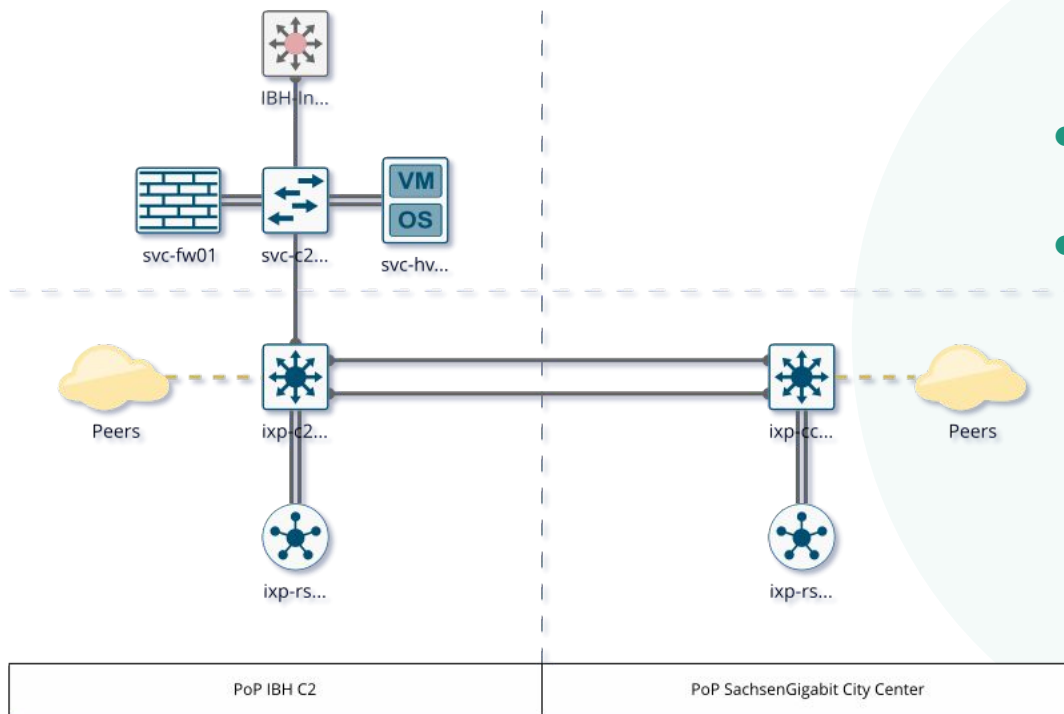


# Deployment automation



- INPUT SANITIZATION!  
VALIDATION! VALIDATION!
- Redeployment is triggered every 6 hours in a special micro VM.
- Ansible for fetching all values, validation them and filling out the templates.

# 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



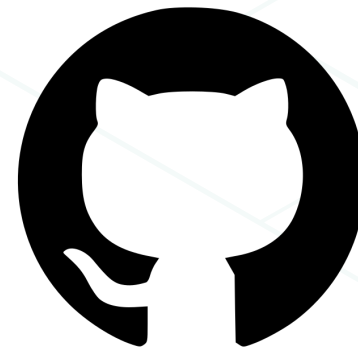
## dd-ix/arouteserver.nix

- custom package with nixos-options
- builds bird configs



## dd-ix/ixp-manager.nix

- custom package with nixos-options
- frontend for customers



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

# An IXP is more than Technology!



Community

# Association model



- member: people (companies as supporting members)
- goals of the association:
  - Education/Outreach
  - Supporting Dresden/Saxony Industry
  - Operating the IXP
- individuals: €60 per year
- companies  $\geq$ €1200 per year



ALASCA

- member: people, companies, and other organizations.
- goals of the association:
  - Education/Outreach
  - Supporting Digital Sovereignty of Europe
  - Developing and Maintaining Open Source Projects
- individuals: €100 per year
- companies: €200 - €5000 per year

# A diverse community

Companies



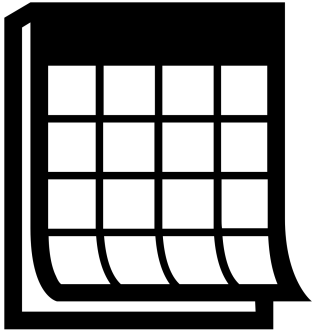
Operators



Individuals



# DD-IX Open Tech Meetup



Tuesday **07.05.2024**

**6pm APB 3080**

Faculty of Computer Science TUD

Nöthnitzer Straße 46

# A Big Thanks to DD-IX Sponsors & Members!



TECHNISCHE  
UNIVERSITÄT  
DRESDEN



Keep Local Traffic Local

## Contacts:

<https://dd-ix.net>

[contact@dd-ix.net](mailto:contact@dd-ix.net)

## News:



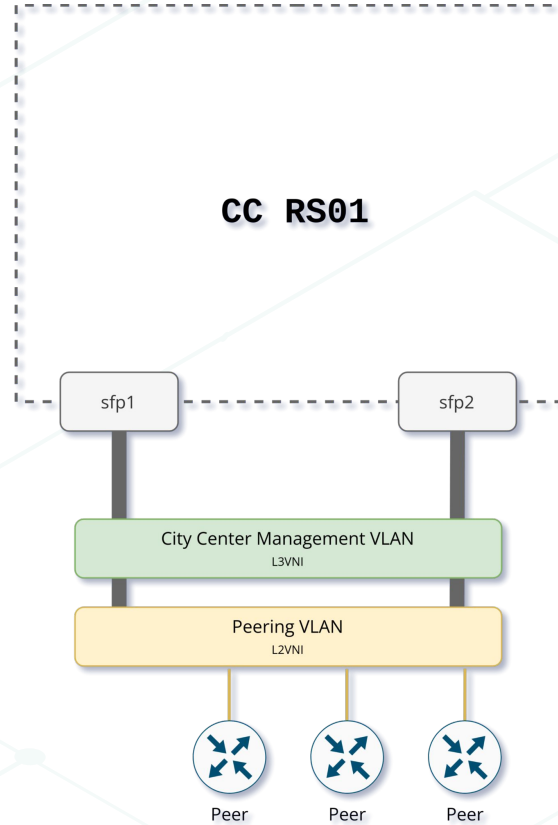
**Join us!**

# Backup Slides

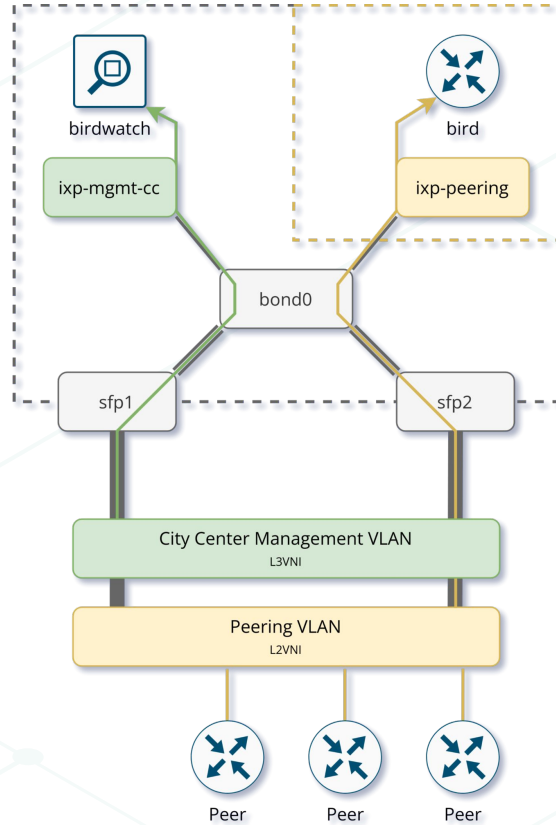




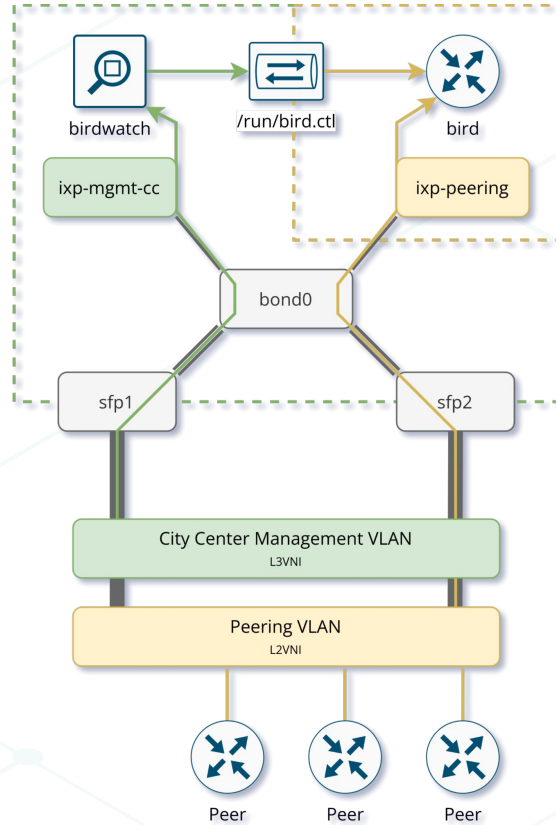
# Route Server



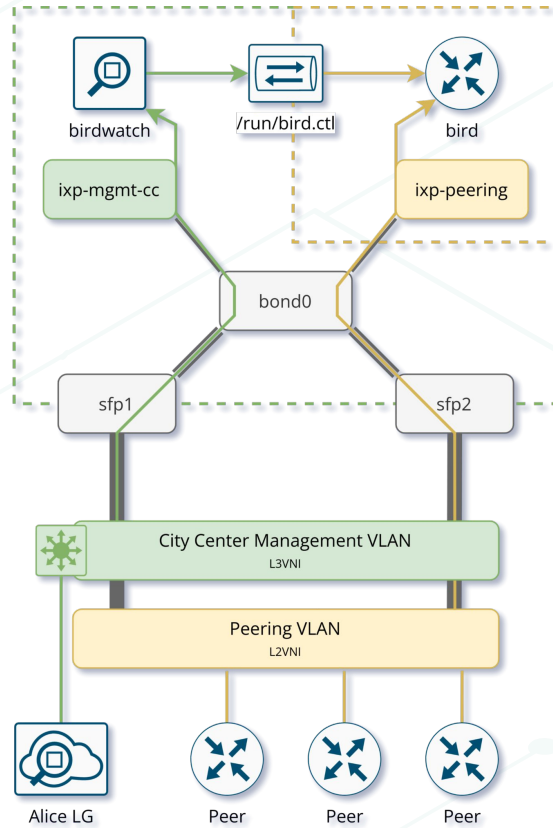
# Route Server



# Route Server



# Route Server



# PoPs

## CityCenter am Hauptbahnhof

- Friedrich-List-Platz 2  
01069 Dresden

## C2 IBH

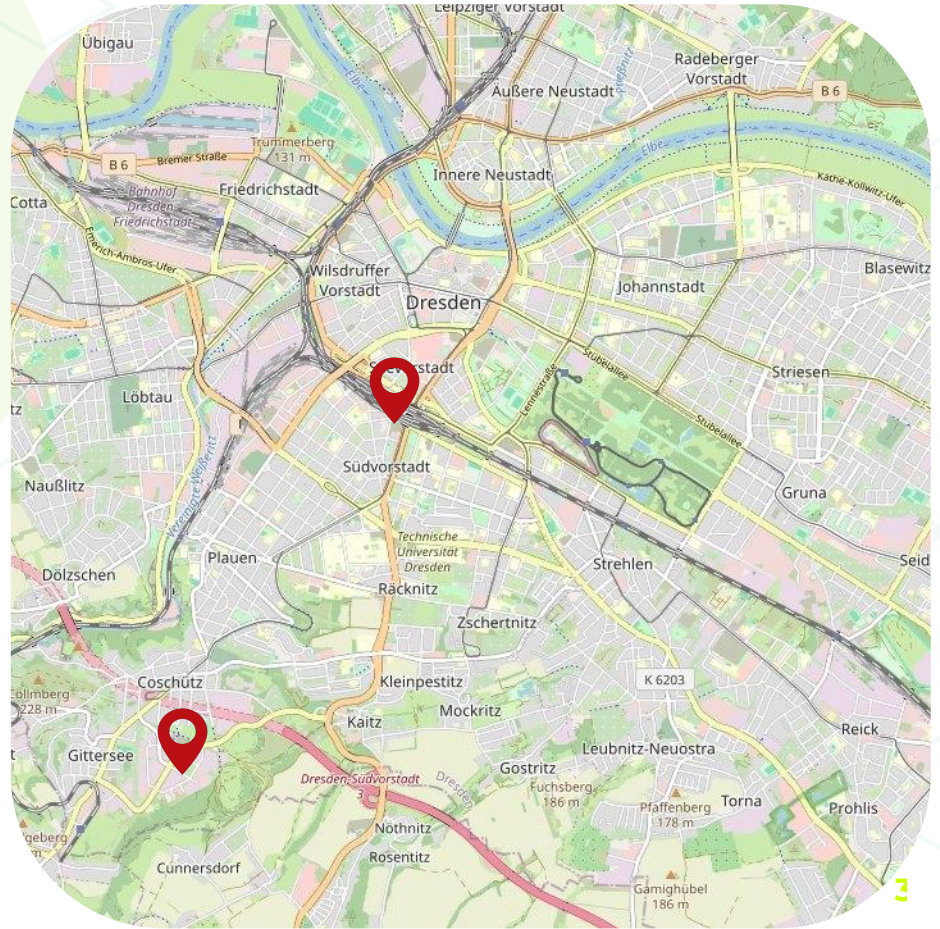
- Heilbronner Str. 20  
01189 Dresden

## Ports

- 10 GbE für 150 euro

## Initiale Peers

- IBH IT-Service GmbH: AS15372
- Cloud & Heat: AS15372
- DSI GmbH: AS16205
- Und weiter (TUD, LHDD, ...)



# Dienste\*

## IX Peering Ports

- Dual Stack
- zwei BGP Route Server

## VLAN Interconnect

- 802.1Q Tag
- dedizierte zwischen zwei Peering Ports



\* weiteres in Planung, spricht uns an...



# Mitglieder und Sponsoren



## Mitglieder

IX-Betrieb mitgestalten  
ausschließlich natürliche  
Personen  
**Stimmrecht**



## Fördermitglieder

Entwicklung fördern  
Sichtbarkeit bei Events  
und auf unserer  
Webseite



## Sponsoren

Spenden materieller oder  
finanzieller Art  
Sichtbarkeit bei Events und  
auf unserer Webseite