



# Demystifying Peering

Introduction to Peering

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JBIX Peering Forum 2019

# Who am I?

- Cloudflare - AS13335 - 7 Years

Network Strategy, Peering, Interconnection, Engineering

- Pacnet - AS10026 - 7 years

Peering, Interconnection, Engineering

I've spent literally half my life peering!

What is Peering?

# What is Peering?

Middle English: from Old French peer, from Latin par 'equal'.

In United States regulatory law interconnection is specifically defined (47 C.F.R. 51.5) as:

*"the linking of two or more networks for the mutual exchange of traffic."*

# What is Peering?

Peering is a ***loaded*** term.

- Implies free
- Implies equal
- Implies balanced

We should use the term “Interconnection”.

# What is ~~Peering~~? Interconnection?

Interconnection between two networks allows exchange between those networks.

It'd be nice if all interconnection was equal, however  
the Internet evolved to client<>server communications  
networks aren't balanced in traffic profile (In:out)

Euro-IX Definition of Peering:

<https://www.youtube.com/watch?v=cpAUedhcjAY>

Why do we Peer/Interconnect?

# Why do we Peer?

- Direct relationship with “neighboring” networks.
  - Improved Performance
  - Improved Reliability / Resilience
  - Better control of traffic
  - Cost?
  -

# Why do we Peer?

- Improved Performance
  - No intermediate networks
  - A 1:1 relationship

# Why do we Peer?

- Improved reliability / resilience
  - A single cable between two networks is very reliable
  - Peering over IX very simple, and a great primary / secondary path for traffic exchange
  - Can call back to transit for extra resiliency.

# Why do we Peer?

- Better control of traffic
  - Some transit providers don't provide good community control
  - Because of 1:1 relationship, traffic is just related to each own network
  - IX's also provide great community control.

# Why do we Peer?

- Cost?
  - IX and PNI (Private Network Interconnection) provide a fixed cost for peering.
  - Controllable cost, doesn't increase with traffic unless you need to upgrade port sizes.

Is peering worth it?

# Is peering worth it?

- Network build out?
- Expansion, just for peering
- Staff
- More than just cost

Who manages Peering?

# Who manages Peering?

- A “Peering Manager”
- An “Interconnection Manager”
- Sample Job Description:

<https://www.verizon.com/about/work/jobs/1029641-interconnections-strategy-manager-asia>

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# Who manages Peering?

- A “Peering Manager”
  - Often handled by a NOC or Engineering function
  - Responds to and generates peering requests over IXPs, sets up PNIs
  - Technical expertise not required, but very helpful
  - NOT a sales person

# Who manages Peering?

- An “Interconnection Manager”
  - Often a dedicated role or committee
  - Manages overall strategy on interconnection (Peering, Transit)
  - Technical expertise not required, most people in this role have a Network Engineering background
  - NOT a sales person

# Who manages Peering?

- An “Interconnection Manager”
  - Attends meetings like this
  - Is the interconnection “Face” for your company.
  - Maintains relationship and follows up with other companies for peering status and expansion

Tools

# Tools

- Without the right tooling, Peering is VERY hard.
- You need:
  - Flows (netflow, ipfix, sflow, cflow, whatever-flow)
  - Configuration Management
  - PeeringDB

# Tools

- Flows:
  - Without Flows, you cannot know how much traffic you exchange with other networks.
  - You can't gauge the importance of the other network
  - Flying blind
  - If you can't do your own tooling, services like Kentik are *great*

# Tools

- Other's tools:
  - Several networks have peering or routing portals:

[Cloudflare](#)

[Google](#)

[Hurricane Electric](#)

# Tools

- These tools can help you show your traffic exchange and manage peering with their networks
- Many IXPs offer tools to make peering easier too:
  - Route Servers
  - Traffic Exchange charts
  - Great Example: <https://metrics.ix.nz/>
  - sFlow Stats

Peering Locations AS6939 - Hurricane Electric

Public/IXP	Private	Session Stats
Sessions: <input type="text" value="Potential"/> Address Family: <input type="text" value="Both"/> <input type="text" value="Q Search locations"/>		
Name	Cloudflare IP address	Peer IP address
APE	2001:7fa:4:c0cb::9a33	2001:7fa:4:c0cb::9ac5
APE	192.203.154.51	192.203.154.197
CINX	196.223.22.109	196.223.22.108
CINX	2001:43f8:1f1::109	2001:43f8:1f1::108
DINX	196.223.30.109	196.223.30.108
DINX	2001:43f8:1f2::109	2001:43f8:1f2::108
Equinix Amsterdam	185.1.112.26	185.1.112.33
Equinix Amsterdam	2001:7f8:83::1:3335:1	2001:7f8:83::6939:1
Equinix Atlanta	198.32.182.50	198.32.182.65
Equinix Atlanta	2001:504:10::1:3335:1	2001:504:10::6939:1



Missing Peering sessions between Cloudflare and Hurricane Electric  
Cloudflare Peering Portal (<https://peering.cloudflare.com>)

Traffic Volume

Query Time:  
Last 24h

Overview

Bandwidth Graphs

PoPs

Traffic Type:

All

Traffic Direction:

To Cloudflare

Location:

All

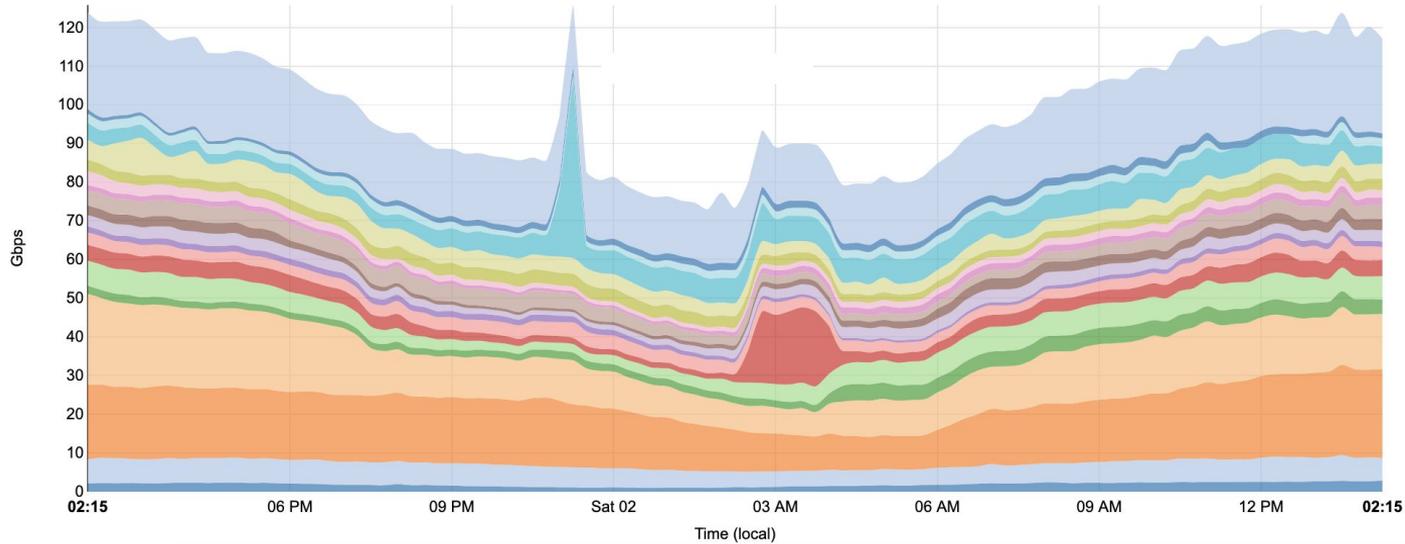
Breakdown per:

Location

Metric:

Bits

- Amsterdam, NL
- Ashburn, US
- Atlanta, US
- Chicago, US
- Dallas, US
- Frankfurt, DE
- London, GB
- Los Angeles, US
- Miami, US
- Milan, IT
- Moscow, RU
- Newark, US
- Paris, FR
- Philadelphia, US
- San Jose, US
- Seattle, US
- Singapore, SG
- Sofia, BG
- Tokyo, JP
- (other)



Traffic exchange between Cloudflare and another network  
Cloudflare Peering Portal (<https://peering.cloudflare.com>)

# PeeringDB

[Register](#) or [Login](#)  
[Advanced Search](#)

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## The Interconnection Database

**Join. Search. Grow your network.**

PeeringDB is a freely available, user-maintained, database of networks, and the go-to location for interconnection data. The database facilitates the global interconnection of networks at Internet Exchange Points (IXPs), data centers, and other interconnection facilities, and is the first step in making interconnection decisions.

The database is a non-profit, community-driven initiative run and promoted by volunteers. It is a public tool for the growth and good of the Internet. Join the community and support the continued development of the Internet.

Learn more [about](#) PeeringDB or [register](#).

**Most Recent Updates**

**Exchanges**

- [France-IX Marseille](#)  
1 days ago
- [France-IX Paris](#)  
1 days ago
- [VernalX](#)  
3 days ago
- [MYNAP](#)  
3 days ago
- [inet2](#)  
4 days ago

**Networks**

- [Allied Telecom Group](#) (22925)  
1 hours ago
- [Rmax Broadband Pvt Ltd](#) (133971)  
1 hours ago
- [SP INTERNET TECHNOLOGIES](#) (134863)  
1 hours ago
- [Server Batam](#) (41239)  
1 hours ago
- [Livek](#) (208505)  
1 hours ago

**Facilities**

- [STAR - TQR](#)  
1 hours ago
- [STAR - GTI](#)  
1 hours ago
- [RV-IX](#)  
7 hours ago
- [GTT Halifax](#)  
12 hours ago
- [Chorus Edgecentre - Mount Eden](#)  
3 days ago

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**Contact Us**  
[support@peeringdb.com](mailto:support@peeringdb.com)

**Global System Statistics**

- 707 Exchanges
- 16958 Networks
- 3393 Facilities
- 29884 Connections to Exchanges
- 27442 Connections to Facilities

How to Peer

# How to Peer

- Over an IX
- Private peering
  - a “Cross connect”
  - A virtual cross connect (VXC)

# How to Peer

- It's done through an email more than anything else!
- Peering Forums for some face to face meetings and turnups.
- How should you send a request?

# How to Peer

## Sample Peering Email

Hey Walt

I see that we are sending you traffic over our transit provider and it looks like it is around 3G of total traffic. (See the netflow data below) As you have an open peering policy we would like to add a session on the JPIX and we have enabled the session on our routers to save time. Let me know if this works for you.

Here are our details:

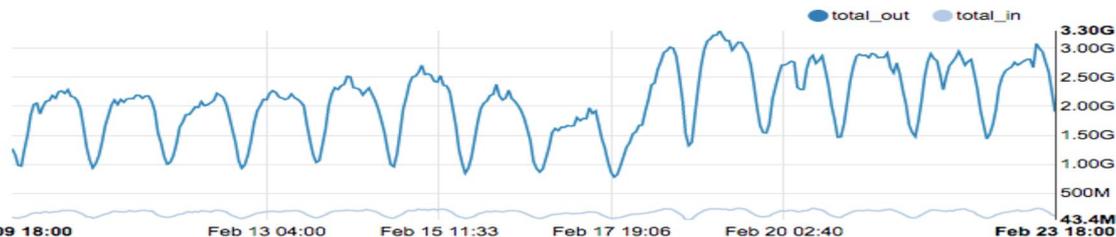
AS13335

210.171.224.134

2001:de8::1:3335:1

With Thanks

Tom Paseka



# How to Peer

Subject: AS13335 – AS6939 peering request

Hey Walt

I see that we are sending you traffic over our transit provider and it looks like it is around 3G of total traffic. (See the netflow data below) As you have an open peering policy we would like to add a session on the JPIX and we have enabled the session on our routers to save time. Let me know if this works for you.

Here are our details:

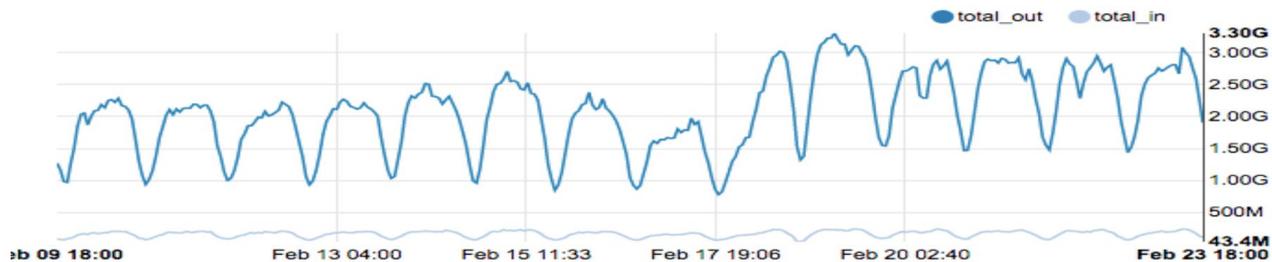
AS13335

210.171.224.134

2001:de8:8::1:3335:1

With Thanks

Tom Paseka



Important things to Include:

- ASNs involved
- Amount of traffic exchanged
- Where
- Details of the session

# How to Peer

- Need help with different languages?
- Ask the local IX
  - Their job is to help facilitate peering
  - They'll help translate and connect you

# Peering Policies

# Peering Policies

- Bi-lateral
  - Open
  - Restrictive
  - Closed
- Multi-lateral

# Peering Policies

- Bilat - Open
  - Happy to peer with anyone and everyone
  - Typically smaller networks
  - Content networks

# Peering Policies

- Bilat - Closed
  - Typically Global Tier-1's
  - They essentially don't want to peer with anyone
  - Want everyone to be their customer, except for the networks they already peer with

# Peering Policies

- Multilateral
  - Done through Route-Server Internet Exchanges
  - One BGP session to reach everyone else on the IX
  - Advanced controls can allow you to choose who you want to receive from or export to.

Peering responses

# Peering responses

- Don't be afraid if someone says "No" do you.
- Some requests need face-to-face meetings
- Keep trying, without being annoying
  - Provide data and your point of view
  - If the remote side says no, doesn't mean that the situation won't change in the future

Questions?

Thank you!

