PeeringDB Update

Arnold Nipper

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Presentation Goals

- Slide overview and content
  - We're developing a new 2017 slide deck with a short/medium/long format for presentation at conferences
  - A 101 introduction tutorial is at the end after the main deck
  - Planning to expand the tutorial into more detailed 201, 301, etc. versions
- Highlight integration with PeeringDB
  - We want to promote the lastest tools and integration developments
  - If you have a tool you'd like us to announce, please get in touch at productcom@lists.peeringdb.com
- We want your feedback on PeeringDB's presence at conferences!
  - Goal is to educate and evangelize PeeringDB to facilitate interconnection
  - How can we be most effective in building the peering community?

Agenda

1. Organization and Election Update
2. Strategic Goals and Organizational Objectives
3. Feature Planning Process and Roadmap Update
4. Third Party Integration

What is PeeringDB?

Mission statement: "PeeringDB, a nonprofit member-based organization, facilitates the exchange of user maintained interconnection related information, primarily for Peering Coordinators and Internet Exchange, Facility, and Network Operators."

- A PeeringDB record makes it easy for people to find you, and helps you to establish peering
- If you aren't registered in PeeringDB, you can register at https://www.peeringdb.com/register
- We use basic verification for new accounts and require current whois information, so please
  - Update and maintain your whois information
  - Register from a company email address

Governance and Membership

- PeeringDB is a United States 501(c)(6) volunteer organization that is 100% funded by sponsorships
- Healthy organization, building financial reserves and executing the long term strategic plan
- Membership rules
  - A corporation, limited liability company, partnership or other legal business entity may be a Member of the Corporation
  - Membership is determined by having both an active PeeringDB.com account and an individual representative or role subscription to the PeeringDB Governance mailing list
  - 327 addresses subscribed to the Governance mailing list (as of 25 Apr, 2017)
  - Governance list is at http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-gov
  - More information available at http://gov.peeringdb.com/

Board of Directors and Officers

Chris Caputo – Secretary & Treasurer
(Non-Board Member)

Patrick Gilmore – Director
(Term Expires 2019)

Aaron Hughes – President
(Term Expires 2018)

Arnold Nipper – Director
(Term Expires 2019)

Bijal Sanghani – Director
(Term Expires 2019)

Job Snijders – Vice President
(Term Expires 2018)

Committees

Admin Committee	Product Committee
• Manage administration of user accounts and PeeringDB records	• Ask for input from the community on desired features
• Answer support tickets	• Manage roadmap and development priorities
• Board members Job Snijders (Chair) and Arnold Nipper (Vice Chair)	• Write SoWs to solicit bids to complete requested features
• Language experience is helpful	• Board members Aaron Hughes (Chair) and Matt Griswold (Vice Chair)
• Contact: admincom@lists.peeringdb.com	• Contact: productcom@lists.peeringdb.com

Admin Committee

Samer Abdel-Hafez

Luisa Fernanda Villa y Battenberg

Hendrik Braasch

Kate Gerry

Christoffer Hansen

Peter Helmenstine

Florian Hibler

Bryan Jong

Eric Lindsjö

Julimar Mendes

Arnold Nipper – Vice Chair

Job Snijders – Chair

Michael Still

Support Ticket Statistics

Total Tickets/Year — ■ PeeringDB 1.0 ■ PeeringDB 2.0

Year	Value 1	Value 2	Value 3
2012	1389		
2013	2284		
2014	3050		
2015	2828		
2016	648	6225	6873
2017	6433	3230	9663

—— Tickets/Day —— Resolution Time (d)

Year	Tickets/Day	Resolution Time (d)
2012	4.09	1.00
2013	6.34	1.06
2014	8.47	1.27
2015	7.86	4.39
2016 (1.0)	8.76	0.53
2016 (2.0)	21.84	0.59
2017	26.8	0.71

300% Increase!
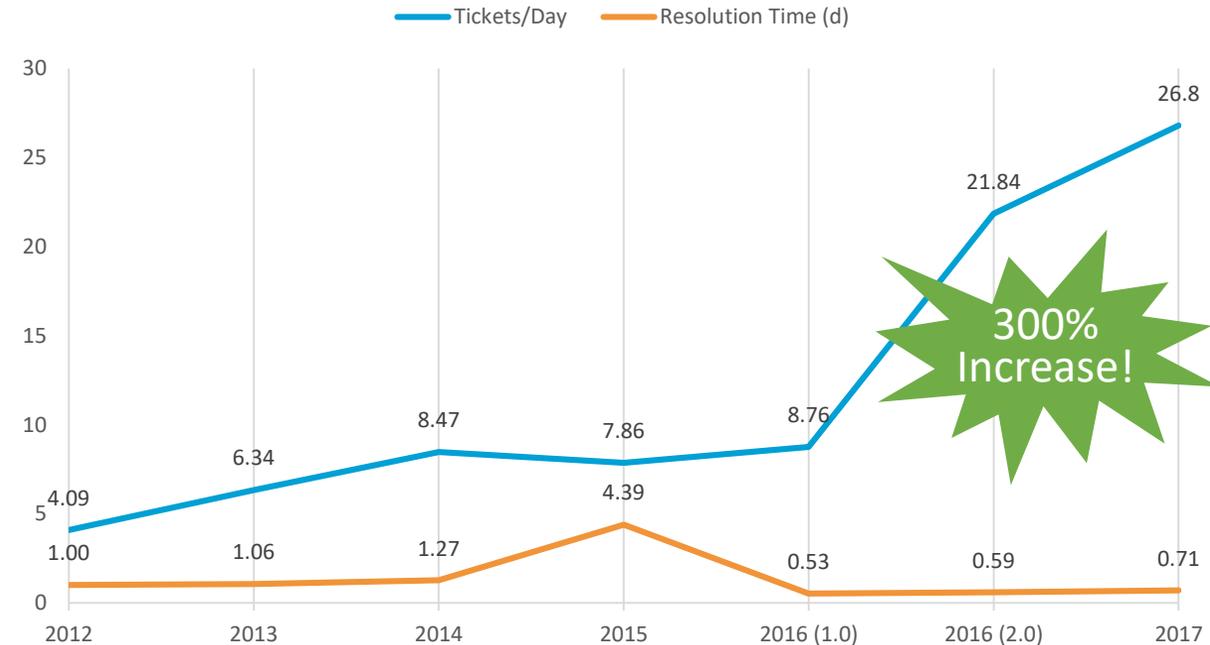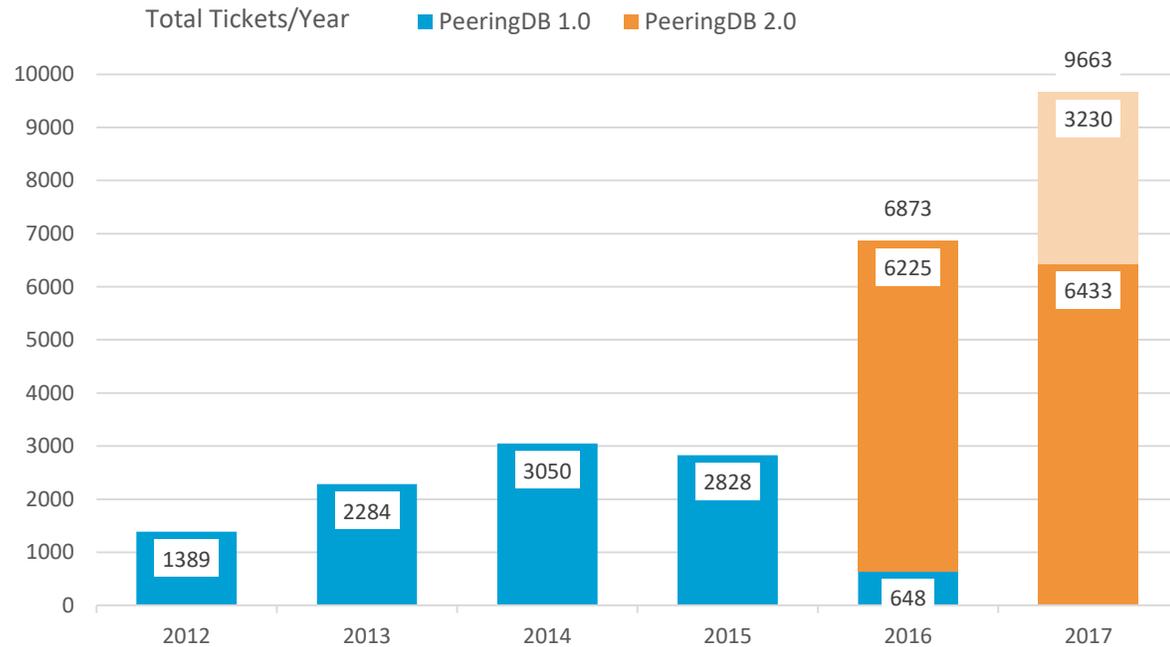
- Admin Committee volunteers are based around the world in a variety of time zones
- Goal is to resolve support tickets within 24 hours

Automated Request Validation

- A lot of support tickets were opened to manually approve new network registrations and affiliation requests
- Automated request validation was introduced in PeeringDB 2.2.1 on July 5, 2017
  - Validation is based on RIR whois information
  - LACNIC validation expected to work by mid-August with their new RDAP software
- Gives users immediate automated processing of these requests, no more waiting on a human to respond
- Significantly reduced the Admin Committee's workload
  - 30% of July / August 2017 total tickets
- First set of new, budgeted features following the Product Committee workflow

Product Committee

Karthik
Arumugham

Matt Griswold –
Vice Chair

Greg
Hankins

Aaron Hughes –
Chair
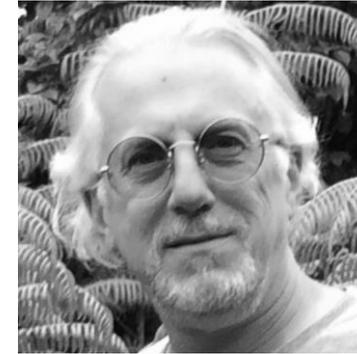
Martin
Levy

Eric
Loos

Stephen
McManus

Arnold
Nipper

Kay
Rechthien

Bijal
Sanghani

Job
Snijders

Become a PeeringDB Sponsor!

- Diamond Sponsorship - $25,000 / year
  - Limited to 2 sponsors
  - Very large logo on top line of Sponsors page with URL
  - Diamond Sponsor badge display on all records
  - Social media promotion
- Platinum Sponsorship - $10,000 / year
  - Large logo on second line of Sponsors page with URL
  - Platinum Sponsor badge display on all records
  - Social media promotion
- Gold Sponsorship - $5,000 / year
  - Medium logo on third line of Sponsors page
  - Gold Sponsor badge display on all records
  - Social media promotion
- Silver Sponsorship - $2,500 / year
  - Small logo on fourth line of Sponsors page
  - Silver Sponsor badge display on all records
  - Social media promotion
- Contact sponsorship@peeringdb.com for sponsorship info

Microsoft [Diamond Sponsor]

Organization	Microsoft
Also Known As	8068
Company Website	http://www.microsoft.com
Primary ASN	8075
IRR Record	AS-MICROSOFT

DE-CIX Frankfurt [Platinum Sponsor]

Organization	DE-CIX Management GmbH
Long Name	Deutscher Commercial Internet Exchange
City	Frankfurt
Country	DE
Continental Region	Europe

Proud Sponsor of **PeeringDB**
GOLD

Thank you to our sponsors!

Diamond Sponsors

Microsoft

Platinum Sponsors

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KDDI · TELEHOUSE · lacnic · LINX Est. 1994 · netnod · NIX·CZ · NLix neutral internet exchange · NTT Communications

NYIIX · LAIIX · PeeringManager · RIPE NCC RIPE NETWORK COORDINATION CENTRE · SysEleven · TERACO AFRICA'S DATA CENTRE · workonline communications · zenlayer

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2017 – 2018 Strategic Direction

- Ensure reliability, security and support of PeeringDB services

- Maintain, develop, and enhance functionality of PeeringDB services as sought by the users and supported by the membership and community

- Educate the community on effective use of PeeringDB

- Educate the community on interconnection

- Evangelize use of PeeringDB

**Rock Solid
Critical Infrastructure**

Uptime Status: http://status.peeringdb.com/

2017 – 2018 Strategic Direction

- Encourage support of PeeringDB via sponsorship
- Build a reserve of 2 years of operational funds for the longterm stability of the organization
- Strengthen relationships with operator and peering forums, and other related databases, to work cooperatively on interconnection topics
- Legal review of liabilities, and insurance (D&O)
- Succession planning
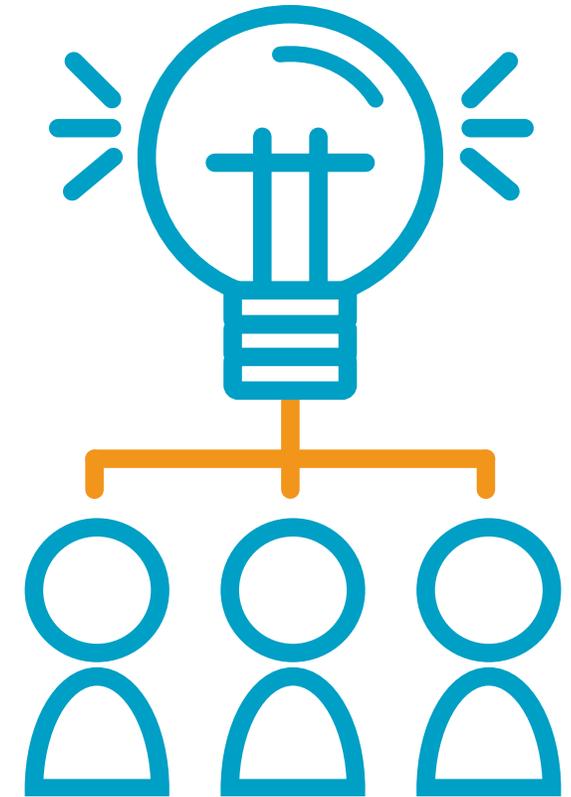
2017 Organizational Objectives

- Obtain contracts for all supporting service providers
- Ensure supporting services are always available
- Ensure regular backups for all services
- Ensure security for private user data
- Conduct redundancy and restoration test bi-annually
- Support the Admin Committee to ensure user expectations are met
- Manage contractor for maintenance, minor development and basic support for underlying PeeringDB platform
- Support the Product Committee for major development and feature enhancements to ensure user expectations are met

- Provide education material in the form of a quick start guide, embedded online assistance, webinars and tutorials
- Participate in peering discussions globally where possible
- Expand social media presence as new material is created
- Survey the existing sponsors
- Write and implement surplus plan
- Present at major conferences where possible
- Conduct one election in April each year
- Conduct one member meeting in April each year
- Engage council for annual review of liabilities and insurance
- Write succession plan

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Feature Workflow

- All features tracked using GitHub at https://github.com/peeringdb/peeringdb/issues with the ZenHub overlay
  - Anyone can open a feature requests, there are no internal or hidden requests
  - Open and transparent process for feature development
  - Workflow is at http://docs.peeringdb.com/workflow/
- Product Committee feature process
  - Evaluate and prioritize the requests
  - Request a quote for development costs
  - Request budget from the board
  - Manage implementation and scheduling

Example Categories
AC (Support Workflow)
Bug
Enhancement
Usability

Your input is needed on features!

PeeringDB

New Release Process

- Announced at least one week in advance with all changes to give the community notice
  - Beta site is already running the development version for testing
  - Announced on PDB Announce list, Twitter, Facebook
- Released on Wednesdays at 0400Z and avoids
  - Mondays and Fridays
  - International holidays
  - Large conferences and events (APRICOT, EPF, GPF, NANOG, RIPE, etc.)
- List of current changes (release notes) for each version are on GitHub at
  https://github.com/peeringdb/peeringdb/milestones
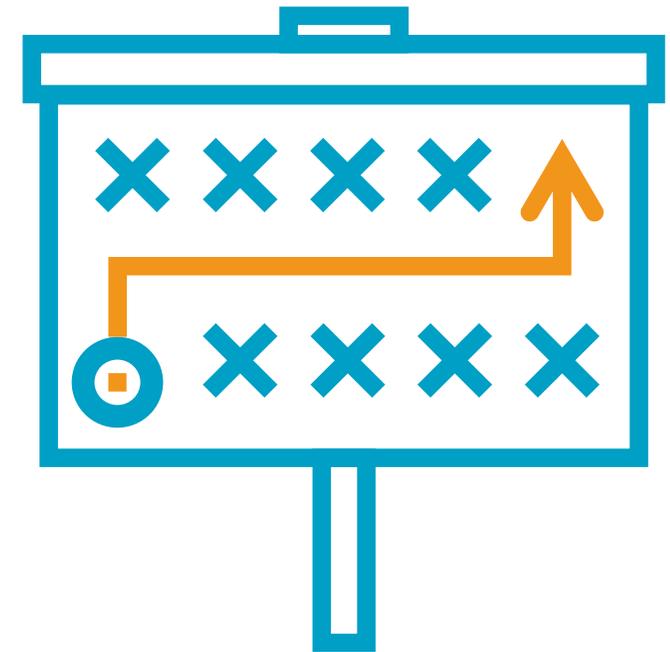
Beta Development

- Beta server
  - Available at https://beta.peeringdb.com/
  - Runs the latest beta software version
  - Full access over HTTP and the API
  - Database is local to the beta server only, changes are not reflected on the production servers
- Latest changes
  - Available at https://beta.peeringdb.com/changes
  - Redirects to the list of issues on GitHub
  - Documents all of the changes in the current beta version
- Anyone can log bugs and feature requests in GitHub at https://github.com/peeringdb/peeringdb/issues

2017 Roadmap

- Several maintenance releases with small features have been released since PeeringDB 2.0 was launched
- We will have major releases with larger features in 2017
  - 2.3.0 will be released 2017-09-06T0400Z
  - upgrading the underlying Django framework to 1.11
  - touching many parts of the code
- Roadmap focus areas
  - Data quality, privacy, confidentiality
  - Usability and API
  - Platform stability and reliability
  - Product evolution
- Communication focus areas
  - Partner management
  - Communication outreach
  - Membership engagement

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Third Party Integration

- PeeringDB maintains interconnection data
  - Permissions and privacy on user information are set by the user
  - Accuracy is essential
  - Exchange sources are vetted
  - Data conflicts are resolved by the Admin Committee
- Third party integration with PeeringDB has started in two ways
  - Data exchange with organizations
  - Use by free and commercial software, full list at http://docs.peeringdb.com/#tools

Data Exchange

- PeeringDB's goals are to
  - Maintain data integrity
  - Provide complete data needed for interconnection
- Working to exchange data with organizations that maintain data on facilities, IXPs, and networks
  - Open and transparent process and integration
  - Not for user data
- IXP data: IX-F, Euro-IX, PCH
- Network data: RIRs (ASNs)
- Facility data: Inflect

Facility Data Validation by Inflect

- Facility data is inconsistent and incomplete
  - Any registered user can suggest facility data
  - Sometimes it's maintained by the facility operator, often it's not
- Inflect is an open, neutral search and procurement tool for internet infrastructure services that provides accurate, validated information
  - Preferred partner to provide free validation of facility data
  - LOI signed August 4, 2017
  - Work in progress now to exchange and import validated facility data

PeeringDB

Unvalidated Facility Data

Validated Facility Data

Inflect

Validation
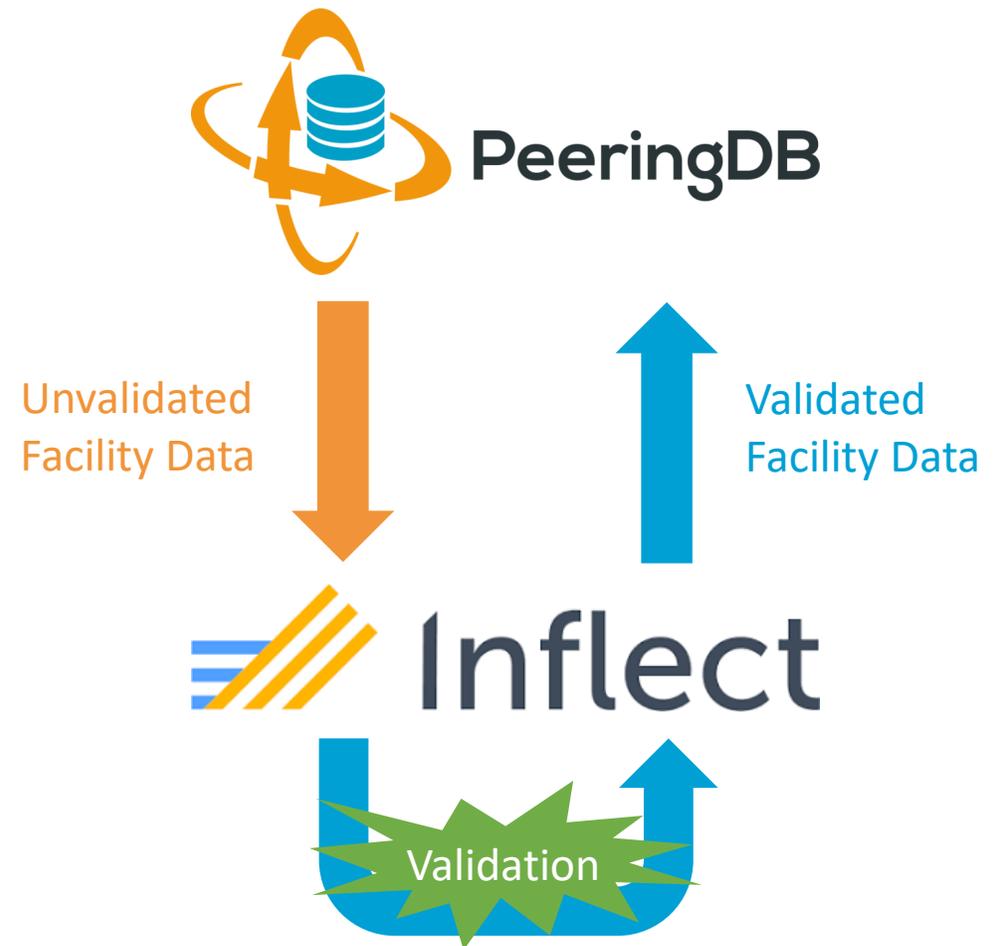
Software Highlight: TraceMON

- TraceMON is a tool for visualizing a network topology generated by traceroutes
  - Provides one-click access to IXP and network info
  - Displays PeeringDB info and allows the user to update their record
- RIPE Atlas users can access it by selecting a traceroute measurement and clicking on the TraceMON tab at https://atlas.ripe.net/measurements/?search=&status=&af=&kind=2%2C4&age=#!tab-public
- Full article is at https://labs.ripe.net/Members/massimo_candela/tracemon-traceroute-visualisation-network-debugging-tool
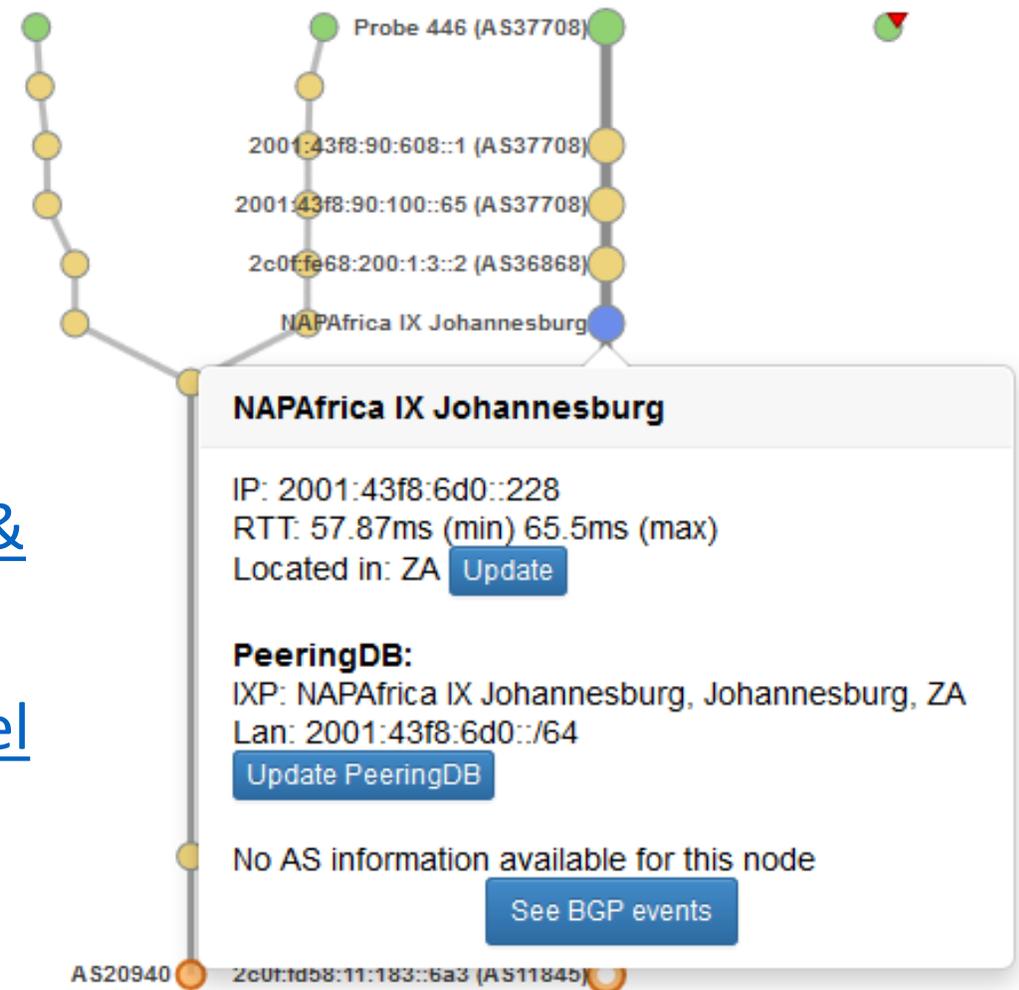
Information and Resources

- Announce list:
  http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-announce

- Governance list:
  http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-gov

- Technical list:
  http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-tech

- User Discuss list:
  http://lists.peeringdb.com/cgi-bin/mailman/listinfo/user-discuss

- Docs, presentations, guides, tools:
  http://docs.peeringdb.com/

- Board and Officers:
  stewards@lists.peeringdb.com

- Admins: support@peeringdb.com

- Presentation requests:
  productcom@lists.peeringdb.com

- Uptime status:
  http://status.peeringdb.com/

- Bugs and feature requests:
  https://github.com/peeringdb/peeringdb/

- Social media:

- @PeeringDB

- https://www.facebook.com/peeringdb/

- https://www.linkedin.com/company/peeringdb

Questions?

Tutorial Slides

PeeringDB 2.0 Key New Infrastructure Features

- Complete rewrite in Python
  - Python: fast and clean, widely used and supported
  - HTML5: adaptive design for desktop and mobile
  - Support for a multideveloper environment
- Redesigned schema with data validation
  - All data is permissioned and editable
  - Input validation on fields: IP addresses, email addresses, etc.
  - Validation in PeeringDB record: dropdown box to select ASN at exchange
- Data versioning
  - Revision history for every data change
  - Easy to restore and roll back
  - Historical data import from CAIDA going back to 2010 (not available yet)
- RESTful API
  - Stateless
  - Incremental database syncs
  - With documentation and tools, oh my!

PeeringDB 2.0 Key New User Features

- Facilities and exchanges can now update their own info
  - Networks are still required to associate their record at a facility or exchange
- Multiple records of any type can be associated with an organization
  - Simpler organization management with a single account for network, facility, exchange records
- One account can manage multiple organizations
  - Manage all of the things with a single account
- Users can manage their accounts
  - Admin account for an organization can delegate fine-grained permissions
- Contact info has permissions
  - Private/users/public permissions
  - All users must register, no more guest account
  - Public view can see all info except contact info (no login needed)
- APIs and local database sync
  - Sync PeeringDB to a local database in any engine format

RESTful API Designed for Automation

- All operations are supported and are designed to be automated
  - Read
  - Create
  - Update
  - Delete

- Each object type has an associated tag
  - org
  - net
  - ix
  - fac

- List of objects: https://peeringdb.com/apidocs/

- API documentation: http://docs.peeringdb.com/api_specs/

Quick Examples Return Output in JSON

- List all networks: `curl -X GET https://<username>:<password>@www.peeringdb.com/api/net`

- Show a specific network: `curl -X GET https://<username>:<password>@www.peeringdb.com/api/net/20`

```
{"meta": {}, "data": [{"id": 20, "org_id": 10356, "org":
{"id": 10356, "name": "20C", "website": "http://20c.com",
"notes": "", "net_set": [20], "fac_set": [], "ix_set":
[], "address1": "", "address2": "", "city": "Chicago",
"country": "US", "state": "IL", "zipcode": "", "created":
"2014-11-17T14:59:34Z", "updated": "2016-03-
23T20:39:18Z", "status": "ok"}, "name": "20C", "aka": "",
"website": "http://20c.com", "asn": 63311, " ... }
```

List All Peers at an IXP (CATNIX)

Peers at this Exchange Point		Filter
Peer Name ▼ ASN	**IPv4** IPv6	**Speed** Policy
Acens Technologies 16371	193.242.98.9 None	1G Open
ADAM 15699	193.242.98.137 2001:7f8:2a:0:2:1:1:5699	1G Open
Adamo Telecom Iberia S.A 35699	193.242.98.143 2001:7f8:2a:0:2:1:2:9518	10G Open
Altecom (Alta Tecnologia en Comunicacions, S.L.) 16030	193.242.98.4 2001:7f8:2a:0:1:1:1:6030	10G Open
bitNAP Datacenter 43578	193.242.98.160 2001:7f8:2a:0:3:1:4:3578	1G Open
BT Spain 12541	193.242.98.145 2001:7f8:2a:0:2:2:0:8903	1G Open
CATNIX-SERVICES 49638	193.242.98.119 None	6G Open
Claranet 8426	193.242.98.131 2001:7f8:2a:0:2:1:0:8426	1G Selective
Cloudflare 13335	193.242.98.153 2001:7f8:2a:0:2:1:1:3335	10G Open
Colt Technology Services 8220	193.242.98.13 None	1G Open
CSUC 13041	193.242.98.38 None	10G Open
Easynet Global Services 4589	213.234.0.15 2001:7f8:2a:0:2:1:0:4589	1G Selective
EBRETIC ENGINYERIA SL 199496	193.242.98.162 2001:7f8:2a:0:3:1:19:9496	1G Open

```
% curl -s -X GET https://www.peeringdb.com/api/netixlan\?ixlan_id=62 \
  | jq '.data[]'
{
  "id": 459,
  "net_id": 91,
  "ix_id": 62,
  "name": "CATNIX",
  "ixlan_id": 62,
  "notes": "",
  "speed": 1000,
  "asn": 8220,
  "ipaddr4": "193.242.98.13",
  "ipaddr6": null,
  "is_rs_peer": false,
  "created": "2010-07-29T00:00:00Z",
  "updated": "2016-03-14T21:09:42Z",
  "status": "ok"
}
```

PeeringDB

Local Database Sync

- Database sync gives you a local copy of PeeringDB for customization or internal use
  - Sync as often as you like
  - Incremental sync is supported

- Improves performance and reduces load on PeeringDB servers

- Build custom indexes and interfaces

- Add custom fields

- Choice of database engines
  - Currently supported: MySQL, Postgres, SQLite

- Sync using the provided tools or build your own using the API

Django Library

- django-peeringdb is a Django library with a local PeeringDB database sync
- Defines the database schema to create a local database copy
- Easy to integrate in a common framework for locals tools and custom interfaces
- Supports multiple database engines (MySQL, Postgres, SQLite)
- Available at http://peeringdb.github.io/django-peeringdb/

Python Client

- peeringdb-py is a Python client for PeeringDB
- Gets objects and outputs in JSON or YAML format
- Provides a whois-like display of records
- Integrated local database sync
- Python library for integration with custom tools
- Available at http://peeringdb.github.io/peeringdb-py/
- Examples at https://github.com/grizz/pdb-examples

Register or Request Affiliation to an Existing Organization
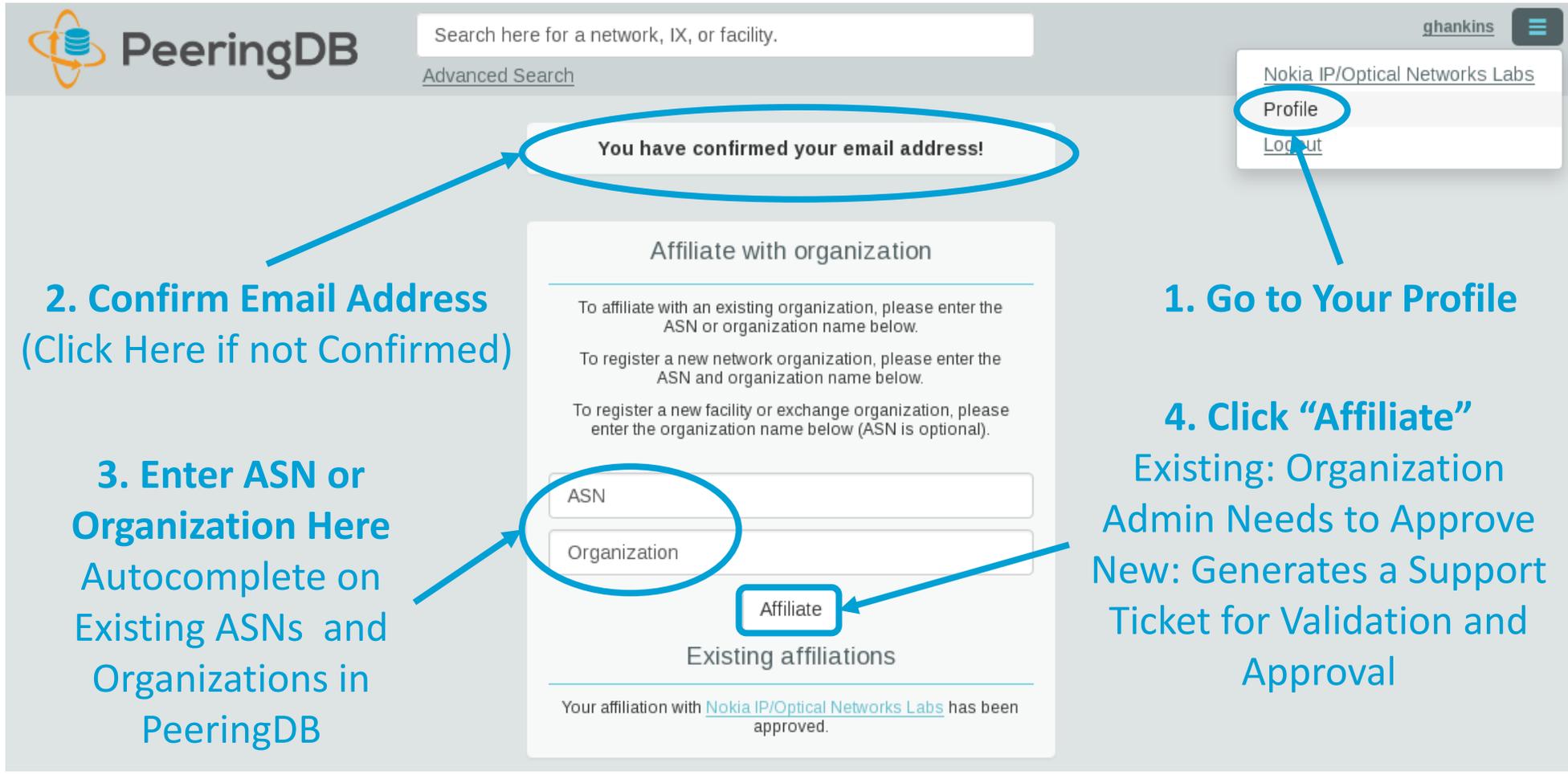
2. Confirm Email Address
(Click Here if not Confirmed)

3. Enter ASN or Organization Here
Autocomplete on Existing ASNs and Organizations in PeeringDB

1. Go to Your Profile

4. Click "Affiliate"
Existing: Organization Admin Needs to Approve
New: Generates a Support Ticket for Validation and Approval

Request Ownership of an Existing Organization

- Network records should already have an organization admin copied from PeeringDB 1.0

- Facility and exchange records will need to have an organization admin assigned

Multiple Records Under a Single Organization

LINX Silver Sponsor

Website	https://www.linx.net
Address 1	The London Internet Exchange Ltd
Address 2	5th Floor, 24 Monument Street
Location	London, , EC3R 8AJ
Country Code	GB

Facilities — Filter

Name ▼	Country City
IXCardiff	United Kingdom Cardiff

Facilities are Shown Here
LINX has 1 Facility

Networks — Filter

Name ▼	ASN
LINX NoVA (LINX USA Inc.)	21919
LINX Route Servers	8714
London Internet Exchange (LINX)	5459

Networks are Shown Here
LINX has 2 Network Records

Exchanges — Filter

Name ▼	Country City
IXCardiff	United Kingdom Cardiff
IXManchester	United Kingdom Manchester
IXScotland	United Kingdom Scotland
LINX LON1	United Kingdom London
LINX LON2	United Kingdom London
LINX NoVA	United States of America Northern Virginia

Exchanges are Shown Here
LINX has 6 Exchange Records

One Account Managing Multiple Organizations

Account "job" is Affiliated with 4 Organizations

Organization User Management

Approve or Deny Pending Requests

Delegate Permissions for Members
Admins Have Access to Everything

Manage

Add Facility   Add Network   Add Exchange   Users   Permissions

Users requesting affiliation

Name User	Email Confirmed	Date
	Currently no users requesting affiliation with Nokia IP/Optical Networks Labs	

Users in Organization

Name User	Email	Group	
Greg Hankins ghankins	greg.hankins@alcatel-lucent.com	admin	Remove
		member admin	Save

Change User Access Levels
Admin – Administrator
Member – Delegate Permissions

Remove Users From the Organization
Does not Remove the User Account From PeeringDB

PeeringDB

Administrative Permission Delegation

User "equinix-uk" can Manage Several Network Records, but <u>no</u> Exchanges or Facilities

Paul Cairney <paul.cairney@eu.equinix.com> equinix-uk	Create	Update	Delete
☒ Network - Equinix Netherlands	☑	☑	☑
☒ Network - Equinix UK	☑	☑	☑
☒ Network - Equinix Germany	☑		
☒ Network - Equinix France	☑		
☒ Network - Equinix Switzerland	☑		
Any Exchange ⇕	☐		Add

Create – New Entries in Record
Update – Change Existing Entries in Record
Delete – Delete Entries in Record

Raphael Ho <raphael.ho@ap.equinix.com> rho	Create	Update	Delete
☒ Network - Equinix Connect	☑	☑	☐
☒ Any Exchange	☑	☑	☐
☒ Any Facility	☑	☑	☐
Any Exchange ⇕	☐	☐	☐ Add

User "rho" can Manage the "Equinix Connect" Network Record, and Any Exchange or Facility

Network Record Contact Information Permissions

Separate Visibility Preferences for Each Role
Private – Organization Only (Default)
Users – Registered Users Only
Public – Anyone (no Login Required)

Roles:
Abuse
Policy
Technical
NOC
Public Relations
Sales

Adding Your Network to an IXP or Facility

1. **Go to your network record and click on "Edit"**
2. **Start to type in the name of the IXP and select the IXP**
3. **If the IXP is missing, contact PeeringDB support**
4. **Add your IP addresses, port speed, and click the "RS Peer" box if you peer with the route server**
5. **Finally click on "Add Exchange Point"**
- **Use the same procedure for adding a Facility**

Adding a New Exchange to Your Organization

Generates a Support Ticket for Validation and Approval

Enter Exchange Info Here, Then Click "Submit Exchange"

Editing Your Exchange Record

Example-IX

Cancel | Save

Organization	Example-IX
Long Name	Example-IX, the only ATM multicast IX on the planet!
City	Atlanta
Country	United States
Continental Region	North America
Media Type	ATM
Protocols Supported	☐ Unicast IPv4 ☑ Multicast ☐ IPv6
Contact Information	
Company Website	http://www.example.com
Traffic Stats Website	http://www.example.com
Technical Email	name@example.com
Technical Phone	
Policy Email	name@example.com
Policy Phone	

Peers at this Exchange Point

Filter

Peer Name ▼	IPv4	Speed
ASN	IPv6	Policy

Nothing matched your filter
You may filter by **Exchange**, **ASN**, **Policy** or **Speed**

Networks are Still Required to Associate their Record at a Facility or Exchange

Enter Exchange Info Here, Then Click "Save"

Editing Your Exchange Record

Enter LAN Info Here
Name – Optional Name
DOT1Q – 802.1Q Tag
MTU
IPv4/IPv6 Addresses

Add Facilities Here
Autocomplete on
Existing Facilities, Must
Contact Support to Add
a New Facility

Questions?