

# PeeringDB Update

**Arnold Nipper** 

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#### **Presentation Goals**

- Slide overview and content
  - We're developing a new 2018 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 <a href="mailto:productcom@lists.peeringdb.com">productcom@lists.peeringdb.com</a>
- 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 Update
- 2. Strategic Goals and Organizational Objectives
- 3. Feature Planning Process and Roadmap Update
- 4. Third Party Integration
- 5. Tutorial



## 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 <a href="https://www.peeringdb.com/register">https://www.peeringdb.com/register</a>
- 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



#### Database Record Statistics

	2.0 Launch 2016-03-15	2016-12-31	2016 % Growth	2017-12-31	2017 % Growth
Facilities	1,957	2,130	9%	2,635	24%
IXPs	630	556	-12%	614	10%
Networks	5,881	8,116	38%	11,327	40%
Organizations	7,490	9,132	22%	11,917	30%
Users	7,866	11,486	46%	15,538	35%

- Strong growth each year since PeeringDB 2.0 launch
  - Lower IXP count in 2016 due to database cleanup
- Users number indicates registered users affiliated with an organization
  - All information except for contact info is available without a login
  - Not an indication of total PeeringDB users



#### 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
  - 332 addresses subscribed to the Governance mailing list (as of May 3, 2018)
  - Governance list is at <a href="http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-gov">http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-gov</a>
  - More information available at <a href="http://gov.peeringdb.com/">http://gov.peeringdb.com/</a>



#### Board of Directors and Officers



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



Patrick Gilmore – Director (Term Expires 2019)



Aaron Hughes – President (Term Expires 2020)



Arnold Nipper – Director (Term Expires 2019)



Bijal Sanghani – Director (Term Expires 2019)



Job Snijders – Vice President (Term Expires 2020)

#### Committees

Admin Committee	Operations Committee	Outreach Committee	Product Committee
<ul> <li>Manage administration of user accounts and PeeringDB records</li> <li>Answer support tickets</li> </ul>	Manage PeeringDB infrastructure	<ul> <li>Manage marketing and social media</li> <li>Develop and maintain presentations, workshops and webinars</li> <li>Coordinate presence at events</li> </ul>	<ul> <li>Ask for input from the community on desired features</li> <li>Manage roadmap and development priorities</li> <li>Write SoWs to solicit bids to complete requested features</li> </ul>
Leads: Arnold Nipper (Chair)	Leads: Job Snijders (Chair) and Aaron Hughes (Vice Chair)	Leads: Bijal Sanghani (Chair) and Aaron Hughes (Vice	Leads: Eric Loos (Chair) and Matt Griswold (Vice Chair)
Contact:	Contact:	Chair)	Contact:

admincom@lists.peeringdb.com

Contact:

pdb-ops@lists.peeringdb.com

productcom@lists.peeringdb.com

#### Admin Committee



Luisa Fernanda Villa y Battenberg



Hendrik Braasch



Christoffer Hansen



Peter Helmenstine



Bryan Jong



Noelle Kenny



Julimar Mendes



Arnold Nipper – Chair



Rob Parker



Brad Raymo

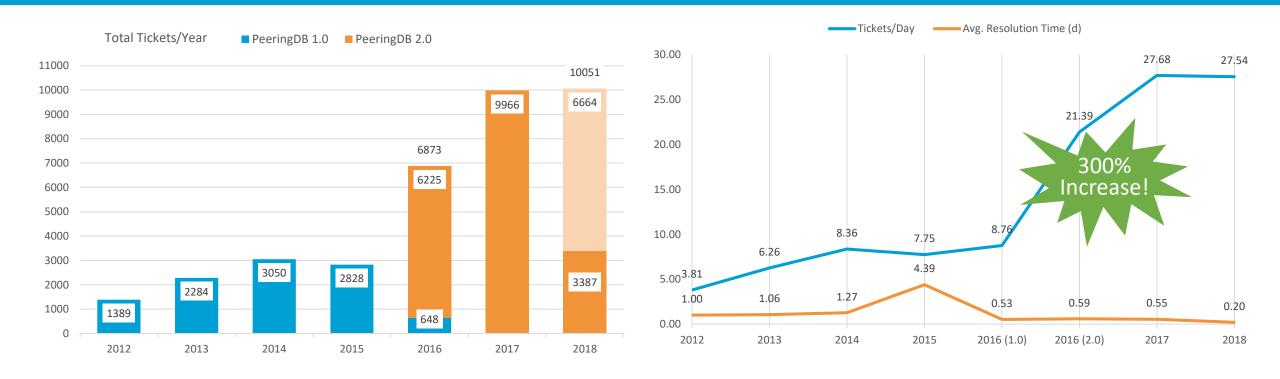


Job Snijders



Marty Strong

## Support Ticket Statistics



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



2018-05-08

#### 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 RDAP information
- Gives users immediate automated processing of these requests, no more waiting on a human to respond
- Significantly reduced the Admin Committee's workload
  - ~2,900 automated tickets services since July 5, 2017 (33% of total tickets)
- First set of new, budgeted features following the Product Committee workflow



## **Operations Committee**



Matt Griswold



Job Snijders – Chair



Aaron Hughes – Vice Chair



Matthew Walster



Stefan Pratter

#### Outreach Committee



Bijal Sanghani – Chair



Aaron Hughes – Vice Chair

#### **Product Committee**



Samer Abdel-Hafez



Martin Levy



Karthik Arumugham



Eric Loos – Chair



Matt Griswold – Vice Chair



Stephen McManus



Greg Hankins



Arnold Nipper



Florian Hibbler



Chris Phillips



Aaron Hughes



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 <a href="mailto:sponsorship@peeringdb.com">sponsorship@peeringdb.com</a> for sponsorship info

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

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Long Name	Deutscher Commercial Internet Exchange	
City	Frankfurt	
Country	DE	
Continental Region	Europe	



#### Thank you to our sponsors!





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## 2018 – 2019 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
- Evangelize use of PeeringDB



Uptime Status: <a href="http://status.peeringdb.com/">http://status.peeringdb.com/</a>

#### 2018 – 2019 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
- Strengthen relationships with Regional Internet Registries (RIRs) with respect to access to authoritative data
- Legal review of liabilities, and insurance (D&O)
- Succession planning



#### High Priority Tasks for 2018

- Maintain SLAs and contracts for all supporting service providers
- Write Operational Service Level Policy (OSLP) for services provided to the community and regularly report compliance
- Document operational infrastructure
- Regular third-party security audit
- Ensure security for private user data
- Conduct redundancy and restoration test bi-annually
- Provide education material in the form of a quick start guide, embedded online assistance, webinars and tutorials for both users and developers



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#### Feature Workflow

- All features tracked using GitHub at <a href="https://github.com/peeringdb/peeringdb/issues">https://github.com/peeringdb/peeringdb/issues</a> 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 <a href="http://docs.peeringdb.com/workflow/">http://docs.peeringdb.com/workflow/</a>
- 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

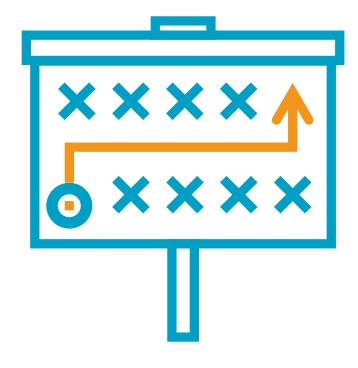
#### Your input is needed on features!



#### 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 <a href="https://beta.peeringdb.com/">https://beta.peeringdb.com/</a>
  - 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

Beta

PeeringDB

- Latest changes
  - Available at <a href="https://beta.peeringdb.com/changes">https://beta.peeringdb.com/changes</a>
  - 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



#### 2018 Roadmap

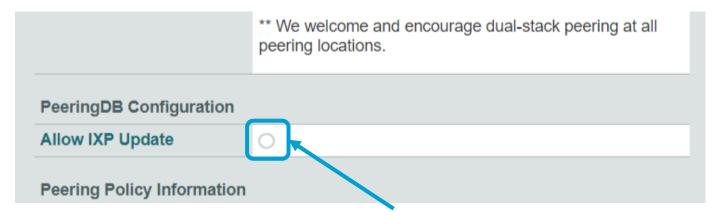
- Several maintenance releases with small features have been released since PeeringDB 2.0 was launched
- Released 2.5.3 on 2017-09-06
  - Updated to Django 1.11; added coordinates for facilities and organizational addresses
- Released 2.6.5 on 2017-11-14
  - Allow IXP Updates and Import of member information in IX-F JSON schema format

- We will have major releases with larger features in 2018
- 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



#### Import of Data Provided by IXPs

- For Networks
  - Allow IXPs to maintain your IXP connection information
  - One setting for all IXPs where you are connected
  - Off by default
- For IXPs
  - IXPs provide participant data (IP addresses, speed, RS peering)
  - Imported into PeeringDB nightly using IX-F JSON schema
- See issue #237 on GitHub for details



Networks Click "Allow IXP Update" in Network Record



IXPs Set Export URL in Exchange Record



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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 <a href="http://docs.peeringdb.com/#tools">http://docs.peeringdb.com/#tools</a>



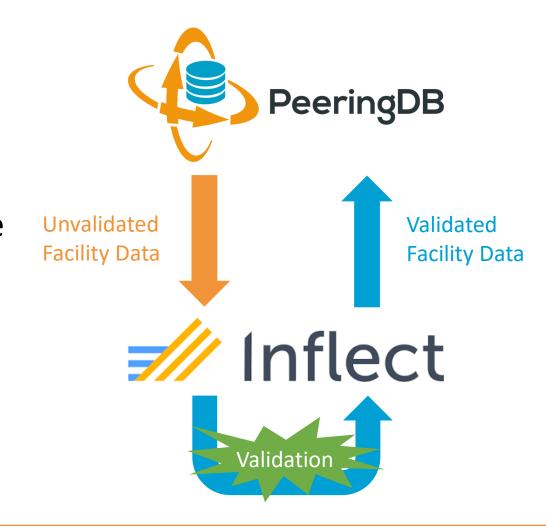
#### Data Exchange

- 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, 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





#### Information and Resources

- Announce list: <u>http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-announce</u>
- Governance list: <u>http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-gov</u>
- Technical list: <u>http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-tech</u>
- User Discuss list: <u>http://lists.peeringdb.com/cgi-bin/mailman/listinfo/user-discuss</u>
- 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: <a href="https://github.com/peeringdb/peeringdb/">https://github.com/peeringdb/peeringdb/</a>
  - Social media:
- @PeeringDB
- https://www.facebook.com/peeringdb/
- https://www.linkedin.com/company/peeringdb





# Questions?





## Tutorial Slides



#### Peering DB 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!





#### Peering DB 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: <a href="https://peeringdb.com/apidocs/">https://peeringdb.com/apidocs/</a>
- API documentation: <a href="http://docs.peeringdb.com/api specs/">http://docs.peeringdb.com/api specs/</a>



#### 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	193.242.98.9	1G
16371	None	Open
<u>ADAM</u>	193.242.98.137	1G
15699	2001:7f8:2a:0:2:1:1:5699	Open Open
Adamo Telecom Iberia S.A	193.242.98.143	10G
35699	2001:7f8:2a:0:2:1:2:9518	3 Open
Altecom (Alta Tecnologia en	193.242.98.4	10G
Comunicacions, S.L.)	2001:7f8:2a:0:1:1:1:6030	) Open
16030		
bitNAP Datacenter	193.242.98.160	1G
43578	2001:7f8:2a:0:3:1:4:3578	3 Open
BT Spain	193.242.98.145	1G
12541	2001:7f8:2a:0:2:2:0:8903	Open Open
CATNIX-SERVICES	193.242.98.119	6G
49638	None	Open
Claranet	193.242.98.131	1G
8426	2001:7f8:2a:0:2:1:0:8426	Selective
Cloudflare	193.242.98.153	10G
13335	2001:7f8:2a:0:2:1:1:3335	Open Open
Colt Technology Services	193.242.98.13	1G
8220	None	Open
CSUC	193.242.98.38	10G
13041	None	Open
Easynet Global Services	213.234.0.15	1G
4589	2001:7f8:2a:0:2:1:0:4589	Selective Selective
EBRETIC ENGINYERIA SL	193.242.98.162	1G
199496	2001:7f8:2a:0:3:1:19:949	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"
```



#### 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 <a href="http://peeringdb.github.io/django-peeringdb/">http://peeringdb.github.io/django-peeringdb/</a>

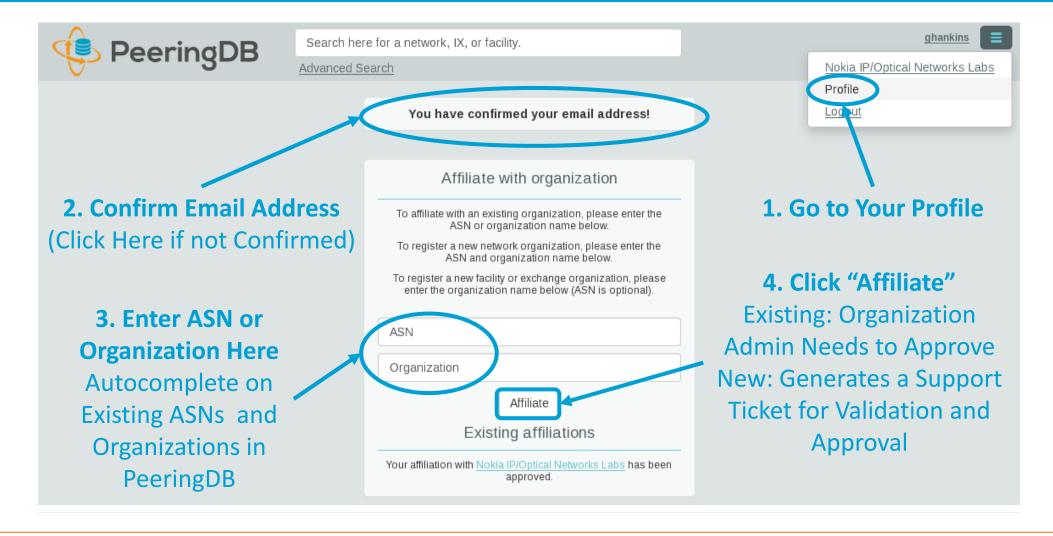


#### Python Client

- 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 <a href="http://peeringdb.github.io/peeringdb-py/">http://peeringdb.github.io/peeringdb-py/</a>
- Examples at <a href="https://github.com/grizz/pdb-examples">https://github.com/grizz/pdb-examples</a>



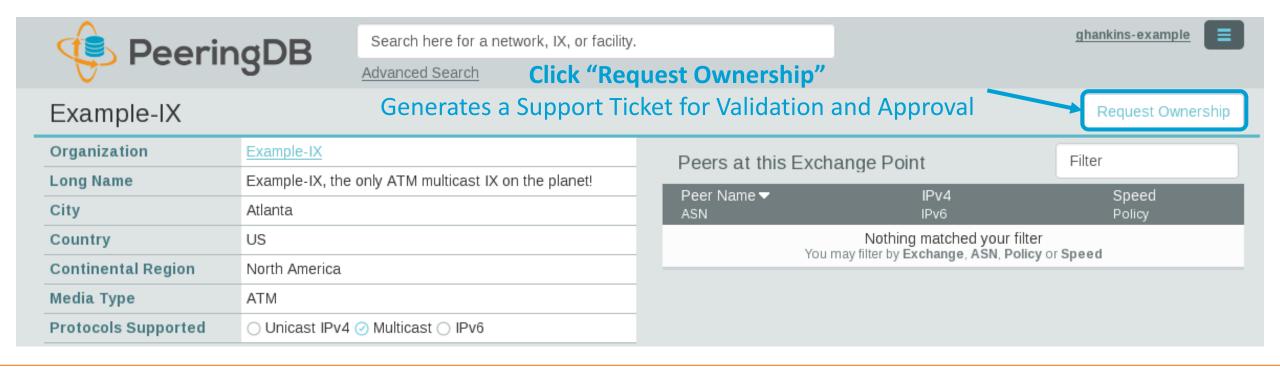
# Register or Request Affiliation to an Existing Organization





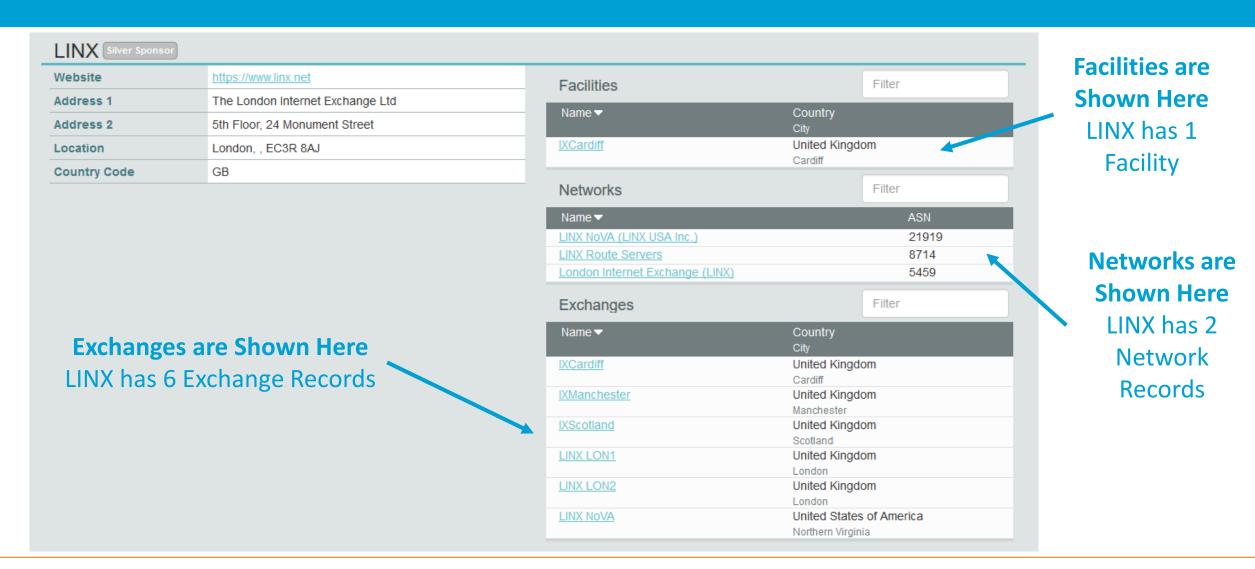
#### Request Ownership of an Existing Organization

- 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



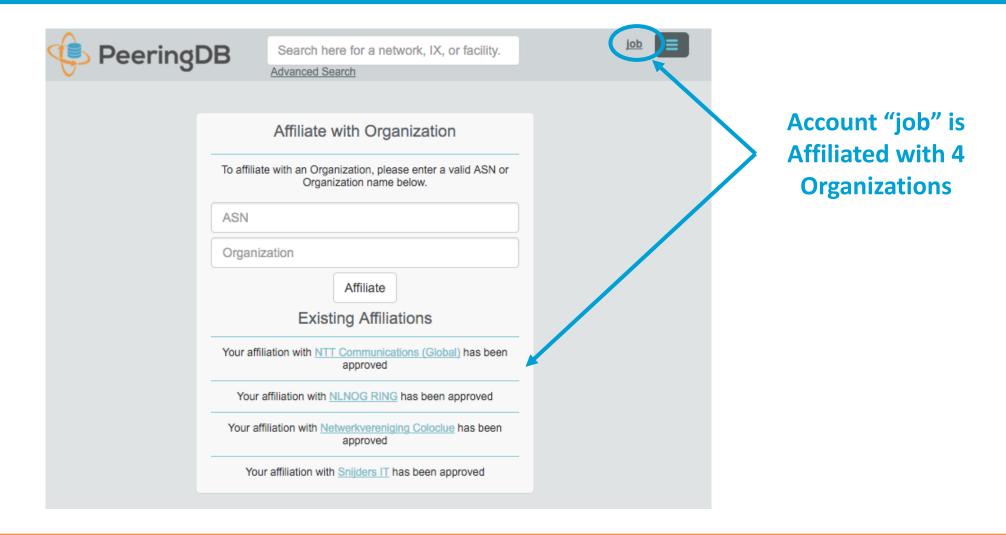


## Multiple Records Under a Single Organization



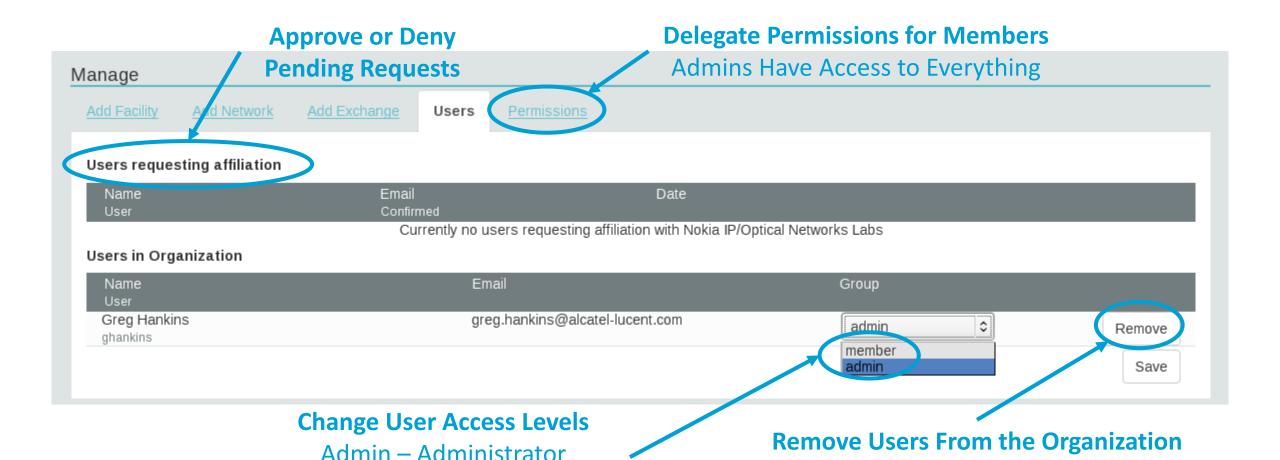


#### One Account Managing Multiple Organizations





#### Organization User Management





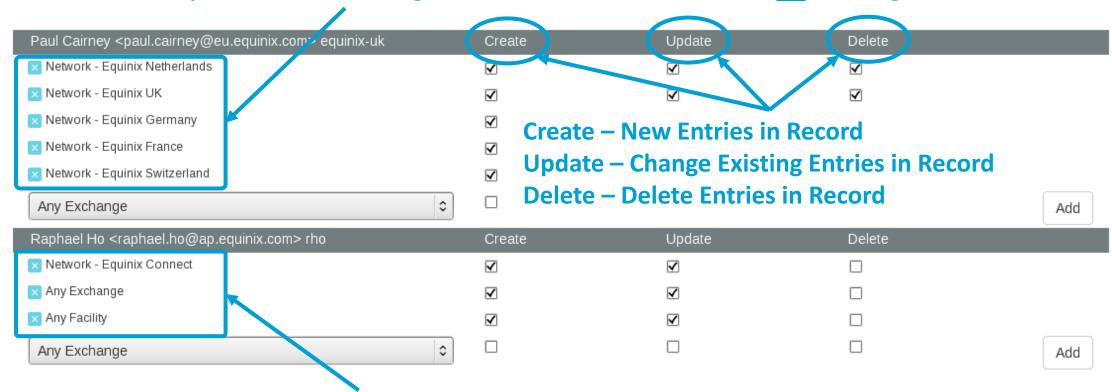
2018-05-08

Member – Delegate Permissions

Does not Remove the User Account From PeeringDB

#### Administrative Permission Delegation

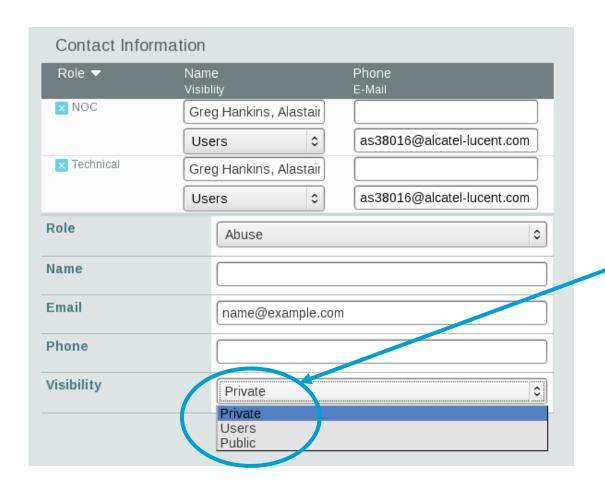
User "equinix-uk" can Manage Several Network Records, but no Exchanges or Facilities



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:

Ahuse

Policy

**Technical** 

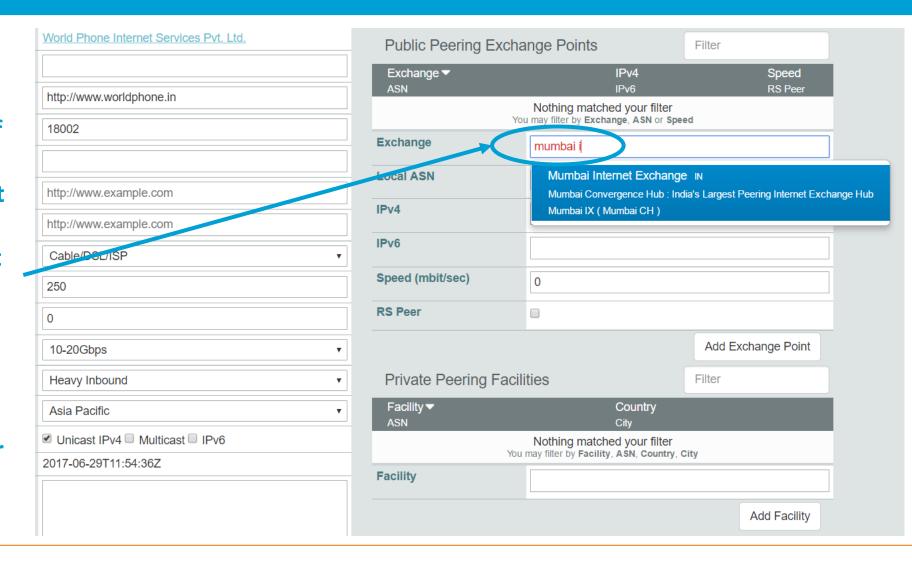
NOC

**Public Relations** 

Sales

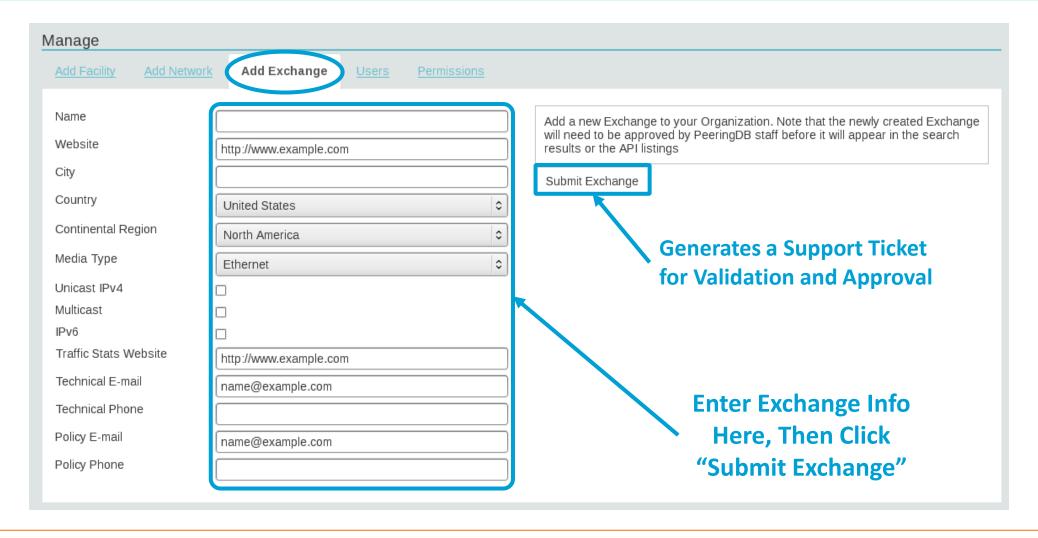
#### Adding Your Network to an IXP or Facility

- 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



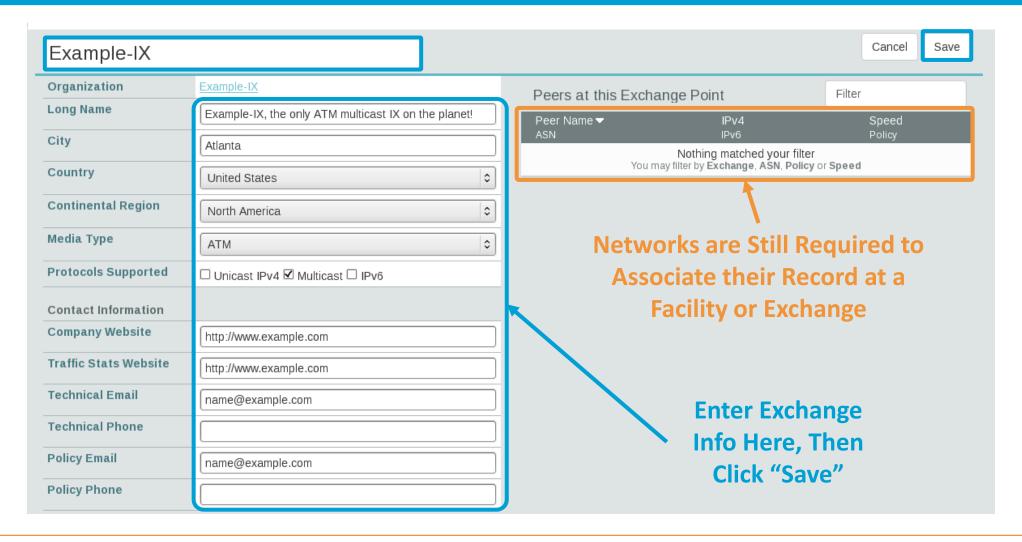


### Adding a New Exchange to Your Organization



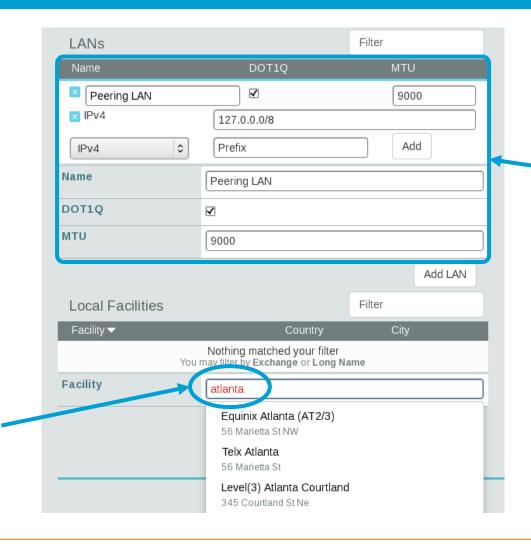


#### Editing Your Exchange Record





#### 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?

