



PeeringDB

Introduction to PeeringDB

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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.”

Why should I have a record in PeeringDB?

- As a network, a PeeringDB record makes it easy for other networks to find you, and helps you to establish peering / interconnection
- As a colocation provider, a PeeringDB record creates visibility, and helps you to attract additional networks and IXes
- As an IX, a PeeringDB record provides information about your participants, and colocations where your service is available
- Provides a user friendly GUI and a powerful API for automatisisation



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
 - 359 addresses subscribed to the Governance mailing list (as of Nov 30, 2021)
 - Governance list is at <http://lists.peeringdb.com/cgi-bin/mailman/listinfo/pdb-gov>
 - More information available at <http://gov.peeringdb.com/>

Governance

- The Members
 - Any corporation, limited liability company, partnership or other legal business entity may be a Member
 - One (virtual / online) member meeting per year
- The Board
 - Sets strategic directions and overlooks financial issues
 - Half of the board is elected every year
- The Committees
 - Responsible for the day-to-day work
 - Admin Committee
 - Operations Committee
 - Outreach Committee
 - Product Committee

Board of Directors and Officers



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



Patrick Gilmore – Director (Term Expires 2023)



Aaron Hughes – President (Term Expires 2022)



Christopher Malayter – Director (Term Expires 2023)



Bijal Sanghani – Director (Term Expires 2023)



Job Snijders – Vice President (Term Expires 2022)

Committees

Admin Committee

- Manage administration of user accounts and PeeringDB records
- Answer support tickets
- Cleansing and completion of PeeringDB records

Leads: Patrick Gilmore (Chair) and Darwin Costa (Vice Chair)
Contact: admincom@lists.peeringdb.com

Operations Committee

- Manage PeeringDB infrastructure

Leads: Job Snijders (Chair) and Aaron Hughes (Vice Chair)
Contact: pdb-ops@lists.peeringdb.com

Outreach Committee

- Manage marketing and social media
- Develop and maintain presentations, workshops and webinars
- Coordinate presentations and attendance at events

Leads: Ben Ryall (Chair) and Bijal Sanghani (Vice Chair)
Contact: outreachcom@lists.peeringdb.com

Product Committee

- Manage roadmap and development priorities
- Ask for input from the community on desired features
- Write SoWs to solicit bids to complete requested features

Leads: Stephen McManus (Chair) and Matt Griswold (Vice Chair)
Product Manager: Leo Vegoda
Contact: productcom@lists.peeringdb.com

Product Development Workflow

- All issues tracked using GitHub at <https://github.com/peeringdb/peeringdb/issues>
 - Anyone can open a feature requests or file a bug report
 - Open and transparent process for product development
 - Workflow is at <http://docs.peeringdb.com/workflow/>
- Product Committee issue process
 - Evaluate and prioritize the requests
 - Request a quote for development costs
 - Request budget from the board
 - Manage implementation and scheduling
- Your input is needed on features!

1 Decide No due date ⌚ Last updated 3 days ago Issues under Decide queue. Issues are kept in Decide while the Product Committee discusses the issue. Next milestone is "Consensus Reached"	 12% complete 128 open 19 closed Edit Close Delete
2 Consensus Reached No due date ⌚ Last updated 3 days ago Issues that are in the Consensus queue. When a decision is made abo...(more)	 0% complete 6 open 0 closed Edit Close Delete
3 Consensus Finalized No due date ⌚ Last updated 1 day ago When an issue is at milestone "Consensus reached" PC members have t...(more)	 100% complete 0 open 2 closed Edit Close Delete
3a Needs Implementation discussion No due date ⌚ Last updated 6 days ago	 0% complete 5 open 0 closed Edit Close Delete
4 Ready for Implementation No due date ⌚ Last updated 1 day ago Last milestone before milestone "Next release". The predecessor is "Consensus Finalized".	 0% complete 22 open 0 closed Edit Close Delete
Next Release No due date ⌚ Last updated 5 days ago	 80% complete 3 open 12 closed Edit Close Delete

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

Microsoft Diamond Sponsor

Organization	Microsoft Corporation
Also Known As	8068 8069
Company Website	
Primary ASN	8075

DE-CIX Frankfurt Platinum Sponsor

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



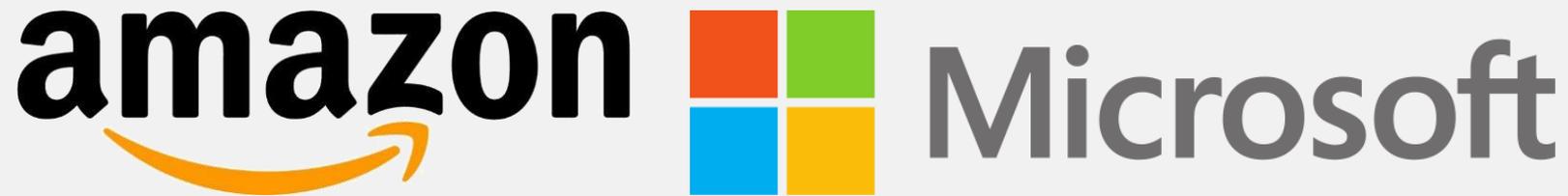
Proud Sponsor of

PeeringDB  Gold

Contact sponsorship@peeringdb.com for sponsorship info!

Thank you to our sponsors!

Diamond Sponsor



Platinum Sponsors



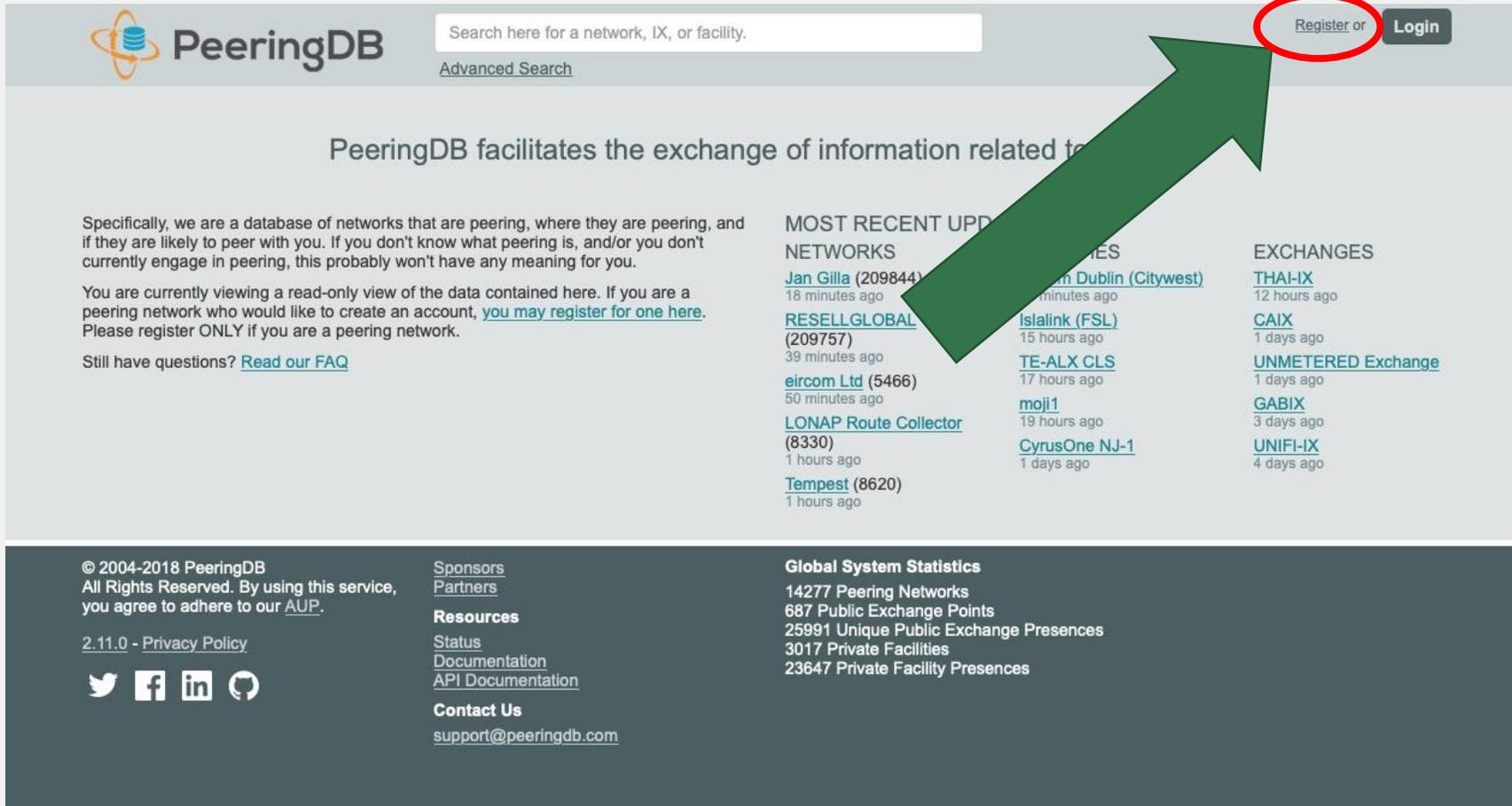
Gold Sponsors



Silver Sponsors



Registering



The screenshot shows the PeeringDB website interface. At the top left is the PeeringDB logo. To its right is a search bar with the placeholder text "Search here for a network, IX, or facility." and a link for "Advanced Search". In the top right corner, there is a button labeled "Register or Login", which is circled in red. A large green arrow points from the center of the page towards this button. Below the navigation bar, the main content area features a heading "PeeringDB facilitates the exchange of information related to" followed by a paragraph explaining the database's purpose and a link to register. To the right, there are three columns of "MOST RECENT UPDATES" for NETWORKS, PRESENCE, and EXCHANGES, each listing recent updates with links and timestamps. The footer contains copyright information, a link to the AUP, social media icons, and various resource and contact links.

Registering

set language preference

You have confirmed your email address!

Affiliate with organization

To affiliate with an existing organization, please enter the ASN or organization name below.

To register a new network organization, please enter the ASN and organization name below.

To register a new facility or exchange organization, please enter the organization name below (ASN is optional).

ASN **645XX**

Organization **Some Name**

Affiliate

In case the RiR entry cannot be retrieved for your ASN, please contact support@peeringdb.com for assistance.

Existing affiliations

- Once your email is confirmed:
- Get affiliated with an organization
 - Your company
 - Which is already in PeeringDB
- Or is new to PeeringDB
 - Can be an ISP – enter your AS number!
 - Or a Datacenter
 - Or an Internet Exchange

Registering

Affiliate with organization

To affiliate with an existing organization, please enter the ASN or organization name below.

To register a new network organization, please enter the ASN and organization name below.

To register a new facility or exchange organization, please enter the organization name below (ASN is optional).

ASN

Organization

In case the RIR entry cannot be retrieved for your ASN, please contact support@peeringdb.com for assistance.

Existing affiliations

Your affiliation with [ACME Alternative Hosting](#) has been approved.

- Once approved, you can edit your organization
- Click on your organization to continue...

Your Organization

- Enter information about your organization – click on edit

ACME Alternative Hosting

Some of the data on this page is incomplete, please update the fields marked with **i** to improve data quality.

Website i	
Address 1 i	
Address 2	
Location i	
Country Code i	
Notes	

Facilities

Filter

Name ▼	Country	City
Nothing matched your filter You may filter by Name, Country or City		

Networks

Filter

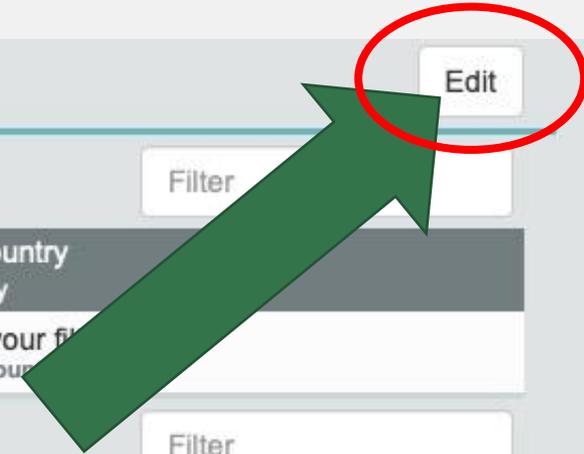
Name ▼	ASN
ACME Alternative Hosting	64501

Exchanges

Filter

Name ▼	Country	City
Nothing matched your filter You may filter by Name, Country or City		

Edit



Network Information

- Now it gets interesting
- With your basic company information now in, let's add information about your network
- Click on your network name – beside your AS number on the right side

PeeringDB asmith

[Advanced Search](#)

ACME Alternative Hosting Inc. Edit

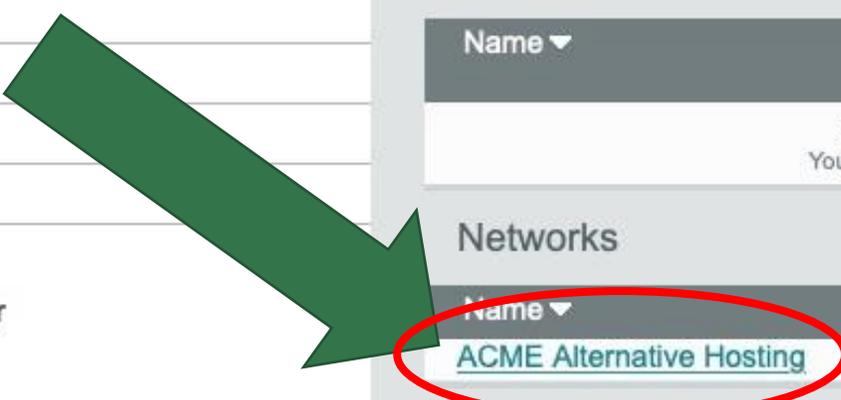
Website	http://www.acme.example
Address 1	Vienna
Address 2	
Location	Vienna 01000
Country Code	Austria
Notes	ACME Hosting <ul style="list-style-type: none">• Best hosting provider ever• Open peering policy• Peer with us!

Facilities

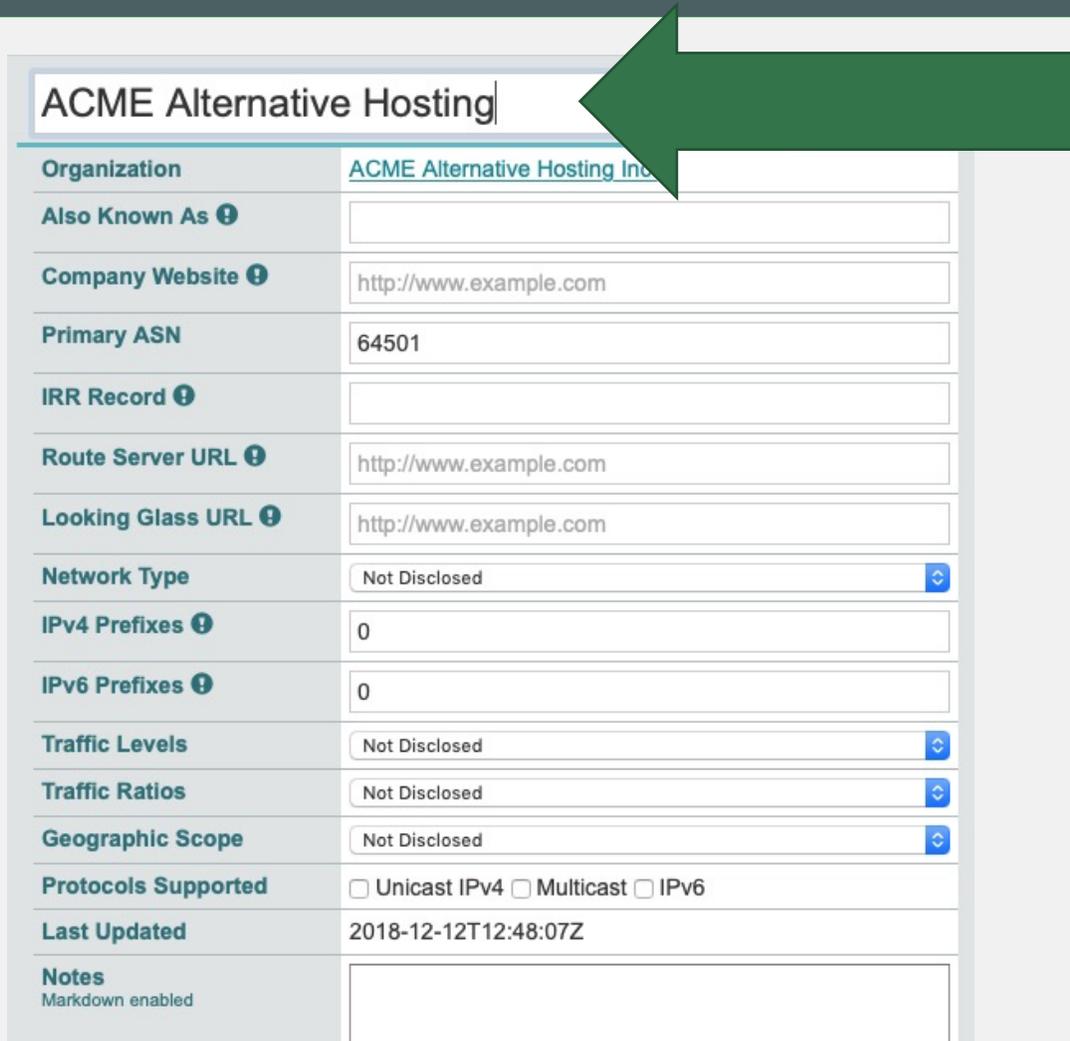
Name ▼	Country	City
Nothing matched your filter You may filter by Name, Country or City		

Networks

Name ▼	ASN
ACME Alternative Hosting	64501



Network Information



ACME Alternative Hosting

Organization	ACME Alternative Hosting Inc
Also Known As ⓘ	
Company Website ⓘ	http://www.example.com
Primary ASN	64501
IRR Record ⓘ	
Route Server URL ⓘ	http://www.example.com
Looking Glass URL ⓘ	http://www.example.com
Network Type	Not Disclosed
IPv4 Prefixes ⓘ	0
IPv6 Prefixes ⓘ	0
Traffic Levels	Not Disclosed
Traffic Ratios	Not Disclosed
Geographic Scope	Not Disclosed
Protocols Supported	<input type="checkbox"/> Unicast IPv4 <input type="checkbox"/> Multicast <input type="checkbox"/> IPv6
Last Updated	2018-12-12T12:48:07Z
Notes	Markdown enabled

- Again, click on „Edit“ (top right)
- Here is a lot of information to enter
- Most is self-explanatory
- But some is not that obvious
 - Title here is your **network name**
 - Does not have to be the same as your company name
 - Some companies run more than one network
 - Or use a different name for their networking business

Peering Information

PeeringDB Configuration

Allow IXP Update ?	<input type="radio"/>
IXP Update Tools	<input type="button" value="Preview"/> <input type="button" value="Postmortem"/>



Peering Policy Information

Peering Policy	
General Policy	Open
Multiple Locations	Not Required
Ratio Requirement	No
Contract Requirement	Not Required

- Now we add information about Peering!
- Important: Allowing IXP Update helps maintaining DB accuracy
- So please allow if you trust your IXPs
 - You trust either all or none

Contact Information

Contact Information

Role ▾	Name	Phone
	Visibility	E-Mail
<input checked="" type="checkbox"/> Abuse	Abuse Desk	
	Public ▾	abuse@acme.example
Role	NOC ▾	
Name	Network Operations	
Email	noc@acme.example	
Phone	+43 1 2341668	
Visibility	Users ▾	

Add Contact

- To inform peers how to contact you
 - In a number of roles
- You can add as many as you need
 - „Add Contact“ to save a contact
 - Public; for logged-in users
- You do not have to fill out all fields
- **Keep contact info up to date**
- **Mandatory if you want to add a connection to an IXP**

Add peering at an IXP

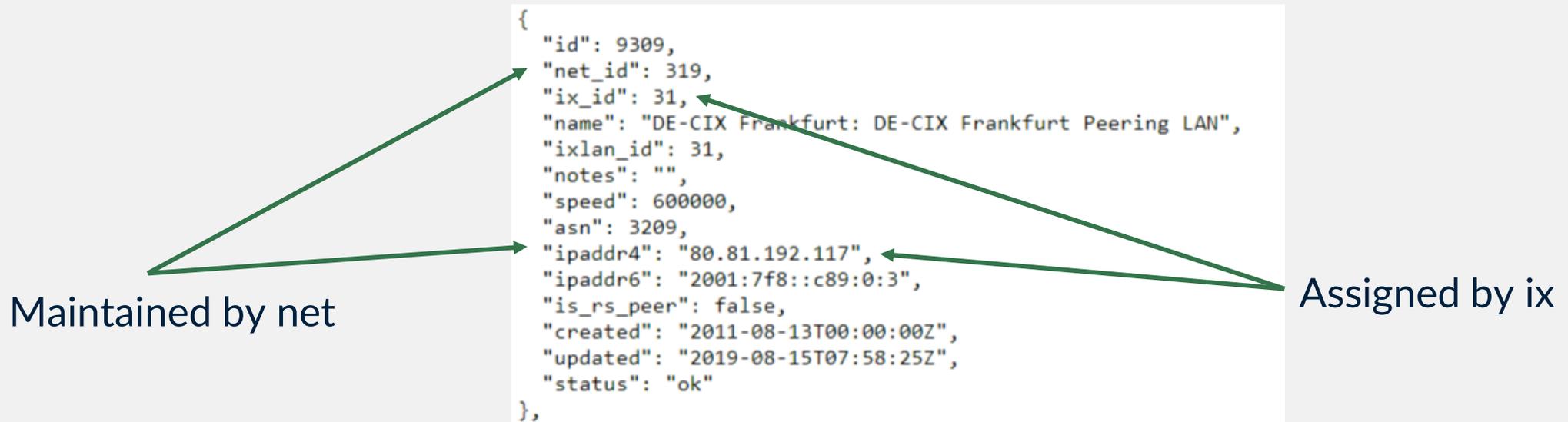
Public Peering Exchange Points

Exchange ▼	IPv4	Speed
ASN	IPv6	RS Peer
Nothing matched your filter You may filter by Exchange, ASN or Speed		
Exchange	<input type="text" value="VIX AT Vienna Internet Exchange"/>	
Local ASN	<input type="text" value="64501"/>	
IPv4	<input type="text" value="192.203.0.222"/>	
IPv6	<input type="text" value="2001:7f8:30:0:1:1:6:fbf5"/>	
Speed (mbit/sec)	<input type="text" value="1000"/>	
RS Peer	<input checked="" type="checkbox"/>	

- Click on „Edit“ at the top right again
- Enter an IXP name in Exchange
 - And select the IXP you are connected to from the list
- Enter speed, IPv4 and IPv6
- Select “RS Peer” if you are peering with the route server
- **Click on „Add Exchange Point“!**
- And then click on „save“.

Data Ownership

- How to resolve conflicts when more than one party is involved?
 - Ex.: netixlan



- A Task Force created a policy document
- Recommendations incorporated in latest releases

Suggested Entries

[Edit](#)

Some exchanges suggest updates to your entries in their peering list.
[Review suggestions](#)

[Cancel](#) [Save](#)

Some exchanges suggest updates to your entries in their peering list.
Expand each exchange below to review, apply or dismiss those suggestions

[LocIX Netherlands](#) 

[Their PeeringDB entry](#) [Auto-resolve](#) [Auto-add](#)

Add	Speed	Options
<input type="text" value="185.1.138.xx"/> <input type="text" value="2a0c:b641:700::xxx:yyy"/>	<input type="text" value="1000"/>	<input checked="" type="checkbox"/> Operational  <input checked="" type="checkbox"/> RS Peer

[Dismiss](#) [Add](#)

- Go to your network page
- Click on „Review suggestions“
- You see a list of IX with suggestions
- Select one
- You have a couple of choices
 - Auto-add: add entry as suggested
 - Auto-resolve: resolve as suggested
 - Dismiss: ignore suggestion

Presence at a datacenter

Private Peering Facilities

Filter

Facility	ASN	Country	City
<input checked="" type="checkbox"/> ITandTEL TechCenter Linz	64501	AT	Linz

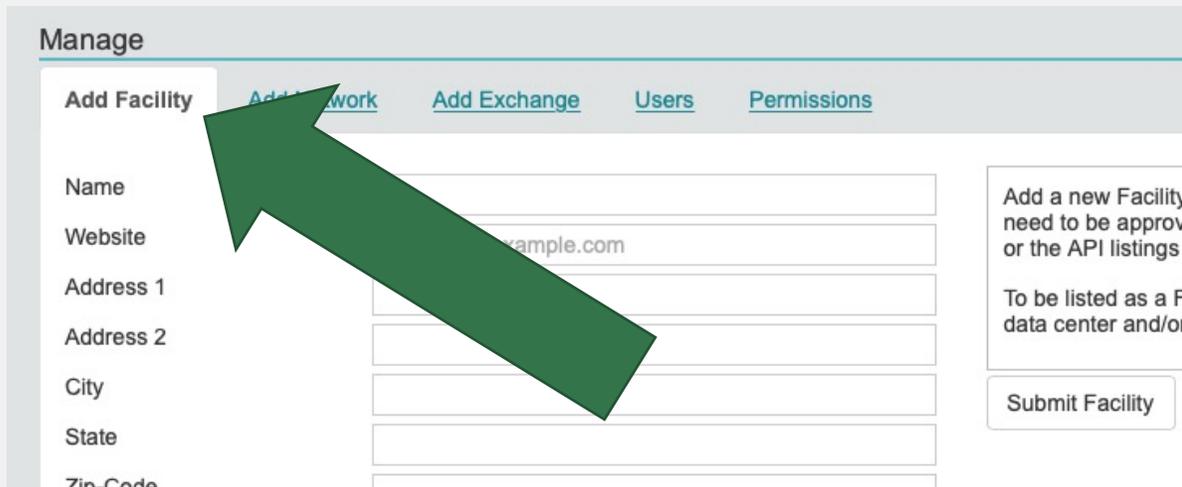
Facility

Klagenfurt

- Kelag Klagenfurt
Arnulfplatz 2
- Klagenfurt Stadtwerke
Gabelsbergerstrasse 50a

- Now again click on „edit“
- Scroll down and enter a city or datacenter name in „Facility“
- Select the facility you are in from the list and....
- ...click on „Add Facility“
- When you have added all facilities click on „Save“

Add your facility

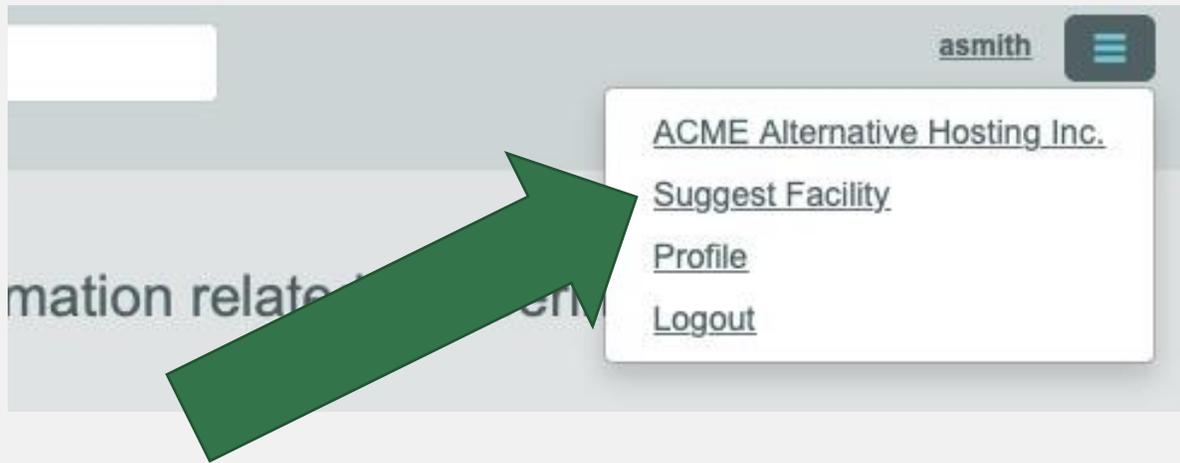


The screenshot shows the 'Manage' section of the PeeringDB interface. It features a navigation bar with links for 'Add Facility', 'Add Network', 'Add Exchange', 'Users', and 'Permissions'. Below this is a form with fields for Name, Website (with 'example.com' as a placeholder), Address 1, Address 2, City, State, and Zip-Code. To the right of the form, there is a note: 'Add a new Facility need to be approve or the API listings' and 'To be listed as a F: data center and/or'. A 'Submit Facility' button is located at the bottom right of the form. A large green arrow points from the bottom left towards the 'Add Facility' button.

- If you run your own datacenter
- Why not add it to PeeringDB?
- Go to your organization page
- Scroll down to „Manage“
- Choose „Add Facility“

Suggesting a facility

- For facilities not your own
- **But you are in or know about**
- Choose „Suggest Facility“
- Is reviewed by PeeringDB staff



Adding users

- You do not have to be the only person working with PeeringDB
- Other users from your organization may also register!
- Users can be „admin“ or „member“
 - The first user automatically will be assigned „admin“ status if authenticated
- Administrators are allowed to edit all fields (of your organization)
- Members rights can be as restrictive or as open as you need them to be

User administration

Manage

[Add Facility](#) [Add Network](#) [Add Exchange](#) **Users** [Permissions](#)

Users requesting affiliation

Name	Email	Date
User	Confirmed	

Currently no users requesting affiliation with ACME Alternative Hosting Inc.

Users in Organization

Name	Email	Group	
User			
Adam Smith asmith	asmith@garf.de	admin	Remove
Wolfgang Tremmel wtremmel	wolfgang.tremmel@de-cix.net	member	Remove

Save

Manage

[Add Facility](#) [Add Network](#) [Add Exchange](#) [Users](#) **Permissions**

Here you can grant permissions to regular members of your organization. Administrative users are not listed here as they have access to everything by default. Additionally, entities that are pending review cannot be permissioned out to users, and will not appear in the entity list.

Wolfgang Tremmel <wolfgang.tremmel@de-cix.net> wtremmel	Create	Update	Delete	
Any Exchange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Add

Save

- Users can be admins or members
- Use the dropdown to change
- For members – you can add permissions
- Use the permissions tab to grant create, update and/or delete to selected of any entities
- Do not forget to „save“ your changes

Removing Users

- Be sure you are logged in as an admin
- Go to your organization page
- Scroll down to the „manage“ section
- Click on the „Users“ tab
- Click on „Remove“ on the right side
- And do not forget to „save“
- The user is only deleted from your organization
- If you want to remove a user completely, email PeeringDB support

Manage

[Add Facility](#) [Add Network](#) [Add Exchange](#) **Users** [Permissions](#)

Users requesting affiliation

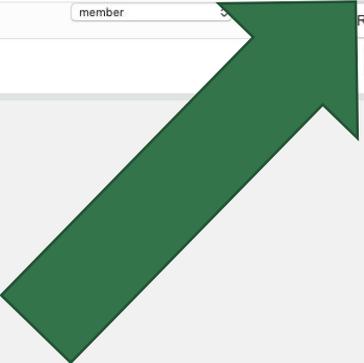
Name	Email	Date
User	Confirmed	

Currently no users requesting affiliation with ACME Alternative Hosting Inc.

Users in Organization

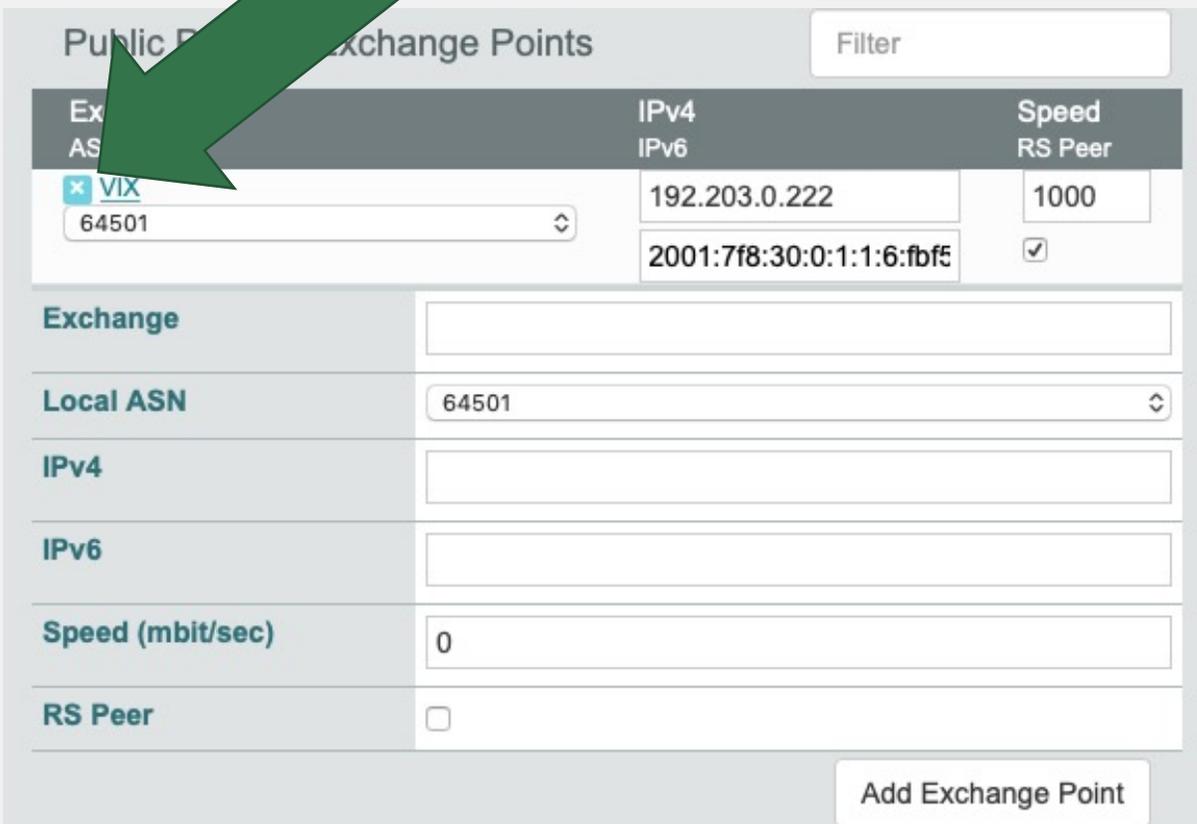
Name	Email	Group	
User			
Adam Smith asmith	asmith@garf.de	admin	Remove
Wolfgang Tremmel wtremmel	wolfgang.tremmel@de-cix.net	member	Remove

Save



More removing...

- If you leave an internet exchange:
 - please remove your peering IP addresses
- Go to your network page
- Click on „Edit“ (top right)
- Click on the  beside the entry of the exchange
- Confirm and do not forget to „Save“



Public Internet Exchange Points

Exchange	AS	IPv4	IPv6	Speed	RS Peer
 VIX	64501	192.203.0.222	2001:7f8:30:0:1:1:6:fbf5	1000	<input checked="" type="checkbox"/>

Exchange

Local ASN

IPv4

IPv6

Speed (mbit/sec)

RS Peer

More removing...

- Facilities, Contacts, all the same
- Click on „Edit“
- Click on the remove symbol at the entry
- Click on “Save“

Contact Information

Role ▼	Name	Visibility
<input checked="" type="checkbox"/> Abuse	Abuse Desk	Public

Role

Private Peering Facilities

Facility ▼
ASN

<input checked="" type="checkbox"/> ITandTEL TechCenter Linz	64501
<input checked="" type="checkbox"/> Klagenfurt Stadtwerke	64501

Facility

Removing – more information

- Objects are only *marked deleted*, but stay in the DB
 - *Facilities and IXes only can be removed if they don't have participants*
- **You cannot simply re-add them**
- Please contact support@peeringdb.com if you need help



Facilities		Filter
Name ▼	Country City	
<input checked="" type="checkbox"/> ACME Alternative Datacenter	Austria Vienna	

Networks		Filter
Name ▼	ASN	
<input checked="" type="checkbox"/> ACME Alternative Hosting	64501	

Removing your organization

- If you dissolve your organization
 - You first have to „empty“ your IXes and Facilities
- Please contact support@peeringdb.com if you need help

Manage

Add Facility

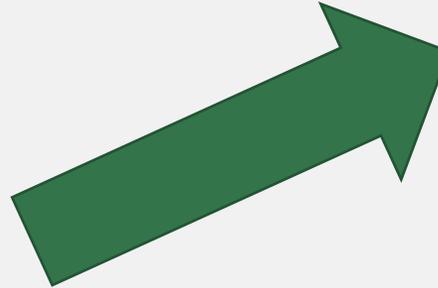
[Add Network](#)

[Add Exchange](#)

[Users](#)

[Permissions](#)

[Delete Organization](#)





PeeringDB

The PeeringDB API

Introduction

- Why API (Application Programming Interface)?
 - The GUI is nice for human beings
 - Automation needs structured data
- Makes it easy to integrate PeeringDB in your environment

jq

- Light-weight and flexible command-line processor
- awk, sed and grep equivalent to JSON data
- A jq program is a filter
 - Needs an input and produces an output
 - Maybe piped
 - Looks weird sometimes, like „add/length“ produces average of an array
 - Simplest filter is „.“ which is the Identity
 - Maybe used to pretty print JSON output
- See <https://stedolan.github.io/jq/manual> for an introduction
- EX: `curl -sG https://peeringdb.com/api/org --data-urlencode fields=id | jq -c '[.data[] | .id] | length'`

JSON

- Open standard file format
- Short for JavaScript Object Notation
- Filenames use the extension .json
- Language independent data format
- Basic data types
 - Number
 - String
 - Boolean
 - Array
 - Object
 - null

```
{
  "firstName": "John",
  "lastName": "Smith",
  "isAlive": true,
  "age": 27,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021-3100"
  },
  "phoneNumbers": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
    {
      "type": "office",
      "number": "646 555-4567"
    },
    {
      "type": "mobile",
      "number": "123 456-7890"
    }
  ],
  "children": [],
  "spouse": null
}
```

Basics

- In general <https://peeringdb.com/api/OBJ>
 - OBJ is case insensitive
 - So called endpoint: /api/OBJ
- Output always fits in one object
 - Meta is optional
 - Data always an array

```
{  
  meta:  
    {  
      status:  
      message:  
    }  
  data:  
    [  
      {},  
      {}  
    ]  
}
```

Authentication

- Authentication
 - basic HTTP authorization
 - API keys
- Guest access does not need any authentication
- Examples
 - `curl -sG https://username:password@peeringdb.com/api/poc`
 - `curl -u username:password https://peeringdb.com/api/poc`
- Recap: only access to contact information may be restricted
 - Endpoint `/api/poc`
 - You need to be authenticated to view objects with visibility „Users“

Operations

- All HTML operations are supported
 - GET
 - Requests a representation of the specified resource
 - POST
 - Used to submit an entity to the specified resource
 - PUT
 - Replaces all current representations of the target resource with the request payload
 - DELETE
 - Deletes the specified resource

Nested Data / Depth

- Of type OBJ_set
- Example: *net_set* will hold network objects
- Depth (for endpoint /api/OBJ)
 - 0: don't expand anything (default)
 - 1: expand all first level sets to ids
 - 2: expand all first level sets to objects
- Depth (for endpoint /api/OBJ/id)
 - 0: don't expand anything
 - 1-4: expand all sets and related objects according to level of depth specified
 - 2 is default

Query modifiers

- numeric fields
 - `__lt`: less than
 - `__lte`: less than equal
 - `__gt`: greater than
 - `__gte`: greater than equal
 - `__in`: value inside set of values (comma separated)
- string fields
 - `__contains`: field value contains this value
 - `__startswith`: field value starts with this value
 - `__in`: value inside set of values (comma separated)

Object Types

- Basic Objects
 - org, fac, ix, net, poc, as_set
- Derived Objects
 - ixfac, ixlan, ixpfx, netixlan, netfac

Basic Objects

- org
 - Root object for fac, ix, net
 - Holds information about organisation
- fac
 - Describes a facility / colocation record
 - More useful information are in derived records netfac
- ix
 - Describes an Internet Exchange
 - More useful information are in derived records ixlan, ixpfx and netixlan
- net
 - Describes a network / ASN
 - More useful information are in netfac and netixlan
- poc
 - Describes various role accounts (point of contact)
 - Currently only for net objects
- as_set
 - Array of all AS-SETs corresponding to a network / ASN
 - Only introduced recently

Derived Objects

- **ixfac**
 - Describes the presence of an IX in a facility
- **ixlan**
 - Describes the LAN of an IX
 - Will go away with PeeringDB 3.0. Hence, already tightly coupled to ix
- **ixpfx**
 - Describes the IP range (IPv4 and IPv6) for an ixlan
 - One ixlan may have multiple ixpfx, both for IPv4 and IPv6
- **netixlan**
 - Describes the presence of a network at an IX
- **netfac**
 - Describes the presence of a network at a facility

Examples

```
# Fetch asn, ipaddr4, ipaddr6, speed from all peers at an IXP. Then fetch correspondent Technical Contacts  
#  
IXPID=986
```

```
curl -sG https://peeringdb.com/api/netixlan?ix\_id=\$IXPID > tmp0  
jq -r '.data[] | .net_id, .asn, .ipaddr4, .ipaddr6, .speed' tmp0 | paste - - - - - > tmp1
```

```
# For the poc we need the net_ids of the ASN. The API allows to query all poc at once by providing all net_ids  
NETIDLST=$(jq -r '[.data[] | .net_id ] | unique | @csv' tmp0)
```

```
curl -snG https://peeringdb.com/api/poc?net\_id\_\_in=\$NETIDLST | jq -r '.data[] | select (((.role ==  
"Technical") or (.role == "Policy")) and (.email != "")) | .net_id, .email, .role' | paste - - - | sort -mu >  
tmp2
```

```
# Merging poc data and connection data is left as an exercise
```