



**PeeringDB**

# The PeeringDB API

Tutorial Presentation // Part I

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# Agenda

- Introduction
- JSON
- HTML Operations
- Record Types
  - Basic Records
  - Derived Records

# 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

# 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 via basic HTTP authorization
- 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`
  - Put credentials in `~/.netrc`
    - `machine peeringdb.com login username password password`
- Recap: only access to contact information may be restricted
  - Endpoint `/api/poc`

# 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

# GET

- GET
  - Multiple objects
    - Endpoint /api/OBJ
  - Single object
    - Endpoint /api/OBJ/id



# Optional URL parameters for GET

- limit
  - Integer value
  - Limits to n rows in the result set
- skip
  - Integer value
  - Skips n rows in the result set
- depth
  - Integer value
  - Nested sets will be loaded
  - See Nesting slide

# Optional URL parameters for GET

- **fields**
  - String value
  - comma separated list of field names
  - only matching fields will be returned in the data
- **since**
  - Integer value
  - Retrieve all objects updated since specified time
  - Unix timestamp in seconds
- ***fieldname***
  - Integer or string value
  - Queries for fields with matching value

# 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 (default)
  - 1-4: expand all sets and related objects according to level of depth specified

# 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)

# POST

- Used to create an object
- Endpoint `/api/OBJ`
- Required parameters
  - Depending on OBJ
  - For *org* you need the *name*
  - For *fac*, *ix*, *net* you need the *org\_id*
  - for *fac* you need the *name*
  - For *ix* you need the *name*
  - For *net* you need the *asn*
- Example
  - `curl -sn -X POST -H "Content-Type: application/json" -d @22106.json \ https://tutorial.peeringdb.com/api/org`

```
{  
  "name": "Org-22106"  
}
```

File 22106.json

# PUT

- Used to edit object
- Endpoint /api/OBJ/id
- Updates data in OBJ/id

```
{  
    "name": "Org-22106",  
    "address1": "23 Mulholland Drive",  
    "city": "Los Angeles",  
    "country": "US"  
}
```

File 22106.json

- Example
  - `curl -sn -X PUT -H "Content-Type: application/json" -d @22106.json \`  
`https://tutorial.peeringdb.com/api/org/22114`
- Operation of PUT is idempotent

# DELETE

- Used to delete objects
- Endpoint /api/OBJ/id
- Example
  - `curl -sn -X DELETE -H "Content-Type: application/json" \ https://tutorial.peeringdb.com/api/org/22114`

# Object Types

- Basic Objects
  - org, fac, ix, net, poc, as\_set
- Derived Objects
  - 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

- ixlan
  - Describes the LAN of an IX
  - One IX may have multiple ixlan
  - May go away with PeeringDB 3.0
- ixpfx
  - Describes the IP range (IPv4 and IPv6) for an ixlan
  - One ixlan may have multiple ixpfx
- netixlan
  - Describes the presence of a network at an IX
- netfac
  - Describes the presence of a network at a facility

# GUI to API // org

- <https://peeringdb.com/org/1187>
- Add pretty and depth for human friendly output
- <https://peeringdb.com/api/org/1187>
- [https://peeringdb.com/api/fac?org\\_id=1187](https://peeringdb.com/api/fac?org_id=1187)
- [https://peeringdb.com/api/net?org\\_id=1187](https://peeringdb.com/api/net?org_id=1187)
- [https://peeringdb.com/api/ix/org\\_id=1187](https://peeringdb.com/api/ix/org_id=1187)

DE-CIX Management GmbH <span>Platinum Sponsor</span>	
Website	<a href="https://de-cix.net">https://de-cix.net</a>
Address 1	Lindleystr. 12
Address 2	
Location	Frankfurt am Main, Hessa, 60314
Country Code	DE
Notes	

**org**

[Edit](#)

Facilities <input type="text" value="Filter"/>	
Name ▼	Country City
<b>fac</b>	No filter matches. You may filter by <b>Name</b> , <b>Country</b> or <b>City</b> .

Networks <input type="text" value="Filter"/>	
Name ▼	ASN
<a href="#">DE-CIX Academy Educational Network</a>	196610
<a href="#">DE-CIX Dallas Route Servers</a>	62499
<a href="#">DE-CIX Dusseldorf Route Servers</a>	56890
<a href="#">DE-CIX Frankfurt Route Servers</a>	6695
<a href="#">DE-CIX Hamburg Route Servers</a>	43252
<a href="#">DE-CIX Istanbul Route Servers</a>	20715
<a href="#">DE-CIX Lisbon Route Servers</a>	43729
<a href="#">DE-CIX Madrid Route Servers</a>	48793
<a href="#">DE-CIX Management GmbH</a>	51531
<a href="#">DE-CIX Marseille Route Servers</a>	20717
<a href="#">DE-CIX Munich Route Servers</a>	47228
<a href="#">DE-CIX New York Route Servers</a>	63034
<a href="#">DE-CIX Palermo Route Servers</a>	25083
<a href="#">DE-CIX R&amp;D Measurement</a>	205530
<a href="#">DE-CIX VoIP</a>	57769

**net**

Exchanges <input type="text" value="Filter"/>	
Name ▼	Country City
<a href="#">DE-CIX Dallas</a>	United States of America Dallas
<a href="#">DE-CIX Dusseldorf</a>	Germany Dusseldorf
<a href="#">DE-CIX Frankfurt</a>	Germany Frankfurt

**ix**

# GUI to API // fac

- <https://peeringdb.com/fac/752>

- Add pretty and depth for human friendly output

- <https://peeringdb.com/api/fac/752>

- [https://peeringdb.com/api/ixfac?fac\\_id=752](https://peeringdb.com/api/ixfac?fac_id=752)

- [https://peeringdb.com/api/netfac?fac\\_id=752](https://peeringdb.com/api/netfac?fac_id=752)

## euNetworks Colocation Hamburg

Edit

Organization	euNetworks Group
Website	<a href="http://www.euNetworks.com">http://www.euNetworks.com</a>
Address 1	Wendenstraße 408
Address 2	
Location	Hamburg, , 20537
Country Code	DE
Geocode	Updated geocode data for this entity will be obtained shortly
CLLI Code	
NPA-NXX	
Notes	

fac

Peer Name	ASN
<a href="#">euNetworks Group</a>	13237
<a href="#">LWL.com GmbH</a>	50629
<a href="#">OMCnet Internet Service GmbH</a>	15388
<a href="#">Vodafone Global Network</a>	1273
<a href="#">Vodafone Kabel Deutschland GmbH</a>	31334

netfac

Exchange	Long Name	Networks
<a href="#">DE-CIX Hamburg</a>	Deutscher Commercial Internet Exchange Hamburg	104
<a href="#">ECIX-HAM</a>	European Commercial Internet Exchange Hamburg	60


ixfac



# GUI to API // net

- <https://peeringdb.com/net/13251>
- Add pretty and depth for human friendly output
- <https://peeringdb.com/api/net/13251>
- [https://peeringdb.com/api/poc?net\\_id=13251](https://peeringdb.com/api/poc?net_id=13251)
- [https://peeringdb.com/api/netixlan?net\\_id=31](https://peeringdb.com/api/netixlan?net_id=31)
- OR <https://peeringdb.com/api/netixlan?asn=196610>
- [https://peeringdb.com/api/netfac?net\\_id=13251](https://peeringdb.com/api/netfac?net_id=13251)
- OR [https://peeringdb.com/api/netfac?local\\_asn=196610](https://peeringdb.com/api/netfac?local_asn=196610)

### DE-CIX Academy Educational Network Platinum Sponsor

net


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

Organization	DE-CIX Management GmbH
Also Known As	DE-CIX
Company Website	<a href="http://www.de-cix.net/academy">http://www.de-cix.net/academy</a>
Primary ASN	196610
IRR as-set/route-set	AS196610:AS-DECIX-ACADEMY
Route Server URL 	
Looking Glass URL 	
Network Type	Educational/Research
IPv4 Prefixes	1
IPv6 Prefixes	5
Traffic Levels	0-20 Mbps
Traffic Ratios	Balanced
Geographic Scope	Regional
Protocols Supported	<input checked="" type="checkbox"/> Unicast IPv4 <input type="checkbox"/> Multicast <input type="checkbox"/> IPv6
Last Updated	2019-02-15T12:19:05Z
Notes	<ul style="list-style-type: none"><li>• We only peer with the route servers</li><li>• Any peering request you send will be used for educational purposes</li></ul>

PeeringDB Configuration

Allow IXP Update

Peering Policy Information







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

Contact Information

Role	Name	Phone	E-Mail
Abuse	DE-CIX Abuse Department		abuse@de-cix.net
NOC	DE-CIX 24/7 NOC	+49 69 1730 902 11	

### netixlan

Public Peering Exchange Points

Exchange ASN	IPv4 IPv6	Speed RS Peer
DE-CIX Dusseldorf DE-CIX Dusseldorf Peering LAN 196610	185.1.58.105 2001:7f8:9e:0:3:2:0:1	100M 
DE-CIX Frankfurt DE-CIX Frankfurt Peering LAN 196610	80.81.196.61 2001:7f8::3:2:0:1	1G 
DE-CIX Hamburg DE-CIX Hamburg Peering LAN 196610	80.81.203.11 2001:7f8:3d:0:3:2:0:1	100M 
DE-CIX Munich DE-CIX Munich Peering LAN 196610	80.81.202.115 2001:7f8:44:0:3:2:0:1	100M 
DE-CIX New York DE-CIX New York Peering LAN 196610	206.82.104.220 2001:504:36:0:3:2:0:1	100M 
MSK-IX Moscow MSK-IX peering network 196610	195.208.210.43 2001:7f8:20:101::210:43	

Private Peering Facilities

Facility ASN	Country City
Interxion Frankfurt (FRA1-12) 196610	Germany Frankfurt

netfac

poc

# GUI to API // ix

- <https://peeringdb.com/ix/31>
- Add pretty and depth for human friendly output
- <https://peeringdb.com/api/ix/31>
- [https://peeringdb.com/api/ixlan?ix\\_id=31](https://peeringdb.com/api/ixlan?ix_id=31)
- [https://peeringdb.com/api/ixpfx?ixlan\\_id=31](https://peeringdb.com/api/ixpfx?ixlan_id=31)
- [https://peeringdb.com/api/ixfac?ix\\_id=31](https://peeringdb.com/api/ixfac?ix_id=31)
- [https://peeringdb.com/api/netixlan?ix\\_id=31](https://peeringdb.com/api/netixlan?ix_id=31)

## 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
Protocols Supported	<input checked="" type="radio"/> Unicast IPv4 <input type="radio"/> Multicast <input checked="" type="radio"/> IPv6
Notes	For peering with the DE-CIX Frankfurt route servers, please see: <a href="#">DE-CIX Frankfurt Route Servers</a>

Contact Information	<b>ix</b>
Company Website	<a href="https://fra.de-cix.net">https://fra.de-cix.net</a>
Traffic Stats Website	<a href="https://www.de-cix.net/en/locations/germany/frankfurt/statistics">https://www.de-cix.net/en/locations/germany/frankfurt/statistics</a>
Technical Email	<a href="mailto:support@de-cix.net">support@de-cix.net</a>
Technical Phone	+49 69 1730 902 11
Policy Email	<a href="mailto:sales@de-cix.net">sales@de-cix.net</a>
Policy Phone	+49 69 1730 902 12

LANs <span>Filter</span>		
Name	DOT1Q	MTU
DE-CIX Frankfurt Peering LAN	<input type="radio"/>	1500
<input type="radio"/> Enable IX-F Import <b>ixlan</b> <span>Preview</span>		

IPv4	80.81.192.0/21	<b>ixpfx</b>
IPv6	2001:7f8::/64	

Local Facilities <span>Filter</span>		
Facility	Country	City
<a href="#">COLT DC Frankfurt</a>	Germany	Frankfurt
<a href="#">Digital Realty FRA (Lyoner Strasse)</a>	Germany	Frankfurt am Main
<a href="#">Digital Realty FRA (Wilhelm-Fay-</a>	Germany	Frankfurt am

## Peers at this Exchange Point Filter

Peer Name ASN	IPv4 IPv6	Speed Policy
<a href="#">Vodafone Germany</a> DE-CIX Frankfurt Peering LAN 3209	80.81.192.117 2001:7f8::c89:0:3	600G Selective
<a href="#">Vodafone Germany</a> DE-CIX Frankfurt Peering LAN 3209	80.81.193.117 2001:7f8::c89:0:4	600G Selective
<a href="#">1&amp;1 Versatel Deutschland GmbH</a> DE-CIX Frankfurt Peering LAN 8881	80.81.193.80 2001:7f8::22b1:193:80	500G Selective
<a href="#">1&amp;1 Versatel Deutschland GmbH</a> DE-CIX Frankfurt Peering LAN 8881	80.81.195.188 2001:7f8::22b1:0:1	500G Selective
<a href="#">Akamai Technologies</a> DE-CIX Frankfurt Peering LAN 20940	80.81.192.28 2001:7f8::51cc:0:28	400G Open
<a href="#">Amazon.com</a> DE-CIX Frankfurt Peering LAN 16509	80.81.194.152 2001:7f8::407d:0:1	400G Selective
<a href="#">Amazon.com</a> DE-CIX Frankfurt Peering LAN 16509	80.81.195.152 2001:7f8::407d:0:2	400G Selective
<a href="#">Cloudflare</a> DE-CIX Frankfurt Peering LAN 13335	80.81.194.180 2001:7f8::3417:0:1	400G Open
<a href="#">Facebook Inc</a> DE-CIX Frankfurt Peering LAN	80.81.194.40 2001:7f8::80a6:0:1	400G Selective

**netixlan**

**ixfac**

# Basic records in detail // ix and org

```
"data": [  
  {  
    "id": 31,  
    "org_id": 1187,  
    "name": "DE-CIX Frankfurt",  
    "name_long": "Deutscher Commercial Internet Exchange",  
    "city": "Frankfurt",  
    "country": "DE",  
    "region_continent": "Europe",  
    "media": "Ethernet",  
    "notes": "For peering with the DE-CIX Frankfurt route servers, please see:\n\n[DE  
    "proto_unicast": true,  
    "proto_multicast": false,  
    "proto_ipv6": true,  
    "website": "https://fra.de-cix.net",  
    "url_stats": "https://www.de-cix.net/en/locations/germany/frankfurt/statistics",  
    "tech_email": "support@de-cix.net",  
    "tech_phone": "+49 69 1730 902 11",  
    "policy_email": "sales@de-cix.net",  
    "policy_phone": "+49 69 1730 902 12",  
    "net_count": 805,  
    "created": "2010-07-29T00:00:00Z",  
    "updated": "2018-06-19T11:53:46Z",  
    "status": "ok"  
  }  
]
```

```
"data": [  
  {  
    "id": 1187,  
    "name": "DE-CIX Management GmbH",  
    "website": "https://de-cix.net",  
    "notes": "",  
    "address1": "Lindleystr. 12",  
    "address2": "",  
    "city": "Frankfurt am Main",  
    "country": "DE",  
    "state": "Hessia",  
    "zipcode": "60314",  
    "created": "2006-11-01T23:37:13Z",  
    "updated": "2017-07-02T00:03:27Z",  
    "status": "ok"  
  }  
]
```

# Basic records in detail // fac

```
"data": [  
  {  
    "id": 752,  
    "org_id": 8540,  
    "org_name": "euNetworks Group",  
    "name": "euNetworks Colocation Hamburg",  
    "website": "http://www.euNetworks.com",  
    "clli": "",  
    "rencode": "",  
    "npanxx": "",  
    "notes": "",  
    "net_count": 5,  
    "latitude": null,  
    "longitude": null,  
    "created": "2010-07-29T00:00:00Z",  
    "updated": "2019-09-25T22:00:34Z",  
    "status": "ok",  
    "address1": "Wendenstra\u00dfe 408",  
    "address2": "",  
    "city": "Hamburg",  
    "country": "DE",  
    "state": "",  
    "zipcode": "20537"  
  }  
]
```



# Basic records in detail // net and poc

```
"data": [  
  {  
    "id": 13251,  
    "org_id": 1187,  
    "name": "DE-CIX Academy Educational Network",  
    "aka": "DE-CIX",  
    "website": "http://www.de-cix.net/academy",  
    "asn": 196610,  
    "looking_glass": "",  
    "route_server": "",  
    "irr_as_set": "AS196610:AS-DECIX-ACADEMY",  
    "info_type": "Educational/Research",  
    "info_prefixes4": 1,  
    "info_prefixes6": 5,  
    "info_traffic": "0-20 Mbps",  
    "info_ratio": "Balanced",  
    "info_scope": "Regional",  
    "info_unicast": true,  
    "info_multicast": false,  
    "info_ipv6": true,  
    "notes": "* We only peer with the route servers\n* Any peering request you send will be used for educational purposes",  
    "policy_url": "",  
    "policy_general": "Open",  
    "policy_locations": "Not Required",  
    "policy_ratio": false,  
    "policy_contracts": "Not Required",  
    "created": "2017-04-20T19:44:59Z",  
    "updated": "2019-02-15T12:19:05Z",  
    "status": "ok"  
  }  
]
```

```
{  
  "id": 25826,  
  "net_id": 13251,  
  "role": "Policy",  
  "visible": "Users",  
  "name": "Wolfgang Tremmel",  
  "phone": "",  
  "email": "academy@de-cix.net",  
  "url": "",  
  "created": "2018-07-24T09:26:21Z",  
  "updated": "2018-07-24T09:26:21Z",  
  "status": "ok"  
},
```

# Basic records in detail // as\_set

```
{
  "meta": {},
  "data": [
    {
      "196610": "AS196610:AS-DECIX-ACADEMY",
      "262150": "AR-EPEC2-LACNIC",
      "393223": "AS-CWICA",
      "32780": "AS-HSI",
      "196621": "AS196621:AS-CUSTOMERS",
      "327698": "AS-327698",
      "32787": "AS-PROLE",
      "327700": "AFRINIC",
      "32798": "RS-USCS-ALL",
      "5467": "AS-MIPT",
      "32806": "AS27822",
      "32808": "AS-UTBB",
      "42": "AS-PCH",
      "262189": "LACNIC",
      "46": "AS-RUTGERS",
      "262195": "AS-ITXAR1",
      "393269": "AS-DAILYMOTIONUS",
      "57": "AS-NLG-PARTICIPANTS",
      "327740": "ORG-TA38-AFRINIC",
      "62": "AS-C1",
      "393280": "AS393280 in Level3",
      "72": "AS-SLB",
      "327754": "AS-RMS-Powertronics",
      "327693": "AfrinIC::AS-ECHOSP/RS-ECHOSP",
      "81": "AS-MCDEM@APTIN"
```

```
{
  "meta": {},
  "data": [
    {
      "42": "AS-PCH"
    }
  ]
}
```

# Derived records in detail // ixfac, ixlan and ixpfx

```
"data": [  
  {  
    "id": 41,  
    "ix_id": 26,  
    "fac_id": 63,  
    "created": "2010-07-29T00:00:00Z",  
    "updated": "2016-03-14T20:33:57Z",  
    "status": "ok"  
  }  
]
```

```
{  
  "id": 31,  
  "ix_id": 31,  
  "name": "DE-CIX Frankfurt Peering LAN",  
  "descr": "",  
  "mtu": 1500,  
  "dot1q_support": false,  
  "rs_asn": 0,  
  "arp_sponge": null,  
  "created": "2010-07-29T00:00:00Z",  
  "updated": "2018-07-08T10:22:35Z",  
  "status": "ok"  
}
```

```
{  
  "id": 312,  
  "ixlan_id": 31,  
  "protocol": "IPv6",  
  "prefix": "2001:7f8::/64",  
  "created": "2011-06-22T00:00:00Z",  
  "updated": "2016-03-14T21:57:28Z",  
  "status": "ok"  
}
```

# Derived records // netfac and netixlan

```
{  
  "id": 30451,  
  "name": "Interxion Frankfurt (FRA1-13)",  
  "city": "Frankfurt",  
  "country": "DE",  
  "net_id": 13251,  
  "fac_id": 58,  
  "local_asn": 196610,  
  "created": "2018-07-24T09:25:24Z",  
  "updated": "2018-07-24T09:25:24Z",  
  "status": "ok"  
}
```

```
{  
  "id": 163,  
  "net_id": 5,  
  "ix_id": 31,  
  "name": "DE-CIX Frankfurt: DE-CIX Frankfurt Peering LAN",  
  "ixlan_id": 31,  
  "notes": "",  
  "speed": 20000,  
  "asn": 3303,  
  "ipaddr4": "80.81.193.183",  
  "ipaddr6": "2001:7f8::ce7:0:2",  
  "is_rs_peer": true,  
  "created": "2010-07-29T00:00:00Z",  
  "updated": "2019-01-18T11:19:59Z",  
  "status": "ok"  
},
```