

# **PEERING** MANAGER

**pyixapi - from feature to library**

# What's IX-API?

- API for IXP – thanks captain obvious
- Define a common standard for IXP to manage/track/record the services it provides
- Allow customers to consume data to enrich their own
- More details at <https://ix-api.net/>

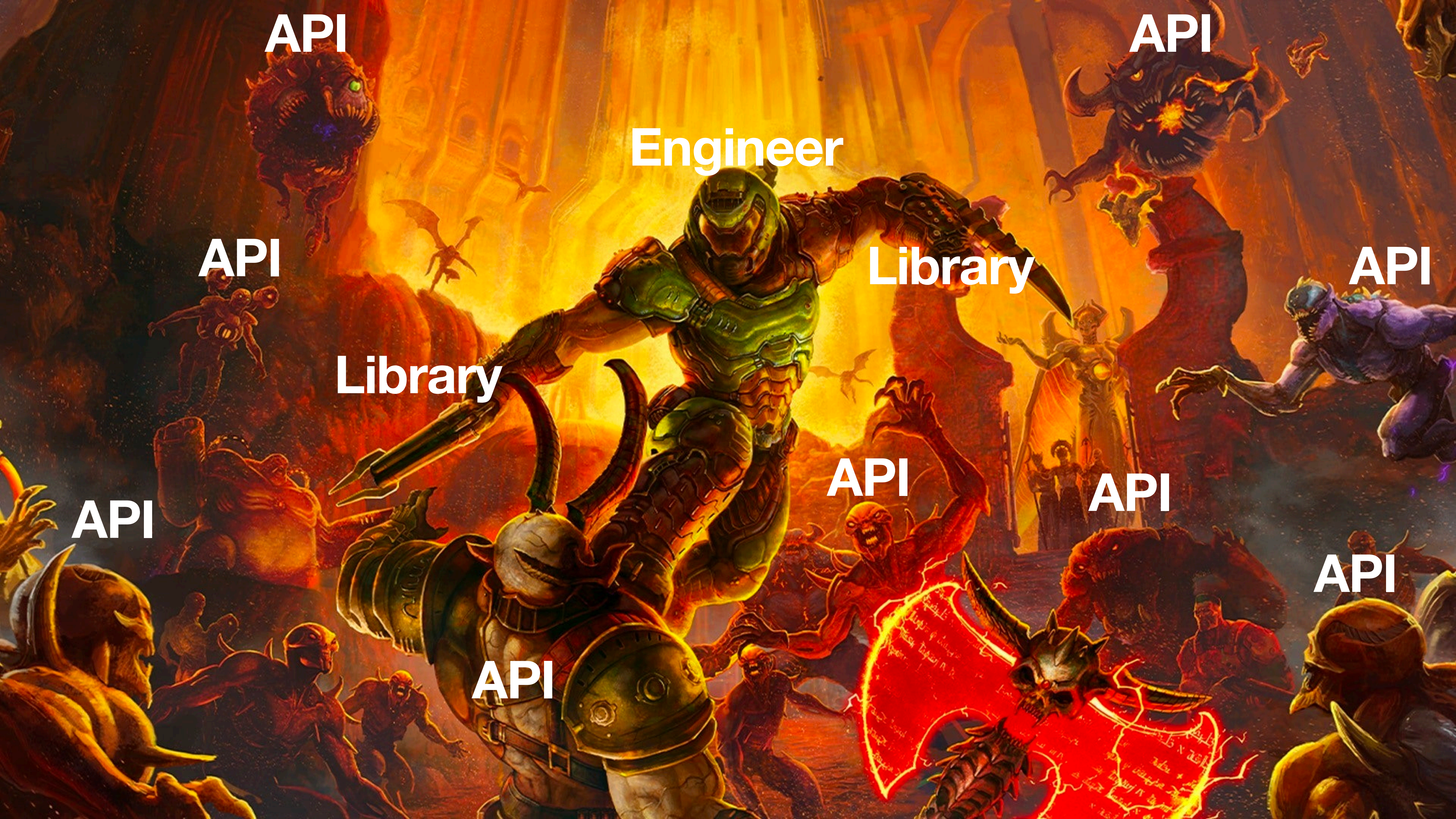
# Why IX-API For Peering Manager?

- Enrich existing data about IXPs and connections with what IXPs know
- Auto-discovery of new connections once setup by the IXP
- Auto-provisioning of new connections when ready
- Auto-discovery of available services on an IXP network

# How It Was Implemented

- Very specific code to perform operations inside Peering Manager
  - Poorly designed
  - Not generic at all
  - Difficult to test
  - Need to be opt-in and not opt-out feature
- Code was not really belonging in the PM code base (maintainer's feeling)





API

API

Engineer

API

Library

API

Library

API

API

API

API

API



# Felt Like A Standalone Library

- Existing client: <https://gitlab.com/ix-api/ix-api-client-python>
- Code can be more IX-API operations focused
- Easier to maintain
- Can benefit the community by being a common base for several projects
- Available on PyPI: <https://pypi.org/project/pyixapi/>

# Try To Be Friendly To Dev

- Authentication function that takes care of JWT tokens
- All endpoints are properties of the API object
- Simple methods to interact with endpoints:

`all()` | `filter(...)` | `get(...)`

- Map objects attributes to properties

# Example Of Friendliness

```
from pyixapi import api

ixapi = api(
    "https://api.de-cix.net/api/v1/",
    "<this is a key>",
    "<this is a secret>",
)

authentication = ixapi.authenticate()
print(ixapi.version) # this will fire a request

# all() and filter() return iterables
for config in ixapi.network_service_configs.all():
    print(config.ips)
```



# Existing Implementation

- Peering Manager IX-API operations will use pyixapi
- Rewrite has been done for read-only operations
  - Discover connections
  - Discover network features (route servers, ...)
- A new operation is coming to life, change your MAC address
  - Set the new MAC address in Peering Manager
  - Peering Manager will propose to propagate it to the IXP via IX-API
  - IXP gets its access list updated with the new MAC address

Endpoint	
IX-API	<a href="#">DE-CIX</a>

Network service	
Service ID	DXDB:PS:1
Product	DE-CIX Frankfurt
Name	Standard Peering Service Frankfurt
Metro area	FRA
Features	<a href="#">Show</a>

DXDB:PAS:30431 - Production	
Outer VLAN	401
IPv6 address	2001:7f8::89d0:0:1/64
IPv4 address	80.81.193.10/21
MAC address	94:f7:ad:58:87:81

✓ Configured

i Info
 </> Config Context
↻ Changelog

**Details** ✓

Status	<span style="background-color: #28a745; color: white; padding: 2px 5px; border-radius: 3px;">Enabled</span>	
VLAN	—	
MAC address	1c:b8:5f:c0:d0:28	<a href="#" style="background-color: #007bff; color: white; padding: 2px 5px; border-radius: 3px;">↔ Update IX-API</a>
IPv6 address	2001:7f8::89d0:0:1/64	
IPv4 address	80.81.193.10/21	
IXP	<a href="#">DE-CIX Frankfurt</a>	
Router	—	Different MAC addresses, propose to update IX-API
Interface	—	
Description	—	

**IX-API** ✓

Identifier	DXDB:PAS:30431
State	Production
Outer VLAN	401
IPv6 address	2001:7f8::89d0:0:1/64
IPv4 address	80.81.193.10/21
MAC address	94:f7:ad:58:87:81

Service
DXDB:PS:1

Available Features				×
Route Server Service RS1 FRA IPV4	AS6695	rs1.fra.de-cix.net	*	
Route Server Service RS2 FRA IPV4	AS6695	rs2.fra.de-cix.net	*	
Route Server Service RS1 FRA IPV6	AS6695	rs1.fra.de-cix.net	*	
Route Server Service RS2 FRA IPV6	AS6695	rs2.fra.de-cix.net	*	

Close

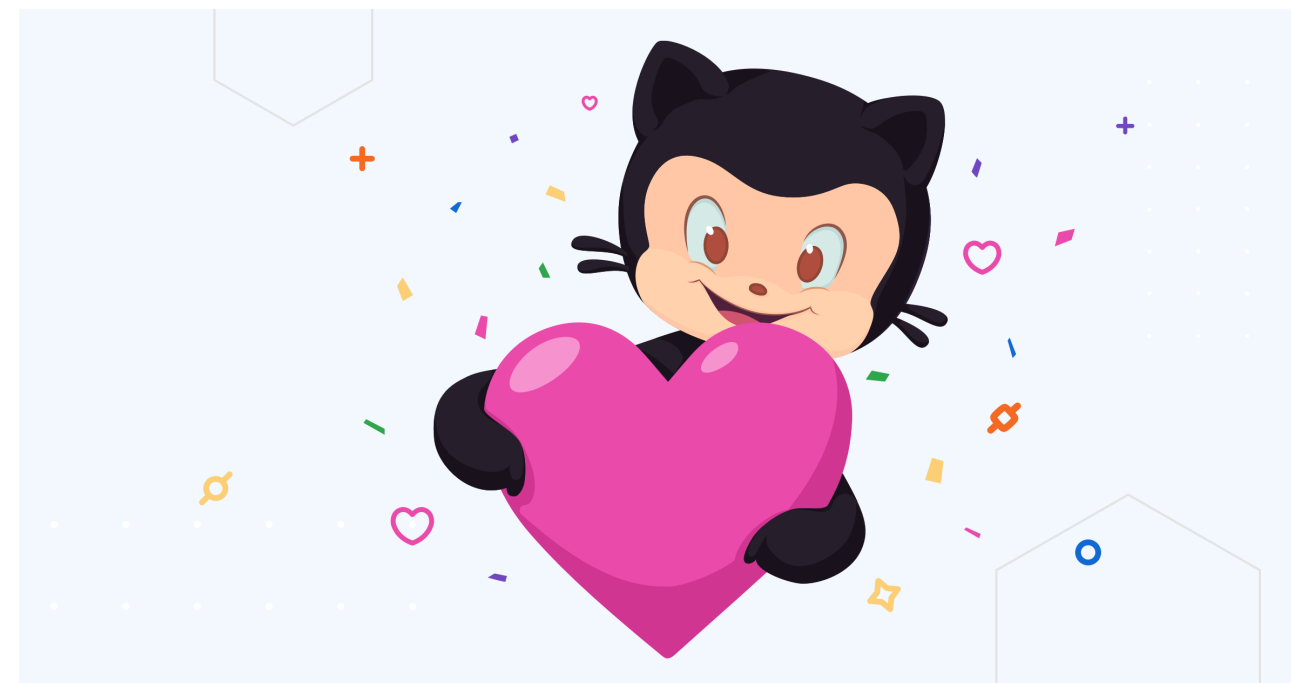


# Learnt Lessons

- Avoid multiple requests to API to save time
- Use requests to gather all data
- Work in memory instead of making requests for each object IDs
  
- How Peering Manager does it:
  - Get all data from a selected list of endpoints
  - Correlate data in memory and display them
  - Reduced page load from > 3 minutes to < 5 seconds

# Show Some Love

- Open Source maintainers play a critical role
- Show some love and support to them
- If possible fund the development
  
- Big thanks to DE-CIX and LINX





# Questions?



[#peering-manager](#)