

# APNIC

## Solving problems for our community

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# A bit about me...

- I started my journey in the RIR world working as a Hostmaster and Policy Officer at LACNIC in Aug 2010
- I then had some technical roles:
  - Networks and Security Engineer
  - Senior Security and Stability Engineer
- I started working with APNIC as a Data Scientist in 2017
- I've always suffered from Impostor Syndrome





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# Impostor syndrome

From Wikipedia, the free encyclopedia

*Not to be confused with [Capgras delusion](#), in which a person believes that a loved one has been replaced by an impostor.*

**Impostor syndrome** (also known as **impostor phenomenon**, **impostorism**, **fraud syndrome** or the **impostor experience**) is a psychological pattern in which an individual doubts their accomplishments and has a persistent [internalized](#) fear of being exposed as a "fraud".<sup>[1]</sup> Despite external evidence of their competence, those experiencing this [phenomenon](#) remain convinced that they are frauds, and do not deserve all they have achieved. Individuals with impostorism incorrectly attribute their success to luck, or as a result of deceiving others into thinking they are more [intelligent](#) than they perceive themselves to be.<sup>[2]</sup> While early research focused on the prevalence among high-achieving women, impostor syndrome has been recognized to affect both men and women equally.<sup>[1][3]</sup>

“

**It's estimated that 70 percent of the U.S. population has experienced what's known as impostor syndrome.**

Source: <https://www.nbcnews.com/better/health/how-impostor-syndrome-holding-you-back-work-ncna814231>

# Information Services Products

- ID (Internet Directory)
- DASH (Dashboard for Autonomous System Health)
- NetOX (Network Operators tool boX)
- Internal Information Services
- Exploring other ideas

# Information Services Products

- **ID (Internet Directory)**
- **DASH (Dashboard for Autonomous System Health)**
- **NetOX (Network Operators tool boX)**
- Internal Information Services
- Exploring other ideas

# ID (Internet Directory)



<https://directory.apnic.net>

Internet Directory

Search economy here

- Home
- Comparison Mode
- Asia Pacific Region
- Out Of Region

Summary ASN IPv4 IPv6

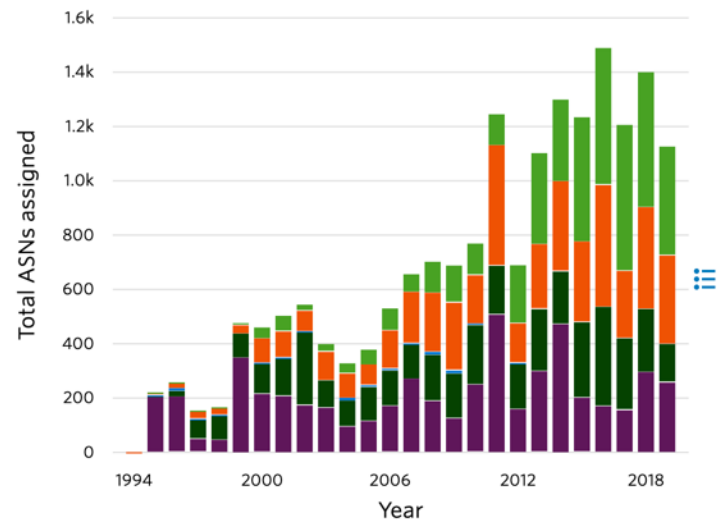
1994 to 2019

Summary

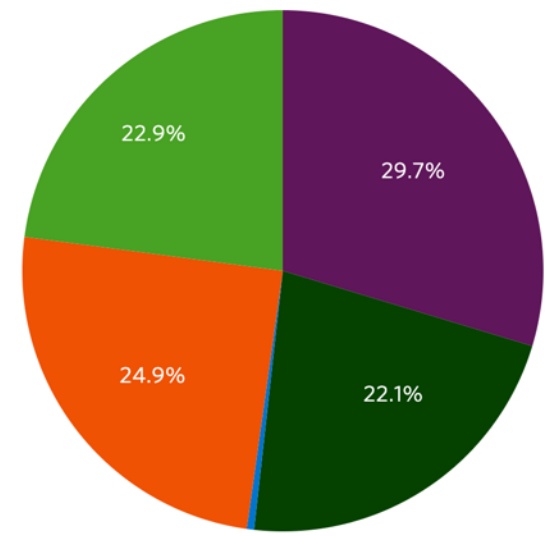


ASN Total by Year

Total 2 byte 4 byte Cumulative



ASN Total by Subregion



IPv4 Delegation by Year

Delegation IP Address /24 Cumulative

IPv4 Delegation by Subregion



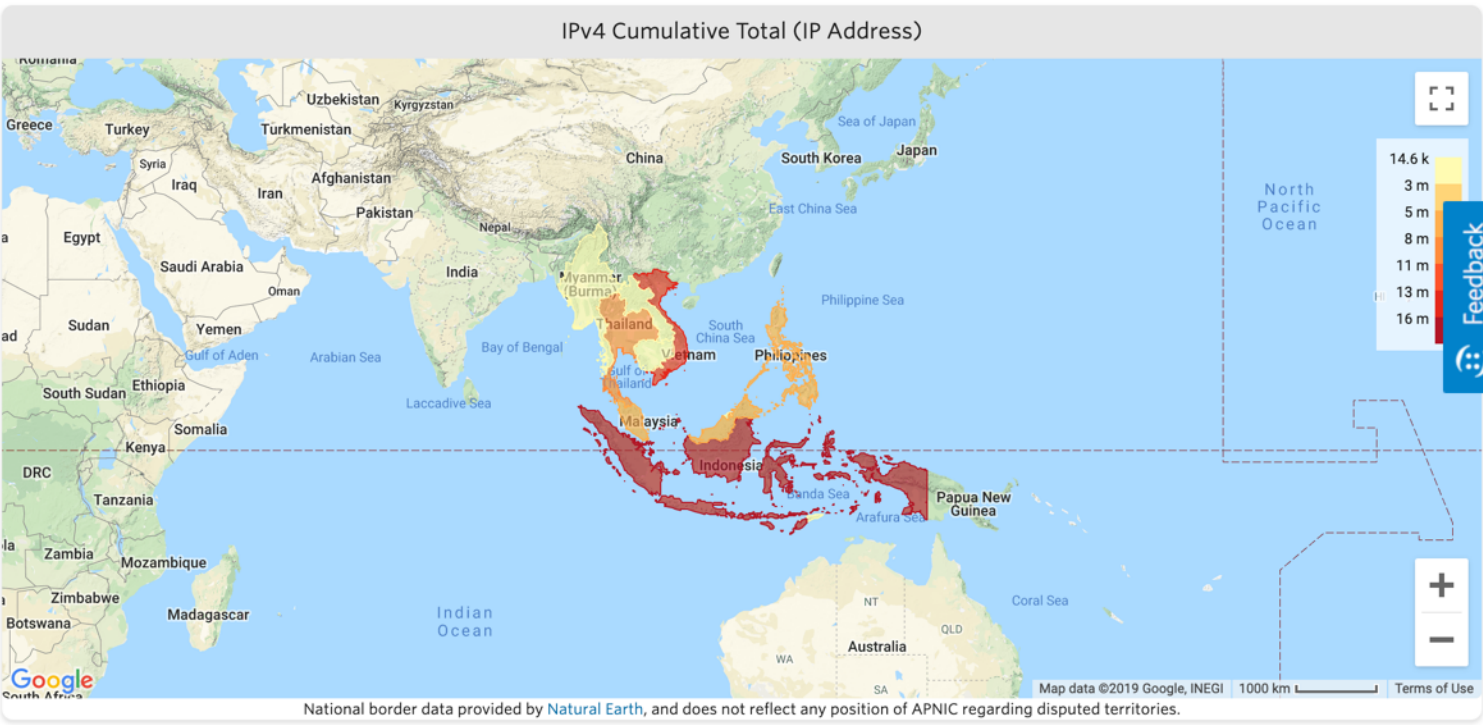
Internet Directory

Search economy here

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- Asia Pacific Region
- Southern Asia
- Oceania
- South-Eastern Asia
  - Brunei
  - Cambodia
  - Christmas Is
  - Cocos Keeling Is
  - Indonesia
  - Lao PDR
  - Malaysia
  - Myanmar

IPv4 Map for South-Eastern Asia

Map controls: Bar chart, Table, Map, Line graph, Zoom in, Zoom out



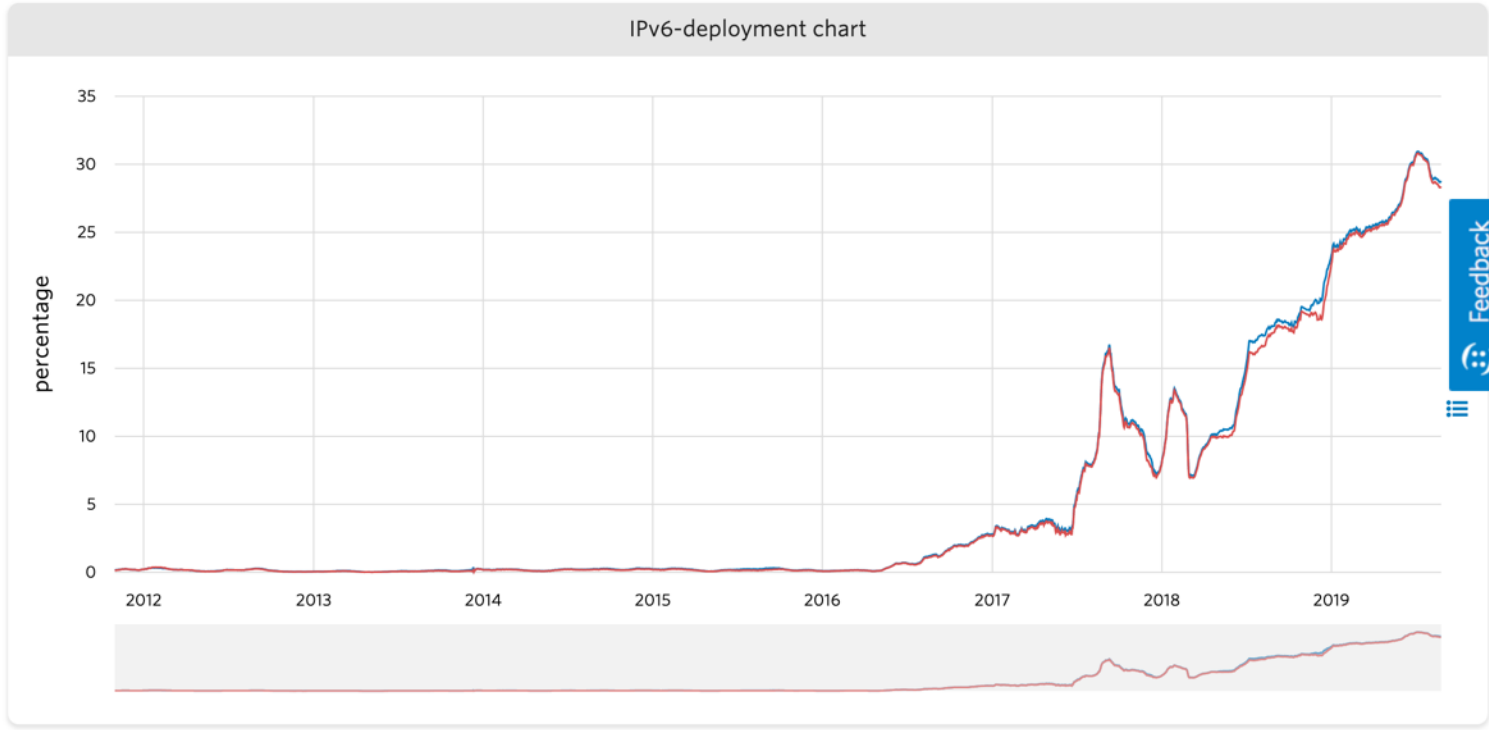


Internet Directory

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IPv6 deployment chart for Thailand



Internet Directory

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  - Malaysia
  - Myanmar

VizAS chart for Thailand

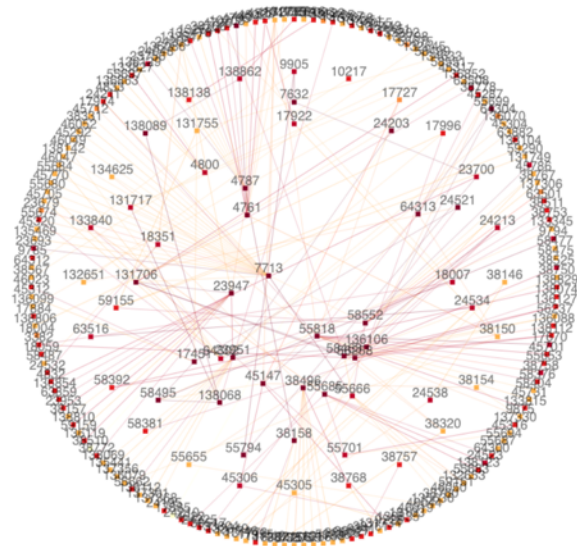
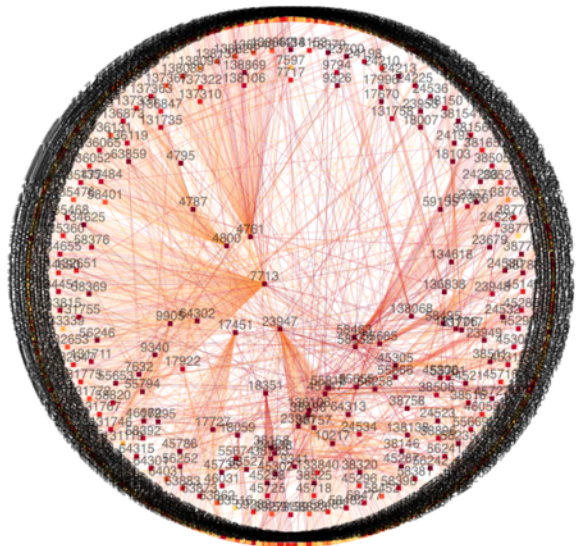


vizAS explores the interconnections between ASes within an economy, and compares the state of interconnections between the IPv4 and IPv6 address families.

TH Thailand

IPv4 - 1124 total ASNs in 1514 visible peerings

IPv6 - 229 total ASNs in 220 visible peerings



BGP data collected 2019-07-23.

Feedback

# ID (Internet Directory)

- Portal that provides data on how Internet number resources are distributed and used in the AP region
- Rebuilt and launched a new version in Sep 2018
- New(-ish) features:
  - IPv6 deployment charts
  - Comparison mode
    - AP region, sub-regions, economies
    - For delegations and IPv6 deployment charts
  - Visualization of interconnection of ASes (VizAS)
  - Web components (*You can now easily embed plots anywhere!*)

# ID (Internet Directory) – What's next?

- Working on:
  - Clearly defining what's the Unique Value Proposition of the ID
  - Who the main target audience is
- Working on continuous improvement
  - Your feedback is most welcome!
- It has evolved a lot since it was born (quite a few years ago!)
  - Maybe it needs a new name?

# DASH (Dashboard for AS Health)



<https://dash.apnic.net>

DASH

- My dashboard
- IPv4 prefixes
- IPv6 prefixes
- Latest security news

- Useful Links
- About


testaccount ▾ testASN ▾

My dashboard

This Month ▾ Generate Report

My network


Total attacks in JUL  
**2.1K**

Compared to previous month  
 **0.3%**

Total attacks in JUN  
**2.1K**

VN


Total attacks in JUL  
**17.3K**

Compared to previous month  
 **28.3%**

Total attacks in JUN  
**24.1K**

South-Eastern Asia

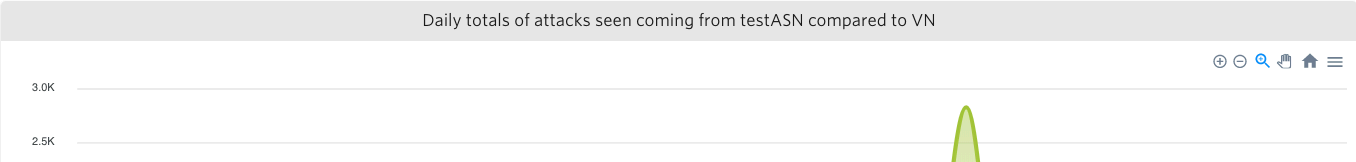
Total attacks in JUL  
**23.3K**

Compared to previous month  
 **15.0%**

Total attacks in JUN  
**27.5K**

Number of attacks seen from my network compared to VN

VN South-Eastern Asia



DASH

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Useful Links

About

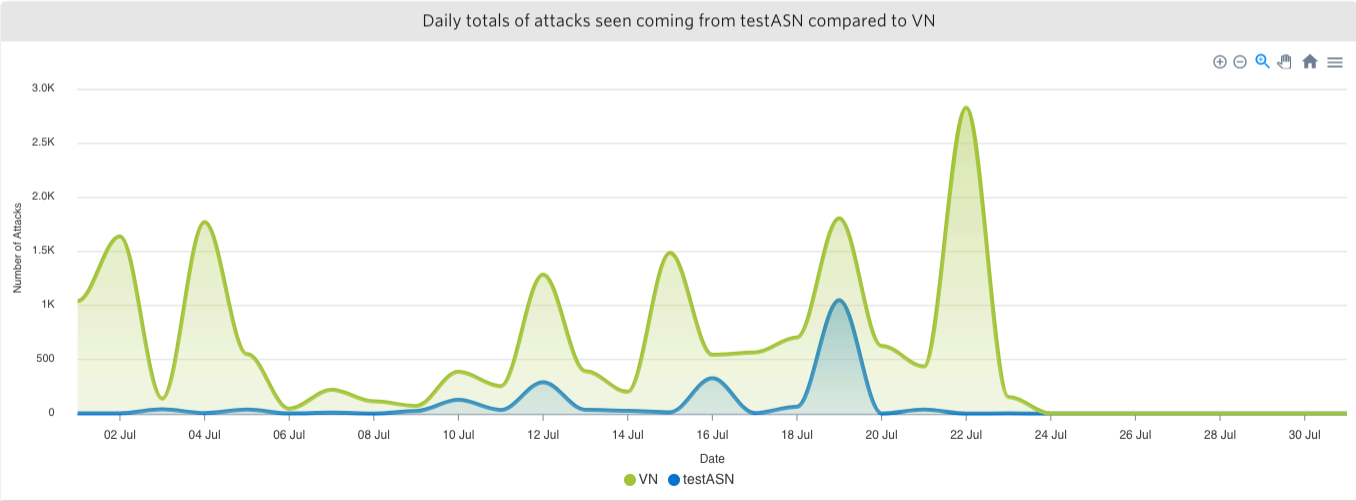
☰ testaccount ▾ testASN ▾

# My dashboard

This Month ▾ Generate Report

## Number of attacks seen from my network compared to VN

VN South-Eastern Asia



DASH

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testaccount ▾

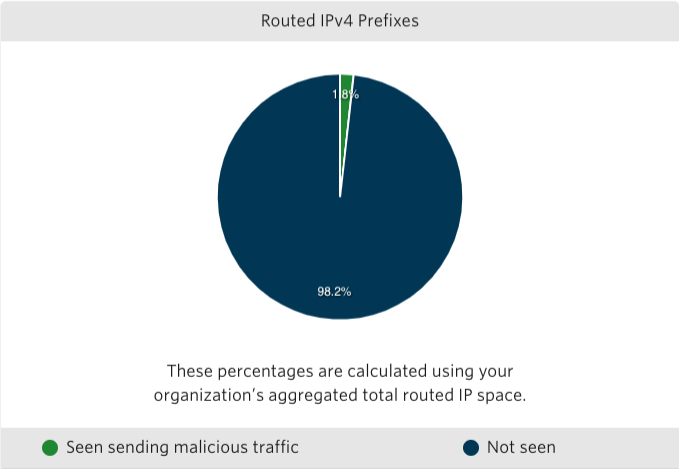
testASN ▾

# My dashboard

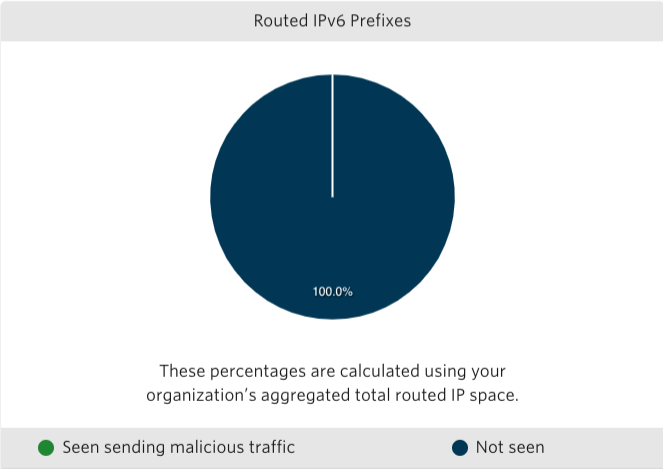
This Month ▾

Generate Report

## Overview of my routed prefixes



[View my offending IPv4 prefixes](#)



[View my offending IPv6 prefixes](#)

Feedback



DASH

- My dashboard
- IPv4 prefixes
- IPv6 prefixes
- Latest security news

Useful Links

About



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testaccount ▾

testASN ▾

# My dashboard

This Month ▾

Generate Report

## My network top 10 offending prefixes

Prefix	Attack types	Count
198.51.100.0/24	SSH	1055
10.183.93.0/24	SSH	683
10.118.0.0/20	SSH	135
192.0.2.0/20	SSH	63
198.51.100.0/20	SSH	57
10.210.0.0/21	SSH	35
10.118.16.0/20	SSH	18
10.210.112.0/21	SSH	13
10.118.32.0/20	SSH	10
10.74.120.0/22	SSH	6

Feedback  
⋮

# DASH (Dashboard for AS Health)

- Dashboard for resource holders that shows **information about suspicious traffic** seen by our honeypots originated at IP addresses managed by the user
- Currently just a prototype:
  - Only showing information about SSH attacks
  - More features pending to be implemented
- Short video available: <https://dash.apnic.net/about>
- Currently:
  - We had interviews to understand motivations and behaviors (during APNIC 48)
  - Preparing soft launch with set of Members who would find interesting info in the current version of the product

# NetOX (Network Operators ToolbOX)



<https://netox.apnic.net>



# Search Internet Number Resources

This is APNIC's Network Operators ToolbOX, powered by RIPE NCC's RIPEstat. It is currently just a prototype. If you have any questions or comments, please get in touch with Sofia at [sofia@apnic.net](mailto:sofia@apnic.net)

Search...

Search



## AS Overview (AS4608)

## Routing information (RIS)



Originates prefixes visible



Is seen in other routes

Name and holder of this ASN:

**APNIC-SERVICES Asia Pacific Network Information Centre**

RIR	Status	Registration	Country
APNIC	ALLOCATED	1995-05-30	AU

Show IANA Registry Information

Showing results for **AS4608** as of **2019-08-22 08:00:00 UTC**

## Routing Status (AS4608)



At **2019-08-22 08:00:00 UTC**, **AS4608** was visible to **100%** of 240  
**IPv4** and **100%** of 234 **IPv6** RIS full peers

## Whois Matches (AS4608)

## ▼ Whois results (1)

Show more fields

aut-num	4608
as-name	APNIC-SERVICES
descr	Asia Pacific Network Information Centre
descr	Regional Internet Registry for the Asia-Pacific Region
descr	6 Cordelia Street
descr	PO Box 3646
descr	South Brisbane, QLD 4101
descr	Australia
country	AU
org	ORG-APNI1-AP
mnt-by	APNIC-HM

## ► Routing registries results (0)

Showing results for **AS4608** as of **2019-08-22 17:17:00 UTC**

# NetOX (Network Operators ToolbOX)

- **Goal:** To be a set of tools that helps network operators interact with other networks
  - Solving routing issues
  - Deciding which other networks to connect to
- Working in collaboration with the RIPE NCC
- Currently RIPEstat with an APNIC 'look & feel'
  - Better performance from the AP region
  - Building additional widgets to cover identified needs

# NetOX in the future

- Exploring how to implement features to solve validated problems:
  - Bringing points of contact and other data (?) from PeeringDB
  - Easily visualizing upstream providers for a given ASN
  - Bringing data from IRRs, for automation of route filters
- Exploring idea of creating **shared knowledge base for network operators**
  - We run some interviews during APNIC 48
  - We are now exploring alternatives to implement the idea

# Some new widgets

## Peers and Providers (AS4608)

Show 10 entries

Search:

ASN	Name	Type
AS42	WOODYNET-1 - WoodyNet	peer
AS714	APPLE-ENGINEERING - Ap...	peer
AS1221	ASN-TELSTRA Telstra Co...	provider
AS3303	SWISSCOM - Swisscom (S...	peer
AS4826	VOCUS-BACKBONE-AS Vocu...	provider
AS7575	AARNET-AS-AP Australia...	provider
AS24130	TPG-AU TPG Internet Pt...	provider

Showing 1 to 7 of 7 entries

ASN names are valid for 2019-10-09 01:17 UTC

The CAIDA AS Relationships Dataset, 2019-08-01. <http://www.caida.org/data/as-relationships/>

Showing results for AS4608

## IRR Explorer (AS4608)

Show 10 entries

Search:

Prefix	Message
103.246.136.0/22	Not seen in BGP, but (legacy?) route-objects exist
110.76.136.0/22	Not seen in BGP, but (legacy?) route-objects exist
2000::/3	Prefix is in DFZ, but NOT registered in any IRR and should go into RIPE!
2001:dc0:2000::/35	Looks good: BGP origin consistent with AS in route-objects
2001:dc0:4000::/34	Look like network is not announcing registered v6 prefix yet
2001:dc0:4000::/35	Look like network is not announcing registered v6 prefix yet
2001:dc0:6000::/35	Look like network is not announcing registered v6 prefix yet
2001:dc0:8000::/33	Look like network is not announcing registered v6 prefix yet
2001:dc0:8000::/34	Look like network is not announcing registered v6 prefix yet
2001:dc0:8000::/35	Look like network is not announcing registered v6 prefix yet

Showing 1 to 10 of 88 entries

## Points of contact (AS4608)

Show 10 entries

Search:

Name	Phone	Email	Source
APNIC Infrastructure Contact	+61 7 3858 3100	noc@apnic.net	whois
IRT-APNIC-IS-AP		noc@apnic.net	whois

Showing 1 to 2 of 2 entries

No PeeringDB contacts are public. You need to log in to <https://www.peeringdb.com/> to see non-public contacts

## Points of contact (AS4609)

Show 10 entries

Search:

Name	Phone	Email	Source
CTM Mcenter	+853 8891 2211	mcenter@services.ctm.net	whois
CTM NMC	+853 8891 2198	mcenter@services.ctm.net	peeringDB
CTM NMC	+853 8891 2211	mcenter@services.ctm.net	peeringDB
CTM NMC	+853 8891 2211	mcenter@services.ctm.net	peeringDB
CTM NOC		noc@macau.ctm.net	peeringDB
CTM NOC		noc@macau.ctm.net	peeringDB
CTM NOC	+853 8891 2211	noc@macau.ctm.net	whois
IRT-CTM-MO		noc@macau.ctm.net	whois

Showing 1 to 8 of 8 entries

Some PeeringDB contacts are not public. You need to log in to <https://www.peeringdb.com/> to see non-public contacts



**Questions? Comments? Feedback?**

**THANK YOU!**