# **TWNIC Update**

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APNIC 47

# Outline

- Statistics of TWNIC's IP members

- TWNIC's activities and training programs

- Conclusions & Future Works

# Statistics of TWNIC's IP Members

| 代理發放單位 | | 代理發放單位 | | 代理發放單位 |
|---|---|---|---|---|
| 1 | | 22 台灣基礎開發科技股份有限公司 | 43 | 筌城有限公司 |
| 2 | | 23 中嘉和網股份有限公司 | 44 | 威達雲端電訊股份有限公司 |
| 3 | **TWNIC** | 24 世新有線電視股份有限公司 | 45 | 安源通訊股份有限公司 |
| 4 | | 25 台灣恩悌悌股份有限公司 | 46 | 大眾電信股份有限公司 |
| 5 | | 26 大台北寬頻網路股份有限公司 | 47 | 大同電信股份有限公司 |
| 6 | | 27 易達通網路系統有限公司 | 48 | 威邁思電信股份有限公司 |
| 7 | 太聯科技股份有限公司 | 28 數位通國際網路股份有限公司 | 49 | 全球一動股份有限公司 |
| 8 | 遠傳電信股份有限公司 | 29 大無畏寬頻股份有限公司 | 50 | 洞瀾有線電視股份有限公司 |

| Service Types | # of TWNIC's Members |
|---|---|
| Co-location/IDC | 64 |
| FTTx | 18 |
| ADSL | 4 |
| Cable Modem | 25 |
| WLAN | 2 |
| 3G/3.5G | 5 |
| 4G(LTE) | 5 |

**TWNIC 's Member: 246**

| | |
|---|---|
| 9 | 宏遠電訊股份有限公司 |
| 10 | 向邦網路科技股份有限公司 |
| 11 | 博訊科技股份有限公司 |
| 12 | 和宇寬頻網路股份有限公司 |
| 13 | 協志科技股份有限公司 |
| 14 | 新世紀資通股份有限公司 |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | 台灣 |
| 21 | 台灣碩網網路娛樂股份有限公司 |
| 42 | 果豆科技股份有限公司 |

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# IPv4 Address Allocation

- TWNIC has allocated 132,190 /24s IPv4 addresses
- The IPv4 application growing fastly in this year



Unit: /24
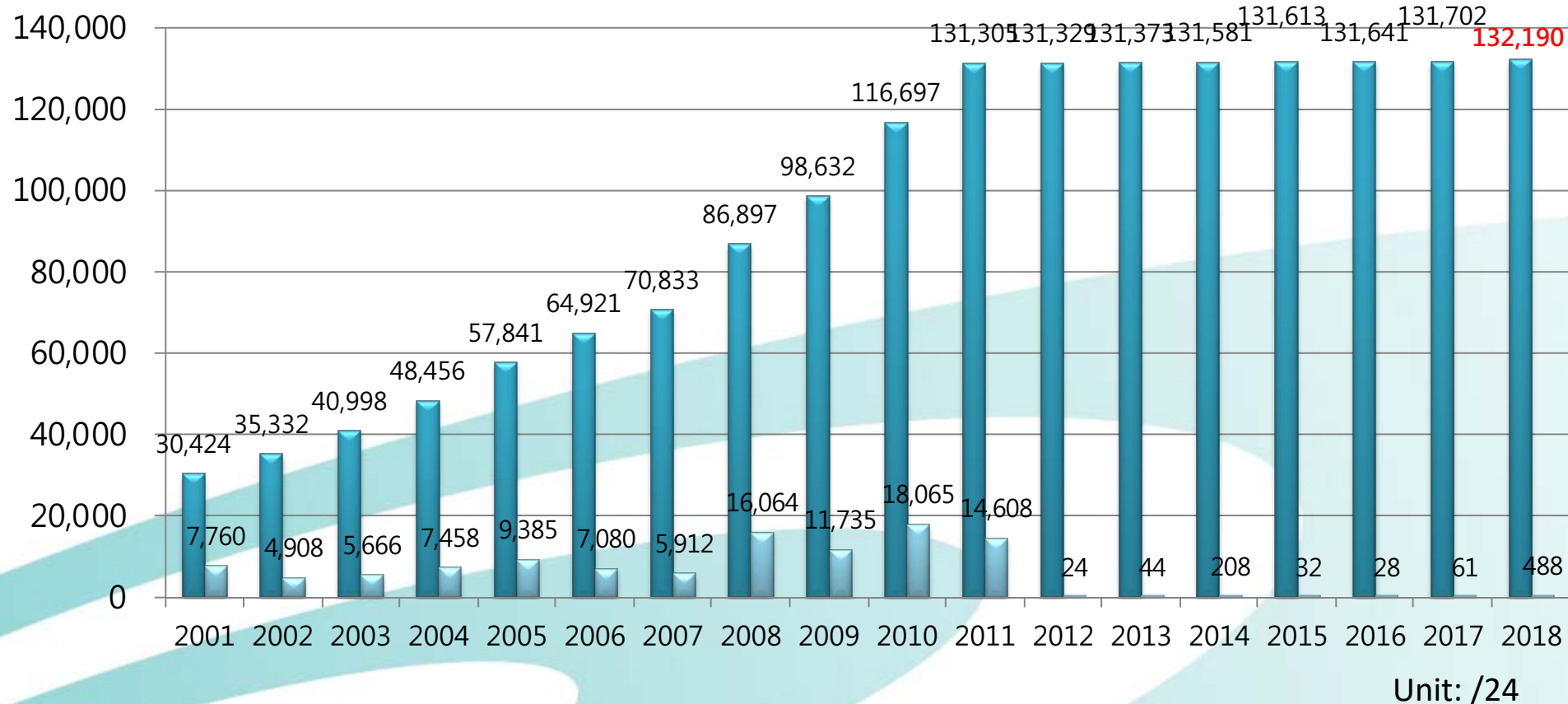
# IPv6 Address Allocation

- TWNIC has allocated 2,455 /32s IPv6 addresses
- Most of TWNIC IP members have obtained IPv6 addresses.

Unit: /32
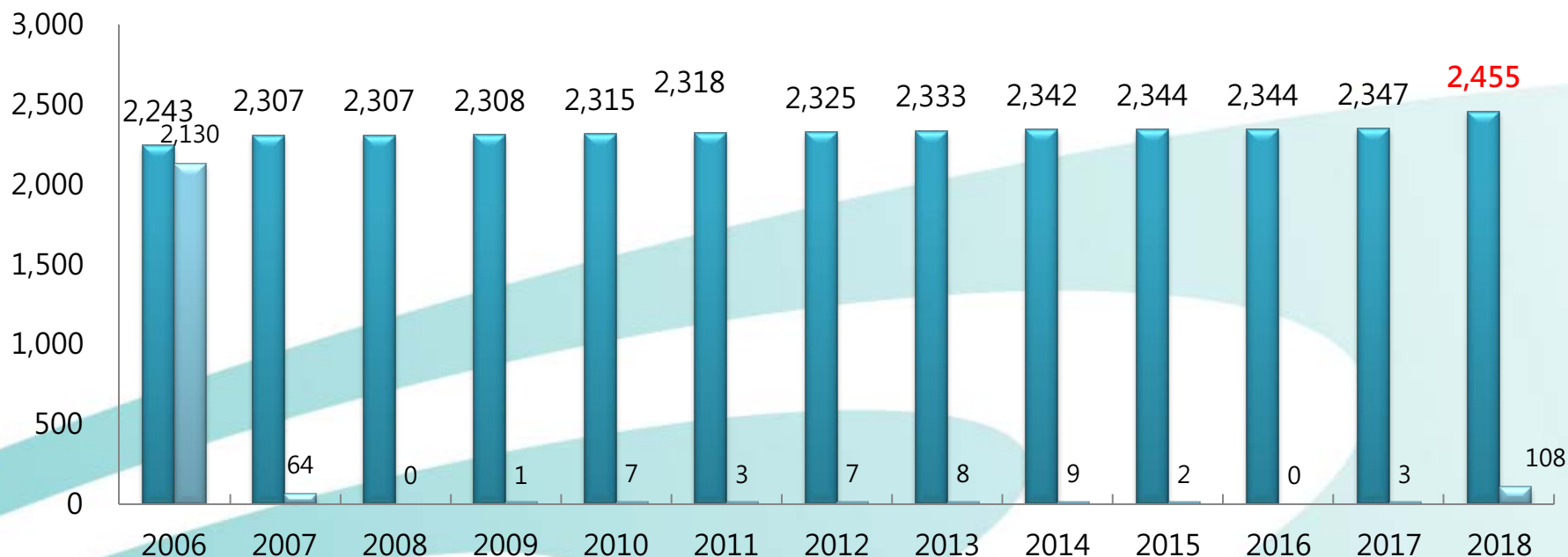
# 31st TWNIC IP Open Policy Meeting & 2nd TWNOG

- Time: November 27-28, 2018
- Keynote speech:
  - **Next generation registry services** Paul Wilson, Director General, APNIC
  - **Akamai CDN, Peering, and Traffic Trend** Kam Sze Yeung, Akamai Technologies & APNIC Executive Council
- Session topics include Cooperation SIG, Policy SIG, IPv6 Deployment SIG, AI Network Operation, 5G & IoT, Cloud Service, Network Security and TWNOG BoF etc.
- To see the detail agenda, visit https://opm.twnic.net.tw/31th/agenda.html

# 2018 TWNIC-APNIC Joint Training - Routing Workshop

- Time: December 5-7, 2018
- Attendee: 49
- Lecturer: Jessica Wei, APNIC & Ozzy Chiou, Systex
- This technical workshop is made up of lectures and hands-on lab exercise to teach basic routing concept, classifications of different routing protocols, Internet routing architecture, Basic network infrastructure design principles, OSPF, BGP etc. Also presented for understanding and to encourage best practice.
- The course also includes considerable practical work based on IPv4 as well as IPv6 and Cisco IOS router configuration commands.
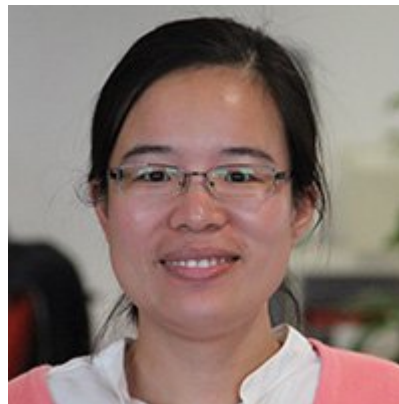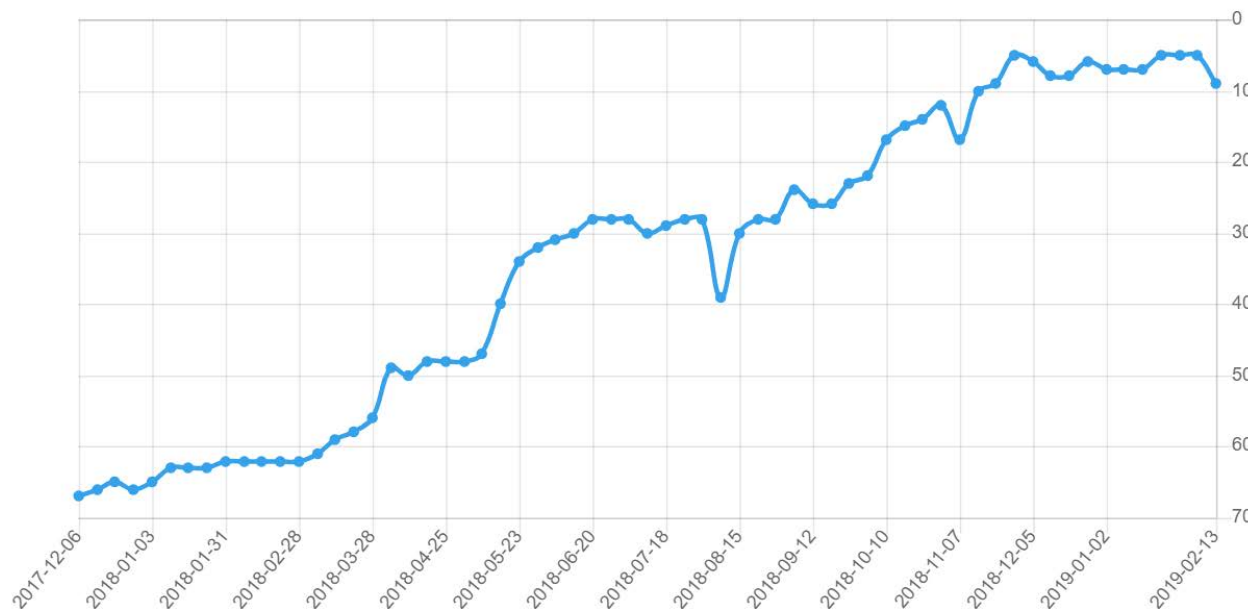
# Taiwan IPv6 User Availability

- Taiwan IPv6 user availability is 0.46% in the end of 2017 and 31.89% in February, 2019.



**Taiwan IPv6 Global Ranking: 9**

2019-02-13 —台灣全球排名：9名 (IPv6比例: 31.89%)

Data derived from APNIC by measuring mean value of IPv6 Capable over the last 7 days.

Top 30 List

# TWNIC RPKI Service

- TWNIC has built the Certification Authority(CA) system and signed the formal CA certification with APNIC.
- TWNIC has built a RPKI Management System for members to view their own resources and manage (add/modify/delete) ROAs.
- TWNIC has built the RRDP (RPKI Repository Delta Protocol) server to publish the CA repositories
- TWNIC has built a RPKI Validator and RTR server to provide the user and router to search and query the ROAs.
- We have hold TWNIC RPKI training twice.

# TWNIC RPKI Training

- Time: December 27, 2018
- Attendee: 45
- The training topic including RPKI introduction, RPKI validator, TWNIC RPKI Management System, RPKI router configuration.
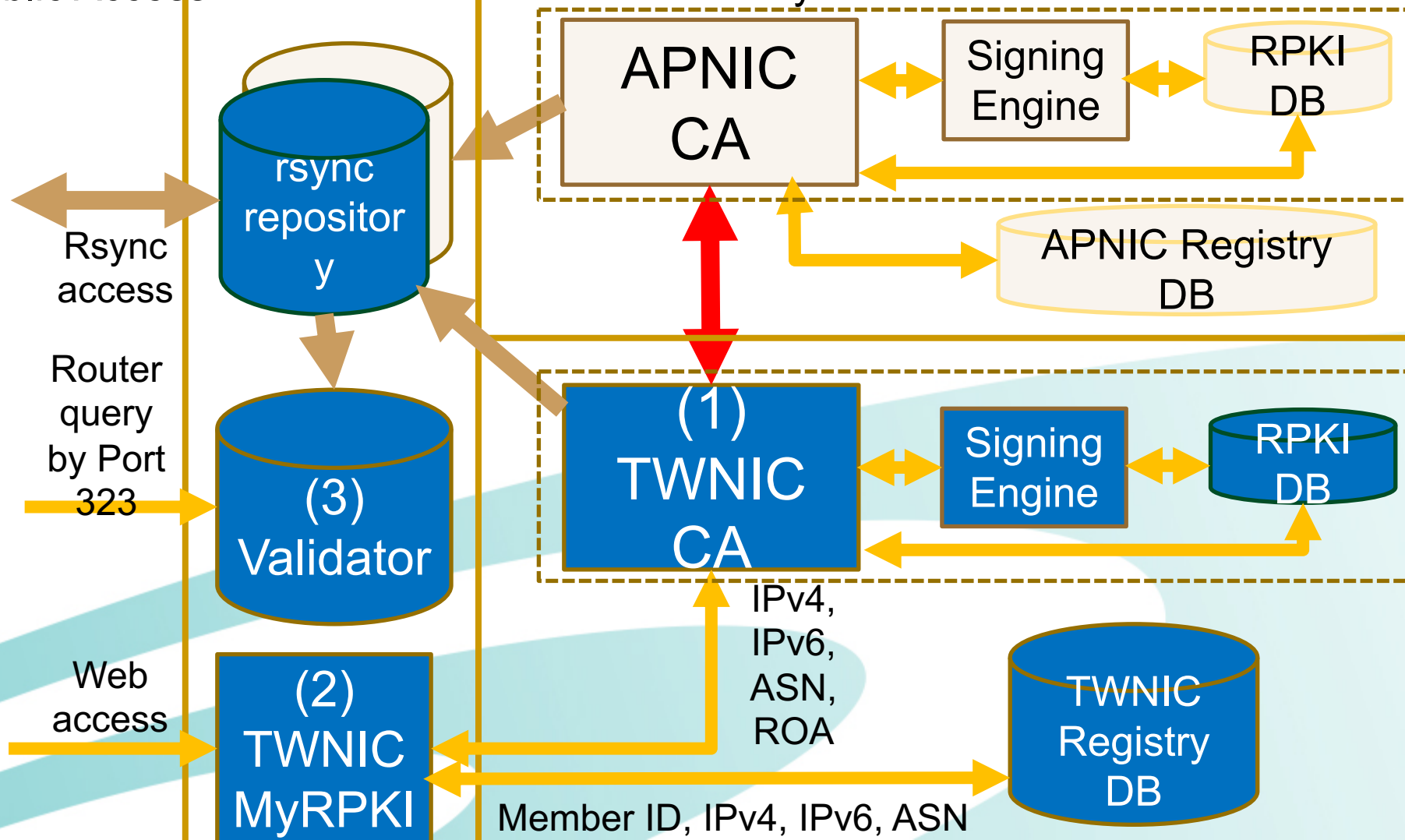
# TWNIC RPKI Architecture
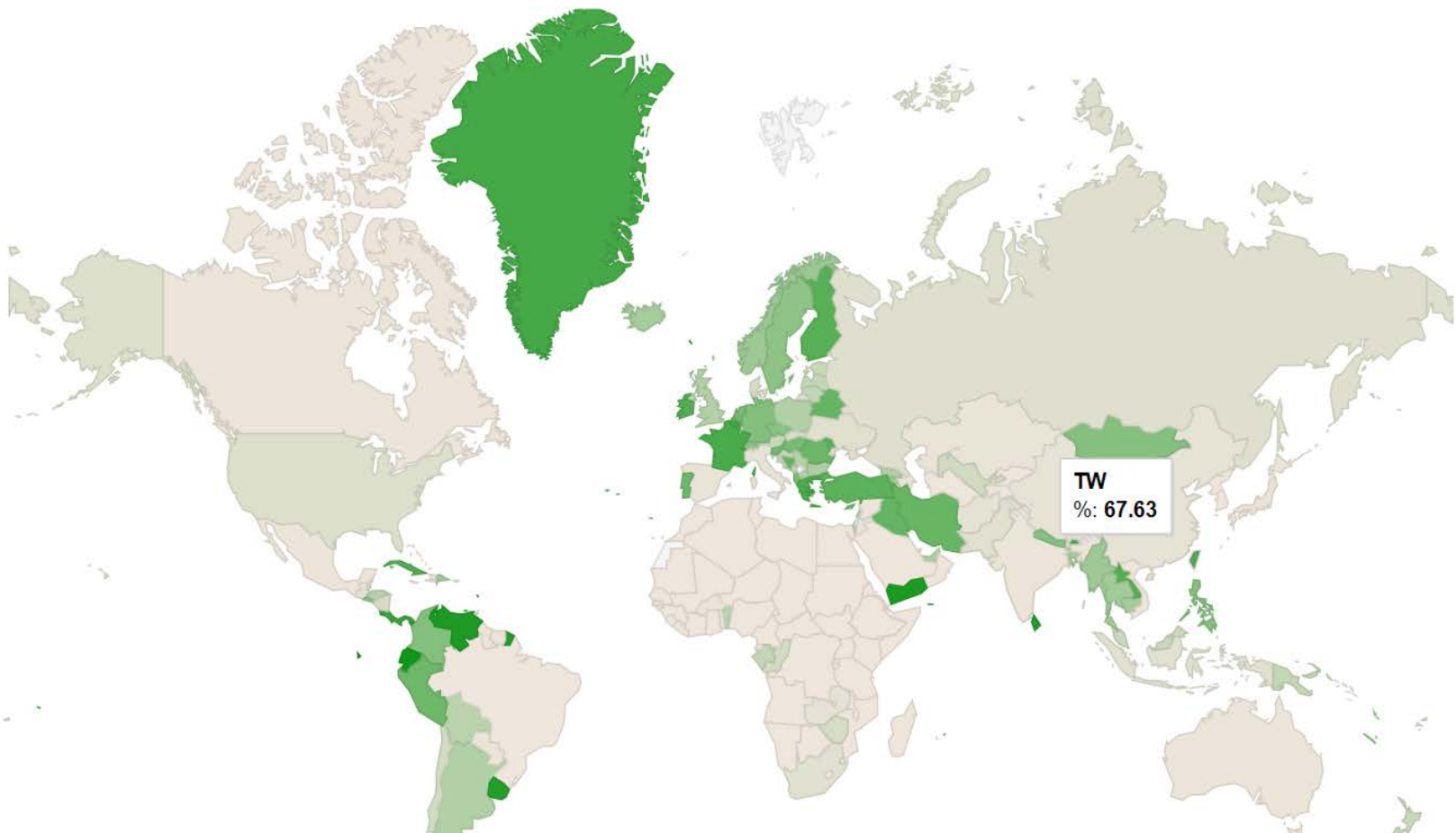
## RPKI Component Elements and Interactions

Public Access

Internal Boundary

rsync repository

Rsync access

Router query by Port 323

Web access

APNIC CA

Signing Engine

RPKI DB

APNIC Registry DB

(1) TWNIC CA

Signing Engine

RPKI DB

(3) Validator

(2) TWNIC MyRPKI

IPv4, IPv6, ASN, ROA

TWNIC Registry DB

Member ID, IPv4, IPv6, ASN

# Taiwan ROA Statistics

# TWNIC RPKI Service

| Number of routing : IPv4 Valid Prefix 65.6% | Number of Class C : IPv4 Valid Space 75.6% |
|---|---|



Invalid (0%) 4
NotFound (34.4%) 1669
Valid (65.5%) 3178
Total: 4851

Invalid (0%) 5
NotFound (24.3%) 49477
Valid (75.6%) 154117
Total: 203599
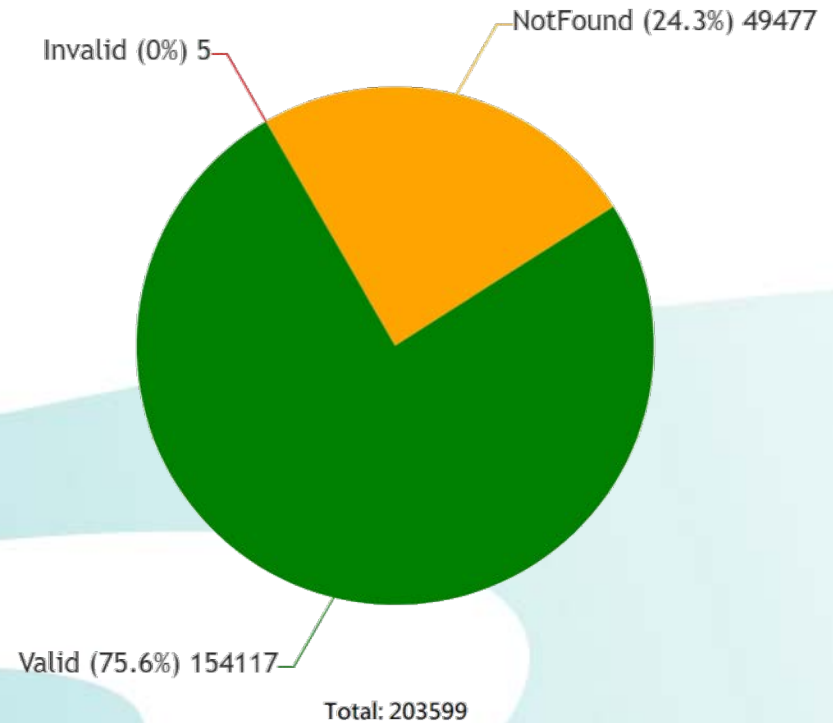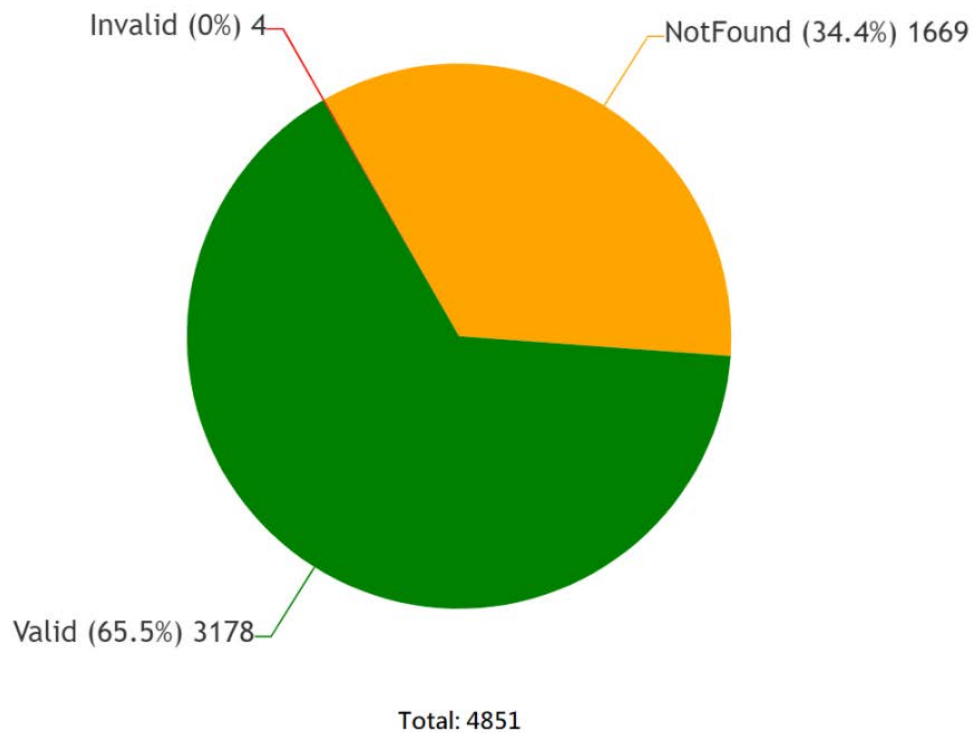
Date : 108/2/15

# Conclusions & Future Works

- TWNIC have 113 more members last year.
- We has built the RPKI CA、Validator、RRDP、management system and provided the RPKI service to TWNIC members last year.
- We will hold the IPv6 training and IPv6 activities this year.
- Taiwan IPv6 User Availability grew rapidly in 2018. Please refer the animation of the 2018 IPv6 Penetration as follows.
  https://youtu.be/nRMwXKWpEBA
- Welcome to attend the APNIC IPv6 Deployment session this afternoon.

# Thank You