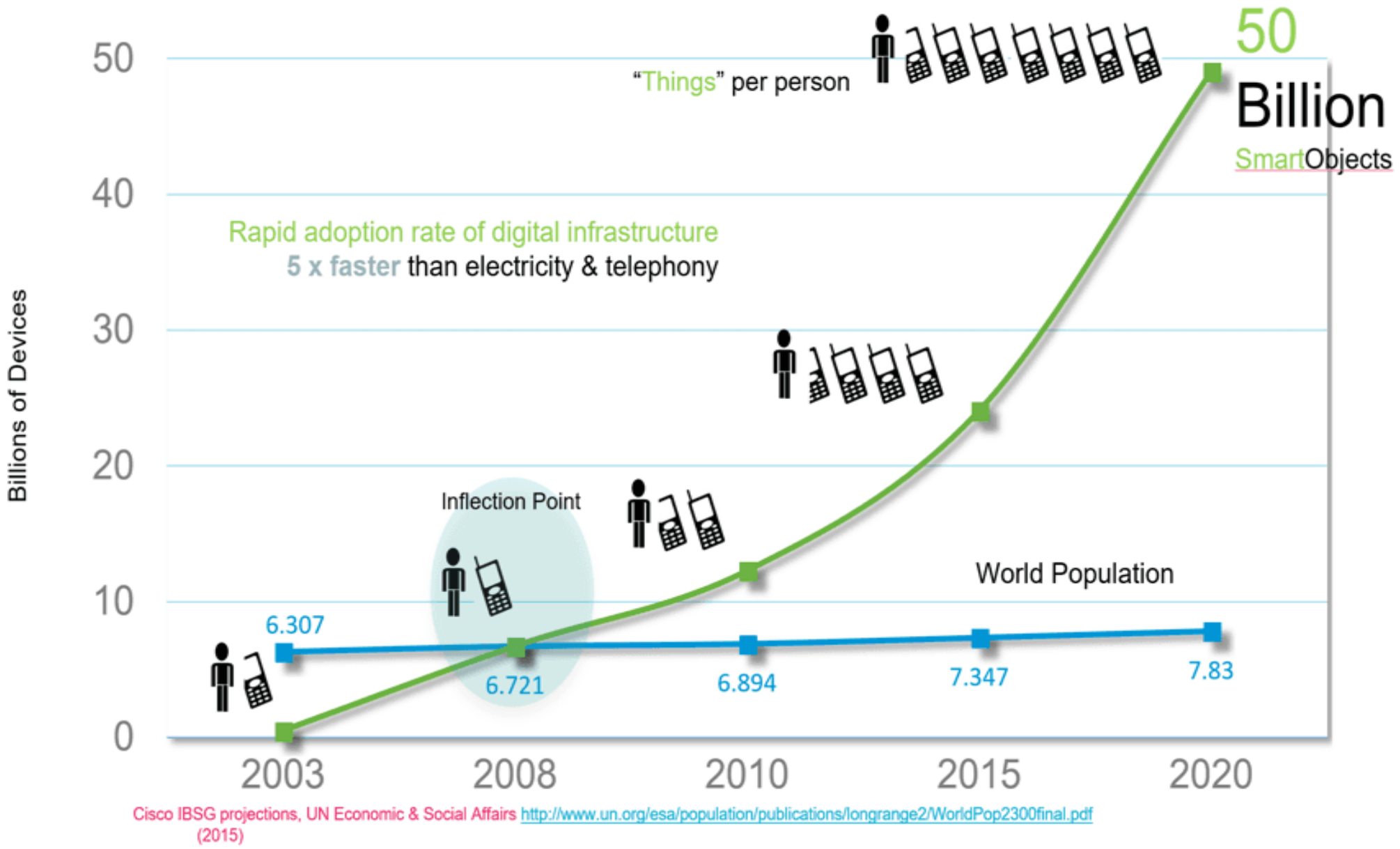
下一代互联网国家工程中心
China Future Internet Engineering Center

# China's IPv6 Evolution and Strategy

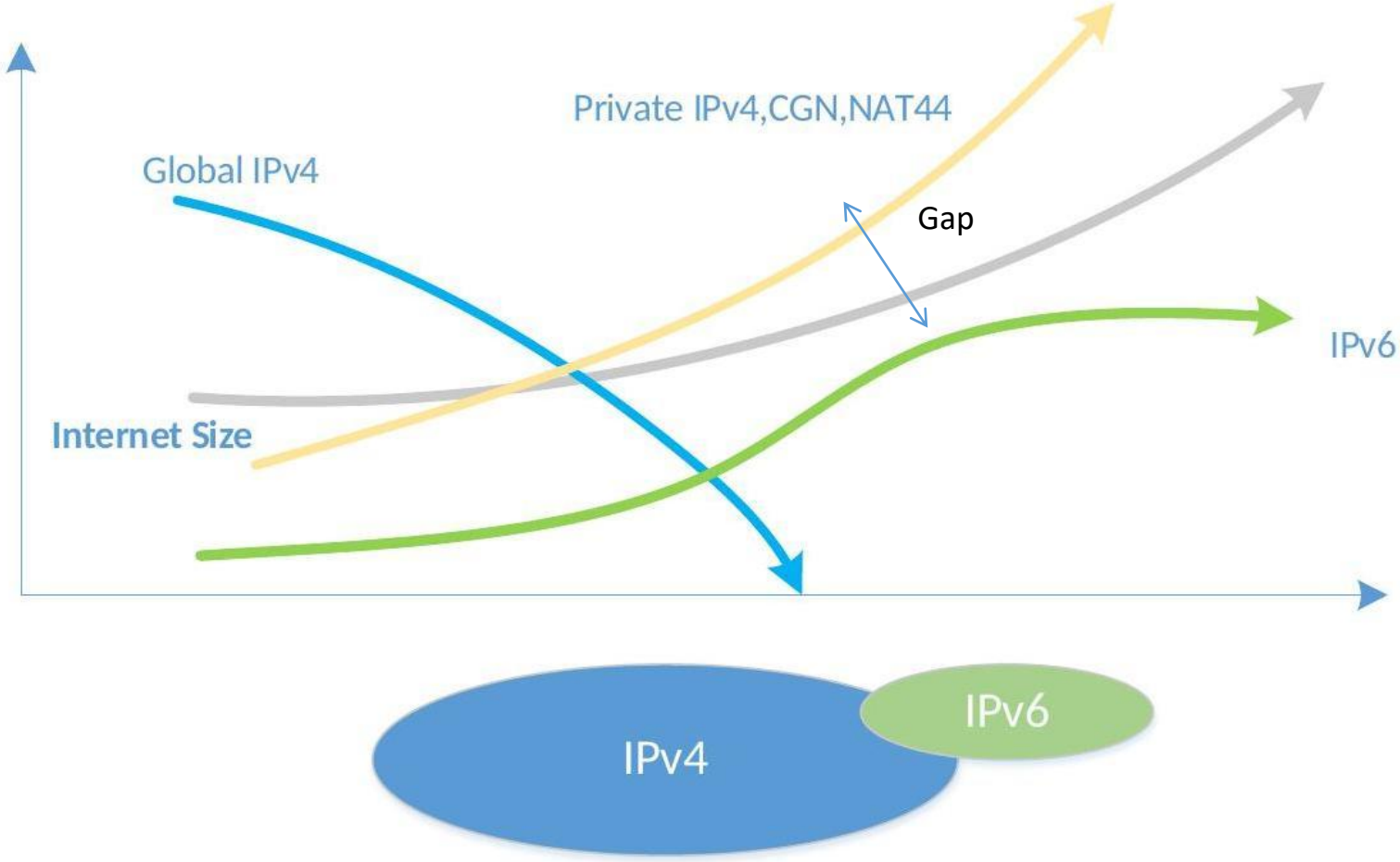
天地互连

# IoT: A Must do

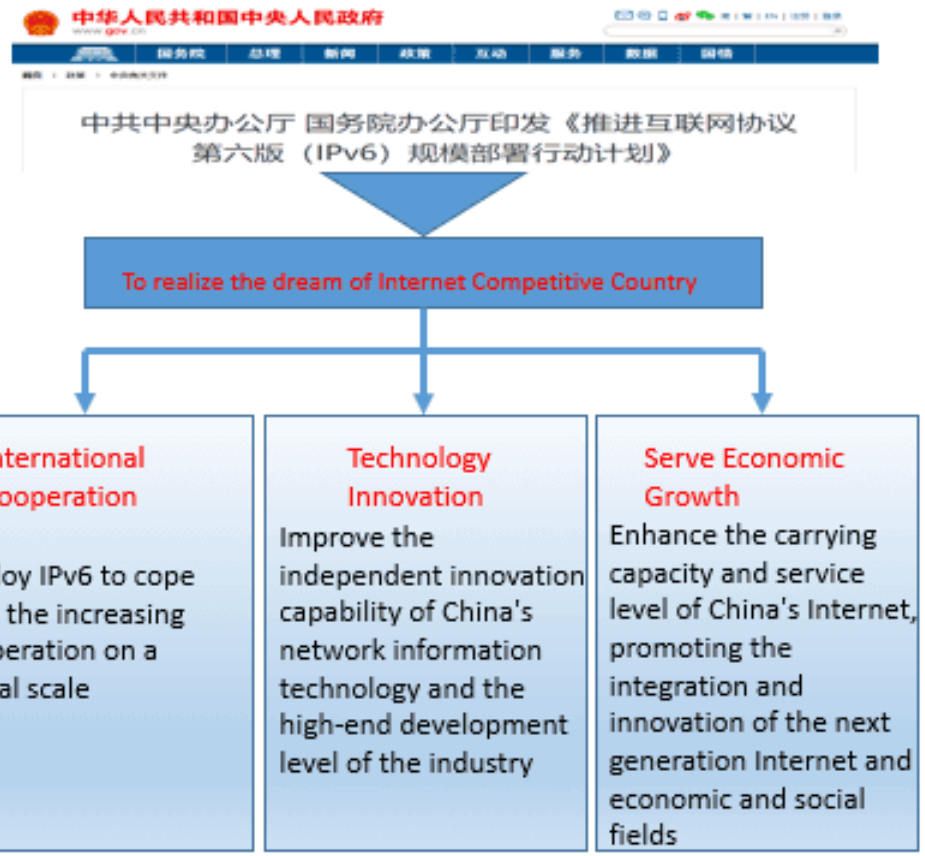


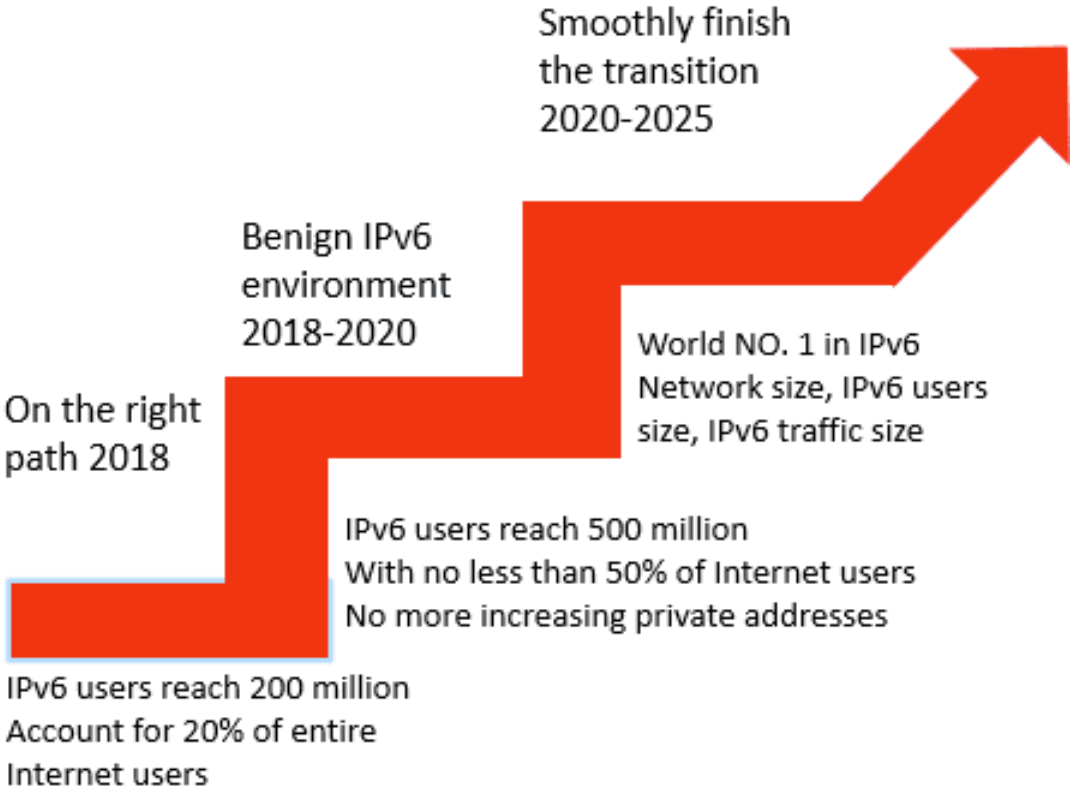

Cisco IBSG projections, UN Economic & Social Affairs http://www.un.org/esa/population/publications/longrange2/WorldPop2300final.pdf (2015)

# The Risks from IPv4 to IPv6



# IPv6 Action Plan Issued by Highest Administrative Office



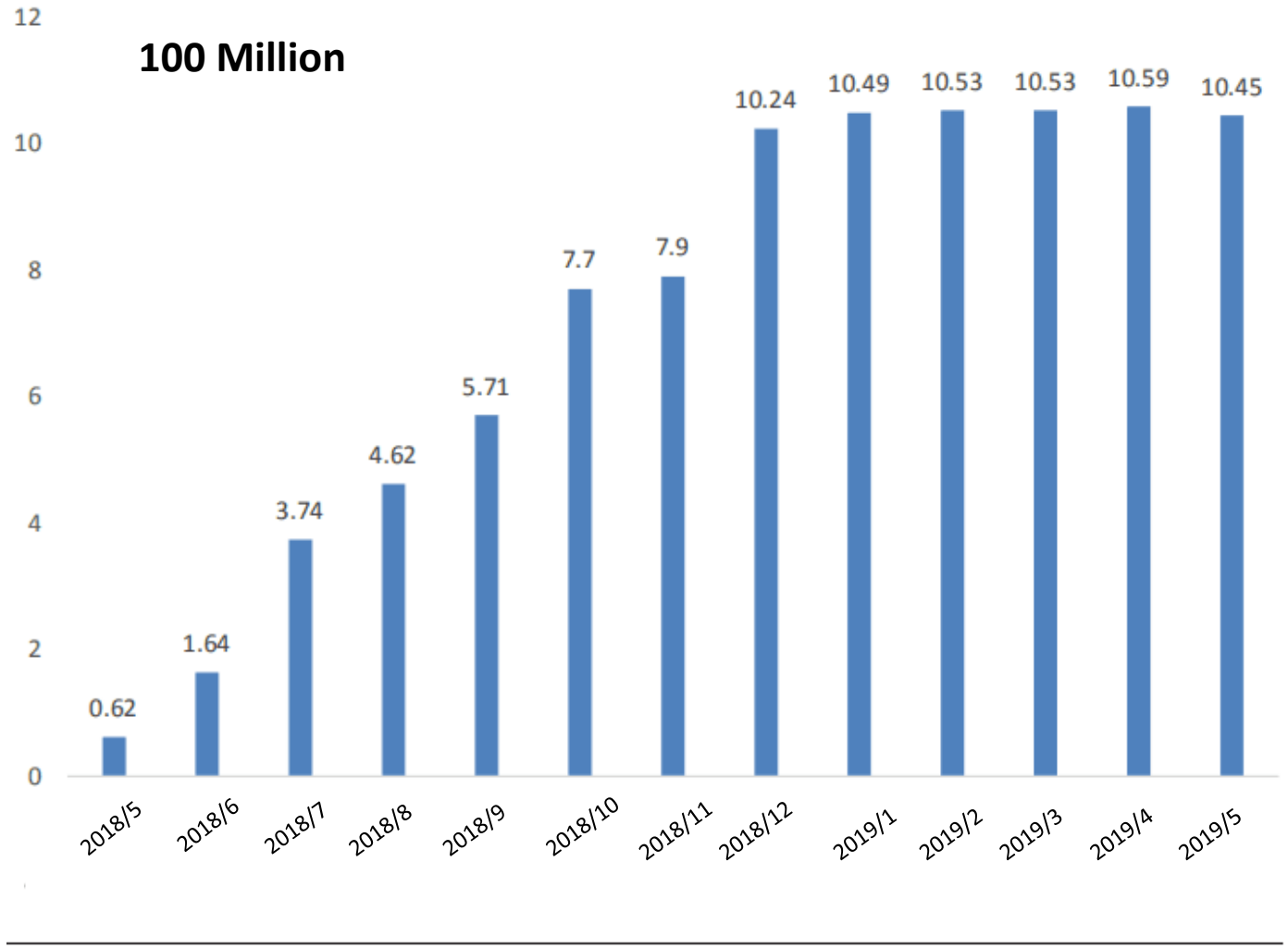



# China Aims To Build The Largest IPv6 Commercial Network

By the end of 2025, network, applications and terminal devices will fully support the adoption of IPv6 in China, and it will have the largest number of IPv6 users in the world, according to the plan.

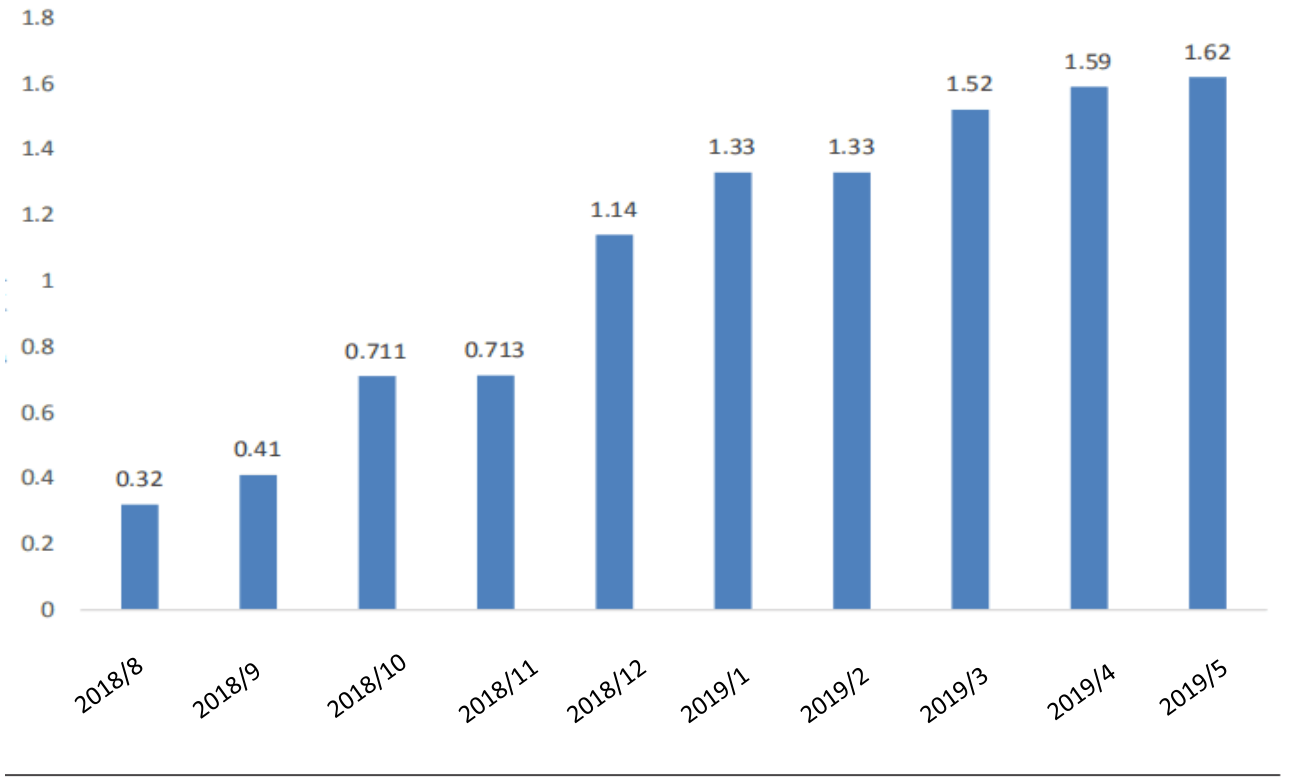
| Time | Users | Commercial Websites | Government Websites | Network | Internet Infrastructure |
|---|---|---|---|---|---|
| 2018 | 200 Million (20%) | Top 50 | State and State owned level, Media, TV | ISP backbone network, Metropolitan Area Network, Network nodes, Mobile LTE network, RFT backbone network | Large IDC, Top 5 CDN, Top 10 cloud service providers with half of the business, DNS, Gateway 300G |
| 2019-2020 | 500 Million (50%) | Top 100 | City level | RFT all networks | Large IDC, Top 10 CDN, Top 10 cloud service providers with all business units。All gateway |
| 2021-2025 | World's largest | All IPv6 supported | All IPv6 supported | World's largest Network (IPv6-only) | World's largest Network (IPv6-only) |

# LTE Network IPv6 User

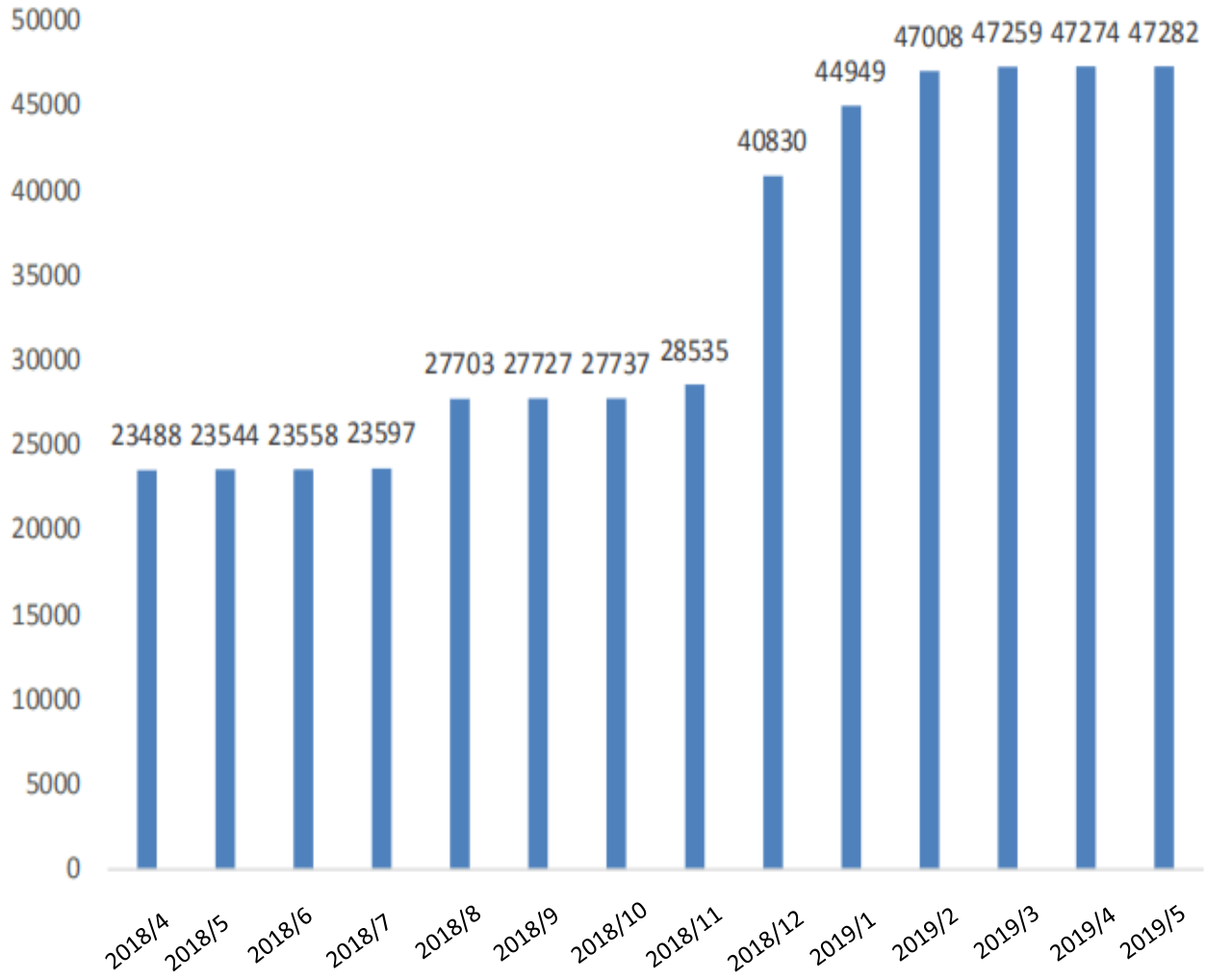


# Fixed Broadband IPv6 User

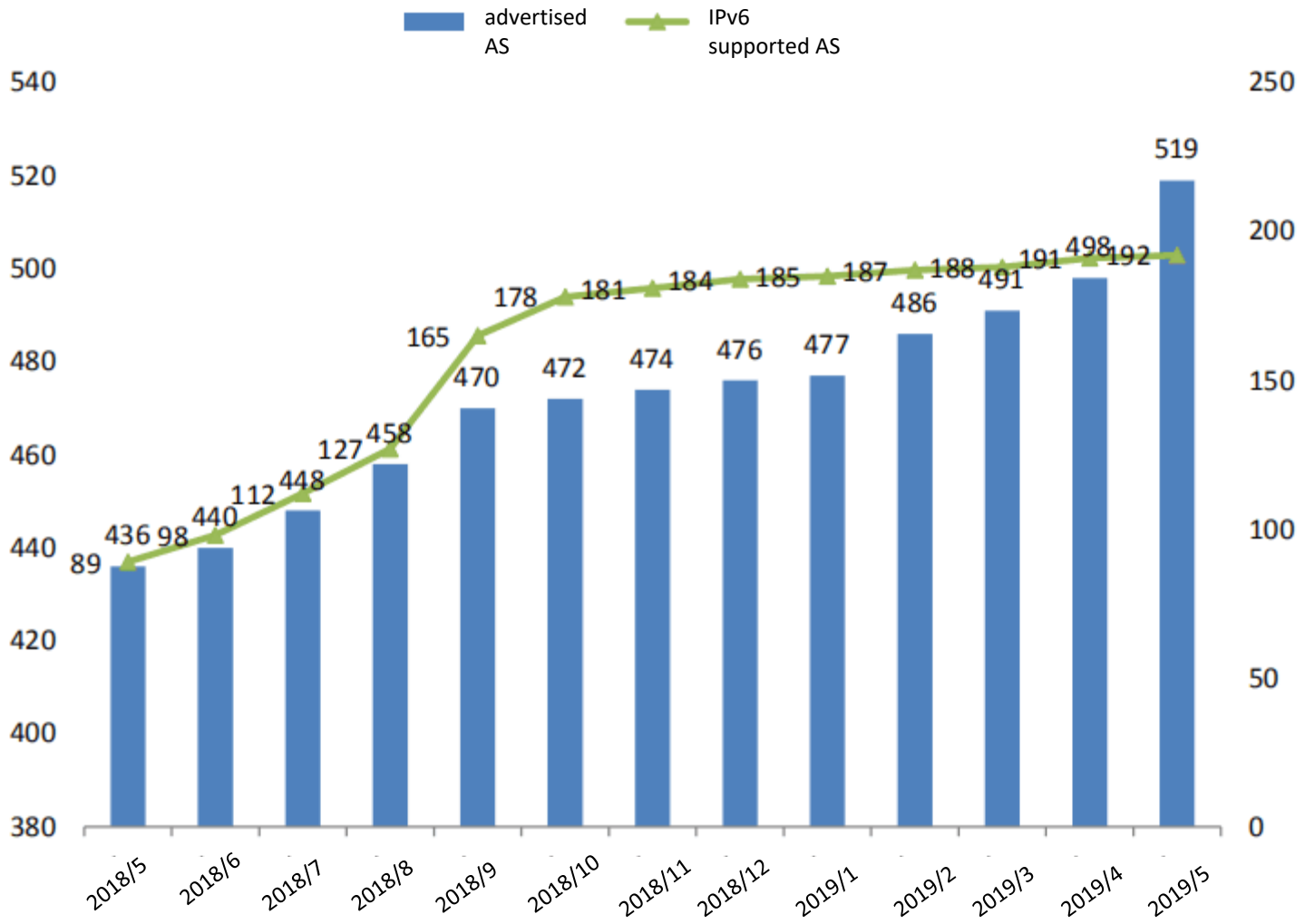
**100 Million**



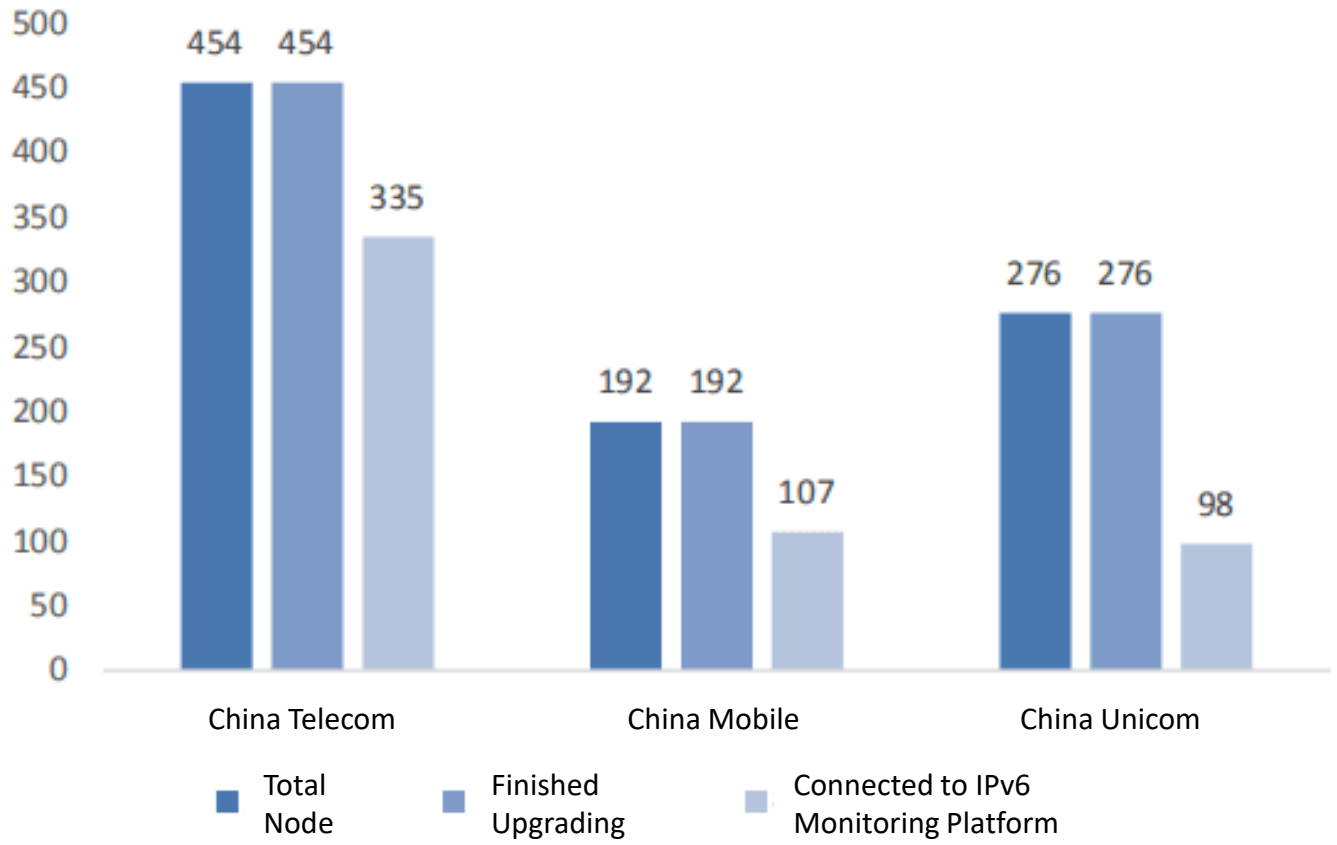
# IPv6 Address Increase



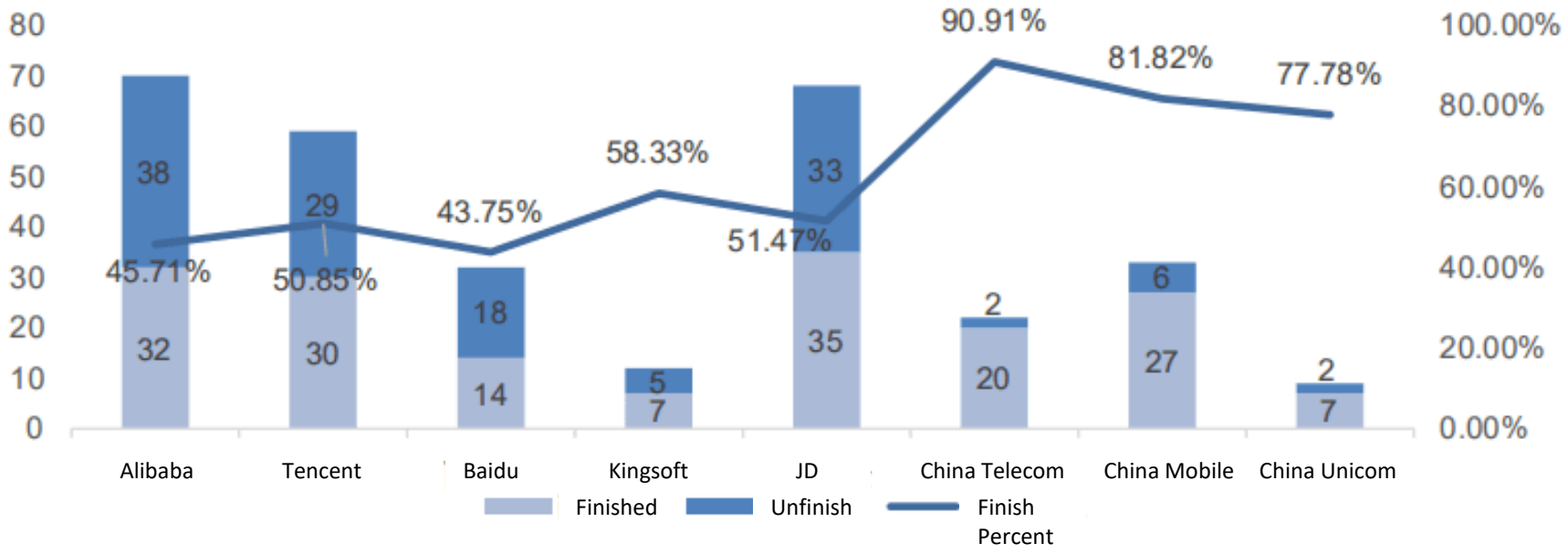
# AS IPv6 Support



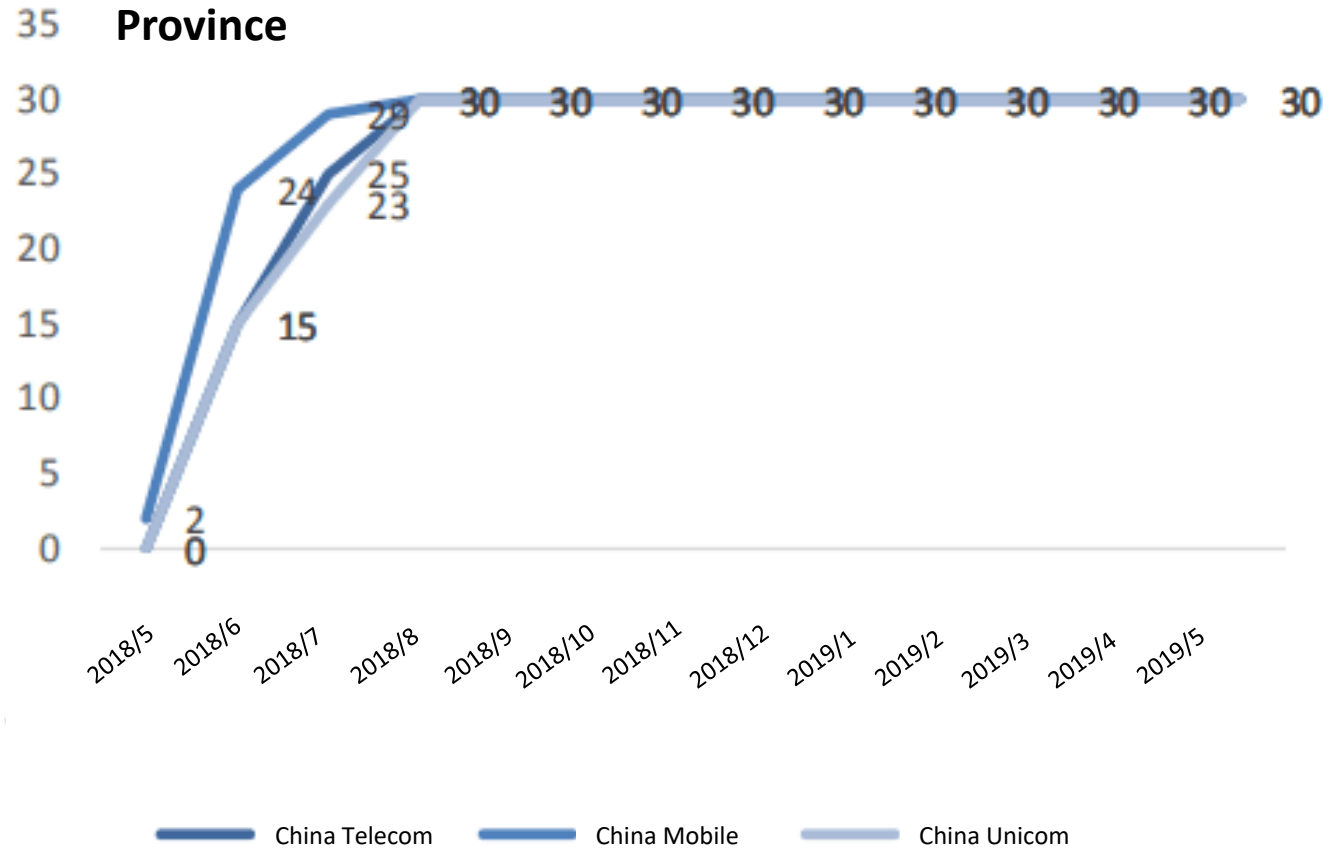
# Network Operator IDC Upgrade



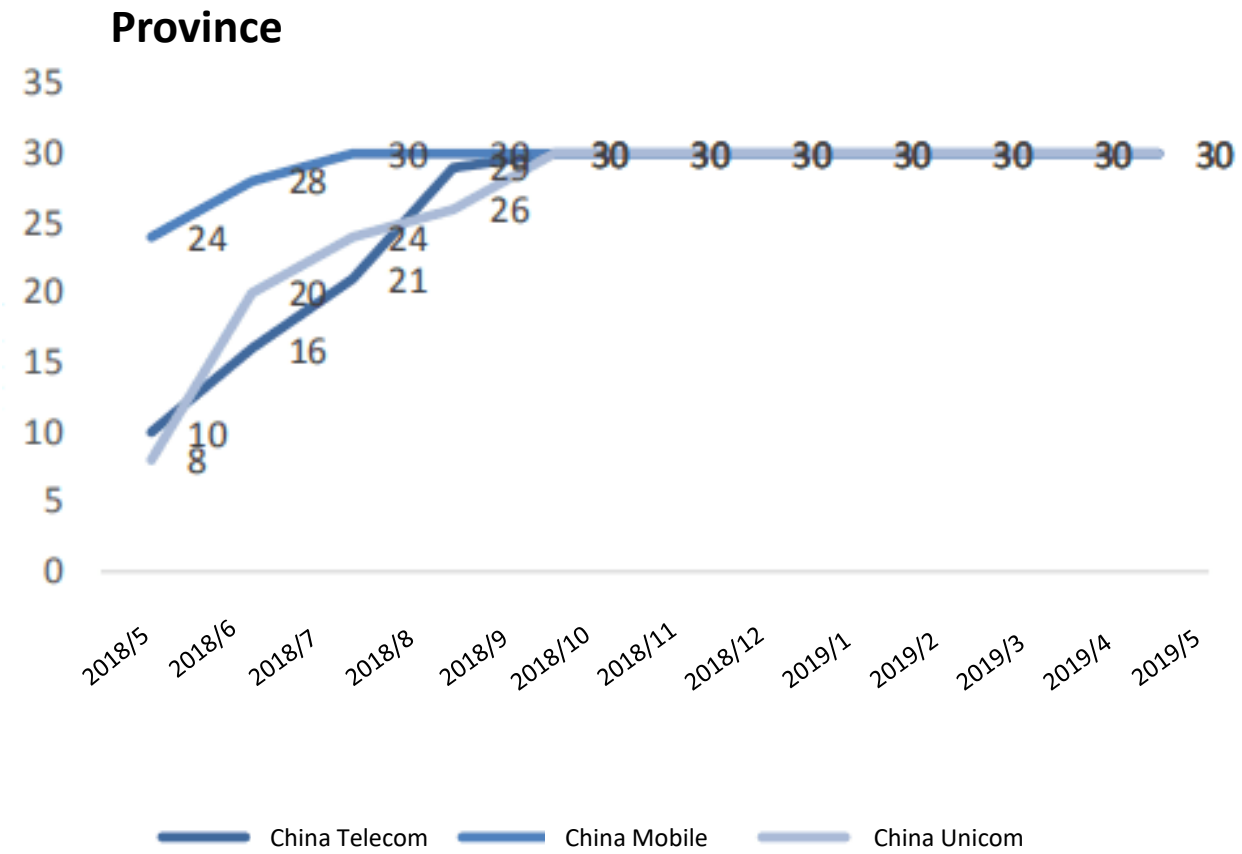
# Cloud Platform Upgrade



# LTE Network IPv6 Upgrade



# Metropolitan Network IPv6 Upgrade



# Metropolitan Network IPv6 Upgrade

**Til 2019/06:**

- **Among 91 Government Websites, 83 are IPv6 accessable (91.2%).**
- **Among 96 Governmental Enterprise Websites, 77 are IPv6 accessable (80.2%).**

腾讯视频

Technology
The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it...
- Mark Weiser 1991

# How about now?

# Yeti DNS Project

**--A Live IPv6-only Root DNS Server System Testbed**

Introduction
Events & Announcements
Yeti Root Zone
Documents & Resource
Operators and Participants
Statistics
Monitoring
Acknowledgement


## Introduction

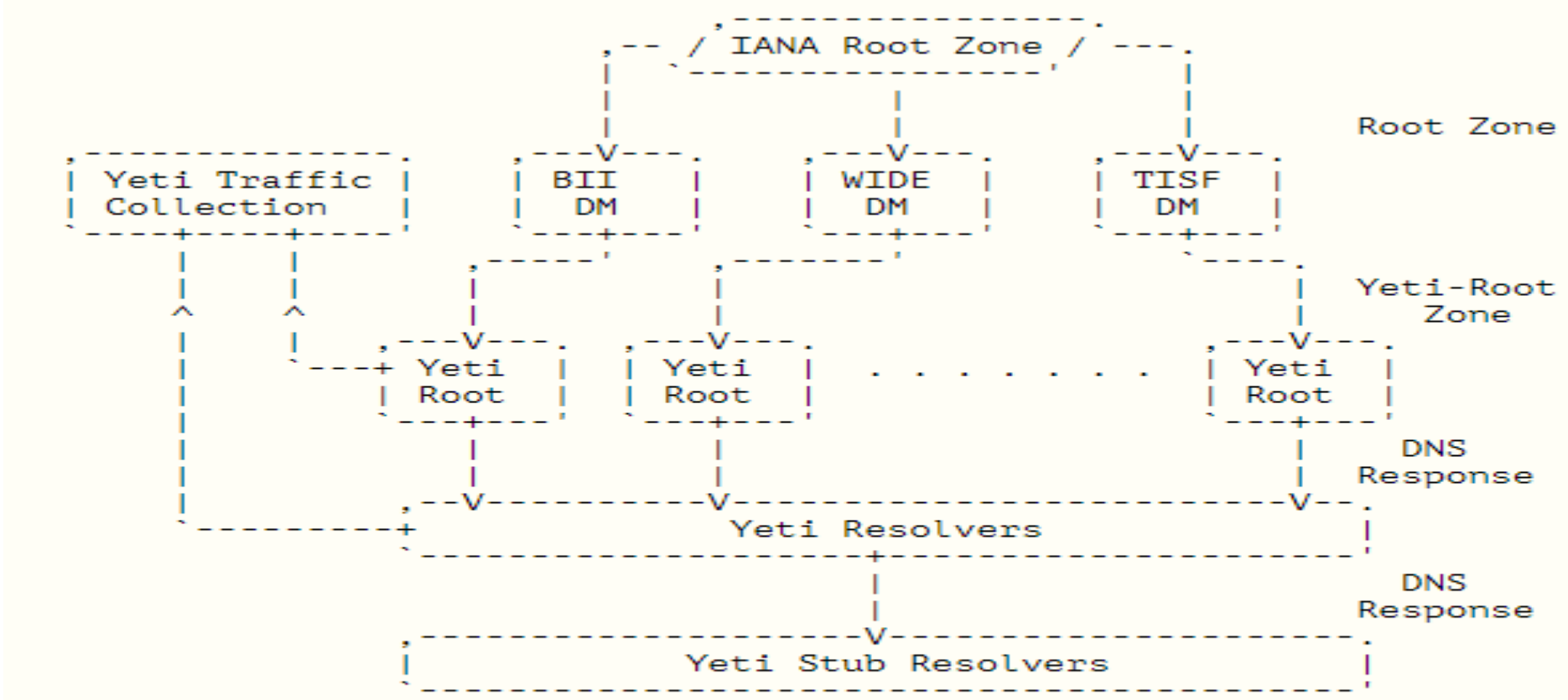
"One World, One Internet, One Namespace" is the essence for the success of today's Internet. The top level of the unique identifier system, the DNS root system, has been operational for 25+ years. It is pivot to make the current Internet useful. So it is considered somewhat ossified for stability reasons. It is hard to test and implement new ideas evolving to a more advanced level to counter challenges like IPv6-only operation, DNSSEC key/algorithm rollover, scaling issues, etc. In order to make the test more practical, it is also necessary to involve users' environment which is highly diversified, to study the effect of the changes in question.

To benefit the Internet development as a whole, the proposal of Yeti Project is formed to build a parallel experimental live IPv6 DNS root system to discover the limits of DNS root name service and deliver useful technical output. Possible research agenda will be explored on this testbed covering several aspects but not limited to:

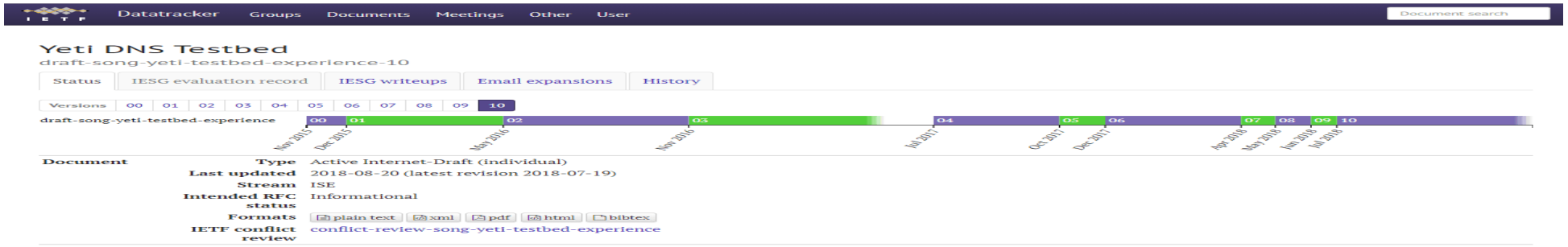
- IPv6-only operation
- DNSSEC key rollover
- Renumbering issues
- Scalability issues
- Multiple zone file signers

Interested parties in this community like individual researchers, labs of universities, companies and institutes are welcome to join us as Yeti root server operators (at least 25 operators), recursive name server operators, and individual researchers. It is expected that Yeti Project can also gain the support from vendors, for example, the DNS software implementers, Developers of CPE devices & IoT devices, middle box developers who can test their product and connect their own testbed into Yeti testbed.

# RFC 8483




The three coordinators of Yeti DNS testbed :
BII : Beijing Internet Institute
WIDE: Widely Integrated Distributed Environment Project
TISF: A collaborative engineering and security project by Paul Vixie



- **Promote Next Generation Internet Infrastructure**
- **Keep a sustainable development of the Internet**

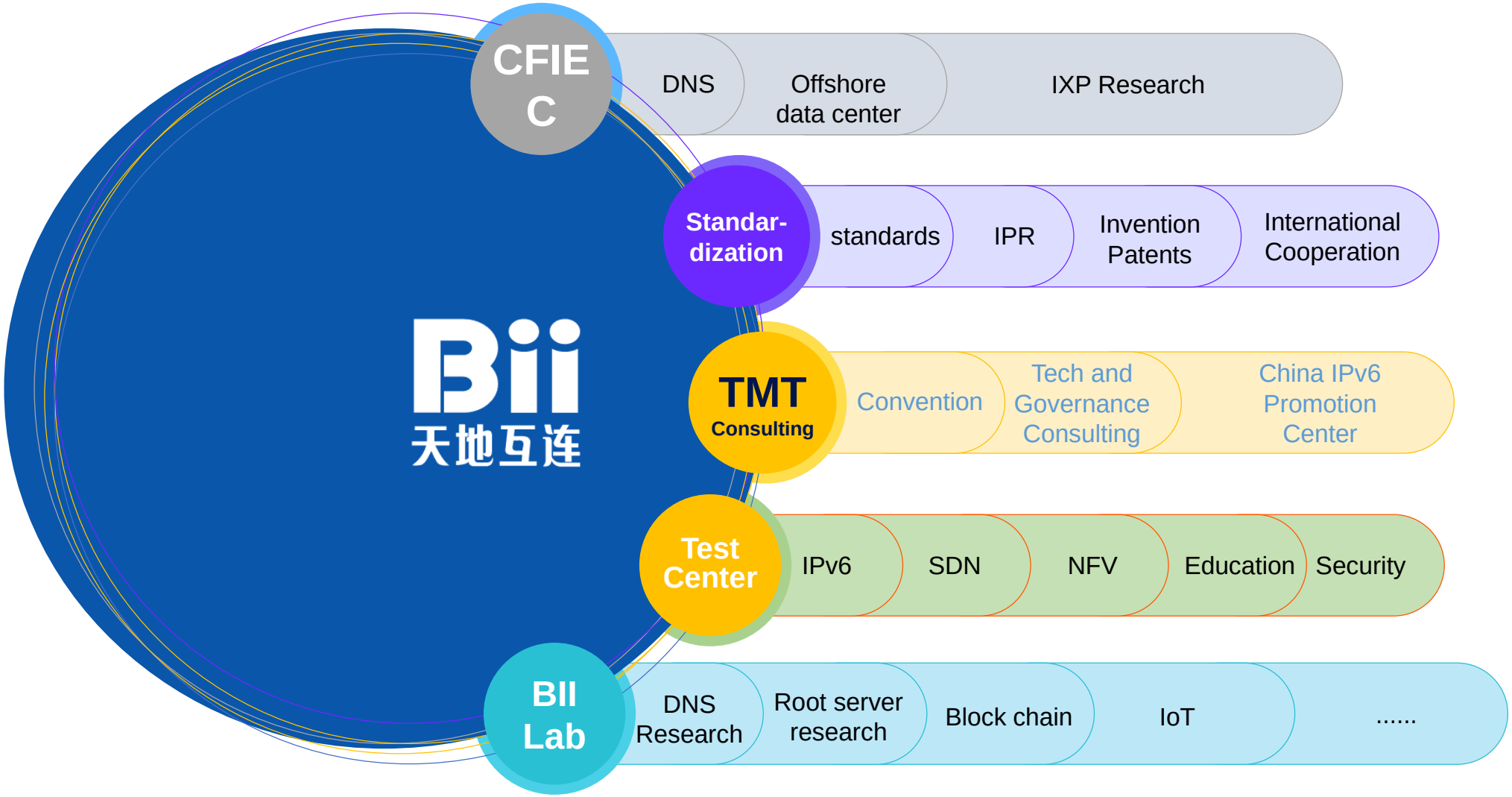
# Global project starting from Asia Pacific Region

## An innovative initiative

# Special thanks to Philippines team

RESOURCES, INC.

# What We Do


CFIEC
DNS
Offshore data center
IXP Research
Standar-dization
standards
IPR
Invention Patents
International Cooperation
Bii
天地互连
TMT Consulting
Convention
Tech and Governance Consulting
China IPv6 Promotion Center
Test Center
IPv6
SDN
NFV
Education
Security
BII Lab
DNS Research
Root server research
Block chain
IoT
.....

# Service to hundreds of enterprises worldwide

## service of IPv6 testing and certificating to hundreds of partners

**Network Equipment vendors**

HUAWEI, ZTE, DCN, Lenovo, Ruijie Networks, TOPSEC, Venustech, JIANGMIN, SECWORLD, www.net.cn, BITWAY NETWORKS, ZTCC, China Datang Co. Potevio, 3COM H3C, MetarNet……

**Terminal device vendors**

MIUI, Lenovo, AIGO, INNOFIDEII, BORQS, Colli High, JIAXUN, Hopen, FOUNDER, VINNOTECH, AUTELAN, BEIJING WATY, LONGDHUA, XINWEI, Veno, KYLAND……

**Service and application provider**

360 Qihoo 360, Baidu, Sohu, 21vianet, CERNET, CAPINFO, Hui Dian, JIANGMIN, Uniware, www.net.cn, ChinaNet.CC, KINGSOFT, Unioncast, offcn, China Telecom, China Unicom, China Mobile……

**Colleges and insitutes**

Tsinghua University, BUPT, Beijing Jiaotong University, Beihang University, USTC, BIT, CNIS, CEPRI, ITEI, CATR, CNNIC, ICT……

# Build the World's Largest Third Party IPv6 Certificate Center

**BII conducts research and development in IPv6 conformance, interoperability, automation and performance testing fields, and offer IPv6 Ready, IPv6 Enabled, IPv6 Education certification globally.**

全球IPv6测试中心
Global IPv6 Testing Center
www.IPv6Ready.org.cn

IPv6 Ready certified equipments trend

**2297 IPv6 Ready Logo**

IPv6 Enabled certified websites trend

**2598 IPv6 Enabled Logo**

**First IPv6 Education Center**

**On July 2018, signed agreement with Nanjing Information Management Institute to collectively promote IPv6 education.**

# Establish Global SDN Test Center and Push for Open Internet Community

## Establish Global DNS Test Center

CFIEC Global SDN Test Center focuses on SDN/NFVdevelopment, promotion and certificates. First group of all 11 **OpenFlow v1.3** products are all tested in the centerand claimed certification.

SDNCTC
全球SDN测试认证中心
Global SDN Certified Testing Center

| Logo ID | 日期 | 厂商名称 | 产品名称 | 产品版本 |
|---|---|---|---|---|
| OFS-1.3-BA-00-0119 | 2015-12 | Huawei Technologies Co., Ltd. | S5720-52X-SI-AC | V2R8C06 |
| OFS-1.3-BA-00-0118 | 2015-12 | Huawei Technologies Co., Ltd. | S7706 | V2R8C06 |
| OFS-1.3-BA-00-0117 | 2015-12 | Huawei Technologies Co., Ltd. | S9306 | V2R8C06 |
| OFS-1.3-BA-00-0116 | 2015-11 | Huawei Technologies Co., Ltd. | S6720-54C-EI-48S | V2R8C06 |
| OFS-1.3-BA-00-0115 | 2015-11 | Huawei Technologies Co., Ltd. | S5720-36C-PWR-EI | V2R8C06 |
| OFS-1.3-BA-00-0114 | 2015-11 | Huawei Technologies Co., Ltd. | S12708 | V2R8C06 |
| OFS-1.3-BA-00-0113 | 2015-09 | Digital China Networks, Ltd. | DCRS-7604 | 7.4.3.0(R0001.0081) |
| OFS-1.3-BA-00-0112 | 2015-09 | Hangzhou H3C Technologies Co., Ltd. | S5130-54QF-HI | ESS 1100 |
| OFS-1.3-BA-00-0111 | 2015-09 | Hangzhou H3C Technologies Co., Ltd. | H3C S6800-54QF | 142 |
| OFS-1.3-BA-00-0110 | 2015-09 | Huawei Technologies Co., Ltd. | CE6851-48S6Q-HI | V100R006 |
| OFS-1.3-BA-00-0109 | 2015-09 | ZTE Corporation | ZXR10 M6000-S | V3.00.10 |

## Establish SDN Test Standard and Tool

➢OpenFlow 1.3 conformance standard Basic single table profile

➢ONF OpenFlow controller performance standard

➢**Self-developed OFsuite**, the world's first test tool that fully covers the ONF OpenFlow v1.3 test specification

## OSPC Open Network Community

Together with ONF established “Open SDN Promotion Center(OSPC)”, aiming to build open SDN eco-system, assist open source program, promote OpenFlow application.

# Global Network Technology Conference 2019

2019 22-24,October China 全球网络技术大会 Global Network Technology Conference

www.theGNTC.com

## Day1 10.22

**PM**

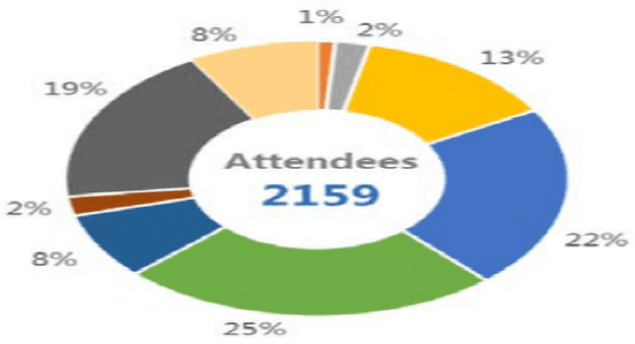
- Opening
- Plenary Session: Global Trends in Advanced Network Technology
- Special Ceremony
  - High Performance Computing Center Opening
  - Advanced Network Innovation Alliance Opening
  - Advanced Network Foundation Opening
  - Signing Ceremony
- IPv6 Hall of Fame Ceremony
- Banquet

## Day2 10.23

| | Summit | Summit | Summit |
|---|---|---|---|
| **AM** | IPv6 | 5G | Edge Computing & IoT |
| | Workshop LF Networking | Workshop Network 5.0 | Workshop Customization |
| **PM** | Summit | Summit | Summit |
| | SDN/NFV | AI/Blockchain | Cloud |
| | Workshop Network Security | Workshop OpenStack | Workshop Customization |

### By Industry

- Carrier
- Gov. Dept. Director
- Equipment Manufacturer
- Software Provider
- IDC & Cloud Company
- Research Institute/College
- Financial Institution
- Media
- Others




### By Position

- Government
- President/VP
- CEO/GM/Director
- Manager/Deputy Manager
- Engineer
- Marketing/Sale/Consult
- Editor/Journalist/Specialist
- Professor/Lecturer/Student
- Others

# Thank You!

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