

Promoting IPv6 deployment and infrastructure security

ITU Regional Development Forum (RDF-ASP)
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Outline

- SDGs, the WTDC Action Plan and IPv6
- Global and regional IPv6 adoption
- IPv6 trends, challenges and opportunities
- IPv6 deployment use cases
- Training and capacity-building efforts

SDGs, the WTDC Action Plan and IPv6

- Goal 9c: Significantly increase access to ICTs and strive to provide universal and affordable Internet access by 2020.
- “Once everyone is connected, we will also see extraordinary progress achieved towards each and every one of the SDGs through emerging technologies such as the Internet of Things (IoT)” ITU blog, July 2016
- PRELIMINARY DRAFT ITU-D ACTION PLAN 2018-2021
Output 2.1 – A role of IPv6

So what is IPv6?

Internet Protocol version 6 (IPv6) is the next generation of the Internet protocol. It was developed to succeed version 4 (IPv4) as IPv4 addresses have almost run out globally.

- Two different Internets
- NOT interoperable
- There's a need to upgrade/migrate/transition to IPv6

What's the situation now?

APNIC reached the last /8 of IPv4 addresses in April 2011, and now provides IPv4 resources according to the “last /8 policy”.

The scarcity of IPv4 makes IPv6 deployment critical for all networks and organizations in the Asia Pacific.

IPv4 vs IPv6

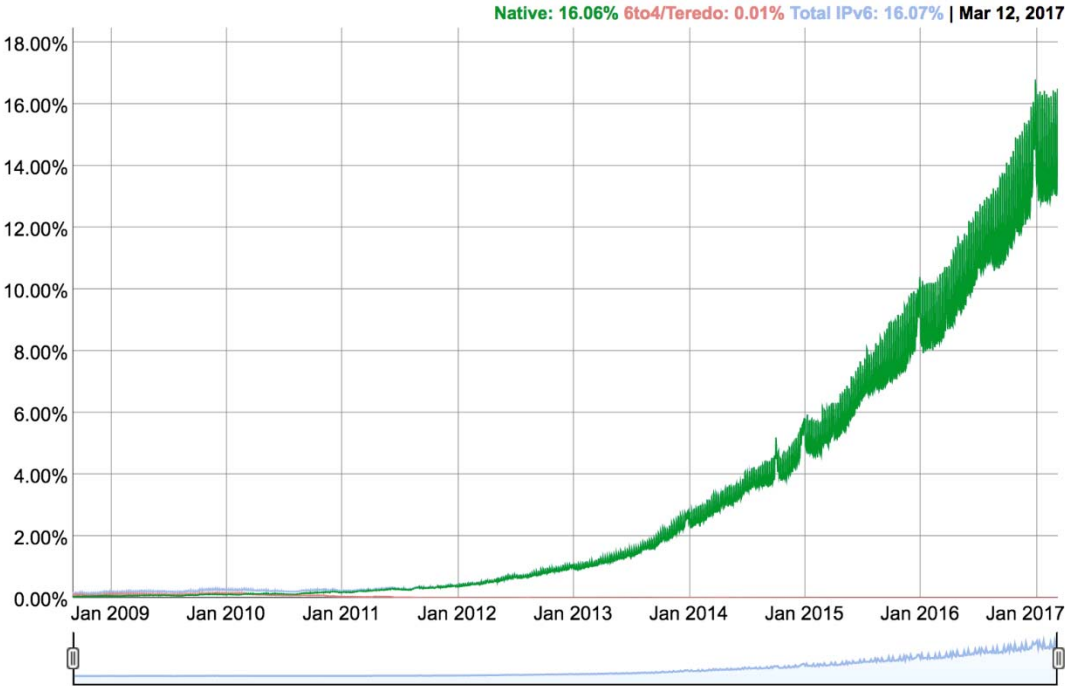
3.7 billion IPv4 addresses available for use on the Internet compared to 340 trillion trillion trillion IPv6 addresses.

IPv6 addresses comprise 128 bits and they are usually shown as sequences of hexadecimal digits.

Example: 2001:0db8:85a3:0000:0000:8a2e:0370:7334

A distant future Internet of 100 trillion devices would only consume a mere 5% of the available IPv6 space (there are about 5 billion devices now).

IPv6 Adoption Status by Google



IPv6 is already being deployed around the world

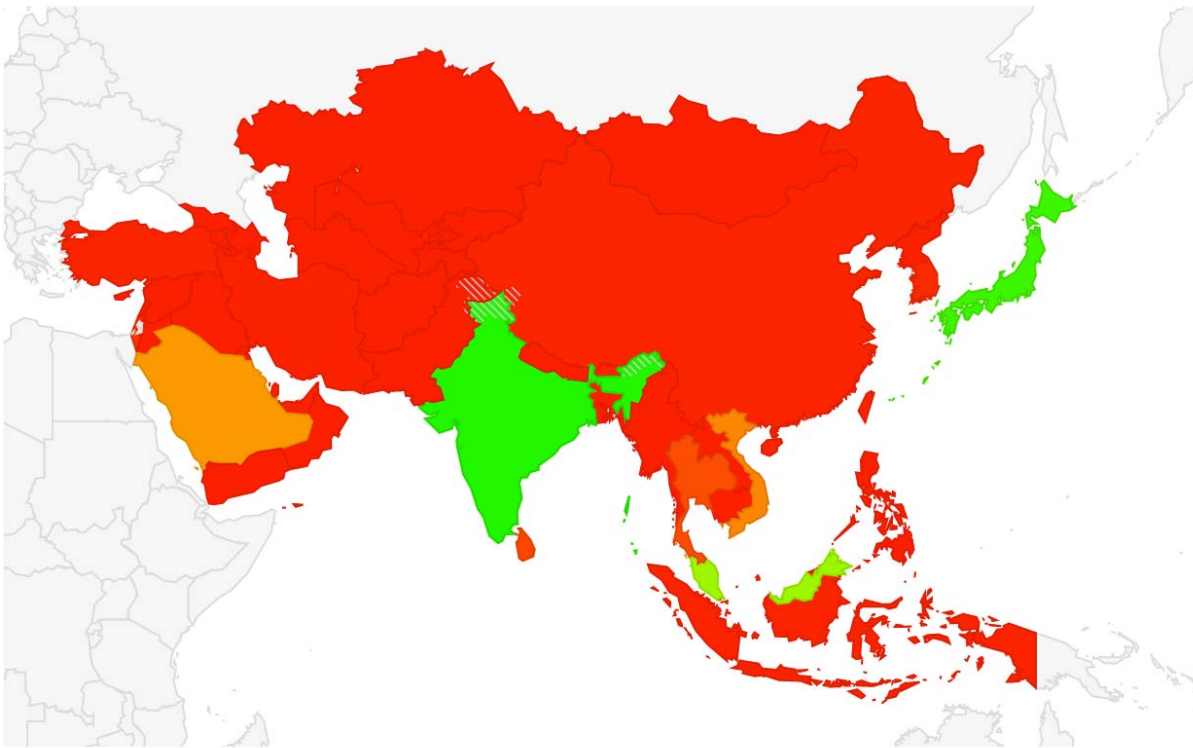
Native IPv6 adoption: 16.06%

IPv6 Deployment Worldwide

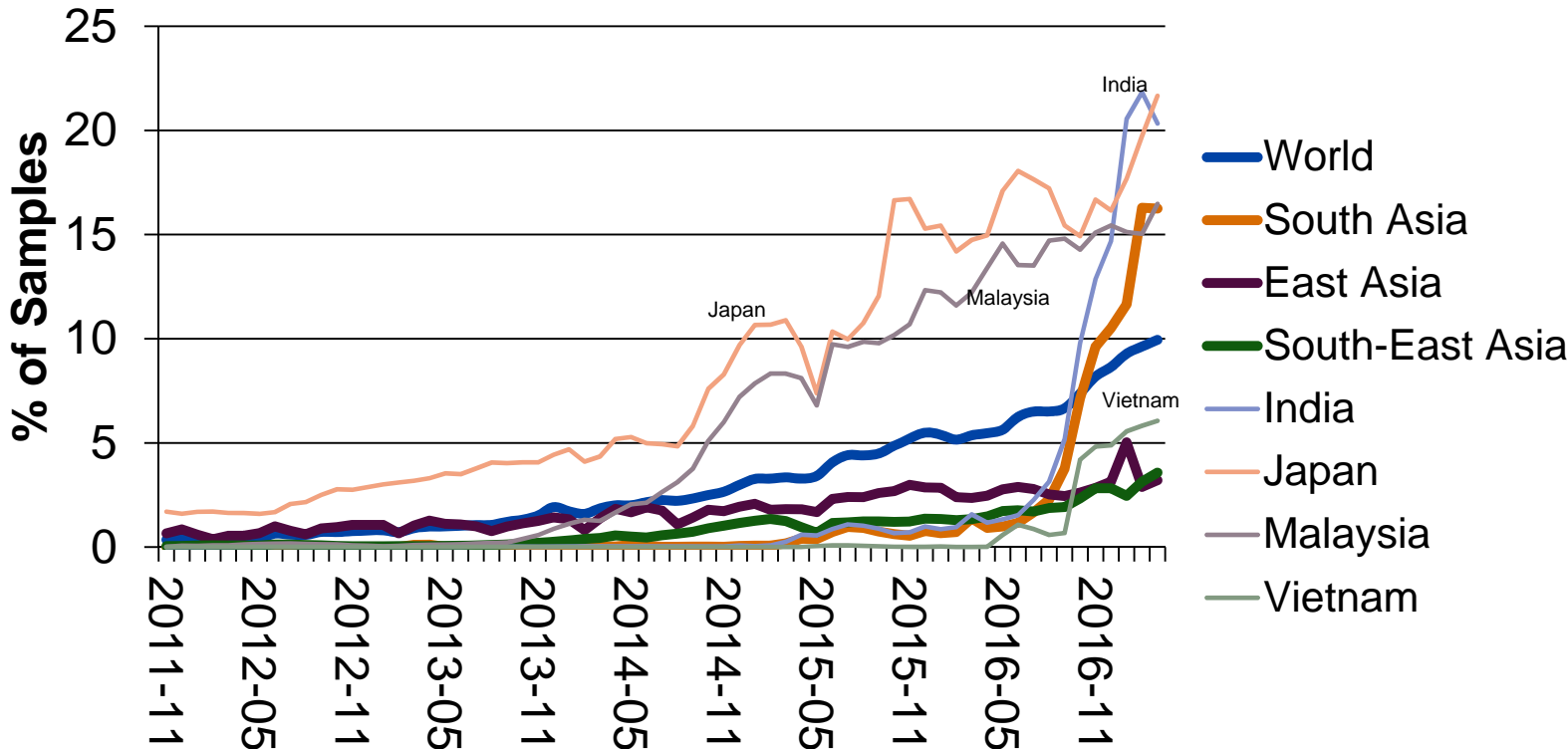


~18% increase
since start of
2017

IPv6 Deployment in the Region



IPv6 Capability (Asia, headline economies)



IPv6 Deployment in the Region

Economy	Sub Region	IPv6 Capable
India	Southern Asia	21.99%
Japan	Eastern Asia	20.58%
Malaysia	South-Eastern Asia	15.76%
Australia	Oceania	14.15%
New Zealand	Oceania	9.05%
Vietnam	South-Eastern Asia	5.88%
Singapore	South-Eastern Asia	4.15%
Thailand	South-Eastern Asia	3.12%
South Korea	Eastern Asia	1.00%
China	Eastern Asia	0.39%

<http://stats.labs.apnic.net/ipv6/XU?o=cXDw1x1r1>

What's the benefit of moving to IPv6?

- **More connectivity:** The ability to deploy new services and expand networks without running out of addresses.
- **Greater speed:** Many large content providers such as Google, Facebook and LinkedIn have converted to IPv6.
- **Lower cost:** Increasing network complexity associated with IPv4 NAT technology, coupled with rising prices of IPv4 addresses.
- **New opportunities:** The recapitalization of networks can invite new business and help grow market share.

APNIC-ITU Capacity-Building Efforts



“IPv6 Transition Strategies and Technologies” Workshop Vientiane, Laos - August 2014



“IPv6 Infrastructure Workshop” Phnom Penh, Cambodia – July 2016

ITU CENTRES OF EXCELLENCE NETWORK FOR ASIA PACIFIC REGION

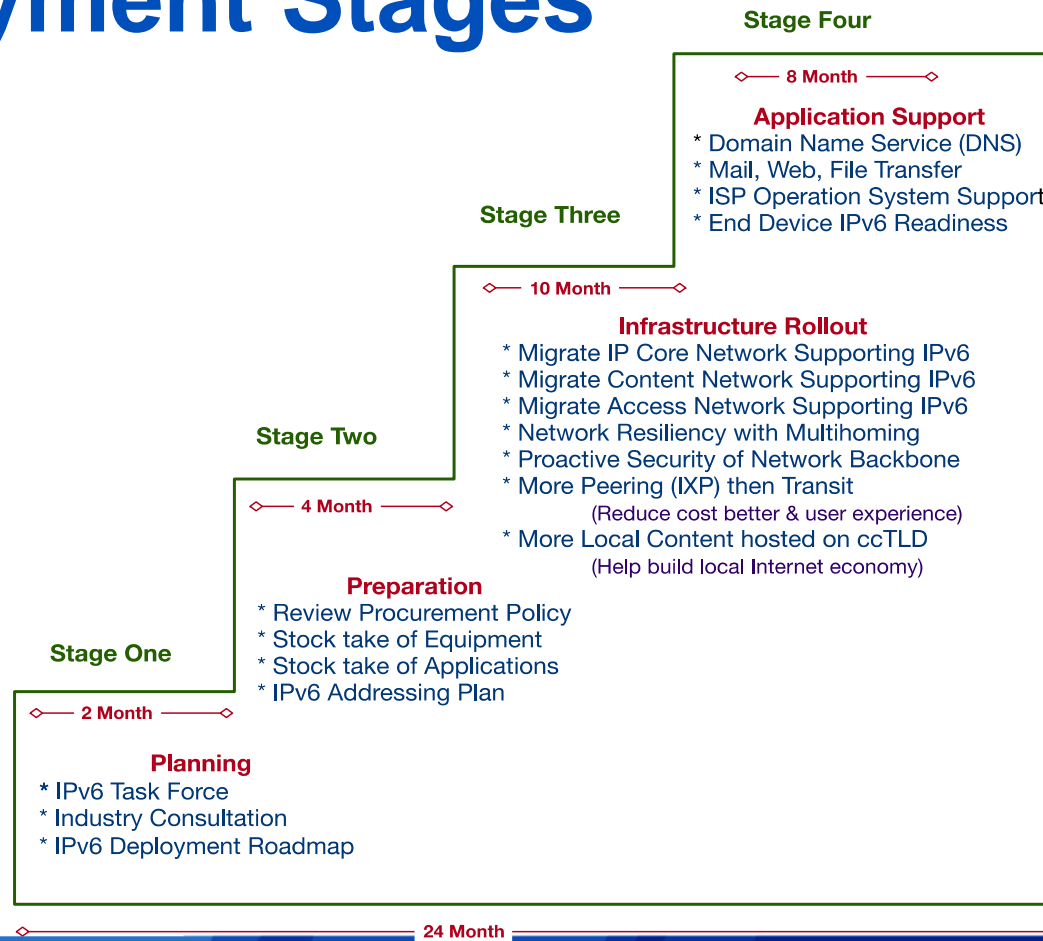
“Internet and IPv6 Infrastructure Security”

8 – 12 May 2017, Nonthaburi, Thailand

Workshop on IPv6 Adoption by ASEAN government agencies.

- APNIC and Singapore's Infocommunications Media Development Authority (IMDA) IPv6 adoption workshop for ASEAN government agencies
- Part of ASEAN Telecommunications Senior Officials Meeting (TELSOM) and ASEAN Telecommunications Regulators' Council (ATRC) joint working group meeting in Jakarta in May 2016
- APNIC presented four stage strategy to deploy IPv6 for government

IPv6 Deployment Stages



The APNIC Foundation



A global, open, stable, and secure Internet
that serves the entire Asia Pacific community

<https://apnic.foundation/>