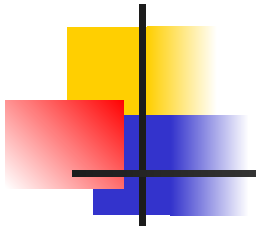
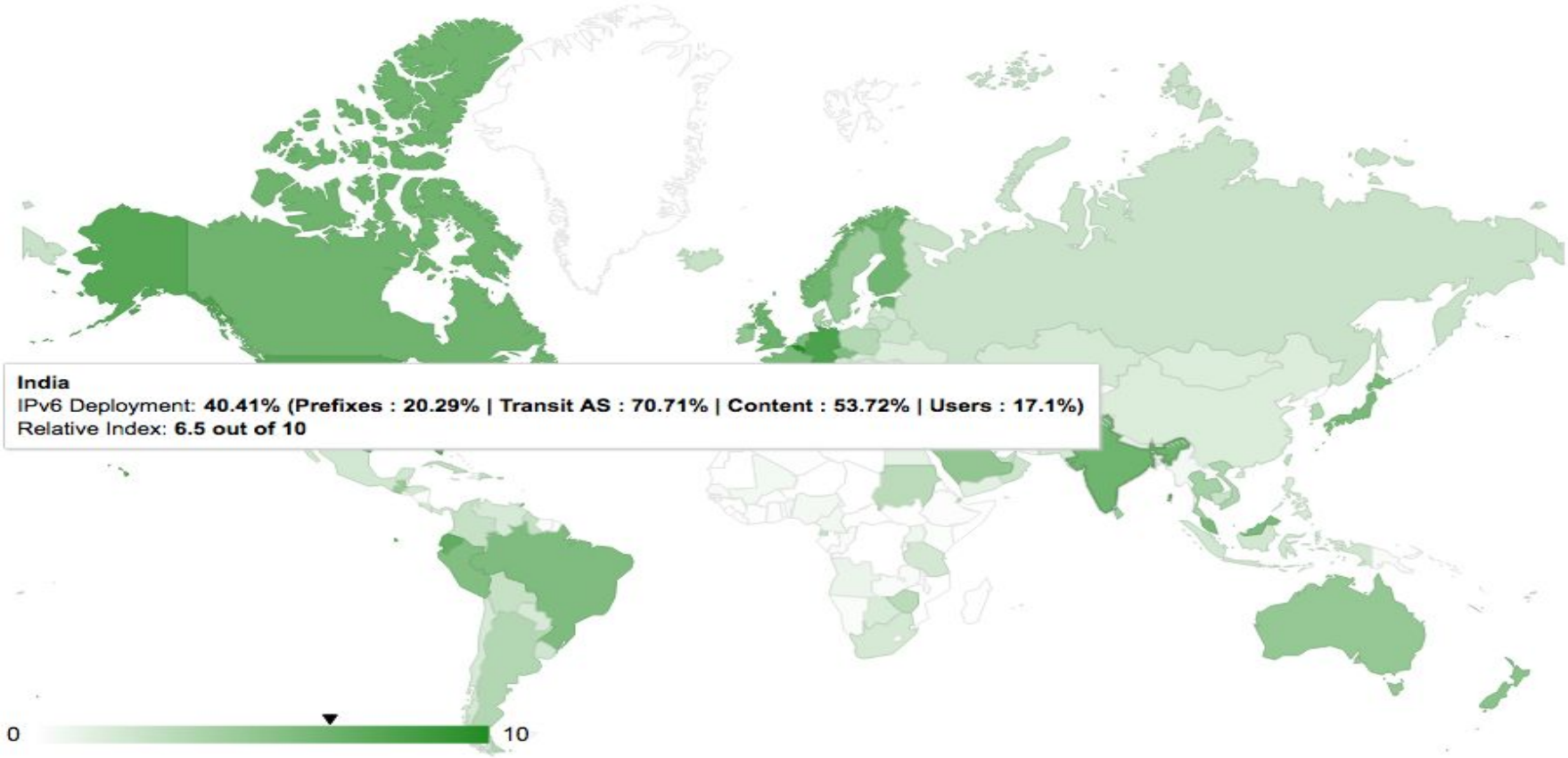


India IPv6 Measurement

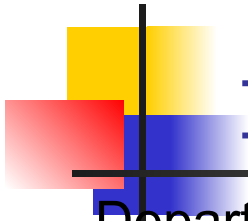
IPv6 Readiness Measurement BoF
APNIC 43
28 February 2017

Ajai Kumar
India
joinajay1@gmail.com

IPv6 Deployment in India as per Cisco



http://6lab.cisco.com/stats/index.php 24-02-2017



IPv6 in India

Department of Telecommunications,Govt of India prepared a Roadmap for adoption of IPv6 in the network of all stakeholders.

TEC (Telecommunication Engineering Center) is writing specification for IPv6 certification.

Sify Technologies Limited, a private Internet Service Provider, rolled out IPv6 since in 2005.

ERNET India is conducting training for Govt officials free of cost.

IRINN is delegating the IPv6 Resource virtually free.

Reliance Jio is running on IPv6 from its first day and 90 million LTE customers are on IPv6.

Top 20 enterprises with IPv6 deployment in India

ASN	Company Name	IPv6 Capable	IPv6 Preferred	Samples
AS45644	State Bank of India	90.40%	0.80%	250
AS55836	Reliance Jio INFOCOMM Ltd	75.36%	67.32%	1,21,92,004
AS134854	Robert Bosch engineering and business solutions private limited	74.30%	0.11%	79,600
AS55446	Centre for Development of Telematics	35.68%	35.68%	398
AS132711	Dell SonicWALL	23.17%	8.54%	164
AS131222	MTS-INDIA	21.41%	19.92%	2,90,626
AS17439	Netmagic Datacenter Mumbai	16.67%	16.66%	22,440
AS132524	Tata Institute of Fundamental Research	9.42%	9.42%	658
AS24391	iGATE Global Solutions Limited	6.82%	0.00%	440
AS132779	RackBank Datacenters Private Ltd	6.61%	0.00%	242
AS45271	Idea Cellular Limited	6.33%	2.40%	10,02,568
AS17624	Qualcomm Inc. Bangalore	6.05%	0.00%	5,984
AS38205	VIDEOCON	4.47%	4.21%	760
AS10199	Tata Communications Ltd	4.33%	4.17%	56,878
AS38536	Software Technology Parks of India	3.43%	3.43%	642
AS133296	Werks DataCenter Pvt. Ltd.	3.29%	1.97%	304
AS132166	Rida Communication Private Limited	3.12%	0.00%	2,050
AS45815	ESDS Software Solution Pvt. Ltd.	2.10%	2.07%	13,516
AS55479	IIT Kanpur	1.71%	1.61%	3,860

IPv6 Deployment Measurement in Asia as per APNIC lab dated 25-02-2017

No.	CC	Country	IPv6 Capable	IPv6 Preferred	Samples
1	**IN**	**India**	**20.16%**	**17.79%**	**2,40,95,452**
2	JP	Japan	18.78%	16.33%	42,48,814
3	MY	Malaysia	15.23%	13.48%	59,08,363
4	SA	Saudi Arabia	6.49%	6.03%	1,60,88,996
5	VN	Vietnam	5.65%	5.29%	2,28,24,973
6	SG	Singapore	4.15%	3.26%	21,62,219
7	TH	Thailand	3.00%	2.91%	66,64,851
8	LK	Sri Lanka	2.66%	2.42%	58,69,276
9	IL	Israel	1.86%	1.81%	66,72,855
10	MO	Macao	1.25%	0.91%	4,66,829
11	KR	Republic of Korea	1.04%	0.62%	32,05,678
12	HK	Hong Kong	0.77%	0.11%	30,21,306
13	TR	Turkey	0.56%	0.02%	1,60,17,022
14	CN	China	0.41%	0.28%	1,62,68,417
15	BT	Bhutan	0.37%	0.37%	96,666
16	TW	Taiwan	0.26%	0.22%	50,62,953
17	AE	United Arab Emirates	0.19%	0.18%	25,55,431
18	ID	Indonesia	0.17%	0.10%	1,07,64,601

IPv6 in Internet Exchange Points in India

NIXI has taken up a number of steps to encourage IPv6 activities in the country.

NIXI set up parallel IPv6 Exchange Routers (test bed) in Mumbai and Delhi Exchange points during 2008.

NIXI Exchange Routers are on Dual Stack at all locations.

NIXI website(www.nixi.in) is IPv6 compatible and IPv6 forum certified .

Mumbai IX(the private largest Internet Exchange point) is also running on Dual Stack.

IPv6 Awareness Programme by Indian companies at different locations

NIXI hosted 10 Hands-on training on IPv6 configuration, in association with APNIC.

NIXI sponsored free of cost training program to 115 engineers across the country for IPV6 online training which include virtual labs for hands on training in association with NIIT.

NIXI & DoT,ERNET,BSNL conducted awareness seminars on IPv6 at major cities in India.

NIXI conducted number of workshops on IPv6 security, Internet resource management(IRM) and Internet Routing Registry(IRR) training at different locations in India.

IPv6 Readiness of .IN CCTLD

IN Registry has been accepting the NS records for both IPv4 and IPv6 from domain registrars for the .IN Zone file publishing and the domains are resolving fine from registry end.

IN Registry Nameservers are responding to DNS queries on dual stack.

Primary and Secondary Datacenters are capable of handling the IPv6 connections from any registrars interested in using their IPv6 addresses for connecting to the registry.

The Registry website is on dual stack i.e. IPv4 and IPv6, in accordance with the guidelines issued by the DoT for IPv6 compliance.

Government Initiatives

NTP-2012 : Implementation of IPv6

Preamble:

NTP-2012 recognizes futuristic roles of Internet Protocol version 6 (IPv6) and its applications in different sectors of Indian economy.

Objective:

Achieve substantial ***transition to new Internet Protocol (IPv6) in the country in a*** phased and time bound manner by 2020 and encourage an ecosystem for provision of a significantly large bouquet of services on IP platform.

Policy Decisions in July 2010 Roadmap v-I

All Major Service Providers will offer IPv6 services by 12/2011.

All Government, shall start using IPv6 services by 03/2012.

Formation of the India IPv6 Task Force:

Three tier Structure of Task Force–

- *Oversight Committee.*
- *Steering Committee.*
- *Working Groups.*

Glimpse of IPv6 Deployment in India

SERVICE PROVIDERS

- 15 Service Providers ready to handle IPv6 traffic and Enterprise IPv6 services
- 9 ready to offer Broadband services on IPv6.

CONTENT PROVIDERS

- 6 out of Top 10 Websites are on IPv6.

GOVERNMENT

- All Government Organizations, including its PSUs, have been sensitised and geared up for IPv6 transition.

ENTERPRISE

- Banking Sector is going to be ready soon
- More than 20 enterprises across India have enabled IPv6 in their network.

Industry wise Adoption Timelines and Guidelines on IPv6

(As per second Road Map released on March 2013)

SERVICE PROVIDERS

- **Enterprise Customers - 01-01-2014**
- **Retail Customers (Wire line)- 30-06-2014.**
- **Retail Customers (Wireless)-**
- LTE customer 3**0-06-2013**
- GSM/ CDMA **30-06-2014**

CONTENT PROVIDERS

- **New contents & applications 30-06-2014**
- **Existing 01-01-2015.**
- **Financial ecosystem 30-06-2013.**
- **The new registrations on '.in' domain 01-01- 2014.**
- **The entire '.in' domain June 2014**

EQUIPMENT MANUFACTURER

- **All mobile phone handsets/ data card dongles/ tablets and similar devices 30-06-2014.**
- **All wire line broadband CPEs 01-01-2014**

GOVERNMENT ORGANIZATIONS

- **Transition plan for transition to IPv6 by December 2017 to be prepared by December 2013**
- **The public interface for delivery of citizen centric services 01-01-2015.**
- **The Government procurement to be either TEC certified or IPv6 Ready Logo certified.**
- **The IPv6 to be included in the curriculum of technical courses being offered by various institutes / colleges**

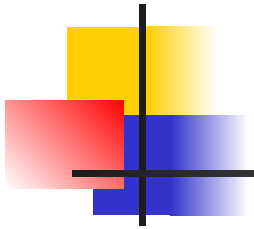
Revision of the IPv6 Transition Timelines

As per second Road Map released on March 2013

SERVICE PROVIDERS	CONTENT PROVIDERS	EQUIPMENT MANUFACTURER	Cloud Computing /Data Centre's	GOVERNMENT ORGANIZATIONS
•**Enterprise Customers** •No change in the timeline •**Retail Customers (Wire line)-** •01-01-2017 •**Retail Customers (Wireless)-** 01-01-2017 •**LTE/GSM customer** 01-01-2017	•**New contents & applications 01-01-2017** •**Financial ecosystem 01-01-2017.** •**The entire '.in' domain should endeavour to adopt IPv6 (dual stack) by 01-01-2017.**	• **No change in the timeline.**	• **All public cloud computing service /data centers providers should Endeavour to adopt IPv6 (dual stack) latest by 01-01-2017**	• **There is no change in the timeline for complete transition to IPv6 (dual stack) by Government organisations which remains as December, 2017.**

Standardization & Testing Facilities

MOU with IPv6 Forum
Setting up IPv6 Test Bed in TEC
NGN Lab & IPv6 Test bed for IPv6 Conformance testing of Telecom Equipment
Ready Logo Certification



Thank You