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Government of India
Ministry Of Communications & Information Technology
Department of Telecommunications

Government of India's IPv6 Deployment Road Map, Its Review and Update

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POLICY DECISIONS

- All major Service providers (having at least 10,000 internet customers or STM-1 bandwidth) will target to handle IPv6 traffic and offer IPv6 services by December-2011.
- All central and State government ministries and departments, including its PSUs, shall start using IPv6 services by March-2012.
- Formation of the India IPv6 Task Force



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STATUS OF THE MAJOR SERVICE PROVIDERS in Indi

Sl. N.	Major Service Provider	Presence	Readiness Status
1	BSNL	All India except Delhi & Mumbai – Fixed & Mobile	MPLS Backbone Ready and on Dual Stack mode, ready to handle IPv6 traffic for Internet leased lines customers on dual stack , report for Broad band & mobile readiness awaited.
2	MTNL	Delhi & Mumbai- Fixed & Mobile	Fixed Ready for IPv6 Internet Leased Line enterprise customers ,for retail BB customers all ready ,except CPE & report for Mobile awaited.
3	Reliance Communication Infrastructure Ltd	Pan India– Fixed & Mobile	Fixed ready to handle IPv6 traffic and offer IPv6 services & Mobile will also be ready soon.
4	Airtel	Pan India	Assured to Comply on time, Final report still awaited.
5	Hathway	Pan India	Assured to be ready by August 2012.
6	Sify Technolges Ltd	Pan India-Data Network Service for Internet & VPN, Network for collocation & Hosting, Cloud-computing services	Ready to offer Services, IP/MPLS backbone across other portfolio are on dual stack.
7	Data Infosys Ltd	Pan India	Assured to Comply on time, final report still awaited.
8	Asianet Satellite Communications Ltd	Kerala- Fixed BB/Cable	Assured to be ready by April 2012.
9	HFCL Infotel Ltd (QuadrantTeleventures Limited)	Punjab	Ready to offer IPv6 services to customers.
10	Beam Cable System Pvt.Ltd	Andhra Pradesh	Assured to Comply on time, Final report still awaited.
11	Tata Tele Services Ltd (TTSL)	Pan India—Fixed & Mobile	Fixed ready to provide dual stack services & Mobile also ready as per discussion in the meeting,.
12	Spectranet	Pan India	Assured to Comply on time, Final report still awaited.
13	Ortel Communications Ltd	Orissa, WB, AP & Chhattisgarh	Assured to Comply on time, Final report still awaited.



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STATUS OF THE MAJOR SERVICE PROVIDERS

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14	HCL Infinet Ltd	Pan India	Assured to Comply on time, Final report still awaited.
15	Ankhnet Informations Pvt.Ltd	Mumbai	Assured to Comply on time, Final report still awaited.
16	Vodafone	Pan India– Fixed & Mobile	Fixed Ready MPLS core on IPv6, 6PE/6VPE, Mobile not yet ready.
17	Shyam Internet Services Ltd	Rajasthan-Fixed	Assured to Comply on time, Final report still awaited.
18	SSTL	Pan India--CDMA	Ready network wise but CPE issue with ZTE/ Qualcomm.
19	Indusind Media & Communcations Ltd	Pan India	Assured to Comply on time, Final report still awaited.
20	Hughes Communication India Ltd	Pan India—Webhosting & Internet through VSAT	Assured to be ready by April 12.
21	Tata Communications Ltd.	Pan India-- Fixed	Ready to handle IPv6 traffic & offer IPv6 services.
22	Southeran Online Bo Technologies Ltd	Andhra Pradesh	Assured to Comply on time, Final report still awaited.
23	Aircel	Pan India	For Mobility & Enterprise services expected to be ready by Q4, 2012, however network tested for enterprises purpose on dual stack with 6PE/6VPE.



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States/UTs Status/Central Government Organizations

Activity	Andhra Pradesh	Maharashtra	Manipur	Meghalaya	Nagaland
Formation of a "Transition Team"	Team formed with Service providers	being formed	Yet to be done	22.08..2011	15.06.2011
Audit of Equipment Reports	10.03.2012	To be done	Yet to be done	14.11.2011	15.08.2011
Set up a pilot test network	15.07.2012	To be identified	Request for pilot project submitted to DIT,GOI	To be identified	31.12.2011
Testing of hardware/ software and migration of applications	15.02.2013	17.09.2012		28.02.2012	29.02.2012
Launch of IPv6 Services	15.03.2013	15.10.2012		31.03.2012	31.03.2012

IPv6 Content Readiness Across Segments

Segment	IPv6 Readiness
Banks	<ul style="list-style-type: none">• Some banks have started IPv6 adoption• Are targeting their most critical content - primarily their internet banking website
Travel (Airlines)	<ul style="list-style-type: none">• Some are undertaking a cost-benefit analysis• Need to plan and begin migration to IPv6 at the earliest
Internet Companies*	<ul style="list-style-type: none">• Key business services are being migrated• Some challenges are being faced – related to payment gateways, DNS, auto assignment, etc.
Enterprises	<ul style="list-style-type: none">• Many have internal systems and hence have not devised an IPv6 plan – DoT is facilitating the required awareness in PSUs and government enterprises• Need to identify public facing content and adopt IPv6

IPv6 Readiness of the Supporting Ecosystem

Segment	IPv6 Readiness
Content Delivery Networks	<ul style="list-style-type: none"> • Most major ones are ready – e.g. Akamai, Limelite, Level 3, etc.
Web Analytics	<ul style="list-style-type: none"> • Not all are compliant - content providers would lose out on IPv6 visitor information initially, but that should be tolerable • Lack of a mature geo-mapping database leads to issues for a small subset of players
Security Providers	<ul style="list-style-type: none"> • Security equipments (hardware) are IPv6-ready – e.g. Arbor, Tipping Point, etc. • However, only the large B2C vendors seem to be IPv6 compliant • Lack of information around security best practices for IPv6
Ad networks	<ul style="list-style-type: none"> • Not all are compliant • Might put off some businesses, especially those who rely mainly on ad-revenue
Payment Gateways	<ul style="list-style-type: none"> • They are primary impediments for transactional sites - very few payment gateways are IPv6 ready • IPv6 migration will need some engineering effort – dual stack alone may not be sufficient
ISPs & Hosting Providers	<ul style="list-style-type: none"> • All major ones are IPv6 enabled • Could play a pivotal role in making the required push for IPv6, happen – e.g. enabling IPv6 support by default, for new content sites



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Indian websites on IPv6---15

Site Name	DNS IPv6 address	Added on
1. <u>tatacommunications-ts.com</u> Tata Communications Transformation Services	2403::24:0:0:0:a	1 day ago
2. <u>bheljhs.co.in</u> bharat Heavy Electricals Limited, Jhansi	2001:4490:dad0::5	2 days ago
3. <u>tataindicombroadband.in</u> :::::New day on the web :::::	2403::24:0:0:0:17	4 days ago
4. <u>ubuntuarhive.hnsdc.com</u> Index of /	2401:4800:123:108:226::4	13 days ago
5. <u>hma.bhelhwr.co.in</u> HARDWAR MANAGEMENT ASSOCIATION	2403::400:8:0:0:0:a	14 days ago
6. <u>www1.bhelhwr.co.in</u> Welcome to BHEL Haridwar Web Site	2403::400:8:0:0:0:a	14 days ago
7. <u>embcoed.bhelhwr.co.in</u> B.Ed college, BHEL EMB Haridwar	2403::400:8:0:0:0:a	14 days ago
8. <u>bhelhwr.co.in</u> Bharat Heavy Electricals Limited	2403::400:8:0:0:0:b	14 days ago
9. <u>hns.net.in</u> Honesty Net Solutions (I) Pvt Ltd	2401:4800::123:108:224:78:2	18 days ago
10. <u>viznet.tatacommunications.com</u> VSNL IPLC CRM ...	2403::24:0:0:0:1c	19 days ago
11. <u>ipv6.bhelivp.in</u> BHARAT HEAVY ELECTRICALS LIMITED	2001:4490:fffc:9c00:117:239:6:210	22days ago
12. <u>ipv6.nkn.in</u> National Knowledge Network - Connecting Knowledge Institutions	2405:8a00:1000::2	99 days ago
13. <u>web.bsnlkannur.in</u> BSNL Kannur - The online information hub of Kannur Telecom	2001:4490:d240::3	158 days ago
14. <u>alttc6.bsnl.co.in</u> IPv6 Website of BSNL at ALTTC Ghaziabad	2001:4490:d930::500	381 days ago
15. <u>tatacommunications.com</u> Tata Communications	2403::24:0:0:0:a	1217 days ago



Procurement of ICT Equipments

➤ Status of TEC IPv6 Lab and IPv6 ready logo certification:

- TEC test bed is under installation and likely to be ready in March, 2012.
- TEC to seek IPv6 ready logo certification from IPv6 Forum .
- DoT/TEC are in consultation with IPv6 world forum for accreditation of the TEC Test Bed as 8th Lab in the world as *IPv6 ready* logo certification lab.
- Meeting with IPv6 world forum's President on 2nd March, 2012 with DoT/TEC officers in this regards.

On request of some of the Government organization for procurement of new ICT hardware DoT has given approval for

“till the Telecom Engineering Centre (TEC), a wing of DoT's test bed becomes operational and gets recognised by the world IPv6 forum for the IPv6 Ready Logo Certification Programme, Organizations may procure the products already certified by the world IPv6 Forum through their IPv6 ready logo programme, the details of which are available in the IPv6 ready logo websites.”



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- Letter by Secretary (T) for making ready the Content/ Applications on IPv6 by all the Government Organizations.
- As per TRAI recommendations all the Government websites to made available on IPv6 by 2012. NIC has been asked to action in this regards.
- Target to pursue the top Government websites to made available on IPv6 : MOF, Railway/IRCTC, Aviation (Air India)/ some of the Pvt. Banks, Heavy Industries & DOAE.
- Pursuing Vendors, Applications & Content Providers for making available their respective products on IPv6.



Important Activity for 2012-13

- **Substantial transition to IPv6 by 2020.**
 - Formulation of New Internet Protocol V6 (IPv6) Deployment Roadmap Version-2 in 2012
- **Setting up of IPv6 innovation centre**
 - Concept Paper & Approval of India IPv6 Innovation Center proposed in 2012
- **All the Government websites on dual stack in 2012 (proposed).**
- **Global IPv6 Summit in India.**
- **Adoption of IPv6 based Pilot Project in Government Sectors .**
- **To Pursue Content, Application and End User Equipment Providers.**
- **IPv6 Ready Logo Certification for TEC Test Bed.**
- **IPv6 implementation workshops for states and central Organizations.**
- **Target to have meeting with End User Equipments Vendors.**
 - Handset/Dongles/Computers/Laptop/Modems/Wi-Fi/& Data Centers vendors.



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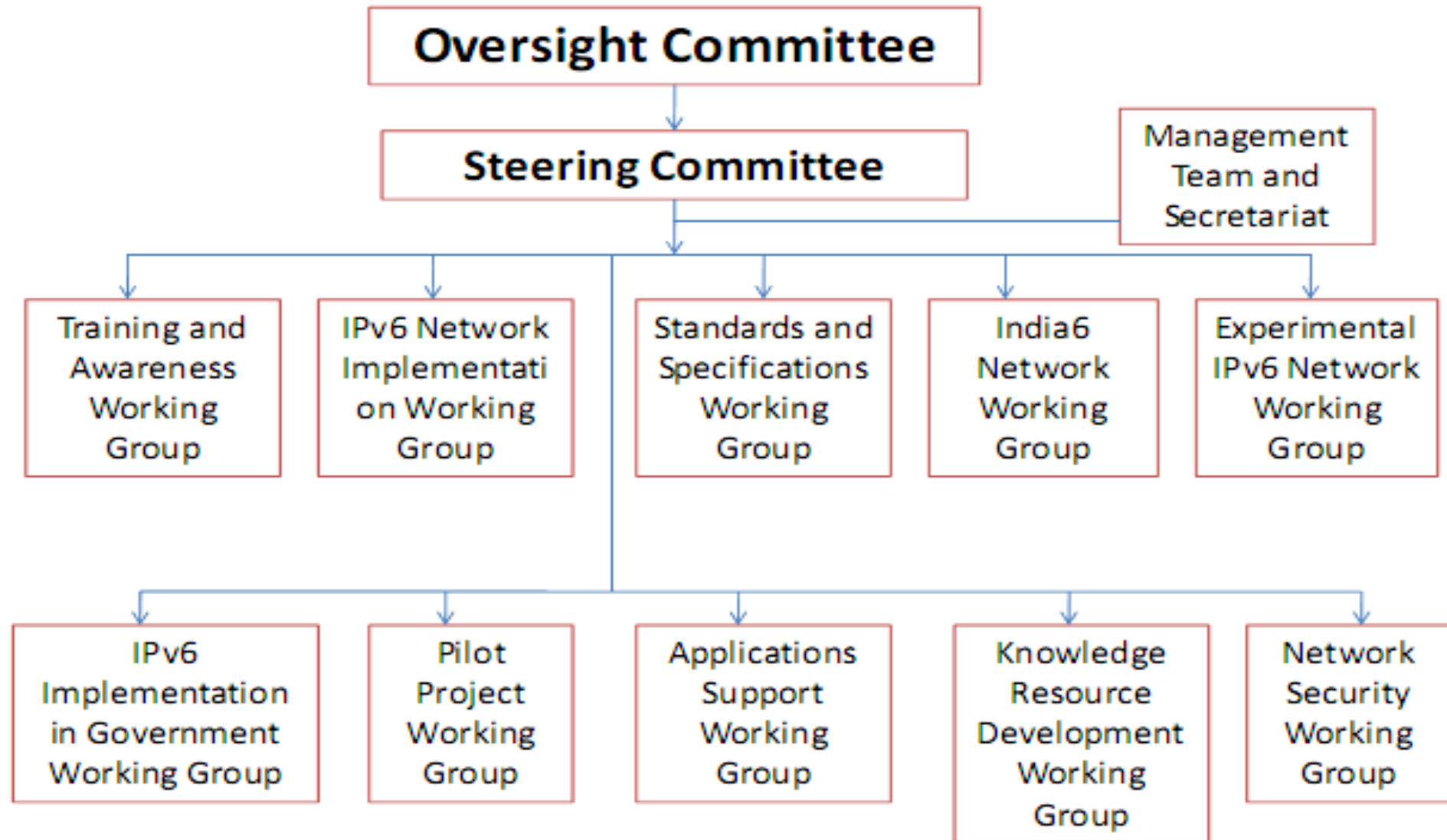
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Thank You



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Structure of “India IPv6 Task Force”





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2nd Meeting held with the Vendors for Readiness of Equipment on 10/13 Feb. 2012

Sl. No.	Vendors Details	Vendors dealing in	Status	IPv6 Certification Status
1	NSN	Complete GSM Product – BSS/OSS, Radio, Core, Packet Core, HLR, Policy Control etc.	Existing before 2011 product not on V6, but by next one and half year it will be ready. New product some are on IPv6 also.	Status to be verified & intimate soon.
2	Ericsson	GSM/CDMA Products- Switches, Routers, BTS, RNCs BSS, OSS, Packet Core, Circuit Core.	Core side Ready (SGSN/GGSN) & Transport /O & M will be ready within next one and half years.	To be checked the same and will be intimated later on.
3	Juniper	Routing/Switching & Security systems & Packet Core (mobile NT) on IPv6.	All the products supplied after 2002, IPv6 Ready.	Status to be verified & intimate soon.
4	Microsoft	Client OS/Server OS & applications— Window XP OS can be made V6 complaint, other products Window Vista, Window 7 are on V6.	All are IPv6 ready	All products IPv6 Ready Logo Certified.
5	IBM, India	Servers & Storage Products-Hardware, All telecom & other applications/ Firmaware—Software.	All the products supplied after 2002, IPv6 Ready.	Status to be verified & intimate soon.



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Sl. No.	Vendors Details	Vendors dealing in	Plan	IPv6 Certification Status
6	Huawei	End to End Products like- Core, Access, Networks, Enterprise & Devices	As far as services are concerned will be ready by Q3, 12 and for dual stack of the old network components and new it will be ready by 2015.	To be checked the same and will be intimated later on.
7	UTStar	Wire line Products like DSLM/IPDSLAM etc.	All Products are IPv6 compliant	Planning to go for IPv6 ready logo certification and TEC test bed will be utilized for that.
8	TEJAS	Transport Equipments—SDH/POTP/ Carrier Ethernet etc. Routers/Switches etc.	Transport on L-2 however some clarification needed from expert group. Routers/ Switches all on IPv6 (Dual Stack)	Presently no certification, like to have certification from TEC after test bed set up.



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States/UTs Status

Activity	Punjab	Tripura	W e s t Bengal	Delhi	Daman & Diu
Formation of a "Transition Team"	Team formed	State IPv6 Transition Committee constituted in Jan 2012	Done	15.03.2012	22.04.2011
Audit of Equipment Reports	As state Govt lacks technical expertise, appropriate consultant should be provided by Dot, GOI.	Empanelment of Auditors by DoT awaited.	30.10.2011	Last week of June 2012	15.06.2011
Set up a pilot test network	To be identified	SDC is proposed for IPv6 compliance testing support from DoT/ NIC/ BSNL	To be identified	Latest by Sept 2012	31.11.2011
Testing of hardware/ software and migration of applications	A continuous Process,	A continuous Process,	A continuous Process,	Dec-12	28.02.2011
Launch of IPv6 Services	31.03.2012	---	----	Dec-12	31.03.2012



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Pilot Projects

The following projects can be identified in the states:

- *IPv6 based tele-medicine*
- *IPv6 based Birth and death certificate*
- *IPv6 cloud based citizen services*
- *Intelligent traffic Management systems*