

TEC/SA/IPv6TF/2010
Government of India
Ministry of Communications & IT
Telecommunication Engineering Centre
Khurshid Lal Bhawan, Janpath

Dated 28th May 2010

Sub: IPv6 Task force: Nominations thereof for IPv6 Task Force at different levels along with a brief biodata and proposed contribution to the activities of the Task Force/working group

Dear Sir,

Government has approved the formation of **IPv6 Task Force** for the smooth transition from IPv4 to IPv6 in the country. This task force shall have different working groups for the speedy deployment of IPv6 in the country. The complete structure of the IPv6 Task force along with functions is attached.

Suitable nominations are invited at different levels in the IPv6 Task Force. It is proposed to have senior functionaries of different stakeholders as members in the Oversight Committee/Steering Committee. The Task Force will consist of many working groups. These working groups shall have IPv6 experts and subject experts from different stakeholders as members. Each working group shall be headed by one of the member organizations that will function as the lead organization for that working group. Details of working groups have been given in the attachment. Senior Executives of the proposed lead organizations shall be given preference over others in the higher level committees.

It is, therefore, requested to kindly send suitable nominations at different levels of the Task Force along with a brief biodata and also details on how the member can contribute to the activities of the Task Force/selected working group.

You may like to take up this case at the appropriate level in your organization. Reply may kindly be sent preferably within 10 days time to facilitate early formation of the IPv6 task force in the country.

For any clarifications, the under mentioned officers may be consulted –

- 1) R.M.Agarwal, DDG(SA), TEC; ddgsa.tec@gov.in ; Mob: 9868133440
- 2) B.K.Nath, Dir (SA), TEC ; dirsa3.tec@gov.in ; Mob: 9868137003

With regards

B.K.Nath
28/05/2010
B.K.Nath,
Dir(SA), TEC

	5
India IPv6 Task Force	

**India IPv6
Task Force**

5.0 Introduction

The transition from IPv4 to IPv6 will affect many organizations. At the same time it is not possible for any one organization to bring about this change. It has to be a coordinated national effort among different stakeholders. During the various workshops conducted by TEC throughout the country, it has emerged to create a task force for deployment of IPv6 in India. This is the method adopted by many countries around the world for facilitating the deployment of IPv6 in their countries. The Task Force will bring together all the different stakeholders to a common platform where they can together discuss the issues, develop and implement the strategies for making the transition to IPv6 possible.

The goal of the Task Force will be to examine the impact of IPv4 address exhaustion from the varying standpoints of the different players involved in the provision of network systems (infrastructure providers, equipment vendors, system integrators, service providers, etc.), imparting the need for an industry-wide recognition of issues and consideration of strategies and countermeasures. The Task Force will emphasize and facilitate the importance of the open sharing of information. As a collaboration of Telecommunications and Internet-related Associations, the Task Force will integrate the resources of various member communities, actively working towards the smooth continuity of Internet-based business throughout the process of and following the exhaustion of IPv4 addresses.

The Creation, structure and working of the Task Force is one of the approved actionable points emerged during five different National IPv6 awareness workshops, one International Summit in Delhi and one exclusive workshop with the service providers, nodal officers and industry associations held by TEC during FY2009-10. The structure is based on the feedback received in these workshops and the summit.

5.1 Duration of Existence of the Task Force

It is once again highlighted that approximately 2 years time frame is available before new IPv4 addresses are more or less depleted. After 2 years our networks can continue to grow only if they adopt IPv6. Even after that the transition of existing IPv4 networks to IPv6 will continue. Transition of all communications networks from IPv4 to IPv6 is a long term

process. It will take many years for IPv6 to replace IP4 and establish itself. It will not happen overnight. Therefore, there is a need to have a permanent establishment to deal with all IPv6 related issues in the years to come. This type of establishment has already been set up in some countries but presently India has no such establishment. When this institution is set up in, it can be named “Indian IPv6 Centre for Innovation”.

The Task Force is only an intermediate short term solution to take up all the IPv6 related issues on priority. *In the long term all activities of the Task Force will be taken over by the “Indian IPv6 Center for Innovation” once it is established.* The Task Force can be wound up after the *Indian IPv6 Center for Innovation* has acquired enough capabilities to carry on the unfinished work of the Task Force in the future.

5.2 Action Items for the Task Force

The task Force will take up activities in the following key areas.

- 1. Raise awareness on the exhaustion of IPv4 and impact of IPv6 on proliferation of Internet and broadband in the country**
 - Activities related to enlightenment, publicity and education
 - Organizing training programmes, workshops, conferences and tutorials
 - Advice to the Government on Policy issues dealing with IPv6

- 2. Encourage all stakeholders to begin the initial phases of IPv6 readiness**
 - To synchronize the activities of various stakeholders
 - List up the issues to solve by each player
 - Information sharing among member organizations
 - Advise to member organizations on IPv6 technical issues during the transition process
 - Identification of challenges and solutions using IPv6
 - Outreach to new stakeholders suffering from IPv4 address exhaustion

- 3. Development of transition plans in subsequent phases to support a smooth and wide transition to IPv6**
 - Conduct surveys, studies and review of the progress by different organizations and the country as a whole during the transition process

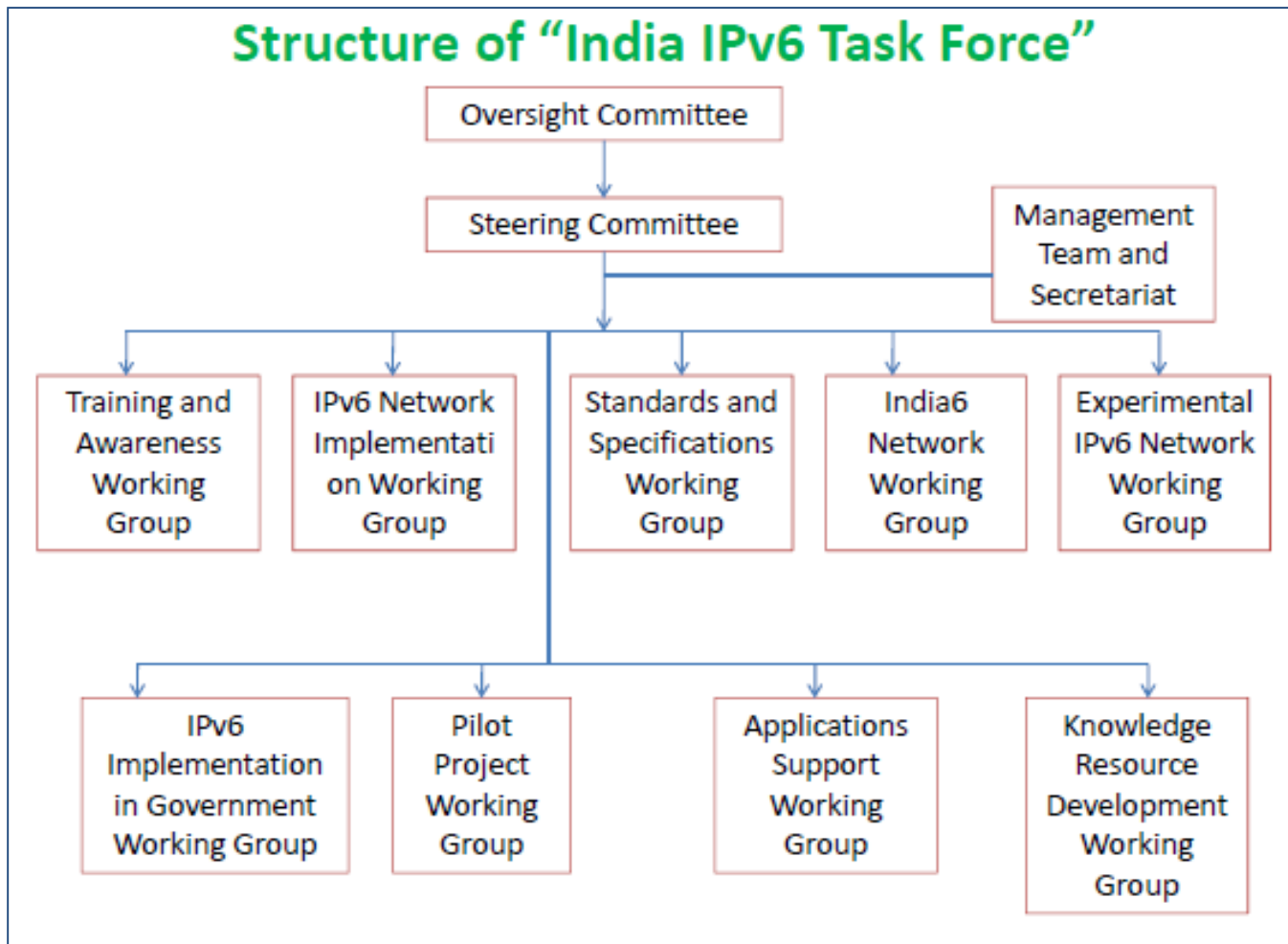
4. Undertake series of impact assessments / business cases

- Coordination with different agencies for the purpose of IPv6 standardization
- Create pilot projects for IPv6 capability demonstration
- Increase R&D coordination between academia and industry

5. International cooperation in IPv6 related areas

- Increasing coordination with international organizations, neighboring and other countries for IPv6 deployment
- International collaboration with other similar Task Force organizations in the world

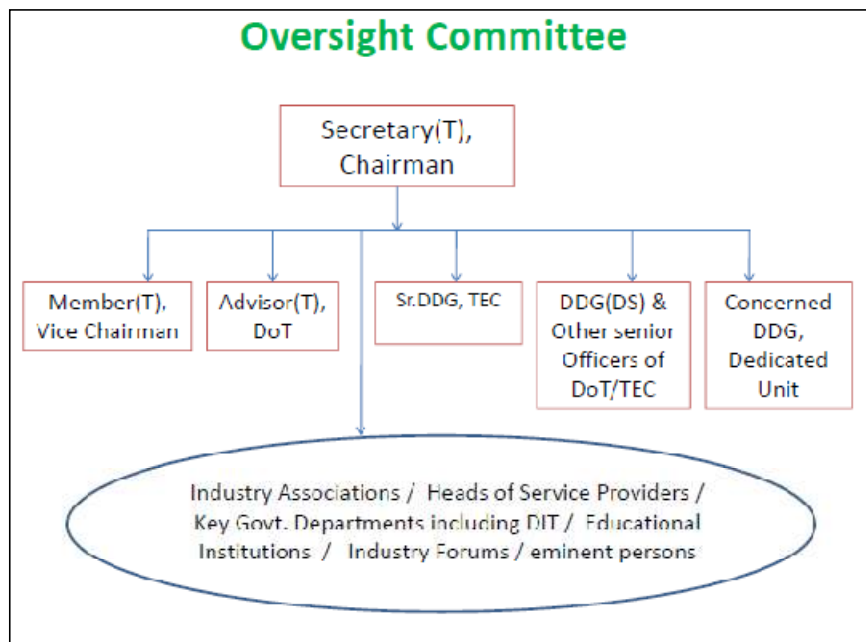
Structure of “India IPv6 Task Force”



5.3 Structure of Task Force

1. **Oversight Committee** – This will be the apex body for making policy decisions and responsible for guiding the task force by taking strategic decisions. Its role will be to provide the strategic national directions for the movement of IPv6 in India. It includes providing the vision, mission and strategic plan for IPv6 implementation in India.

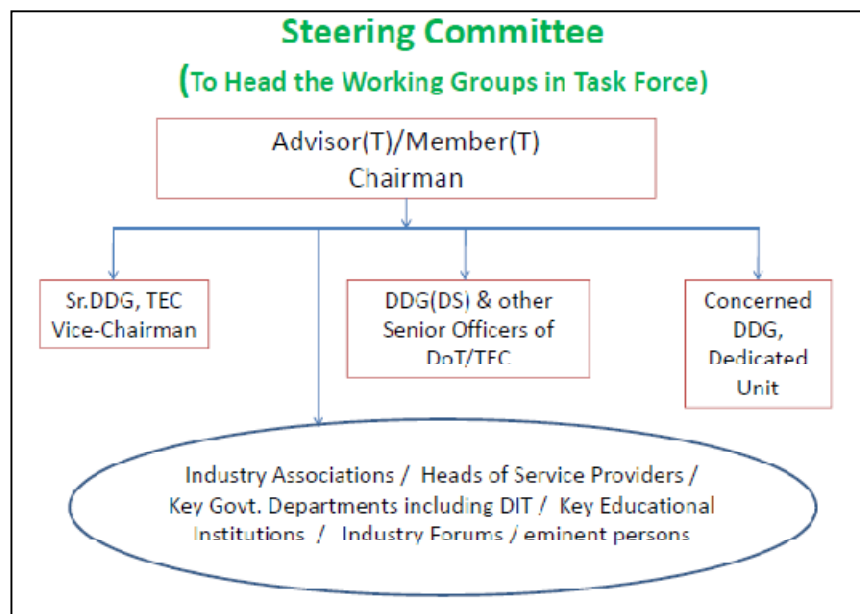
Composition of the Oversight Committee



The members of the Oversight Committee will consist of heads of service providers in the country, who will take up different activities in the working groups. It will also have members from key government departments, Industry associations, educational institutions and different industry forums and persons of eminence. The Oversight Committee will be headed by Secretary(T), DoT as its Chairman, Member(T),DoT as its Vice-Chairman ,Advisor(T) DoT, Sr.DDG, TEC and other senior officers of DoT as members and concerned DDG of Dedicated Unit as the member convener. The Oversight Committee will normally meet every 4 months. The membership of the Oversight Committee shall be limited to 20, however Chairman can nominate additional members as and when required.

2. **Steering Committee** – The Steering committee will be the second level body for coordinating the activities of the Task Force. It would perform the following important functions –
- To oversee the activities of the different working groups constituted under the Task Force for timely smooth transition in the country.
 - To coordinate with different Central, State Government Departments and all other stakeholders including service providers for taking full advantage of IPv6 applications in the country.

Composition of Steering Committee



- The Steering Committee will be headed by Advisor(T)/Member(T), DoT as Chairman and Sr.DDG(TEC) as Vice-Chairman and the concerned DDG, Dedicated Unit as Convener. In the absence of Advisor(T), Member(T) shall function as Chairman of the Steering Committee. The Steering Committee will also have senior officers and office bearers from various other stakeholders as members. Additional members can be nominated by the Chairman of the Steering Committee. The Steering Committee will normally meet every 2 months.
- To coordinate with the activities of different working groups, the Steering Committee will have the heads of the various working

groups as members. Alternatively, it can have members from the lead organizations of these working groups. Additional members can be inducted depending upon the type of activities performed by different working groups.

- c) There are more than 100 different central and state government ministries, departments and PSUs. The DoT has already issued instructions to them for appointment of nodal officers for facilitating the transition from IPv4 to IPv6 in their respective organizations. To coordinate with these nodal officers from the different central and state governments and other related work it is proposed to entrust this work to a dedicated unit with one DDG and three Directors level officer in DoT.
- d) In addition, the steering committee will also have the nodal officers of important ministries/departments as members. To begin with we may have as members the nodal officers from Department of Information Technology, Department of Science and Technology, Ministry of Defence, Ministry of Railways, Ministry of Power and Ministry of HRD, Ministry of Home Affairs, Ministry of Information and Broadcasting. Nodal officers from other ministries or departments can also become additional members depending upon the quantum of transition work involved and the concerned DDG of Dedicated Unit shall take decision in this regard.
- e) The Steering Committee will also have members from other stakeholders like the IPv6 Forum, IPTV Forum, IPv6 equipment manufacturers and vendors etc. In addition to above, the Steering Committee would also have adequate number of JAG level officers from DoT/TEC as members for coordination in all technical matters pertaining to transition.
- f) A three members subcommittee headed by the Convener of the Steering committee will approve the members of the different working groups and will sort out their routine problems. The other 2 members shall be concerned DDG/Director from TEC/DoT and shall be nominated by chairman of the steering committee.

3. Deployment Working Groups – Under the Steering Committee, there will be different working groups. Each Working group will be responsible for specific activities associated with transition to IPv6. One of the member organizations of each working group will become the lead organization in that working group. The lead organization will be responsible for funding the activities of the respective working group in addition to other activities like place of meetings, logistics, selection of members etc. The distribution of activities amongst different stakeholders is given separately. The members of each working group shall meet at least once every month to review the progress of that working group.

5.4 Member Organizations

The members of the Task Force will broadly belong to the Government, Industry and Academia. The members in the Task Force shall be mainly from the following organizations/stakeholders in addition to others.

- DoT/TEC/CDoT
- DIT (NIXI, ERNET, NIC etc.)
- Different central/state Government Departments
- All telecom and internet service providers
- Educational Institutions (IIT, IISc, Etc.)
- Industry Associations
- IPv6 Forum, India
- Equipment Vendors
- Content Providers

- Software vendor
- Cable TV Industry representatives
- Persons of eminence

5.5 Working Groups

Each working group will consist of members drawn from different organizations who are members of the Task force. The members should be so selected that adequate representation is given to all service providers / stakeholders. One organization will become a lead-member in each working group for guiding and funding the activities of that working group. The different types of working groups are given below -

1. **Training and Awareness Working Group** – The training requirement for having an adequate pool of IPv6 trained manpower in both the government and the private sector is huge. E.g. For the government sector alone, there are about 100 different central government departments / ministries. Each department/ministry has about at least 100 different units including PSUs and their wings etc. There are 34 states/UTs and each one has about 100 different state government ministries, departments and PSUs . By conservative estimates, even if 5 persons are required at each place the demand is a staggering 67,000 persons(Approx.) to be trained on IPv6, just for the government sector alone. Even these are very conservative estimates. The demand by the private sector will be separate. Therefore, the potential for training and awareness is huge.

There are various types of activities like –

- a. Hands-on trainings in association with APNIC, IISc and other organizations
- b. IPv6 Certification programmes for qualified engineers
- c. Network engineers trainings
- d. Trainings for nodal officers from government
- e. Conducting Workshops, seminars and conferences

This working group will be responsible for conducting the above activities for benefit of all stakeholders. This WG will follow the “Train the Trainer” concept. It will be responsible for developing the trained manpower required by different organizations in the government and the private sector to deal with the different

types of IPv6 transition issues. The Working group can also explore revenue generation through the above activities.

2. **Action Plan and IPv6 Network implementation working Group** – This working group will be primarily responsible for studying the different network scenarios and come up with action plans for individual service providers / organizations. Different organizations are likely to have different network scenarios, so they will have unique needs in their organization. This group will assist them to create a tailor made action plan for them for transition to IPv6. This working group can also have “on-demand project” teams which can give on-site support or specialized assistance to organizations who need help for IPv6 deployment. TEC will be an active member of this working group as all the nodal officers appointed by different organizations for deployment of IPv6 would be interacting with TEC.
3. **Standards and Specifications Working Group** – This working group will coordinate with TEC for development of common IPv6 specifications for the country, which will be followed by all stakeholders. This working group will also coordinate with the IPv6 Ready Logo committee of the Ipv6 Forum to plan and advise different stakeholders and organizations like vendors, ISPs, Websites etc. for obtaining the IPv6 Ready Logo. This working group will also interact with other standardization bodies around the world like USGv6, NIST USA, JATE Japan, Nav6 Malaysia, etc to participate in various standards and specification development processes.
4. **“India6” Network Working Group** –
 - a. **Concept of Transition Pipe** – Most parts of the Internet are based on the IPv4 protocol. As the transition to IPv6 will happen gradually, during the transition period, islands of IPv6 networks will come up in different organizations spread far and wide. The problem is that organizations hesitate to migrate to IPv6 because they are not sure whether they will be able to send IPv6 traffic to another IPv6 network because of the absence of any nationwide “**IPv6 carrier network**” in between.
 - b. **Need for a “Transition Pipe”** - This point has been often raised by service providers/associations in various workshops and meetings. They want a

“Transition Pipe” for carrying IPv6 traffic from one IPv6 network to another IPv6 network. At present there is no such pipe at all-India level so IPv6 traffic remains isolated in closed networks. The absence of such a “transition pipe” is hampering the growth of IPv6 in India. There exist similar networks in all the countries, which are at the forefront of the IPv6 revolution, e.g. CNGI (China Next Generation Internet). In India also this type of network can be built and can be named as “**India6 network**”. *In fact service providers have suggested that the Government should take initiative in this area and build this “Transition Pipe”. Another perceived benefit of having the IPv6 “Transition Pipe” in place is that it would facilitate the penetration of broadband in our country, since future development of broadband in India will depend on IPv6 only.*

- c. **Prerequisites for building a “Transition Pipe”** – Since it would be an all-India network, it is important that the service provider/organization entrusted with this activity should have or be able to develop a pan-India fiber network. Therefore, large telecom service providers and ISPs are possible candidates to take up this project.
 - d. **Purpose of the Working Group** - This working group will work to plan this transition pipe, make a project report, prepare a funding model and also coordinate with the selected service provider/organization to build this “Transition Pipe” called “India6 network” which will then act as an IPv6 backbone network.
5. **“Experimental IPv6 Network” Working Group** – During the transition period, stakeholders will need an IPv6 network for demonstrating and experimenting with different IPv6 transition scenarios. This activity is not possible on an existing ISP network carrying commercial traffic. Therefore, a separate network is needed for simulating a commercial ISP network. This group will plan and build this “Experimental IPv6 Network”, which can then be used for experimentation by different vendors and organizations both from the public and the private sector. This “Experimental Network” can also be used for training of personnel for operating IPv6 networks.

6. **Pilot Project WG** – IPv6 has many capabilities which are new and not there in IPv4. These capabilities can be demonstrated through pilot projects relevant for the industry and Government. Many such applications were discussed during the IPv6 workshops conducted by TEC throughout the country. These pilot projects will provide the necessary experience for large scale implementations by the organizations. This group will plan, prepare project report, prepare the funding models and coordinate with different government and service providers to take up the deployment of such pilot projects to demonstrate the IPv6 capabilities.

7. **Applications support Working Group** – This group will facilitate the transition of existing content and applications and development of new content and applications on IPv6. It will extend its support to all member organizations. This group will consist of members from software and content developers.

8. **Knowledge Resource development Working Group** - In addition to different activities it is also important to develop the IPv6 knowledge base in the country. This knowledge base can be developed with active participation of the educational institutes. The members of this working group will be drawn from educational institutes, who will be actively involved in the change of curriculum to include IPv6 as a subject, pursue with the Ministry of HRD to take up study of IPv6 related issues by educational institutes, involve in basic research on IPv6 etc.

9. **IPv6 implementation in the Government Working Group** - This working group will pursue with different government departments for implementation of IPv6. The members will be drawn from nodal officers in various government departments. It will be headed by the concerned DDG of Dedicated Unit.

5.6 Distribution of Working Groups between Different Service providers

It is proposed to distribute different activities of the working groups between different service providers as given below –

Sr.No.	Name of the Working Group	Proposed Lead Service Provider / Organization
1.	Training and Awareness WG	

2.	Action Plan and IPv6 Network Implementation WG	
3.	Standards and Specifications Working Group	
4..	India6 Network WG	
5.	Experimental IPv6 Network WG	
6.	Pilot Project WG	
7.	Applications support WG	
8.	Knowledge Resource Development Working Group	
9.	IPv6 Implementation in the Government Working Group	

5.7 Human Resource Requirements

IPv6 expertise, both technical and non-technical would be required at different levels. It is not expected that all the expertise would be available in one organization. So experts will have to be brought into the Task force both from within the government and outside the government. Depending upon the existing availability of required manpower, the following methods would be adopted for sourcing the manpower –

- a) Internal sourcing
- b) External sourcing
- c) Deputation from other govt. departments / PSUs / private sector organizations

The selection of the manpower to conduct the activities of the working group will be done by the lead organization. The lead organization will try to give due representation to all the participating organizations.

5.8 Funding Model and Budget Requirements for the Task Force

The funding of the activities of the Task Force will be based on the “Public Private Partnership” model where contributions will be made both by the government and the participating organizations. Funding will be required at the following levels –

- a) Activities of the Oversight Committee
- b) Activities of the Steering Committee
- c) Activities of the Working Groups
- d) Task Force Secretariat

For running the activities of the Oversight Committee, Steering Committee and Task Force Secretariat, responsibility shall be taken up by the IPv6 Task Force Secretariat. Delegation of adequate financial powers shall be given for this purpose.

For the activities of the individual working groups, funding will be done by the lead organization. The government contribution can vary and shall be decided on case to case basis on the recommendations of the respective working group. As an incentive, the lead organization (and the government) in the working group will have first right on any kind of intellectual property, which arises out of the activities of the respective working group. The working groups will be permitted to charge fees for the services rendered by them to different stakeholders. The scope of activities and funding pattern will be guided by a “Memorandum of Understanding” between the lead organizations and the government.

Annual budget of the Task Force containing the details of contributions by the sponsoring organizations and the contribution from the government will be approved by the Oversight Committee. The approved budget will be put up to the Government for demand of grants. The details of the budget requirement shall have to be worked out separately in association with the lead organizations. *The decision of lead organizations, scope of activities and funding pattern for various working groups shall be taken up in the first meeting of the Oversight Committee soon after formation of the IPv6 Task Force.*

5.9 Creation of “Indian IPv6 Centre for Innovation” as a Long term alternative to Task Force

Transition from IPv4 to IPv6 will not happen overnight. Organizations have invested lot of money in building the IPv4 infrastructure over the years and replacement of that infrastructure is not feasible without the recovery of the investment. Therefore, IPv4 and IPv6 will co-exist for a long time to come. During the intervening period the organizations will have to face many hurdles during the process of transition since IPv6 is a new protocol and research is still going on throughout the world to understand and exploit its numerous capabilities.

Since there are critical activities needed for successful deployment of IPv6, other countries have taken many initiatives in building dedicated institutions for coordinating all the activities associated with the deployment of IPv6. Some have created “Task Forces” and

some have created dedicated centers, some have created projects. In many ways, countries have adopted IPv6 in their own ways.

The long term solution to tackle all IPv6 related issues in the country is to set up a dedicated institution as an alternative to the Task Force. It can be called the Indian IPv6 Centre for Innovation. The details of the proposed IPv6 centre is given in Chapter-8.

5.10 Actionable Points

1. Creation of the IPv6 task Force with the structure and functions mentioned therein
2. Creation of “Indian IPv6 Centre for Innovation” as a long term measure to take over all the functions of Task force on IPv6 deployment
3. Assignment of lead organization to each of the working groups in the task force, which can be decided during the first meeting of the Oversight Committee after the formation of the Task Force.

-----x-----