Title:	Minutes of the 4th IPv6 Task Force Phase II Meeting
Author(s):	Tim Chown[1]
MEETING Date:	OCTOBER 1st 2003
Version:	0.4 --- FINAL ---
Distribution:	Participants list
Document number:	TBD

[1] University of Southampton, UK (tjc@ecs.soton.ac.uk)

Table of Contents

Fourth IPv6 Task Force Phase II meeting

1. Opening of the Meeting

This meeting was a joint meeting of the EC IPv6 Task Force and the IST IPv6 Cluster, and serverd as a kick-off for the formation of the Italian IPv6 Task Force.

Latif Ladid, the chairman of the EC IPv6 Task Force, opened the meeting at 9:20 AM, describing the agenda to follow. He explained the good history of hosts TILAB (formerly known as CSELT, and now part of Telecom Italia) in the IPv6 area, including their development of the first IPv6 tunnel broker.

Slides from the presentations are available on the EC IPv6 Task Force web site.

2. Participants

The attendance list is shown in Annex A.

3. Agenda

The approved agenda is presented in Annex B.

4. Welcome and Introduction (João da Silva, EC)

So far the EC IPv6 TF has had two phases. The first phase activity led to a document that was well received and that woke up an amount of IPv6 activity worldwide. The second phase is now progressing, with developments pushed forward on a world stage. The international cooperation, including countries like India where the March 2004 Euro-India event will be held, is very important. The 2nd phase has also responded to privacy concerns in IPv6 from the Article 29 Working Party.

We are now at the end of phase 2, so the question is what to do next? There is the eEurope 2005 plan, which includes a call for action on broadband and IPv6. Currently IPv6 deployment is not as well taken care of as broadband. In the last year broadband take-up/growth has been 50%. There is an estimated 12,500,000 broadband users in Europe.

There needs to be investigation into barriers to IPv6 innovation. Growth comes from increases in network infrastructure and in knowledge. Investment in R&D is very important at this time. It would be good to *form a "technology platform" on IPv6 to investigate barriers, bringing together stakeholders and the public and private organisations and companies* (A.24), just as there are such platforms for nanotechnology and mobile systems.

In China, the government is putting $180M into IPv6 research and development.

For the third phase of the TF we should:

- Focus on deployment (awareness raising is no longer required so much), e.g. approaching governments to get IPv6 deployed in schools
- Produce a business plan for governments to deploy IPv6
- Maintain a very live international presence, and consolidate a roadmap at the European and worldwide level, with a clear liaison with RIPE.
- Study policy issues, beyond just privacy
- Attract ISPs that are willing to deploy IPv6, both classic ISPs and new emerging wireless ISPs (WISPs)
- Benchmark the deployment progress
- Monitor the IPv6 activities of 3GPP, and the problems that 3GPP has encountered
- Attract consumer electronic companies into IPv6, e.g. Philips, Thomson in Europe
- Establish synergies with new technology initiatives such as RFID, and between the IPv6 TF and the IST IPv6 projects (making use of funds in existing projects such as Eurov6).
- Look at examples of best practice of broadband and IPv6, e.g. voice and gaming.

The WSIS Summit in December includes a slot reserved for IPv6 where policy can be discussed.

João reported that Hitachi announced to be producing in the near future a 3 micron RFID tag with 2,000 bits of data, costing as little as 1 cent. The implications of such identifiable tagging (including privacy aspects) could be investigated by the TF.

Comments:

The EC has invested 180M Euros in IPv6-related projects (depending on exactly which projects are counted, given the projects have other focuses as well).

Korea Telecom has a basic level of VDSL (20Mbit/s) and there ADSL is considered historical. In France, there is “light DSL” at 128Mbit/s. There is a disparity in what “broadband” means worldwide and in Europe. Sweden has some of the best broadband in Europe.

Broadband and IPv6 go hand-in-hand. For applications such as voice and gaming, IPv6 and broadband should be deployed. In Europe, despite 12,500,000 broadband users, there is no real IPv6 deployment. The TF could focus in this area.

Some ISPs may view IPv6 with fear as peer-to-peer collapses their business model due to bandwidth issues and lack of “control” in service provision (e.g. users being able to use “peer-to-peer” VoIP on otherwise unmetered broadband IP links).

In Korea, Samsung ensures new apartment buildings are wired “by default”, and IPv6 is the only way to go. The government allocates a certificate of Type 1, 2 or 3 to each apartment (which also affects the price of the apartment).

We should focus on new fields where we currently have no IP devices but where we soon will; companies working on such devices should go straight to IPv6. Such innovation can come from SMEs, but that requires that *IPv6 knowledge should be pushed to SMEs* (A.26).

The user issue for IPv6 is that the end customer is not the entity deploying NAT, the ISP does, so the customer has no choice to use IPv6, except by a tunnel broker or 6to4. What is the incentive for the ISP to deploy a service that focuses on peer-to-peer where centralised services cannot be sold (and which may replace a large slice of the POTS revenue)? At present many ISPs wish to protect their leased line and high-end service market, such that end customers wanting to run

services cannot easily do so while NAT pervades on broadband deployments. Where is the incentive for the ISP to empower the end user?

It is interesting that there is technology to run IP over DVB, rather than DV over IP.

Europe has additional issues due to national differences, but that issue is one coordinating role of National TFs working with the EC IPv6 TF.

It was suggested that one goal of the TF is to explain why *governments should require IPv6-capable devices and software in their procurements* (A.27), just as the DoD does in the USA.

ISPs will deploy in response to commercial pressures. Currently many traditional European telcos believe it would be "suicide to deploy". But deployment is a slow process, as new equipment in an ISP becomes IPv6 capable, the ISP becomes increasingly capable to turn on a service. The question is then the extra cost in supporting an IPv6 service (in dual-stack mode) in addition to an IPv4 service (unless the service is IPv6 only, which currently appears to be more common in Asia than the US or Europe).

It was noted that WISPs that are rolling out WLAN hotspots would be good examples for IPv6 deployment.

IPv6 is really useful for appliances, rather than PCs. IP-enabled appliances are emerging in Japan, but not in Europe or the US. An example in Europe is Kiss Technologies who have an IP-enabled digital video recorder.

5. The EC Roadmap (Latif Ladid, Chairman, EC IPv6 Task Force)

Latif described how IPv6 deployment is currently in a chasm between early deployment and R&D test-beds and the "early majority" deployment. That chasm needs to be crossed.

The DoD has a potential $34B market for IPv6, given their recent statement that future procurements should be IPv6-capable. This in itself generates a large market for IPv6 technology. A large number of companies are participating in the Moonv6 project test-bed, which has an initial phase in October 2003.

The National TFs are run on a generally voluntary basis, but overall the awareness-raising activity has been good.

A number of problems exist, for example:

- 3G was a "flagship" for IPv6, but it has been slow to progress
- The big application vendors are not on board, e.g. Oracle/PeopleSoft
- The cost of transition is not clear, nor is the return on investment (RoI)
- Europe lacks companies developing IPv6 products, compared to Japan

We might expect a number of killer apps to evolve for IPv6 as big as the Web. But so far there is no evidence of these emerging (candidates include VoIP, p2p, gaming, GRID, 6Wifi, …).

6. The Italian IPv6 Task Force (Leonardo Ferracci, TILAB)

The goals of the Italian IPv6 TF are to:

- Raise awareness of IPv6
  - Web site
  - White papers, reports
  - Meetings, conferences, workshops
- Promote IPv6 Adoption
  - Recommendations, e.g. government mandating IPv6 capability in procurements
  - Lobbying in standards bodies, e.g. IMS and IPv6 in 3GPP
  - Support IPv6 test-beds and trials, including IPv6 multicast, IX's, DNS for .it)
- Produce a final report containing
  - Recommendations targeted to decision makers
  - Social and business implications
  - Achievements

The Italian TF duration is one year initially, with documents to be produced in September 2004. The TF has government, telco, ISP, manufacturer and academic members, and is open to all. The Task Force's working group structure is inspired by the EC TF structure, i.e. it has applications, infrastructure, mobile and wireless, and trials WGs.

At the moment there is no funding for the activity.

7. Barriers to IPv6 Deployment (Peter Hovell, BT Exact)

Peter described some of the currently perceived technical barriers to IPv6 deployment.

These include:

- Some important standards areas are still not stable, or have only recently hardened, meaning that implementations are lacking (developers do not like shifting targets). For example DHCPv6 and MIPv6 implementations are lacking, as these important standards only became finalised during mid-2003. [Though MIPL 1.0 for Linux implementing MIPv6 final draft 24 was released on the day of the TF meeting.]

- There is no clear way to effectively do IPv6 multihoming and renumbering. Multihoming is a key requirement for many users, and exists for IPv4 today. There is no scalable, clear way to do IPv6 multihoming at present.

- The user-network interface – making IPv6-enabled devices usable by ordinary users – is an area that urgently needs work to ensure standard methods are developed, rather than vendor-specific proprietary solutions. Best practice guidelines are required for interoperable solutions for mass deployment.

- Equipment availability is limited in the access area, e.g. IPv6 DSL termination equipment.

- Network management tools do not necessarily support IPv6, and MIBs are still being finalised in the IETF.

- There is a lack of IPv6-enabled consumer devices – there is a chicken-and-egg " no network so no devices" problem still.

- IP version-neutral applications need to be further developed, and best practice on IPv6 and IP version-independent application development well publicised.
- DNS – including DNSsec – has further standardisation work to be done.
- Plug and play (i.e. zeroconf networking) is important – deployment methods should be complete and robust for the average user.
- Security – we need to understand how IPsec deployment can scale. Similarly deployment of PKIs.
- The IPv6 transition picture is confusing due to the plethora of proposed transition tools; again best practice guidance and scenario analysis is required.

Other non-technical issues of course exist, such as the need for business cases.

Peter believes the key issues are zeroconf, the user-network interface and multihoming.

Comments:

Which customers will pay more money to get IPv6 connectivity on their DSL connection?

You should sell services to end users, not IPv6 as such.

8. Status of IPv6 in Europe and the World (Jordi Palet, Consulintel)

Jordi described the situation for commercial IPv6 deployment in Europe. The full details can be found in his slides on the EC TF web site (www.ec.ipv6tf.org).

Two flagship IPv6 deployment projects are Euro6IX and 6NET. The GÉANT network also runs IPv6 natively (dual stack) since March 2003. As of today 18 National Research and Education Networks (NRENs) are natively connected, and many have also gone dual-stack themselves.

France is perhaps in the most advanced state, as France Telecom has an IPv6 service, and the AFNIC .fr registry/DNS is IPv6 enabled.

Many IX's are beginning to exchange IPv6 traffic (at layer 2).

The Tiscali ISP network is dual-stack.

In Spain, the larger hotel in Europe, in Madrid, now offers IPv6 connectivity in all its rooms. The hotel was used for the Global IPv6 Summit in spring 2003.

The key IPv6 procurement announcement is the US DoD, with an IP budget of $30-35B.

9. IPv6 in 3G (Karim El-Malki, Ericsson)

Mobile IPv6 is an important enabler to bring together mobile users and differing technologies for personal, local and wide area networks. Mobile users need IP addresses. We need new services

that take advantage of the higher bandwidth (e.g.. 3G compared GPRS). Coupling the radio and IP technologies for local and global coverage with one IP protocol is desirable.

Peer-to-peer is important for voice, gaming, multimedia messages, chatting and many new applications and services, where no server is required. Thus you must be reachable on a public IP address, which implies IPv6 is required given the billions of mobile IP devices that will need connectivity. The key IPv6 advantages are increased address space and enhanced mobility support (e.g. so you can select between WLAN and 3G based on user preferences in their terminal).

3GPP IMS Multimedia services will support IPv6. IPv4 and IPv6 will coexist for some time. IPv6 will be added as a service enabler.

IETF-3GPP collaboration has led to future-proof IPv6 standards for mobile terminals; each such terminal being assigned a unique /64 prefix. Thus there is no need to use IPv6 NAT on technical grounds.

For transition and coexistence, the dual stack terminals will be able to prefer IPv6 for some applications, or use dual-stack proxy servers. Translators will be required for some services, e.g. to reach IPv6-only SIP communication (3GPP IMS), but not for generic cases (as we wish to avoid the old NAT problem).

MIPv6 is being used for session continuity and access independence, as well as reachability (a permanent public IP address).

Ericsson demonstrated end-to-end IPv6 applications with “6ref” – in January 2003 a world first demonstration of IPv6 over WCDMA was shown, as part of the 6WINIT project. They also demonstrated IPv6 roaming over a commercial IPv6 network in an event in Belgium in September 2003.

Comments:

3GPP Release 6 appears set to have standards for integrating WLAN into 3GPP networks.

10. Italian IPv6 Project and Achievements (Raffaele D’Albenzio, TILAB)

TILAB has a good history in IPv6 work; when formerly known as CSELT it released a tunnel broker and the Aspath-tree BGP route view/stability monitoring package.

More information can be seen at http://carmen.ipv6.tilab.com/ipv6.

ASpath-tree can be seen running at http://net-stats.ipv6.tilab.com/bgp/index.html.

TILAB is part of Euro6IX and has many IPv6 BGP peerings; is also connected to 6NET.

They have their own “Reseau” test-bed network for experimental work on access technologies, linking a number of TILAB sites in Italy. The network is IPv6 enabled, and some end users have IPv6 connectivity (e.g. Gigabit Ethernet to a university). There is also IPv6 access on VDSL. They have an extensive internal test-bed.

The current work of the ngnet.it initiative is to offer:

- IPv6 tunnel broker access
- Application services (chat, mail, web, games, …)
- Experimental connectivity (native or tunnelled)
- Traffic and network monitoring (traffic and routing stability)

There are 37,000 registered TILAB IPv6 tunnel broker users. Typically 1,000 simultaneous users will be seen (6 months ago the figure was around 2,000 - the figure has fallen because only TILAB customers can now use the service, which gives some accountability for the service usage).

Up to 1,500 users use the IPv6 IRC chat server, linked to IPv4 IRCnet, provided by TILAB. The average number of connected IRC users is around 600. The IPv6 servers are less congested, the IPv6 user cannot be flooded back by an IPv4 user if looked up, and the reverse delegation can be seen to work because they have a static IPv6 address instead of a dynamic IPv4 address.

Also ngnet.it offers IPv6 Quake II, a newsfeed, and e-mail boxes with IPv6 webmail, POP3 or imap access. An IPv6-only Jabber server is available for instant messaging.

Comment:

The tunnel broker is a stateful, managed transition/access service, while 6to4 is stateless and automatic. A stateful approach is better for public systems because it allows control of the number of accesses (e.g. a limit of 1,000 tunnels, or 100Kbit/s). Ease of use is more or less the same; the TILAB tunnel broker appears as a remote access server – you just click on the “connect” button (a bit like setting up a VPN). One 6to4 relay in comparison got flooded with a 20Mbit/s “attack”.

Tim, Raffaele and Jordi will consider writing an IETF I-D on this comparison.

11. GARR Operational Experience with IPv6 (Mauro Campanella, GARR)

Mauro explained that GARR had gone to dual-stack on their Italian research network backbone in the last 3 months and the network was operating well.

Tim added a brief update on 6NET explaining that the focus was now on applications and services, and that valuable extra expertise had been brought to the project with the addition of the newly associated states (Czech Republic, Poland and Hungary).

12. The IPv6 Cluster and new FP6 Proposals (Mat Ford, BT Exact)

The IST IPv6 Cluster has just released a new publication “Moving to IPv6 in Europe”, and will distribute 4,000 copies at the IST2003 event. It also continues to produce general cluster meeting reports, tri-annual standardisation reports (in sync with IETF meetings) and bi-monthly newsletters.

The web site is http://www.ist-ipv6.org/.

Two mailing lists exist: projects@ist-ipv6.org (for project leaders or representatives) and ipv6cluster@ist-ipv6.org (a general, open list).

Mat explained how to use the Cluster web site, and how to access reports and submit news. *Projects were encouraged to submit news of new developments and deliverables on a regular basis* (A.28).

The only new IPv6-focused project that is known to have been funded to date in FP6 is SEINIT, which is aiming to define new security architectures and models of trust in different environments, but with a focus on IPv6. SEINIT has a wide range of study areas, including performance, transition security, security for applications, mobility security, DNSsec integration and IPv6 network traffic anomaly detection systems.

13. The IPv6 Cluster Publications (Peter Christ, T-Systems)

A new 6LINK publication is due around March 2004. It has to be something of use; currently ideas are being solicited. The centre of gravity needs to be established – e.g. deployment, applications, projects, Mobile IPv6 or a sector-specific business opportunity.

Comments:

Latif volunteered a paper or contribution on privacy and security.

IPv6 and broadband would make a good topic, and possibly be centre stage given the *e*Europe 2005 broadband drive.

IPv6 and ambient intelligence, the digital home, or IPv6 and GRID, are possibilities.

The book could be broader than just Europe. It could describe the IPv6 deployment situation globally.

A section on IPv6 in education in large, including schools, would be appreciated, or how to deploy IPv6 in a university.

14. Research Infrastructures (Mario Campolargo, EC)

A key reason for deploying the research network infrastructure is to empower the researchers to communicate and share information and resources. The infrastructure should use the latest technology and foster the generation of knowledge through virtual research organisations, paving the way for industrial adoption.

Such research infrastructures are a cornerstone of the ERA, and a spearhead for the *e*Europe infrastructure (going beyond broadband). They integrate national infrastructures and enable international collaboration. Test-beds are an important facility for user and market adoption of research results, and to create and foster innovation.

International connectivity is important. At the end of 2003 improved capability will be deployed to SE Asia (the TEIN link is currently 20Mbit/s).

There will be an IPv6 Global service launch in January 2004.

GÉANT2 will include a focus on end-to-end services. On top of this a new grid infrastructure will be created. A pan-European grid will be produced by the (very large) FP6 EGEE project. End user communities will be served by the projects using this infrastructure – the two major communities currently being high-energy physics and biocomputing, but with areas like digital libraries catching up.

In the US a similar infrastructure is being created called the cyberinfrastructure. The Teragrid could link this initiative to European infrastructure.

The IPv6 Task Force has an important role to play in the policy and recommendation areas.

Comments:

What about infrastructures for non-scientific areas like the humanities?
By addressing grids and test-beds, and deploying 10Gbit/s+ networking, we have a minimum infrastructure with which we can reach all users – we talk about services not technology, bringing online museums for example. We need to understand their requirements also. Technologists have to address the needs rather than developing solutions and saying “take it or leave it”.

The pan-European grid will be open, and not limited to HEP and biocomputing projects.

15. Open Debate – The Way Forward for IPv6 Task Forces (All)

The following National TFs gave 3-minute status presentations, on achievements, barriers and next steps:

- Spain
- Germany
- UK
- Switzerland
- Portugal
- Belgium
- Finland
- France

The slides are available from the EC IPv6 TF web page.

Comments:

We should focus on a small number of things and do them really well, to foster IPv6 deployment (A.29).

One barrier is the lack of funding for the national TF activities. Individuals may get funded by their companies, but usually only when doing things the company finds commercially useful.

The UK IPv6 TF is attempting to get funding through the DTI broadband initiative, rather than trying to get special IPv6 funding. This may be an approach that other TFs find useful, given the wide recognition of the importance of broadband (through *e*Europe 2005) within governments.

IPv6 should be user and industry driven, and not be mandated by a government, however the governments can support the IPv6 TFs.

For a collective, coordinated action *we need some measurement and benchmarking of activity* (A.25). Best practices exist nationally and these could be reported. White papers would be useful to present to organisations including governments.

We need to target people who "could not care less about IPv6", but who make the decisions that matter in the broader IPv6 picture.

Moving to IPv6 is not an issue, but the timing is.

Getting the top-level national NICs to move to IPv6 is important, as AFNIC has done in France. The EC TF could *help organise a dedicated IPv6 meeting for the European NICs* (A.23).

IPv4 only caught on as a result of the Web became popular, despite it existing for many years before. This implies a "killer application" is an issue – if there were one, we wouldn't need the TF activities.

There are some potentially exciting applications to explore with IPv6, e.g. VoIP over WLAN over broadband.

We should determine clear aims, e.g. if we decide to have governments procuring IPv6-capable systems is important, we need to develop a strategy to achieve that.

How do we implement national TF coordination?

We should have a web portal with national TF statuses shown.

We are focusing on a tool too much, rather than what we can do with the tool. Perhaps the next 6LINK book can address this question "Imagine a world with IPv6"?

IPv6 is an enabling technology for accessing knowledge. Without addresses, you cannot address knowledge. [By implication, new IPv6 devices should be able to access knowledge only available over IPv4.]

We require a benchmarking and monitoring framework and activity for IPv6 (A.25).

There are IP policy issues – some enterprises will insist on local, private IPv6 addresses, because they use them in IPv4. We need enterprises to adopt IPv6. But what is gained by enterprises moving to IPv6 if they still use NAT? Desire for independence from their operator/provider is one reason.

Naming is an important issue, in addition to addressing.

Creation of "HowTo" documents would be useful, e.g. "I use private IPv4 address space for reason X, what do I do in IPv6 to achieve the same X?"

Jordi indicated about the Spanish funded 6SOS project (www.6sos.org), that will be ready at the end of this year, and can be used as input for the future IPv6 Task Force portal.

If we want IPv6 for end-to-end connectivity we need end-to-end security. But there is no such security available at present. Thus we are currently deploying IPv6 like IPv4, with site security via firewalls (where they exist) but with no renumbering story.

So it seems there are many thrusts to what needs to be done, for example:

- Technical and standards development (e.g. flavours of IPv6 multicast)
- Removal of policy and capability barriers (e.g. getting national NICs moved to IPv6)
- Reaching new audiences and adopters (e.g. new markets like consumer electronics)
- Influencing decision makers (who may well not care less what IPv6 is)
- Benchmarking effort already underway

Which do we focus on, and how? How can concerted action help in these issues?

Jordi will *analyse the TF presentations for commonalities in problems and achievements, and report these back to the TFs* (A.21). However there should not be pan-European TF policy as some things only work in some countries. Nor should there be repetition of work. The National TFs should meet every three months to discuss issues.

Case studies could be funded by the EC. Latif will *identify potential case studies for IPv6 deployment* (A.22).

16. Close of Meeting

The meeting was closed at 6:40pm.

The next meeting will be held just before the Global IPv6 Event on 15-16 January 2004. The likely date is thus Wednesday 14th January 2004, in Brussels.

17. ANNEX A – 4th IPv6 TF Phase II Meeting Attendance List

Attendee	Organisation	Country
Leonardo Alberti	Univ. di Perugia	Italy
Stefano Beccia	Alcatel	Italy
Viviana Biadene	Nortel Networks	Italy
Guiseppe Bianchi	Univ. Palermo	Italy
Alessandro Bonomi	ISCTI – Ministry of Communications	Italy
Mauro Campanella	GARR	Italy
Mario Campolargo	EC	EC
Tim Chown	University of Southampton	UK
Peter Christ	T-Systems	Germany
Patrick Cocquet	6WIND	France
Raffaele D'Albenzio	TILAB	Italy
Marco D'Itri	ITGATE	Italy
João Da Silva	EC	EC
Riccardo De Luca	Telscom	Switzerland
Rosa Delgado	ISOC	Switzerland
Gianfranco Delli Carri	ITGATE	Italy
Paolo Di Francesco	CRES	Italy
Karim El Malki	Ericsson	?
Andrea Fanfani	ITGATE	Italy
Jose Fernandes	FCCN	Portugal
Leonardo Ferracci	TILAB	Italy
Mat Ford	BT Exact	UK
Fredrik Garneij	IPcom	Sweden
Gerhard Gessler	IABG	Germany
Rosario Giordano	CRES	Italy
Patrick Grossetete	Cisco	France
Leen Hendrickx	EC	EC
Peter Hovell	BT Exact	UK
Matheo Labanti	MIX s.r.l.	Italy
Latif Ladid	IPv6 TF-SC chairman	Luxembourg
Timo Leppinen	Ficora	Finland
Emanuela Mereu	H3G Spa	Italy
Marcin Michalak	Telscom	Switzerland
Malfredo Miserocchi	Atragon	Italy
Mícheál O Foghlú	WIT, TSSG	Ireland
Jordi Palet	Consulintel	Spain
Antonio Pinizzotto	CNR-IIT	Italy
Gianluca Reali	Univ. di Perugia	Italy
Guiseppe Rinaldo	ISCTI – Ministry of Communications	Italy
Lorenzo Rossi	CNR-IIT	Italy
Andreas Schmid	Swisscom	Switzerland
Ilenia Tinnirello	Univ. di Palerno	Italy
Ger Van Den Broek	Philips	Netherlands
Rozette Vandenbrouche	Univ. Brussels	Belgium
Gianluca Verin	Ericsson	Sweeden
Andre Zehl	T-Systems	Germany

18. ANNEX B - Agenda 4th IPv6 Task Force Phase II Meeting

1st October 2003

09:00 to 17:30

Telecom Italia, Milan, Italy

1. Welcome and Introduction (João da Silva, EC)
2. The EC Roadmap (Latif Ladid, Chairman, EC IPv6 Task Force)
3. The Italian IPv6 Task Force (Leonardo Ferracci, TILAB)
4. Barriers to IPv6 Deployment (Peter Hovell, BT Exact)
5. Status of IPv6 in Europe and the Rest of the World (Jordi Palet, Consulintel)
6. IPv6 in 3G (Karim El-Malki, Ericsson)
7. Italian IPv6 Project and Achievements (Raffaele D'Albenzio, TILAB)
8. GARR Operational Experience with IPv6 (Mauro Campanella, GARR)
9. The IPv6 Cluster and new FP6 Proposals (Mat Ford, BT Exact)
10. The IPv6 Cluster Publications (Peter Christ, T-Systems)
11. Research Infrastructures (Mario Campolargo, EC)
12. Open Debate – The Way Forward for IPv6 Task Forces (All)

19. Annex C: List of IPv6 TF-SC Actions arising from Meetings

These actions require investigation and/or reporting towards IPv6 deployment in Europe. The IPv6 TF can make recommendations and position statements on these issues, but many are beyond the scope of the TF's remit, and can thus only be "non binding" recommendations.

Currently of 19 actions, 6 have been completed, 2 are new, 6 are ongoing while 5 are overdue.

Ref	Action	Responsible	Due date
A.1	Investigate issues for deployment of IPv6-based EC web services (accessibility to EC information over IPv6, including by dual-stack). If technical problems exist, report them back to the IETF v6ops WG.	Jordi	Ongoing
A.2	Consider and then publish joint research plans with Japanese IPv6 Promotion Council established after EU delegation visited Japan in December 2002	Latif	Ongoing
A.3	Contribute recommendations to the Global IPv6 Showcase project	Latif Jordi	Ongoing
A.4	Track and promote the IPv6 Forum "IPv6 Ready" programme to European vendors and industry	Latif	Complete. See also A.18
A.5	The TF should draw up its recommendations to the IETF on an appropriate timescale to wind down the 6bone experimental network	Jordi	Complete. (6Bone phase-out plan finalised)
A.6	Methods should be considered to encourage ISPs to offer IPv6 services over existing IPv4 links, so that customers can gain native IPv6 access over the same link as their existing IPv4 access	Peter H	Ongoing
A.7	Encourage vendors to offer IPv6 security products, including IPv6-capable firewalls	Tim	Ongoing
A.8	TF position paper on best practice for deployment of secure IPv6 routers and firewalls in the absence of site NATs	All	**Outstanding**
A.9	TF position paper on the outstanding IPv6-specific privacy and security issues, and how the privacy issues impact on EU legislation, current or future. (Max 3 pages)	Alberto Jordi Patrick Wolfgang	Complete

A.10	TF position paper on outstanding IPv6 DNS issues (one page)	Tim Peter H	Draft circulated
A.11	TF position paper on IPv6 PKI deployment issues (short paper)	Jordi	Ongoing
A.12	TF position paper on IPv6 ISP deployment status and hurdles (one page, six key issues)	Peter H	Complete
A.13	TF Position paper on international IPv6 routing stability issues (one page)	Tim	Draft circulated
A.14	Finnish TF to circulate its "IPv6 deployment issues" document to TF members	Timo	Complete
A.15	The TF should liaise with telco operators and RIPE NCC to ensure the telcos gain the appropriate IPv6 address space for their needs, and end users get appropriate delegations (/48 or /64).	Peter H Tim	Ongoing
A.16	The TF should revise its roadmap documents on a regular basis (e.g. after each TF meeting)	Andre Latif	Ongoing
A.17	Investigate a Specific Support Action proposal under the open FP6 call, to undertake an "IPv6 Measurement" project	Jordi	Complete
A.18	Produce one page summary of IPv6 Ready programme goals and methodology	Latif	**Outstanding**
A.19	Produce IPv6 Multihoming short briefing paper.	Tim	**Outstanding**
A.20	Consult with appropriate European experts on the potential to develop an open source European IPv6 stack.	Latif	Ongoing
A.21	Analyse National TF achievements, perceived barriers and planned next steps for commonalities and report them to all TFs	Jordi	2003-10-05
A.22	Identify candidate IPv6 deployment case studies that can be passed to the EC for possible tender for reporting	Latif	2003-12-14
A.23	Produce a communiqué recommending the holding of a meeting of national NICs to coordinate IPv6 service support in top level services as per AFNIC	Jordi	2003-12-14
A.24	Produce a communiqué recommending the formation of a "technology platform" on IPv6 to investigate barriers, bringing together stakeholders and the public and private organisations and companies.	Jordi	2003-12-14
A.25	Produce a communiqué recommending the creation of an IPv6 adoption measurement and benchmarking framework for Europe.	Jordi	2003-10-05

A.26	Produce a communiqué reinforcing the need for IPv6 knowledge and awareness to be targeted at European SMEs.	Jordi	2003-12-14
A.27	Discuss and then decide how to best recommend the adoption of an “IPv6 Ready” procurement policy for government procurements (in all aspects of state networks including government, health, education).	Latif	2003-12-14
A.28	In support of 6LINK, request that the EC reminds IST projects in the IPv6 Cluster to contribute news of significant IPv6 work done in their projects to the Cluster (to the Cluster news site at www.ist-ipv6.org).	Tim	2003-12-14
A.29	Select 3-4 key action areas for the IPv6 TF-SC to push during the closing months of the TF-SC project.	Andre	2003-12-14