TITLE:	**MINUTES OF THE 1ST IPv6 TASK FORCE PHASE II MEETING**
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First IPv6 Task Force Phase II meeting

1. Opening of the Meeting

The meeting was opened by Joao da Silva, DG-INFSOC of the European Commission, who explained the role of the second phase of the EU IPv6 Task Force as a follow-up to the activities carried out during the period April 2001 to January 2002. The first phase reports and recommendations led to resolutions at the European Council. For the second phase, a small support team – the IPv6 Task Force Steering Committee (IPv6 TF-SC) – has been funded under the IST Programme to assist in taking the recommendations and resolutions forward. Such activity is made in the context of the e-Europe Action Plan, which itself is currently being driven forward by the Danish Presidency.

2. Participants

The attendance list is shown in Annex A.

3. Agenda

The approved agenda is presented in Annex B.

4. IPv6 Task Ahead (Latif Ladid, IPv6 TF-SC)

Latif described the limitations of the IPv4 Internet, characterised by networks interconnected by Network Address Translation (NAT) devices. There is a choice to be made between moving to an Internet where NATs prevail – an InterNAT – and maintenance and application development becomes more complex, or to an Internet where IPv6 is introduced, restoring the end-to-end principle of the original Internet, offering improved services for end users and lower deployment and maintenance costs for ISPs.

5. IPv6 Deployment in Japan (Kosuke Ito – IPv6 Promotion Council, Japan)

In Japan, government and industry have worked together to further the advance of IPv6. The promotion body is very important as an aggregating, driving force for knowledge dissemination. The government has been involved with designing, planning and funding IPv6 initiatives ($80m US in 2001), while industry and companies are undertaking R&D and trials. In addition, a consumer monitor group is overseeing application trials and collating feedback. Finally, the press, magazines, special events, and the Galleria – Promotion Council Showroom (featuring a live demo of IPv6-enabled consumer devices) – all raise awareness for the public.

The status in Japan is relatively healthy. Government support has encouraged ISPs to offer IPv6 services (IIJ and NTT offer dual-stack service), and backbone and IX operators (NSPIXP6, JPIX, MEX) also support the new protocol. Japanese router vendors all cater for IPv6, while terminal devices, sensors, home appliances and web-cams are all emerging with IPv6 functionality. Service trials include Internet cars and trains (wireless LAN coverage), and also medical and gaming

sectors. The Japanese Gigabit Network (JGN) runs IPv6 over ATM at 622Mbit/s, with 45 access points. The NTT service uses Yamaha home routers.

There are two promotion groups. The IPv6 Deployment Committee falls under the Internet Association of Japan, and organises events such as the IPv6 Forum Japanese Summits (the next one being 18-19th December 2002 in Yokohama). The IPv6 promotion Council of Japan organises trials and international collaboration. Online information can be found at the *v6start.net* web site. An advanced test-bed includes Softfront VoIP IPv6 phone devices and many other technology demonstrators, to the point that IPv6 is not considered as being special any more.

More information can be found at *http://www.v6pc.jp* or by mailing *info@v6pc.jp.*

6. Spanish IPv6 Task Force (Jordi Palet, IPv6 TF-SC)

The new Spanish IPv6 Task Force enjoys the support of the Spanish Science and Technology Ministry, which endorses the Task Force events, although it does not fund its activities.

The TF runs until May 2003 (1 year), is open, and has no legal entity. It could be extended if needed. Its goal is to produce documents for various sectors following the EC recommendations, for example by encouraging public organisations to require IPv6 commitment in procurement tenders. There will be 3-4 plenary meetings in the year, all in Spanish language, and all vendor neutral in the documentation.

The five TF working groups are infrastructure, mobility and new wireless technology, security and privacy, next generation applications (home, Grids, QoS, multicast), and R&D, innovation and training. There is a balance of educational and industrial participants in each group. A steering committee, including two government representatives, ensures quality control in the WG deliverables and the final reports with specific recommendations, and further follow-up of the deployment status.

7. The Danish Presidency (Sidse Aegidius)

The Presidency is driving the e-Europe action plan. This includes a public sector information directive aimed at making public sector information available, but it also has a desire to bring industry on board too. The plan tried to embrace e-health, learning, govt and business, also security, privacy and infrastructure. Currently the Presidency is trying to get a resolution implementing the action plan with a target for progress for 2005, which includes getting indicators for the holistic picture of the information society to see if the plan is going the right way.

The Council passed a resolution in June 2002 recognising the potential importance of IPv6 and the need for deployment, alongside broadband network access.

See: http://www.eu2002.dk

8. IPv6 ISP Business & Technical Case Study (Peter Hovell –BT)

[C = audience comment]

IPv6 is at the stage where the hype is done, and we are entering the realism phase, as we begin growing into deployment. There is a growing demand for ISPs to offer Internet services – VPNs, e-mail, network access, VoIP, other value added services, xDSL and wireless LAN hotspots, etc.

The current trend is for growing broadband penetration, although the nature of broadband access varies across Europe. More Internet devices and addresses are needed, for the 580M people regularly online worldwide, according to http://www.nua.com. There are more people online in Europe than in the US and Canada.

Users want security and mobility. ISPs want lower end user support and operating costs. IPv4 is massively installed, with trained engineers, but has NAT restrictions, poor MIPv4 (compared to MIPv6), and IPsec as only an optional add-on. NAT deters innovation at the edge. In contrast IPv6 improves global address availability, has improved mobility and has IPsec functionality included by default in a full IPv6 implementation (RFC2460). However, IPv6 is less mature, is lacking end user applications and trained engineers.

Today IPv6 is still a niche – ISPs need to understand the business impact of IPv6, and thus should be investigating the technology now. In 3-5 years all ISPs will probably need an IPv6 offering, and in 5-10 years we can expect to see IPv6 everywhere (but the exact rate of adoption is hard to predict, and includes many factors – it may be accelerated sooner rather than later).

IPv6 may be "beneficial for society", but such a benefit does not mean a profit for the shareholders of commercial ISPs. Thus, we should ask how IPv6 could increase revenues and/or lower operating costs. We may see more customers wanting value-added services, and the ability to run VoIP and peer-to-peer (p2p) applications. IPv6 may be useful to 3G, but the finances for 3G amongst the operators are poor, with the additional problem of development and deployment delays.

While equipment costs may be similar, the OSS may be cheaper in the longer term, but possibly higher in the short term if both protocols need to be supported together (dual-stack or otherwise) – a deployment "hump" for operators. In favour of IPv6 are new, simpler to deploy applications, new customer categories, and easier OSS. Against are the IPv4-IPv6 interworking costs, new training, and general issues with running dual-stack. But we can expect serious IPv6 impact inside 3-5 years.

C: Don't market IPv6 specifically, instead market "always-on" services, etc.

C: Training is very important.

C: In Valencia, last August, there were 1,200 IPv6 users connected in a "campus party", supported by Euro6IX project. Spain has an ISP that supports 250,000 Linux users. When the Linux association asked for IPv6, the ISP agreed that next year's contract will have IPv6, mainly for peer to peer applications.

C: What is the model for carriers where streaming is concerned? Bandwidth management is an issue.

C: Telia administers its backbone routers with link-local addresses – the only drawback is that this breaks "pretty" traceroute output.

C: The p2p area is a broad area, including banking, airline reservations, etc

C: There was no IPv4 business model. Also note that SMS emerged as a "killer app" when voice was the original business model. IPv6 will enable unexpected innovative applications.

C: The backbone Internet routing table size is growing very fast – we may need multihoming to be sorted before widespread adoption occurs. There is also the "hump" problem of moving through a dual stack phase.

C: New systems for cars, etc should now be being designed with IPv6 for roll out in 2-3 years, rather than migrating later. Greenfield deployment scenarios have an advantage in many respects.

C: IPv6 is needed where any operator wants a service with 2M public IP addresses.

C: We see users using more Napster-like p2p applications than http, so we should bend the service to fit user use – i.e. support IPv6 instead of IPv4.

9.   IPv6 security and privacy - societal impact (Latif Ladid – IPv6 TF-SC)

Many security problems are related to security of (vulnerabilities in) the operating system itself. Currently IPsec is just optional in OS stacks with IPv4. The Internet is edge-centric – hence firewalls at the edge. Security is hard to deploy because it is a "negative deliverable" (there is no perceived gain if security works).

Security can work at the application (e.g. PGP), transport (e.g. SSL), network (e.g. IPsec), or the physical layer. IPsec in IPv4 often runs NAT to NAT, and thus does not protect a weak internal LAN in the way that end to end (e2e) encryption could. The objective should be to do e2e, IPsec and mobility all in one system.

There is a privacy concern over EUI-64 addresses in statelessly autoconfigured IPv6 networks, but this is largely addressed by RFC3041 (IPv6 Privacy Extensions). However, a mobile handset does not yet have an interface ID defined for such autoconfiguration.

If IPv6 does not deploy, we face a "fog" of IPsec problems that will get worse with the lack of global IP addresses, then eventually IP address exhaustion will lead to NAT over NAT networks being run as is currently the case in India.

An INET2002 keynote urged the US Government to drop all export resections on crypto around the new AES encryption standard, allowing interoperable IPsec to be more readily deployed around the world.

C: Encryption e2e places the security emphasis on the end (operating) system - a firewall would generally be unable to check the encrypted traffic passing through it.

C: Security in information systems is not an IPv6-specific issue – we must be able to match the IPv4 level of security with IPv6 – if sites wish to keep the firewall and their existing security policy this can ease an incremental deployment.

C: There is a clash of ISP requirements in knowing who is connecting against the privacy of the user attaching to that ISP – implies a need to advise governments on legislation.

C: There is no PKI yet – this is a problem for IPsec management – is it something a government supplies, like a police station?

C: There will be no global PKI ever – nations simply don't trust each other.

C: People want smart cards for PKI if only for psychological reasons – they can't handle the technology for software certificates.

10. IPv6 in the Home (Tim Chown, University of Southampton)

The combination of always-on connectivity, increased bandwidth and IPv6 enables a wide new range of innovative services into the home. New types of devices are also emerging, such as IP phones, IP fridges, IPv6 in Playstations, portable video players, cameras and wall displays. IPv6's global addressing means no more NAT restrictions into the home, and autoconfiguration aids device plug and play.

There are now over 1M broadband users in the UK, although Europe is led by Sweden, Belgium, Germany and Denmark. Broadband speeds are higher in Sweden, Japan and the USA. IPv6 will be a key enabler for innovation, including peer to peer and mobile applications.

C: Devices can register themselves – therefore the service discovery problem kind of fixes itself.

C: Can't a home be controlled over IPv4? Yes, but not so flexibly, and IPv6 enables a range of other devices to be addressed and used remotely, without the need of "middle boxes".

11. Building trust and confidence – eTEN/CASES (Prof Urs E. Gattiker)

A project called CASES exists for Cyberworld Awareness and Security Enhancement Structure (see http://www.research.weburb.net). The project has a national node gathering information in each country. Within FP6 it would be desirable to benchmark security against the e-Europe trust confidence and "security culture" targets. For example, by 2005 medical records should be online – but we want it secure if available over IPv6 as one bad accident could ruin IPv6 trust.

Technology may advance faster than people's ability to adapt. We need to consider the digital divide, and privacy issues. The CASES philosophy is that we should do something good now rather than something perfect later (if it ever arrives). We need to consider with IPv6 a few "what happens if…?" scenarios.

12. Building the National and Regional IPv6 Task Forces

A set of presentations were then made for emerging national IPv6 Task Forces:

12.1. Sweden (Dirk Schefstrom)

Broadband means really high bandwidth in Sweden due to Ethernet to the home at 10-100Mbit/s, for 30-50 Euros per month. There is a high computer penetration and mobile phones are ubiquitous. However, there are unfulfilled expectations on the mobile Internet.

IPv6 should be a major upgrade for mobility, but there is a big price-performance gap between wired and unwired, which we should aim to reduce or remove. Ad-hoc connectivity where you are – using wireless LAN – could take some of the 3G market. Skanova has IPv6 services running.

12.2. Switzerland (Rosa Delgado)

The Swiss TF is just starting to form today.

12.3. France (Patrick Cocquet)

The French TF is in process now. France has strong IPv6 R&D through the G6, and AFNIC has a native IPv6 DNS for the .fr domain. 6WIND has been making IPv6 edge router products since September 2000. The RENATER 3 academic network will have IPv6 native (dual stack) in 2003, and there will soon be a first commercial ISP offering in France, but nothing has been publicised yet.

Future work includes identifying the sectors – industry, health, education, leisure – along with awareness raising and deployment roadmap recommendations. New applications in R&D in 2003 will go to prototype trials in 2004 and then to commercial offering in 2005. We wish to find future users, and people or groups who may influence decisions, including ISOC and the IPv6 Forum.

The French TF has a 1-year program and will meet 6 times. It is choosing working groups, and seeking clear commitment from members. Meeting format will be 2 presentations then discussion, adding reports from IPv6 events, discussion of recommendations and the next agenda. The first full session will be on October 28th.

12.4. UK (Tim Chown)

The UK IPv6 TF has had two meetings so far, on an ad-hoc informal basis. Attendees include telcos, software vendors, universities, exchange point operators and ISOC UK (Christian deLarrinaga is the chair).

The UK has specific requirements and avenues for development that the TF will seek to address. The DTI is probably the best route into government support, along the same path as the (well-funded) UK e-Science initiative. Part of the challenge is to convince the government that IP infrastructure is a public policy issue and resource, and aim for government stimulus. Current public sector IPv6 use is in academic pilots on JANET.

12.5. Belgium (Paul van Binst)

The Begian IPv6 TF is a light, scientific activity – open in nature, not a legal body, and not for profit. The TF is coordinated by the University of Brussels. Issues are awareness, dissemination, education and training, with a focus on demonstrators (including NGN-LAB and Eurov6). Seminars and workshops are being planned. Interoperability work is being done through remote participation in the 2002 ETSI Plugtest. Support exists within BELnet, BELtug, and the Belgian ISP association. See: http://www.ipv6tf.be

12.6. Luxembourg (Patrick Vande Walle)

The TF is being led by the President of ISOC Luxembourg, working with Latif Ladid of Ericsson Telebit. Some IPv6 trials have been run by RESTENA, the academic network. Luxembourg is mainly banking and insurance driven – there is very little industry.

13. Further discussion

C: Andre Zehl is coordinating the IPv6 Task Force Steering Committee, which is a small, IST-funded support group for the Task Force whose duties include handling agendas and minutes of the meetings.

The IPv6 TF-SC project, in its role as the facilitator of the Task Force, which is invited to create strategic Roadmaps, will continuously monitor the academic, market and industrial activities, and provide guidance where appropriate to avoid duplication of work.

The project will carefully take action and not jeopardizing any time schedules in place by inviting high-level Officers of the industry and administrations from time to time, to openly discuss and agree on common grounds in general issues of IPv6. Together with the Commission, it will hold Workshops to ensure the awareness and work activities are put in place, according to the market status and Information Society progress and developments.

The IPv6 Task Force Steering Committee will raise flags where appropriate so that the recommendations from the IPv6 Task Force 1st phase are implemented. It will help to coordinate the IPv6 the EU program, where necessary, with the outside industry and it will spread the word about IPv6 in new industries that are not yet fully aware of IPv6 (automotive, aero space, etc.), but that will benefit from IPv6 in a major way, as it can be seen by activities in Japan for example.

To this extend, the project will facilitate, support and coordinate the continuation of the work of the IPv6 Task Force, with the renewed mandate of a 2nd phase, with the means of a Steering Committee, consisting of IPv6 experienced Experts. This will facilitate the successful introduction of IPv6 in Europe and consequently, the rest of the world.

C: The presentations will all be made available online.

C: The World Information Society has a summit in Bucharest in November with a view to making recommendations to Head of States in the longer-term future.

C: The TF could consider supporting a pan-European PKI prototype smartcard potential project.

C: Andre Zehl is looking to form a German TF – candidate organisations could include IABG, DFN, JOIN, Siemens and DT.

C: How about an EU version of the Japanese IPv6 Promotion Council showcase? We could take work from those projects?

C: The All-IPv6-World group is investigating the "missing pieces" for IPv6 with a view to FP6 bid(s). The next meeting is October 1st, with the FP6 calls expected at the end of November.

C: Perhaps regional TFs should make tunnel brokers available.

C: We should arrange more time for discussions – e.g. use the French TF format of agreed presentations to focus on deeper discussion.

C: IPv6 over satellite would be interesting - the European Space Agency may wish to do this.

14. Close of Meeting

The meeting was closed at 5.00pm.

15. ANNEX A – 1st IPv6 TF Phase II Meeting Attendance List

Name	Organisation
Aegidus Sidse	DK Gov
Ben-Merien Tayeb	France Telecom
Bereski Philippe	Alcatel R&I
Bernard Jean-Jacques	AFNIC
Borgström Owe	Ericsson AB
Carvalho Graça	CISCO
Cassette Bruno	DATAR
Cebrian Carlos	Tissat
Ceccarelli Daniele	TIM
Cerciello Gianluigi	Alcatel - On behalf of EICTA
Chown Tim	University of Southampton
Christodoulides Louis	Vodafone
Cocquet Patrick	6WIND
Cousin Philippe	ETSI
Dasilva Joao	European Commission
Delgado Rosa M.	SITA
Demassieux Nicolas	Research Centre Motorola - Paris
Donadio Roberto	ESA/ESTEC
Drabik Pascal	European Commission
Egeland Geir	Telenor
Escudero-Pascual Alberto	IT University - Kista (Sweden)
Fernandes Bosco	Chairman ICT Focus Group, UMTS Forum
Fernandes Jose	European Commission
Ferracci Leonardo	TILAB
Fontes Francisco	PT Inovação
Gattiker Urs E.	EICAR Office
Hope Stephen	Orange
Hovell Peter	BTexact Technologies
Hurri Pasi	BaseN Ltd
Ito Kosuke	IPv6 Promotion Council of Japan
Ladid Latif	Chairman, IPv6 Forum
Lignell Mattias	Skanova Networks
Lombardo Filippo Maria	GSM Europe - Hutchinson 3G Italy
Mecrow Steve	mmO2 - GSM Europe
Moatti Alexandre	Responsable IT Cabinet Ministère Recherche
Mueller-Boehm Christian	DFN
Nomura Kenji	NTT Europe
Palet Jordi	Consulintel
Prehofer Christian	DoCoMo Euro-Labs
Quemada Juan	UPM
Rao Sathya	Telscom
Reynaert Thomas	ETP (Nortel Networks)
Rhoton John	HP
Robin Jonathan	ISOC France
Schefström Dick	
Schmid Andreas	Swisscom
Shaw Robert	ITU

Szucs Paul	Sony International (Europe)
van Arkel Jan	Co Chair e-Europe Smart Card Charter
Van Binst Paul	ULB
van den Broek Ger	Philips Research
Vande Walle Patrick	President of ISOC Luxembourg, secretariat of EEC-ISOC
Zehl André	Deutsche Telekom Group
Zielinski Chris	Information Waystations and Staging Posts Network

16. ANNEX B - Agenda 1st IPv6 Task Force Phase II Meeting

12 September 2002, 09:30 – 17:00

European Commission Offices (CCAB),

Brussels, Belgium

1. WELCOME (JOAO DA SILVA, DG-INFSOC)

2. IPv6 TASK AHEAD (LATIF LADID, IPv6 TF STEERING COMMITTEE)

3. IPv6 DEPLOYMENT IN JAPAN (KOSUKE ITO – IPV6 PROMOTION COUNCIL OF JAPAN)

4. SPANISH IPv6 TASK FORCE (JORDI PALET – CONSULINTEL)

5. DANISH PRESIDENCY (SIDSE AEGIDIUS)

6. IPv6 ISP BUSINESS & TECHNICAL CASE STUDY (PETER HOVELL –BT)

7. IPv6 SECURITY AND PRIVACY - SOCIETAL IMPACT (LATIF LADID – ERICSSON)

8. IPv6 IN THE HOME MAKES SENSE (TIM CHOWN, UNIVERSITY OF SOUTHAMPTON)

9. BUILDING TRUST AND CONFIDENCE – ONE STEP AT A TIME – ETEN/CASES (PROF URS E. GATTIKER PHD)

10. BUILDING THE NATIONAL AND REGIONAL IPv6 TASK FORCES

    - SWEDEN (DIRK SCHEFSTROM)

    - SWITZERLAND (ROSA DEL GARDO)

    - FRANCE (PATRICK COCQUET)

    - UK (TIM CHOWN)

    - BELGIUM (PAUL VAN BINST)

    - LUXEMBOURG (PATRICK VANDE WALLE)

11. FURTHER DISCUSSION

12. CLOSE (5PM)

17. ANNEX C - Updated Document List

Document Title	Source/Author	Date	Document Number