IPv6 TF: Next Generation Applications WG

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IP, the Web and beyond

- The Internet is over 20 years old
  - IPv4 was chosen to be 32-bit
  - Original network was always-on
  - Dial-up and NAT both contributed to address pooling
- The Web evolved at CERN
  - Not envisaged when IPv4 was designed
  - Mushroomed 10 years+ after IPv4 deployed
- There was no IPv4 business case
- There is no single IPv6 killer app (yet…)

Trends…

- New devices
  - Smart phones, handhelds, wearable, embedded
- New networks
  - Wireless LANs, always on, broadband, GRIDs
- New services
  - Infotainment, location awareness, mobile, ad-hoc, presence awareness, device-to-device, in-car
- Peer to peer
  - People-oriented applications: IRC, Napster, SMS
  - Video conferencing, home network access

Buzzwords…

- Scalability
  - Ease of management – including mass software updates
  - Plug and play – end users want simplicity
  - Demands on core services (e.g. DNS) of a 10-billion node Internet
- Service discovery – coupled to location awareness
  - Beyond 3G… 4G…. 5G (!)
- Security – but we have no real PKI
- Quality of service
  - Issues invariably policy-oriented not technical.

The goals…

- Application developers should be able to think innovatively, end-to-end and not be hindered by NAT restrictions.
- End-users should be able to connect to anyone, anytime, anywhere. No NAT.
- There are parallel requirements – e.g. broadband to the home and SME premises.
- Much needs to be done (e.g. service discovery, IPSec, infrastructure scalability, device ergonomics, etc) but IPv6 is the key enabler.

Application areas

- Online gaming
  - Peer-to-peer, buddy awareness
- Collaborative working
  - Conferencing, messaging
- Home networking
  - Combine broadband and wireless, home access
- Ambient intelligence
  - Embedded systems, tuned to users

Application areas (2)

- Ad-hoc connectivity
  - Airport lounge, Internet café, public library, high street
  - Pick appropriate connectivity at appropriate time, e.g. 802.11b, Bluetooth, GPRS...
- In-car
  - Remote diagnosis, fleet management, entertainment
- Medical
  - Hospitals, ambulances, handhelds (c.f. 6WINIT)
- And many more….

Recommendations

- Educate stakeholders, disseminate IPv6 activities
- National governments need to drive broadband
- Promote IPv6 roll-out, e.g. in general consumer electronics by 2005 (the “internet fridge”).
- Funding and support for projects that develop innovative IPv6 applications
- Need IPv6 API in development environments
  - And in database and other systems interfaces
- Develop “IPv6 chip” for sensors by 2004.

Recommendations (2)

- IPv6 in peer-to-peer gaming by 2003.
- IPv6-based biometric security by 2005.
- IPv6 videoconferencing by 2003.
- IPv6 Internet car by 2005.
- Dual-stack SIP phones by 2003.
- Establish European IPv6 Centre of Excellence
  - Assists the development of an open source code-base
- Procurements should be IPv6 future-proof.

Wrapping up..

- Other application areas?
- Timing of recommendations?
- Other recommendations?