The Future Internet: Can we get there from here?

Richard Jimmerson
Director, Deployment & Operationalization Hub
Internet Society

26 April 2011
This presentation is not about IPv6 on its own.
Two Forces at Work

In 5 years, the Internet will be vastly different. How it will be different depends on which force prevails.
People on the Internet

Source: World Bank

Internet Society
Gopher to Web

Welcome to NCSA Mosaic, an Internet information browser. Mosaic was developed at the National Center for Supercomputer Applications, University of Illinois in Urbana-Champaign. NCSA is a unit of the University of Illinois at Urbana-Champaign.

Internet Society
FTP to Web

Welcome to NCSA Mosaic, an Internet information bro Mosaic was developed at the National Center for Sup University of Illinois in Urbana-Champaign. NCS The Board of Trustees of the University of Illinois UI.
192.52.179.024

2001:0db8:85a3:0000:0000:8a2e:0370:7334
Facebook IPv6 Address

2620:0:1cfe:face:b00c::3
The only constant is change...

— Isaac Asimov
Why do we want the Internet to continue evolving?

- More new stuff
  Innovating without permission

- More people
  Enjoying the same Internet we enjoy today

- More devices
  Supporting sensor nets and concepts like “smart grids”

- Independent and collaborative networks
  Evolving in their own right
Internet Evolution has brought us:

- Google
- Facebook
- Amazon
- Netflix
- Twitter
- Skype
Internet Evolution in Research and Education
Typical Organization View of IPv6
The Internet’s Future Innovation is the Forest
The IPv6 Challenge
20% by 2012
Why is 20% the goal?

- Not just because more is better...
- We need a tipping point big enough so that:
  - IPv6 is part of “standard” Internet access
  - Content providers recognize that IPv6 is important
  - Technology providers can't ignore IPv6
- We’ll prove that the Internet can still evolve
Where do we stand?

Global IPv4 Address Pool Depletion

ISP IPv4 Address Pool Depletion

Global Internet

Internet Users

Acquiring additional IPv4 Addresses

IPv4-only Internet

IPv4 Demand

NAT

Internet Society
Challenges for IPv6

- Transit providers
- Enterprise
- Residential providers
- Mobile operators
- Content Providers
expected need for additional addresses

Internet touchpoints

- enterprises
- transit providers
- residential providers
- mobile providers
- content providers
IPv6 is Beginning to Make Business Sense

- IPv4 addresses now have prices attached
- NATs are hard and expensive
- Party lines don’t work for business
- Certain apps don’t work at all (games)
- New markets are going to be driven by IPv6
IPv6 Deployment Already Underway

- Free (French ISP)
- Comcast
- Japanese ISPs
- Hurricane Electric
- Google
- YouTube
World IPv6 Day Participants

- Akamai
- Comcast
- Facebook
- Google
- Limelight Networks
- Rackspace
- Steadfast Networks
- Time Warner Cable
- Yahoo!
Who’s going to build the Future Internet?
We will.
IPv6 Call to Action

- Make a plan if you don’t have one
- If you have a plan, *accelerate it*
- Let the world know about your plan
Quotes from World IPv6 Day Participants

- “We've turned IPv6 on already.”
- “We want to be the first in our industry to be fully IPv6 capable.”
- “My customers have been calling me because of this thing you're doing.”
- “We switched ISPs so we can use IPv6.”
- “Working together, we can make 2011 an historic year for ensuring the stability, security and growth of the Internet.”
- “…a groundswell of attention.”
- “Another step in furthering the industry’s ability to work together to anticipate and solve real-world issues.”
- “The number of web-connected devices is exploding, and World IPv6 Day is a crucial step in ensuring they can all communicate”
- “In the short history of the Internet, the transition to IPv6 is one of the most important steps we will take together to protect the Internet as we know it.”
The Future Internet: Can we get there from here?

Only if you take us...
The Future Internet: Can we get there from here?

Richard Jimmerson
Director, Deployment & Operationalization Hub
Internet Society

26 April 2011