

IPv6 in the Real World

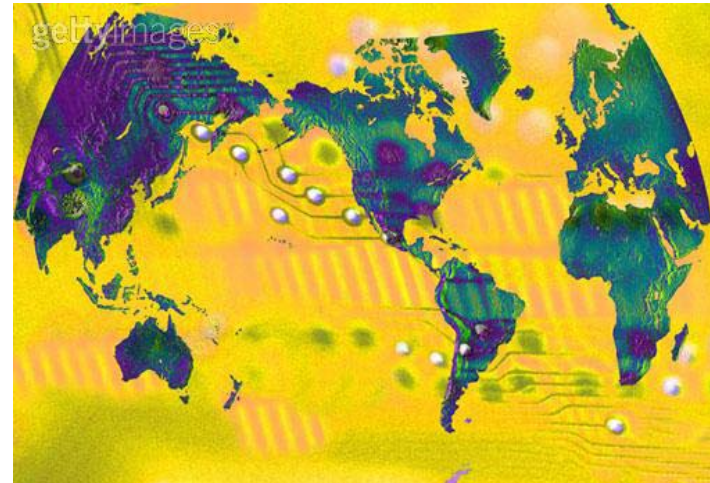
NTT/VERIO

Presented by Stan Barber



IPv6 in the Real World

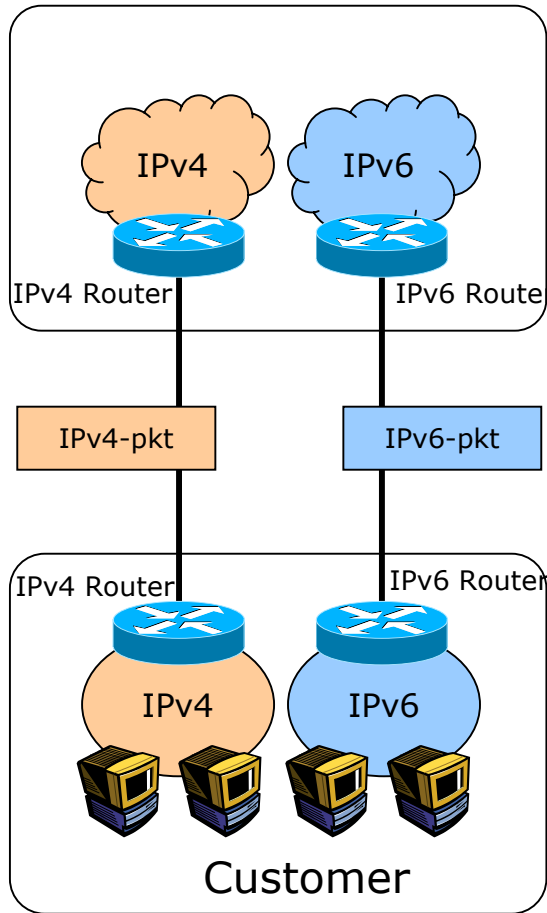
- **IPv6 perceptions, business needs and adoption rate vary by region and even by country**
- **Innovative technology deployment builds on significant experience in IPv6 offerings**
- **Key learnings from customers; business and real-world applications of technology**
- **The future of IPv6**



IPv6 in the Real World

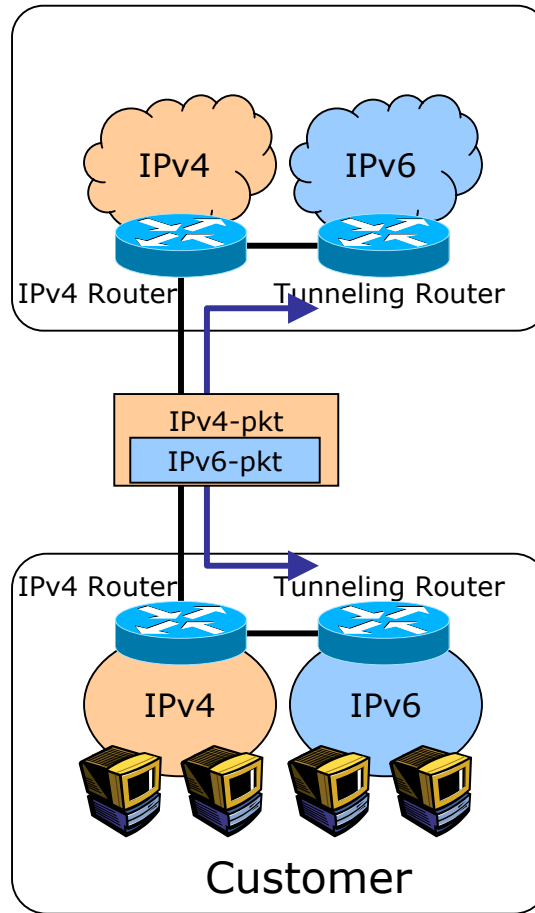
- Many technical and management benefits to using IPv6
- Benefits alone will not make IPv6 successful
- Available to all customers for it to be useful and accepted
- For success content providers and consumers must be able to make use of the capabilities of IPv6
- Important to listen to the needs of the customers
- Address these needs

NTT/VERIO IPv6 Services



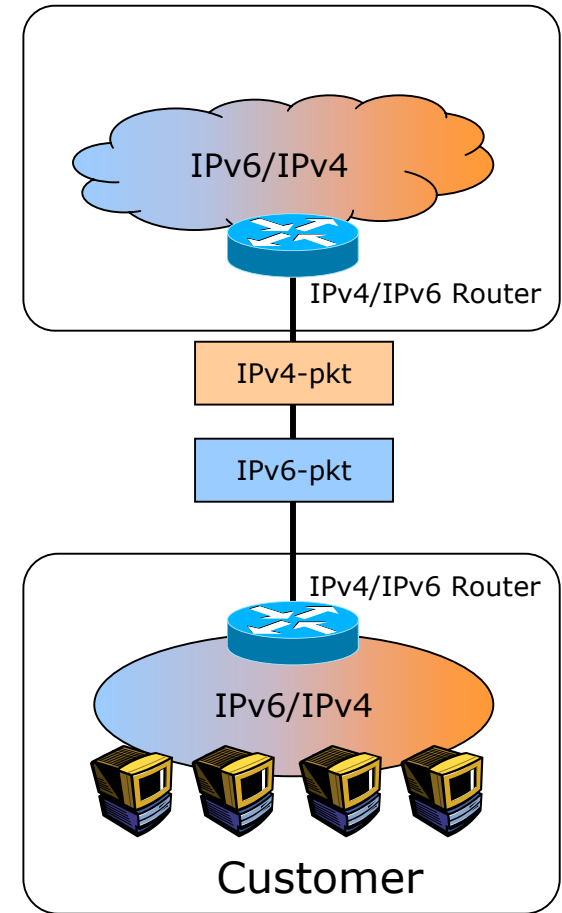
Native

Pacific Rim: Since April 2001
 Europe: Since February 2003
 North America: Since May 2003
 (Pre-commercial Service)



Tunneling

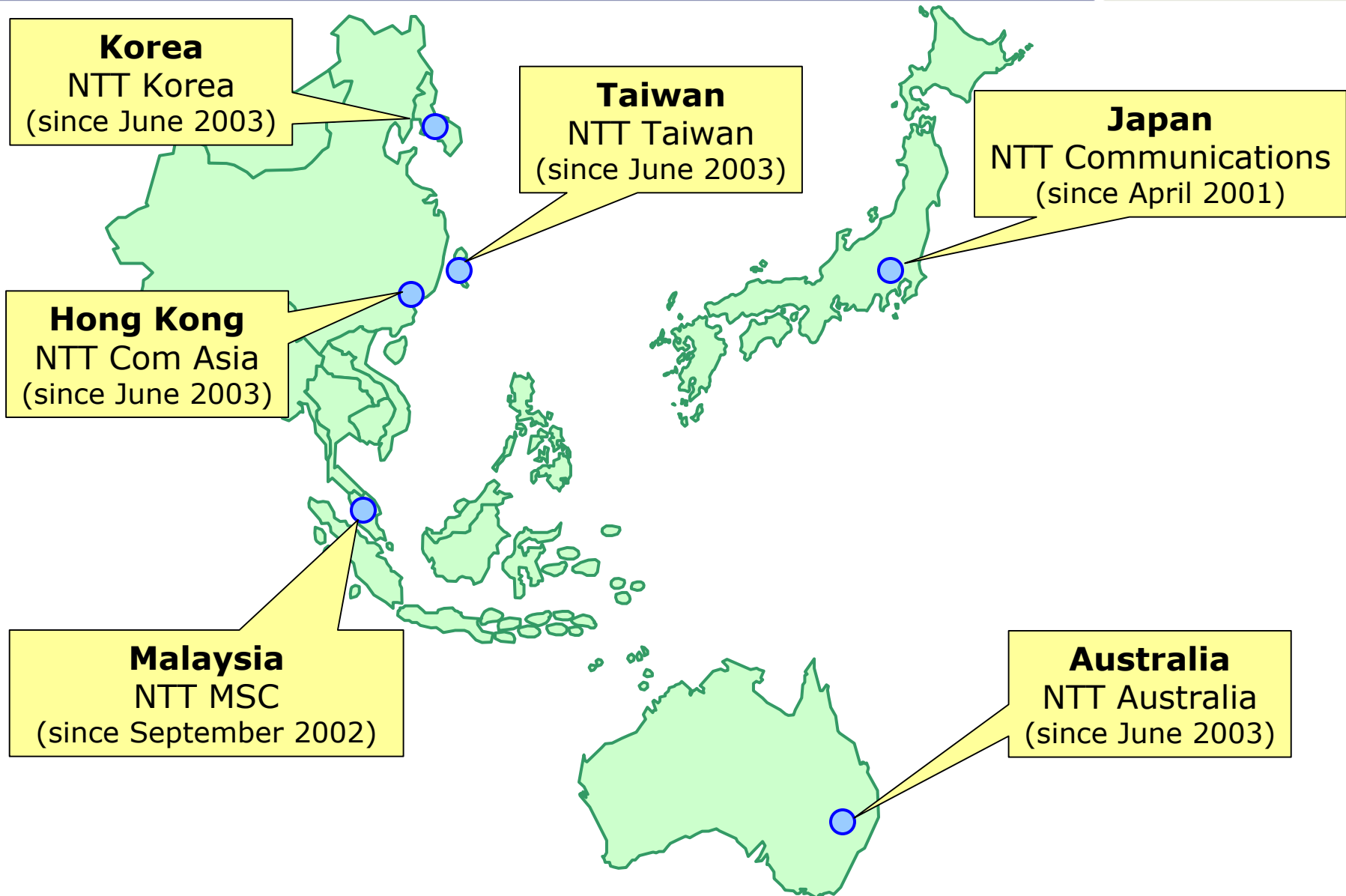
Pacific Rim: Since June 2001
 Europe: Since February 2003
 North America: Since May 2003
 (Pre-commercial Service)



Dual

Pacific Rim: Since August 2002
 Europe: Available Q4 2003
 North America: Available 10/03

Pacific Rim Services Available Now



Pacific Rim

Customer interest in IPv6:

Advanced Regional ISP



Developing web-based products and services



Security over IP



Non-PC based appliances/devices



New peer-to-peer applications



Wireless technologies



And finally, They do not want to be left behind when IPv6 is implemented.₆

Pacific Rim Customer Experiences

"IPv6 protocol is essential when home electronic/appliance manufacturers develop new products. It is our hope that Matsushita can collaborate with NTT on a long-term basis-- we count on the NTT/VERIO network quality for developing our IPv6 enabled equipment."

Jun Yoshida

CTO

Internet Business Promotion Office

Corporate eNet Business Division

Matsushita Electric Industrial CO., Ltd.

"BIGLOBE, as being one of the biggest domestic ISPs in Japan, has been a pioneer for boosting Japan's Internet surroundings and establishing Japan's Internet infrastructure. Likewise, we have been leading the IPv6 industry in an effort to boost IPv6 infrastructure in Japan. We have started using NTT/VERIO IPv6 transit service..."

Noriyuki Kishikawa

Manager, BIGLOBE Design and Operations Division

NEC Corporation

Pacific Rim Customer Experiences

Fujitsu noted the importance and value of having a global IPv6 network, and for having providers such as NTT boost the usage of IPv6 services globally.

Akihiro Inomata

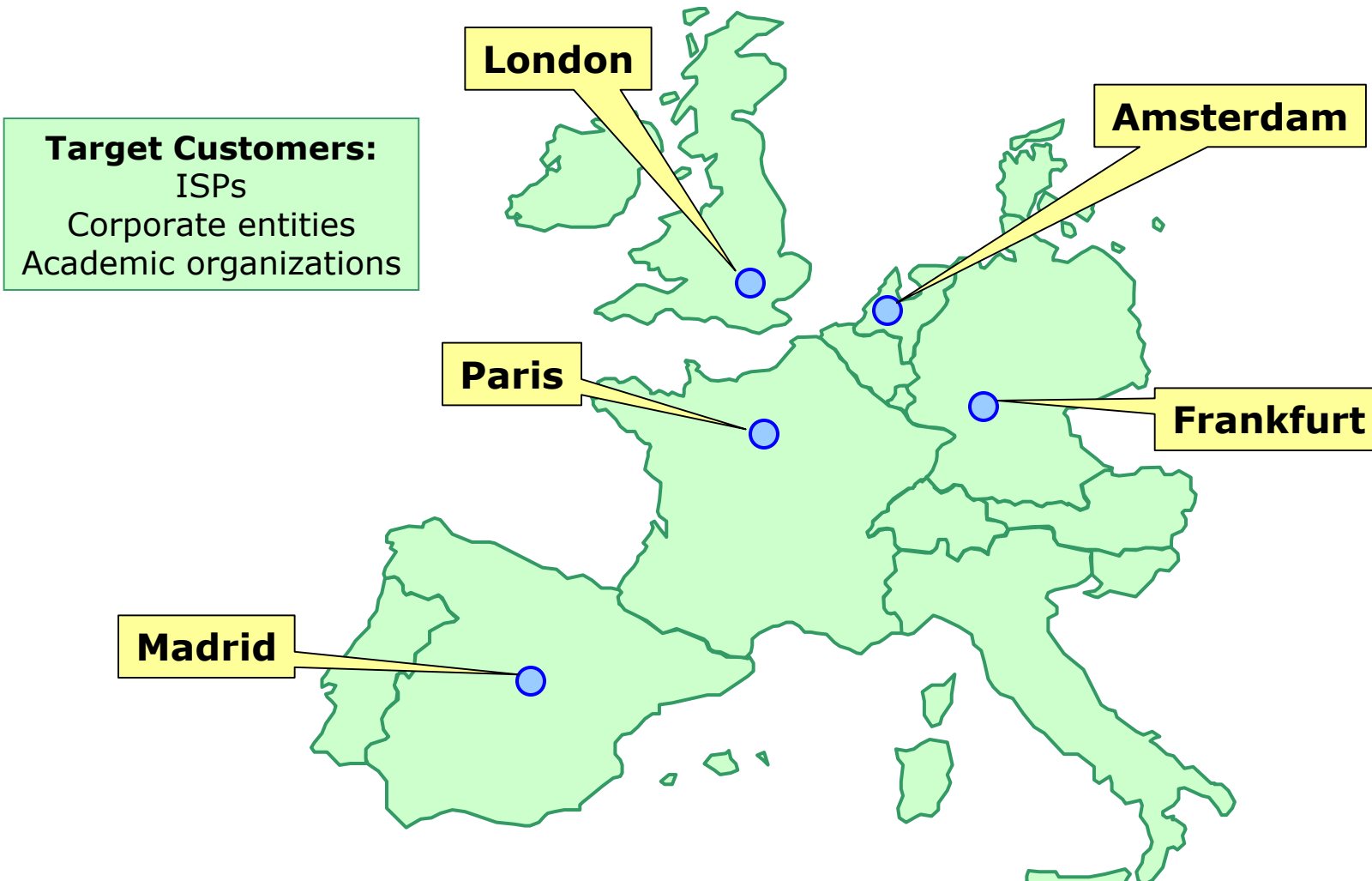
Chief Engineer
Network Service Division
Network Services Group
Fujitsu Limited

"IPv6 is significant when home appliance manufacturers consider "value-add" to their current devices. We, Panasonic, have been moving forward to develop and include IPv6 specs to our new products/devices, and in doing so, NTT/VERIO IPv6 service has been supporting us when we check interoperability of our new devices."

Junichi Sakai

Panasonic Communications

European Services Available Now

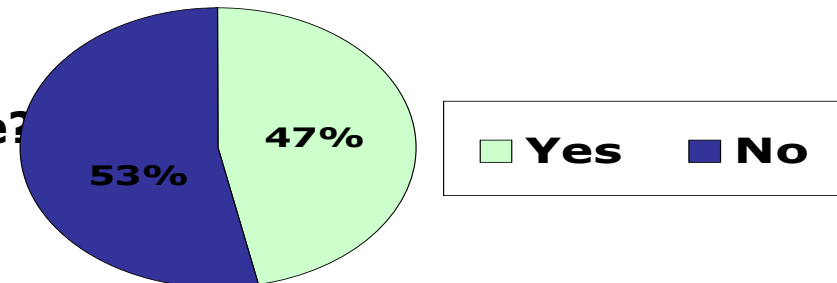


➤ All European services provided by NTT Europe and launched in February 2003

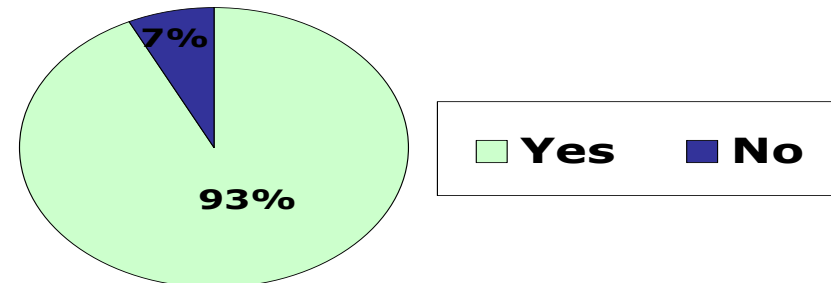
Europe

- Built on successful deployment strategy developed in Pacific Rim.
- Customize services to fit local customer needs and desires.

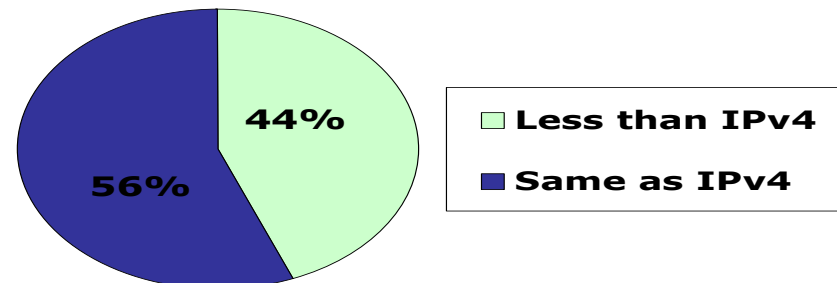
Would you like to use IPv6 for business purposes in the future?



Would you like to pay more for IPv6 connectivity when using it in business?



At what level would you want IPv6 transit to be priced?



European Customer Experiences

Mitsubishi Research Institute noted the benefit of having a provider to handle the coordination functions among networks in both Europe and globally, and notes the application and benefit to business areas.

"IPv6 accelerates real Internet deployments in new areas such as transportation and mobile phones, and ISP services in such areas would not only be good for business but also would be a great contribution to our social community for what it could enable."

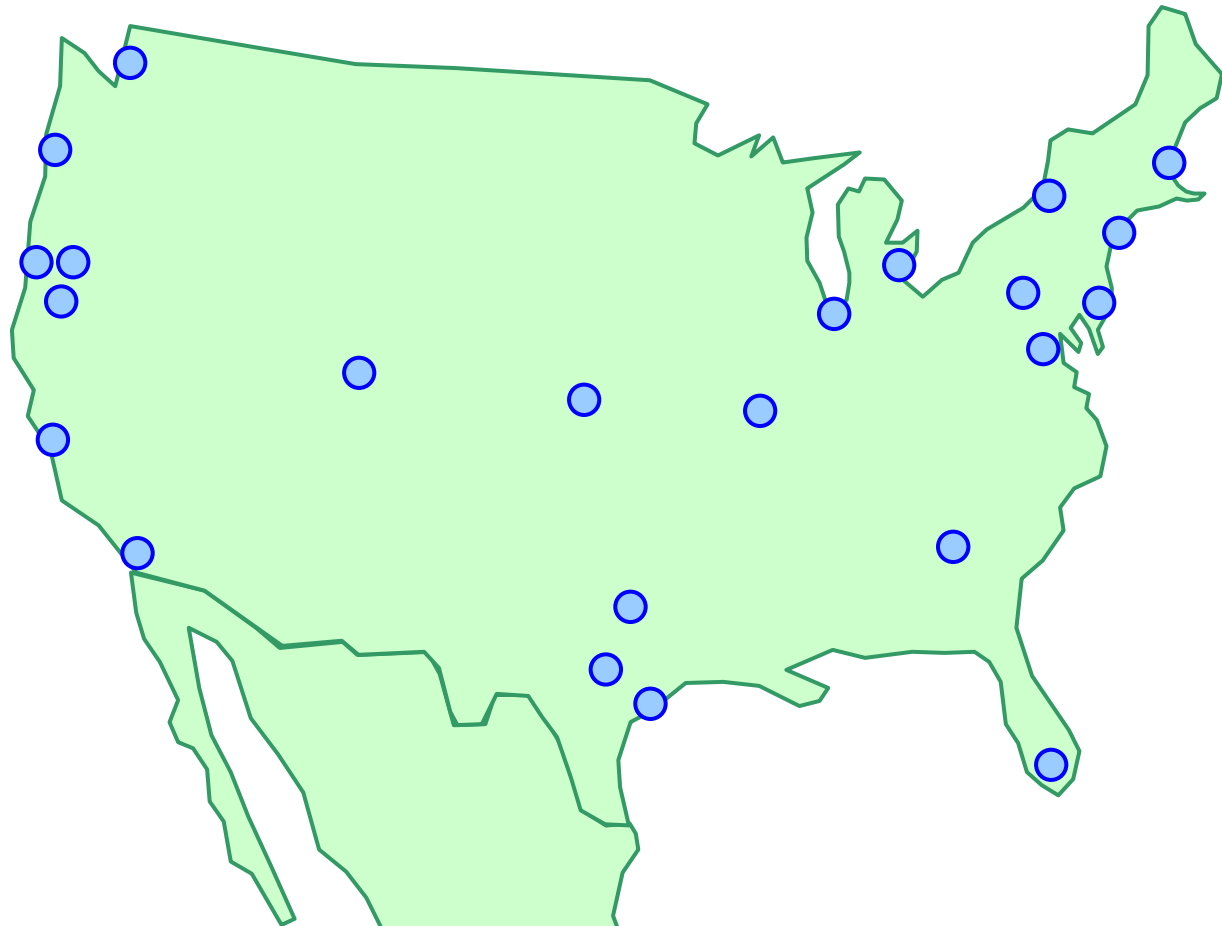
Shuji Nakamura

Project Manager, Research for E-Government
Mitsubishi Research Institute, Inc.

North America Services Available Now

US IPv6 Cities

Atlanta
Austin
Bay Area (SF)
Boston
Chicago
Dallas
Denver
Detroit
Houston
Kansas City
Los Angeles
Miami
New York City
Philadelphia
Pittsburgh
Portland
Rochester
San Diego
Seattle
St. Louis
Washington, DC



- IPv6 Native service is available in 5 pops
(3 in the San Francisco Bay Area, 1 in Los Angeles and 1 in Washington D.C.)
- IPv6 Tunneling service is available throughout NTT/VERIO's IPv4 network
- All North American services provided by Verio and launched in May 2003

North America

- NTT Com and Verio are building on past experiences from Pacific Rim and Europe
- Service tailored to fit customer needs in each region

North American IPv6 User Profile

- Will not pay more for IPv6
- Requires IPv4 until IPv6 coverage more widespread
- May be slower to adopt IPv6 than other regions
- Research/academic environments expected to adopt IPv6 before businesses

North America Customer Experiences

- North American Pre-Commercial Services are available for selected customers.
- Customer Profiles:
 - Medical schools
 - Super-computing centers
 - Universities
 - Industrial research laboratories
- Initial installation phases are complete for some of these customers. Others are still in progress
- NTT/VERIO is the official IPv6 provider for the **North American IPv6 Global Summit**



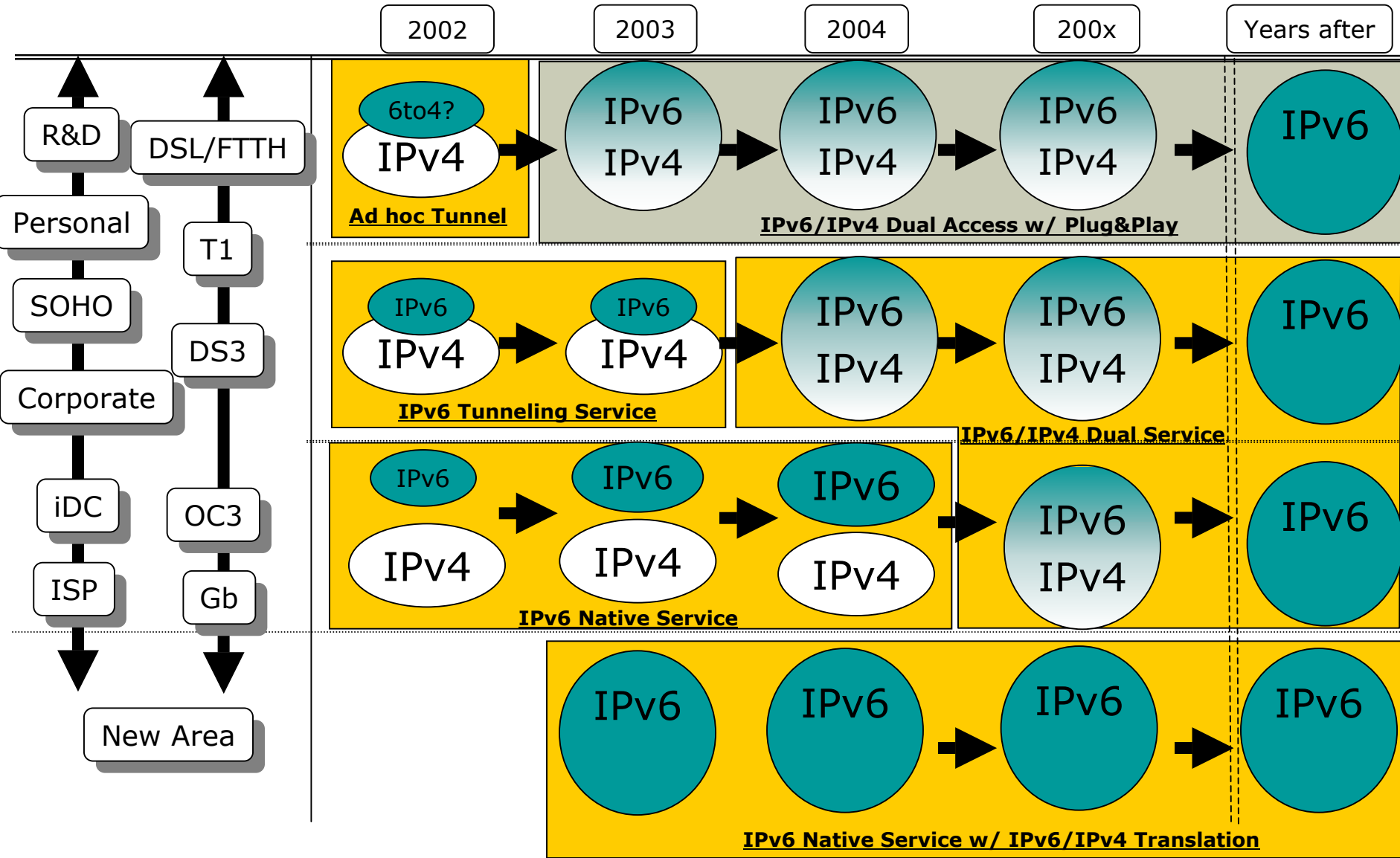
The Future of IPv6?

IPv6 Home Appliance Trials ▲

▲ Home Appliance Products

▲ 3GPP, 3GPP2

▲ End of IPv4 new allocation?



NTT/VERIO Commitment to IPv6

- **NTT/VERIO Global IPv6 Backbone is the first global IPv6 network reaching Asia, Australia, Europe and North America**
- **NTT/VERIO is dedicated to bringing IPv6 from the conceptual phase into reality**
- **IPv6 doesn't just relieve issue of overcrowding address space; US customers can realize security benefits and a more robust method of sending data over the Internet**
- **NTT/VERIO is committed to development of the application side of IPv6, as this protocol opens up new opportunities for the Internet**
- **NTT Communications and Verio are building on experience from Asia and Europe to offer IPv6 in US**

Contact Us in the Real World

- **Please stop by our booth (#6) for more information and a demonstration of applications utilizing IPv6.**
- **Additional questions and comments about IPv6 can be addressed to usipv6@verio.net**