



Internet Protocol version 6: A Pillar of On Demand Computing



Promise of IT: On Demand Business

An enterprise whose business processes -- integrated end-to-end across the company and with key partners, suppliers and customers -- can respond with speed to any customer demand, market opportunity or external threat

Responsive



Variable



Focused



Resilient



On Demand Computing Attributes Served By IPv6

Self-managing systems and network technology that deliver..

Increased Responsiveness

Autoconfiguration enables dynamic network adaptation to changing environments

Operational Efficiency

NAT removal significantly simplifies connectivity and improves operational efficiency



Business Resiliency

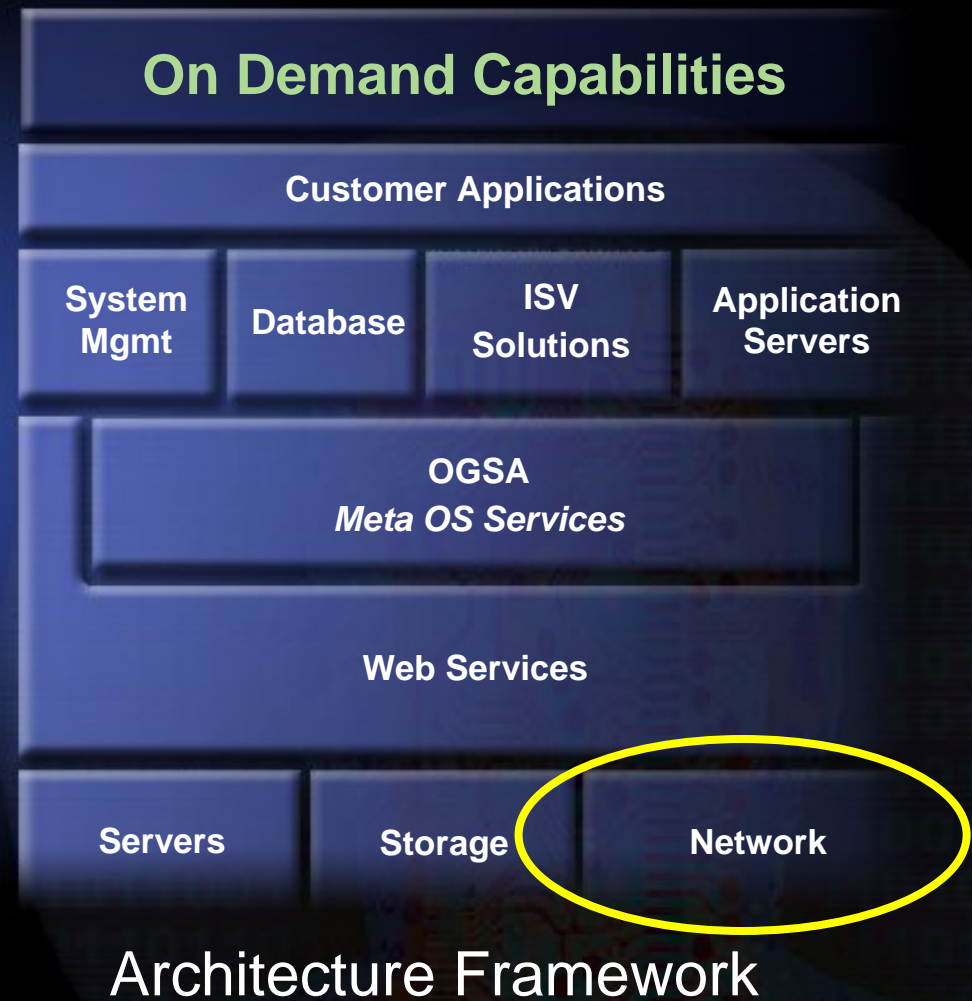
Default router & unreachability detection improve ability to prevent network disruptions

Secure Information and Resources

End-to-end connectivity simplifies ability to anticipate, detect, identify, and protect against attacks

The Benefits of A Holistic Approach

- Based on open industry standards
- Utilizing standard instrumentation and control to tie heterogeneous systems together
- Enabling each system element with autonomic capabilities
- Integrating elements to monitor and manage end-to-end system



On Demand Network Requirements

- **Sufficient Address Space to meet the exploding needs of Customers, where IT becomes a resource supplied On Demand by the network**
- **More than just expanded addressing...**
 - **Facilities for Automatic Configuration beyond DHCP, including stateless autoconfiguration for autonomic networks**
 - **Improved Mobility through design instead of retrofit**
 - **Back to basics security, with end-to-end connectivity and security as the internet was originally designed to be**
 - **Improved network performance including simplified headers and improved QoS routing decision information**

Does On Demand Require IPv6?

- Within constrained boundaries, IPv4 can be and is being used, but ...
IPv6 enables significantly expanded markets!
- In the long-term, e-business on demand requires
 - Unlimited scaling of the network
 - The ability of any service requester to connect to any service globally
 - Simplified Configuration: Add/Change/Delete for required network resources
- IBM e-business on demand support will increasingly depend on IPv6 to connect any service requester to any service

What Does IPv6 Provide On Demand Environments?

- **Essentially unlimited addressing**
 - **No practical scaling limitations**
 - **No need for ambiguous addressing**
 - **Effectively permitting universal connectivity**
- **Universal connectivity in turn enables, a simplistic, yet robust approach to end-to-end network security**
- **Network device automatic configuration driven by application need On Demand**
- **Anycast service discovery to simplify and automate the dynamic enrollment of new services as they become available to the network**

What Comes Next?

- **Existing applications and middleware must be converted**
 - **Minimally, this requires recompilation**
 - **Address size and format dependencies must be addressed**
- **Network Management tools extended to support...**
 - **Address size and format dependencies**
 - **New manageability functions in IPv6**
- **Customer demand for functionality only available with IPv6, such as...**
 - **“RFID-like” applications requiring huge numbers of IP addresses**
 - **Business growth inhibited in IP address starved geographies**
 - **Technological growth demanding universal connectivity (e.g. OGSA)**

IPv6 Deployment Roadmap

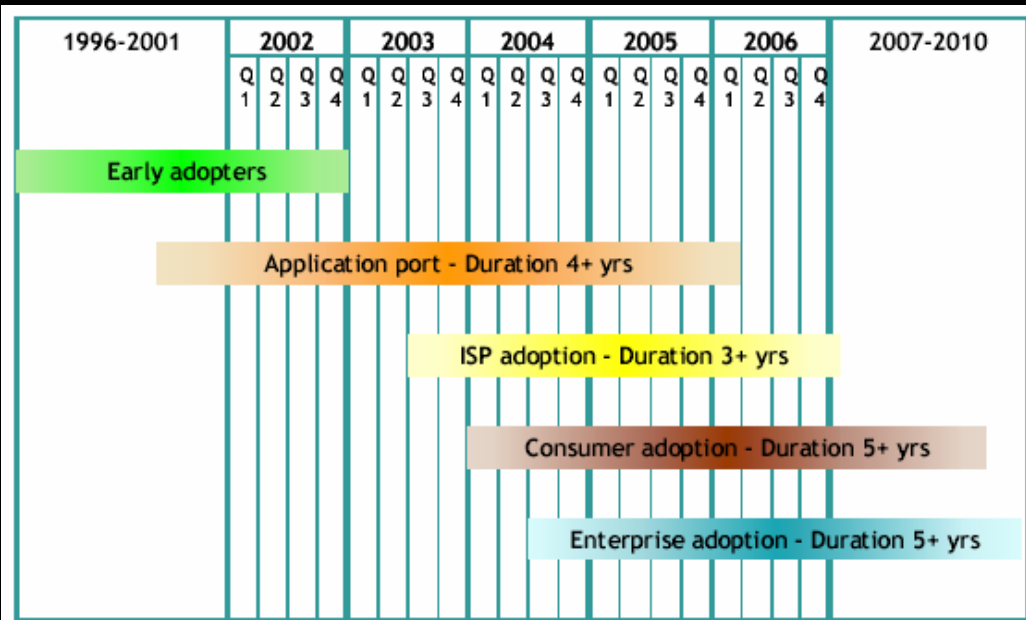


Figure 2-2: IPv6 Rollout

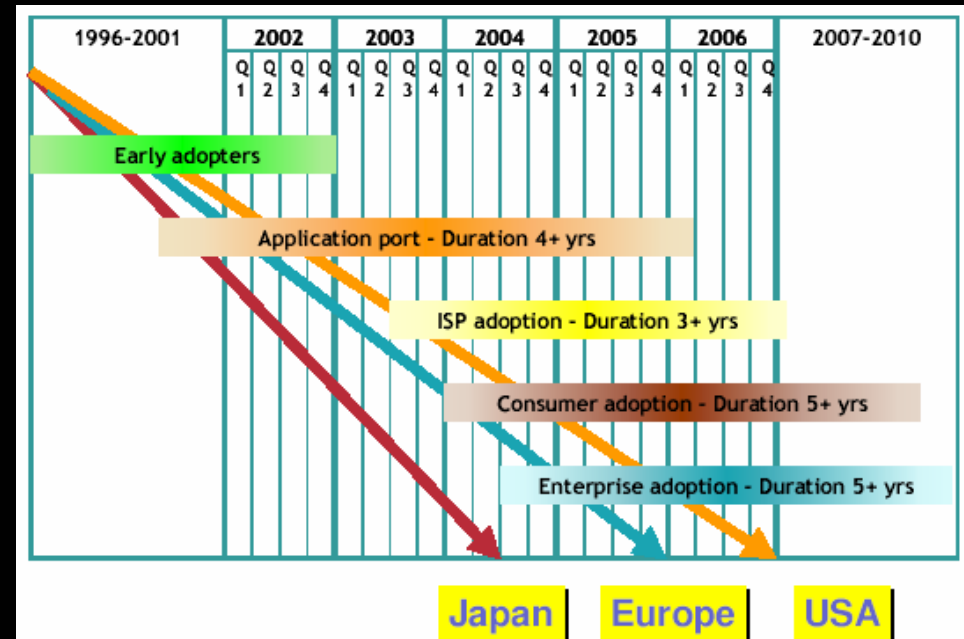


Figure 2-7: IPv6 in Japan, Europe and USA

**Source: IPv6 Task Force Steering Committee
Status Report 9/30/2003**

IBM's Support of IPv6

- IBM has participated in the design and standardization efforts since 1995
- IBM leads the work on middleware and application trials in 6NET
- IBM provided the first commercial support of IPv6 on Unix in 1997
- All IBM eServer platforms have IPv6 support at varying levels of maturity
- IBM's Linux Technology Center has made substantial contributions to IPv6
- IBM is participating in the DoD's 1Q04 interoperability testing
- All IBM products are internally tracked to ensure plans to provide IPv6 support
- Some products are available now, many more next year and shipments will continue over the next two to three years with timing depending on individual product schedules and marketplace need

IBM Product Areas Support of IPv6

Platforms

- AIX:** *Available since 1997 (first commercial offering)*
- z/OS:** *Communications Server on z/OS*
- Linux:** *Supported across the eServers (i, p, x and zSeries)*
- OS/400:** *Application Development Platform since 2002, full support planned in future release*

Middleware and Tools

- IMS:** *Supported in most currently available version*
- CICS:** *Planned support early 2004*
- Rational:** *Support by Entire Development Platform except Clearcase*
- Lotus:** *Currently available in servers; Clients being assessed*
- WebSphere:** *WebSphere Application Server support planned in 2004*
- DB/2:** *Support is committed as part of the next version*
- Tivoli:** *Initial support late 2004*

IPv6 is a Pillar of On Demand Computing!

Any Questions?