



Compaq and IPv6

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- Compaq's IPv6 History
- Compaq's IPv6 Strategy
- Compaq IPv6 Enabled Products
- Compaq's IPv6 Roadmap

Compaq Took Early Lead in IPv6

- 1993** Compaq prototypes help define the IP Next Generation protocol in the IETF
- 1995** Public demos & experiments verify core IPv6 interoperability
- 1996** Early and active Participant in 6bone for worldwide early adopters experimenting on the Internet
- 1997** Early Adopter Kits on Tru64 UNIX and OpenVMS provide IPv4/IPv6 stacks to early adopters
300 early adopters used the kit

Compaq IPv6 Standards Activities

- Founding member of the IPv6 Forum
 - Chair of IPv6 Technical Directorate for the IPv6 Forum
 - IPv6 Forum Board Member.
- Currently, active participation in IETF Meetings and mailing lists
- Author/Co-Author numerous IPv6 standards
- Funding public domain IPv6 activities
- Interoperability events:
 - University of New Hampshire
 - Connectathon
 - ETSI

Tru64 UNIX - Internet Technology Strategy

- Business goal: Support customer choice of primary infrastructure technology & eCommerce solutions
 - apps servers, storefronts, procurement, directories, integration technologies
- Provide leadership operating system networking features
- Internet enable & optimize, out-of-the-box base platform
- Provide leadership Java performance
- Exploit underlying platform differentiation
 - cost-effective scaling, performance, availability
- Leverage Professional Services practice for tailored customer solutions

IPv6 is part of the Future

- IPv6 Solves many of the problems caused by the IPv4 success and more...
- Will the whole Internet get upgraded any time soon?
 - No way!
- Are “green field” sites considering use of IPv6?
 - Yes!

Compaq IPv6 Product Goals

- Embedded into IP stacks
- Hybrid, integrated stack, supporting IPv4 and IPv6
 - Configurable: IPv4-only, IPv6-only, IPv4/IPv6
 - Integration of IPv4 and IPv6 Applications and Networks
- Binary Compatibility
- Applications delivered with the operating system to be IPv4/IPv6 capable
 - Other applications can adopt IPv6 as needed
 - IPv4 and IPv6 APIs will coexist
 - IPv6 binaries should support IPv4 addresses
- IPv6 Advantages:
 - Address Space, End-to-End, Plug-N-Play, and more efficient Mobile IP computing.

IPv6 Leadership

- **IPv6 leadership**
 - Enhanced network security (IPsec)
 - Voice over IP
 - IPv6 / IPv4 combined stack
- **Quality of Services**
- **Broadened Internet capabilities and increased performance**
 - Mobile IP support
 - Real-Time Streaming Protocol (RTSP)
 - Random Early Detection (RED)

Compaq IPv6 Product Delivery

- Tru64 UNIX V5.0; Summer 1999
 - Early Adopters Kits available at its first revenue ship in summer 1999
- Tru64 UNIX V5.1 September 2000
 - Full product support for IPv6 beyond ADKs
- Initial IPv6 Release Theme is “IPv6 Infrastructure and IPv4 Integration”
- TCP/IP Services for OpenVMS Q4 2000 supports IPv6

Compaq is Shipping IPv6 Now

2000 First vendor to implement RSVP for IPv6

2000 Tru64 UNIX Support for IPv6

1Q01 TCP/IP Services for OpenVMS support for IPv6

The technology you've been waiting for is here

IPv6 Core Specifications Implemented

- IPv6 Base Protocol Specification
- Internet Control Message Protocol for IPv6
- Path MTU Discovery for IPv6
- Neighbor Discovery
- Stateless Autoconfiguration
- RIPng Routing Protocol for IPv6
- Transition Mechanisms for IPv6 Hosts and Routers
- DNS Extensions for IPv6 and Dynamic Updates to DNS
- Basic IPv6 Application Programming Interfaces (APIs)
- Resource Reservation Protocol
- IPv6 over Ethernet, FDDI, and PPP

IPv6 Enablers Implemented

- Transition Mechanisms for IPv6 Hosts and Routers
- IPv4 Tunnel Configuration for IPv6 Packets
- DNS Extensions for IPv6, Dynamic Updates to DNS
 - ipnodes
- IPv6 Application Programming Interfaces (APIs)
- IPv6 documentation
- Base Applications:
 - telnet
 - ftp
 - r*commands
- Management commands:
 - ifconfig
 - route
 - ping
 - netstat
 - tcpdump

IPv6 Leverages Compaq's Tru64 and Alphaserwer Technology

- Leveraging Alpha for IPv6
- IPv6 family of protocols optimised for 64 bits
- IPv6 encourages compute-intensive applications
- Combined and Shared Engineering Efforts across Compaq

Compaq Targets IPv6 for 3rd Generation Mobile Networks

- IP gateway support nodes
- Location registers
- Mobile IPv6 home agent
- AAA support nodes
- Networked server farms

In Summary...

- Compaq is a leading player in IPv6
- OpenVMS and Tru64 are proven platforms
- Compaq is ready now with IPv6 AlphaServers
- You can deploy now!

Imagine what IPv6 can do for you...

COMPAQ IPv6 Homepage



<http://www.compaq.com/ipv6/>

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Backup Slides

IMAGINE you're a LAN administrator...

You need to improve service while reducing your staff and expenses—all while demand on your network is increasing.

But you need increasingly specialized skills to manage address assignment, equipment configuration, and network support.

You don't know it...but you need IPv6.

IMAGINE you're a network operator.

How do you protect your network?

How do you keep from being the weak link in the chain?

You don't know it... but you need IPv6.

IMAGINE you're in sales...

*You're battling fierce competition for a major account.
Closing the deal hinges on communicating*

*Integrated communications device plugged into car's dash
keeps you connected while on the move. You must be able
to communicate efficiently, transparently.*

You don't know it...but you need IPv6.

IMAGINE you're a regional sales manager...

You're about to close on a big contract. You've just received critical competitive information. But your team is headed to the final customer presentation...

Imagine you could reach every person on the team — no matter where they are — with one simple message?

You don't know it...but you need IPv6

IMAGINE you're a LAN administrator...

*Your company has just acquired another company.
You need to:*

- *Integrate both internal networks*
- *Add new nodes to support the increased capacity*
- *Reallocate resources on existing nodes*
- *Automatically configure and renumber addresses*

You don't know it...but you need IPv6.

Imagine... IPv6



*A Core Building Block for
Next-Generation Networks*

COMPAQ

Inspiration Technology

IMAGINE a service provider operating a high-bandwidth packet network...

You need to offer service level agreements that guarantee customers:

- *Bandwidth for peak loads*
- *Priority for voice packets over e-mail packets*
- *Priority for e-commerce transactions over browsing*

You don't know it...but you need IPv6.

IPv4 - Limiting factors

- Running out of Internet addresses
 - Limits Internet growth & Hinders its use
- System Management Costs
- Optional Security, No ONE standard
- Difficult to add new functions and services to the base IPv4 technology
 - Adding it on is very high overhead

How long can we ignore these problems?

IPv6 Offer Superior Services to Customers

- Virtually unlimited addresses
 - Seamless & efficient service availability
 - End-to-end security
 - Lower network maintenance
-
- Deploy today with Compaq's Tru64 UNIX v5.1 and OpenVMS TCP/IP Services v5.1

Imagine what IPv6 can do for you ...

The Compaq advantage for next generation networks

The Internet for Everyone and Everything

- IPv4 is out of space
- 1B mobile users by 2005
- 1B internet users by 2005
- 90% of all new mobile phones will have internet access by 2003*
- 3GPP adopted IPv6 as networking protocol for 3G networks
- IPv6 leaps from 32 to 128-bit addressing

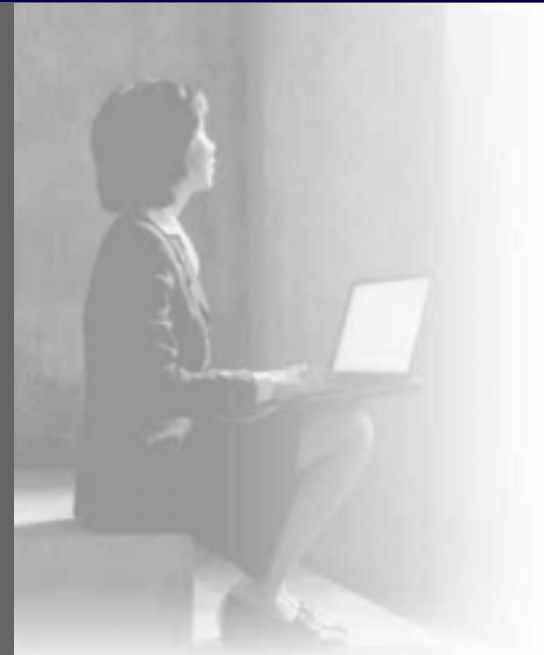
*Cell Phone Data Source, Morgan Stanley Dean Witter, May 2000

Simplified Network Administration

- Autoconfiguration provides stateless and stateful plug-and-play
- Easy renumbering IPv6 Hosts
- Renumbering in IPv6 is designed to happen!
- An end of ISP “lock in”!

Engineered to Protect and Perform

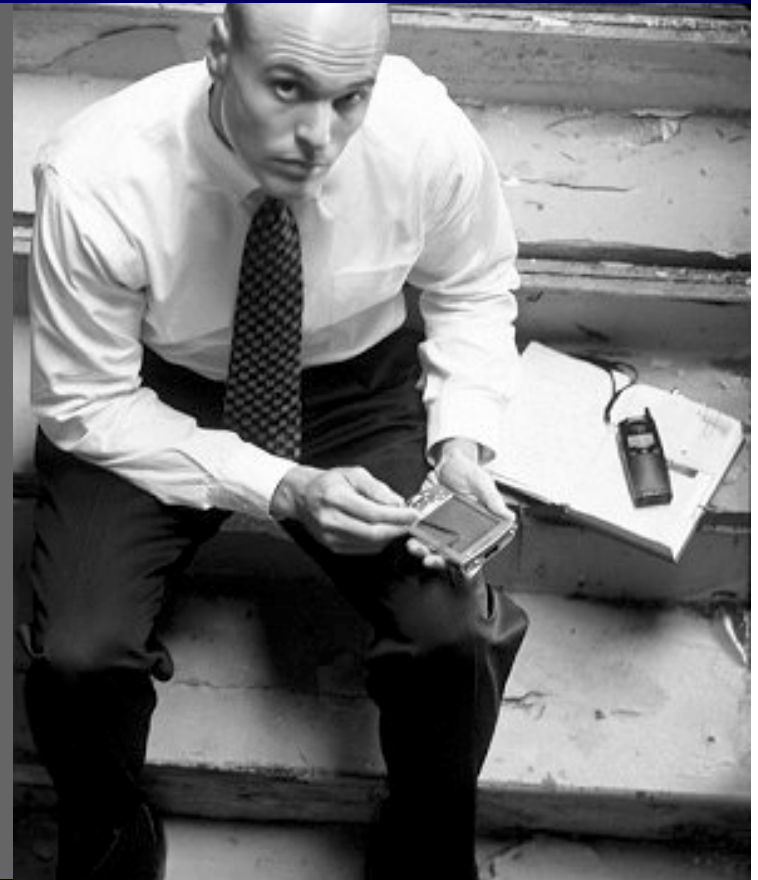
- Mandatory security in IPv6
- Authentication
- Encryption
- End-to-end security model



Peace of mind.

Go Mobile with IPv6

- Mobility core in IPv6, not add-on
- No single point of failure
- More scalable, better performance



Multicast & Anycast Potential

MULTICAST delivers data simultaneously to all hosts that sign up to receive it

- Makes conferencing more efficient

ANYCAST delivers data to one host in the group

- Could be used to implement fault tolerant client/server applications more efficiently

Quality-of-Service Potential

- IPv6 packet supports 20-bit traffic flow ID field
- Provides potential for differentiated, packet services
 - Flow management
 - Rating & billing
 - Capacity on demand
- Support for RSVP in Tru64 UNIX 5.1