Solaris 2 IPv6 Prototype Status Report

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Overview of Talk

- Release Plans and Status
- Release Features
- Implementation Experience
- For More Information

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Prototype Release Plans

- Target Platforms:
  - Solaris 2 on sparc, x86 and power PC
- Series of prototype snapshot releases
  - At approximately 3 month intervals
  - New features in each release
  - Full functionality by June 1996
- Releases to be available via anonymous FTP

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Release Status

- Second release completed mid-October 1995
- Third release planned for mid-January 1995

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Release 2 Overview

- Supported Platform: Solaris 2.5 on sparc
- IPv6-over-IPv4 tunneling
- IPv6 unicast and multicast
- Neighbor discovery
  - Address resolution
  - Address autoconfiguration
- Applications
  - telnet, ftp, tftp client and server; ping program
  - DNS resolver and server
  - snoop packet trace program
- Basic API features

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Plans for Release 3

- Supported platforms: Solaris 2.5 on sparc and x86
- Complete ICMP error generation/handling
- Neighbor unreachability detection
- Router discovery
- More applications
- Advanced API features

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Implementation Experience IPv6-over-IPv4 Tunneling

- Basic functionality easy with modular tunnel driver
    - Required no change to IPv6 layer
- Raw IPv6 for on-link neighbors
    - Added special-case complexity to IPv6 layer
- Multi-homed machines
    - Current design only allows one tunnel interface
- IPv4 PMTU discovery
    - Hard to implement with strictly-layered tunnel driver
    - PMTU kept in IP layer, not tunnel driver
    - Will require per-destination state

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Implementation Experience
IP, ICMP, TCP and UDP

- IPv4 code extended to support IPv6
  - Required extensive changes at all layers
- Lack of broadcast simplifies IP
- Link local addresses make multi-homing hard
- TCP and UDP were straightforward
  - Required extensive changes

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Implementation Experience
Address Autoconfiguration

- Basic functionality easy to implement
  - Separate ethertype for IPv6 simplified implementation
- Duplicate Address Detection
  - Not yet implemented
  - Will add some complexity
- Address deprecation
  - Moderately complex but straightforward

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Implementation Experience
Neighbor Discovery

- Address resolution and router discovery
  - Relatively straightforward
- Neighbor unreachability detection
  - Hard to modularize
  - Requires interaction with IP and transport layer
  - Will require much work to implement

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Implementation Experience
Applications

- Most are straightforward
- FTP
    - Implemented LPRT command
- BIND
    - Required numerous changes

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For More Information

- Release Information
  - http://playground.sun.com/pub/solaris2-ipv6/html/solaris2-ipv6.html
- Release 2 code
  - ftp://playground.sun.com/pub/solaris2-ipv6/release2.tar

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