

IPv6 Enterprise Networks Scenarios

**Enterprise Design Team
draft-pouffary-v6ops-ent-v6net-00.txt**

Topics

- Who we are
- Our goals
- What we have done?
 - Definition of an Enterprise
 - Define our Assumptions
- What is our strategy?
 - Discuss scenarios first
 - Then Points of Transition

Enterprise Design Team Members

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Goals / Non Goals

- Goals:
 - Focus on defining:
 - Set of technology scenarios
 - Set of transition mechanisms needed by different scenarios
 - Set of tools needed for IPv6 deployment within the Enterprise
 - Focus on defining a template for
 - How existing / new transition mechanisms and tools could be used in the Enterprise network scenario
- Non Goals:
 - This document will not declare specific transition mechanisms or tools for the Enterprise

What is an Enterprise ?

- An Enterprise Network is
 - A user network connected to an ISP actively managed by the users of that network, and has multiple independent networks within the Enterprise.
 - May also have mobile IP users accessing Network within the Enterprise or from the public Internet into the Enterprise
- Enterprise can be
 - A large business (Manufacturing, Financial, Government)
 - A small office business (e.g. Law Firm, Stock Brokerage)

Design Team Assumptions

- Rate / methods for Adoption of IPv6 will vary
- No one can tell users how to transition, they will all do it differently
 - Some users have hardly any IPv4 addresses
 - Some have plenty of IPv4 address space
 - Some users will move right to IPv6 not later simply because it is easier
- Need to state our assumptions vs. ISP, Unmanaged, and 3GPP
 - Though these will apply to the Enterprise too

Enterprise Network Scenarios Strategy

- Our initial consensus strategy is to discuss the scenarios first
- Then deal with the technical and transitional details below the scenarios
- The following scenarios list is not complete

Example Scenario - 1

- Enterprise, with an existing IPv4 network, wants to turn on IPv6 for a group of ~100 clients that exist at two geographic sites
 - IPv6 clients need to communicate with each other, but still need access to IPv4 based services provided by the corporation.
- What needs to be done to enable this deployment and where?
- Which transition technologies are applicable as they begin using the application?

Example Scenario - 2

- Enterprise, with an existing IPv4 network, wants to deploy wireless services, want to optimize support Mobile IP and choose to make this service IPv6 only.
 - Mobile IPv6 only nodes need to still need access to IPv4 based services provided by the corporation.
- What needs to be done to enable this deployment and where?
- Which transition technologies are applicable as they begin using the application?

Example Scenario - 3

- A multi-site enterprise has deployed IPv4-NAT with overlapping private address ranges between sites. To deploy peer-to-peer application between sites, they update OS to support both IPv4 & IPv6.
- What needs to be done to enable this deployment and where?
- Which transition technologies are applicable as they begin using the application?
 - What changes or additional technologies are applicable when some ISP for some site, but not all sites, offers native IPv6 service?
 - What transition technologies are applicable when all ISPs offer IPv6 services, but some of the internal nodes remain IPv4-only?

Example Scenario - 4

- An enterprise has several administratively distinct business units. Some business units want to deploy large number of nodes in a single subnet, want to support wireless mobility and peer-to-peer conferencing while at the same need to support legacy IPv4-only applications
- What needs to be done to enable this deployment and where?
- Which transition technologies are applicable
 - When only parts of the business unit are capable of IPv6 packet forwarding?
 - When an entire business unit is capable, but other business units are not fully capable?
- What transition technologies apply at the boundary to the public Internet?

Example Scenario - 5

- Two large enterprises using IPv4-NAT merge with the consequence that large segments of private network address space overlap. To allow the network operations to merge they decide to deploy IPv6 across the network core and support infrastructure first.
- What transition mechanisms apply to the process of migrating and managing the network core?
- What transition technologies apply to the support infrastructure?
- To further integrate the systems, what transition technologies are applicable to the end nodes?

Plan of Action

- Specify and Define the scenarios in an incremental fashion.
 - Small network/single building/single location
 - Medium network/campus environment/single location
 - Large network/campus environment/multiple locations
- Wireless/Mobility incorporation (which fits into any of the previous cases)
- Specify Points of Transition

Enterprise Points of Transition

- Nodes Accessing IPv6 thru IPv4 Tunnels
- Nodes Accessing IPv6 thru NAT
- Nodes Accessing IPv4 Services within IPv6 Network
- Nodes Accessing IPv6 Islands within IPv4 Network
- Nodes Accessing IPv4 Islands within IPv6 Network
- Mobile Nodes using the above Points of Transition
 - Mobile Nodes on the Enterprise Intranet
 - Mobile Nodes Accessing the Enterprise from the Internet

Software Points of Transition (1)

- Enterprise will be required to determine
 - What software will be extended
 - What software will be affected by transition
 - What software must be managed
- This will define the policy for the Enterprise

Software Points of Transition (2)

- DNS
- Routing
- Autoconfiguration
- Security
- Applications and APIs
- IPv6 Address Scoping
- Network Management
- Address Plan
- Tools for Configuration
 - Routing Configuration
 - DNS Configuration
 - IPv6 Address Allocation and Configuration
 - IPv4 Address Allocation and Configuration
 - VPN/Tunnel Configuration
 - Mobile Node IPv4/IPv6 Interoperation Configuration

IPv6

Questions ?

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