

Unmanaged Network Transition

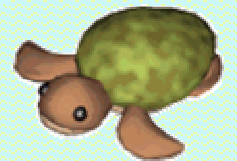
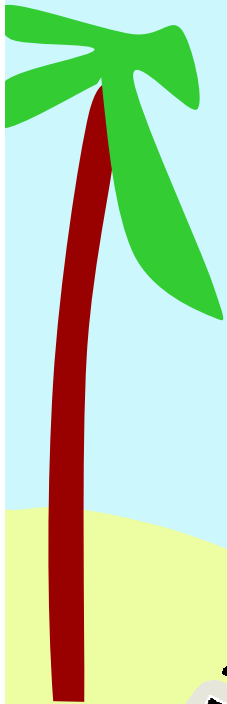
Christian Huitema

`draft-ietf-ngtrans-unmanscope-01.txt`

`draft-huitema-ngtrans-unmaneval-00.txt`

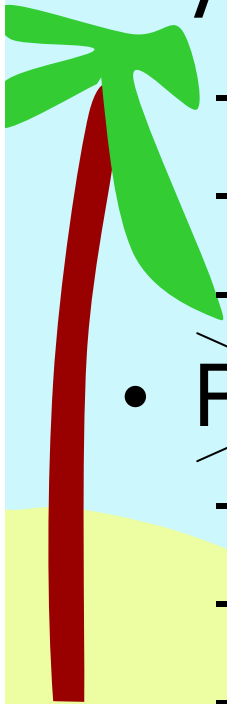
Team members

- Christian Huitema
- Margaret Wasserman
- Rob Austein
- Ronald van der Pol
- Suresh K Satapati
- Tony Hain



Scope: exploring the problem space

- Applications
 - What are the application needs?
 - Local, Client, P2P, Server
 - Presented in Yokohama
- ~~Phases, Stages, Cases~~ of transition
 - Case A: Gateway is v4 only
 - Case B: Gateway & ISP dual stack
 - Case C: Gateway dual stack, ISP v4 only
 - Case D: Gateway dual stack, ISP v6 only



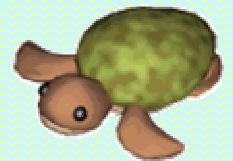
Case A: Gateway is v4 only

- Consensus:
 - This is a real need, not all gateways can be easily upgraded
- Hosts IPv4 or dual stack
- Applications: client, p2p with “outside”
- Connectivity requirement
 - Automatic tunneling over UDP
 - Aim for minimal “server” requirement
- Naming requirement
 - DNS access over IPv4
 - Reverse lookup for client applications



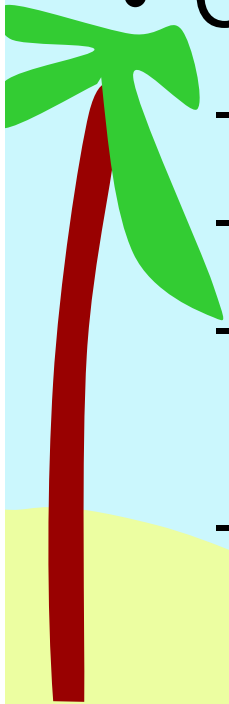
Case B: dual stack gateway, ISP

- Main line transition case
- Hosts: IPv4 only, dual stack, IPv6 only
- Applications:
 - Local applications “across the stacks”
 - IPv6 only clients access IPv4 services
 - Question mark: IPv4 client access IPv6 services
 - Backward vs. Forward compatibility
 - P2P with outside = single stack
 - IPv6 servers accessible from outside



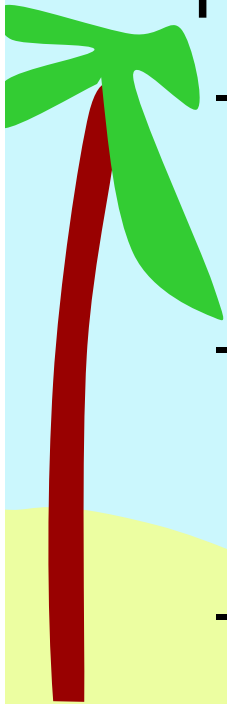
Case B, continued, connectivity

- Connectivity requirements
 - Unmanaged network is dual stack
 - Need “IPv6 prefix delegation” to gateway
 - Some form of translation between local IPv4 and local IPv6
 - Some form of translation between local IPv6 and global IPv4 services



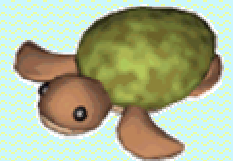
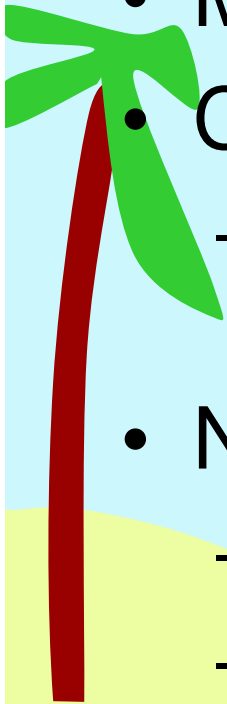
Case B, continued, naming

- Naming requirements
 - Name lookup service independent of protocol
 - Dual stack home must get same answer if querying over IPv4 or IPv6
 - Local applications must work
 - “shadow” of IPv4 only hosts in IPv6, & vice-versa
 - Not just a DNS issue (SLP, proprietary naming)
 - Need to “register” auto-configured IPv6 addr.
 - Direct lookup (local & server applications)
 - Reverse lookup (client applications)



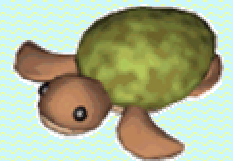
Case C: Dual stack gateway, v4 ISP

- Mostly same requirements as case B
- Connectivity
 - Gateway need to “self provision” a prefix, use some form of automatic tunneling
- Naming
 - Use DNS-v4 for both A and AAAA lookup
 - May need to “register” with 3rd party service
 - Need solution for reverse lookup



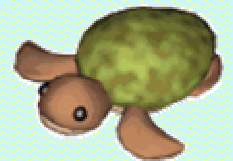
Case D: IPv6 only ISP

- Case of “green field” ISP
- Same application requirement as case B
- Connectivity
 - Access to IPv4 Internet through IPv6
 - This cannot be done with a gateway based system
- Naming
 - DNS access over IPv6



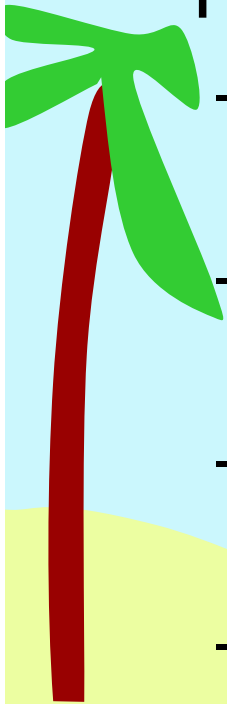
Evaluation of mechanisms

- Still very sketchy
- Connectivity
 - Case A: Teredo
 - Case B:
 - RA proxy vs. explicit delegation
 - Variation of SIIT & NAT-PT
 - Case C: 6to4
 - Case D:
 - Network based variations of SIIT, DSTM



Mechanisms, continued, naming

- Naming mechanism
 - Discovery of the DNS server by IPv6 hosts
 - DHCPv6, LLMNR, or reserved IPv6 addresses...
 - Local naming for IPv6 applications
 - Dynamic update of server, or LLMNR
 - Naming bridge for local applications
 - Variations of NAT-PT, bridges to LLMNR, etc.
 - Access to IPv4 servers
 - Configured SIIT prefix in IPv6 vs. variations of NAT-PT



Mechanisms, continued

- Break-out session!

