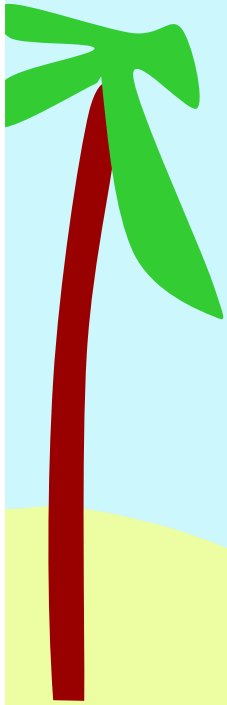


Unmanaged Network team

Christian Huitema

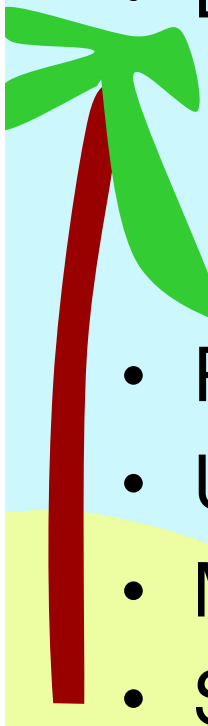
draft-ietf-ngtrans-unmanscope-01.txt

draft-huitema-ngtrans-unmaneval-00.txt

Unmanaged team report

- How we got organized
  - List of issues
  - List of “other work”
- The name resolution issue
- The multiple link issue

List of issues



- Different topologies (routers, multiple routers)
  - multihousing unit, shared subnet, multiple subnets
  - shared wireless (single/multiple isp, security)
  - fixed ethernet (impacts, naming, discovery)
- Prefix delegation
- Use of tunnel broker for case A
- Monitoring requirements
- SIIT issue: only layer 3, support for port mapping, v4 to v6 support?

Issues, continued

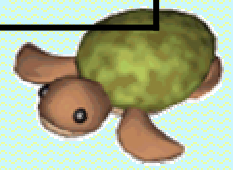
- Registration of new appliances, notification, device capability, security (application vs network)
- Security: is the inside really safer?
- What support do we need for "legacy" ipv4:
  - ipv4 only, local connectivity to local ipv6, remote ipv6 (legacy apps vs new apps)
- Solutions for name resolution →LLMNR, DDNS, etc.
- Mobility, roaming → guest in the house, call back home

Work for another team

- Ad hoc
- Personal area network
- Mobile network

The desired name resolution

From A to B	B V4 only	B Dual Stack	B V6 only
A V4 only	V4(B)	V4(B)	Some translation
A Dual stack	V4(B)	V4(B) or V6(B)	V6(B)
A V6 only	Some translation	V6(B)	V6(B)



The problem with NAT-PT

From A to B	B V4 only	B Dual Stack	B V6 only
A V4 only	V4(B) OK	V4(B) OK	V4 translation
A Dual stack	V4(B) or V6 translation	V4(B) or V6(B)	V6(B) or V4 translation
A V6 only	V6 translation	V6(B)	V6(B)

Recommendations for naming

- Make the IPv6 host dual stack
  - IPv6 host will also look for A record
  - Solves the “litteral URL” issue
- If not dual stack, use “local SIIT” (BIA)
  - Need to reserve of configure a SIIT prefix
  - Or just forego interoperability with IPv4
- Leave the AAAA requests alone
  - Since the host will look for A if needed

The result of dual-stack or SIIT

From A to B	B V4 only	B Dual Stack	B V6 only
A V4 only	V4(B) OK	V4(B) OK	No solution
A Dual stack	V4(B)	V4(B) or V6(B)	V6(B)
A V6 only + A query	V6 translation	V6(B)	V6(B)

More naming recommendation

- IPv4 only host need some translation
  - Need a DNS ALG
- But translating A request is harmful to dual stack hosts
- Suggestions
  - Use two different DNS services, based on protocol type, port numbers or names
  - Use a special address range for translated addresses

More naming stuff

- Configuration
  - Both DHCP option and reserved address work
- Acquiring autoconfigured addresses
  - Gateway receive request for local name
  - Gateway issues LLMNR request, cache the results
  - Returns AAAA reply
- Advantage: stateless

Next question: multiple links

- Some medias are hard to “bridge”
  - Bluetooth, IEEE 1394, possibly power line
- Request to support two topologies
  - Star:
    - Every link goes to the router
  - Mesh:
    - “Routers” connected to the home network

Connectivity issues

- Two options for mesh topology
  - Multi-link subnet (single /64)
    - Analogous to “proxy ARP”
    - Need a detailed specification
  - Configured subnet prefixes
    - Require multiple /64 prefixes
    - Require a prefix allocation specification
- Star topology
  - Simple solutions, e.g. allocation of subnet # by the gateway + use of classic RS/RA

Naming issue in star topology

- Configuration
  - Both DHCP and reserved address work
- LLMNR for resolving AAAA
  - Gateway must repeat the query on multiple links

Naming issues in mesh network

- Configuring the DNS server
  - The “reserved address” approach just works.
  - DHCP requires a set of DHCP proxies
- Options for using LLMNR
  - LLMNR cache + relays at routers
  - Or, “right scope” multicast
    - Subnet scope if “multi-link subnet”
    - Or, site local scope if “configured routers”
- Multicast issue appear in LLMNR, but also duplicate address detection