Unidentified Issues in IPv6 Deployment/Operation

draft-itojun-jinmei-ipv6-issues-00.txt

IPv6 working group, WIDE project
Jun-ichiro itojun Hagino/Tatuya Jinmei, editor
itojun@{iijlab,kame}.net
jinmei@{isl.rdc.toshiba.co.jp,kame.net}

Motivation

- Identify remaining issues in IPv6 deployment/operatio
- Some may NOT fit in this working group
  - Some are in fact being addressed in other places
- Anyway, we thought it important to identify the problems
  - intending to provide a "TODO" list

Addressing

- Reverse address mapping
  - (heated discussion in the ipngwg/namedroppers mailing lists)
  - Other solutions? ICMPv6 node info query?
- How to use site-local addresses
  - (heated discussion in the ipngwg mailing list)
- Can we assume multicase routing be present?
  - Affects the use of multicast in service location and such
  - If not - SLP needs to be revised
- How to use anycast for service location purposes
  - (there has been some discussion on this)
- Prefix Management
  - (several related drafts issued)

Routing

- BGP-4+ may have to be revisited
  - 32-bit IDs, peering with link-locals
  - some related drafts exist
- Multihome
  - ISPs tend to announce less-aggregated routes.
  - need some operational compromise
    - # of routes v.s. flexibility of inter-ISP multi-homing
  - (multi6 wg?)
- Securing routing exchange
  - RIPng/OSPFv3 documents are silent about how to secure routing exchange
  - "use IPsec" is not enough
  - Link-local multicast with IPsec - 3 difficult problems combined!
    - key management issue: IKE doesn’t work

32bit IDs

- 32bit IDs are used in many places
  - BGP-4, OSPFv3, NTPv3, and others
  - natural and okay for IPv4
  - for IPv6, introduce management costs, and will cause negative impact to scalability
- How big does it need to be?
  - must be bigger than 32bits for 32bit AS number
  - 128bit: best (need more bits to identify scope zones)
  - 64bit: EUI-64??
  - 32bit: may be okay for non-global ID (like OSPFv3), but it is cumbersome to manage

DNS related issues

- DNS server discovery
- DNS Transport
- DNS space partition
- Fixing broken DNS servers for IPv6 deployment
  - returns NXDOMAIN instead of NOERROR on AAAA queries
- Making root DNS servers IPv6 ready
- Making registries IPv6 ready
- Name registration to DNS
  - -> dnsext, dnsop

SNMP

- SNMP transport on IPv6
  - SNMPv1/v2 does not support Trap-PDU for IPv6
  - Must use SNMPv3
- MIB extensions: more will be needed
  - e.g. impossible to distinguish IPv4/IPv6 traffic in a dual stack
    - interface MIB is counting layer-2 in octets

Security

- "use IPsec" is not enough
- Every protocol that relies upon IPsec should discuss the details

Application Specific Issues

- Public Access Service and Hot Spot Service
  - -> "securing ND" BOF
- RADIUS
  - IPv6 transport issues exist.
- DBMS
  - DBMS supports IPv4 addresses as a basic type ("inet" in PostgreSQL)
  - we need a same one for IPv6
- Platform-dependent APIs
  - make them not depend on IPv4 addresses
  - even for non-networking libraries; e.g. database primitives

Education

- Transition to IPv6-friendly API
  - Need more books on IPv6

Operation

- Host/router requirements
  - (being worked on at ipv6 wg)
  - http://www.kame.net/newsletter/20010615/

Summary

- There are a lot of things to be visited

- To recap
  - multicast operation/implementation
  - 32bit ID numbers
  - "use IPsec" is not enough - routing protocols
  - updating various APIs

- Next steps?
  - comments are welcome.
  - we’re okay with the status of individual draft.
  - if this should be a wg item, which wg?
    - ipv6/ngtrans/others?