New Multicast Group Allocation Protocols

ZEROCONF and GAAP
The Problem

• Primary problems with existing multicast group allocation protocols (ex MADCAP) are:
  • Single point of failure
  • Collisions at the ethernet layer possible
  • How to configure

• For some applications these problems block deployment.

• draft-karstens-pim-zeroconf-mcast-addr-alloc-ps-00 defines these problems.
Dynamic IPv6 Multicast Address Group IDs

• Updates RFC 3307 in two ways:
  1) Divides the area of dynamic groups IDs into different ranges (allows different protocols to be used on the network at the same time)
  2) Recognizes that solicited-node multicast addresses are already in the range of dynamic groups IDs (any new group ID should not use the same range).

• IANA: New registry of ranges for dynamic multicast group IDs

• draft-karstens-pim-updt-ipv6-dyn-mcast-addr-grp-id
ZEROCONF (draft-karstens-pim-ipv6-zeroconf-assignment)

• Any ipv4/v6 network (initial effort focused on ipv6 marine networks).
• Zero config, decentralized, active collision detection (uses a random number and saving state between power cycles)
• Extends existing protocol
• Collision detection mechanism utilizes Multicast DNS [RFC6762] to distribute a database of dynamically assigned Ethernet addresses.
• IANA: new "eth-addr.arpa" special-use domain
GAAP (draft-farinacci-pim-gaap)

- Any ipv4/v6 network
- Zero config, decentralized, active collision detection (hashing algorithm).
- **New lightweight protocol**
- IANA:
  - well-known UDP port number for the GAAP protocol.
  - allocate one v4 and one v6 multicast address that GAAP uses for messaging.
  - allocate a multicast address block for GAAP allocated group addresses.