Zero-Configuration Multicast Address Assignment

IETF 118
Garmin
National Marine Electronics Association
Document Overview

• draft-ietf-pim-zeroconf-mcast-addr-alloc-ps
  • Problem statement

• draft-ietf-pim-updt-ipv6-dyn-mcast-addr-grp-id
  • Creates IANA registry for dynamic multicast address assignment protocols
  • Changes group ID allocation for MADCAP protocol
  • -01 version: editorial changes

• draft-ietf-pim-ipv6-zeroconf-assignment
  • mDNS-based zeroconf solution
  • Primarily intended for L2 networks
  • Reserves group IDs 0x90000000-0x9FFFFFFF

Thank You!
OneNet Progress

- Discussed IETF work at last meeting
- Currently reserved ff0X::160-16f with IANA
- Interim solution: use ff02::168-16f for OneNet-specific approach
- Replace with IETF solution when published

- Will deliver presentation on OneNet to the IAB
Proof-of-Concept

- [https://github.com/nkarstens/mdns-zeroconf-mcast](https://github.com/nkarstens/mdns-zeroconf-mcast)

**mdns-zeroconf-mcast [OPTION]**

Options:
- `-i --intf=interface` The network interface to use
- `-n --name=name` The name of the application
- `-g --groupid=id` 32-bit group ID in hexadecimal
- `-t --ttl=ttl` Record TTL in seconds (optional, defaults to 1 hour)
- `-h --help` Prints help message

- Simulates advertising and collision detection
  - Use iptables to simulate partition & repair
- Actual use would have random group IDs and persistent storage
The “Null and Void” Port (Problem)

• The transport layer is used to multiplex applications on the same host. Applications are identified by the port.

• With multicast, the application can be identified by the destination multicast address, making the port irrelevant.

• Current practice requires developers to reserve a port with IANA.
The “Null and Void” Port (Proposal)

• Reserve port 49151 (last “user” port according to RFC 6335, section 6) as the “Null and Void” port.

• Conformant stacks will prevent applications from exclusively reserving this port.

• Conformant applications will not exclusively reserve the port.

• Alternative name: “Multicast Application” Port

• We can do this right now!
The “Null and Void” Port (Demo)

- **Transmitter, Terminal 1:**
  ```
  socat STDIN UDP4-DATAGRAM:239.0.0.1:49151,ip-multicast-if=172.16.6.100
  ```

- **Transmitter, Terminal 2:**
  ```
  socat STDIN UDP4-DATAGRAM:239.0.0.2:49151,ip-multicast-if=172.16.6.100
  ```

- **Receiver, Terminal 1:**
  ```
  socat UDP4-RECVFROM:49151,bind=239.0.0.1,ip-add-membership=239.0.0.1:172.16.1.132,fork STDOUT
  ```

- **Receiver, Terminal 2:**
  ```
  socat UDP4-RECVFROM:49151,bind=239.0.0.2,ip-add-membership=239.0.0.2:172.16.1.132,fork STDOUT
  ```