TRILL Directory Assistance Mechanisms

draft-dunbar-trill-scheme-for-directory-assist-06
draft-eastlake-trill-ia-appsubtlv-03

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Changes from presentation in July in Red
Goal

• To reduce multi-destination traffic by
  – reducing or eliminating unknown unicast flooding
  – when appropriate, locally responding to ARP, ND, and RARP requests or converting them to unicast requests

  using address mapping directories.

• An appropriate source of directory information is a Data Center orchestration system.
Two Directory Types

- **Push Directories**
  - Data and updates pushed out on a per Data Label (VLAN or Fine Grained Label) basis to all subscribing candidates.

- **Pull Directories**
  - Each Pull Directory responds to requests in a set of Data Labels it advertises.
Two Directory Types

• Push Directories
  – Redundant push directories supported that can be configured as to how many should be active at once.
  – Data conflicts and which push directories should be active arbitrated by priority.
  – Push Directory state machine added.
  – Primary Push Directory can provide the data to secondary directories.
Two Directory Types

• Pull Directories
  – Data and negative responses include an expiry time for caching.
  – Unsolicited updates sent for unexpired cached information.
Out of Scope

- How directories are originally populated with information and updated as the network changes.
  - But orchestration systems seem like a good source.
Push Directory Mechanisms

- Uses the TRILL ESADI protocol for reliable Data Label scoped data flooding services.
  - draft-ietf-trill-esadi-03.txt *(can be secured using ESADI authentication)*
- Client simply advertises (in core IS-IS) participation in ESADI for a Data Label and will be sent the data and updates.
- Push Directories for a Data Label can see each other in that ESADI instance to arbitrate which should be active.
Pull Directory Mechanisms

• Uses the RBridge Channel mechanism for requests and responses.
  – draft-ietf-trill-rbridge-channel-08.txt (can be secured using draft-eastlake-trill-channel-tunnel)

• Can optionally include the actual frame that caused the pull in pull request.

• Can be hosted on an end stations, in which case the TRILL switch by which it is reachable proxies for it.
Push Pull Policies

• Clients can have a wide variety of policies:
  – Type of directory use:
    • Just use pushed data.
    • Just use pulled data.
    • Consult pushed and cached pull data and do a pull if no match found.
  – Behavior if no match
    • Either immediately or after failed pull:
      – Discard packet
      – Flood packet
Push Pull Policies

• Push Directories may be the most appropriate for Data Labels with a smaller number of end stations that mostly all talk to each other.

• Pull Directories may be the most appropriate for Data Labels with larger numbers of end stations with sparse intercommunication.

• If a Data Label has a few end stations everyone talks to, but otherwise has sparse intercommunication, you could push information for the few and use pull for the rest.

• A client pulling could just pull from the nearest relevant pull directory or could pull from all relevant pull directories and use the first response it gets, etc.
Added Material

• Text on events that may cause directory use
  – Forged native frames
  – Unknown destination MAC
  – ARP, ND, or RARP

• Optional Layer 3 address learning

• Should this material be split off into a separate draft?
Address Mapping Data Representation

• Both push and pull directories use the “Interface Addresses” APPsub-TLV
  – draft-eastlake-ia-apsubtlv-03.txt

• Provides for encoding a flexible set of addresses that all represent the same Interface (port).
  – For example { an IPv6 address, a 48-bit MAC address, a Data Label, a TRILL switch nickname }.
    • Could be used to look up the IPv6 address or the MAC address within the Data Label to get the other addresses.
Next Steps

- WG adoption of draft-dunbar-trill-scheme-for-directory-assist-06.txt and draft-eastlake-trill-ia-appsubtlv-03.txt

- Solicit reviewers at this meeting to review after WG adoption.