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 revenant 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.