Automatic attachment of end stations and network devices

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(draft-unbehagen-lldp-spb-02)
The Auto-Attachment Concept

- Simplify operations procedures by automating the configuration of network devices and end-stations to individual services in a core network
- Run a simple one-hop / two steps protocol that
  - Discovers and identifies end-stations to edge devices
  - Configures the link and connects the station to the available core network resource (L2VPN, MPLS, etc.)
Conceptual Auto Attach Model

(Core Network) -> Edge Device AA-Server -> End Station AA-Client

Routing Control Plane (Service / Tunnel ID) <-> Auto-Attachment Primitives (Service Tag)
Conceptual SPB Auto Attach Model

- SPB Network
- BEB AAS (LLDP MIB)
- SDN/Policy Server
- (YANG Module)
- End Station / AAC (LLDP MIB)

SPBM

ISID

LLDP

VLAN
What is in draft-unbehagen-lldp-spb-02.txt?

• From 01 to 02
  – Added auto-attachment architecture and flow description
  – More details on the LLDP instantiation
    • AA Element TLV (the discovery step)
    • AA I-SID/VLAN assignment TLV (service assignment step)
  – Error codes
  – Security Considerations
Data Models

• There are actually three data models:
  – (1) Protocol Extensions DM
    • Initial configuration parameters / defaults
    • Status
    • Errors reporting
  – (2) LLDP extension (new TLVs support)
    • Was done only until now in SMIv2 MIB modules (IEEE 802.1AB - LLDP MIB maintained by the IEEE 802.1 WG)
  – (3) Policy and Service Mapping Tables
    • For example (VLAN/ISID) in the implementation described by the I-D
    • YANG model
Status and Next Steps

• Advantages of the AA method
  – Avoids individual configuration at the end station
  – Does not require support for e2e protocols in end-stations
    • Fit for scalable IoT applications
  – Modular - can use different AA protocols with different routing/tunneling services in the core

• Status of the project
  – Implemented using extensions of the Link Layer Discovery Protocol (LLDP – IEEE 802.1AB) and core IEEE 802.1aq (Short Path Bridging) networks
  – Deployed
  – Open source code available in ODL
  – IEEE 802.1 / LLDP extensions defined in the IEEE 802.1Qcj project

• Next Steps
  – I-D detailing AA use cases, framework and architecture
  – YANG data model for policy and service configuration
  – Other protocols instantiations
  – Possible OPSAWG work item if there is interest and willing contributors
Reading List

- [http://www.ieee802.org/1/pages/802.1cj.html](http://www.ieee802.org/1/pages/802.1cj.html)