IPv6 over Link-Local Discovery Protocol

draft-richardson-anima-ipv6-lldp

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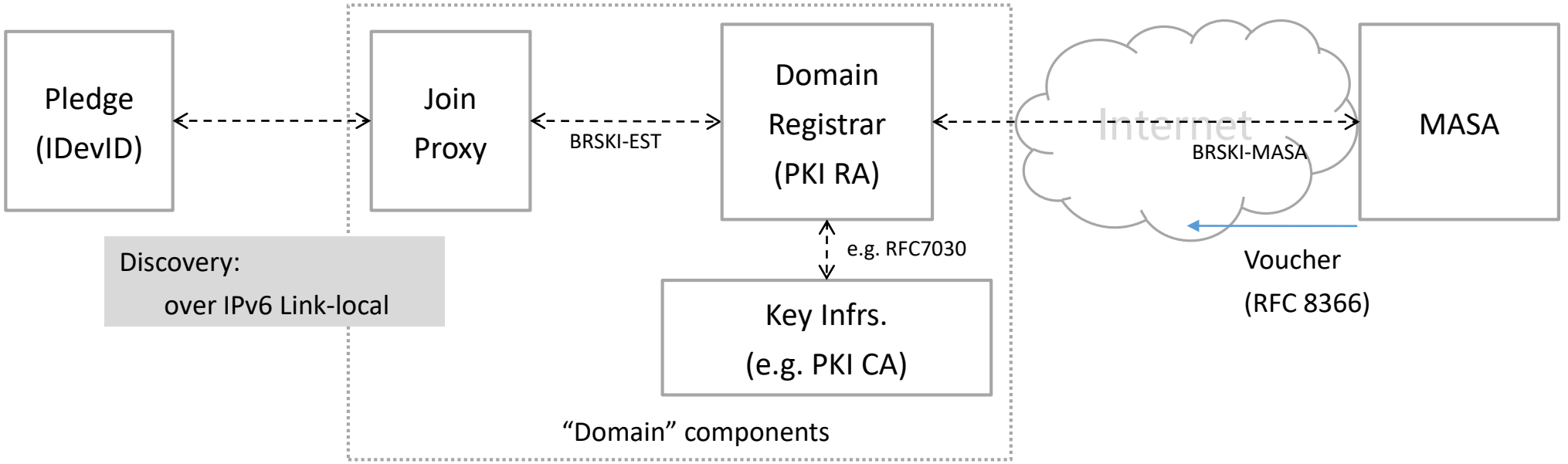
Discovery of adjacent systems

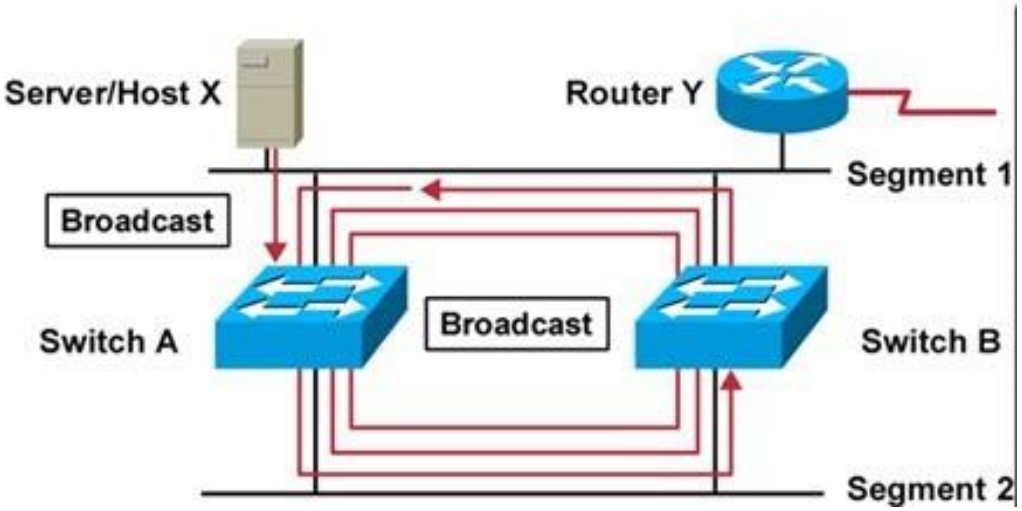


- Pledge talk to Join Proxy using IPv6 Link-Local Address
  - On the ACP, Need hop-to-hop discovery of adjacent system

Bootstrap Interlocking Problem

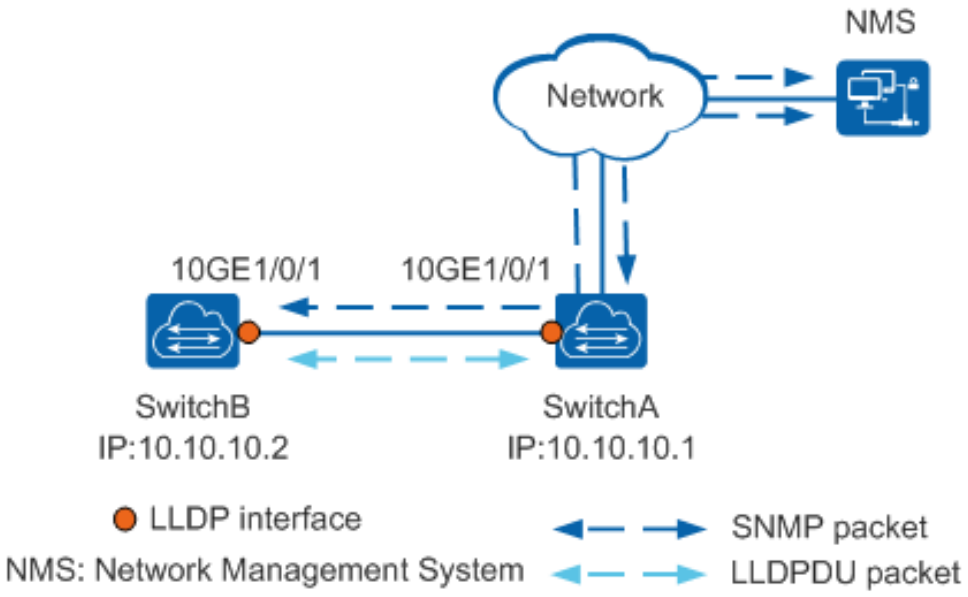
- RFC8368 provide a stable SDN connection method
  - (RFC8368 : Using an Autonomic Control Plane for Stable Connectivity of Network Operations, Administration, and Maintenance (OAM))
- But before the connection, Broadcast is in this L2 Network, => Loop
  - Need additional mechanism for Loop-breaking
  - Like STP …
    - But STP Can’t be automatically configured till on-boarding process is done
    - Slow convergence protocol
- LLDP is L2-based hop-to-hop discovery protocol

控制器

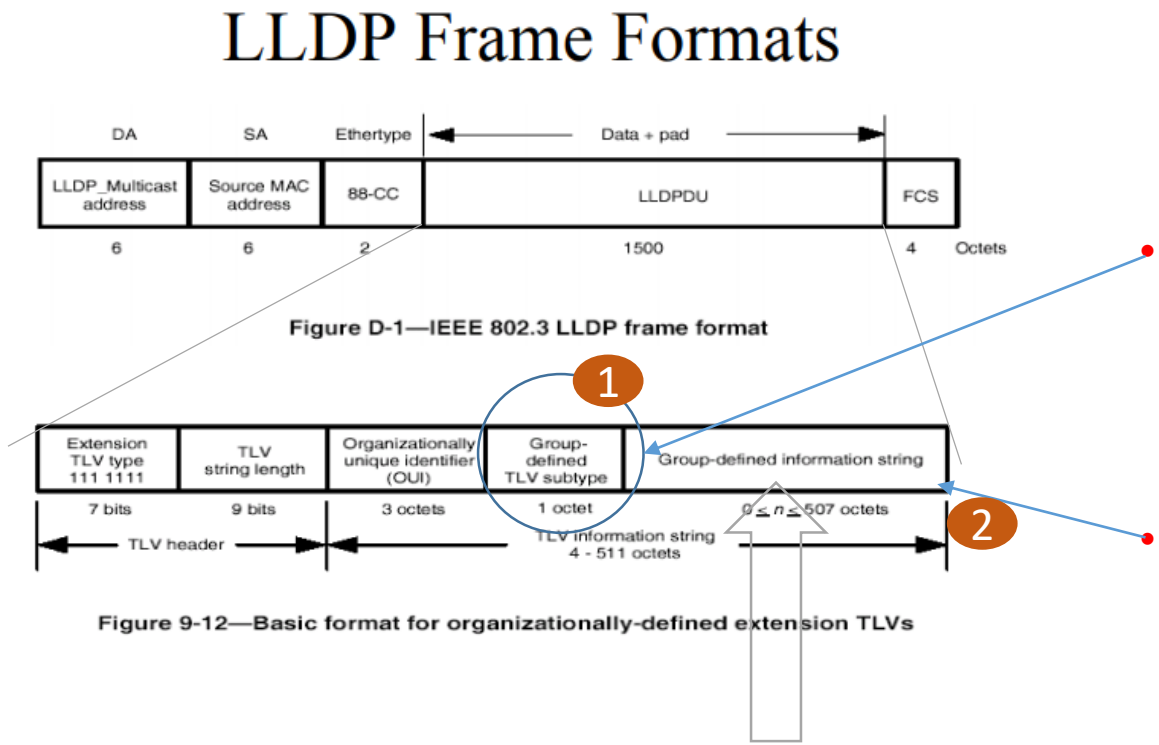


Proposed LLDP Solution

- LLDP*(Link Layer Discovery Protocol)* Description:
  - Standard Layer-2 discovery protocol in IEEE 802.1ab, without Control Plane
  - **Does not forward packets with default**, that is : it discovers all compliant layer-2 devices in a network, even if they do not normally do layer-3 forwarding
- Process for LLDP frames:
  - Be sent to the control plane processor, -> exactly the desired for ACP: all traffic goes to the control plane processor.



LLDP Encapsulation Issues



Vendor-specific TLV : 127	IANA unique	TBD	IPv6 fragment : up to 507 octets

- 507 octets limit the vendor-specific frame:
  - minimum MTU in IPv6 protocol standard : 1280
  - So LLDP IPv6 fragment contain **more than one** TLV, accommodate up to 1500bytes(often larger…) in Ethernet network
- Issue 1 : Subtype TLV, which better?
  - Option-1: Multiple different subtype values
  - Option-2: Repeatedly same subtype TLV values
    - How to keep the correct order?
- Issue 2 : Content payload, which suitable?
  - Option-1: entire IPv6 packet, including IPv6 header
  - Option-2: elided IPv6 packet, without IPv6 header and others
  - Option-3: compressed packet, based-on RFC8138 or others?

Thank You!