Bootstrap of Campus Network
&
Service VLAN Auto-Deployment

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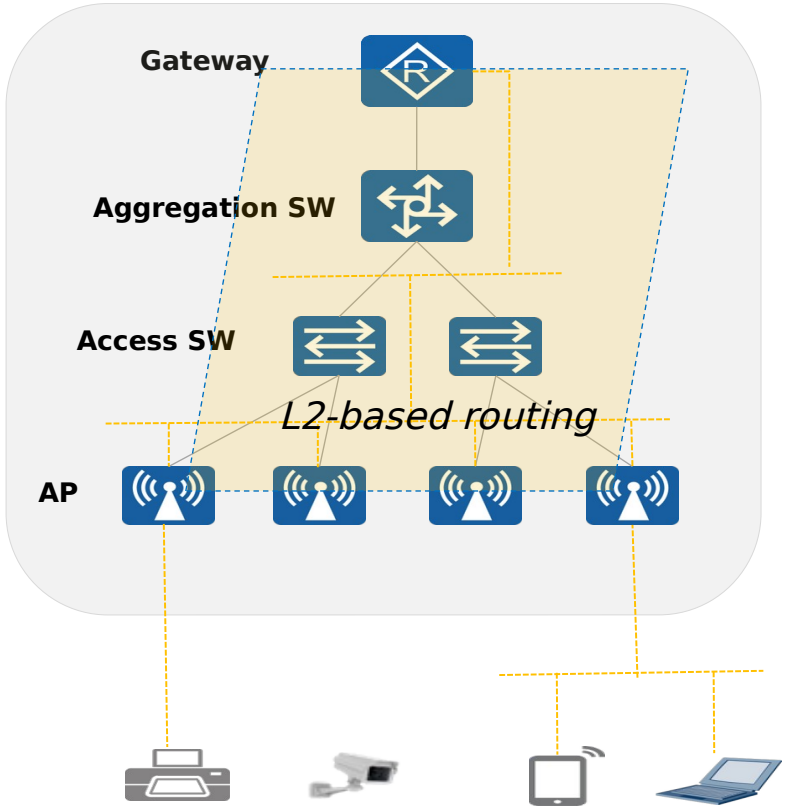
Scenarios description (Bootstrapping)

Typical Network Architecture



- The IT team wants the network to be automatically bootstrapped, including topology discover, device discovery etc.

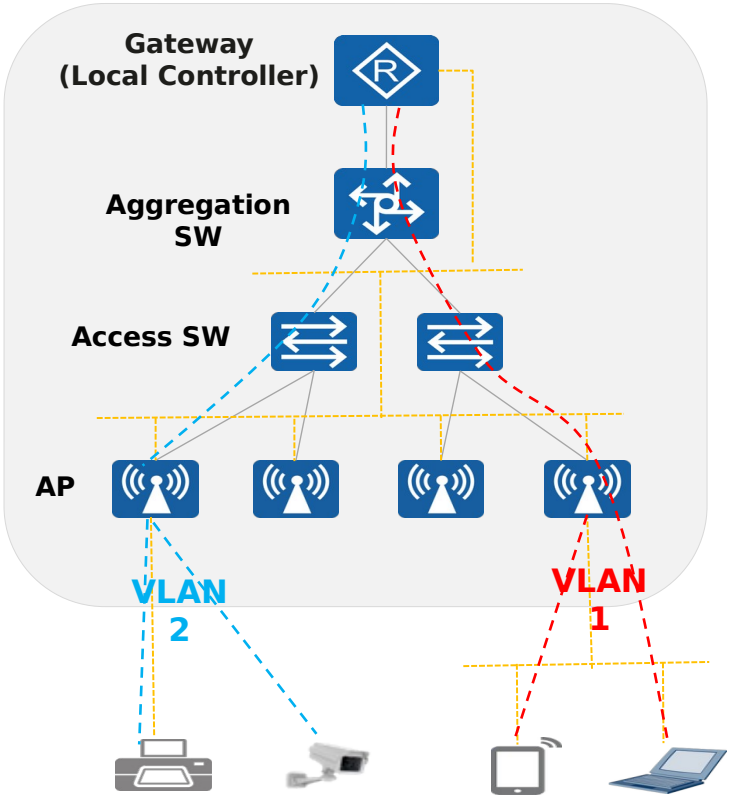
Typical Features/Limitations

- L2 Routing
  - ✓ Many campus networks (esp. SMEs) have NOT adopted L3 routing, they just use L2-based solutions to simplify the O&M
- No Controller/NMS
  - ✓ A significant amount of enterprises (esp. for SMEs) DO NOT want to deploy network controller, due to limited budget/resource
- Constrained device resource
  - ✓ Network devices might have little CPU/RAM/TCAM etc.

How Anima’s technologies fit into here (Bootstrapping)

- **Utilizing the Autonomic Signaling Protocol (i.e. GRASP) for “gluing” the bootstrapping process**
  - **Auto-discovery between devices**
    - Possible device types/roles: AP, Switch, Gateway ， Local Controller (see below) etc.
  - **L2 Topology discovery**
  - **Local Controller self-election & fault switching**
    - A “logical/virtual Controller” is still required for autonomic configurations even without a dedicated controller.
    - Normally, the relatively high performance/high positon devices (e.g. Gateways) could be the Local Controller
  - **Autonomic configurations of basic network connectivity/routing**
    - e.g. VLAN configurations as described below

Scenarios description (Service VLAN Auto-Deployment)



- The VLAN configs could be automatically delivered according to the user intent and topology information

General process and required functions

- The user configs the “VLAN Dividend Intent” in the Local Controller
  - ✓ e.g. selecting a group of devices through a Web-based interface)
  - ✓ Or configure VLAN dividend policies based on e.g. device types
- The local controller compiles and delivers the configs to the switches/APs through Autonomic Signaling Protocol (i.e. GRASP)

General requirements of the signaling protocol

Options Definition & Interaction Process	• Auto-discovery between devices • L2 Topology discovery • Local Controller self-election & fault switching • VLAN configuration
Message Definition & Interaction Process	Reuse the currently defined messages and procedures of the GRASP protocol and the GRASP-distribution extensions (Pub/Sub, conditional flooding etc.)
Scalability	Lightweight implementation/optimization is needed, to minimize the resource consumption in the devices
Transport	Over UDP is a better choice
Security	Not relying on ACP

Next Step

- Comments/collaboration are welcomed!

Thank You!

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