Scenarios and Requirements for a Layer 2 Autonomic Control Plane
`draft-carpenter-anima-l2acp-scenarios-00`

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IETF 105
July 2019

1

Topics

- Scenarios for a Layer 2 ACP
- Requirements for a Layer 2 Technology
- Implementation Note
- Next steps

Scenarios for a Layer 2 ACP

- GRASP must run over a secure ACP substrate isolated from data plane traffic.

- The regular ACP constructed at Layer 3 is complex and aimed at large networks.

- A simpler Layer 2 solution may be used for:

  1. A small enterprise within one or two buildings, but large enough to require autonomic network management.

  2. An enterprise that prefers to segment its network into small units for management.

Requirements for a
Layer 2 Technology (1)

MUST:

1. Support transmission of IPv6 packets. (Note that GRASP can run with link-local addresses; a router is not required.)

2. Support L2 multicast.

3. Minimum MTU of 1500.

4. Isolation of a set of nodes (ACP VLAN).

5. Secure authorization for access to the ACP VLAN.

Requirements for a
Layer 2 Technology (2)

SHOULD:

6. Support dataplane VLAN and ACP VLAN on the same physical sockets.

7. Line speed encryption of the ACP VLAN.

8. Wired/wireless bridging if relevant.

Requirements for a
Layer 2 Technology (3)

9. The technology should require minimal configuration of ACP nodes.

- However, we expect that nodes will need to be preconfigured with the VLAN ID, and a VLAN password or encryption key if necessary.

- A solution which is both secure and 100% self-configuring at Layer 2 is out of scope.

(The network is autonomic, but its creation is not.)

Implementation note

A small ACP software module will be needed in each autonomic node, to provide the GRASP core with:

1. A signal that the L2 ACP is available and secure.

2. The current global scope IPv6 address that GRASP should use, preferably a ULA, if available. If no global address is available, GRASP will operate with link-local addresses.

3. A list of [interface_index, link_local_address] pairs for all IPv6 interfaces attached to the L2 ACP.

Discussion + next steps

- Comments? Questions?
- Are people interested in this work?