

**Scenarios and Requirements for a  
Layer 2 Autonomic Control Plane**  
**draft-carpenter-anima-12acp-  
scenarios-00**

**Brian Carpenter  
Bing Liu**

**IETF 104  
March 2019**

# 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?

