MAC address assignment in IEEE 802.11 through IEEE 802.11aq

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Motivation

- MAC address is part of the state information required for the association and security in WLAN
    - Any modification of MAC address in WLAN forces a new association and security association establishment
- If MAC assignments are required in a given network, it is required to discover the address in pre-association
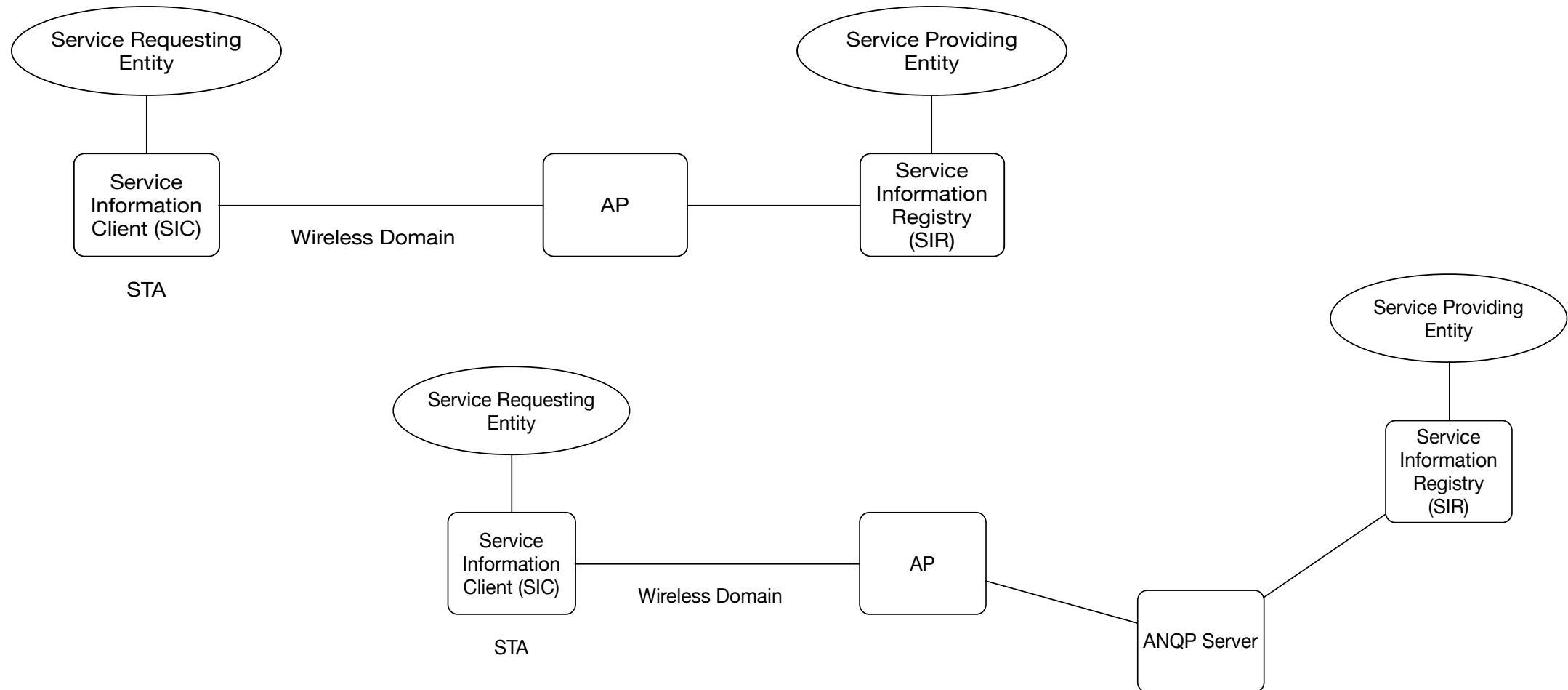
Proposal

- Use IEEE 802.11aq mechanisms to discover LAAP services and provide MAC address assignment in pre-Discovery state
  - Use of Service Hint/Hash to advertise LAAP service
  - Use new protocol within Service Information Request/Response Element in IEEE 802.11aq modified ANQP to negotiate MAC address
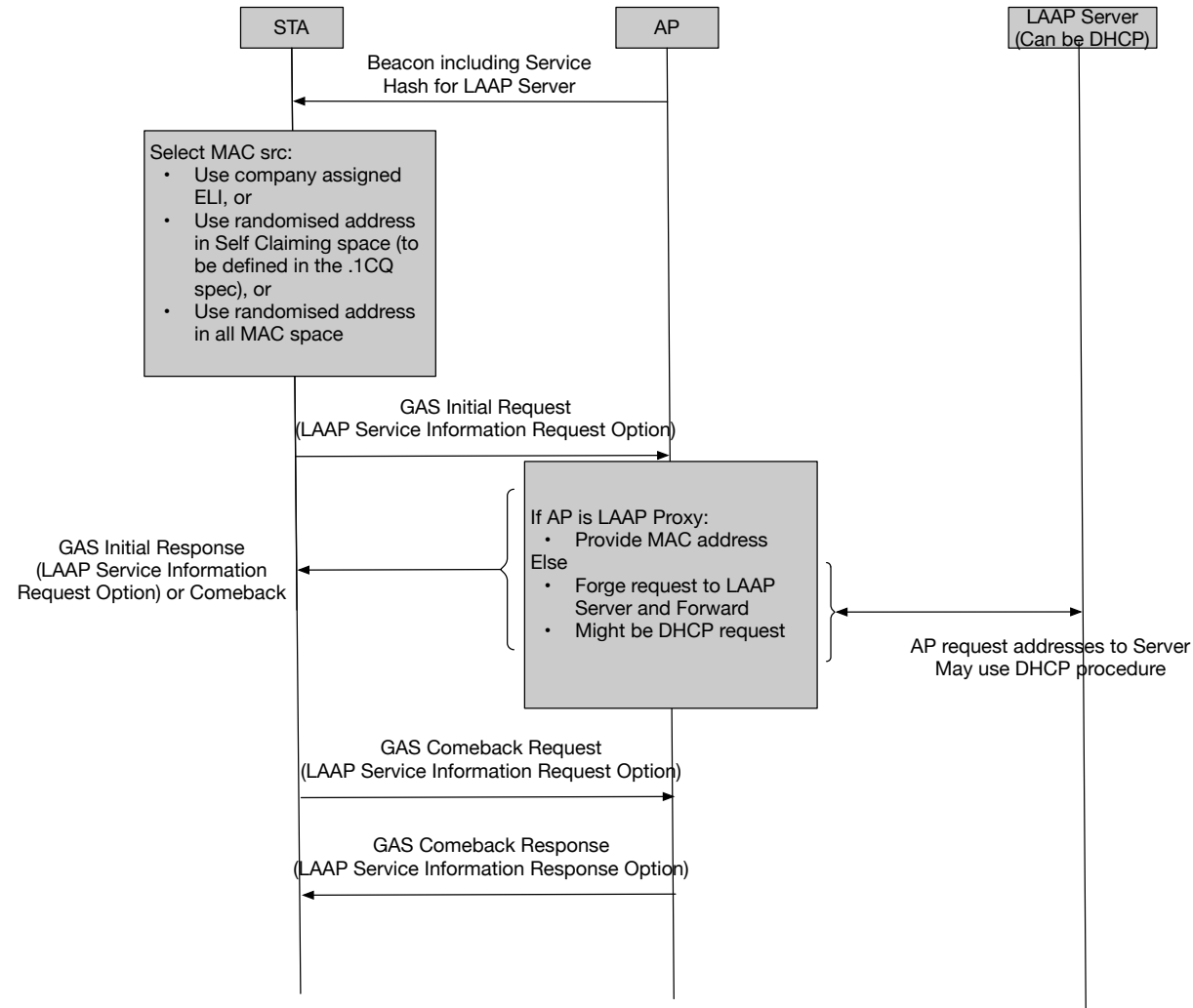
Service Advertisement

- IEEE 802.11aq defines two mechanisms for the distribution of information about services available
  - Service Hint: The Service Hint element provides a probabilistic representation of a set of services that are available to the BSS (Bloom filter).
  - Service Hash: The Service Hash element contains one or more service hashes.
- How to compute both is defined in Clauses 11.25a.4 and 11.25a.5 of IEEE 802.11aq
- Proposal:
  - Define the following service names following RFC6335
    - Ieee-8021cq-LAAP-server
    - Ieee-8021cq-Self-Assignment
    - Ieee-8021cq-Self-Assignment-with-prefix
  - PAD-enabled STA will advertise the above services when available

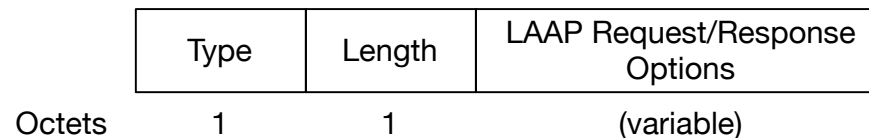# Exchanging messages with the LAAP Proxy Server→Arquitecture

Exchanging messages with the LAAP Proxy Server→Procedure (.11aq compatible)

STA | AP | LAAP Server (Can be DHCP)

Beacon including Service Hash for LAAP Server

Select MAC src:
- Use company assigned ELI, or
- Use randomised address in Self Claiming space (to be defined in the .1CQ spec), or
- Use randomised address in all MAC space

GAS Initial Request
(LAAP Service Information Request Option)

If AP is LAAP Proxy:
- Provide MAC address
Else
- Forge request to LAAP Server and Forward
- Might be DHCP request

GAS Initial Response
(LAAP Service Information Request Option) or Comeback

AP request addresses to Server May use DHCP procedure

GAS Comeback Request
(LAAP Service Information Request Option)

GAS Comeback Response
(LAAP Service Information Response Option)

Exchanging messages with the LAAP Proxy Server→Protocol

- Need to define a new protocol on top of Service Information Request/Response Element

Info ID	Length	Service Information Request Tuples

Octets: 2   2   variable

Service Hash	Service Information Request Attribute Length	Service Information Request Attribute

Octets: 6   1   variable

Type	Length	LAAP Request/Response Options

Octets   1   1   (variable)
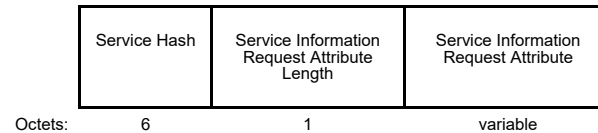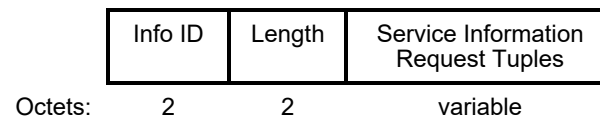
Value	Description
0	Request
1	Rebind
2	Response
3-255	Reserved

Conclusion

- Pre-association Discovery in WLAN can be done through the use of IEEE 802.11aq

- 802.1CQ can be in charge of defining the new service names and registering them in IANA

- 802.1CQ can design the protocol on top of 802.11aq ANQP extensions (Service Information Request Response) to assign MAC addresses

- This will not require of **any** change to IEEE 802.11