CE streams Addressing in AV Bridged 802 Networks

Dirceu Cavendish, NEC

What is the problem

How do we map/address A/V streams into 802

How to bridge A/V endpoints via an 802 cloud

- A/V applications are multipoint in nature
- Multiple A/V streams are sourced at an end-point, and destined to various destinations

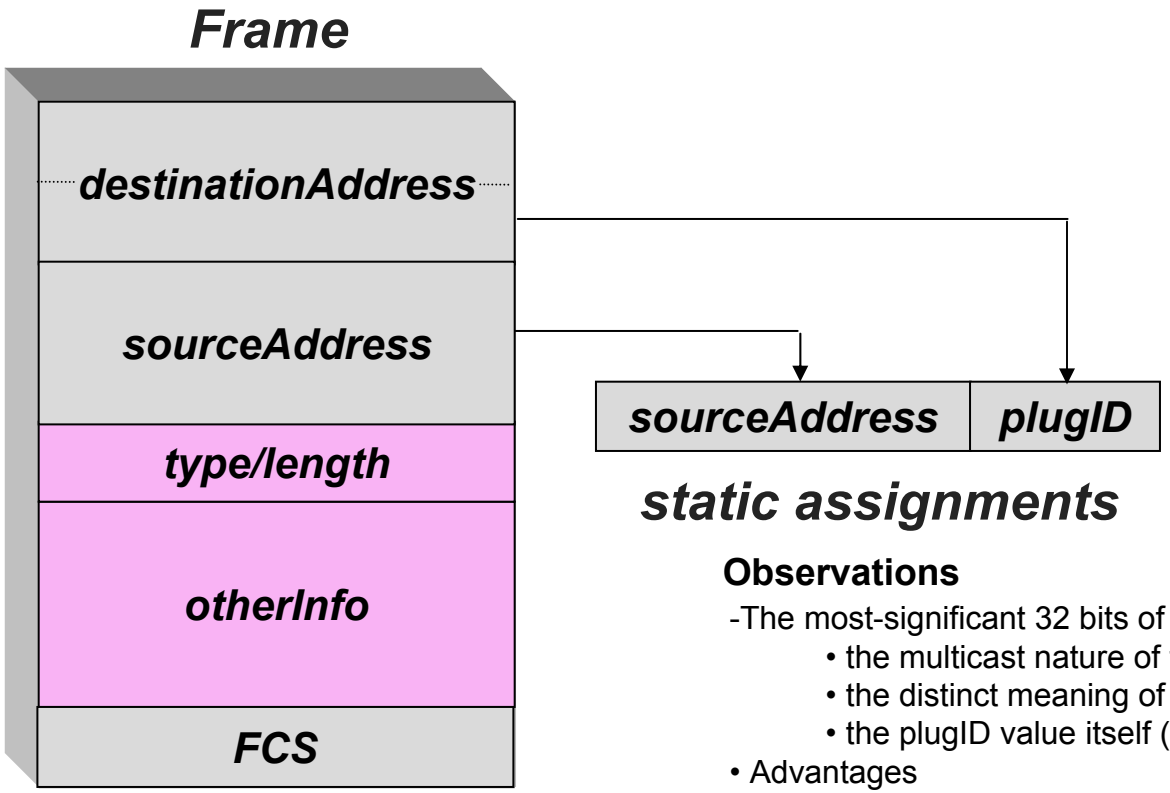
Objectives

- Support large number of streams
- Support heterogeneous (various makers) talker/listener applications
- Support multicast streams
- Support dynamic join/leave of end-points

Considered options

- MAC address plus “plug” identifier
- MAC address plus VLAN tag
- Per stream group MAC address
  - Without priorities, without tags
  - With priorities, without tags
  - With priorities and tags

CE MAC includes plugID



AV stream proposed frame format

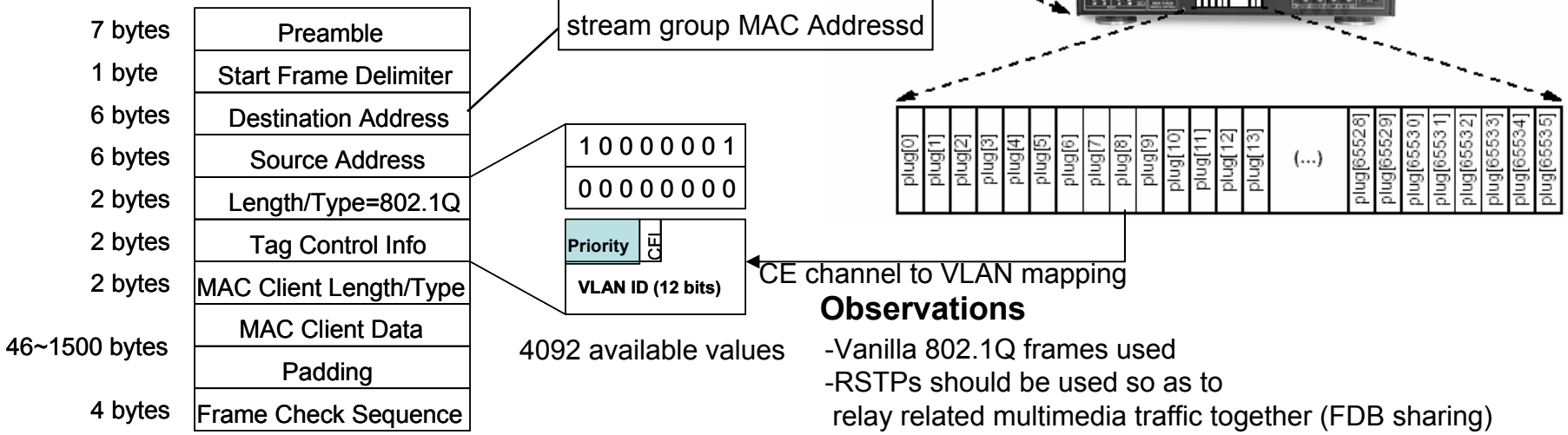
Observations

-The most-significant 32 bits of the destinationAddress explicitly identify:
- the multicast nature of this frame
- the distinct meaning of this frame (an AV stream frame)
- the plugID value itself (the 16 LSBs)

• Advantages
- there is no need for a multicast-address server
- the number of associative bridge-resident tables is reduced

• Disadvantages
- Not compatible with 802.1 frame forwarding

CE MAC + VLAN Addressing Scheme



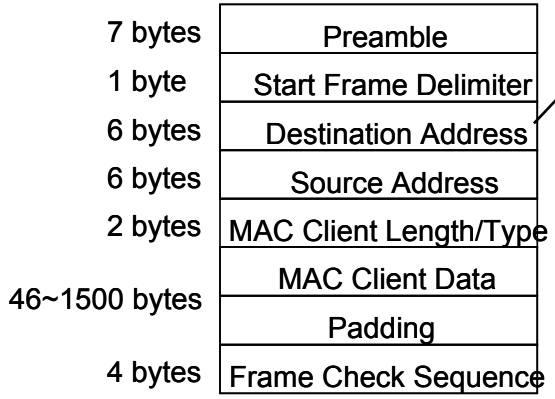
AV stream proposed frame format

Observations

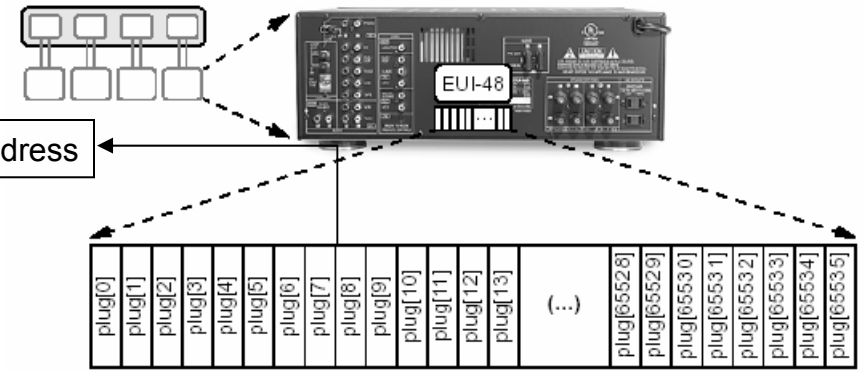
-Vanilla 802.1Q frames used
-RSTPs should be used so as to relay related multimedia traffic together (FDB sharing)
-CE industry should agree on a set of VLAN values for applications (mapping).
- 1000~2000 – audio
- 2001~3000 – video
- 3000~4000 – interactive gaming

-Since NO residential bridge is to be managed by a residential user, no “clash” of VLAN values is expected
-PC applications are VLAN unaware, so VLAN collision with RE VLAN values is only possible if RE user accesses a home bridge and configures VLAN space.
- Management actions may interfere with VLAN tag space

Group MAC Address – no priority



AV stream proposed frame format



Observations

-Advantages

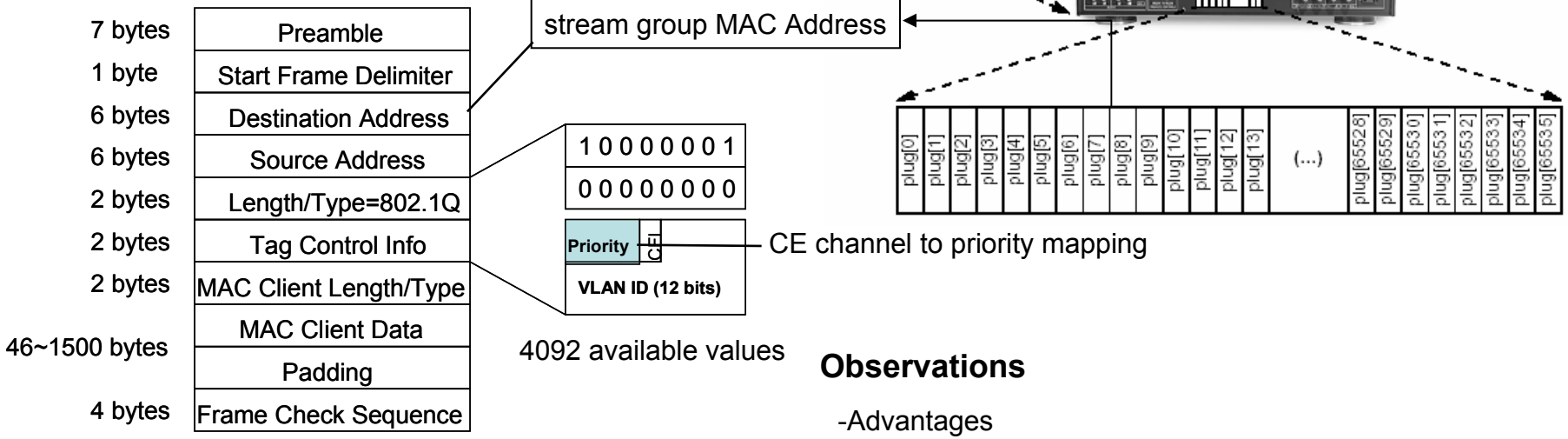
- Avoids VLAN tag management at home

-Disadvantages

-Large number of group MAC addresses

-Group MAC address registration/allocation required

Group MAC Address – with priority, no tag



AV stream proposed frame format

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-Advantages
- Avoids VLAN tag management at home
- Allows better networking of QoS stringent traffic

-Disadvantages
- Large number of group MAC addresses
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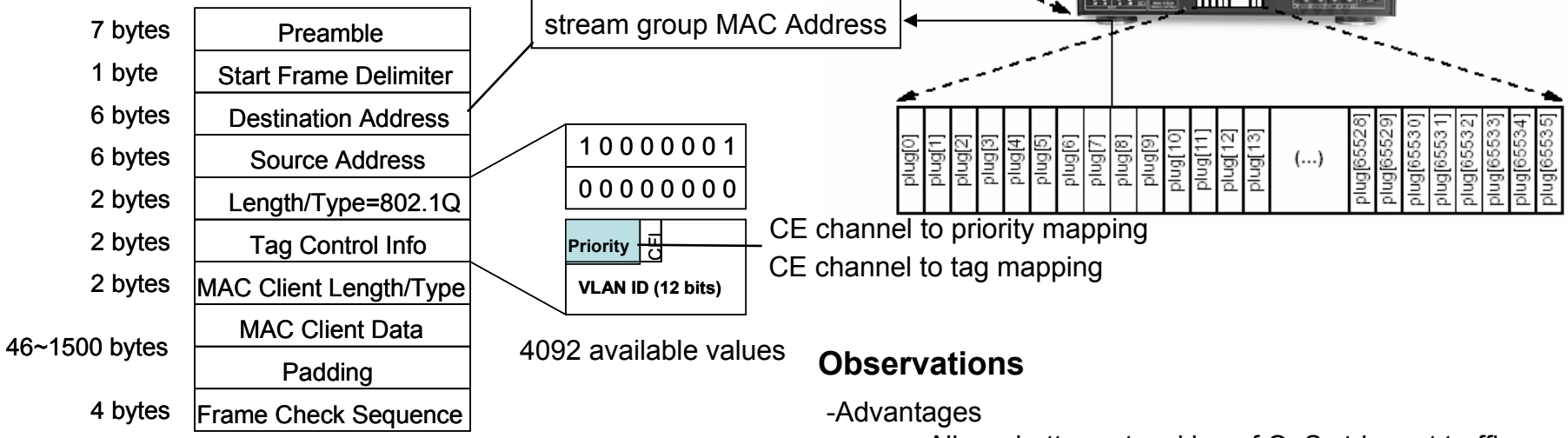

AV stream proposed frame format

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-Advantages
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-Disadvantages
- Group MAC address registration/allocation required
- VLAN tag management required

CE Addressing Schemes - summary

	MAC+plugID	MAC+q	G-MAC	G-MAC+p	G-MAC+p+q
Address Mgm	No multicast address assignment needed	No multicast address assignment needed	Multicast address assignment needed	Multicast address assignment needed	Multicast address assignment needed
FDB	NA	Scales with AV sources	Scales with AV sources	Scales with AV sources	Scales with AV sources
Forwarding	No MRP required	No MRP required, explicit CoS tagging	MRP required, CoS tag derived from FDB	MRP required, explicit CoS tagging	MRP required, explicit CoS tagging
Application Mgm	Simple	VLAN space Mgm	G-MAC space Mgm	G-MAC + p Mgm	G-MAC + p +q Mgm
Routing	Single path	Multiple path	Single path	Single path	Multiple path
Backward Compatibility	Breaks bridge forwarding	Yes, but will conflict with other VID uses	Yes	Yes, but may require priority mapping at edge	Yes, but will conflict with other VID uses, and may require priority mapping at edge

Thank You!