



Addressing Streams in Residential Ethernets

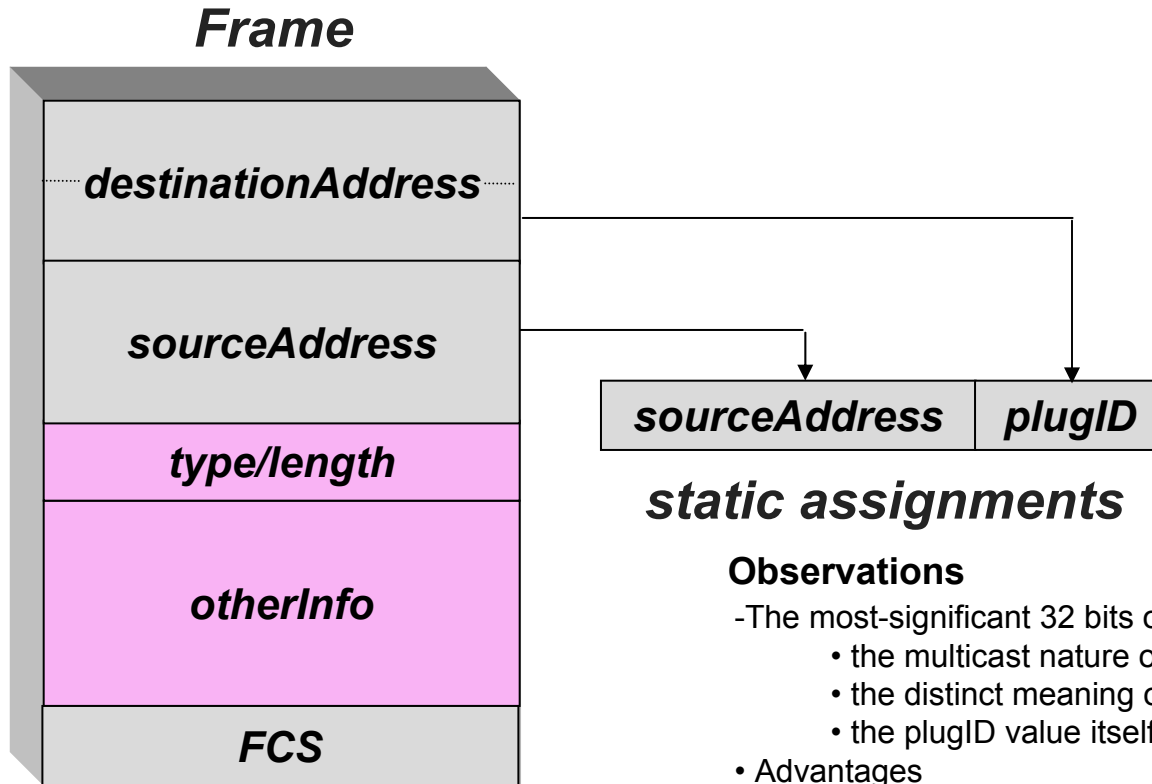
Dirceu Cavendish, NEC

CE addressing schemes

Considered options

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

Source MAC + plug ID addressing scheme

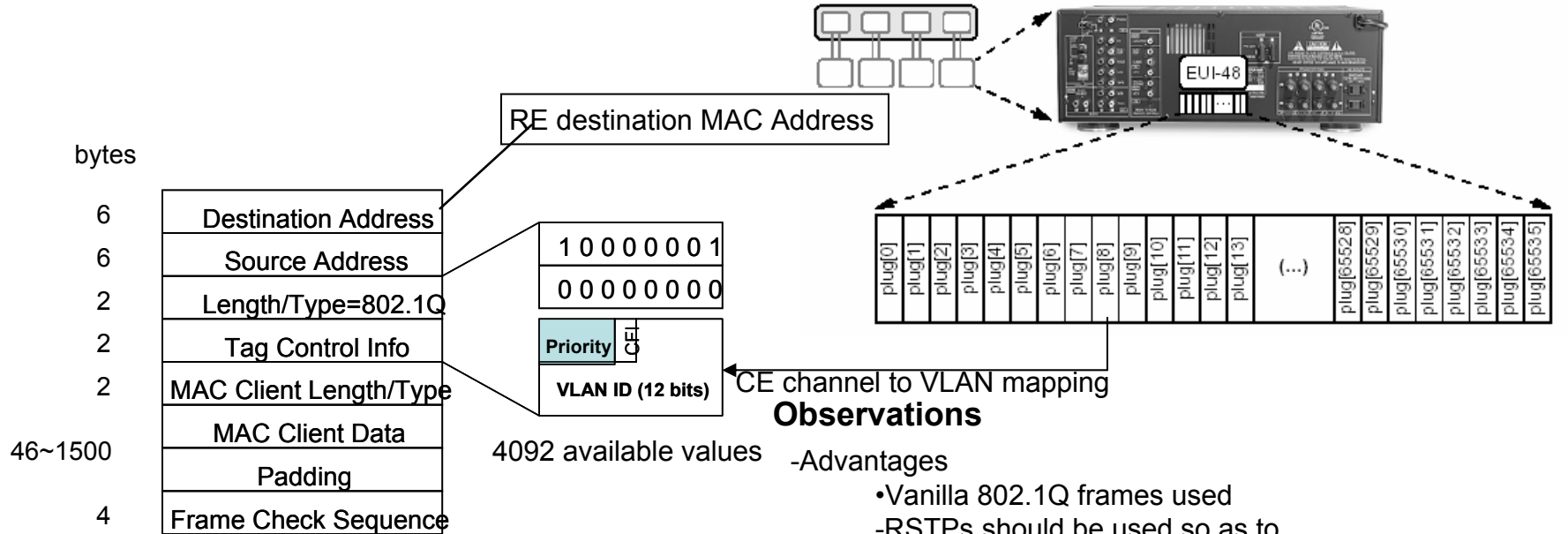


RE proposed frame format

Observations

- The most-significant 32 bits of the destinationAddress explicitly identify:
 - the multicast nature of this frame
 - the distinct meaning of this frame (an RE 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

Destination MAC + VLAN addressing scheme



RE proposed frame format

Observations

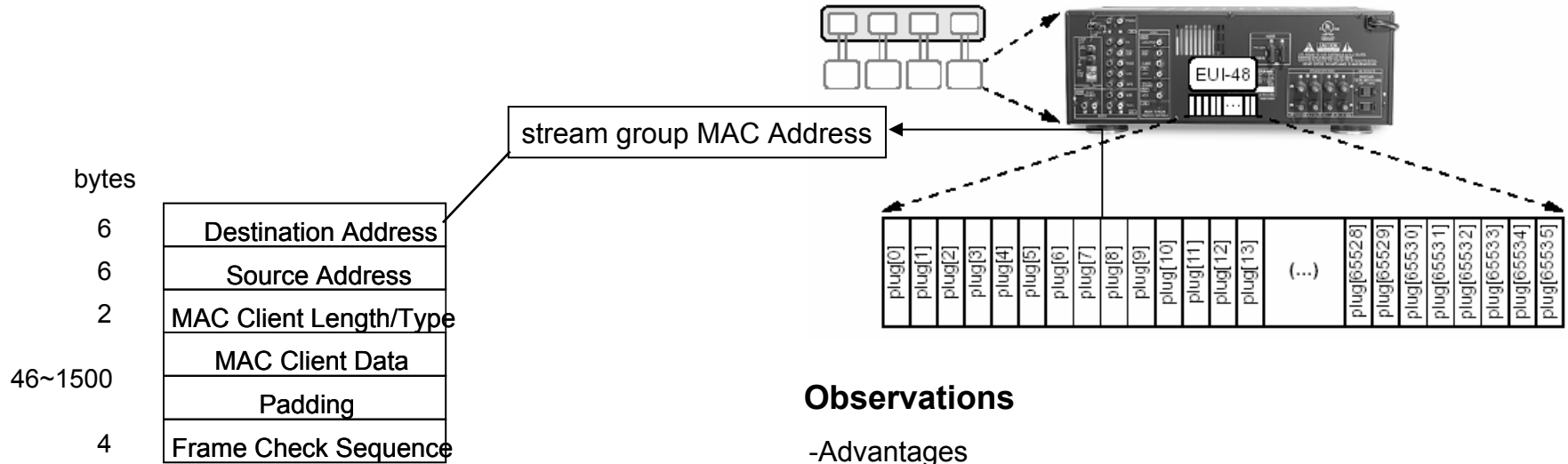
-Advantages

- 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)

-Disadvantages

- NO residential bridge is to be managed by a residential user, to avoid "clash" of VLAN values
- PC applications are VLAN unaware, so VLAN collision with RE VLAN values is possible
- Only if RE user accesses a bridge to configure VLAN space.

Group MAC address – no priority



RE proposed frame format

Observations

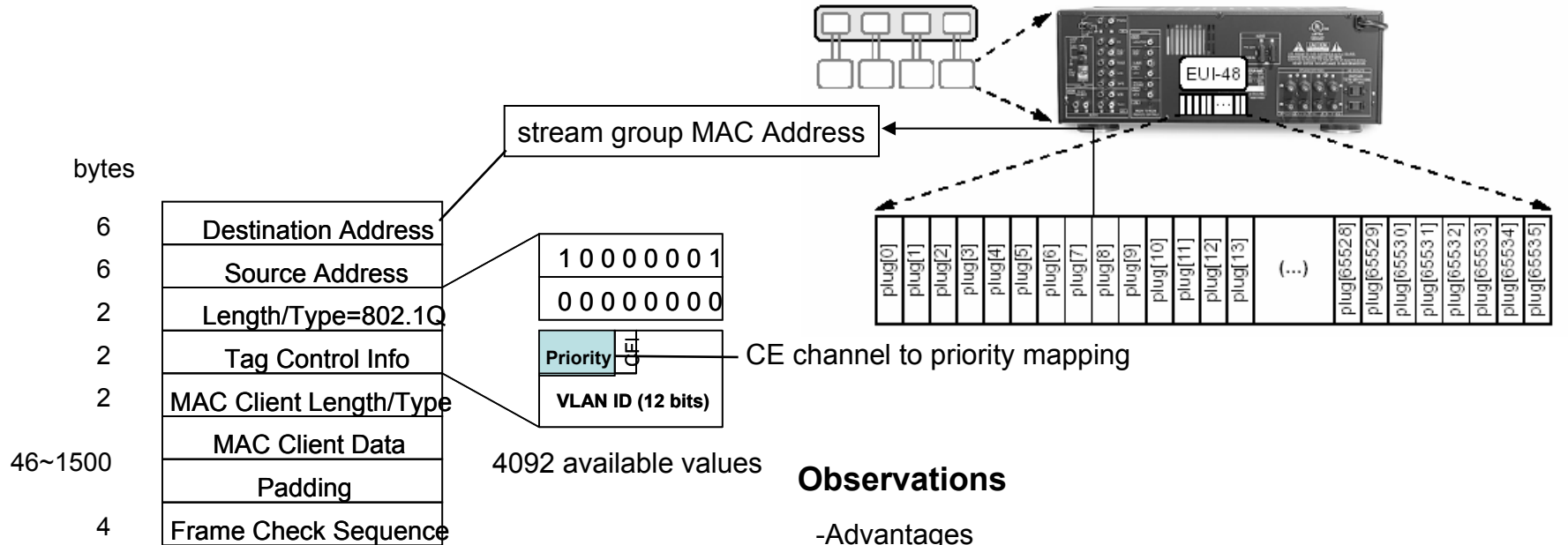
-Advantages

- Avoids VLAN tag management at home
- Standard multicast forwarding scheme

-Disadvantages

- Large number of group MAC addresses
- Group MAC address registration/allocation required
- A single spanning tree is used
 - Hotspots on richly connected network

Group MAC Address – with priority, no tag



RE proposed frame format

Observations

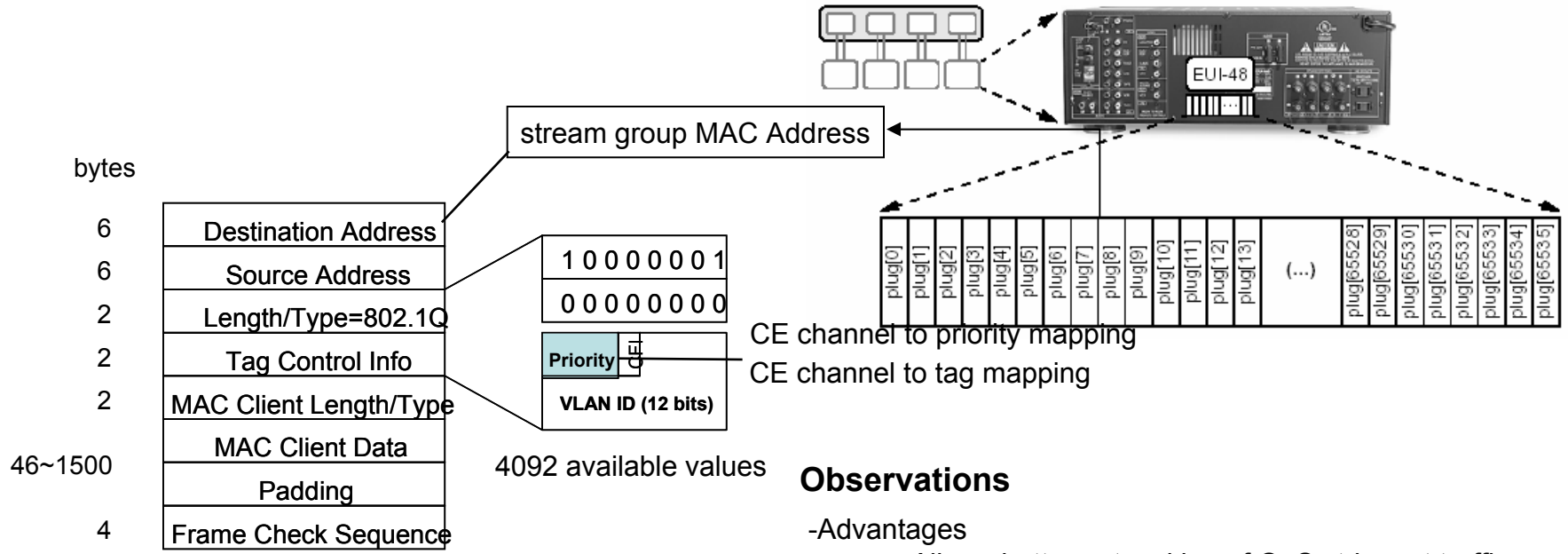
-Advantages

- Avoids VLAN tag management at home
- Allows better networking of QoS stringent traffic
- Standard multicast forwarding

-Disadvantages

- Large number of group MAC addresses
- Group MAC address registration/allocation required

Group MAC address—with priority, with tag



RE proposed frame format

Observations

-Advantages

- Allows better networking of QoS stringent traffic

-Disadvantages

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

RE addressing schemes - summary

	S-MAC+plugID	D-MAC+q	G-MAC	G-MAC+p	G-MAC+p+q
Address mgm	No multicast address server	No multicast address server	Multicast address server needed	Multicast address server needed	Multicast address server needed
FDB	NA	Scales with RE sources	Scales with RE source/destination	Scales with RE source/destination	Scales with RE source/destination
Forwarding	No MRP required	No MRP required	MRP required	MRP required	MRP required
Application mgm (PnP)	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	Backward compatible	Backward compatible	Backward compatible	Backward compatible



Thank you!