

Virtual Private LAN Segments

draft-vkompella-ppvsn-vpsn-mpls-00.txt

Vach Kompella

Sunil Khandekar

Nick Tingle

Timetra Networks

Juha Heinanen, Song Networks

Giles Heron, PacketExchange

Rick Wilder, Masergy

Luca Martini, Level3 Communications

Tom Soon, SBC Communications

VPLS Design Team

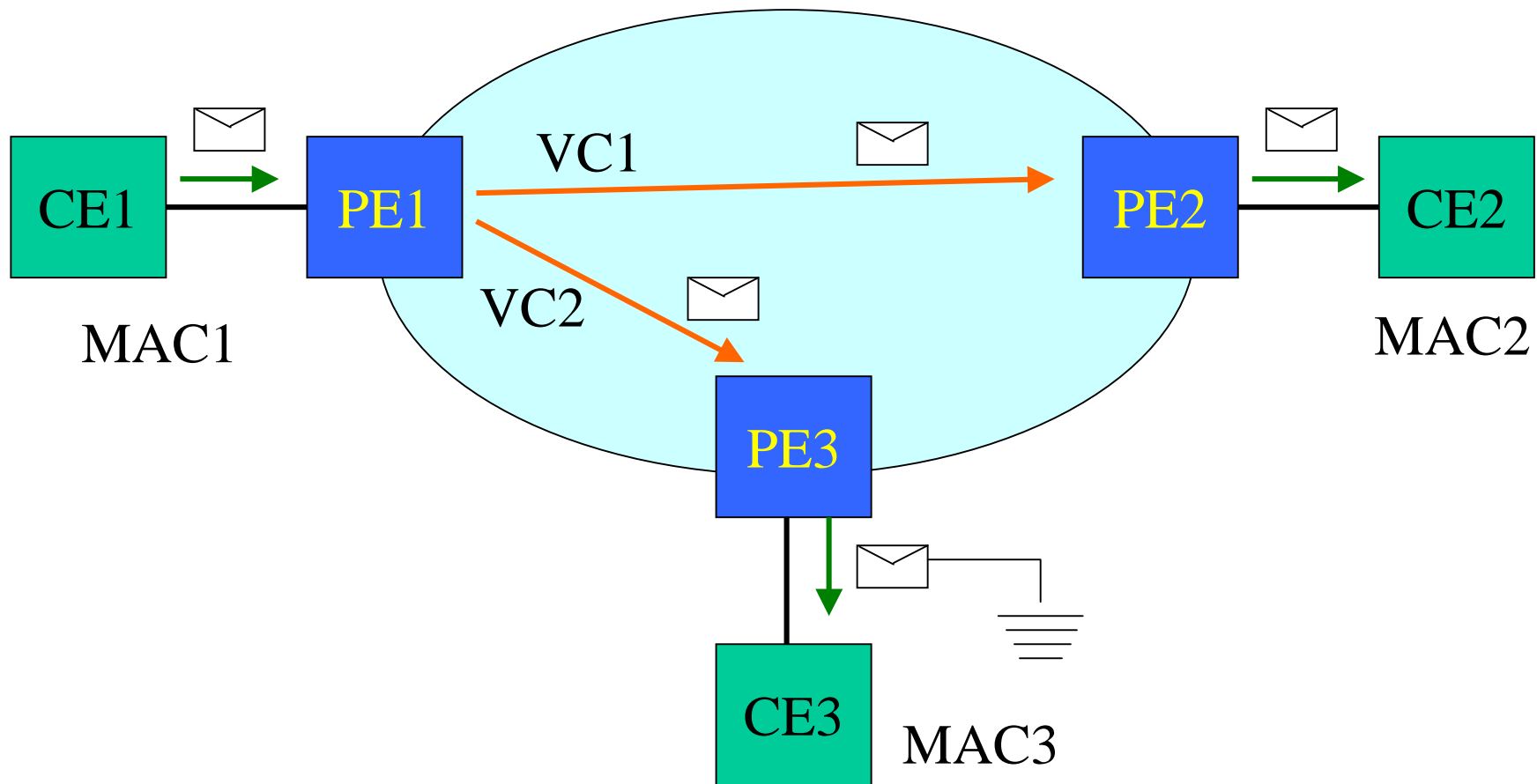
- Consolidate requirements docs into one
- Consolidate solutions docs
 - draft-lasserre and draft-vkompella
 - VPSN = TLS = VPLS

How it works

- Two major components
 - Full mesh of multi-point VCs to emulate LAN segment connectivity
 - Replication for unknown MACs
 - Split horizon
 - Layer 2 learning function
 - MAC+VLAN tag
 - VC label for demultiplexing senders

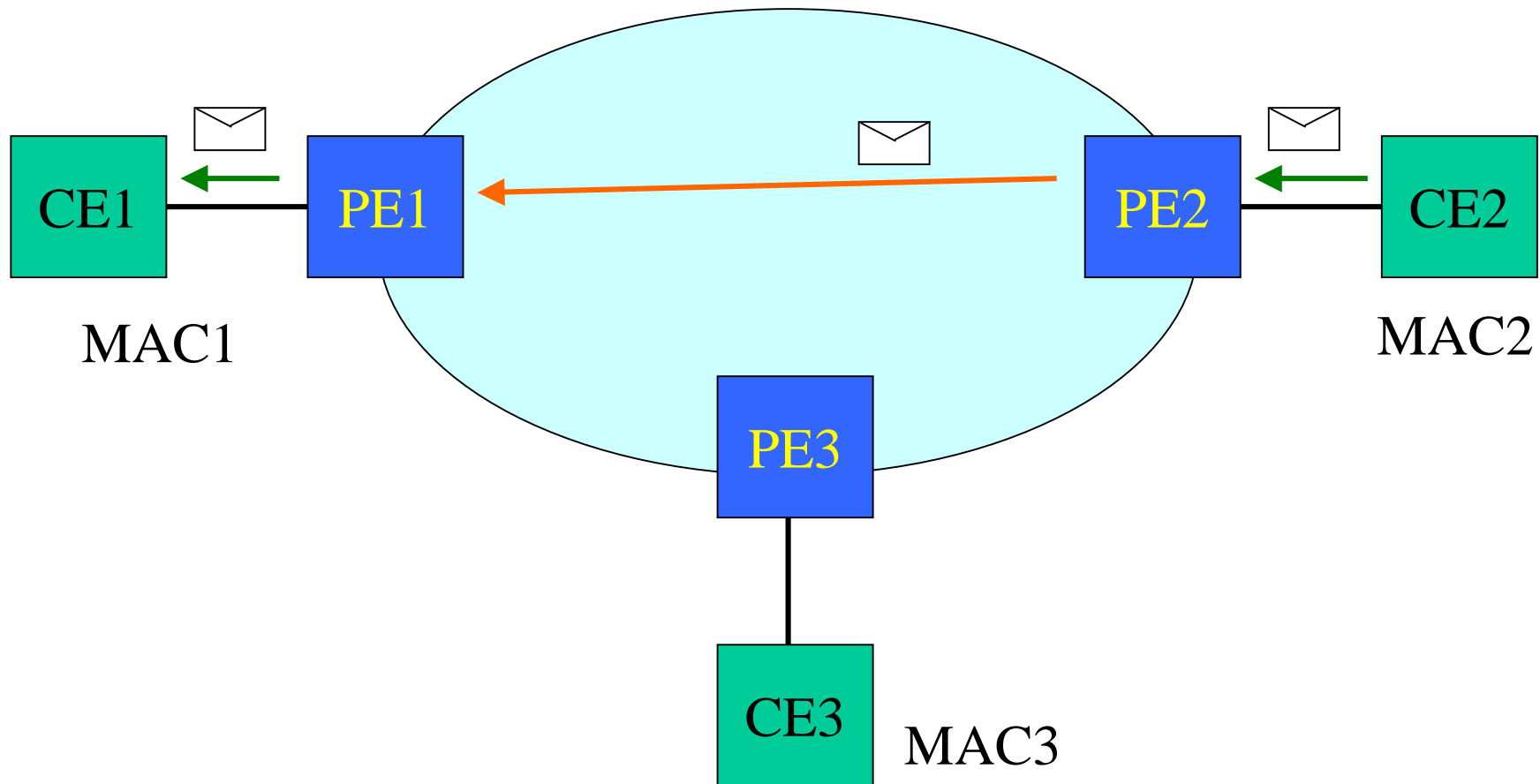
VPLS Example

Unknown destination MAC2 is broadcast at PE1



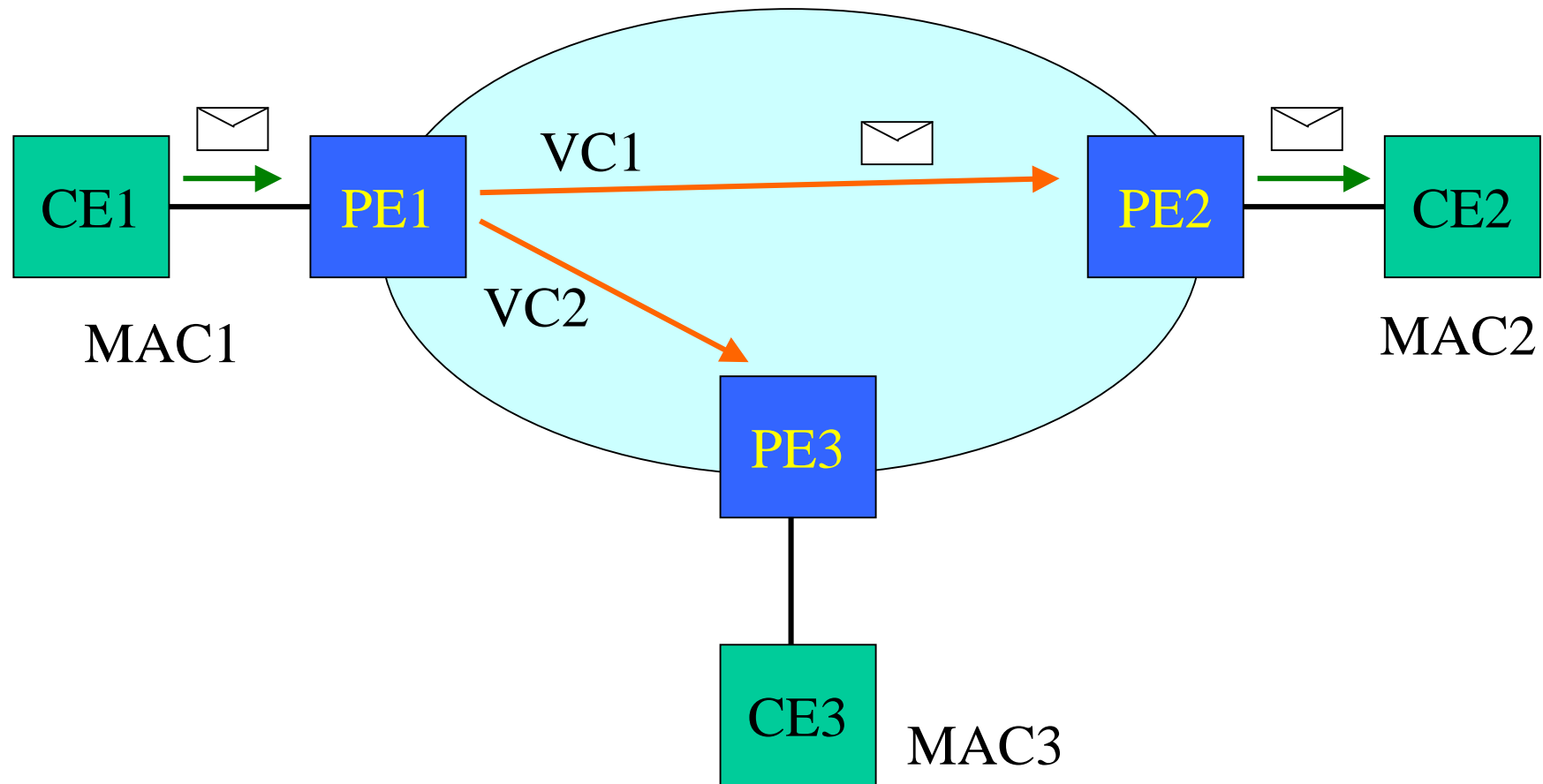
VPLS Example contd.

Unknown destination MAC2 is learned at PE1, and associated with VC1



VPLS Example contd.

Known destination MAC2 is sent on VC1 to PE2

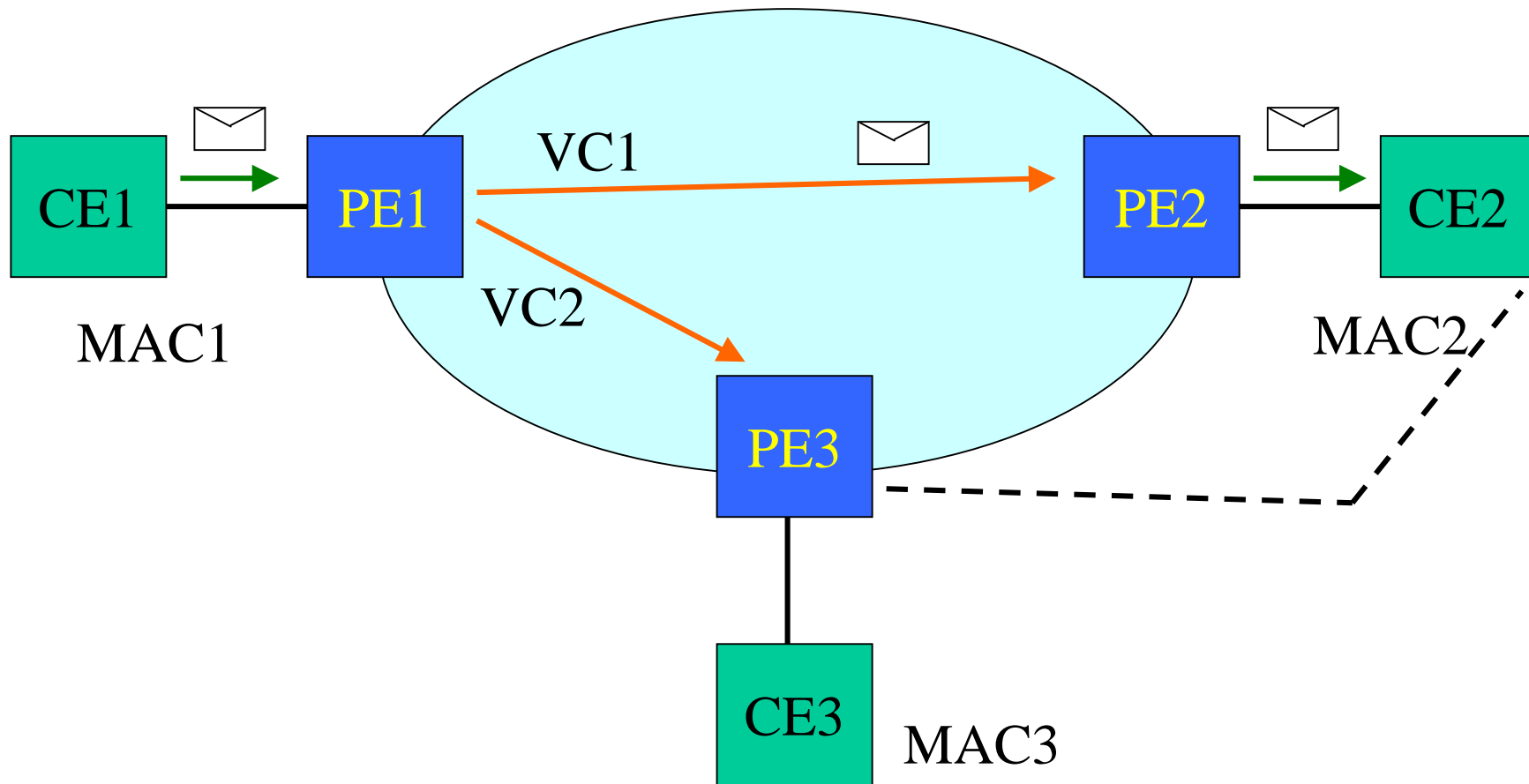


MAC Address Movement

- A CE may be multi-homed
- It would be known initially as being behind one PE
- Other PEs learn which PE it belongs to
- If the link to the PE breaks, it now belongs to another PE
- Some PEs may not know about this until they age out entries
- Optional MAC TLV for faster convergence

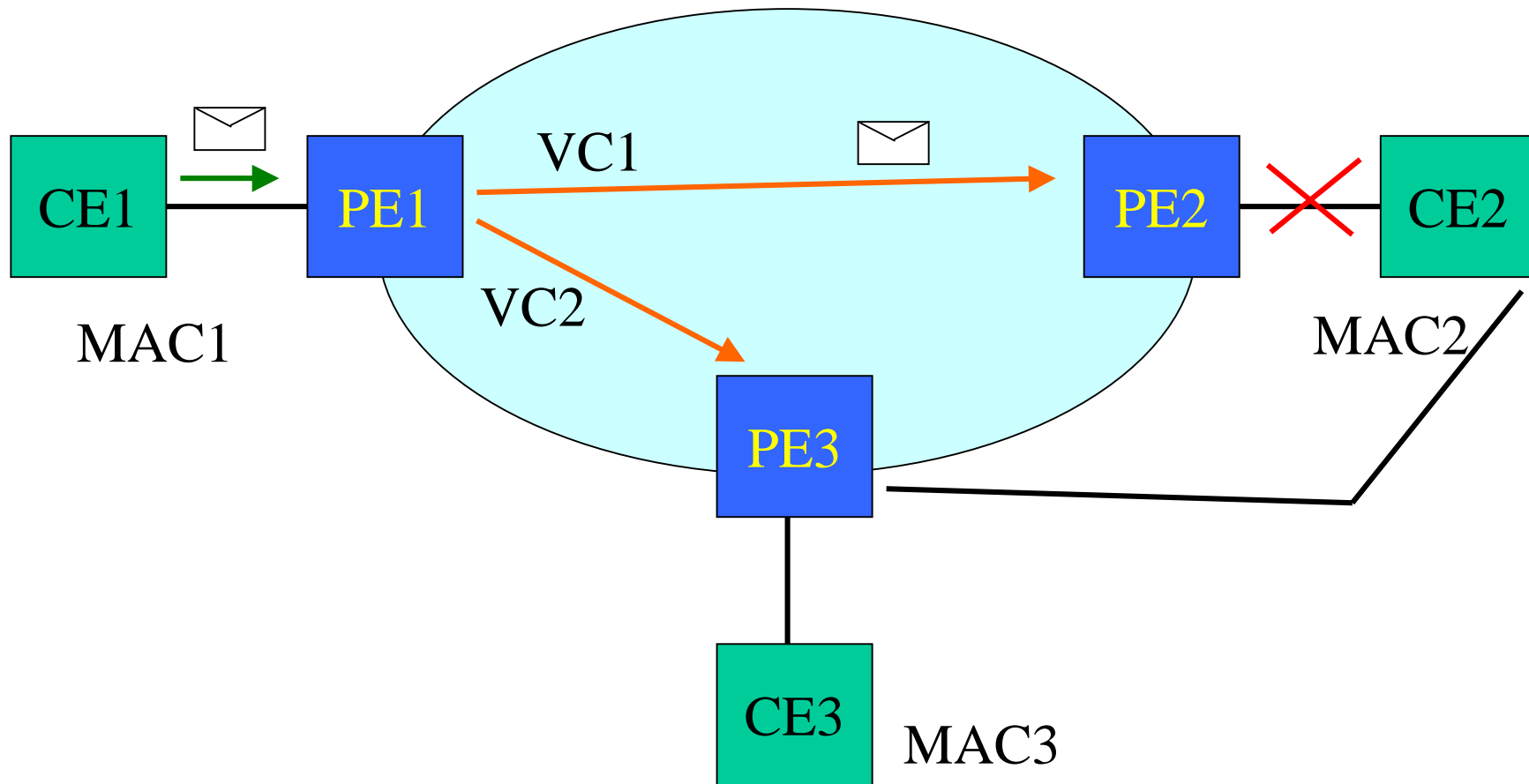
MAC Address Movement contd.

Multi-homed CE problems



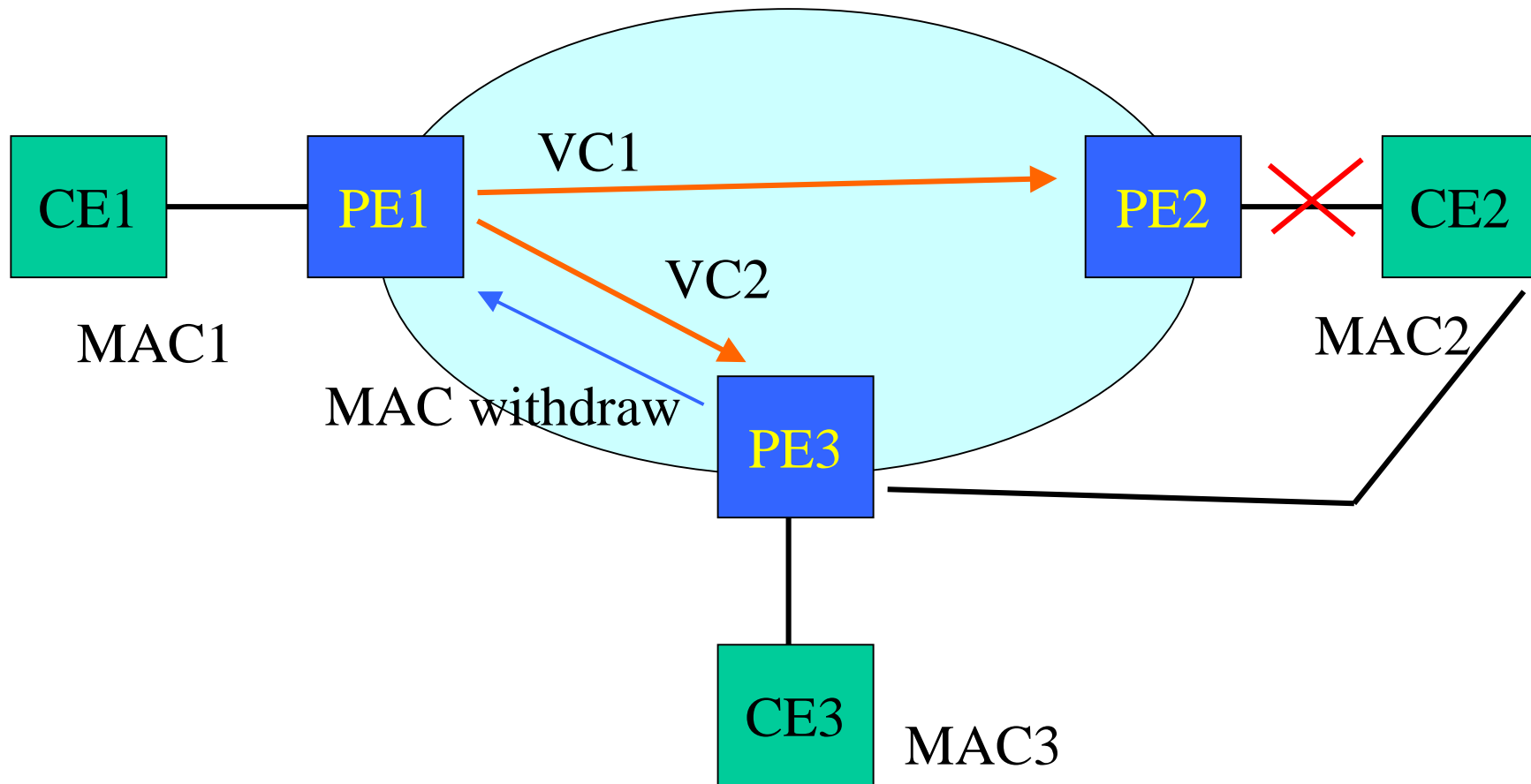
MAC Address Movement contd.

Multi-homed CE problems: old binding won't work



MAC Address Movement contd.

Multi-homed CE problems: force unbinding and re-learn



And now for something related...

VPLS Signaling Using MP-BGP

- Using BGP to signal multiple VC labels on a per PE pair basis is bad
- Alternative: from any PE, signal a **single** VC label for all VCs inbound for a particular VPLS
- Use 2547 style advertisements

VPLS with MP-BGP

- Layer 2 MAC learning becomes difficult
 - Re-define Ethernet control word to represent sending LSR
 - Demultiplex incoming packets based on sending LSR for L2 learning