DRNI: Multi-component Models and Generalized Model

Version 02

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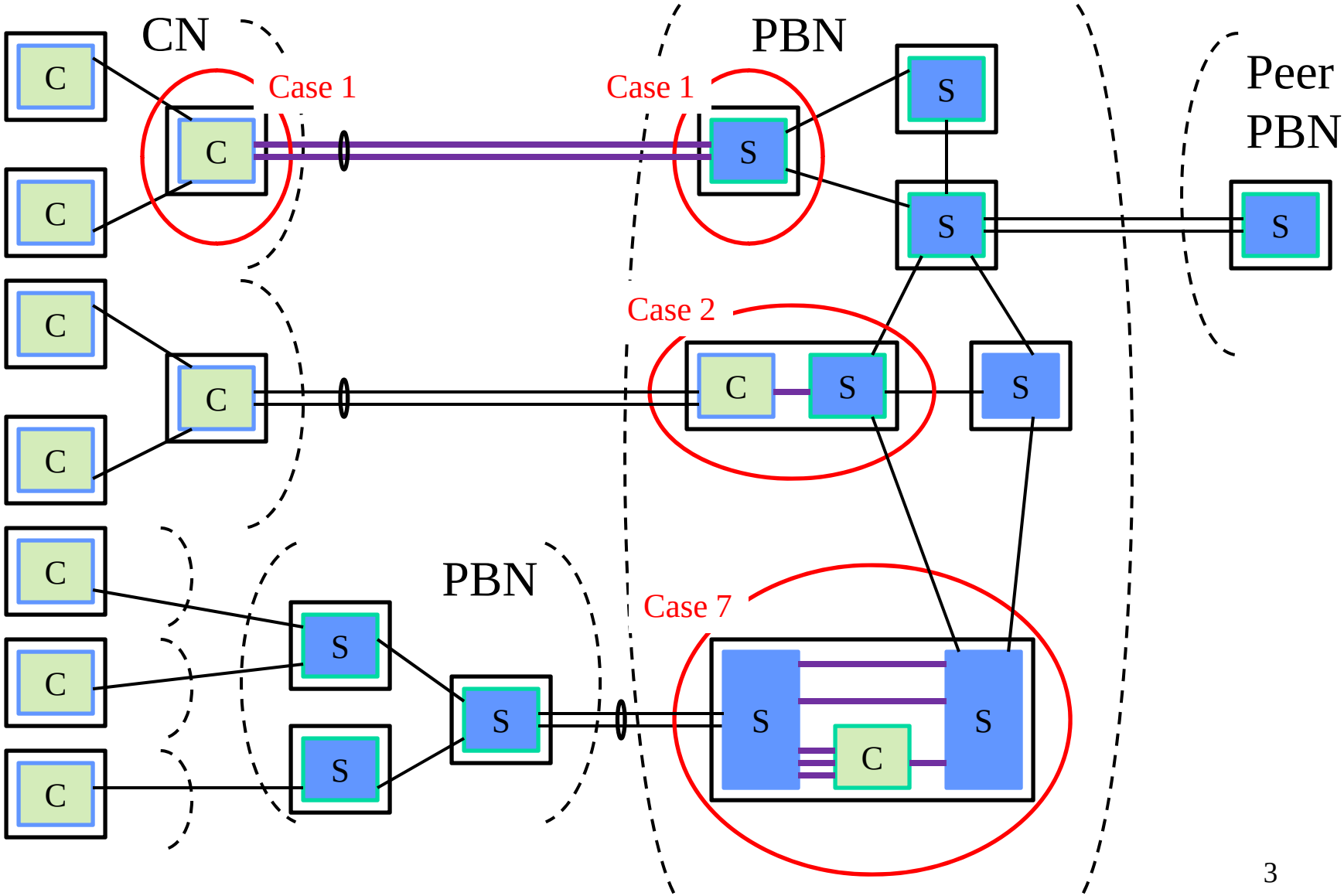
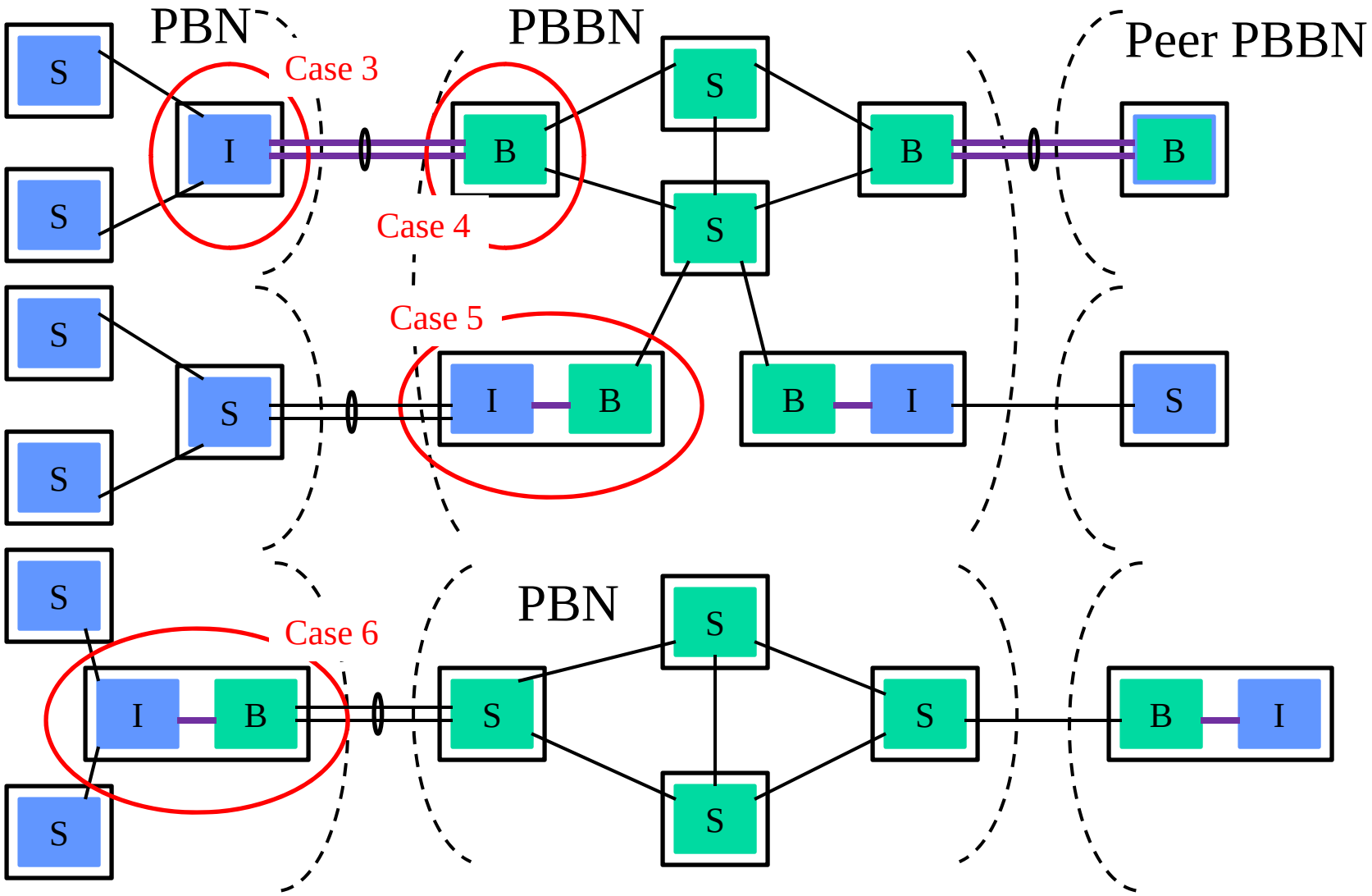
- This presentation develops logical component models and distributed component models for 7 cases of DRNIs involving single and multi-component bridge.
- From these, a single generalized model is developed.

Q, PB, PEB, and RCSI cases to consider

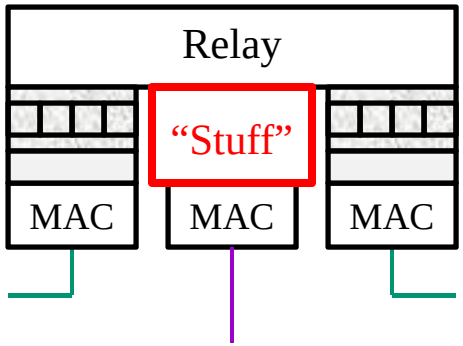


BEB cases to consider

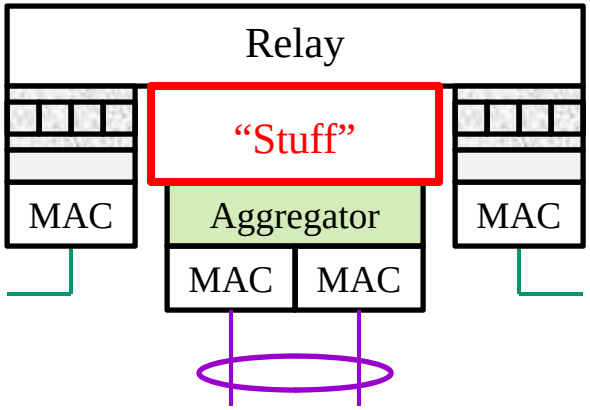


Generalized LAG Baggy Pants Model

Each of these cases can be represented by a generalized model that has “stuff” in the interface stack between the MAC relay of the primary component and the aggregated port. “Stuff” may include logical bridge components. (“Stuff” could probably be other technologies, e.g. pseudowire.)



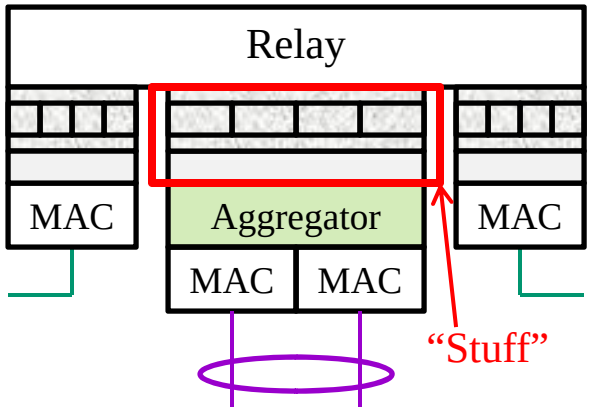
“Stuff” on a single port



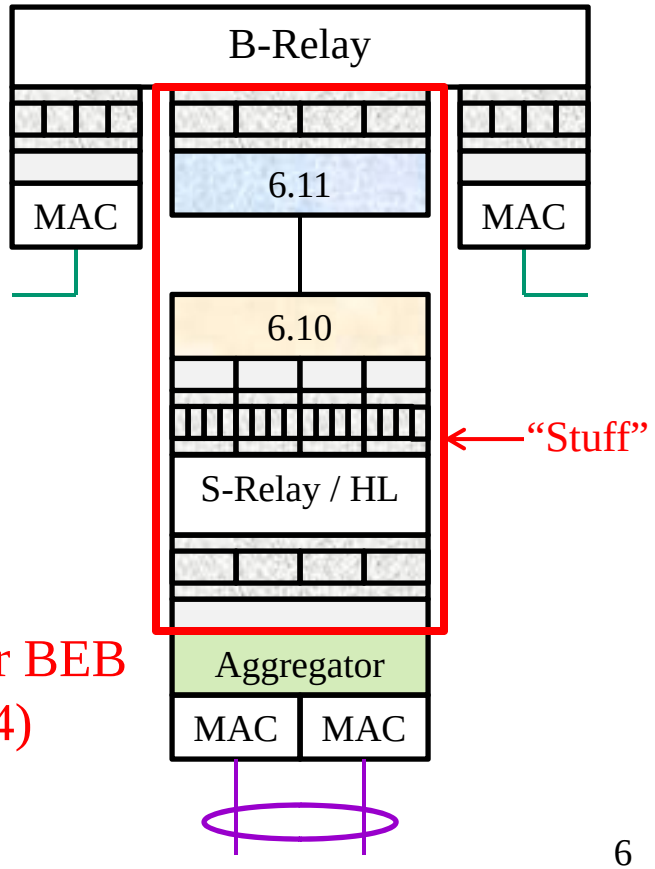
Generalized LAG Model

Example LAG Baggy Pants Models

In some cases there is just a little “stuff” and in some cases there is a lot of “stuff”!

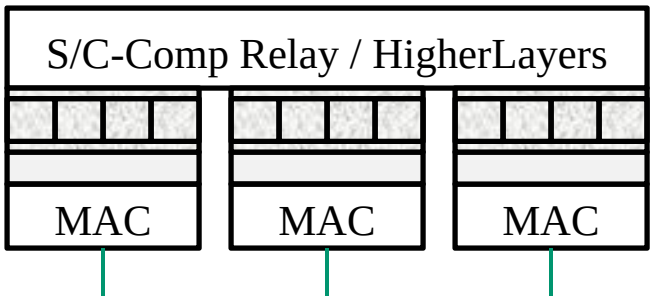


Example for C-VLAN or S-VLAN component (Case 1)



Example for BEB (Case 4)

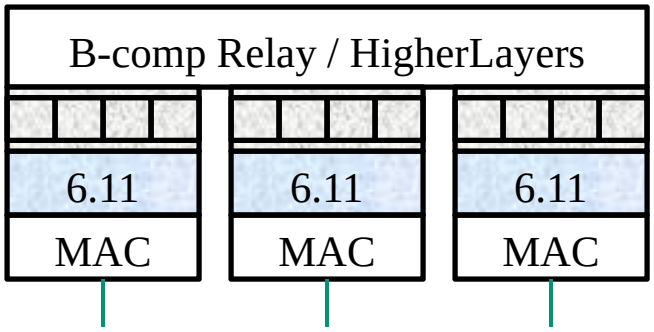
Key to Interface Stacks in Diagrams



EISS Mux (6.17) and VLAN MPs

VLAN tagging (6.9) and Bridge Tx/Rx (8.5)

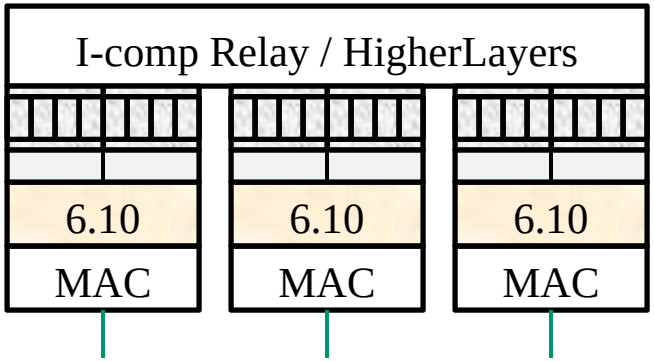
Port Down MEP, ISS (6.7) and MAC



EISS Mux (6.17) and B-VLAN (and TESI) MPs

CBP (6.11), BSI Mux (6.18) and MPs, Bridge Tx/Rx (8.5)

Port Down MEP, ISS (6.7) and MAC



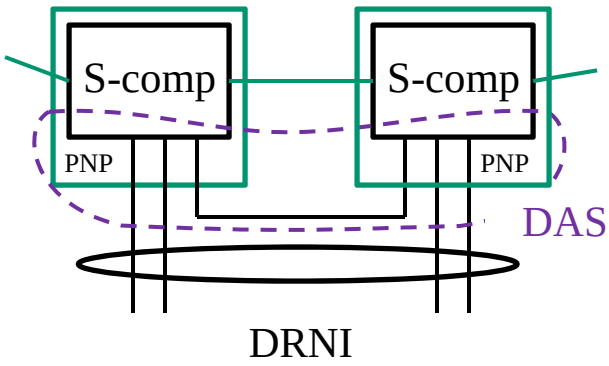
VIP: EISS Mux (6.17) and VLAN MPs

VIP: VLAN tagging (6.9) and Bridge Tx/Rx (8.5)

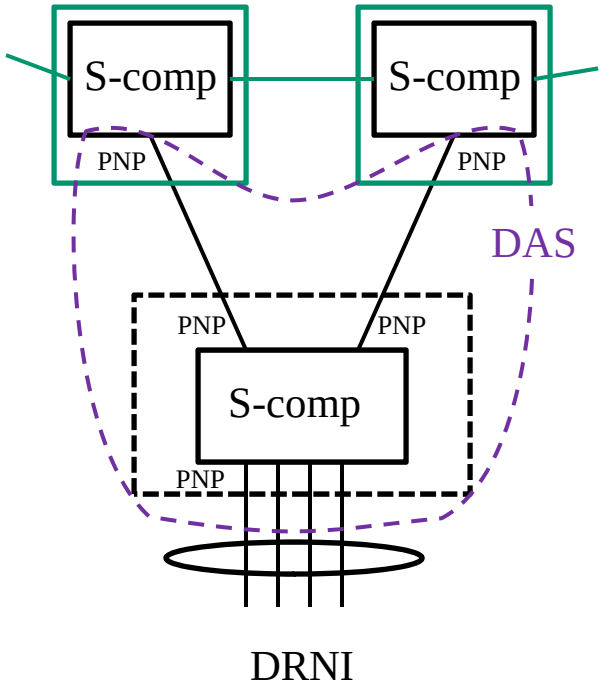
PIP (6.10), BSI Mux (6.18) and MPs, Bridge Tx/Rx (8.5)

Port Down MEP, ISS (6.7) and MAC

Physical and Logical Topology of S-tagged DRNI



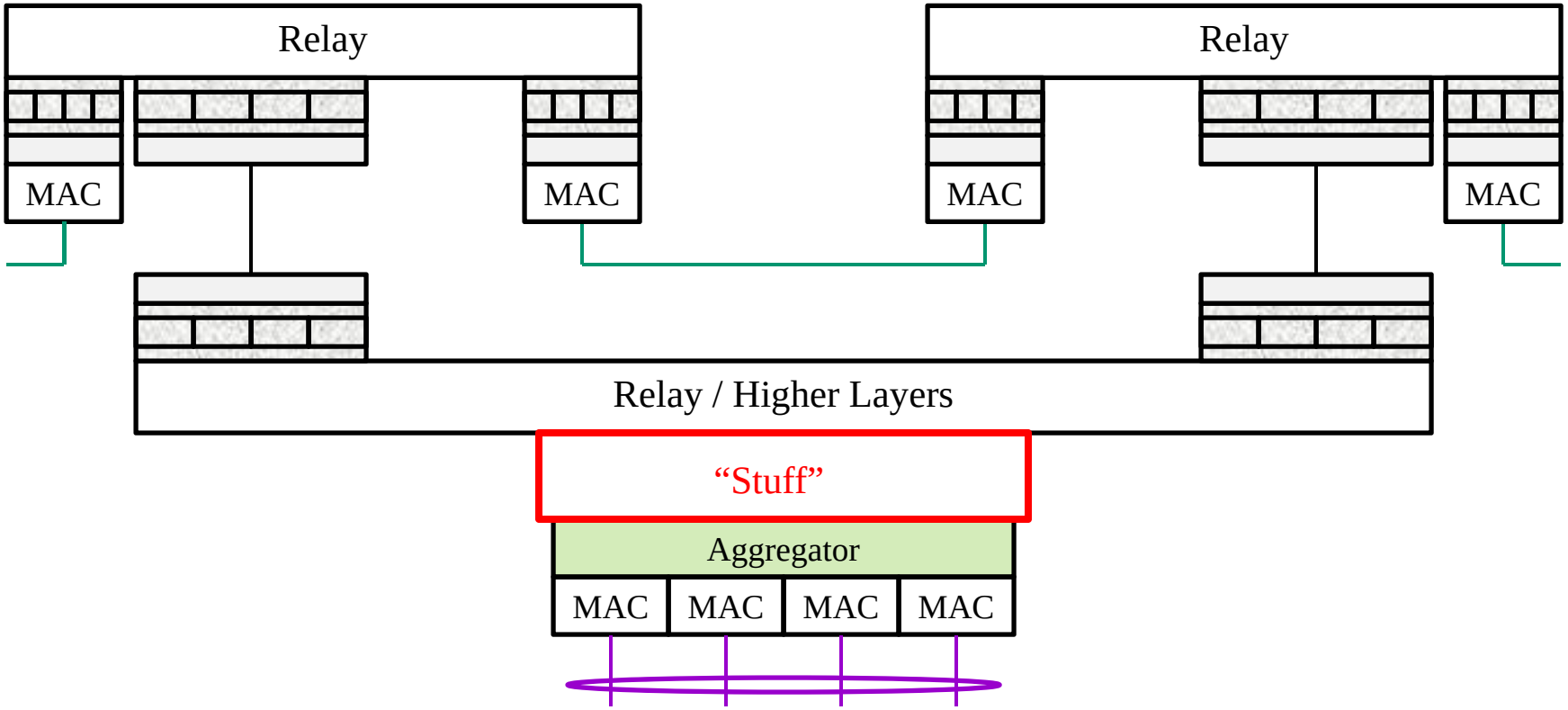
Physical Topology



Logical Topology

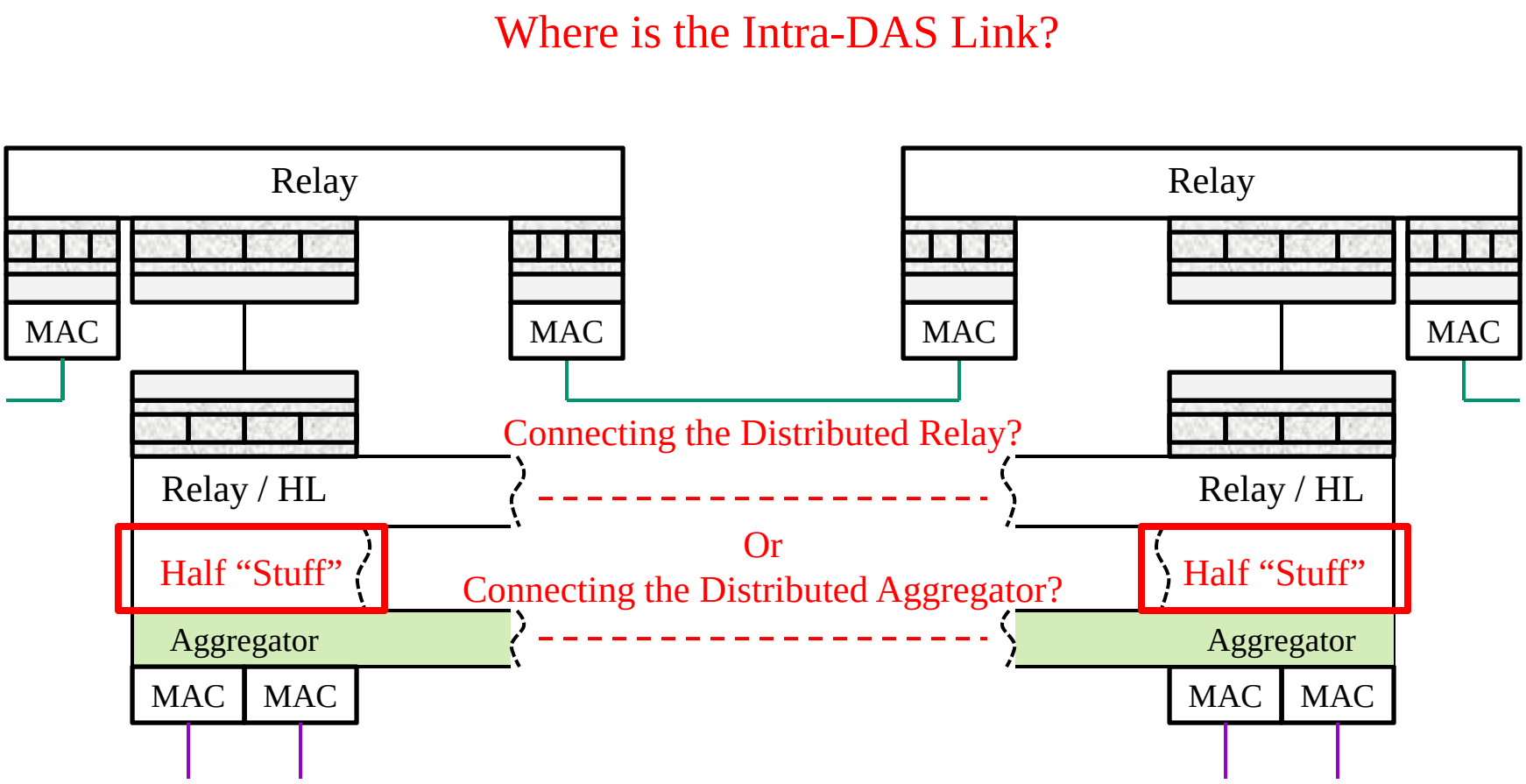
Generalized Logical Component Model of DRNI

Generalized model has the primary component of each physical bridge logically connected to a logical third component. The logical component also has all of the “stuff” associated with the aggregated port.



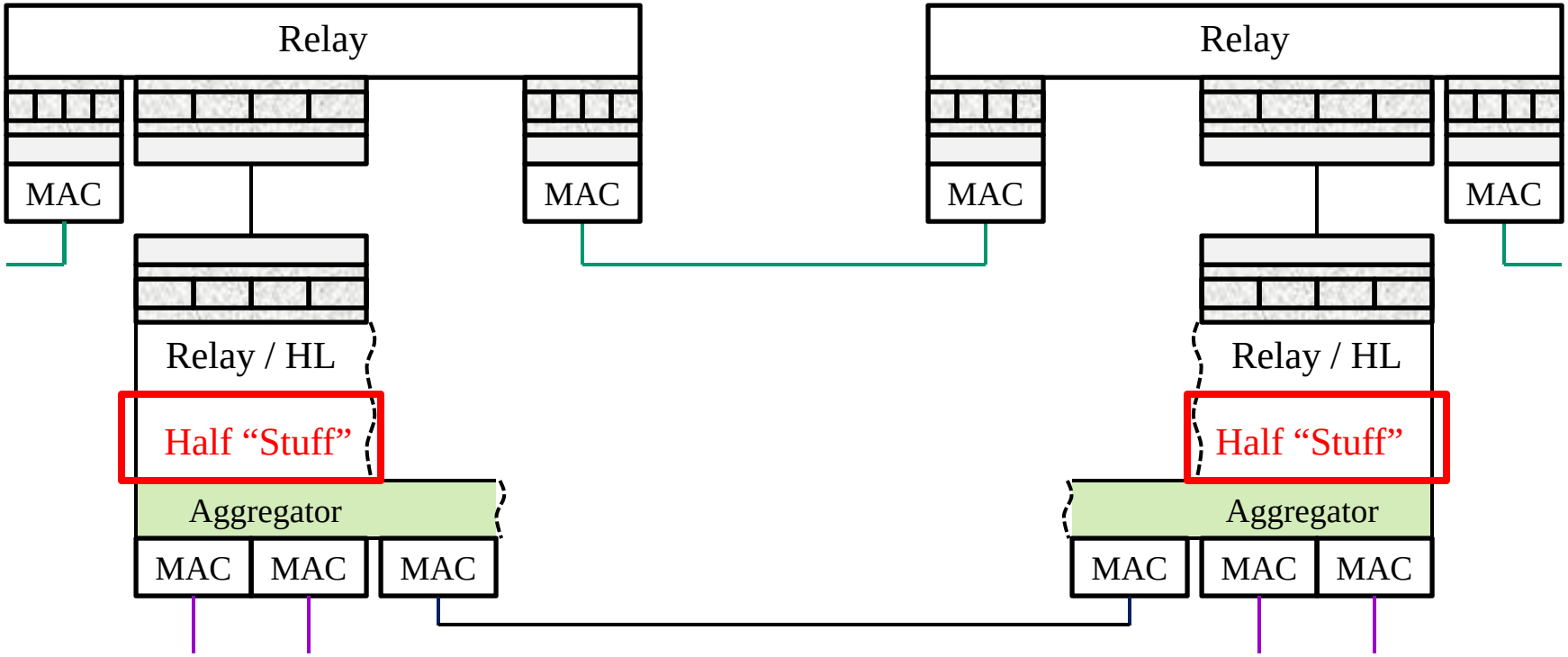
Generalized DRNI Logical Model

Generalized Distributed DRNI Model



Generalized Distributed DRNI Model

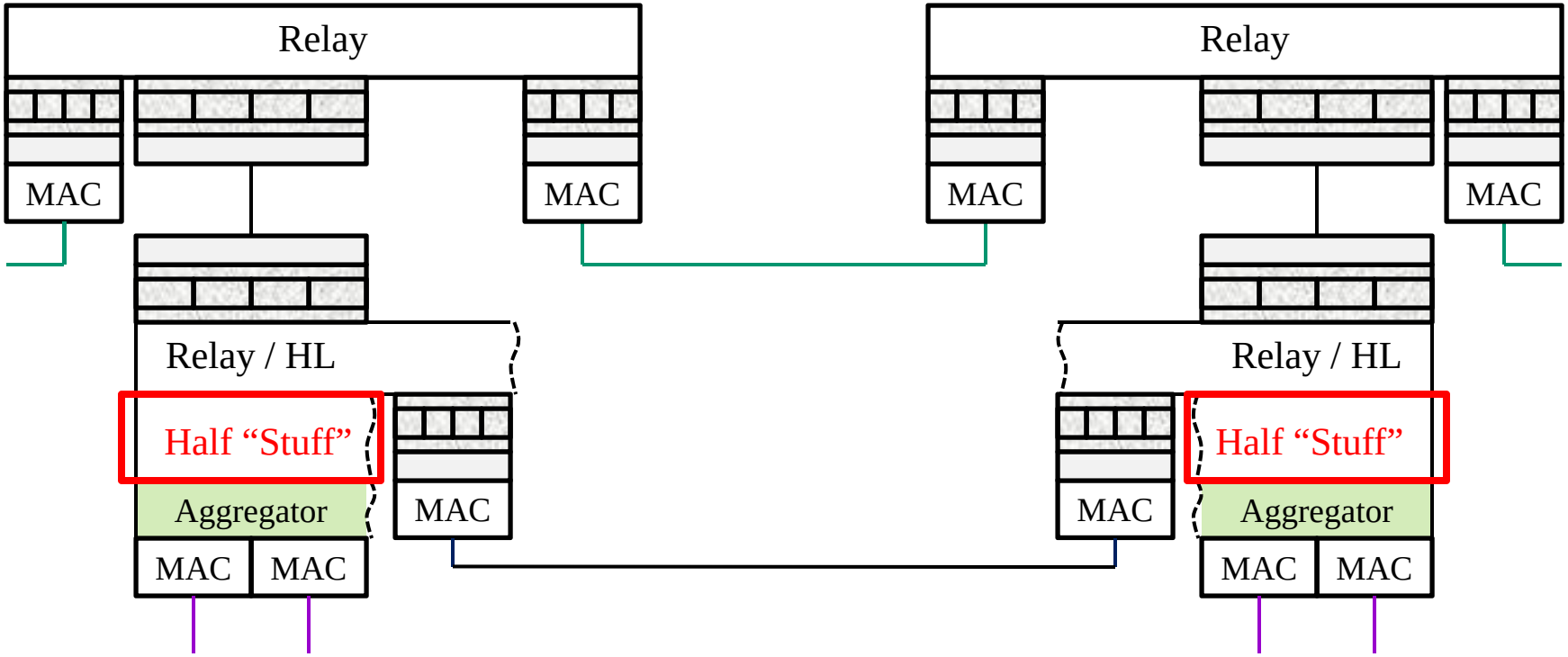
With the Intra-DAS Link connecting the Distributed Aggregator



(In previous presentations I have been assuming Intra-DAS Link at the Aggregator)

Generalized Distributed DRNI Model

With the Intra-DAS Link connecting the Distributed Logical Relay

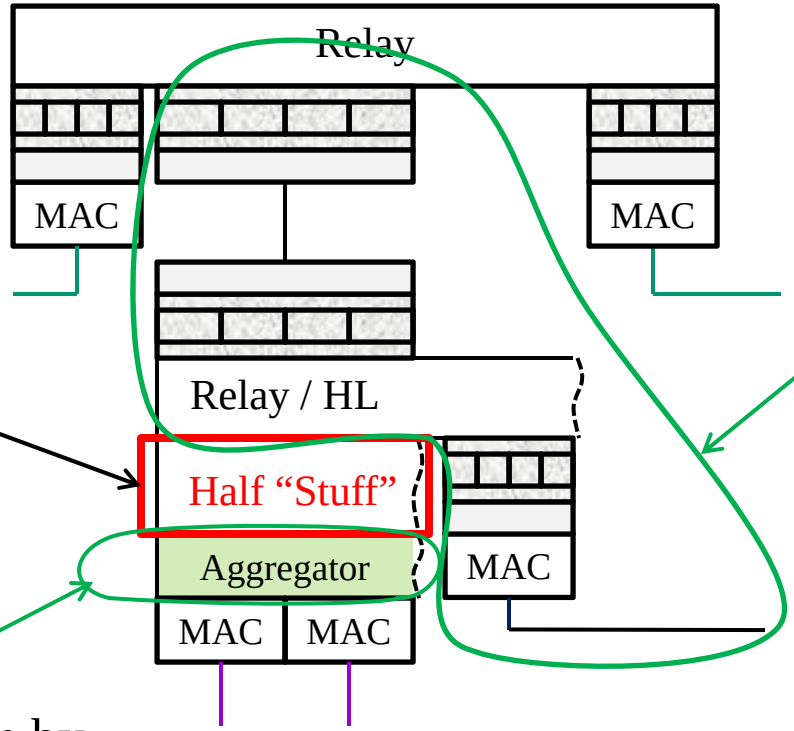


(There are several potential advantages to the Intra-DAS Link at the Logical Relay)

Why Intra-DAS at Relay?

1. MEP Placement for protection switching
   - Intra-DAS link ends up on network side of MEPs,
     - Where Norm, Ben, and Maarten want them.
     - Decouples protection switching events from gateway changes.
2. RCSI
   - If pull all gateway functionality down to Aggregator it becomes a relay.
3. More closely matches the gateway in the logical model
4. Possibly more closely matches implementations
     - For highly centralized implementation it doesn't matter whether Intra-DAS link at Relay or Aggregator, but for implementations with functionality distributed to ports then at Relay is better.
5. Better for encapsulating traffic for virtual Intra-DAS Link
6. Enables multiple DRNI on single Intra-DAS w/o encap.
7. Intra-DAS Link looks like network link, not interconnect link.

What gets specified in the standard?



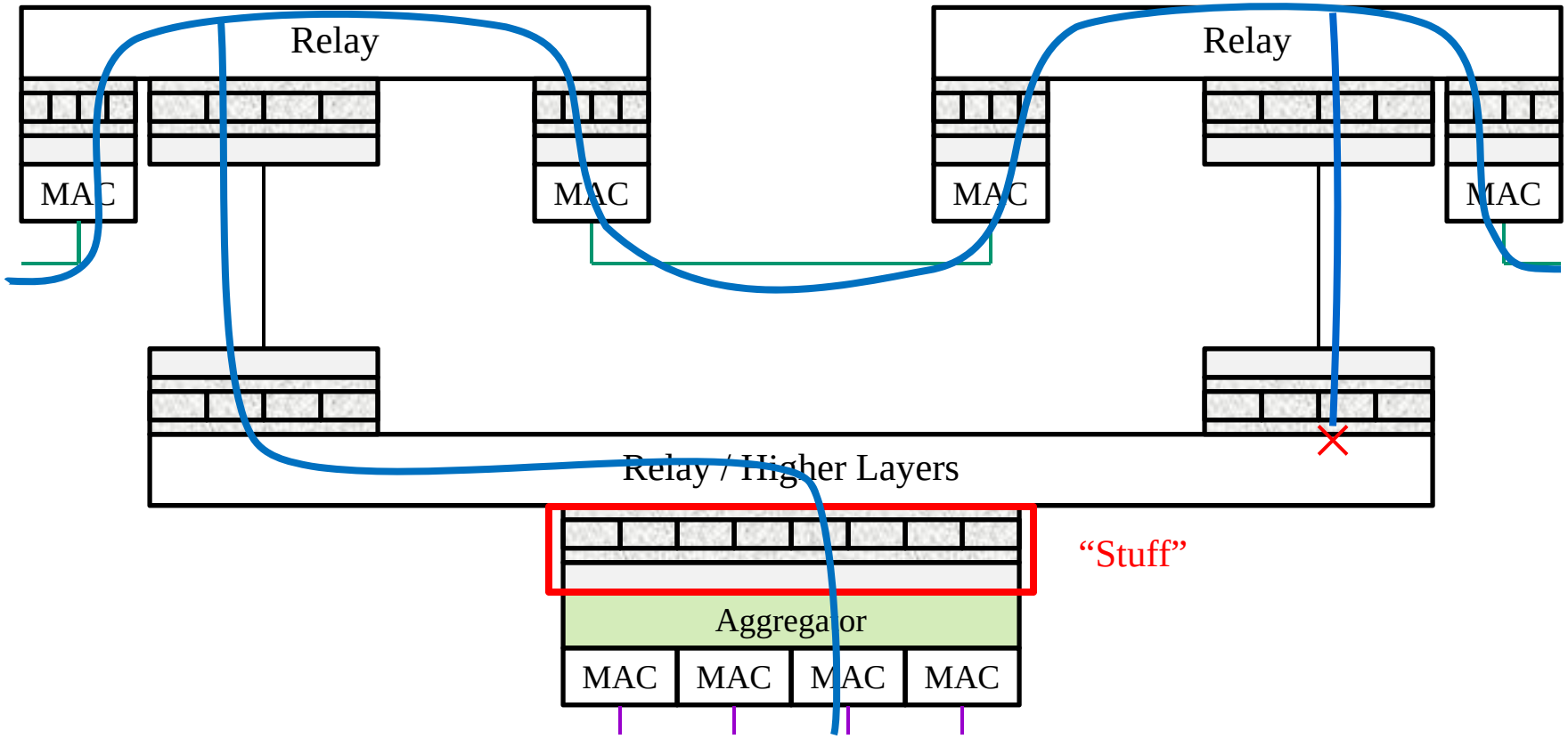
Annex material about "stuff" and distributed Higher Layers

Specify the gateway function and Intra-Portal protocol

Add Link Selection by service to Aggregator, and LACP enhancements

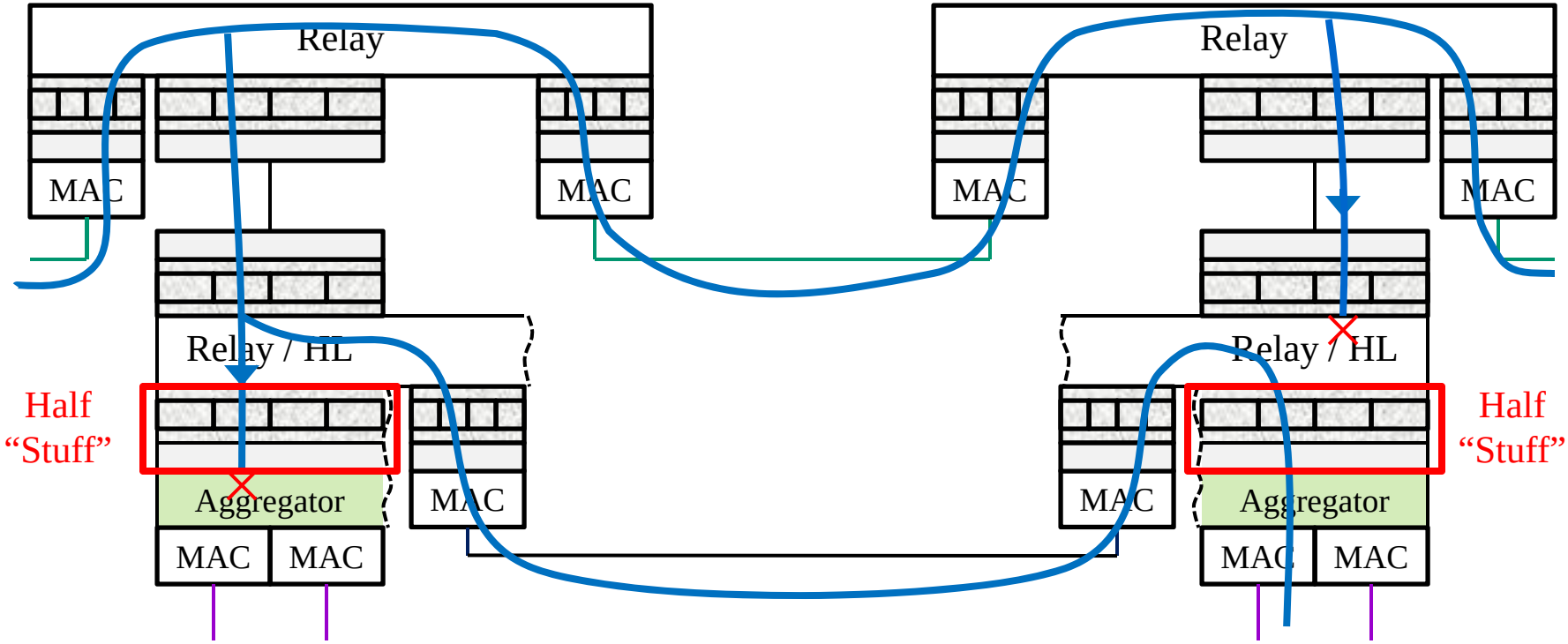
Detailed Models
(showing the real “stuff”)

Case 1: Logical Component Model
C-VLAN or S-VLAN Component

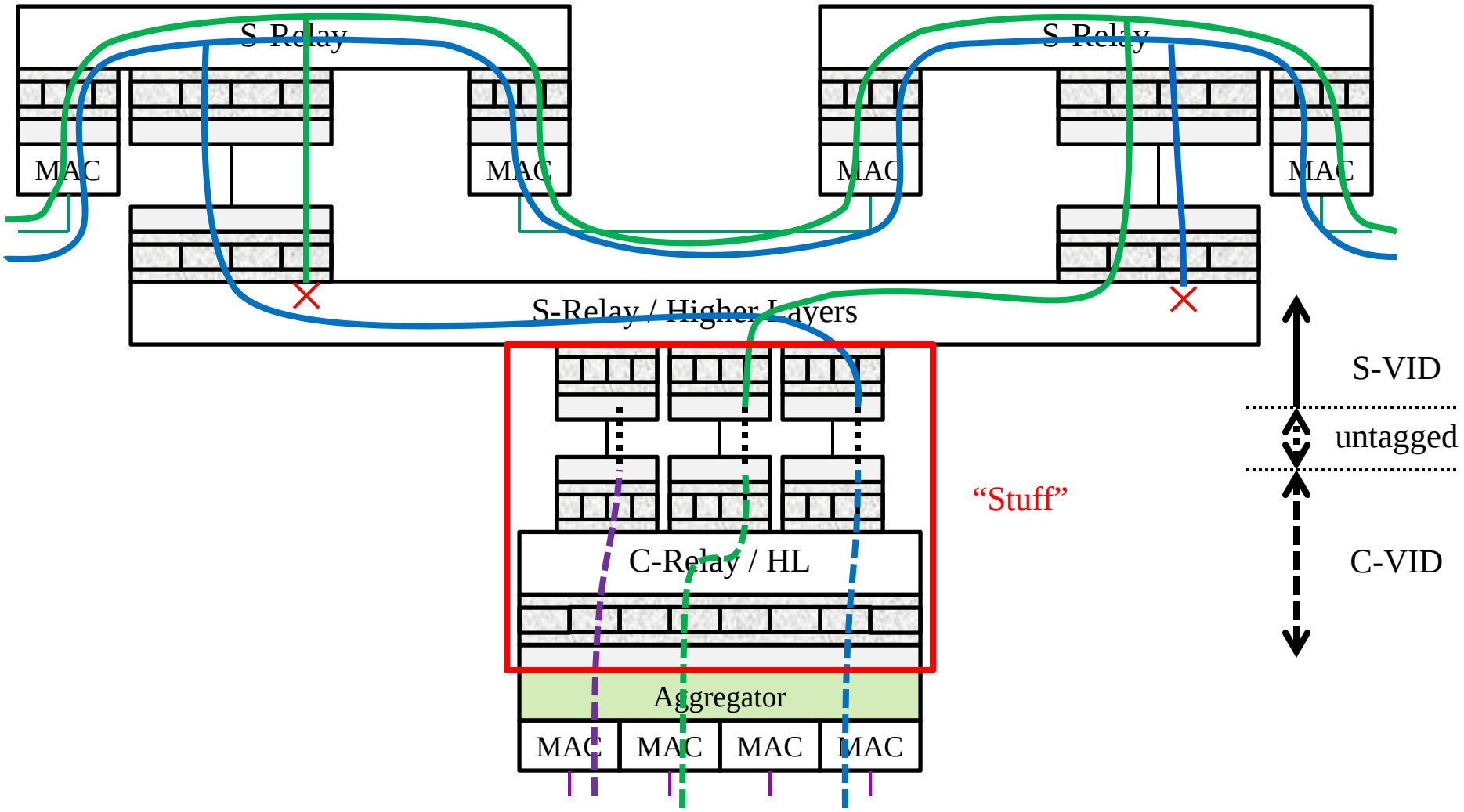


Case 1: Distributed Component Model

C-VLAN or S-VLAN Bridge

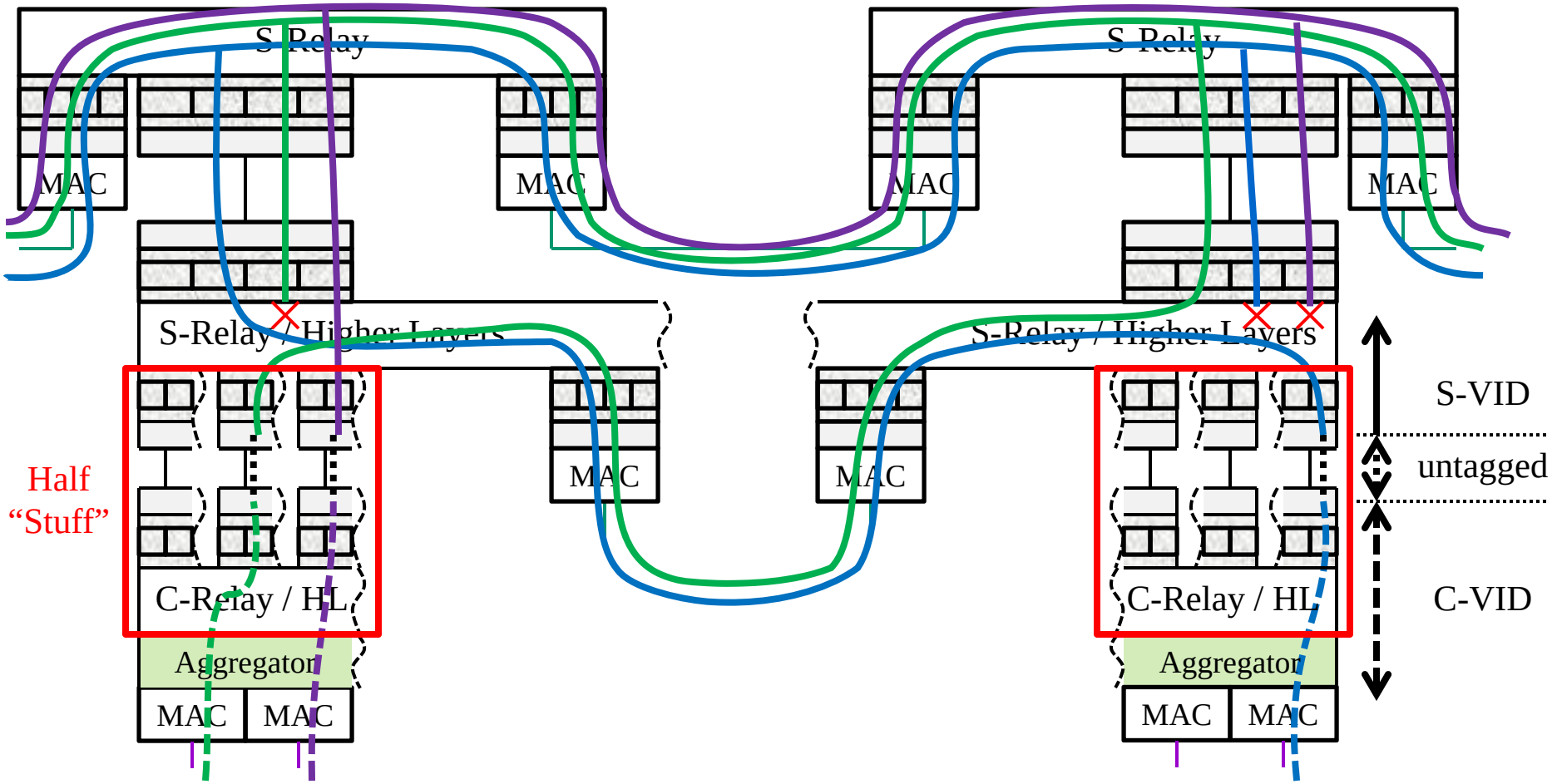


Case 2: Logical Component Model
Provider Edge Bridge

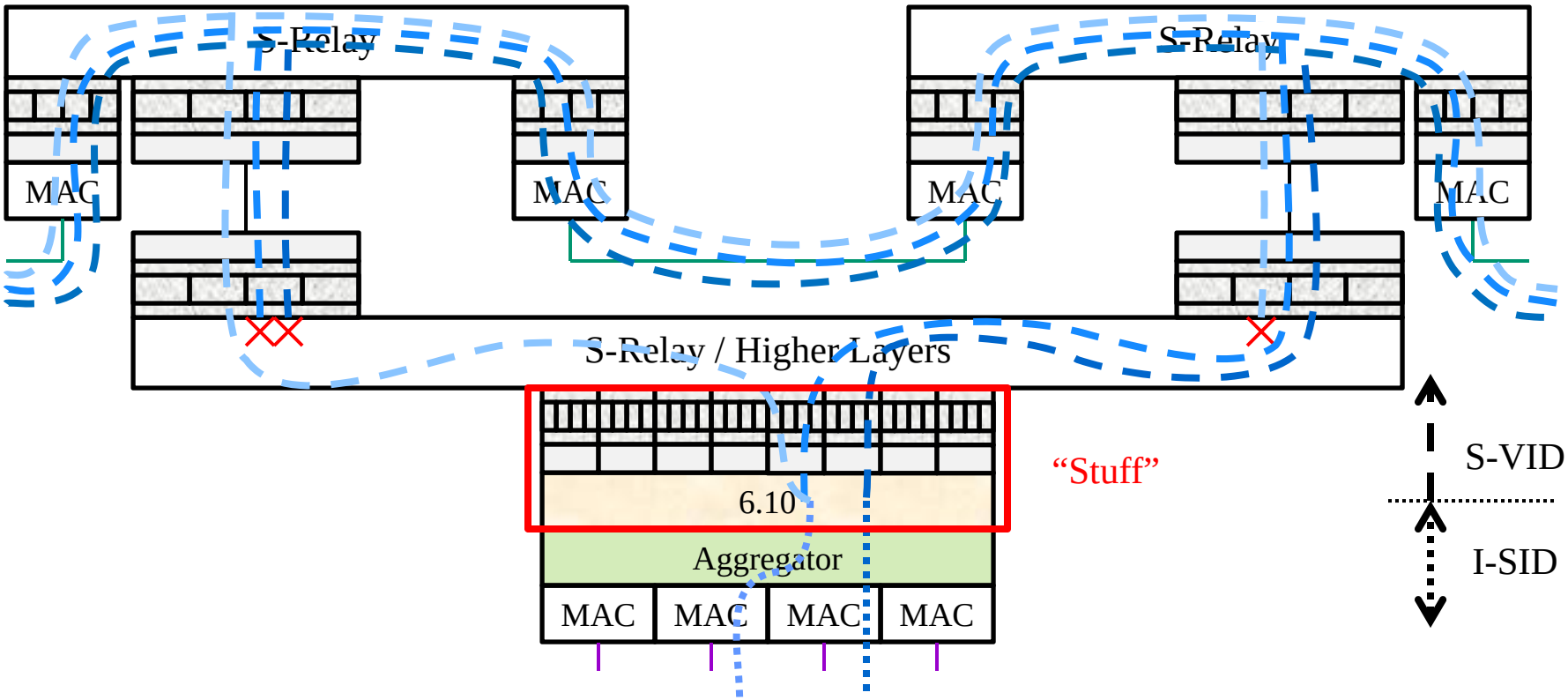


Case 2: Distributed Component Model

Provider Edge Bridge

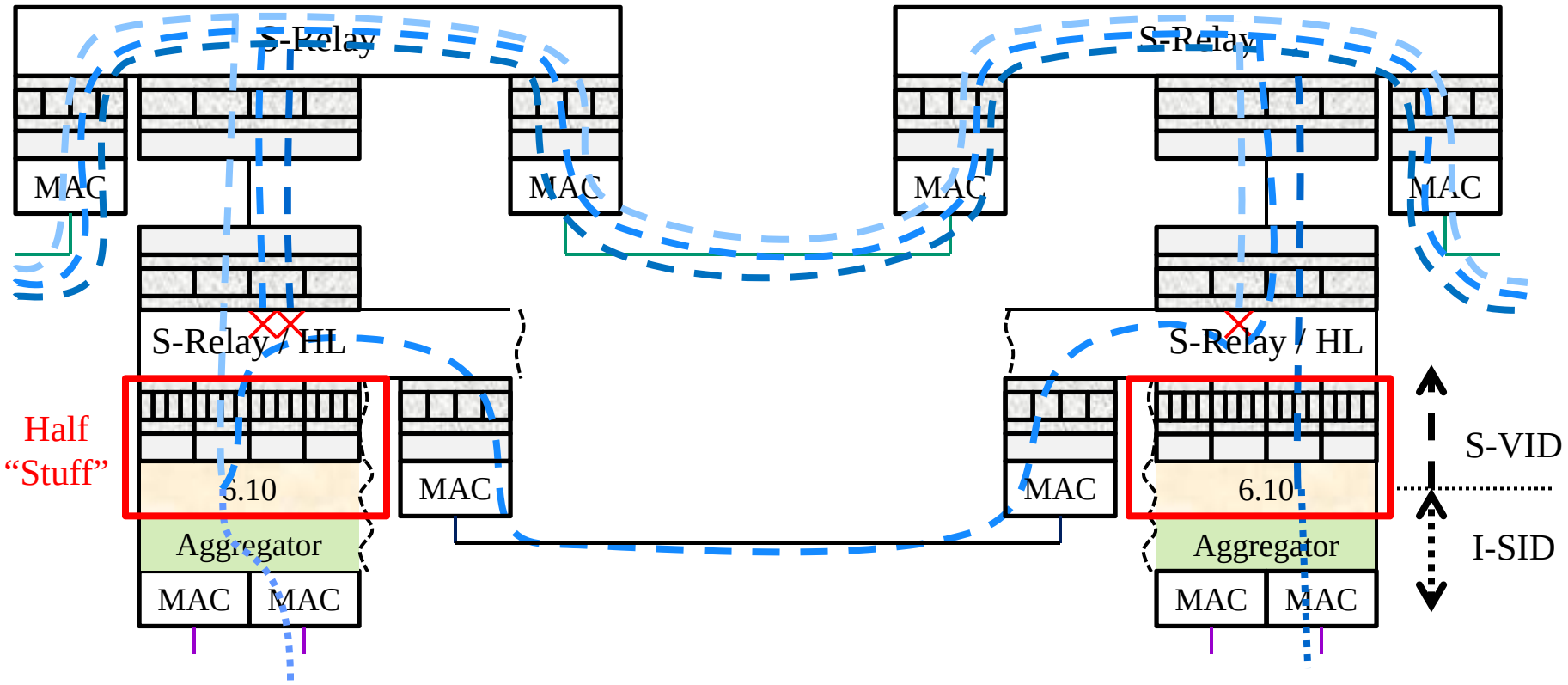


Case 3: Logical Component Model
I-tagged DRNI with I-BEB

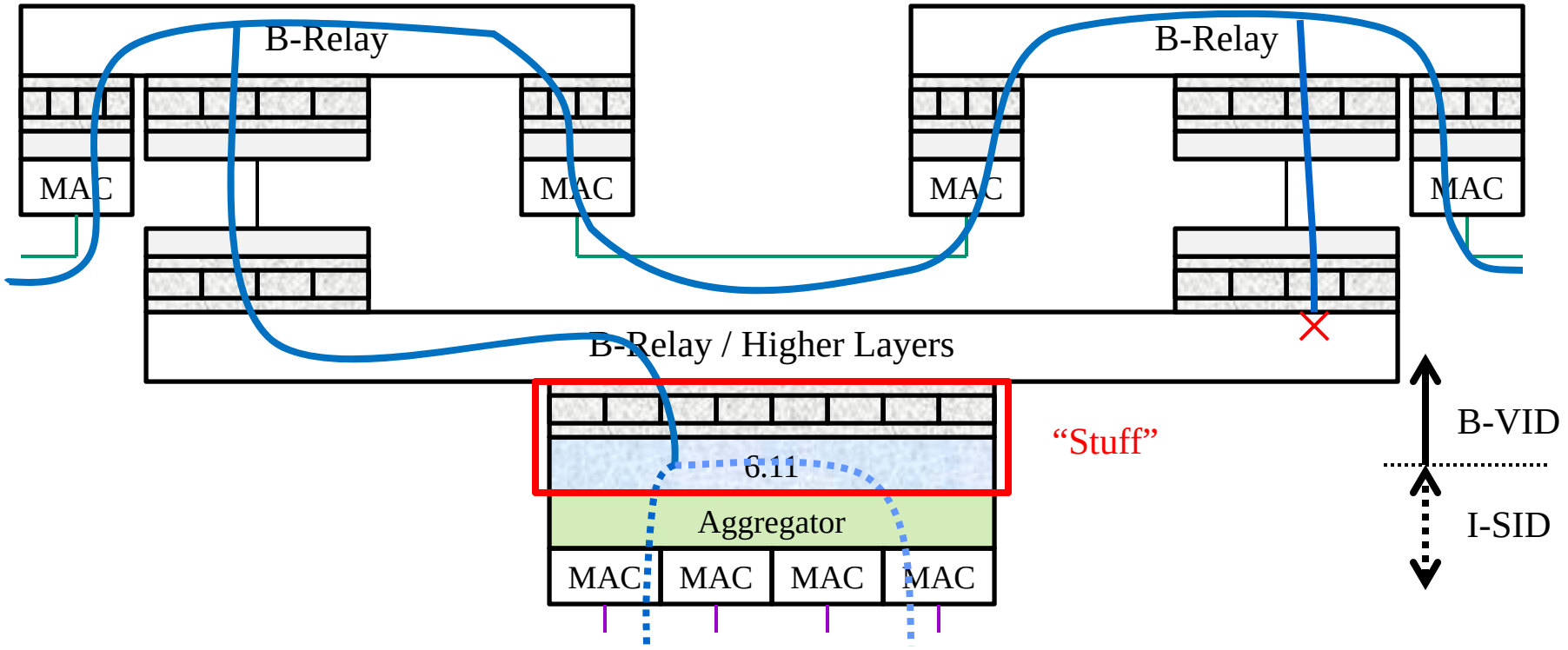


Case 3: Distributed Component Model

I-tagged DRNI with I-BEB

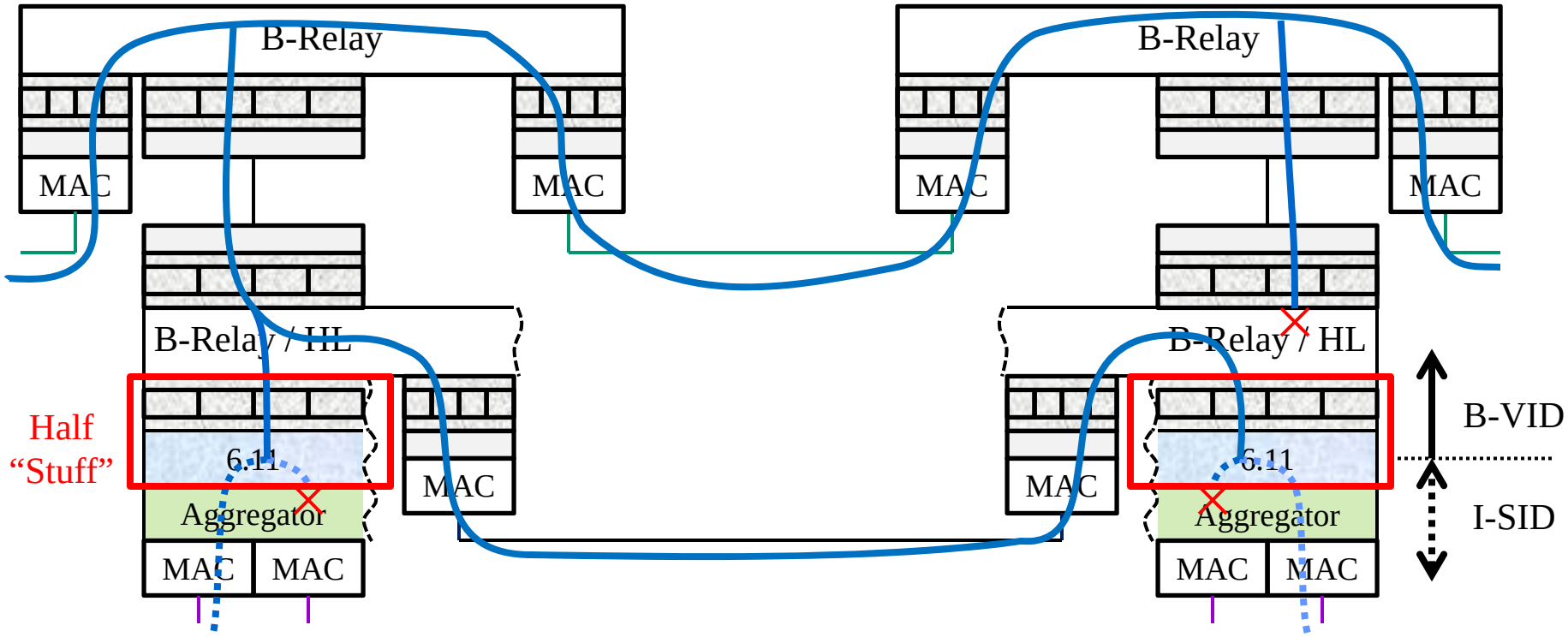


Case 4: Logical Component Model
I-tagged DRNI with B-BEB

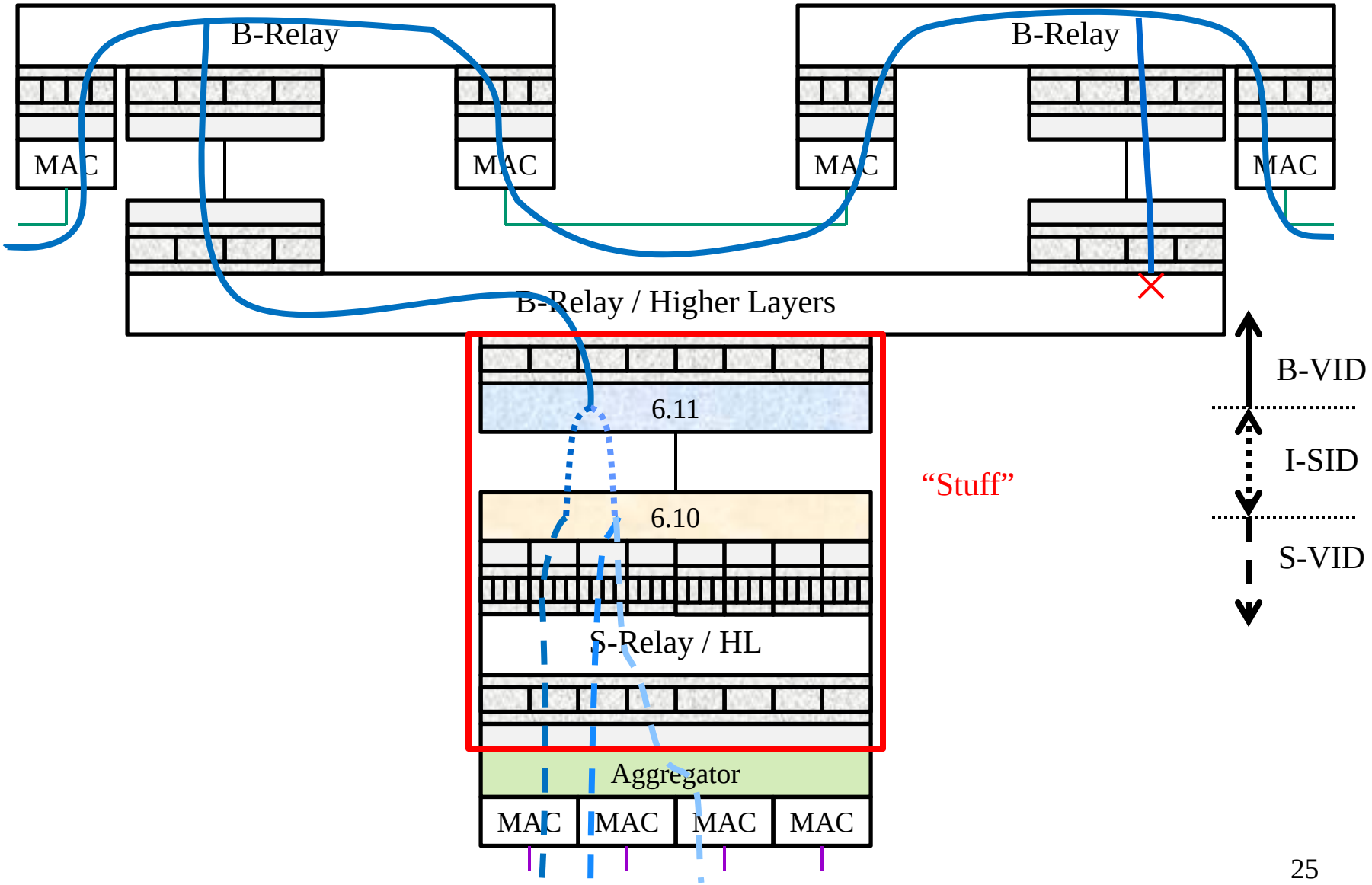


Case 4: Distributed Component Model

I-tagged DRNI with B-BEB

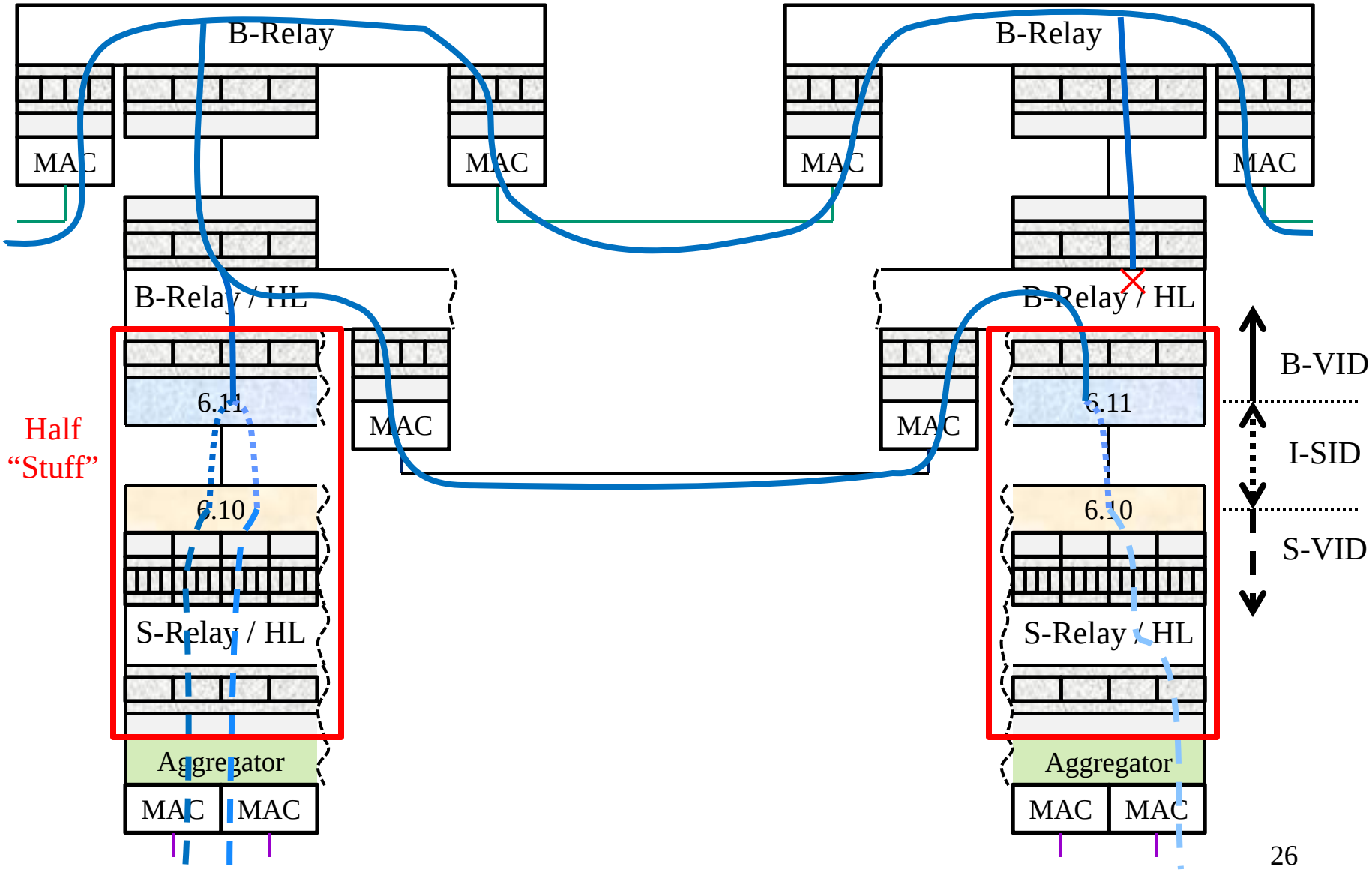


Case 5: Logical Component Model
S-tagged DRNI with IB-BEB



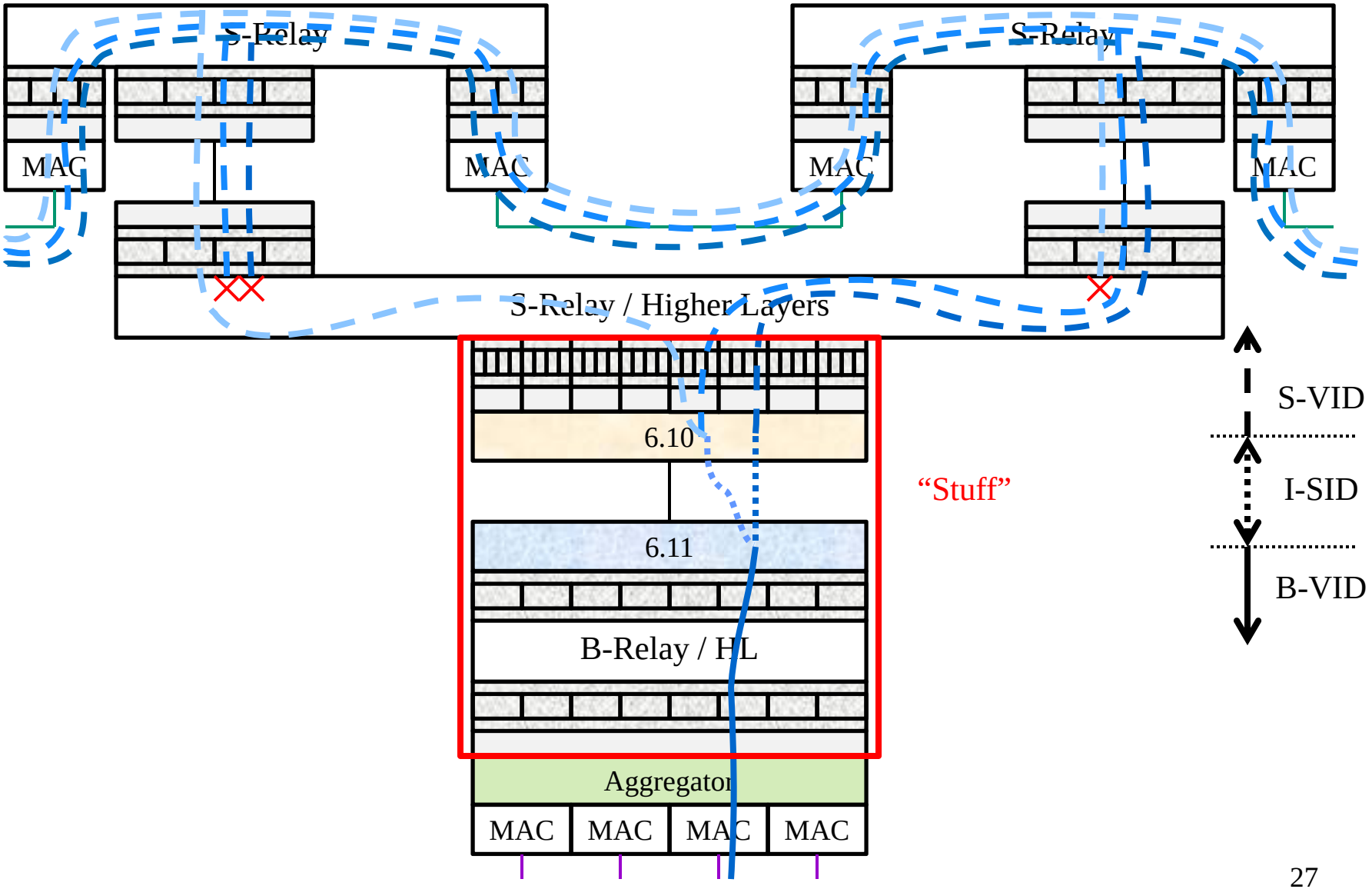
Case 5: Distributed Component Model

S-tagged DRNI with IB-BEB



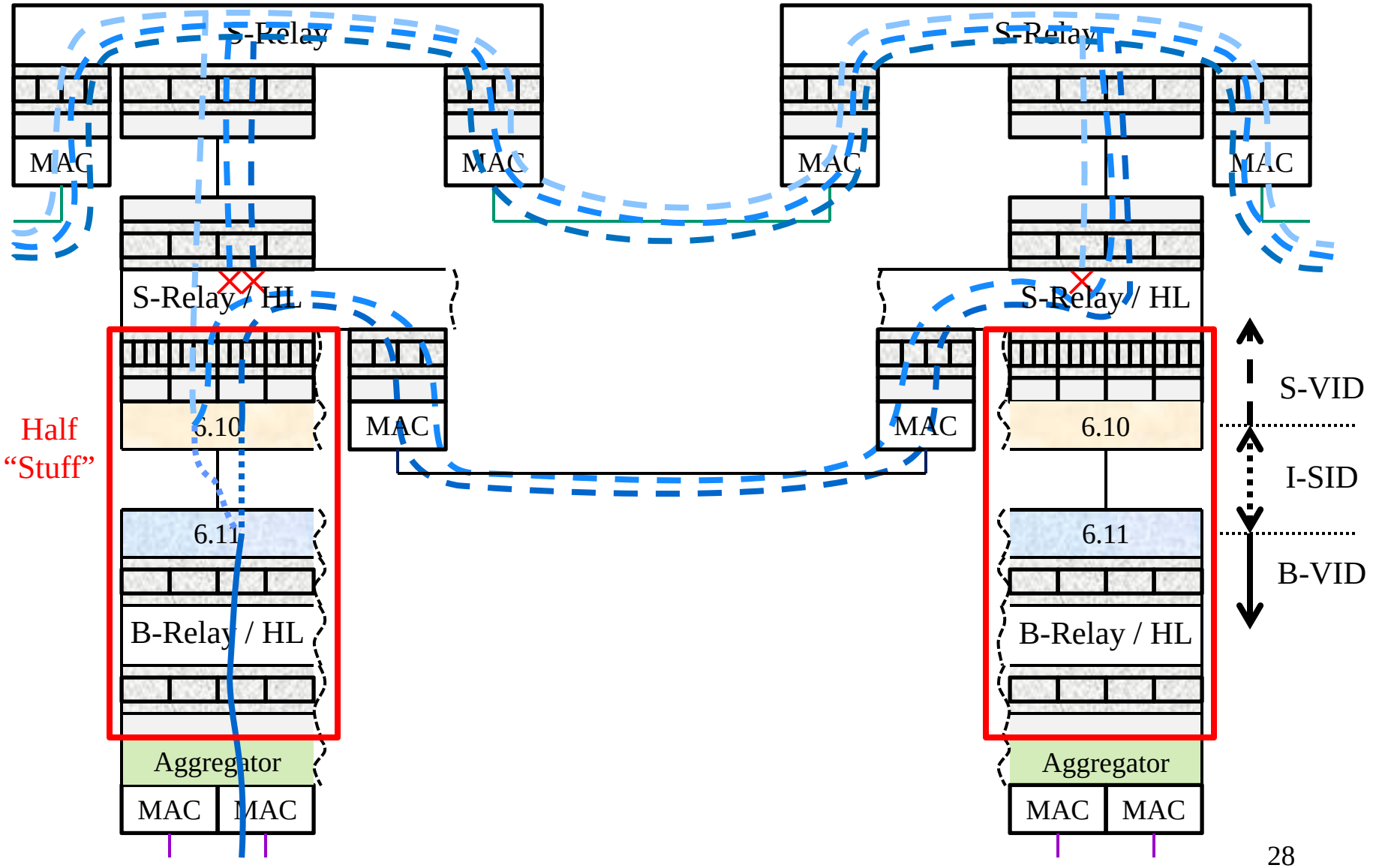
Case 6: Logical Component Model

‘B-tagged’ DRNI with IB-BEB



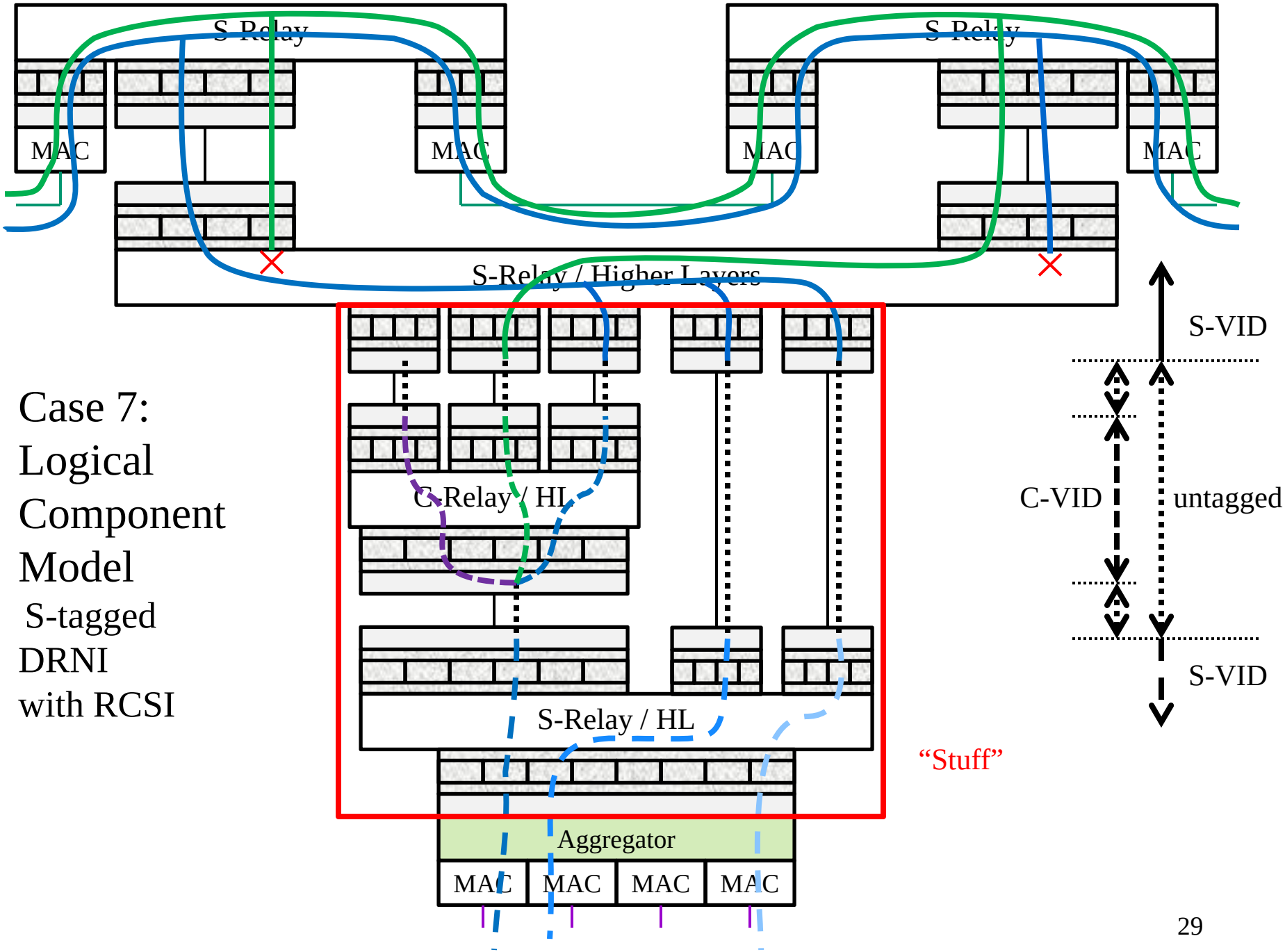
Case 6: Distributed Component Model

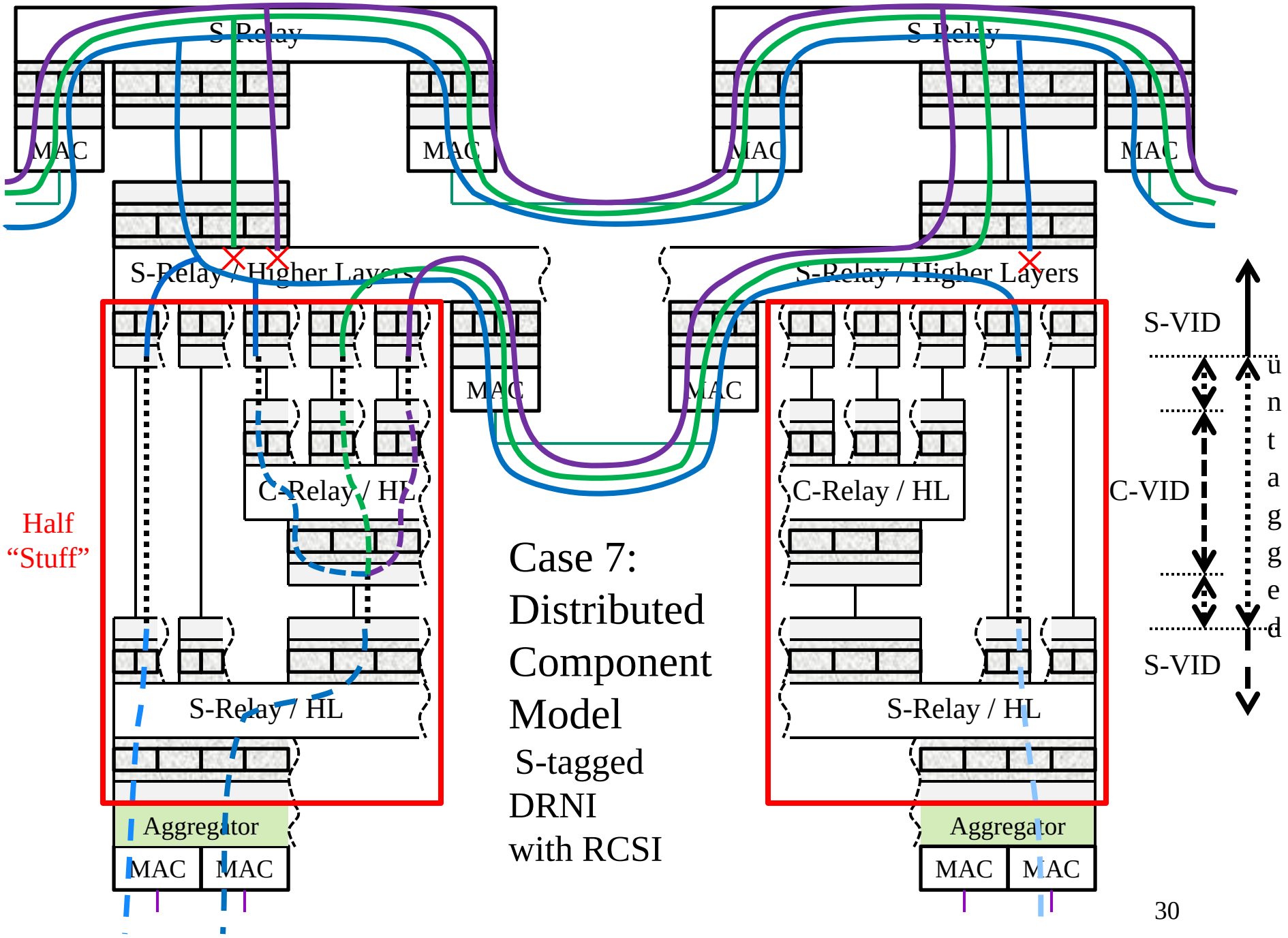
‘B-tagged’ DRNI with IB-BEB



Case 7: Logical Component Model

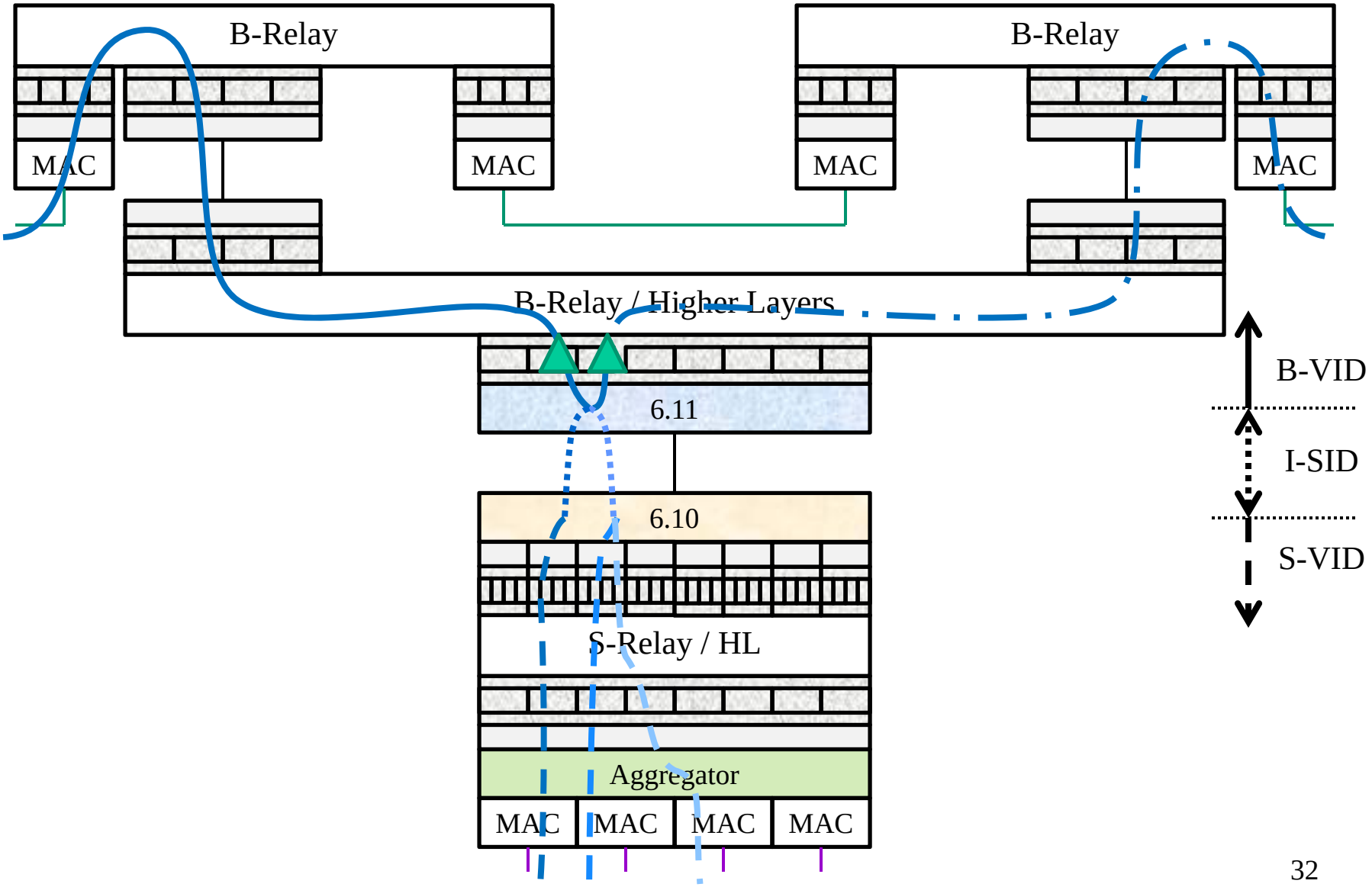
S-tagged DRNI with RCSI




S-Relay
S-Relay
MAC
MAC
MAC
MAC
S-Relay / Higher Layers
S-Relay / Higher Layers
MAC
MAC
C-Relay / HL
C-Relay / HL
Half
"Stuff"
S-Relay / HL
S-Relay / HL
Aggregator
Aggregator
MAC
MAC
MAC
MAC
S-VID
C-VID
S-VID
untagged
Case 7:
Distributed
Component
Model
S-tagged
DRNI
with RCSI

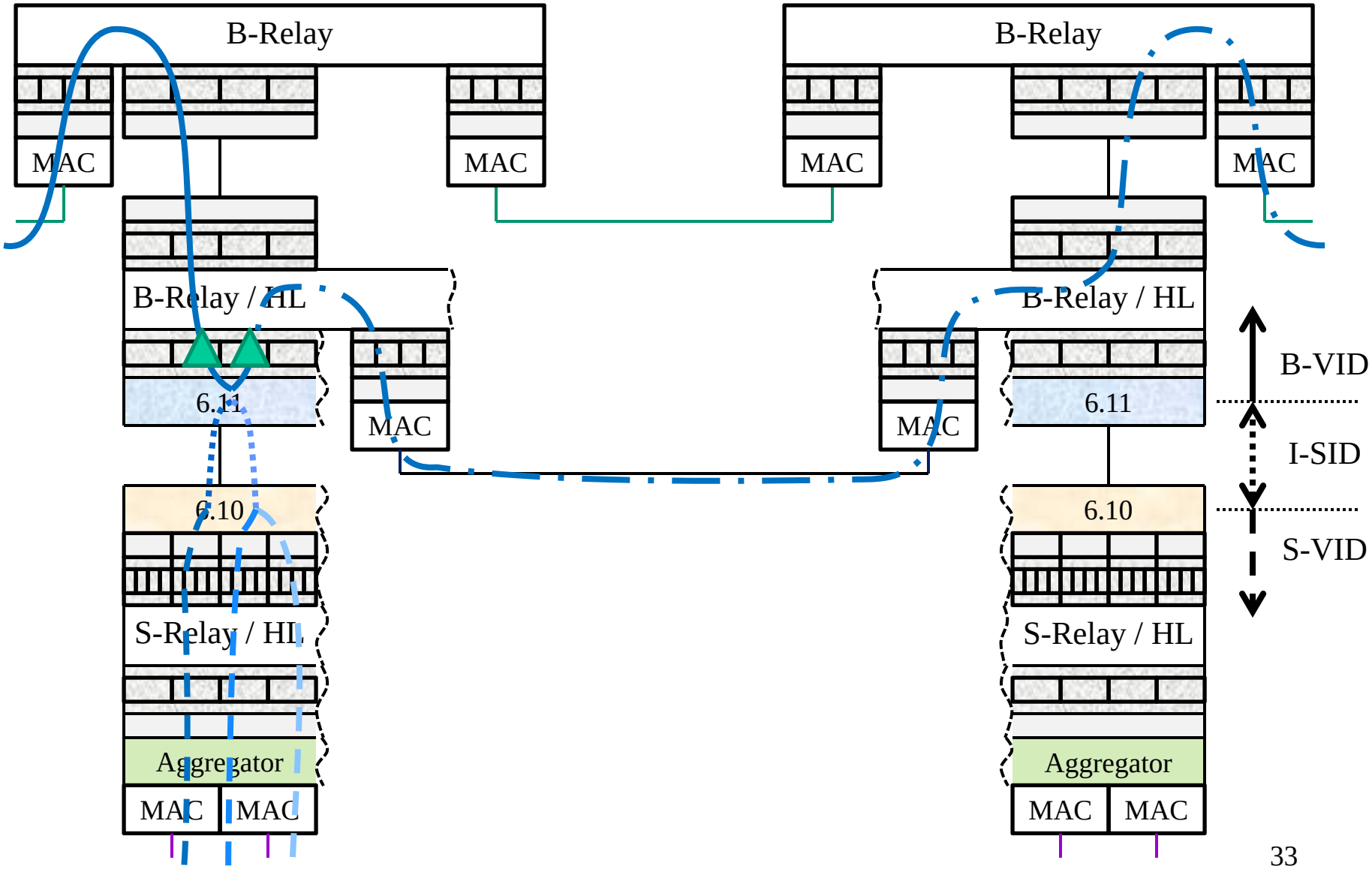
Backup Slides

TESI Protection Switching
Logical Component Model

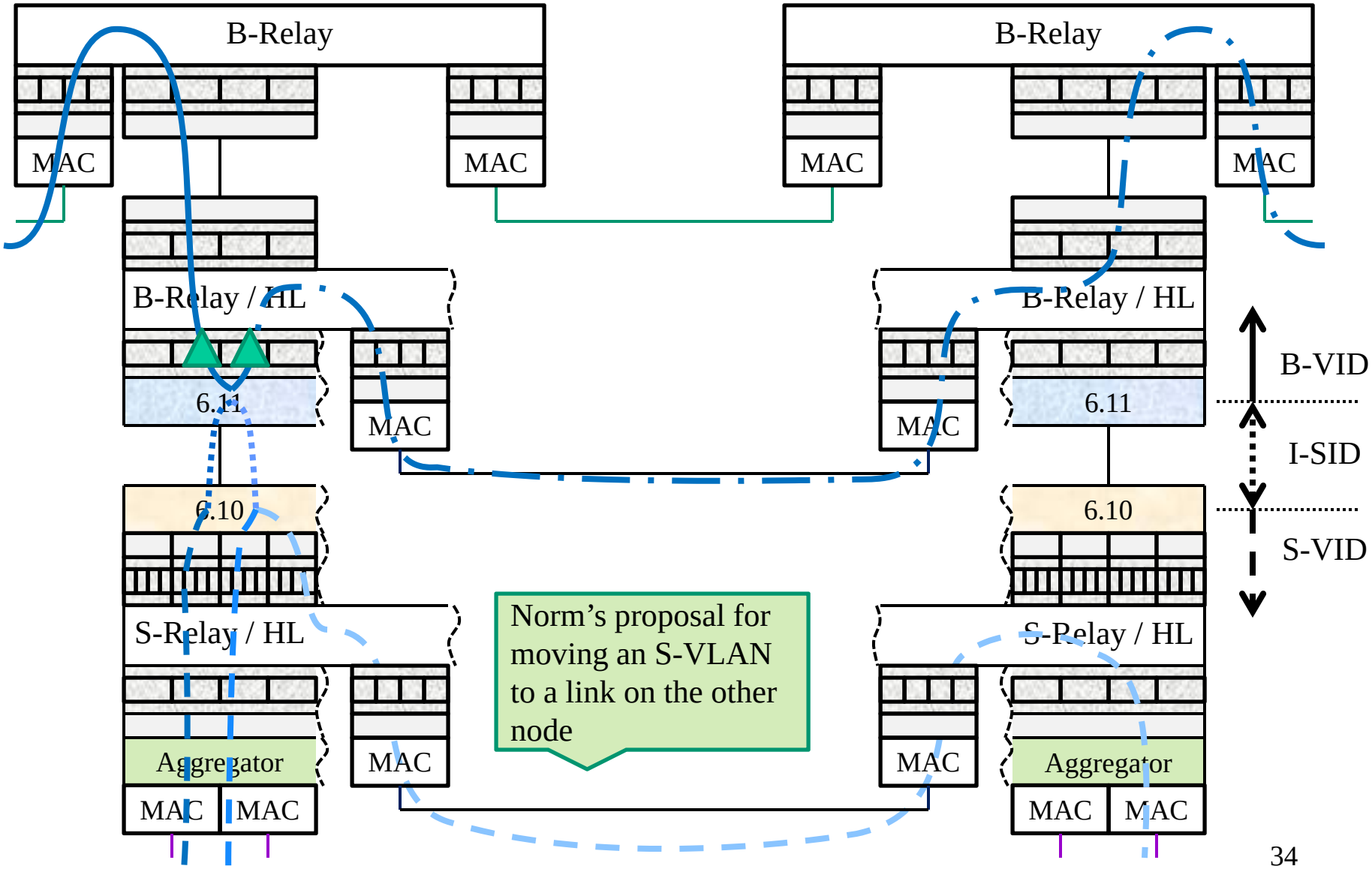


TESI Protection Switching

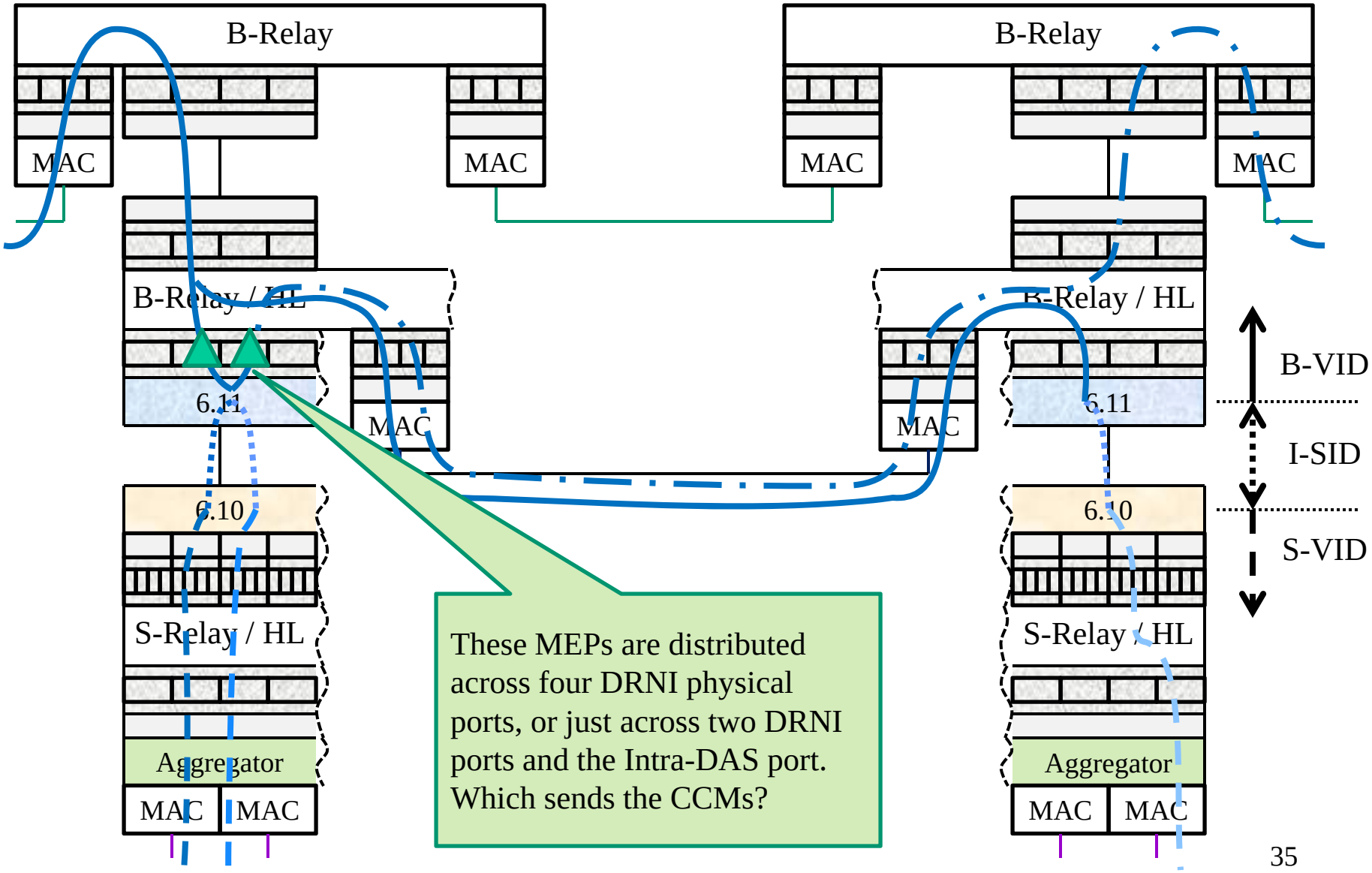
Distributed Component Model



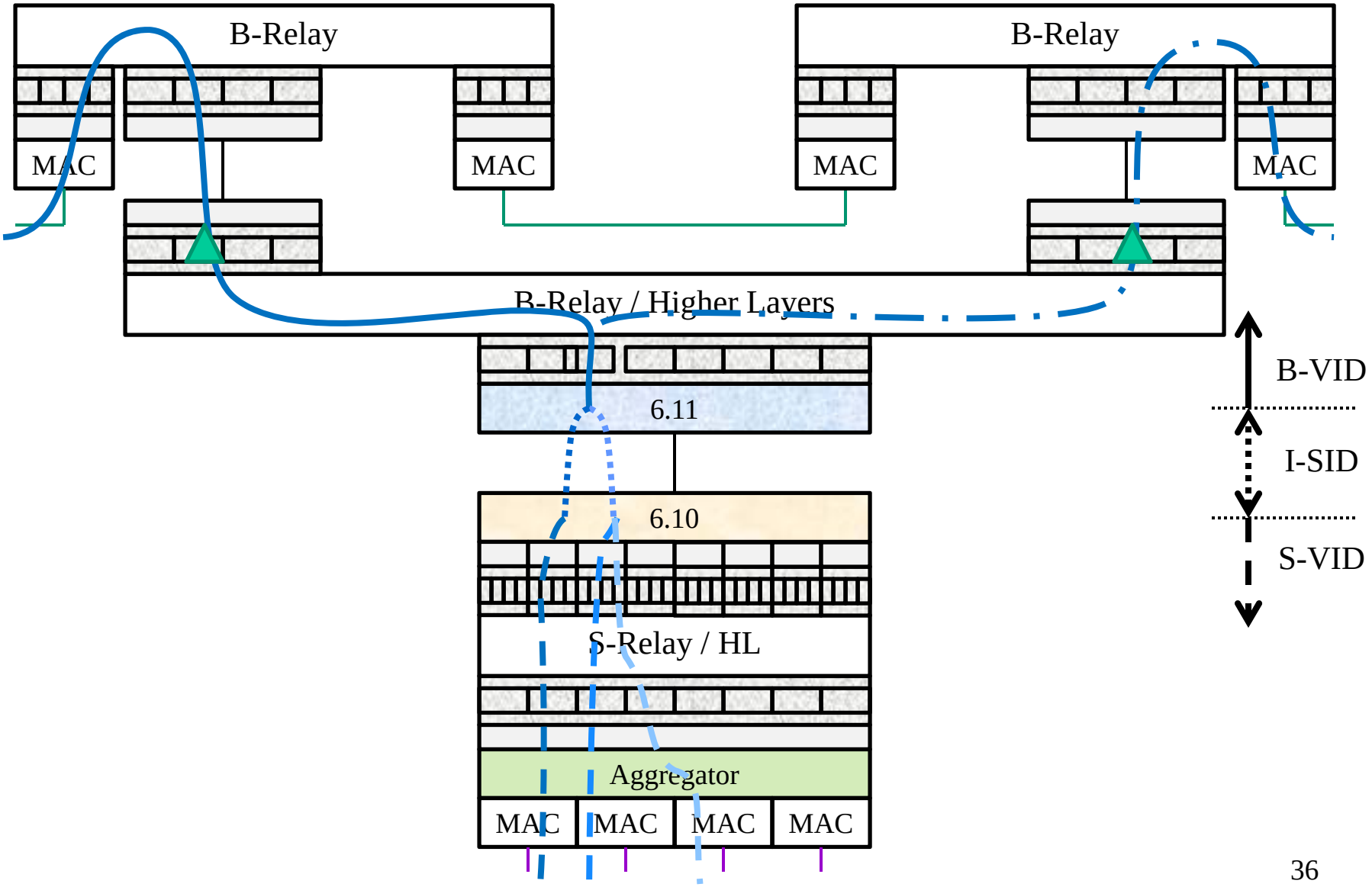
TESI Protection Switching
Distributed Component Model



TESI Protection Switching
Distributed Component Model



Segment Protection Switching
Logical Component Model



Segment Protection Switching
Distributed Component Model