Bridges
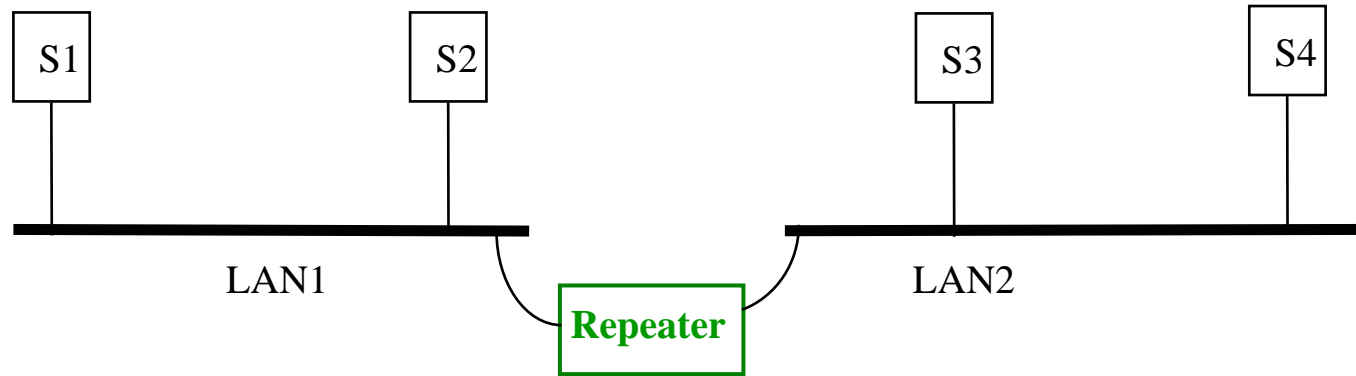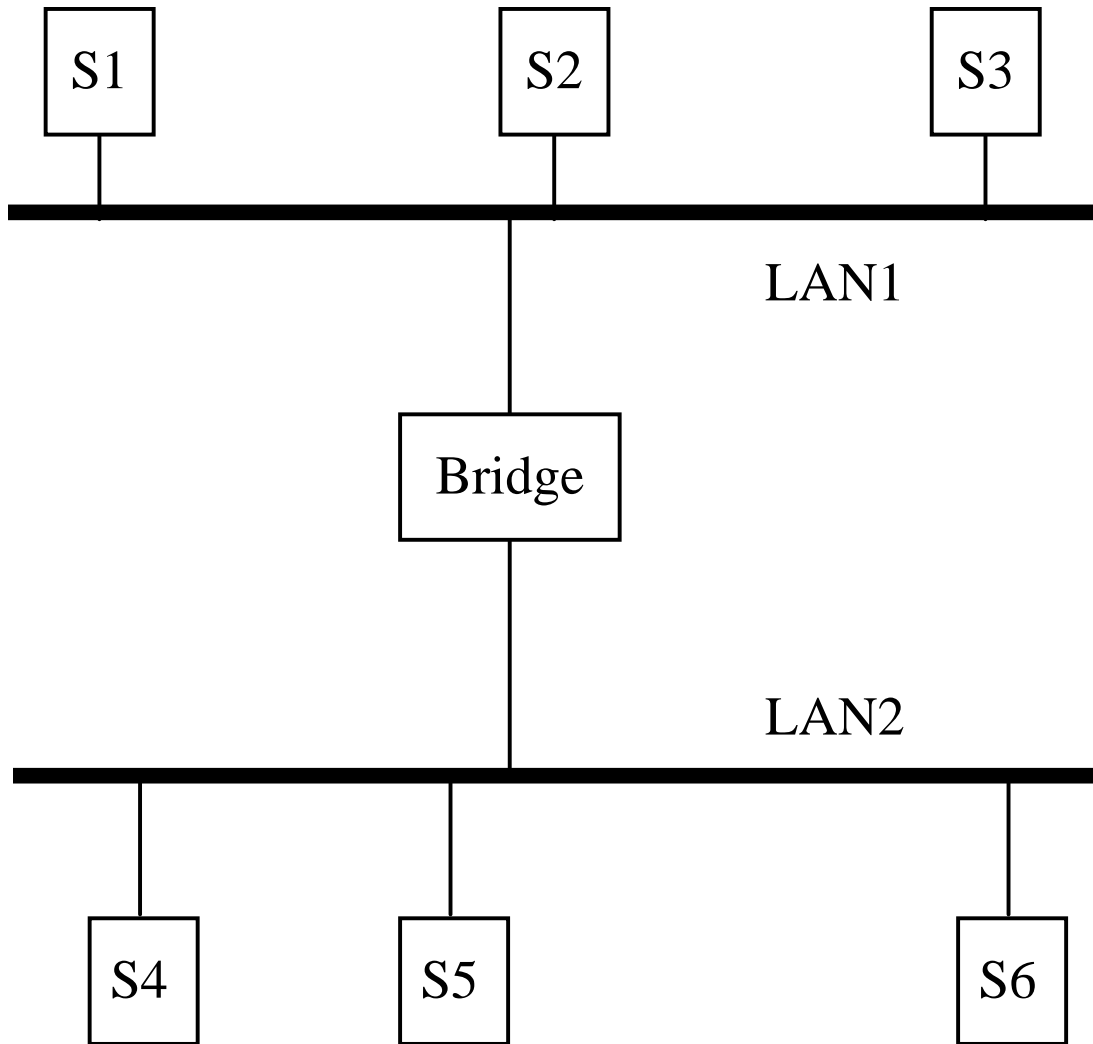
A repeater operates at the physical layer and forwards everything between the two LANs.
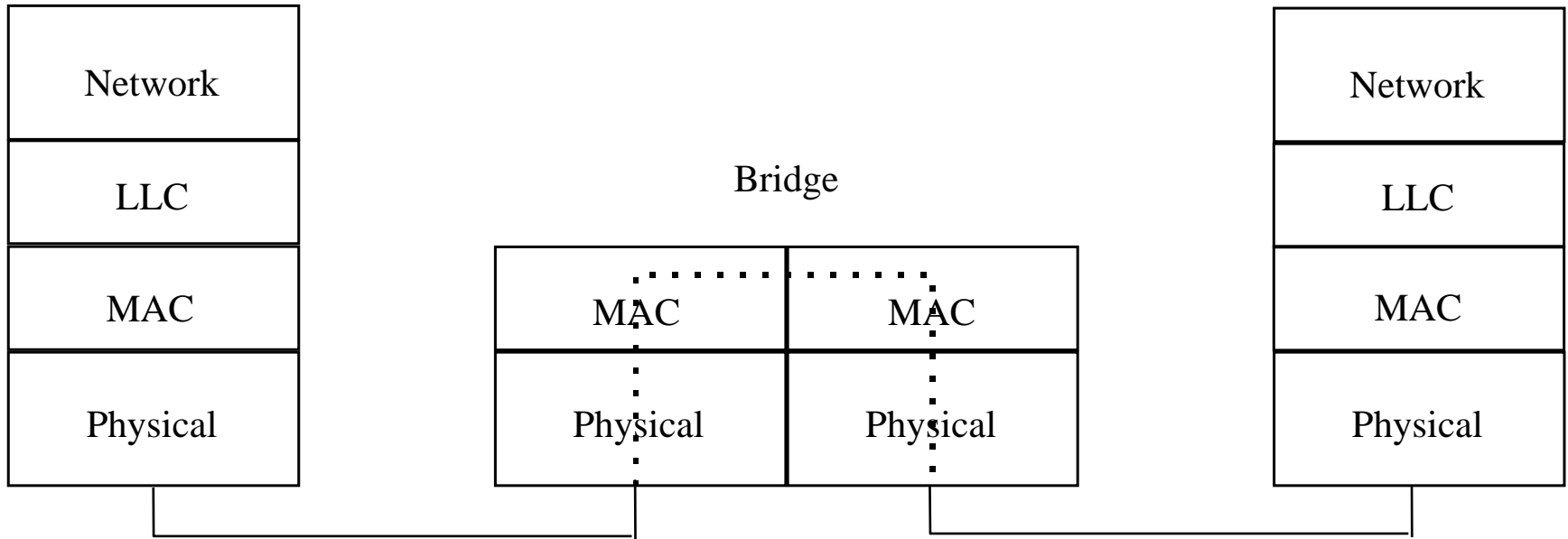
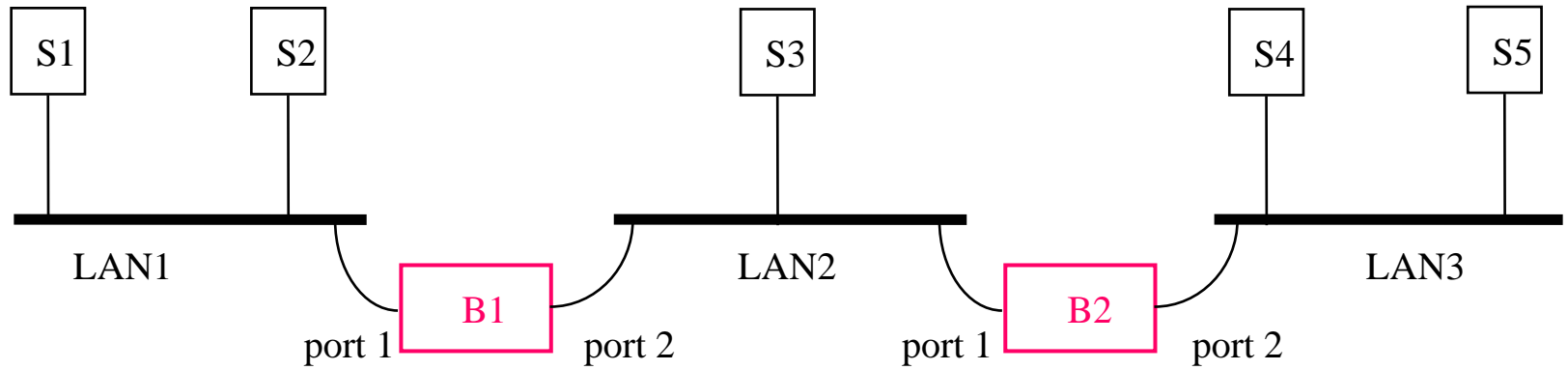LAN1 and LAN2 are in the same collision domain.

Bridges

- Operate at the data link layer.

- Bridges use backward learning in recording source addresses on transmissions.

- Unlike repeaters, bridges will not forward a frame onto another LAN segment if it knows about the location of the destination node.

- *Bridge management gets more complicated when **loops** are possible in the frame route.*

Bridge

Network			**Network**
LLC			**LLC**
MAC			**MAC**
Physical			**Physical**

Bridge

MAC	MAC
Physical	Physical

A bridge is a store and forward device that **separates** collision domains.

Figure 6.80

Computer Networks: Bridges

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Bridges

Figure 6.81

6

Computer Networks: Bridges

Bridges

| S1 | | S2 | | S3 | | S4 | | S5 |

S1 → S5

LAN1   LAN2   LAN3

B1   B2

port 1   port 2   port 1   port 2
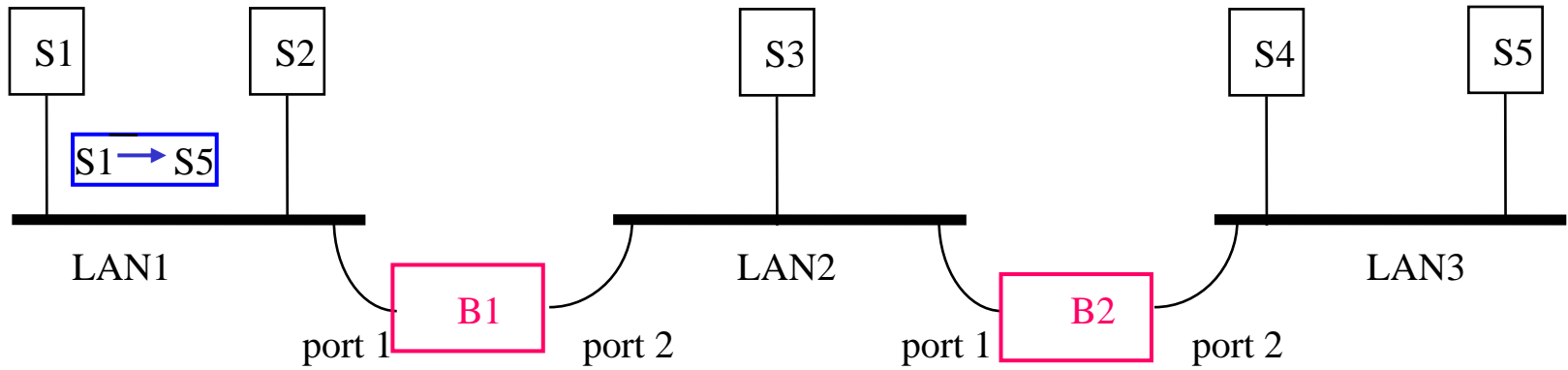
Address	Port
S1	1

Address	Port
S1	1

Leon-Garcia & Widjaja: *Communication Networks*

Figure 6.82

Computer Networks: Bridges

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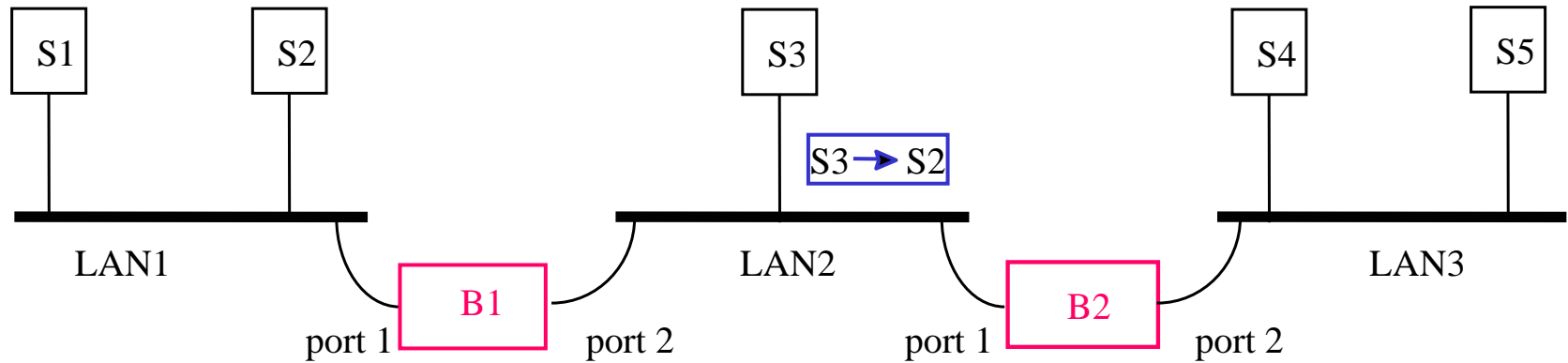
Bridges

MANs with Bridge Loops
Bridges
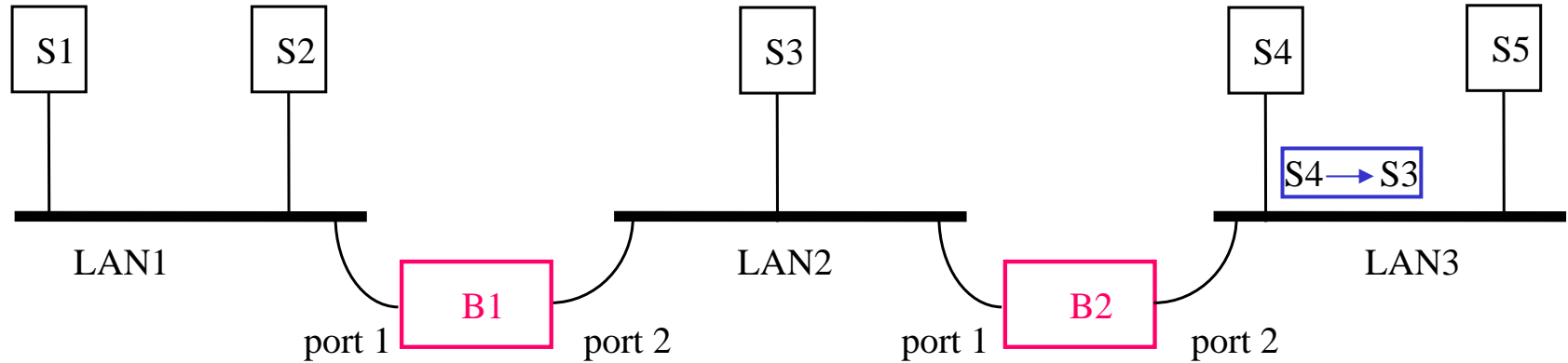
Bridge 1 does not forward the frame to LAN1

Address	Port
S1	1
S3	2
S4	2

Address	Port
S1	1
S3	1
S4	2

Leon-Garcia & Widjaja: *Communication Networks*   Figure 6.84

Computer Networks: Bridges

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Bridges

S1　　S2　　　　　　S3　　　　S4　S5

S2 → S1

LAN1　　　　　LAN2　　　　LAN3

B1　　　　　　B2

port 1　　port 2　　port 1　　port 2
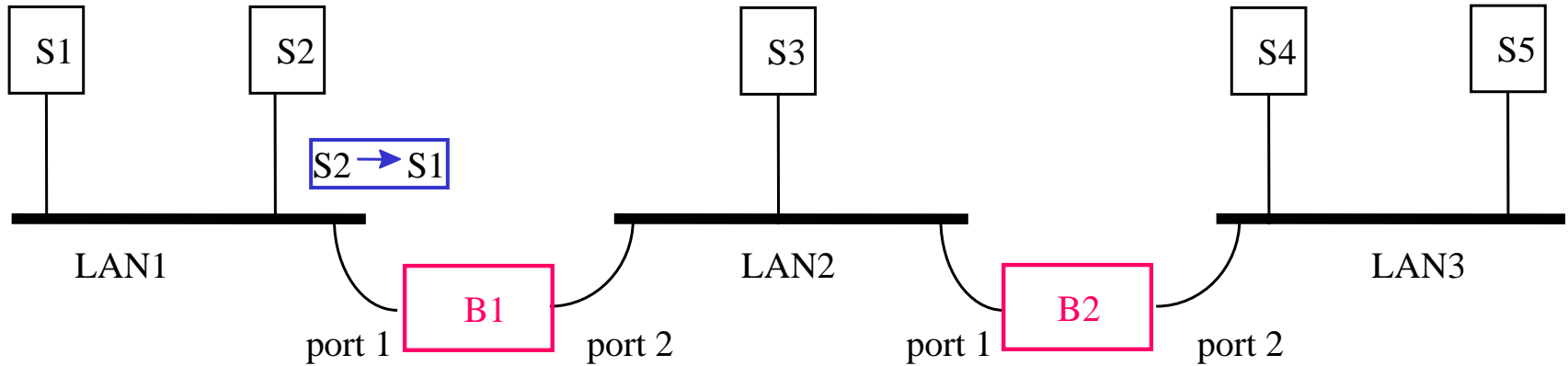
Bridge 1 does not
forward the
frame to LAN2

Address	Port
S1	1
S3	2
S4	2
S2	1

Address	Port
S1	1
S3	1
S4	2

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Figure 6.85

Computer Networks: Bridges

MANs with Bridge Loops

LAN1

(1)   (1)

B1   B2

(2)   (2)

(1)

B3   (3)

LAN2

(1)   (2)

B4

(2)

LAN3

(1)

B5

(2)

LAN4

Leon-Garcia & Widjaja: *Communication Networks*

Computer Networks: Bridges

Figure 6.86

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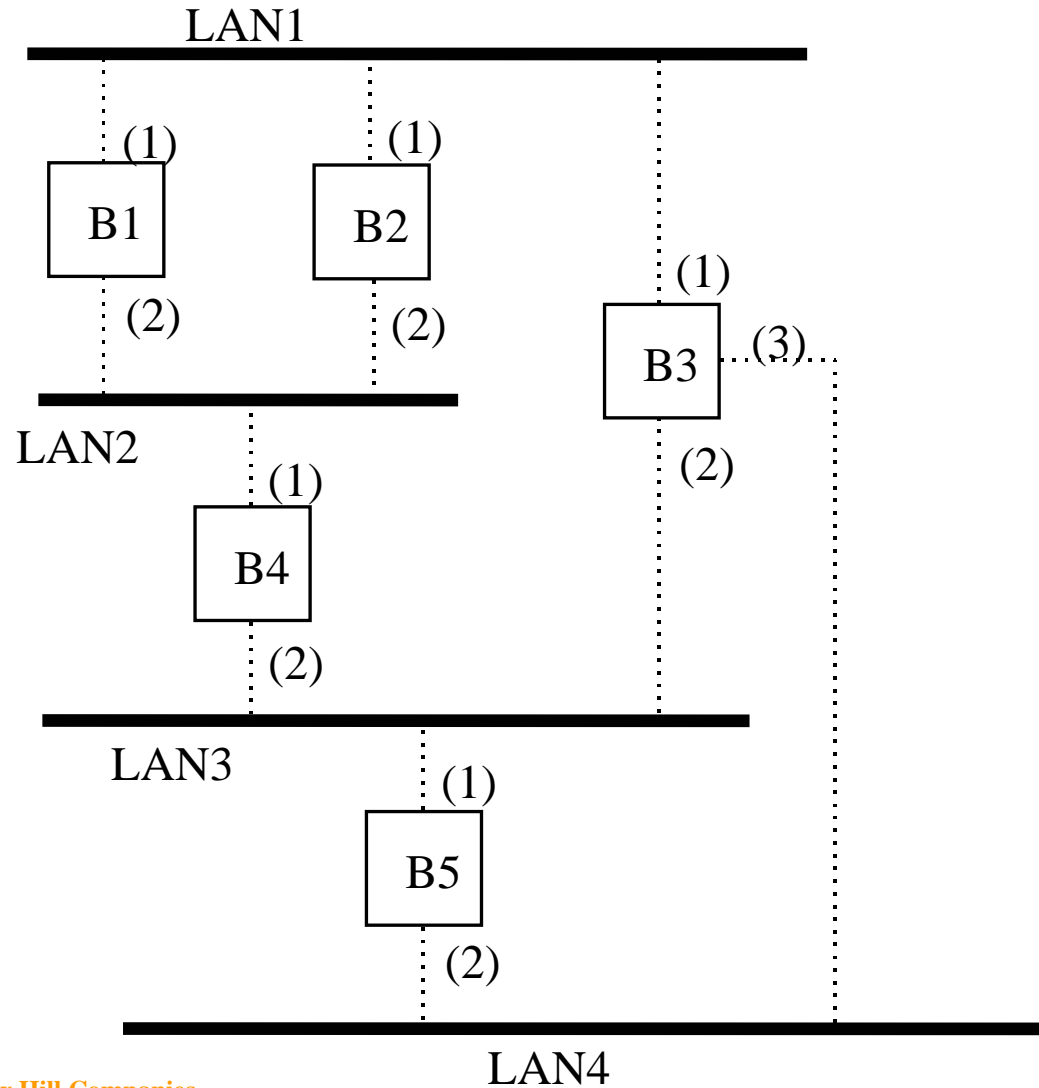
MANs with Bridge Loops
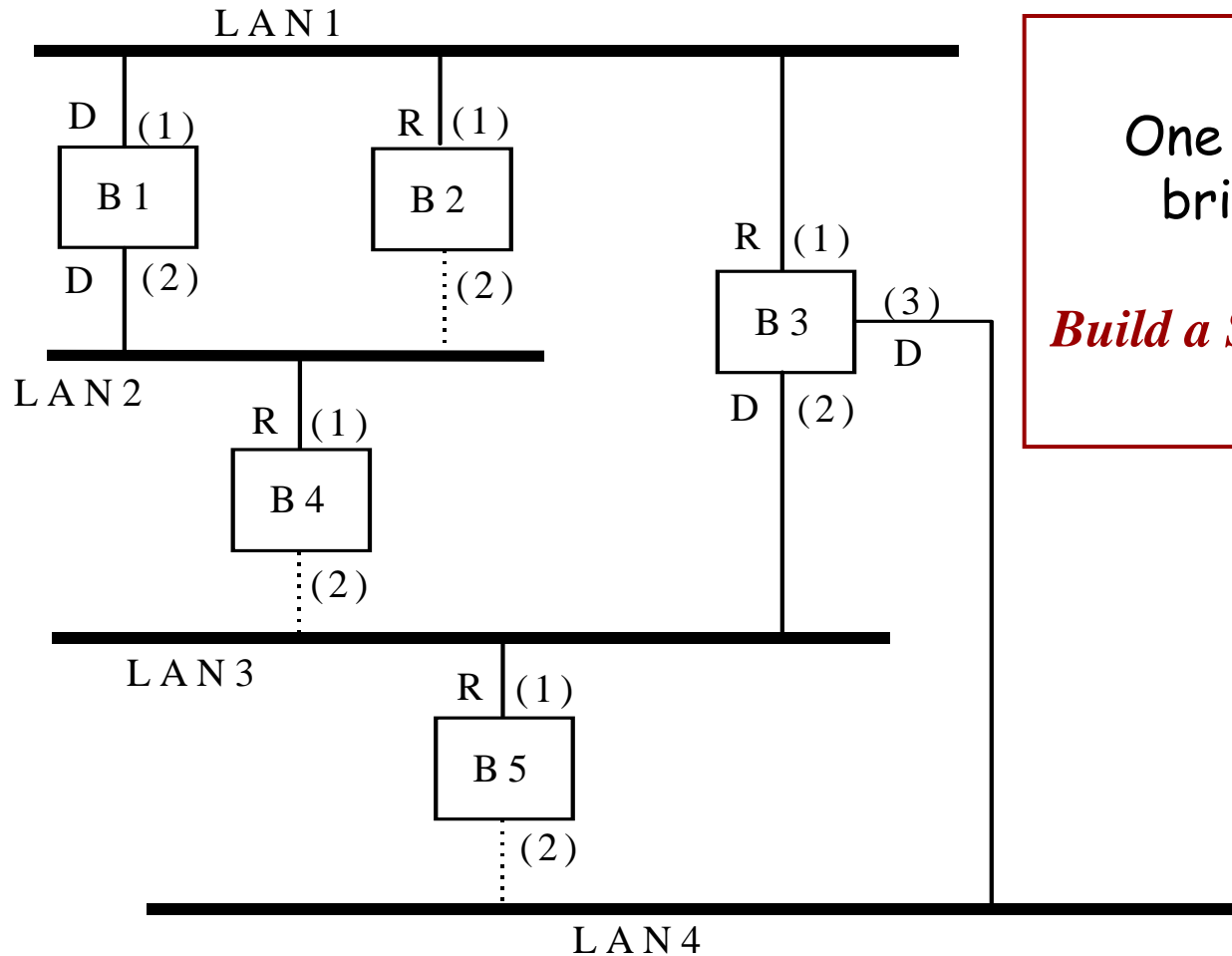
One solution to bridge loops

Build a Spanning Tree!