Bridges
Bridges Outline

- Repeaters
- Bridges
  - Backward learning
- Bridge Loops
  - Spanning trees (transparent bridges)
  - Source-routing bridges (e.g., token rings)
A **repeater** operates at the physical layer and forwards everything between the two LANs.

LAN1 and LAN2 are in the same **collision domain**.
Bridges

S1 - S2 - S3

LAN1

S4 - Bridge - S5

LAN2

S6
Bridges

- Operate at the data link layer.
- **Bridges** use **backward learning** in recording source address 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.
A bridge is a store and forward device that **separates** collision domains.
Bridges

Leon-Garcia & Widjaja: Communication Networks
Bridges

- LAN1
  - S1
  - S2
  - B1
    - port 1
    - Address: S1
    - Port: 1
  - LAN2
    - S3
    - B2
      - port 1
      - Address: S1
      - Port: 1
    - port 2
    - S4
    - S5

- LAN3
  - port 2

Leon-Garcia & Widjaja: Communication Networks
Bridges

LAN1

S1

LAN2

B1

port 1

S1

1

B2

port 1

S1

1

S3

2

LAN3

S4

S5

S3 → S2

Leon-Garcia & Widjaja: Communication Networks
Bridge 1 does not forward the frame to LAN1.
Bridge 1 does not forward the frame to LAN2

<table>
<thead>
<tr>
<th>Address</th>
<th>Port</th>
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</thead>
<tbody>
<tr>
<td>S1</td>
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</tr>
<tr>
<td>S3</td>
<td>2</td>
</tr>
<tr>
<td>S4</td>
<td>2</td>
</tr>
<tr>
<td>S2</td>
<td>1</td>
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MAN with Bridge Loops
One solution to bridge loops

Build a Spanning Tree!
Bridges Summary

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