
University of Colorado Boulder

Fundamentals of Data Communications

Midterm Review

Levi Perigo, Ph.D.
University of Colorado Boulder
Department of Computer Science
Network Engineering

Review

- **Lab**

- **Routing Static/Dynamic**

Midterm Exam

Midterm Exam Format

- **Canvas**
  - BRING YOUR LAPTOP!
  - Make sure it is charged
- **45 Questions**
- **75 Minutes**
- **Multiple Choice**
  - Select the BEST answer
  - 2 points
- **Short Answer, Long Answer, and Essay**
  - Single Answer (3 points)
  - Long/Multiple Answer (5 points)
  - Essay (10 points)
  - Short and to the point
    - ***Does not need to be in sentence format***
    - ***If question asks for "two answers" provide 2 and only 2***

Material

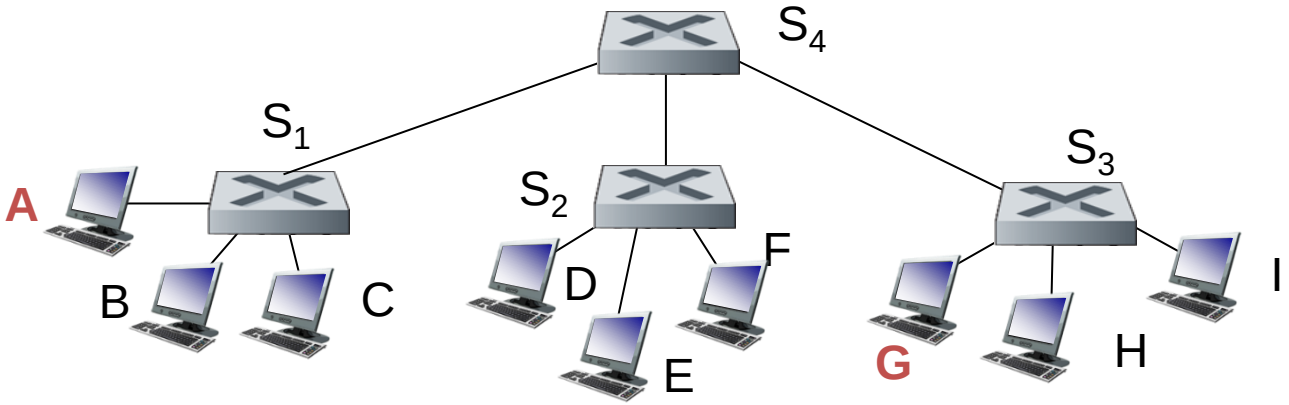
- **Assignments**
- **Quizzes**
- **Readings**
- **Labs**

Topics

- **OSI Model**
- **Internet speed tests**
- **OS shell/terminal**
- **Network Topologies and Media**
- **Ethernet Cabling**
- **TCP & UDP**
- **Switching**
  - STP
  - VLANs
  - Trunking
- **IPv4 Addressing**
  - Public vs. Private
  - Subnetting
  - Address resolution
    - ***DHCP & ARP***
- **IPv6**
- **Routing**
  - Static vs Dynamic
    - ***Static routes***
    - ***Routing protocols***
    - ***Administrative distance***
- **Basic technology troubleshooting**

Interconnecting Switches

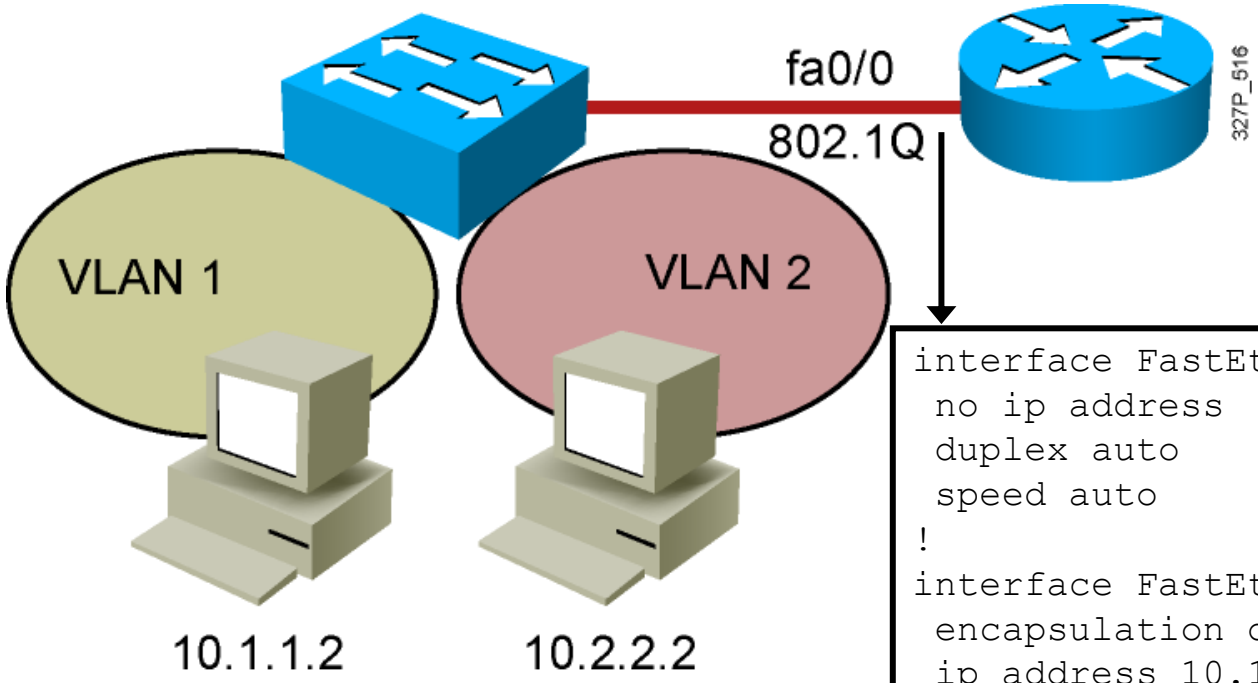
Self-learning switches can be connected together:



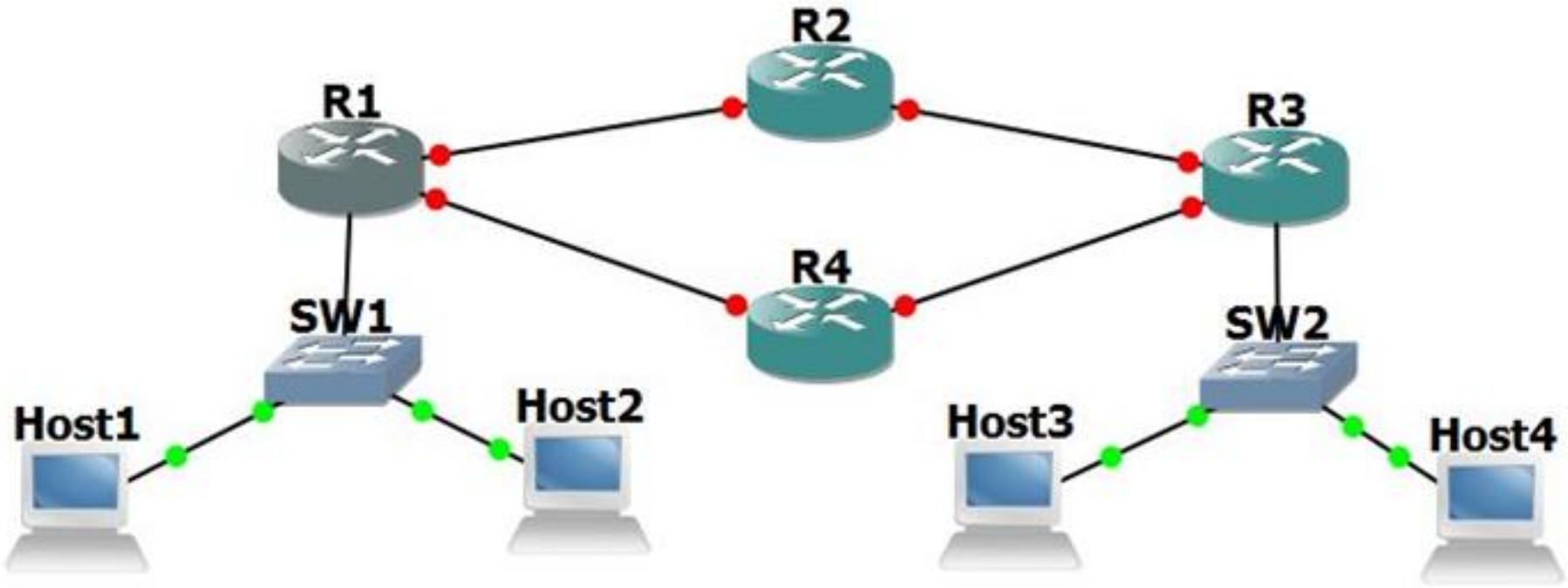
Q: Sending from A to G - how does S_1 know to forward frame destined to G via S_4 and S_3?

- *A:* Self learning! (works exactly the same as in single-switch case!)

Routing Between VLANs with 802.1Q Trunks




```
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
!
interface FastEthernet0/0.1
 encapsulation dot1Q 1 native
 ip address 10.1.1.1 255.255.255.0
!
interface FastEthernet0/0.2
 encapsulation dot1Q 2
 ip address 10.2.2.1 255.255.255.0
```


R2
R1
R3
R4
SW1
SW2
Host1
Host2
Host3
Host4

Questions?