

FLIPPED CLASSROOM FLIPPED CLASSROOM

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WHY?

- *Intuitive assumptions*
- *Context of learning*
- *But also...*



HOW?

- *Before class*
 - *Online lectures*
 - *Readings*
 - *Quizzes*
- *During Class*
 - *Review, Q&A*
 - *Simulations*
- *After Class*
 - *Assignments*
 - *Discussion Board*

Module 9

ACCESS CONTROL LISTS



This module is dedicated entirely to Access Control Lists, a feature available on most most routers and layer 3 switches. Access Control Lists define a number of rules that apply to specified network traffic based on information such as port numbers, transport protocols or layer 3 protocols and addresses. Although access control lists are often used to implement some kind of security by restricting traffic between network segments, their primary objective is the selection and classification of traffic to serve many different purposes including quality of service, traffic redirection and Network Address Translation.

Learning Objectives for this Module

At the end of this module, you should be able to:

- Describe the sequence involved in the processes involving access lists,
- List the various uses of access-lists,
- Explain the concept of wildcard mask,
- Configure and apply basic access-lists to restrict traffic between networks.

To Complete this Module

Before Class

- Watch the [video recording](#) on Access Control Lists
- Read about Security in Lammle, 2011, [chapter 12](#)
- Consult the [Cisco IP Access List tutorial](#) (optional)
- Take the [quiz](#) for module 9.
- Post your comments questions on the [discussion board](#).

During Class

- Review of content (Q&A)
- Lab activity (Configuring Access Control Lists)

After Class

Complete the [assignment](#) for Module 9. The deadline for submission is Wednesday March 13, 6:00 pm

- Review the [class lecture recording](#) (optional)
- Review the [class demo on ACL configuration](#) (optional)

Next Module

In the next module, we will talk about Network Design for Local Area Networks and you will start working on the final assignment of this course. This assignment will consist in the overall design and configuration of a local area network. It will include the various concepts and techniques studied since the beginning of the course.

THE COURSE INTERFACE

- *Learning objectives*
- *Before Class*
- *During Class*
- *After Class*
- *Next Module*

VIDEO RECORDINGS

Example

Transmission Control Protocol

Source port: http (80) (relative sequence number)

Destination port: http (8080) (relative ack number)

Sequence number: 1231 (relative sequence number)

Acknowledgement number: 295 (relative ack number)

Header length: 20 bytes

Flags: 0x18 (PSH, ACK)

- 0... .. = congestion window reduced (cwnd): not set
- 0... .. = ECH-Echo: not set
- ...0... .. = urgent: not set
- ...1... .. = acknowledgment: set
- ...0... .. = push: not set
- ...0... .. = reset: not set
- ...0... .. = syn: not set
- ...0... .. = window scale: not set
- ...0... .. = timestamp: not set

Window size: 65535 (correct)

Checksum: 0x1234 (correct)

[Good checksum: true]

[Bad checksum: false]

TCP segment data (1216 bytes)

Last byte received + 1

Selection of traffic

Module 9

- Introduction
- Traffic Selection
- Wildcard Mask
- Permission/Denial
- ACL Examples
- ACL Location

Selection of traffic

Access List (0-99) IP

Protocol

Address deny permit

Access List (100-199) IP

200-299 IP

IPx permit/denied

IP addr. permit

IPx permit

Application

Application Lists

Router A

Router B

IN THE CLASSROOM

- *Refrain from lecturing*
- *Focus on group activities*
- *Participation*



<http://commons.wikimedia.org>

ONLINE LEARNING

■ Use the capabilities of the LMS

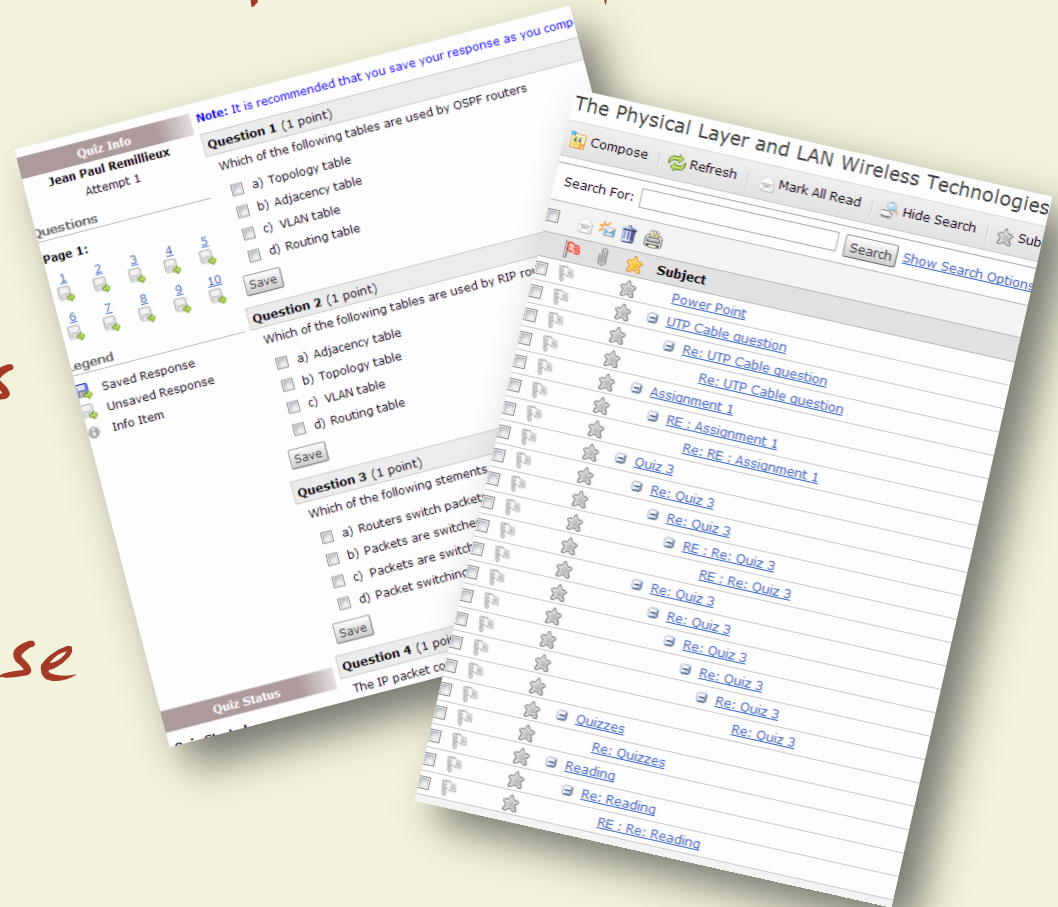
■ Quizzes

■ Assignments

■ Discussion boards

■ Announcements

■ Conditional release



GETTING STUDENTS READY

- *Set your expectations and rules from the start*
 - *Explain what you do and why*
 - *Get them to participate*
 - *Attendance*
 - *Watch for signs of drop out*

SOME LESSONS LEARNED

- *Be consistent*
- *But be flexible*
- *Plan your schedule well*
- *Keep track of what you learned*

THE REWARDS

- *The class is more fun*
- *It forces you to rethink the course design*
 - *Context*
 - *Content*
 - *Learning outcomes*
 - *Assessment*
 - *Strategies*
- *It improves course quality*
- *It'll be easier next time*

QUESTIONS ?

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Thank you