Electrical Engineering & Computer Science University of Kansas

EECS 800

Internet Routing Architectures Tuesday and Thursday, 3:30 PM to 5:00 PM 3015 Learned Hall

Dr. Joseph B. Evans 204 Nichols Hall, 785-864-4830, evans@ittc.ukans.edu Office Hours: Tuesday and Thursday, 1:30 - 2:30 PM, Nichols Hall, otherwise by appointment

Topics

- Evolution of the Internet Architecture
 - NAPs, Autonomous Systems, etc.
- IP Services and Characteristics
 - Internet Protocol review
 - Basics, forwarding versus routing
 - IP address depletion
- Routing Protocols
 - Distance vector and link state, Dijkstra's algorithm
 - IGPs and EGPs
 - Overview of RIP, OSPF, ISIS
 - Introduction to BGP EBGP and IBGP
- Interdomain Routing and BGP
 - Border Gateway Protocol details
 - messages and state machines
 - route aggregation
 - Multicast MBGP
- Policy and BGP
 - BGP decision process
 - Access lists, prefix lists, AS paths, Community
 - Route maps
 - Attributes AS_Path, local preference, MED, Community, ATOMIC_AGGREGATE, Aggregator, Origin, NEXT_HOP, AS-SET
 - Route filtering
- Architecture and BGP
 - Redundancy, symmetry, load balancing
 - Confederations, route reflectors
- Laboratory

Texts/References:

- Notes
- Internet Routing Architectures, Bassam Halabi, Cisco Press, New Riders Publishing, ISBN 1-56205-652-2

Anticipated Schedule

Date	Topic	
January 19	Evolution of the Internet Architecture	
January 21	Evolution of the Internet Architecture	
January 26	IP Services and Characteristics	
January 28	IP Services and Characteristics	
February 2	Routing Protocols – Distance vector & link state, Dijkstra's	
	algorithm, IGPs & EGPs	
February 4	Routing Protocols – Overview of RIP, OSPF, ISIS	
February 9	Routing Protocols – Introduction to BGP – EBGP and IBGP	
February 11	Interdomain Routing and BGP - Border Gateway Protocol details	
February 16	Interdomain Routing and BGP - Border Gateway Protocol details	
February 18	Interdomain Routing and BGP - Border Gateway Protocol details	
February 23	Policy and BGP – review of attributes	
February 25	Policy and BGP – BGP decision process	
March 2	Exam	
March 4	Policy and BGP – access lists, prefix lists, AS paths, community	
	strings	
March 9	Policy and BGP – access lists, prefix lists, AS paths, community	
	strings	
March 11	Policy and BGP – access lists, prefix lists, AS paths, community strings	
March 16	Policy and BGP – route maps	
March 18	Policy and BGP – route maps	
March 23	Spring Break	
March 25	Spring Break	
March 30	Policy and BGP – route filtering	
April 1	Policy and BGP – route filtering	
April 6	Policy and BGP – route filtering	
April 8	Policy and BGP – route filtering	
April 13	Architecture and BGP – redundancy, symmetry, load balancing	
April 15	Architecture and BGP – redundancy, symmetry, load balancing	
April 20	Architecture and BGP – redundancy, symmetry, load balancing	
April 22	Architecture and BGP – confederations, route reflectors	
April 27	Architecture and BGP – confederations, route reflectors	
April 29	Architecture and BGP – confederations, route reflectors	
May 4	Special Topics – QoS features	
May 6	Special Topics – Multicast and MBGP	
May 17	Final Exam, 3:00 PM – 6:00 PM	

Note that this schedule may be modified in order to adapt to currently unforeseen circumstances.

Grading Policy

The class will be graded competitively according to the percentages listed below. Each assignment within a category will be weighted equally. The course grade thresholds (that is, the numerical grade required to get a particular letter grade) will be set by the instructor to reflect the relative performance of the students. Class attendance is expected unless otherwise indicated.

Exam	25%
Final	25%
Project	40%
Homework, Miscellaneous	10%

Note: failure to complete the "Project" portion of the course will result in a grade of F for the course.

3% per day will be subtracted from assignments turned in late, except under extraordinary circumstances and with adequate prior notification of the instructor.

The student must notify the instructor within 48 hours of a missed exam and present adequate justification. If illness is the justification, a doctor's note must be provided to the instructor.

An appeal on grades for individual assignments must be within 14 days of the date the assignment is returned.

Further details of the project grading procedure may be announced in class or via email as required.