
Using PlanetLab in Computer Network Courses

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My Classroom Experience of PlanetLab

- Used twice
 - 2003 Fall: Graduate Computer Networking Course
 - 2005 Spring: Undergrad Introduction to Computer Networks
- Got following feedback from students
 - Fascinated by global access to 500+ nodes
 - Experienced difficulties of actually building a fault-tolerant system in reality

2003 Fall Graduate Course Overview

- Networking course for 1st year grad student
- Goals of term project
 - Introduce students to real networking and systems research
 - Experience in designing, developing, and deploying global-scale system
- <http://an.kaist.ac.kr/courses/2003/cs540/>

Term Project Themes

- File distribution (4 teams)
 - One-to-many file dissemination
- Application-level multicast (2 teams)
 - Tree construction for streaming
- Routing and server selection (2 teams)
 - Alternative path selection for Voice Over IP (VoIP)
 - Mirror selection
- Peer-to-peer (2 teams)
 - load balancing, resilience P2P for telematics

2005 Spring Undergrad Course Overview

- Introductory computer networks course for juniors and seniors
- Programming project
 - Build an application multicast system and measure its performance
 - Their first experience with
 - ▶ Disparity in development and execution systems
 - ▶ Running multiple concurrent programs
 - ▶ Remote system failures w/o control
 - ▶ Concept of a "slice"
 - Used private ssh accounts with one slice
 - ▶ To manage 30+ students
- <http://an.kaist.ac.kr/courses/2005/cs441/>

Ideas for Future Projects

- For Undergrad
 - Use existing PL services (CoDeen, CoDNS, CoBlitz, ...)
 - Build an intermediary for peers behind firewalls/NATs
 - ▶ Remote monitoring of connections
 - ▶ No need to set up a server for homework
- For Grad
 - Design and implement “some” long-running service
 - Use PL as testbed for new large-scale systems

From 1st PlanetLab-Asia Workshop

- On September 17th and 18th, 2004
 - ~ 30 people
 - 4 countries: Japan, China, US, Korea
- Feedback on PlanetLab System
 - Installation/configuration
 - ▶ Boot files: too many, too large
 - Maintenance
 - ▶ Security incidents: X-mas Eve shutdown
 - ▶ Operators complain on "weird" mix of traffic
 - ▶ Resource mgmt too coarse
 - ▶ Slice creation: hard to check on progress
- Where are we?