

CS598 Tue Sep 22

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Announcements

Projects

- **Tonight:** Proposal comments back to you
- **Oct 22:** Project midterm presentations
- **Dec 10 | 11:59pm:** Project paper due
- **Dec 15 | 1:30-4:30pm:** Poster session (it's official!), location TBA

Midterm presentations

- 10% of your course grade (20% of project)
- 5 minute presentation (\leq 3-5 slides)
 - What problem are you solving
 - Why doesn't the best past work solve it
 - Your solution approach
 - **Demonstrate progress** in your solution

Project paper

- **Like a short publishable paper:** Abstract, Problem statement, importance of problem, Related work, Your approach, evaluation, and results, Summary of conclusions, discussion of limitations, and future work
- One person projects: about 8 pages
- Two person projects: about 12 pages
- But you will be judged on results, not pagecount!

Workload

- 62% of you thought the current workload is about right, or worth the effort.
- 39% of you would rather concentrate on fewer papers.

Routing background

Routing is hard

- Automatic adaptation to failures
- High reliability
- Balancing traffic
- Convergence
- Management complexity
- Scalability
- Sharing of resources
- Security
- Multiple players (policy, privacy, incentives)

Approach One (of N)

- Original ARPANET: **distance vector routing**
- Remember your distance to each destination (initially: distance 0 from myself)
- Send vector of distances to neighbors
- Receive vector: my distance = min of all my neighbors + 1
- Send packet to neighbor with lowest dist.
- **Slow convergence** and **looping** problems

Approach Two (of N)

- New ARPANET algorithm: link state routing (“shortest path first (SPF)”)
- McQuillan, Richer, and Rosen 1980; Perlman 1983; led to OSPF
- Broadcast the entire topology to everyone
- Locally run shortest path algorithm
- Send packet to neighbor along computed shortest path

Tag switching / MPLS

- Separate data plane (where you send packets) from control plane (deciding where to send packets)
- More flexible control of the data plane
 - e.g., set up any explicit route you want
- A more modern choice of intradomain routing protocol