

IP ROUTING

Outline

- ▣ Position Paper assignment
- ▣ Background on Internet Connectivity
 - Nor01 paper
- ▣ Background on BGP
- ▣ BGP convergence
- ▣ BGP and traffic
- ▣ Discussion

Position Paper

- Goals:
 - Practice writing to convince others
 - Research an interesting topic related to networking.
 - Generate reactions amongst fellow classmates/professors
- Size of the paper:
 - 4000-5000 words, 5-7 pages, 10 pt. Font
- Must have title and abstract
- Name on the paper is optional
- You will evaluate 2 papers
- You will revise your paper
- Hand in in PDF (preferred) or PS only
- First draft due Oct 19th

Evaluation Criteria

- ▣ Is the position well defined?
 - ▣ Is it narrow enough to be manageable?
 - ▣ Are the communities of people involved with the position (and their positions) identified?
- ▣ Are the opposing positions articulated?
- ▣ Are rebuttals given to the opposing positions?
- ▣ What evidence is used to support the position?
 - ▣ Quantitative evidence based on experimentation?
 - ▣ General facts about the systems in question?
 - ▣ Anecdotes only?
- ▣ Is the paper logically organized?
- ▣ Most importantly, does your paper influence someone towards the position?

Position Topics I

- ▣ Peer to Peer technologies equals pirating.
 - (suggested by Thu Nguyen)
- ▣ SANs vs. LANs.
- ▣ Distributed hash tables (DHTs): What are they good for?
- ▣ Ipv4 is sufficient for the next 30 years.
- ▣ IP over direct links.

Position Topics 2

- Over-provisioning vs. QoS.
 - (Suggested by Badri Nath).
- Multicast vs. P2P for content distribution.
- Mobile IP is dead.
- Wireless Ad-hoc networks.
- Information will be free.
- Privacy will die soon (or is dead already)
- Bottom up standards are better.
- Others Possible (e.g. security)
 - Must convince the instructor position is worthy.

Academic Integrity

- ▣ DO: think about the position
 - Helps if you pick a position you care about (at least a little bit)
- ▣ DO: write your own text
- ▣ DO: Original research and properly cite sources at points embedded in the text.
- ▣ DON'T rip/off copy text
 - Longer quotes (100-200 words) ok, IF properly cited.
- ▣ Use papers and samples as models.

Review

- ▣ Basic routing protocols
 - Distance Vector (DV)
 - ▣ Exchange routing vector hop-by-hop
 - ▣ Pick routes based on neighbor's vectors
 - Link State (LS)
 - ▣ Nodes build complete graph and compute routes based on flooded connectivity information

Historical Context

- ▣ Original ARPA network had a dynamic DV scheme
 - replaced with static metric LS algorithm
- ▣ New networks came on the scene
 - NSFnet, CSnet, DDN, etc...
 - ▣ With their own routing protocols (RIP, Hello, ISIS)
 - ▣ And their own rules (e.g. NSF AUP)
- ▣ Problem:
 - how to deal with routing heterogeneity?

Inter-network issues

- ▣ Basic routing algorithms do not handle:
- ▣ Differences in routing metric
 - Hop count, delay, capacity?
- ▣ Routing Policies based on non-technical issues
 - E.g. Peering and transit agreements not always align with routing efficiency.