INDEPENDENT PROJECTS
CALL FOR PROPOSALS
(Proposal Due: M Sept 28, 2008)
(Final Report Due: M Dec 8, 2008)

A) PURPOSE: To provide the student with opportunity to do a detailed study of some area of computer networking over and above what is covered in the class lectures. If your topic covers merely what is discussed in class you will receive very little credit (see part E below for grading policy).

B) POLICIES:

• A report of not more than 20 pages long (12pt, single space) will be required for each project.
• Each report will be presented in a professional manner.
• Each project will be duly demonstrated in a professional manner.
• Depending on the type of project, an in-class oral presentation will be required. An example is a paper study. Implementation/Simulation (i.e. programming) projects will require demonstrations instead of oral presentations.
• Paper projects will not be presented as a joint project. That is, it will be presented by exactly one student with each student, working on a different topic.
• The topic for each project is expected to be unique.

There are cases where, depending on scope, more than two students may want to collaborate to work on a single project. Implementation/Simulation projects typically have this characteristic because they involve extensive programming. In such cases the group of students must specify their desire to do so in their preliminary proposal (see item D below). In addition you must specify who will be primarily responsible for which part of the project and who the project leader is.

Joint Programming Projects are encouraged and recommended. The instructor is willing to help divide the work among students who are interested in proposing joint projects.

C) SOME SUGGESTED TOPICS:

• Telephony over IP/VoIP issues, including security
• Group Communication: Internet Group Management Protocol (IGMP), Clusters and Design Issues, etc.
• Performance Issues via simulation, closed form solutions, or measurement. Examples are Comparison of Error Control Protocols; Simulation of Distributed Routing Algorithms (eg. RIP) on User Supplied Network Topology; etc.
• Reliable Multicast Routing Protocols: Concepts and Examples
• Resource Reservation Protocol (RSVP) Details
• Congestion Control and Traffic Policing in high-speed (eg. ATM) networks.
• TCP/IP application protocols. For eg. SMTP/MIME, SNMP, FTP, etc. A detailed discussion of the protocol from RFCs and example implementations are expected here.
• Fast and/or new transport/transfer protocols (VMTP, XTP, Delta-T, NETBLT, etc)
• Client-Server programming (eg. primitive file server, etc) using sockets and involving multiple servers with communication among servers.
• Real-Time Transport Protocols/Streaming Video and/or Audio Protocols.
• Java-based client/server programming via java sockets and involving multiple servers with communication among servers.
• CISCO Router Configuration including security
• Network Performance using OPNET Simulation package.
• Session Initiation Protocol (SIP)
• Specification of Guaranteed Quality of Service (RFC 2212) (52330 bytes)
• The Reliable Multicast Design Space for Bulk Data Transfer (RFC 2887)
• Resource ReSerVation Protocol (RSVP) -- Version 1 Functional Specification (RFC 2205)
• RSVP Operation Over IP Tunnels (RFC 2746) (59497 bytes)
• RSVP Cryptographic Authentication (RFC 2747) (50656 bytes)
• RTP: A Transport Protocol for Real-Time Applications (RFC 1889), or MULTIMEDIA COMMUNICATION PROTOCOLS
• SCTP Stream Control Transport Protocol and DCCP Datagram Control Congestion Protocol, including potential applications with reasons.
• Known TCP Implementation Problems (RFC 2525) (137201 bytes)
• TCP Congestion Control (RFC 2581) (31351 bytes)
• Transport Layer Security Extensions (rfc3546)
• Computing TCP's Retransmission Timer (13638 bytes)
• TCP for Transactions.
• Reverse Tunneling for Mobile IP (RFC 2344) (39469 bytes)
• Multicast Security Architecture (rfc3740)
• Dynamic DNS details, including security features.
• TCP/IP over IEEE 802.17 including Resilient Packet Ring technical details.
• TCP/IP over wireless, radio, or satellite networks
  
  http://www.faqs.org/rfcs/
  http://www.ietf.org/iesg/1rfc_index.txt (LOOK FOR MOST RECENT ONES)
• Related topics from ACM Communications, Journal of Networks, IEEE Computer, Computer, ACM Computing Surveys, etc.
• OTHER TOPICS OF YOUR CHOICE (must be approved).

D) PRELIMINARY PROPOSAL:

1. Each student must present an proposal of not more than 2 pages of the project of their choice. It must include at least the following:
   - Student Name
   - Title of Project
   - Goal of the Project
   - Brief discussion of how goal will be achieved

2. The proposal is due not later than or Friday September 28, 2007. Electronic Submission is required. When sending the submission as an attachment it must be named according to the following format:
   NAME1_NAME2_255_ProjectTitle

3. Group projects are possible depending on scope. The instructor is solely responsible for approving such projects. Refer to Policies (item B above).

4. The proposal will be read and returned to you. If approved it must be included in the final report.

5. NO STUDENT IS ALLOWED TO CHANGE THEIR TOPIC AFTER PRESENTATION/DEMONSTRATION SCHEDULES HAVE BEEN ANNOUNCED.

E) TENTATIVE GRADING POLICY FOR FINAL REPORT of PAPER PROJECTS

I. Heading (name, title, date)  5%
II. Organization (Intro., Table of Contents, page #s, Etc.)  10%
III. Clarity  15%
IV. Content  60%
V. References  10%

F) TENTATIVE GRADING POLICY FOR ORAL PRESENTATION

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<tr>
<td>Appearance</td>
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<td>Clarity (Intro, title, agenda, transparencies, etc.)</td>
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<td>Knowledge and Handling of questions</td>
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NOTE: The Oral presentation will be worth 35% of your project grade.
ORAL PRESENTATION NOTES

1. Provide a Title
2. Provide an Agenda
3. Use few transparencies each containing as much information as possible. Be judicious on how much information you put on each slide.
4. Use Figures as much as possible.
5. Give a clear presentation.
6. Sometimes, if you can't answer a question it's better to say you don't know than to try to answer it and make mistakes.
7. Keep eye contact with the audience and don't spend a lot of time reading from a sheet of paper.

G) TENTATIVE GRADING POLICY FOR PROGRAMMING PROJECTS

1. The report must include objectives, requirement specification, design, a well-documented listing of programs (in an appendix) and, User's Manual.

2. Demonstration will be used for 35% of the project grade and grading will be based on preparedness and completeness.

3. The latest time to hand in the report is at time of the demonstration.