

Written exam in EDA385/IN661 Internet technology 2006-03-08 afternoon in V. Exam time: 4 hours.

Material allowed: Samuel J. Leffler et al.: *An Advanced 4.4BSD Interprocess Communication Tutorial*

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Result: Will be announced 2006-03-27 (latest)

Examination of the exam: 2006-03-29 at 11.00-12.00 in Sven Tafvelin's office

<i>Points:</i>	24-35	36-47	48-60
<i>Grade:</i>	3	4	5
<i>Grade (GU)</i>	G	G	VG

Write concisely but give clear answers. Your thoughts, calculations and ways of reasoning must be necessary to understand.

IPv6

- 1 a) When we compare the IP headers for IPv4 and IPv6 we find that the number of fields in the IPv6 header are fewer. Since we don't believe that the fields could be abandoned you should explain where they are now. 4p
- b) Explain how fragmentation is managed in IPv6. 4p
- c) Expand this expression to full colon hex notation ::415:161.128.64.32/96 2p

Communicating server

2. Write a combined server and client called *splitterd*. The overall service is to on request take a stream of integers (network byte order) and send the odd numbers on one stream and the even numbers on another stream. Both should be in network byte order.
- Details: There is a service in /etc/services called *splitter* for TCP. When someone connects to the server two integers are sent to the server. The first integer gives the IPv4 address to the server where the odd numbers should be sent. The second integer gives the address to the server where the even numbers should be sent. The corresponding services are *odd-sink* and *even-sink* and exist for TCP. *Splitterd* reads the input data and sends it on corresponding stream and when end of file is received it terminates. 12p

DNS

- 3 a) In the DNS there are various resource records. Explain what is meant by A, MX, AAAA records. 3p
- b) If you have a high performance machine you would like to have your own cache of DNS information to be able to be your own DNS server. When you need to ask another server for help should you use iterative or recursive request? Explain why. 3p

Mobile IP

- 4 a) Regarding mobility the computers can be divided into three classes. Describe the classes. 3p
- b) Describe how mobile IP is working. Don't forget the two cases with/without foreign agent. 6p
- c) Describe the two crossing problem. 3p

Network design

- 5 a) Explain what is meant by redundancy and diversity. 4p
- b) Describe the two reasons why GigaSunet need to be replaced. 2p

Network management

- 6a) Explain what a mib is. 3p
- b) The communication between the partners in network management is done with a stream of small integers. Describe how the meaning of the stream can be established. 4p

MPLS

- 7 a) Describe what MPLS is and how it is intended to work. 5p
- b) The label only contains 20 bit for the label index. Describe how that can be sufficient for all MPLS usage over the world. 2p