S-38.120 Telecommunication Switching Technology, Exercise 5

Friday 12.4.2002, 0915am, Lecture Hall S4

The answers are to be returned before the exercise begins (see the above date and time) either to the exercise assistant (in person or via email to piia@tct.hut.fi) or, preferably, to a box underneath the lab's notice board on G-wing 2nd floor. Since we aim to publish the results immediately after the exercise all late answers will be disregarded. Please, adhere to the deadline.

Task 1

A subscriber dials a five-digit number and each digit is keyed individually. Show the messaging flows for a successful call attempt and call release with ISUP. Describe briefly the function of each message.

Task 2

A subscriber dials a five-digit number and each digit is keyed individually. Show the messaging flow for an unsuccessful call attempt with ISUP, when the call ends with wrong keying after the second number. Describe briefly the function of each message.

Task 3

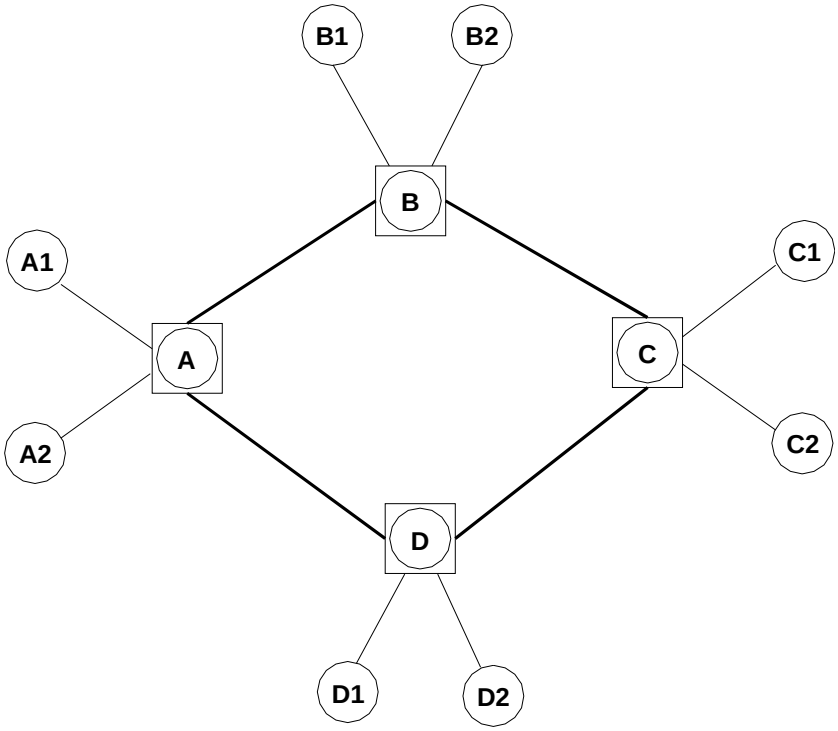
Each access switch has 10000 subscribers and each subscriber generates calls to the access switch with the intensity of 30 calls per hour. Calls are destined to the local area with the probability of 20% and to the other destinations with the probability of 80%. Not all calls to the other destinations succeed: 2% of the calls are ended with wrong dial in the source access switch and 5% of the calls are ended with wrong dial in the destination access switch. What is the number of call attempts in SPs and STPs that causes signalling load? Use the network shown in the picture below.

Task 4

Use the network shown in the picture below and the information given in the previous tasks.
Lengths of the SS7 messages are in order of size:

- IAM 39 bytes
- REL 21 bytes (unsuccessful call)
- REL 16 bytes (successful call)
- SAM 16 bytes
- ACM 14 bytes
- ANM 12 bytes
- RLC 12 bytes

How many timeslots are required to serve SS7 traffic in different links? Other MTP-2 messages than those mentioned above are not taken into account.



Network for Tasks 3 and 4