

S-72.423 Exercise 2.

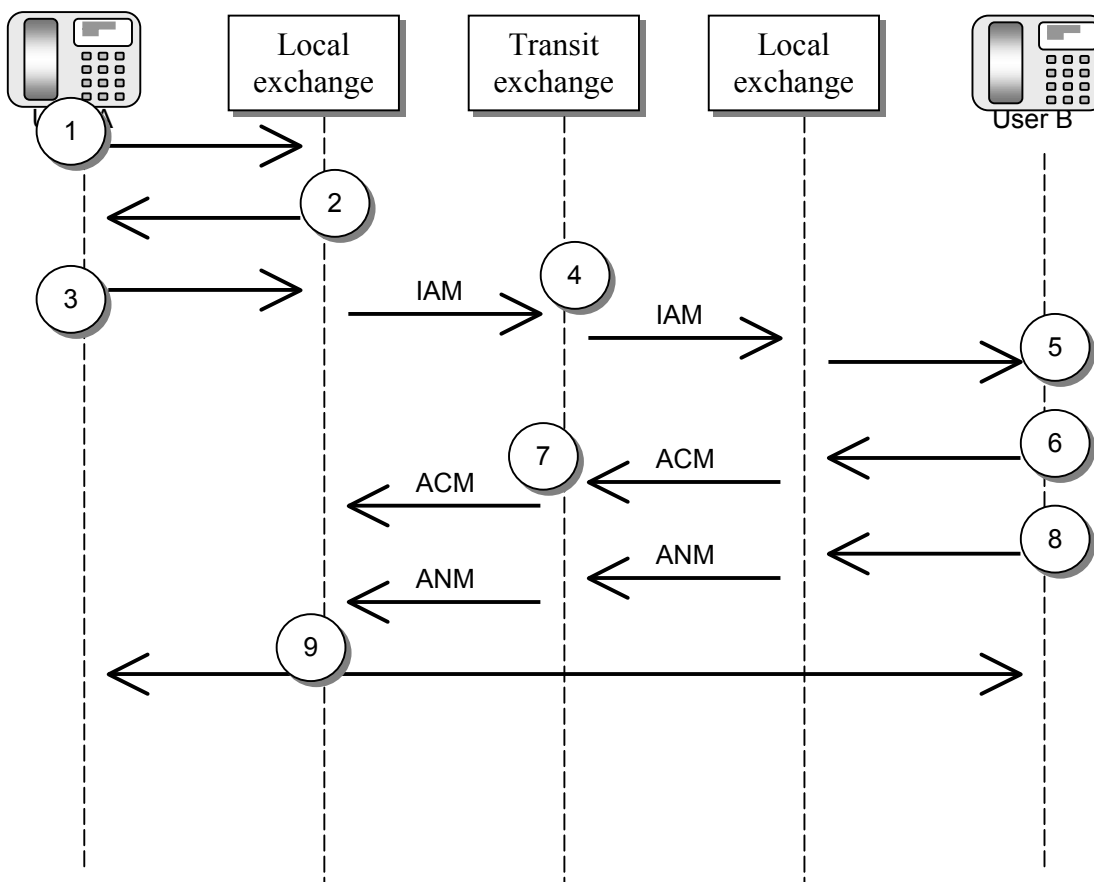
Return your answer no later than on Tuesday 28.10.2003 at 16:00 into the course's P.O. box at the third floor of the E-wing.

Please, include the following information in your answers:

- Your name
- Your student number

It may be that you won't find answers to the questions straight from the lecture material. You may have to look for information from the textbooks and Internet. Good luck for information search!
To this exercise you may answer in English, Finnish or Swedish.

1. ISDN: List and describe 5 supplementary services other than mentioned in lecture notes.
2. Briefly explain the way of using and the differences of FISU, LSSU & MSU in CCS.
3. The figure below presents the signalling during the establishment of a circuit switched call from a subscriber behind an analogue line in the PSTN (User A) to a subscriber behind a digital ISDN line (User B). Your task is to shortly describe the numbered functions (in other words "what is going on") and why these functions are needed.



4. ATM

Let us assume that compressed digital speech with a bit rate of 12 kbit/s is sent over an ATM link (cell bit rate = 150 Mbit/s) using AAL 1.

a) What is the packing delay at the sending side of the ATM link when each ATM cell is fully packed?

Is there a similar delay at the receiving side of the ATM link?

b) What is the packing efficiency when the packing delay is not allowed to exceed 10 ms?

c) When using AAL 2, how many compressed speech signals can be multiplexed over one ATM virtual circuit? (We assume: Start field = 1 byte, CPS header = 3 bytes, CPS packet payload = 8 bytes)