NETWERK-ONDERSTEUNING VOOR TELELEREN

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CTIT WORKSHOP
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ENSCHEDE

CONTENTS

APPLICATION DEMANDS

• BITRATE VERSUS DELAY

• SECURITY

NETWORK FACILITIES

• LOCAL AREA NETWORKS

• WIDE AREA NETWORKS

• PUBLIC ACCESS

CONCLUSIONS

APPLICATION DEMANDS
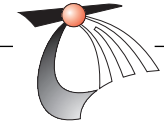
BITRATE VERSUS DELAY

LOW-TECH
- EMAIL
- WWW FORMS
- DOWNLOADING EXERCISES
- DOWNLOADING READERS

MEDIUM-TECH
- NON-INTERACTIVE VOICE
- NON-INTERACTIVE VIDEO
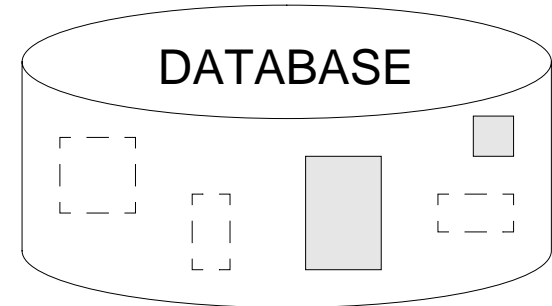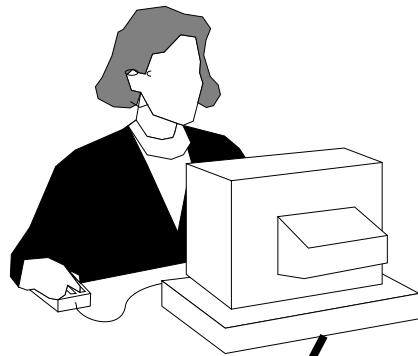- SHARED WHITE-BOARD
- INTERACTIVE VOICE

HIGH-TECH
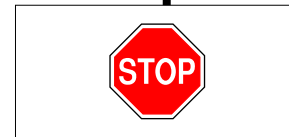- TWO-PARTY VIDEO CONFERENCING
- MULTI-PARTY VIDEO CONFERENCING

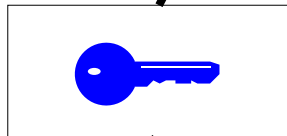# APPLICATION DEMANDS

SECURITY

DATABASE

ACCESS CONTROL   STOP
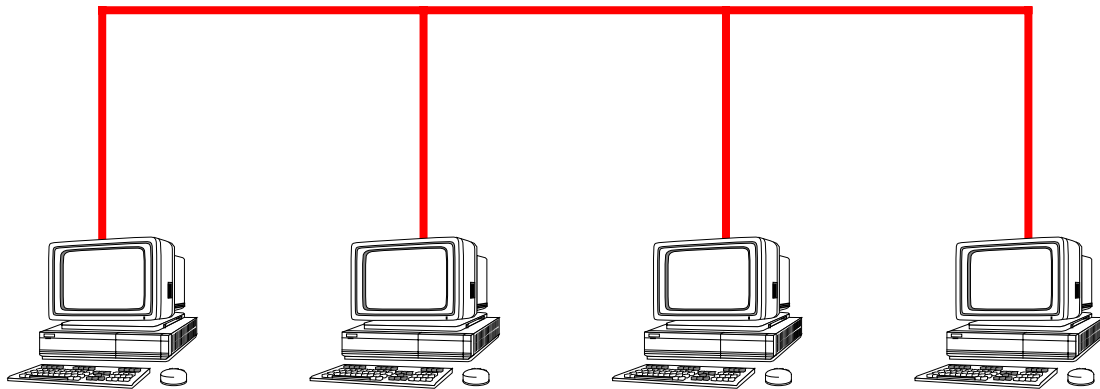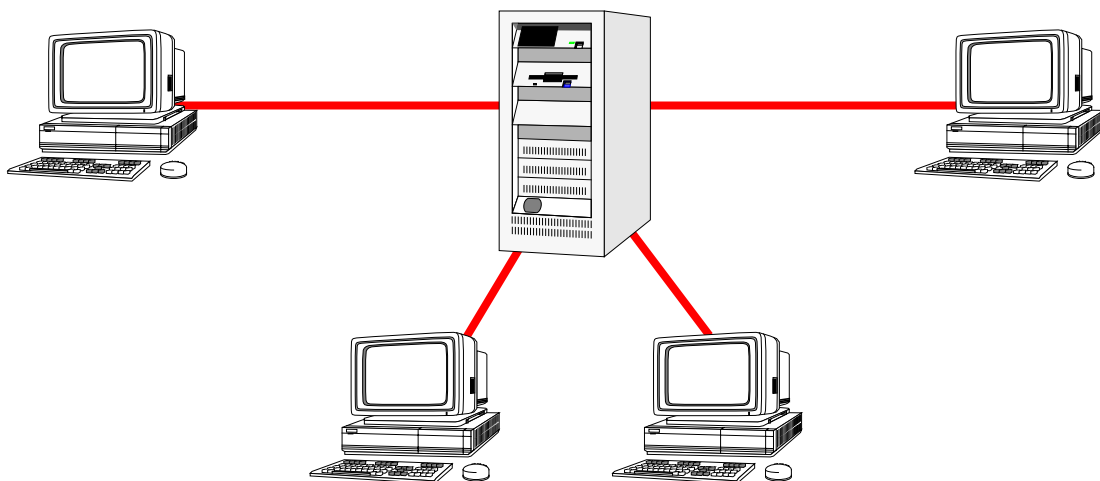
SECURE SOCKET LAYER
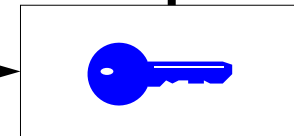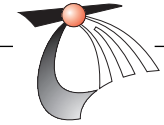
NETWORK

LOCAL AREA NETWORKS

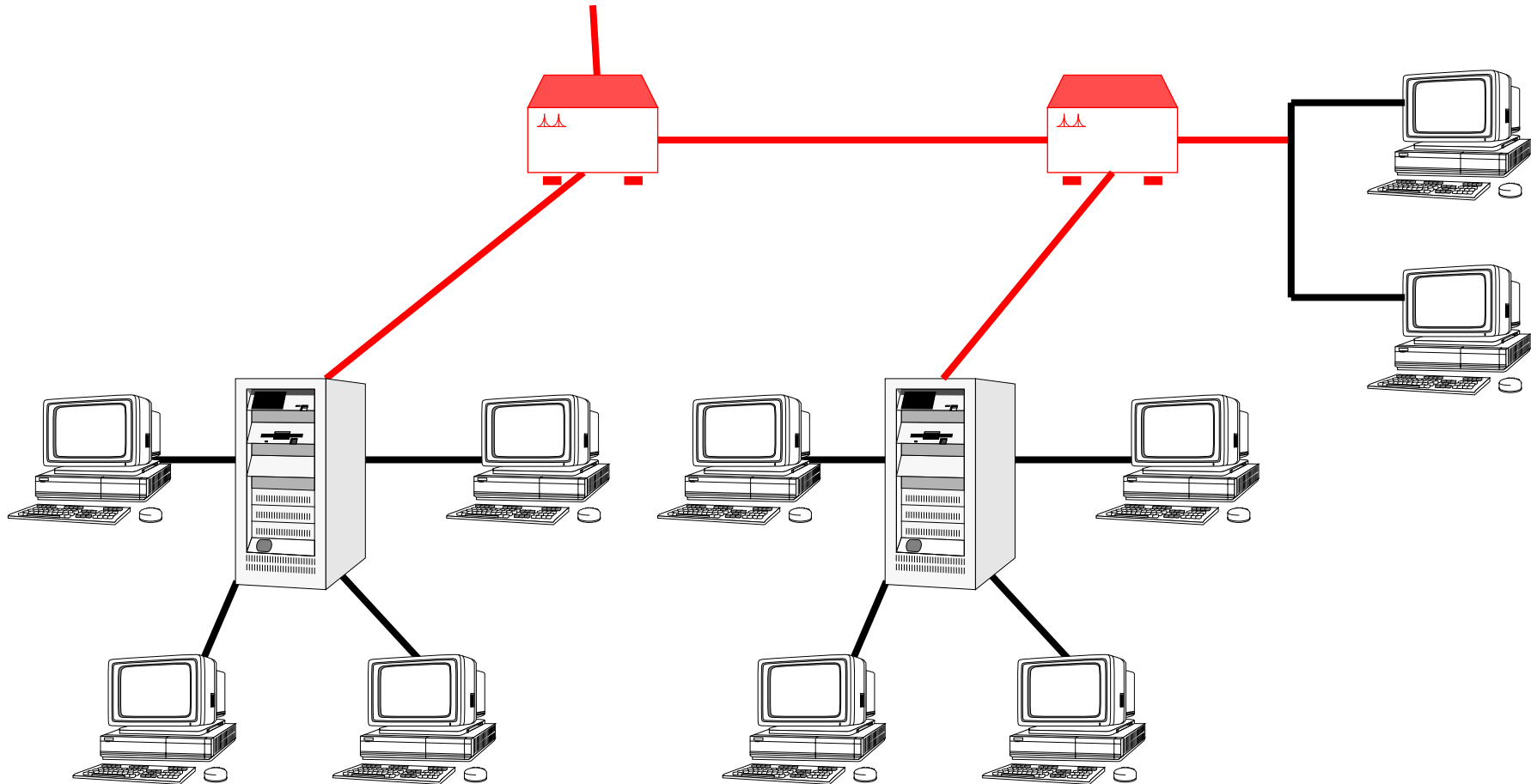*INDIVIDUAL SEGMENTS*

SHARED ETHERNET:

SWITCHED ETHERNET:

- TRADITIONAL ETHERNET (10 MBPS)
- FAST ETHERNET (100 MBPS)
- GIGABIT ETHERNET (1 GBPS)

LOCAL AREA NETWORKS

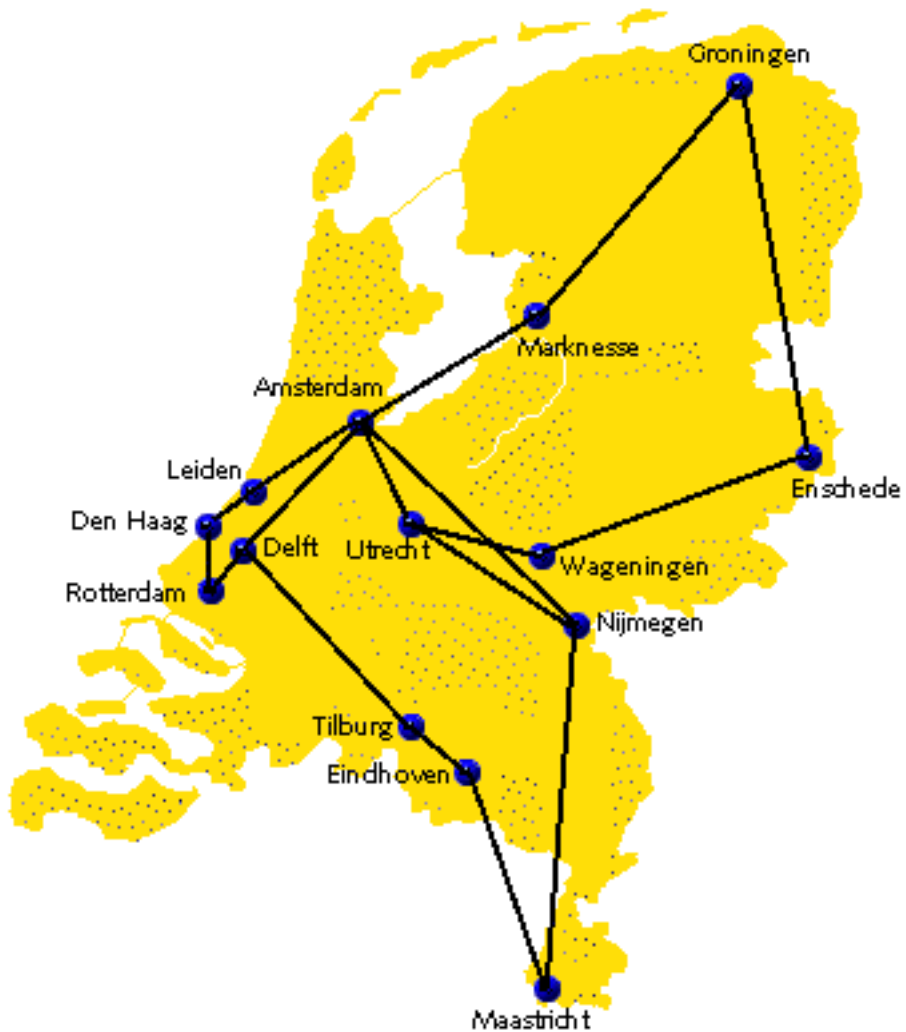*INTERCONNECTION OF SEGMENTS - IP / ATM*

WIDE AREA NETWORKS

IP

- ## SURFNET

── 34 Mbit/s

EUROPE: TEN34

US: 16 MBIT/S (1997: 34 or 155 MBIT/S)

WIDE AREA NETWORKS

ATM

SURFNET4

- 34 MBIT/S: NOW

- 155 MBIT/S: END OF THIS YEAR?

- CONNECTED TO JAMES

STATUS

- PVCs AVAILABLE

- SVC INTRODUCTION IS DIFFICULT
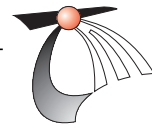
- LACK OF APPLICATIONS

WIDE AREA NETWORKS

FUTURE

ATM WILL BECOME THE BACKBONE OF IP?

IPv6

RSVP

MBONE
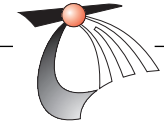
PUBLIC ACCESS
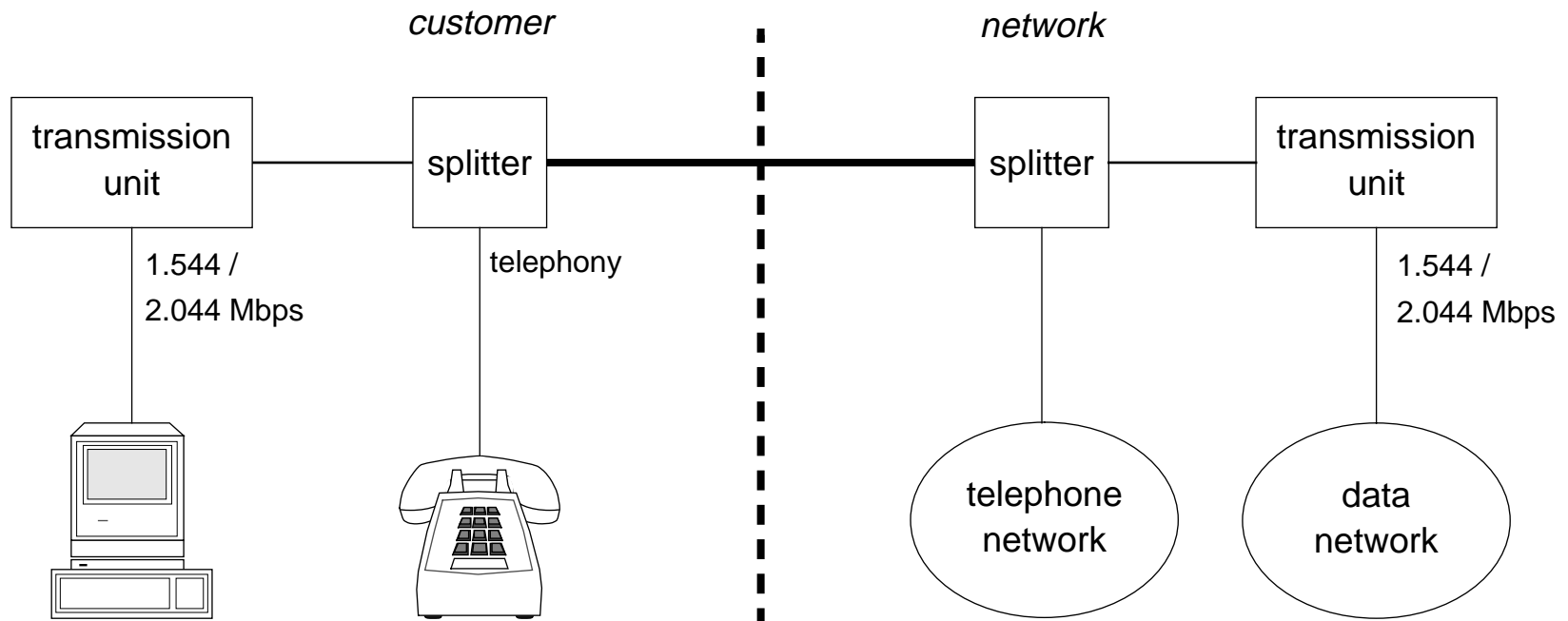
MODEMS: 33.6 KBPS (V.34)

ISDN

56K MODEMS

CATV NETWORKS?

ADSL

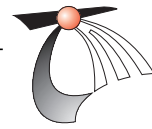# ADSL

Abbreviation	Name	Data rate
HDSL	High data rate Digital Subscriber Line	1.544 - 2.048 Mbps
SDSL	Single line Digital Subscriber Line	1.544 - 2.048 Mbps
ADSL	Asymmetric Digital Subscriber Line	Up: 16 to 640 kbps Down: 1.5 to 9 Mbps
VDSL	Very high data rate Digital Subscriber Line	Up: 13 to 52 Mbps Down: 1.5 to 2.3 Mbps

ADSL

customer   *network*

| transmission unit | splitter | | splitter | transmission unit |

1.544 / 2.044 Mbps

telephony

telephone network

data network

1.544 / 2.044 Mbps

CONCLUSIONS

LOW- AND MEDIUM-TECH
TELE-EDUCATION
CURRENTLY POSSIBLE

CONNECTING STUDENTS
AT HOME
REMAINS THE BOTTLENECK

HIGH-TECH
TELE-EDUCATION EXPERIMENTS
SHOULD BE POSSIBLE
IN CONTROLLED ENVIRONMENTS