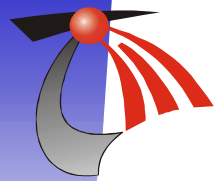


Centre for
Telematics and
Information
Technology

University of Twente
The Netherlands

ATM MANAGEMENT

Some of the results of the SURFnet4 project

Aiko Pras

CTIT

University of Twente

the Netherlands

email: pras@cs.utwente.nl

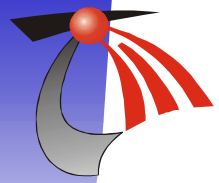
http://wwwctit.cs.utwente.nl/~pras

SURFNET4

ATM NETWORK IN THE NETHERLANDS

RELATIONS WITH:

- TERENA ATM TASKFORCE
- JAMES



Centre for
Telematics and
Information
Technology

University of Twente
The Netherlands

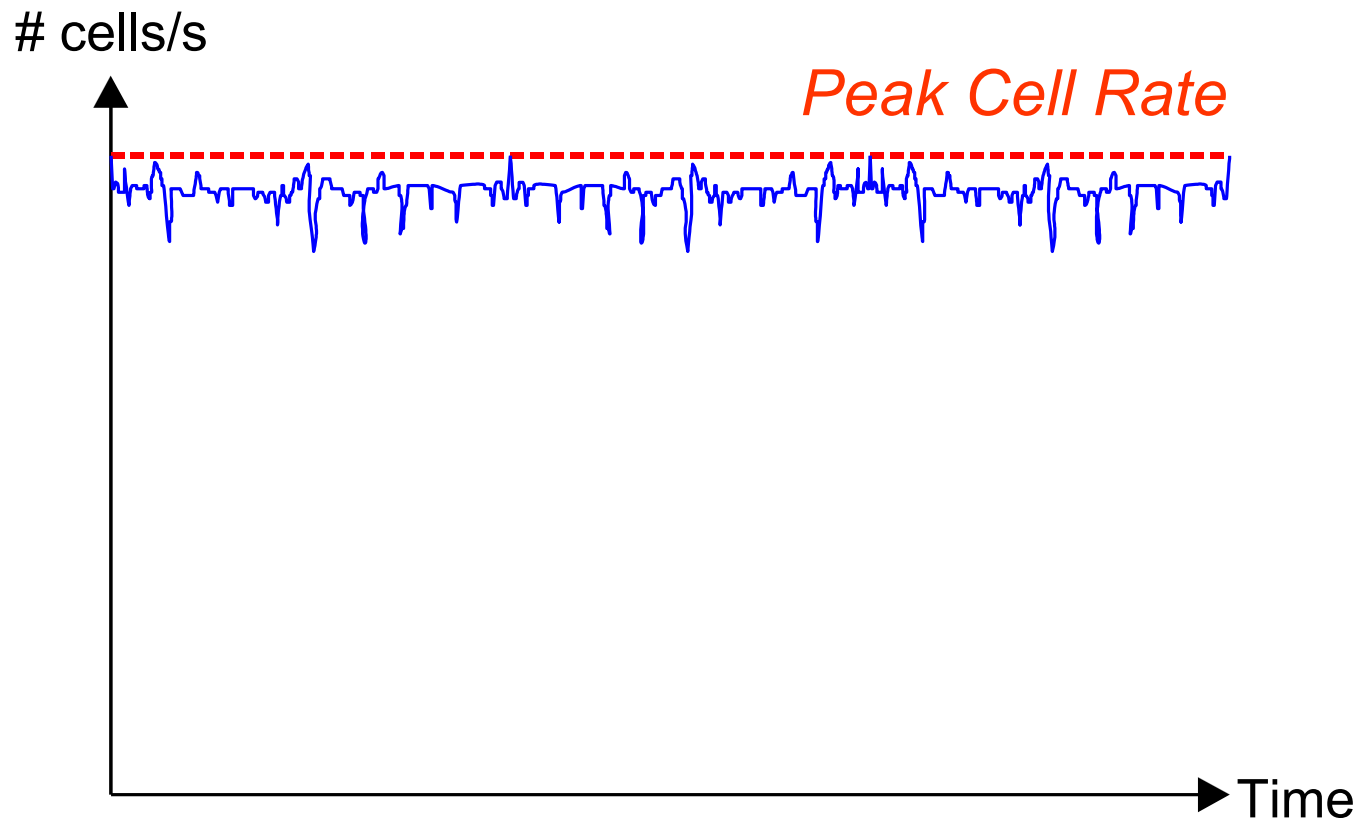
ATM

GUARANTEED QUALITY OF SERVICE

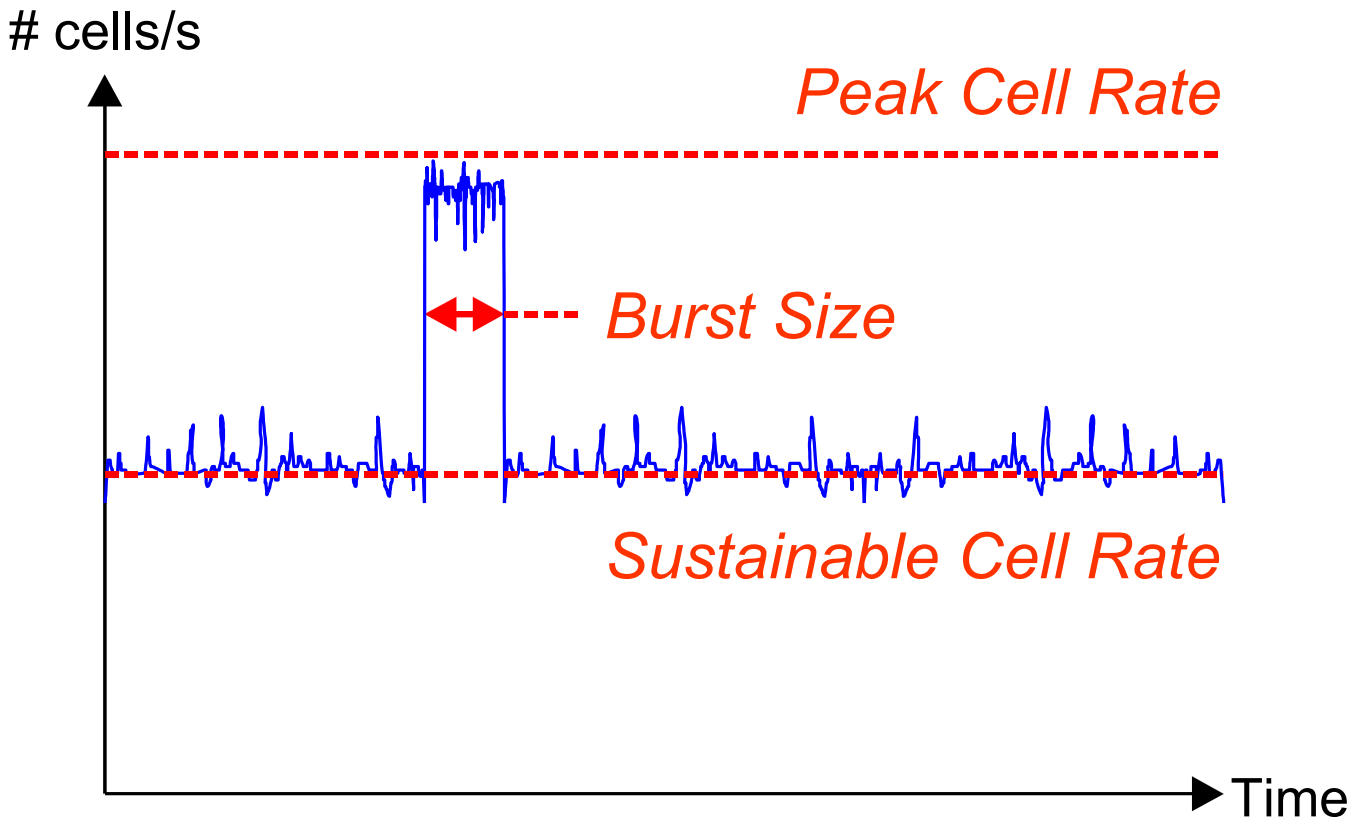
PVC: PERMANENT VIRTUAL CONNECTION
SVC: SWITCHED VIRTUAL CONNECTION

- UNSPECIFIED BITRATE (UBR)
- CONTINUOUS BITRATE (CBR)
- VARIABLE BITRATE (VBR)
- AVAILABLE BITRATE (ABR)

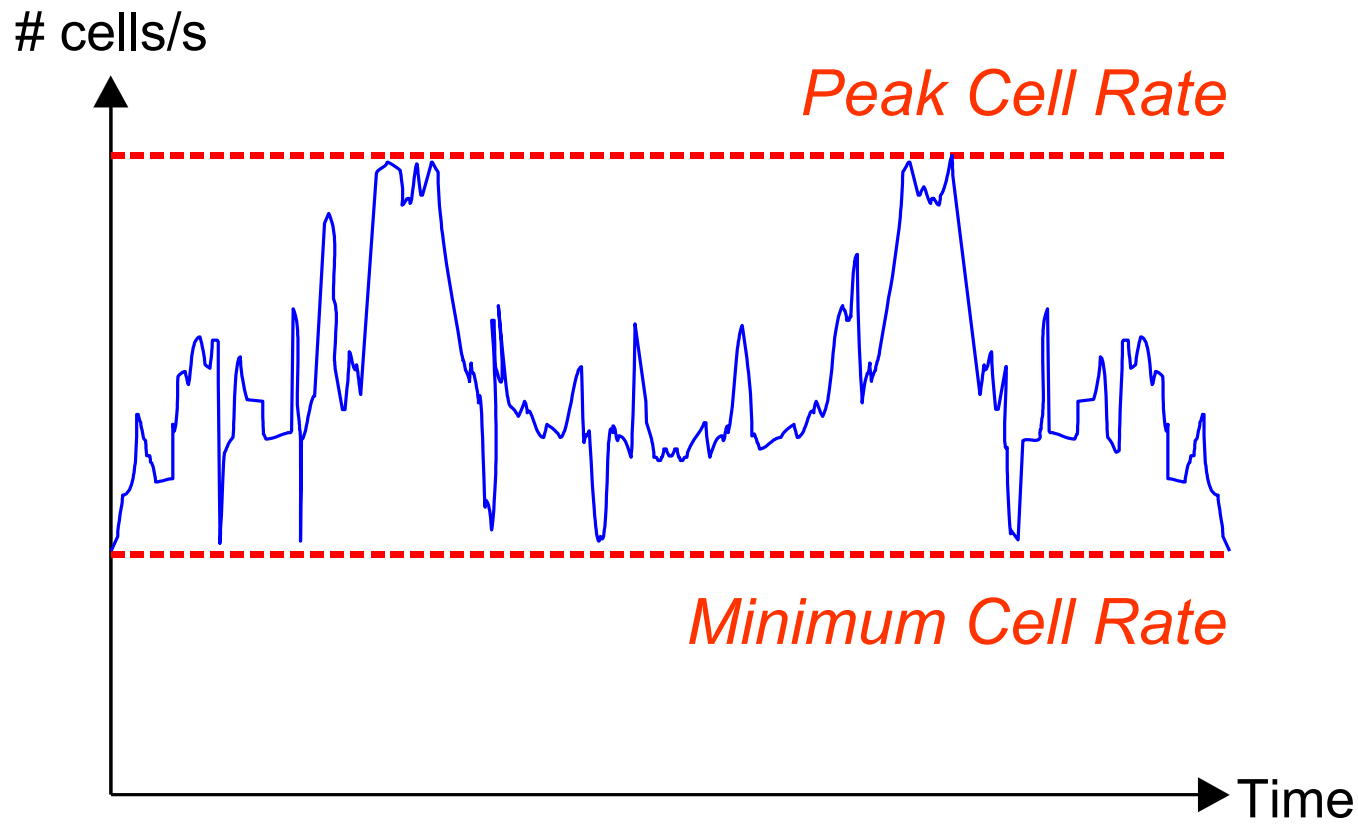
CONTINUOUS BIT RATE



VARIABLE BIT RATE



AVAILABLE BIT RATE



OTHER PARAMETER ISSUES

- **CELL LOSS PRIORITY**
- **TAGGING**

THERE ARE 20 POSSIBLE PARAMETERS

CONFIGURING ATM CONNECTIONS IS DIFFICULT

WHO CONFIGURES THE CONNECTION

- **PVCs: HUMAN USER**

E.G. UT-ATM TOOL

- **SVCs: APPLICATION PROGRAMME**

E.G. NetMeeting

PROBLEM STATEMENT

- **SUM OF THE REQUESTED CAPACITY MAY BE MORE THAN THE AVAILABLE CAPACITY**

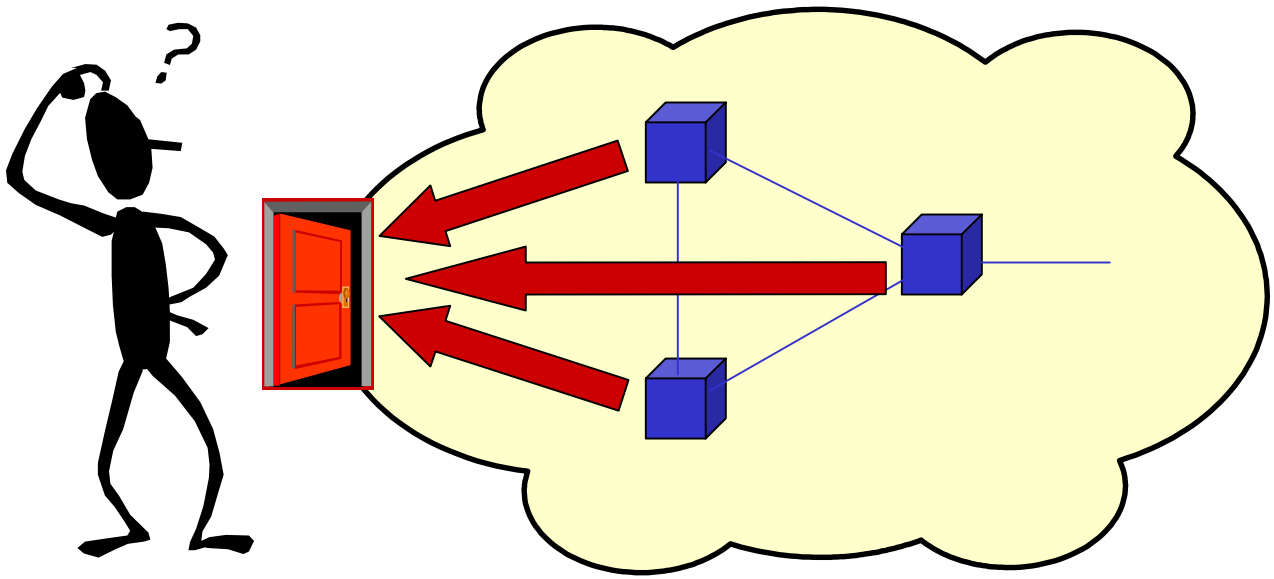
- **DENIAL OF SERVICE**

THERE IS NO GUARANTEE THAT THE USER WILL BE ABLE TO *ESTABLISH* A CONNECTION

THERE MUST BE SOME FORM OF CONTROL!

CONTROL

CONNECTION ADMISSION CONTROL



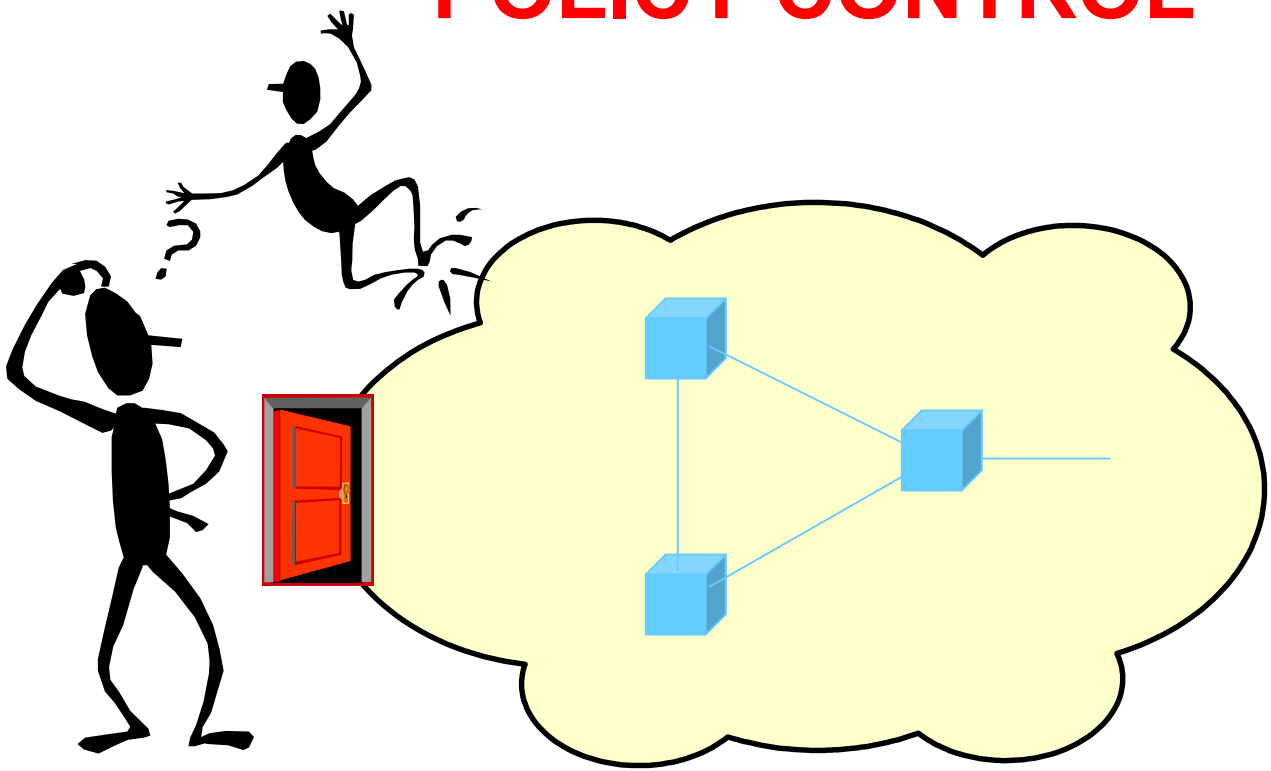
CONNECTION ADMISSION CONTROL

- CAPACITY OF SWITCHES
- CAPACITY OF LINES

MULTIPLE LEVELS, E.G.:

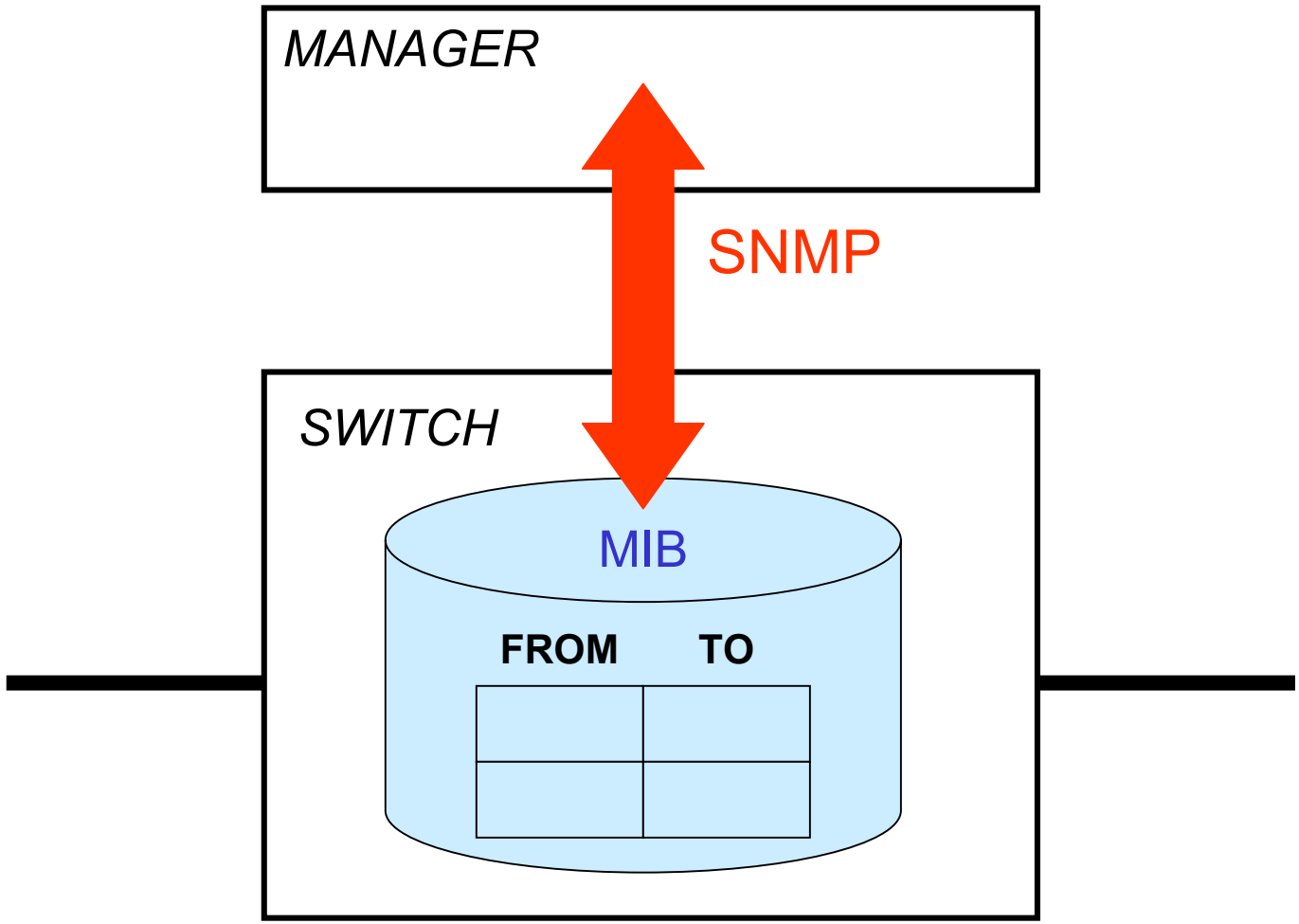
- USE CURRENT PARAMETER VALUES
- USE STATISTICAL INFORMATION OVER LAST MINUTES
- USE STATISTICAL INFORMATION OVER LAST DAYS

POLICY CONTROL

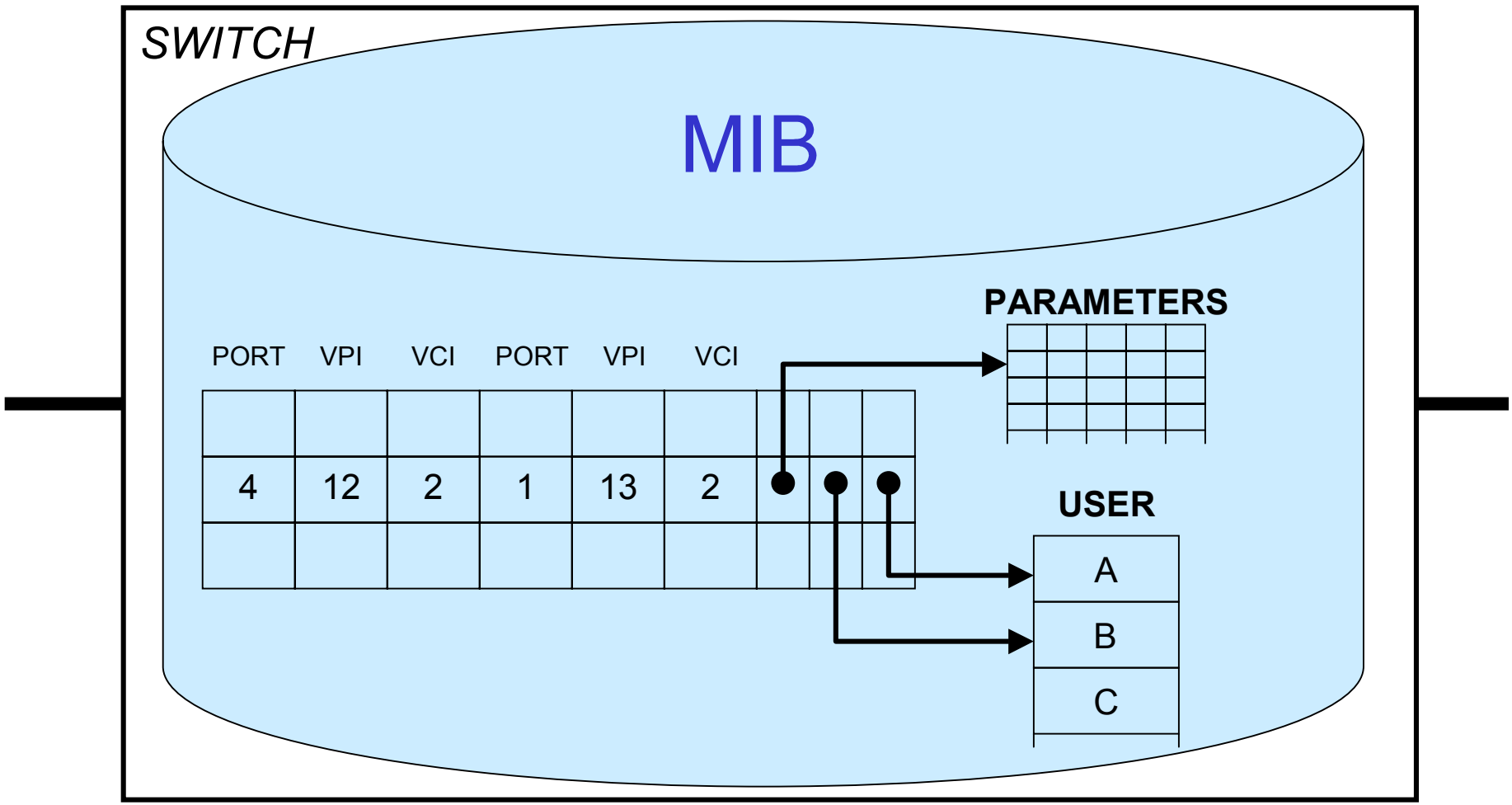


CONTROL

ABORT EXISTING CONNECTIONS

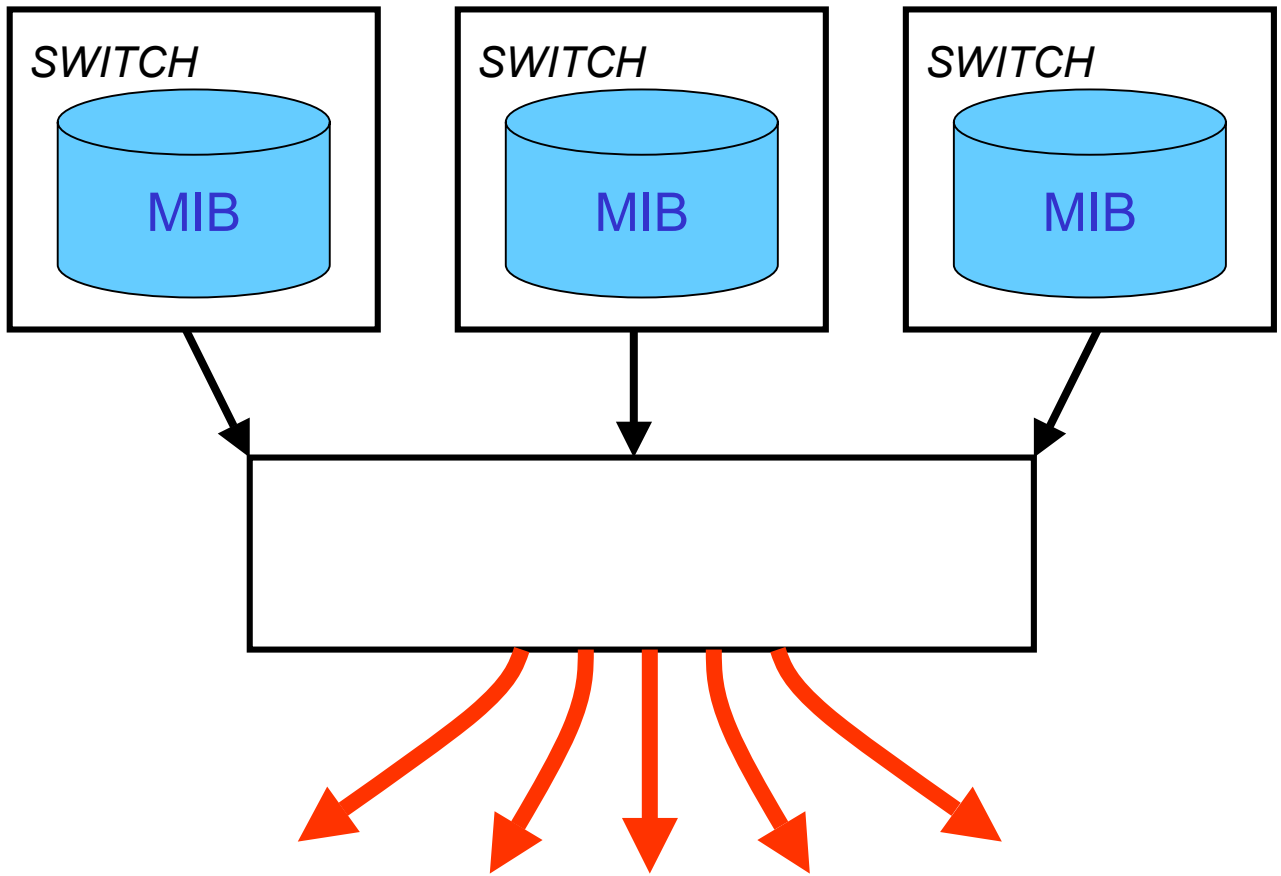


ABORT EXISTING CONNECTIONS



CONTROL

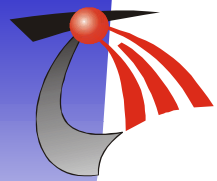
ACCOUNTING



METERING

CHARGING

BILLING



Centre for
Telematics and
Information
Technology

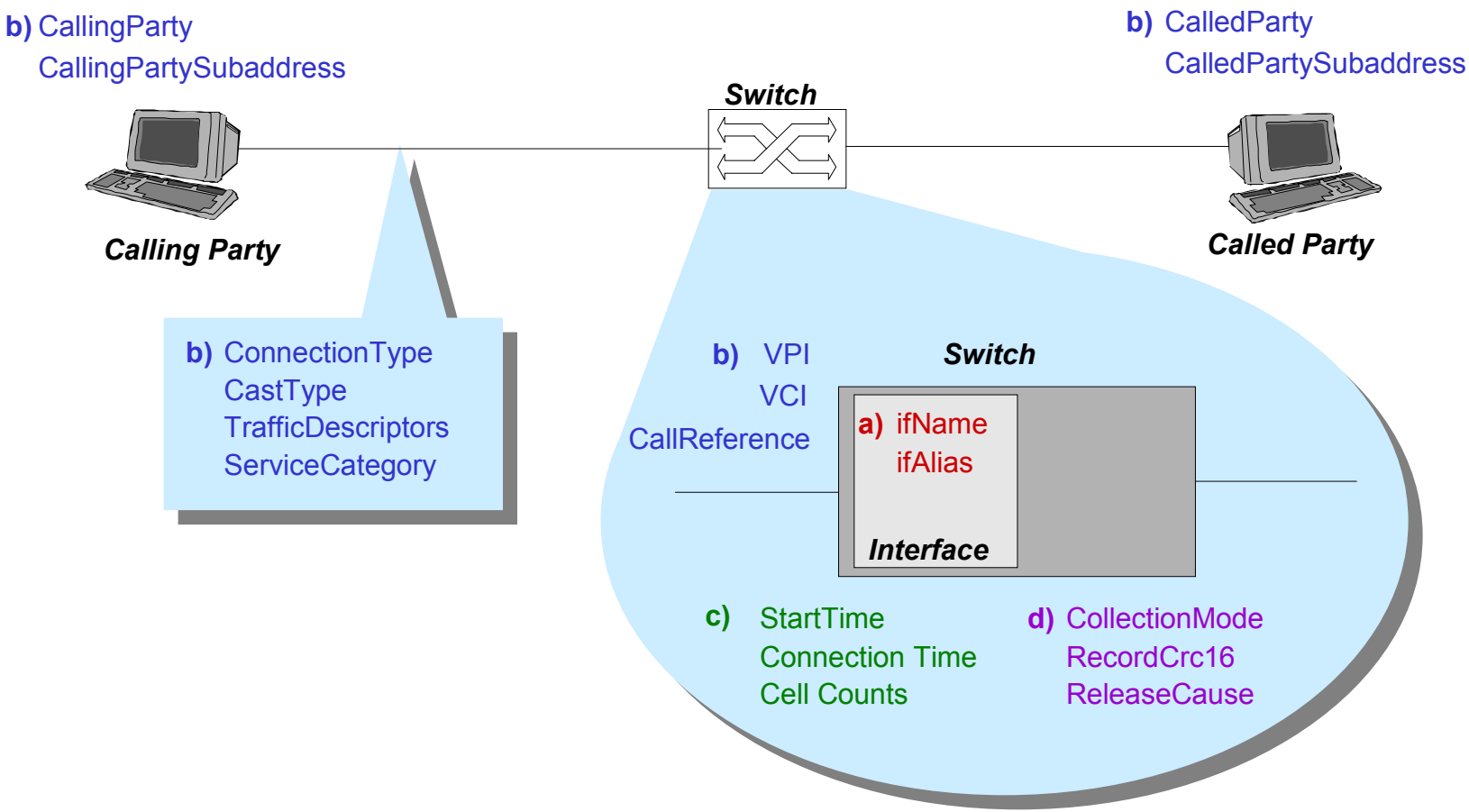
University of Twente
The Netherlands

METERING

WORKING DOCUMENTS WITHIN IETF:

- **ACCOUNTING INFORMATION MIB**
- **ACCOUNTING CONTROL MIB**

MIBs FOR METERING



MIBs FOR METERING: STATUS

- PROPOSALS NOT YET ACCEPTED BY IESG
- NO COMMERCIAL IMPLEMENTATIONS
- PROVIDER SPECIFIC SOLUTIONS
  - FORE
  - CISCO
  - GDC
  - NEWBRIDGE

CHARGING

NO OPEN STANDARDS

TWO PROJECTS FROM ACTS ACCOUNTING CHAIN:

- **CANCAN**
- **CA$HMAN**

CHARGING PRINCIPLES

INSTALLATION COSTS

SUBSCRIPTION CHARGES

CALL RELATED CHARGES

- CONNECTION TIME
- VOLUME
- SERVICE CATEGORY

BILLING

NO OPEN STANDARDS

SEEN AS CONFIDENTIAL INFORMATION

BILLING PRINCIPLES

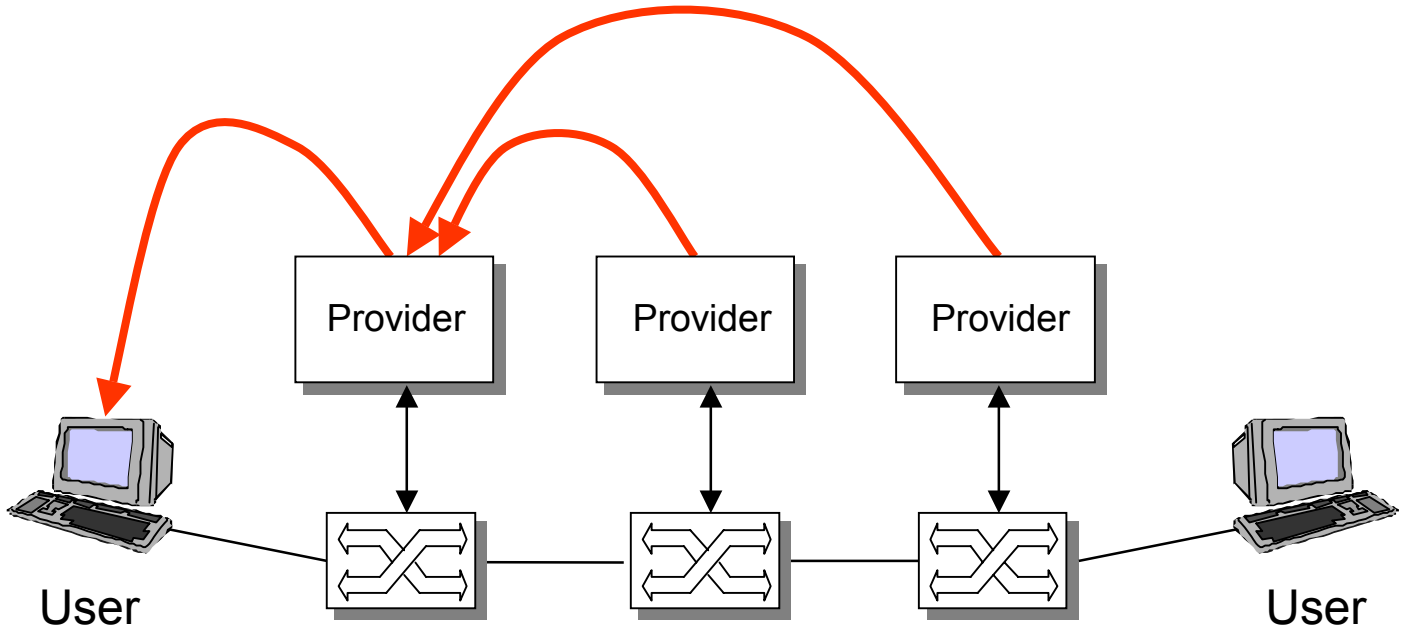
SETTLEMENT WITH ORIGINATING PROVIDER

SETTLEMENT WITH PREDECESSOR

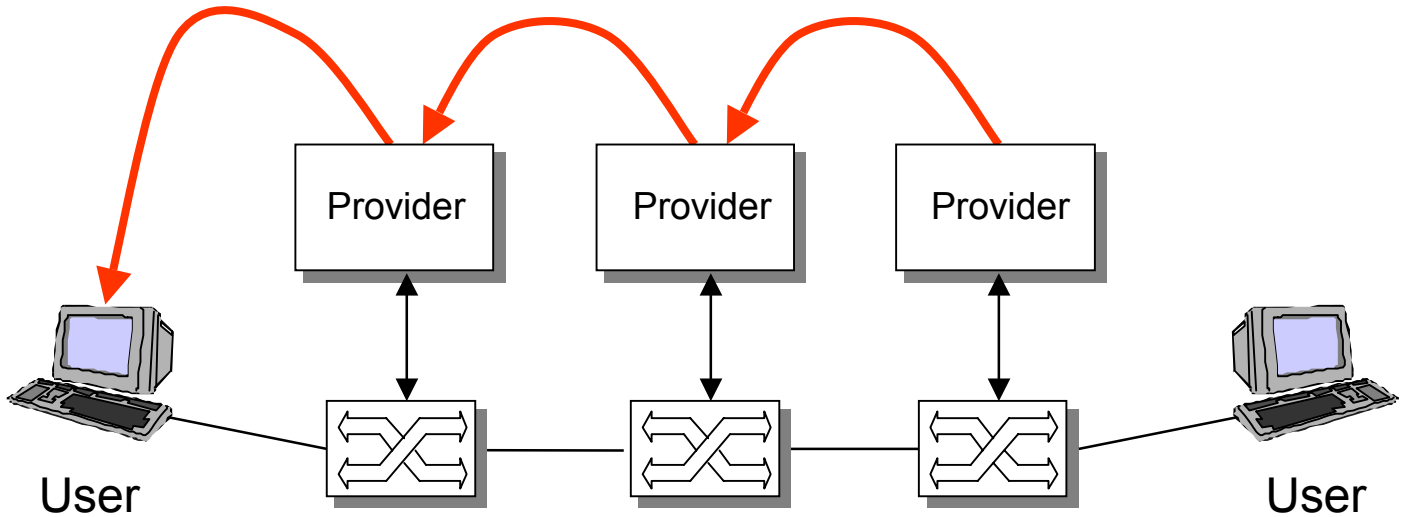
SETTLEMENT WITH ORIGINATING USER

CENTRAL BILLING SYSTEM

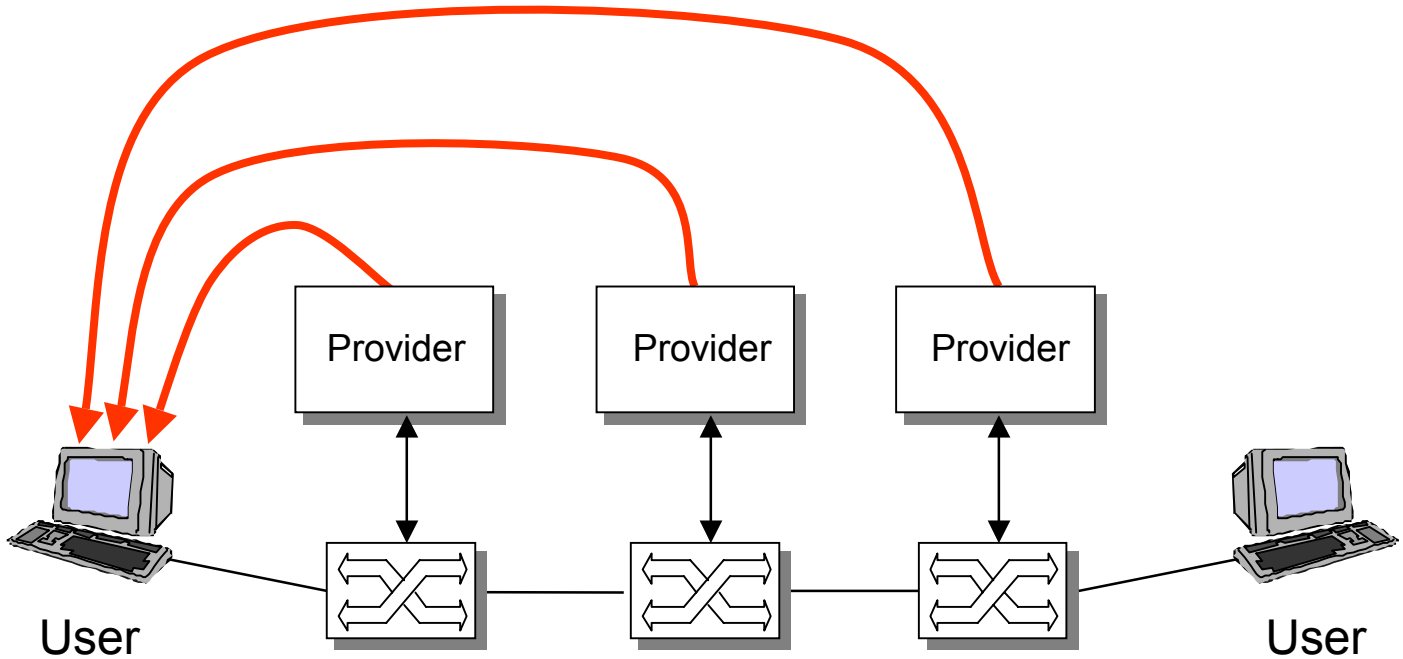
BILLING
SETTLEMENT WITH *ORIGINATING* PROVIDER



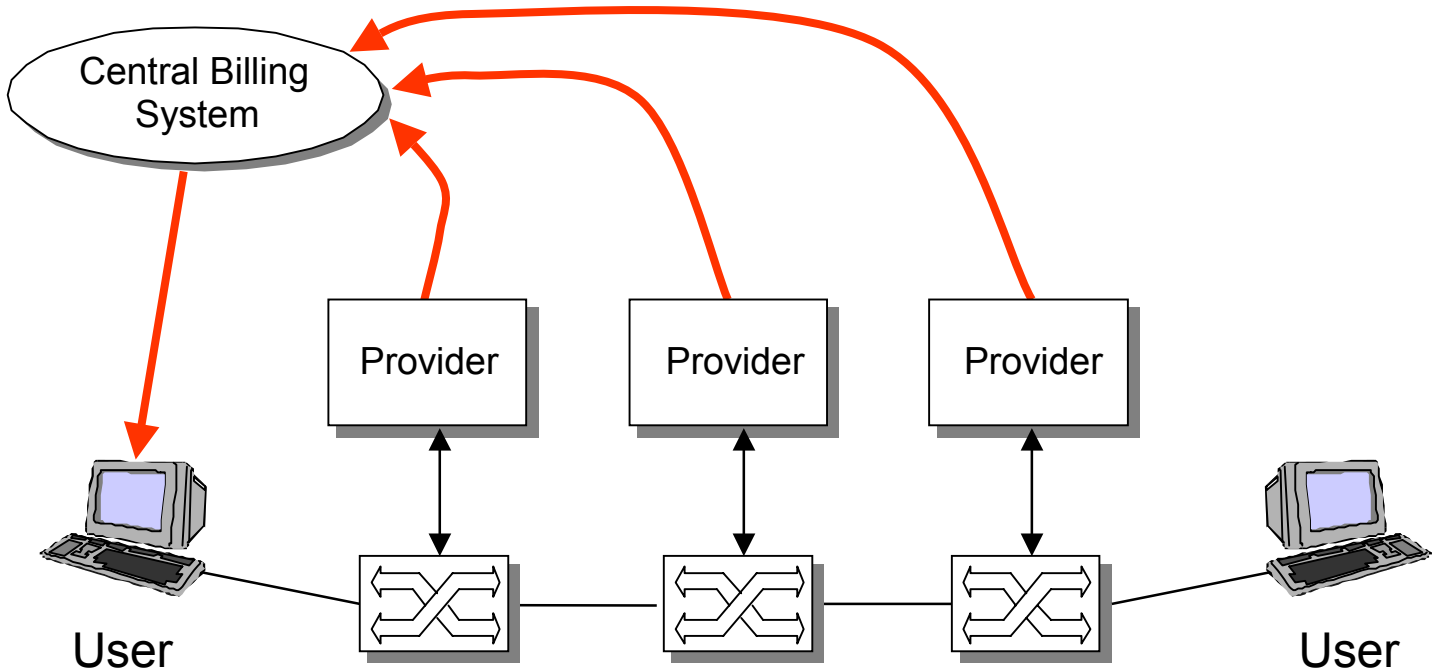
BILLING
SETTLEMENT WITH *PRECEDING* PROVIDER



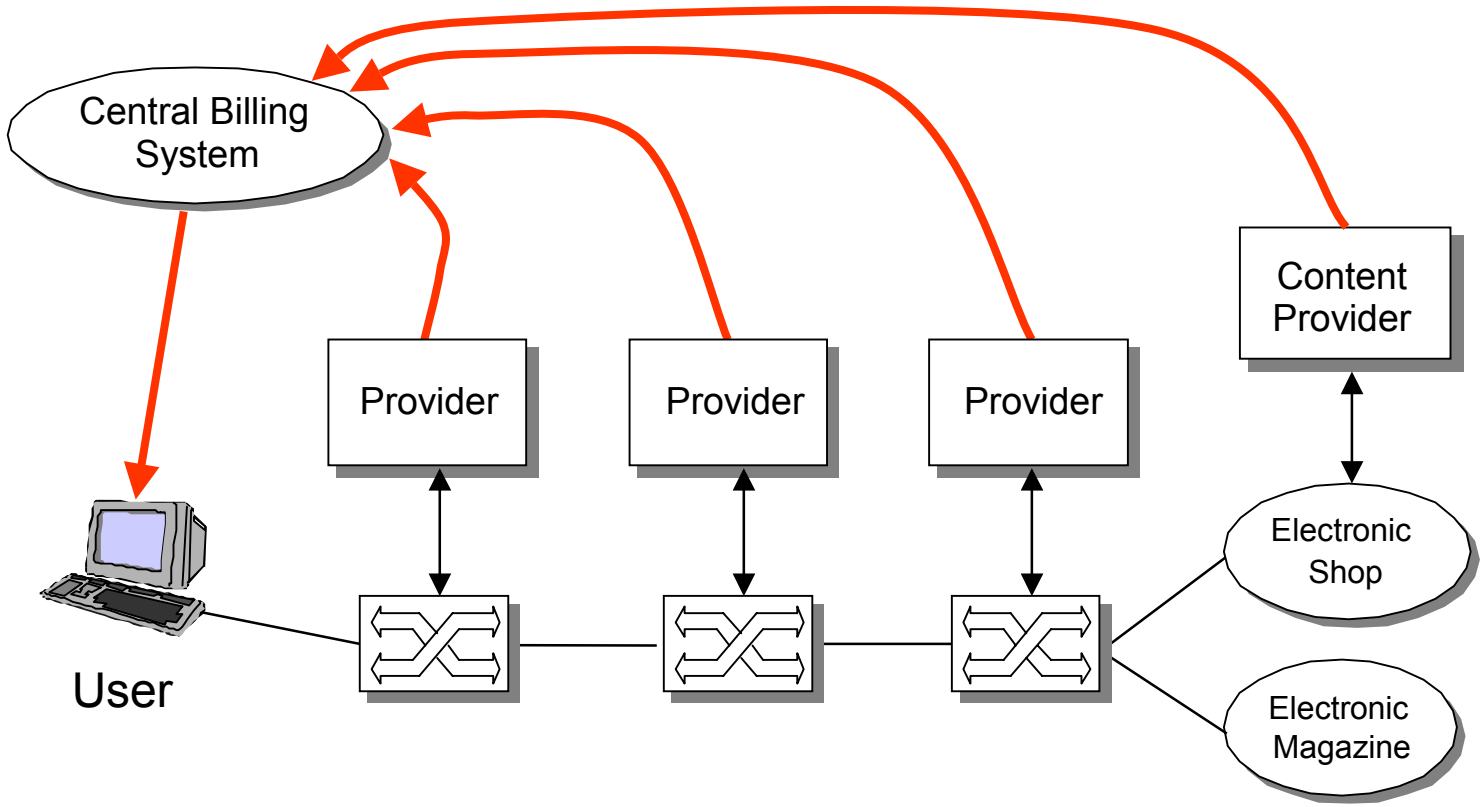
BILLING
SETTLEMENT WITH ORIGINATING *USER*



BILLING
CENTRAL BILLING SYSTEM



BILLING
CONTENT PROVIDERS



SUMMARY

- **CONNECTION ADMISSION CONTROL: OK**
- ***POLICY CONTROL: NOT AVAILABLE***
- **ABORTING CONNECTIONS: PRIMITIVE, BUT POSSIBLE**
- **USAGE METERING: NO STANDARD IMPLEMENTATIONS**
- **CHARGING: NO STANDARDS**
- **BILLING: MANY OPTIONS**

CONCLUSIONS

- **ATM SVC MANAGEMENT HAS BEEN NEGLECTED**
  - **SURFNET WILL NOT (YET) INTRODUCE SVCs**
- **ATM PVCs REMAIN WITHIN THE BACKBONE (FOR THE TIME BEING)**
  - **IPv6 / RSVP WILL FACE SIMILAR KIND OF PROBLEMS**