ATM MANAGEMENT
Some of the results of the SURFnet4 project

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SURFNET4

ATM NETWORK IN THE NETHERLANDS

RELATIONS WITH:
• TERENA ATM TASKFORCE
• JAMES
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

# cells/s

Time

Peak Cell Rate
VARIABLE BIT RATE

# cells/s

Time

Peak Cell Rate

Burst Size

Sustainable Cell Rate
AVAILABLE BIT RATE

# cells/s

Peak Cell Rate

Minimum Cell Rate

Time
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!
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

TIME

PREVENT  CONNECTION  INTERVENE  SEND BILL
ABORT EXISTING CONNECTIONS
ABORT EXISTING CONNECTIONS

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<th>VPI</th>
<th>VCI</th>
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PARAMETERS

USER

A
B
C
CONTROL

TIME

PREVENT

CONNECTION

INTERVENE

SEND BILL
METERING

WORKING DOCUMENTS WITHIN IETF:

• ACCOUNTING INFORMATION MIB
• ACCOUNTING CONTROL MIB
MIBs FOR METERING

- **Calling Party**
  - CallingParty
  - CallingPartySubaddress

- **Connection Type**
  - ConnectionType
  - CastType
  - TrafficDescriptors
  - ServiceCategory

- **Switch**
  - Switch
  - ifName
  - ifAlias
  - CallReference

- **Interface**
  - VPI
  - VCI

- **Called Party**
  - CalledParty
  - CalledPartySubaddress

- **Connection Time**
  - StartTime
  - Connection Time
  - Cell Counts

- **Collection Mode**
  - CollectionMode
  - RecordCrc16
  - ReleaseCause
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
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