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Optimistic Hard Real Time Analysis of Connectionless Self Similar Traffic in ATM Networks

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Abstract
Network parameters were referred and background traffic types reference traffic background network utilization and number of hop connections. This paper describes Asymmetric digital subscriber simulation model developed using ADSL. ADSL is integrated with IP and ATM in order to provide QOS using this model a comparison study between network using IP and ATM over ADSL is provided. In general all the proposed schemes solve many of the fundamental issues faced by optical burst switching networks thereby making more practical and efficient in the near feature. Finally the proposed algorithm were fed with this information and from their outcome we derived our results and conclusions.

1. Introduction
A bit stream traffic model is used which has the advantage of being easier to describe traffic generation pattern of a CBR/VBR connection and traffic distortions with a network. Exact worst case traffic distortions within a network can be obtained by using the bit stream traffic model. Also the filtering effect of a transmission link to the aggregated traffic of multiple connection can be modeled to obtain tighter queuing delay bounds. Explicit algorithms are given for the calculation of worst case queuing delay switch. Unlike that of do not require a maximum operation as a complex function over a continuous interval. Also a CAC algorithm proposed in this paper to avoid interaction procedure in the delay bound calculation by having each switch provide fixed delay bounds to connections regardless of the current traffic load. The CAC scheme presented in this paper allows a switch to assign multiple priority levels for real time connections can be accommodated more flexibility.

2. Objectives
Developing a practical planning method for the optimal designing task of a realistic network. Developing and evaluating numerical methods for applied to the analytical performance evaluation of telecom system. To give an exact formulation of the planning task which aim is to implement and deploy an ATM network on top of the SDH infrastructure. The idea of utilizing the existing the existing SDH resources stems from the economic point of view and sharply corresponds to the realistic safety of network provider. To propose a practical approach to solve this planning task in an easy to implement and efficient way which results in an ATM network with optimal topology.

3. Research Methodology
This is to classify that the in spirant aspects and design tasks. Whether the network is built on top of existing capabilities which aspect should be the most important network cost its performance or manageability what is the focused problem node placement and sizing or link topology optimization. This is gather traffic decodes QOS requirement device requirements device characteristics is a technical step which mathematically combines all the information received in this paper in a consistent and systematic description. According to the feature of the formulated task a quantitative method is development for the decision process design result presentation and assessment of the proposed design method. To implement a prototype VOD system that can be used on the basis for experimental cell level measurement of ATM traffic. To suggest new ways to model and approximate the CTD distribution with the analysis of data from experimental cell level measurements [4].

4. Related works
Point to point traffic definition for multiple traffic types and varying traffic results. Dynamic bandwidth allocation and de allocation. Statistics for cell loss ratios and cell transfer delay variations a dimension specifying the number of input and parts of the output in this type of switch. A switching fabric defining the connections between the input pass and output parts. A set of buffer and buffering strategy that specifies the how many buffer are available and how they are configured and used. Routing tables used to map cells from input parts to output parts. This mapping is done using VC and VP indices. Separate buffer queue for the CBR and VBR service categories and four mechanisms for scheduling the removal of cells from these queues. Separate thresholds for dropping cells with high loss priority and for software loss congestion notification.

All incoming messages are removed from the message and field in the event. If a filled message contains timestamp smaller than the last event processed by the linear programming is rolled back. Messages sent by this rolled back event are en queued in the queue of the processor hold the message. All incoming cancelled messages are removed from the queue and processed one at a time. Anti messages annihilate their complementary positive messages in the unprocessed even queue. However if the positive messages have been processed secondary role back may happen and the handled in the same manner as role back called for the stronger positive messages. Memory storage taken by cancelled messages returned to processor free memory pool. De queue an unprocessed event with the smaller time stamp from the queue. Then process it by calling the LP event handler. A smallest time stamp first time scheduling algorithm is used where event with smaller time stamp is always selected as the event to be processed.

5. Simulation Results

In the CAC scheme an accumulated cell delay variance CDV is needed to calculate the worst case arrival bit stream of a connection. For real time connections this CDV can be calculated as the summation of maximum queuing delay over upstream switch which report the worst case variation of queuing delays that cell of connection may experience. This worst case however is verify unlikely to happen practice since the probability of a cell is having maximum queuing delay over all switches on its route is very small. Thus for soft real time connections a less conservative CDV accumulation scheme such as square root summation of queuing delay burst over upstream switches can be used to accumulate more real time connections in a network.

The proposed scheme supports multiple priority scheme levels for real time connections. The advantage of using multiple priority levels is that connections with diverse delay bound requirements can be supported more efficiently. However the computation and memory required to perform the CAC check also increase proportionally with the number of priority levels used to support real time connections so far networks where fast establishment of switched real time VC is needed to the number of priority levels assigned for supporting real time traffic should not be large. The proposed scheme can be implemented either or centrally at a CAC server. For permanent real time connections to the CAC check can also be performed off line for which case the memory and computation requirements would not be a big issue.

After creating the scenario and generate traffic simulate an environment using LAN/WAN components like CPE's switches and hub and routers. At the end of the simulation the report is created based on the give table values. In the given algorithm the normalized throughput shown in the given graph. The values between the given two values as the distance increase the normalized throughput decreases because the distance between the source and destination affect the packet numbers on the receiving side. Comparison between the distance and normalized throughput means successful packets transfer from source to destination. On the increasing distance between two ATM switches different parameters have been measured again and compared the result as per the changing environment.

The card time arguments are stripped off here and the simulation object is initiated. The card time arguments are stripped off and the confirmation parameters read from an external file. Global application data structure are built during this phase. Simulation time does not advance on this face the simulation time on this phase and there is no time events are received. This phase terminates either normally due to end off simulation or abnormally due to an error in the simulation. All nodes have small number of incoming and outgoing links. The capacity of the link is limited by the length of cells. Different experts often give different answers to the small questions which result in rules having the same ascendants but different consequents. Different words means different things to different people and membership functions are associated with the words. If we also ask the experts but the membership function parameters. We are likely to get different answers for these parameter values. This result in an certain membership functions. Consequently answer to queries about membership functions lead to uncertain ascendants and additional uncertainty about consequents.

Table 1: Switch behavior / Routing table

In port	In VCI	Out port	Out VCI
0	1	6	1
0	2	7	2
1	3	6	3

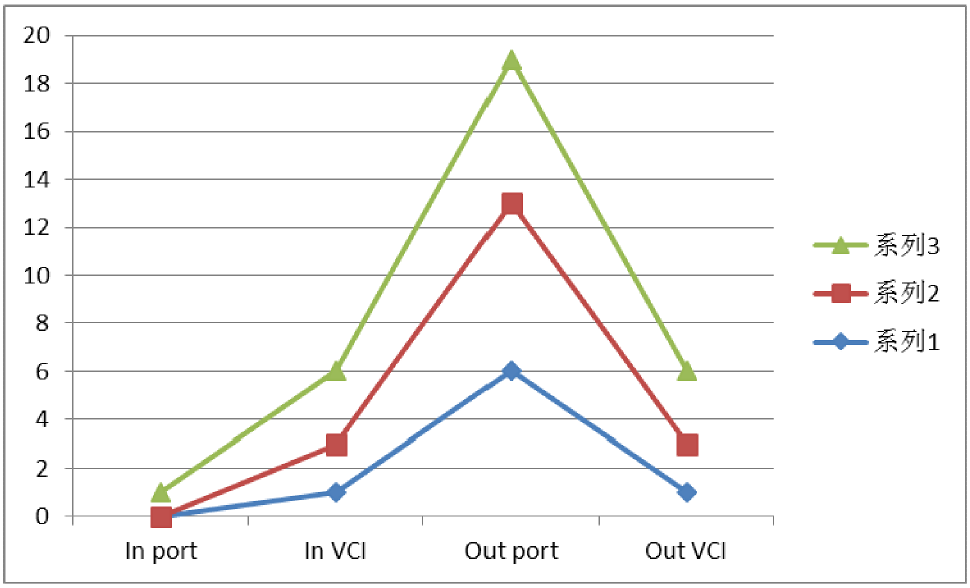


Table 2: Resource efficiency

Switch Priority	Switch 1	Switch 2
Port	8	8
Buffer size	8	8

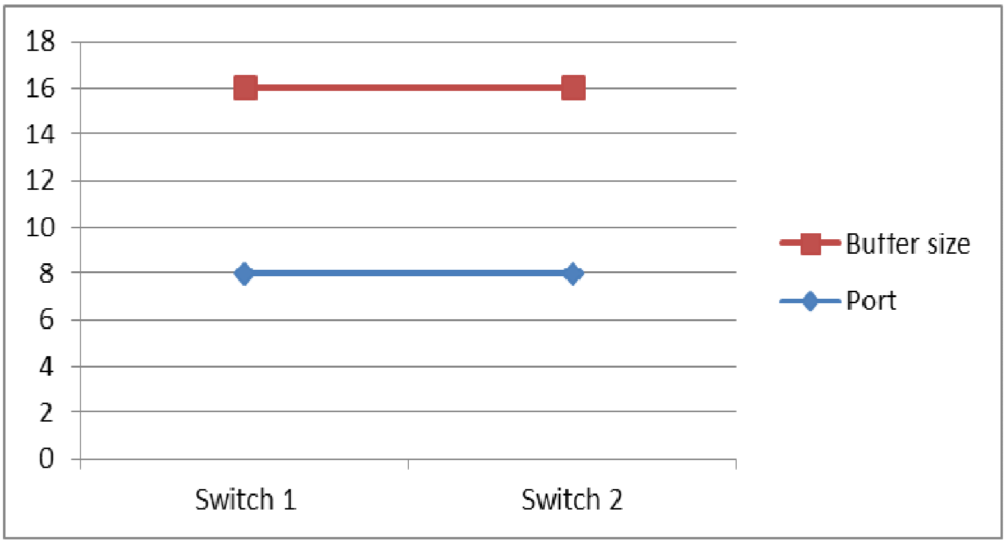


Table 3: Network performance

Distance	Throughput
100	71.94
200	71.93
300	71.92
400	71.95
500	71.93

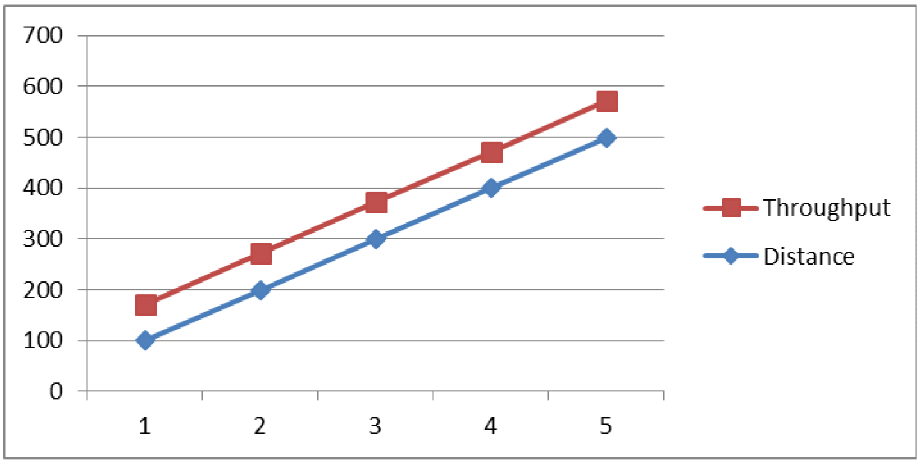


Table 4: Traffic result

Input	Traffic	Delay	Standard Deviation
13	0.07	2.26	1.74
3	0.73	2.34	1.84
57	0.01	3.31	2.82
49	0.02	2.52	2.05
9	0.111	2.31	1.81

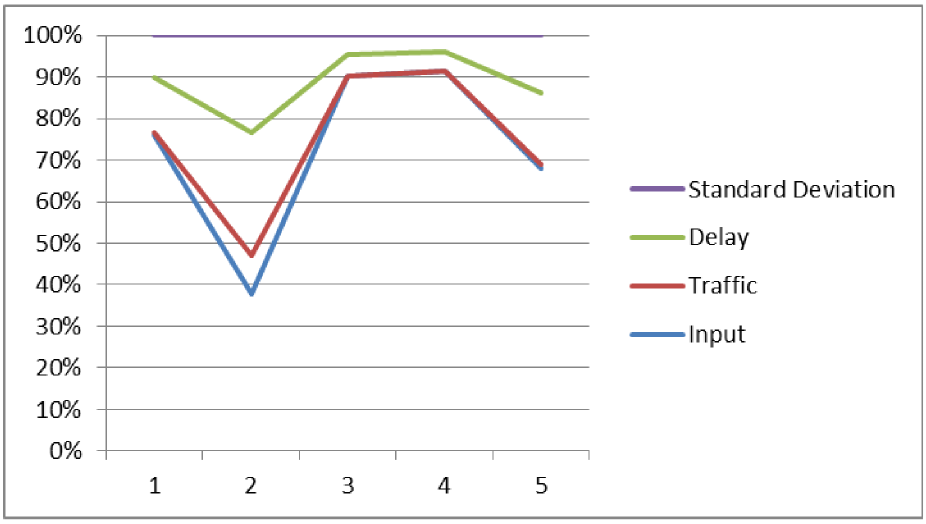
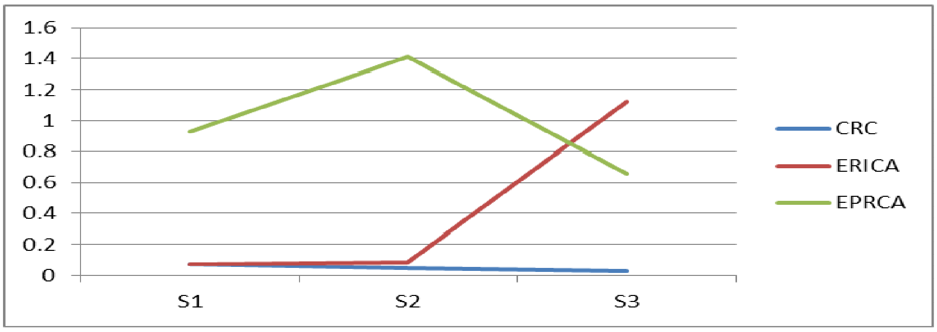


Table 5: Switch Comparison

Switch type	S1	S2	S3
CRC	0.07	0.05	0.03
ERICA	0.075	0.084	1.12
EPRCA	0.93	1.41	0.66



6. Performance evaluation

The average delay in the mean time elapsing from the arrival of a packet in the traffic shaping buffer of a CLS until the departure of the packet from the buffer . This delay consist of the time of a packet spends in a buffer plus the time necessary for transmission of the consecutive cells of the packet on a outgoing connection. The average reserved bandwidth is the long time average of the bandwidth reserved on a connection between on a source/destination pair of CLS provides of time in which no connection is available are taken into account in the average and are considered as periods during which the reserved bandwidth is 0. The average reserved bandwidth will be strongly resulted in the cost of the service.

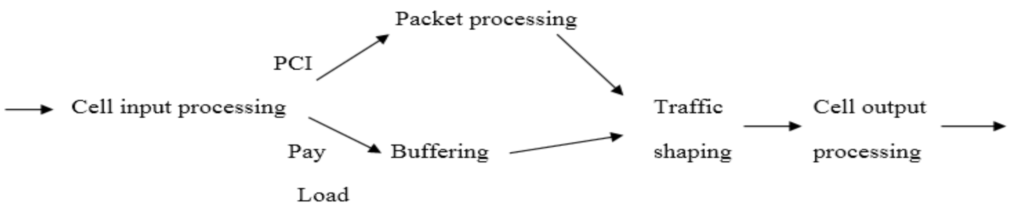


Fig 1: cell process

Proposed Algorithm

```
If (c=1)
{
Acr = acr-acr*rdf
}
Else if (c=0) and (n = 0)
{
Acr = acr + acr * rif
Acr = mdv (acr, pcr)
Endif
}
If (acr>er)
{
Acr = er
Acr = max(acr,mcr)
}
```

The average number of connection setup per second is the logic time average of the number of times a connection is established per second. This measure is an indication for the load on the signaling system. Which is also cost factor for the provision of a connection service. Note that the number of request for connection release equal the number of request for connection establishment. The sample of analytical performance evaluation relies on queuing they indicating the both the steady state and transient analysis. The chosen queuing model is expected to capture the essential characteristics of the system as much as possible. At the same time it should remain analytically traceable. On the queuing model has been adopted its numerical analysis regarding to the steady state and/or the transient behavior is carried out. Perfect measure of internet is calculated and measured one.

By means of mathematical tool we have exactly formulated to design task of topology optimization for an overlaid ATM network as inter programming problems. Which enables the appropriate choice of planning methods. We have heuristic algorithm accordingly to the specific nature of the planning task. We have proposed the combination of these heuristic algorithm to the solution of the design task. We have proposed the normal proposed approach for the planning task. The original design problem has been decomposed into sub problems in such a way that the code of the optimization algorithm can be efficiently reused.

Conclusion

The CTD distribution of the CBR reference traffic without background traffic load was sufficiently modeled by a normal distribution. The symmetrical CTD distribution of the CBR reference traffic at the low utilization were adequately modeled by a gamma distribution. This result was same as the simulation result[5]. Single gamma distribution failed to model the CTD distribution of CBR reference traffic with single channel CBR background traffic at high utilization.

A tool to access average delay of a CLS as a function of the used implementation architecture the mode of operation and the bound. A tool to access the packet loss probability and occupancy distribution of a reassembly buffer as a function of its size and the load. A tool to access among other the delay reused bandwidth and signaling load of the OCR mechanism as a function of its control parameters. Un controllable experimental parameters is the complicated analysis of the experimental results. They were the instances of reference and background cell arrival at the network module of each connection hop length of each VC queue at the network module and how much weight was put on the refereed traffic in case of the out put port congestion.

It combines the input rate of real time voice and video traffic and non real time data traffic in the decision of connection admission. It combines the experiences from lot of experts so that an acceptable decision boundary can be obtained. It provides an interval decision so that a soft decision trade- off between cell loss ratio and bandwidth utilization.

Acronyms

AUU – ATM USER TO ATM USER INDICATION
BCLS – BROAD BAND CONNECTION SERVICE
CATV – CABLE TELEVISION ANTENNA
CBDS – CONNECTIONLESS BROAD BAND DATA SERVICE
CLNP – CONNECTIONLESS NETWORK PROTOCOL
CLSM – CONNECTION LESS SERVICE MODULE
CPCS – CONNECTION PART OF THE CONNECTION SUB LAYER
DQDB – DISTRIBUTED QUEUE DUAL BUS
HDTV – HIGH DEFINITION TELEVISION
HLPI – HIGH LAYER PROTOCOL INDICATION
OCDR – ON DEMAND CONNECTION WITH DELAYED RELEASE
SMDS – SWITCHED MULTIMEGABIT DATA SERVICE
SSCS – SERVICE SPECIFIC PART OF THE CONVERGENCE SUB LAYER
PCR – PEAK CELL RATE
MCR – MINIMUM CELL RATE
ACR – ALLOWED CELL RATE
ICR – INITIAL CELL RATE
NRM – NUMBER OF CELLS FROM RM CELLS
MRM – MINIMUM NUMBER OF CELLS BETWEEN RM CELLS
TRM – UPPER BOUND ON INTER FRM TIME
RIF – RATE INCREASE FACTOR
RDF – RATE DECREASE FACTOR
ADTF – ACR DECREASE TIME FACTOR
TBE – TRANSIENT BUFFER EXPOSURE
CRM – MISSING RM CELL COST
CDF – CUT OFF DECREASE FACTOR

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