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Internetworking and Video Support for Technology Inter Operations in ATM Networks

P. Rajan
Research Scholar
Bharathiyar University
Coimbatore-641046

Dr. K.L.Shanmuganathan
Prof. and Head
Dept. of CSE
RMK Engg. College ,Chennai-601206.

Abstract - The ATM is expected to be the Multiplexing and switching technique for future broadband integrated service digital networks which can transport almost all types of traffic including bursty data traffic and continuous voice and video frames. This paper describes the R& D background and state of the art that led us to this approach. If then describes the communication infrastructure and the application infrastructure of the setup the problems we found and the solutions.

1. INTRODUCTION

Radio Base stations connected to the wireless ATM network provide the equivalent of a wired ATM drop cable from this network to the mobile. ATM traffic characteristics such as low battery, statistical multiplexing and QOS reservations [3] are presented in the wireless network. An ATM mesh of switches running standard ATM protocols is used for base station interconnection. Both fixed and mobile host used standard ATM adaptation and signaling probs. efficient use is made of radio bandwidth. Mobiles of varying complexity are supported. Active ATM VC are presented during handover with minimal loss of data. The small scale mobility of mobile devices is hidden from the wired ATM network. Bandwidth request using short cells. The ONU uses short cells to request upstream bandwidth. The OLT allocate the timeslot of the shared band in proportion to the notified queue length from each ONU. Assuming that one short cell has a seven octect length and 32ONU can connected to one OLT interface 8 ONU can send each short cell in one time slot and the time interval of short cell is from frames. No dynamic bandwidth allocation all upstream bandwidth are pre assigned to each quality. This condition was simulated for reference. For cost effective mass produced devices we must achieve an innovative reduction in the number of component such as the optical lens and component for assembly and an innovative assembly process. For high performance devices one key issue is effective assembly of optical devices for wavelength division multiplexers.

2. RELATED WORKS

Bandwidth enforcement increases the complexity of a system. Basically what bandwidth enforcement does is to hold early messages at the source node and release them when they become eligible for transmission. This is difficult to implement in high speed networks especially for nodes from which many traffic stream originate. Bandwidth enforcement could become inefficient violation of traffic characteristics by one user does not necessarily imply network congestion. Holding the extra traffic outside a network may be unnecessarily conservative and waste network resources. Bandwidth enforcement reduces the ATM ability of accommodating varying bit rate traffic [6] which has been claimed to be one of the main advantages of the ATM over the traditional synchronous transfer mode. The underlying FIFO scheduling of cell transmissions of is not suitable for heterogeneous real time communications. With FIFO scheduling it is difficult to accommodate real time services which have different bandwidth and delay requirements. The deadline scheduling policy can minimize the effect of queuing delay in the sense that given a set of cells with deadlines. So that they can under the deadline scheduling policy[2] . Thus the deadline scheduling policy gives a communication network more capacity to accommodate real time schedule that with other scheduling policies. The deadline policy reduces the probability of unnecessarily rejecting connections setup request. A rich deadline scheduling theory has been established from which the admission control scheme[5] for real time channels can be desired.

This theory can be used directly for ATM network from which the guaranteed QOS can be provided if the deadline scheduling of cell transmission is implemented in ATM switches. With the deadline scheduling of cell transmission from different source interfaces with each other only through their deadlines. Thus with a proper deadline assignment and buffering scheme it is easy to remove the adverse effect of a user generation of more traffic than that specified at a connection setup time. This eliminates the need for bandwidth enforcement at the network entry points. Another major advantage of using the deadline scheduling is that the messages which violate the proposed messages generation pattern can be transmitted over the network entry points.
Another major advantage of using the deadline scheduling is that the messages switch violate the pre specified message generation pattern can be transmitted over the network on a best effort basis.

Early messages will be assigned latter deadlines but they can still be eligible for transmission if the network is lightly loaded. This can sharp contrast to bandwidth enforcement where early messages are held outside the network until they become outline. This feature is very important for applications where the traffic characteristics[8] cannot be predetermined accurately and when the source generate more traffic than expected it is still describe that the extra traffic should be transmitted as soon as does not interface with the timeless generate their low abiding channels.

3. SIMULATION RESULTS

TABLE 1: SYSTEM COMPARISION

P386 Min	P386Avg	P386 Max	P486 MIN	P486 AVG	P486 MAX
0.45	25.05	27.50	0.33	0.40	0.85
26.60	13.5	1.10	26.60	27.05	27.50
13.01	3.65	27.50	13.0	3.60	3.65
3.60	0.15	13.60	3.60	3.65	3.80
0.11	0.65	3.80	0.33	0.47	1.05

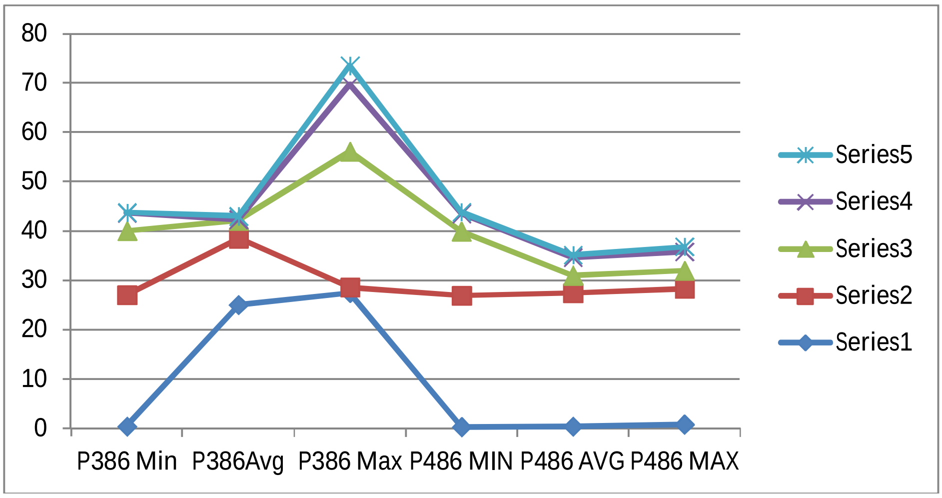
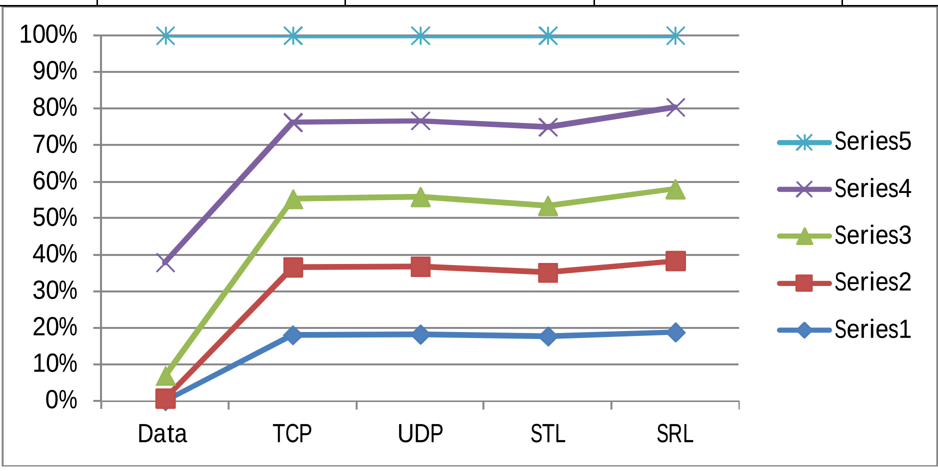


TABLE 2 : SOFTWARE TRANSMISSION COMPARISON

Data	TCP	UDP	STL	SRL
1	202.30	205.75	332.15	283.50
10	207.90	209.90	326.20	293.90
100	209.50	215.50	342.80	296.0
500	235.3	234.9	403.0	337.80
1000	266.7	263.7	469.5	295.23



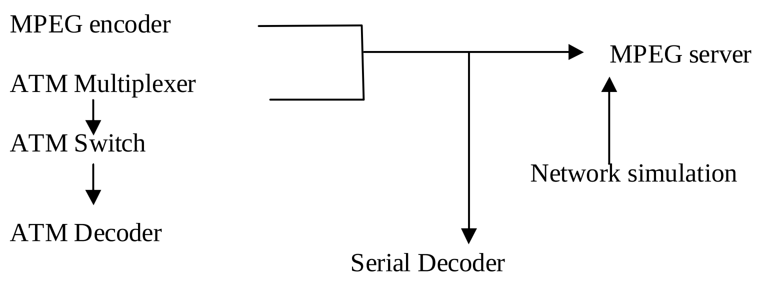
ALGORITHM STEPS

Start
Number of channels to write
Number of bytes in the buffer
Number of bytes written
The call result in overlapped operation
Commence network transmission
Open socket
Pointer to array of buffer
Number of buffer in the array
Number of correctly translated type
Number of flags
Non overlapped sockets
End

The packet size chosen [7] for our simulations was is P235 cells which regularly corresponds to an Ethernet MTU i.e. 1500 bytes. In general a token to be 0.5 which indicate that it is a bursty source generating at the fifth percentage of its capacity. As indicators for the performance of the ATM network and end nodes. We have considered latency and throughput. Latency is always present due to soft and hard overheads at the host and due to a limited line speed. While a peak cell rate is set to a small value the host experience difficulties in sequencing the cell emission efficiency.

It will take a significant amount of time before large messages have been put on the link by the lost. Our evaluation result is shown in the given table and graphs is the amount of memory required at the end systems the amount of time required at the end systems the amount of time needed to contrast a separate path i.e. carried out the VC level and the VC blocking probability. We use network topologies each of size 2764 nodes our result indicate that the view based routing schemes performs close to better than the simple scheme in terms of VC carried blocking probability over a wide range of work load. It also reduces the amount of memory requirement by up to 2 order of magnitude.

Fast transmission and guaranteed maximum transmission delay in no loss cell caused by traffic congestion in the network. Losses due to transmission error or physically broken connections are ignored here. The use of fiber optic cable reduces the bit error rate to less than 10^{-9}. A certain output port can only be accessed by one dedicated input port. Exclusively to one logical connection dedicated physical connections and strict priorities.



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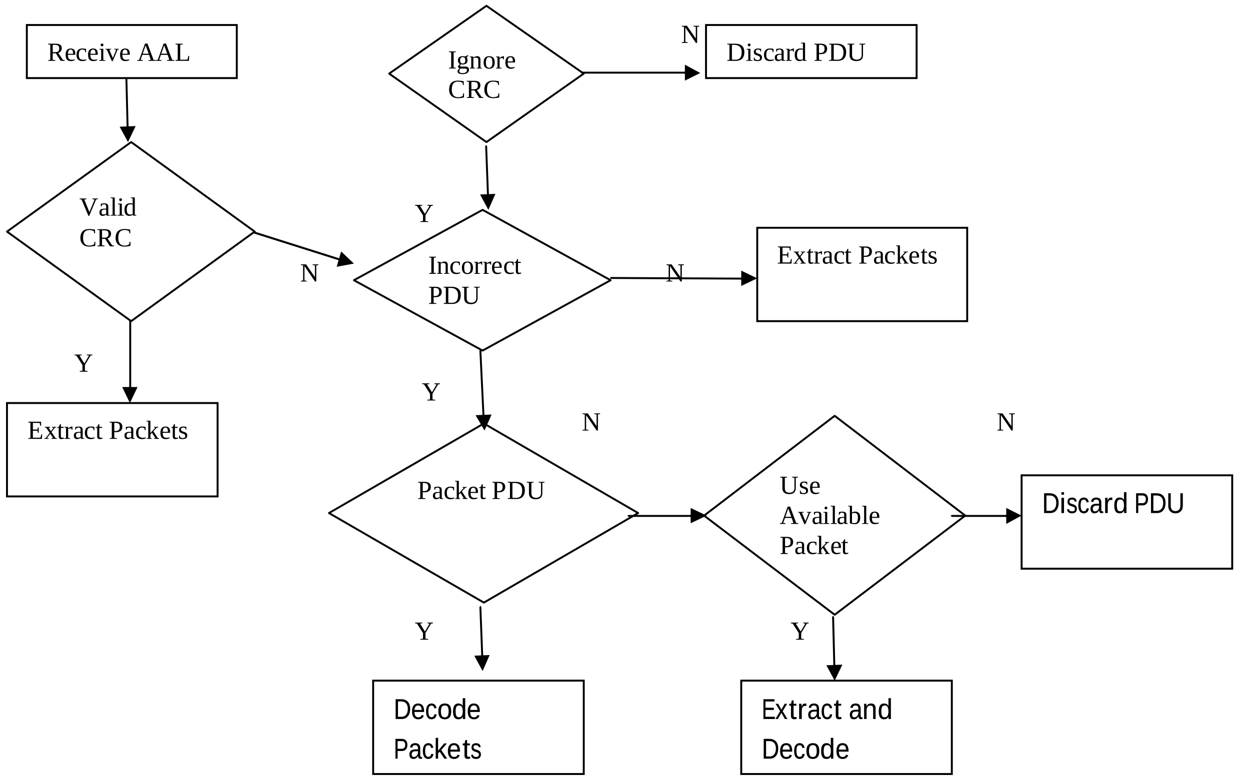

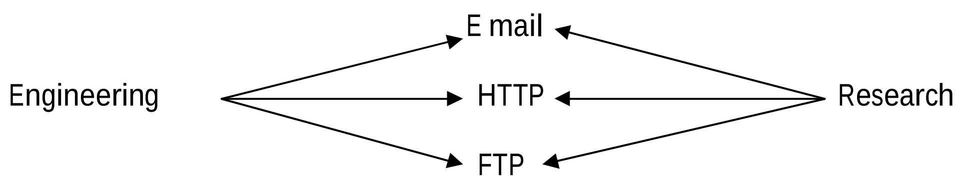

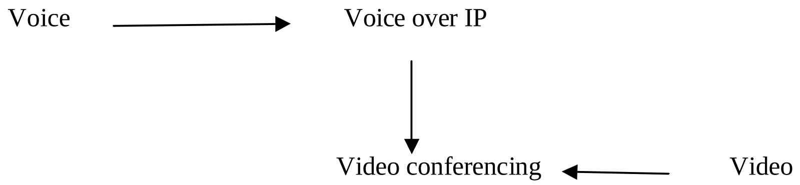

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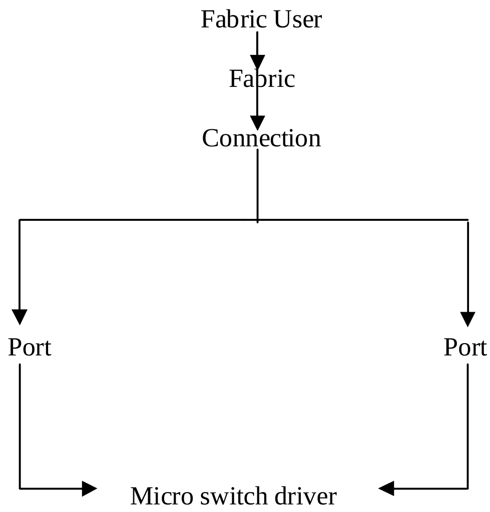
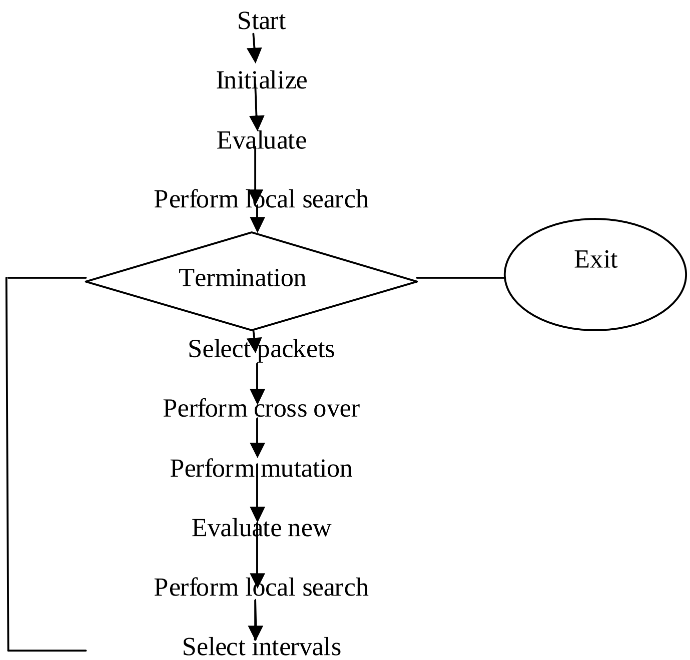


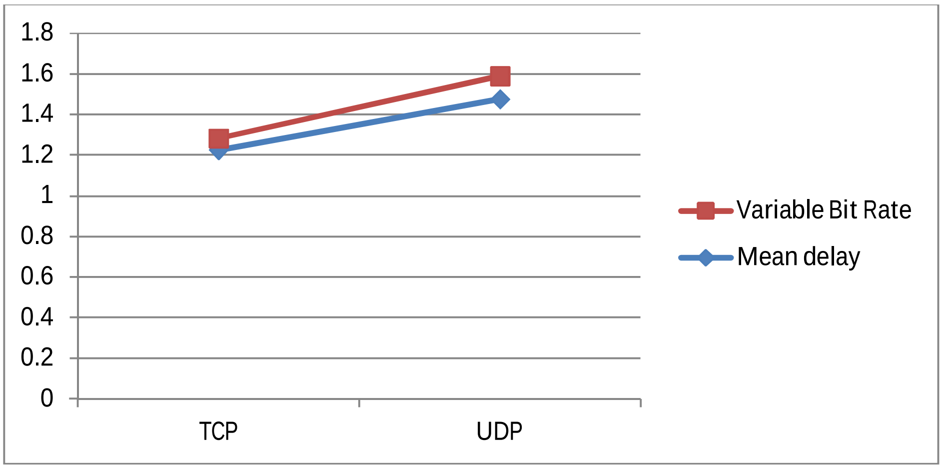


4. PERFORMANCE ANALYSIS

Average queuing delay i.e. the average elapsed time from the time packet join the local queue until it reaches the head of the local queue itself. The average MAC delay experienced by a packet from the time it reaches the head of the local queue until the beginning of its successful transmission. The average access delay is the sum of the average delay and average queuing delay. The aggregate throughput is the number of bits successfully by all stations per time unit. Cell loss rate the transaction of cell loss ratios and percentiles of the delay discussion. The former type of traffic is managed by the DCF [1]the later by the DCF. The performance analysis of IEEE 802.11 is further extended towards the opening region investigated for wireless ATM to verify whether or not this MAC protocol [4] is a suitable coordinate for wireless ATM.

TABLE 3: DELAY JITTER CONTROL

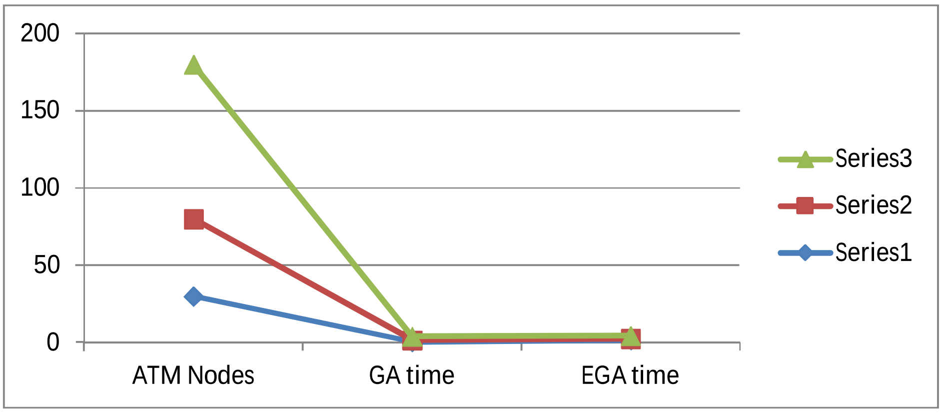
Protocol	TCP	UDP
Mean delay	1.225	1.475
Variable Bit Rate	0.057	0.113



The latency delay include all delays such as sampling compression and networking decomposition and presentation. Delays of more than 150 MS cause a loss of natural reactions. In the intermediate node large play out buggers may increase the end to end delay and delay variation. The skew is the difference in presentation times between two related objects. The jitter is the instances and variations in the object presenting time. This metric related to the packet loss probability. To maintain picture quality the requirement for uncompensated cell loss ratio on the order of 10^{-7}.

TABLE 4: RING TOPOLOGY

ATM Nodes	GA time	EGA time
30	0.55	1.65
50	1.10	0.95
100	2.25	1.85



The cell loss size[5] of VBR and ABR service parameters are 10000. Maximum available bandwidth is 155mbps with 100% available buffer size is 512KB. The network performance or plotted as a function of traffic S/R packets. In order to request different type of call request in 3 types of call request type are assumed. Store the newly arrived cell rate is the pool of this research.

CONCLUSION

We have addressed the problem of providing real time communication services in ATM networks. Using the concept of real time channel we can solve the fundamental congestion control problem and can also provide the guaranteed QOS in ATM networks. Our main contributions are to slow the suitability of the real time channel approach for ATM networks and develop a message transmission scheme which is suitable for ATM network and has a number of significant advantages over the schemes.

ACRONYMS

AAL – ATM ADAPTATION LAYER
ARP – ADDRESS RESOLUTION PROTOCOL
BGP – BORDER GATEWAY PROTOCOL
CIF – CELL IN FRAMES
CSR – CELL SWITCHING ROUTER
DNS – DOMAIN NAME SERVER
DTL – DESIGNATED TRANSIST LIST
FIB – FORWARD INFORMATION BASE
LES – LAN EMULATION SERVER
NAP – NETWORK ACCESS POINT
NNI – NETWORK NODE INTERFACE
NTP – NETWORK TIME PROTOCOL
PDU – PROTOCOL DATA UNIT
PSTN – PUBLIC SWITCHED TELEPHONE NETWORK
PVC – PERMENANT VIRTUAL CIRCUIT
RFC – REQUEST FOR COMMENT
RTP – REAL TIME PROTOCOL
UNI – USER NETWORK INTERFACE
VPI – VIRTUAL PATH IDENTIFIER
BER – BIT ERROR RATE
EPD – EARLY PACKET DISCARD
HOL – HEAD OF LINE
NPC – NETWORK PARAMETER CONTROL
SDH – SYNCHRONOUS DIGITAL LIBRARY
UPC – USAGE PARAMETER CONTROL

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