A Review Paper on Buffer Management in High Speed ATM Network

Dr. Manju Kaushik [1], Pankaj Kr. Gupta [2]

Associate Professor (Computer Science and Engineering), JECRC University, Jaipur, India[1]

M.Tech, (Computer Science and Engineering), JECRC University, Jaipur, India [2]

Abstract— **in the recent year's speed of data sending is increase and increase rapidly everyone are using the high speed network connection like broadband services Third Generation Network or 3g etc so in this technology it is necessary to manage the buffer size because of ATM Network use the concept of packet switching. So to hold the sending data each and every node of virtual path is must so in this paper we are introduce with the concept that how to manage memory when data going through from source to destination and we also manage the bandwidth in this path that help to increase the speed of sending of data from source to destination. And it is also help to understand that how set a next path for destination if any link or node is Failed During the sending the data.**

Keywords— ATM, Virtual Path, Buffer, X.25, virtual channel

I. INTRODUCTION

In the recent year we are introduce with various switching technique for example circuit switching message switching ,packet switching in these technique packet switching technique is very popular that is used in the recent network and its higher version of switching. This switching also used in x.25 and Asynchronous Transfer mode (ATM) technology used this switching technique. Today era we use high speed network provided by ATM network used 53 byte of cell size and data are send into the frame. So as well as speed of data travel on the net is increased there is always a problem with the buffer of a network node due to handle the speedily data there is a problem with the buffer size so here we discusses the problem of buffer size in ATM network .When load is much on the network node or a particular correspondent node or if it failed because of load for the failed link or node we want to manage the buffer size and restore the failed link again to new path and retransmit the data or we want to use various heuristic approach for this failed link .Again manage the virtual path and provide a bandwidth to new node to send the data we need to manage virtual path here because of the TAM technologies is connection oriented technology base on the virtual path technique in which A path is Assign to Perrier to send the data from one the network[1]. In that case of buffer management scheme or in a network we are know that there are multiple connection to a node that share the same physical buffer management scheme also known as space priority scheme are necessary to ensure the proper buffer access priority of different services. But on the network if traffic follow is much and congestion increasing due to failed of any node so it is required to manage the buffer because today network is base on high speed and data cannot be stop streamlining id data is processes through a network speedily then it is need to manage the buffer on the time of allocation .and if a connection does not have enough cells in its queue to use up all its automatic sharing of unused bandwidth so WRR (weight round robin)[4] server is used to achieved the bandwidth sharing this is also helpful to manage the traffic and traffic management is achieved by this strategy so using this we can achieve guaranteed Quality of service required traffic isolation as well as allocation of enough network resources e.g. Buffer space and bandwidth to each call and statistical bandwidth sharing means the network resource should be occupied on demand leading to less traffic isolation and minimal resource allocation[2].

II. BANDWIDTH MANAGEMENT STRATEGY

In order to achieve a successful bandwidth management framework, it is necessary to incorporate efforts at both the cell and network design levels. In this section we will first introduce the basic concepts of the proposed framework and the Cell-level schemes to support them, and then look into the network design level issues. Furthermore, we also present a sketch of a possible implementation of the proposed framework [7].

III. BASIC I DEAS: BANDWIDTH A LLOCATION VS. RESERVATION

In traditional telecommunication networks, usually a certain amount of bandwidth is *reserved* for all connections; that is, each connection will always be given and only be able to use the portion of bandwidth explicitly assigned to it [9]. For example, in a time-division multiplex (TDM) system, each connection has (and pays for) its own digital channel and the Associated fixed bandwidth. No connection may use the bandwidth on any other channels, even if there is no traffic on them at the time. Since the majority of traffic in those networks is CBR (voice connections), the reservation-based Scheme is sufficient. However, VBR and "best-effort'' traffic (ABR and UBR) will play very important roles in ATM networks, and it is difficult, if not impossible, to support these services efficiently by a *reservation-based* scheme. In order to achieve both guaranteed QoS and high network utilization for all service classes in ATM networks, a new kind of bandwidth management, which we call bandwidth *allocation,* must be introduced. In a bandwidth-allocation based scheme, each connection is allocated a certain amount of bandwidth (which could be zero) [10], and: Each connection is *guaranteed* to have access to its allocated bandwidth whenever it has something to send. Unused bandwidth is available to other connections. Consequently, a connection can sometimes use bandwidth exceeding its allocation, but *only* when other connections are *not* using their allocation. Note that different services emphasize different aspects of the allocation-based scheme. For example, since the *QoS* requirements for CBRIVBR connections need to be guaranteed all the time once they are admitted into the network, it is necessary to allocate them an amount of bandwidth which will guarantee that the QoS (Quality of service) requirement will be met. On the other hand, ABR connections would be allocated only enough bandwidth to guarantee their minimum cell rate (MCR), since they are supposed to utilize the bandwidth "spared" by CBR and VBR connections. Similarly, UBR connections would likely not he allocated any bandwidth [11].

IV. Bandwidth Management for CBR/VBR Traffic

As we have mentioned before, CBR/VBR services generally require a worst-case QoS guarantee, and the primary way to achieve this is to allocate enough bandwidth to each connection (sufficient buffer space should also be allocated). Thus, the admissible traffic load on a VP is determined by the total amount of bandwidth allocated to that VP. From the traffic engineering point of view, this amount should be determined by relatively long-term considerations, such as physical link capacity, traffic forecast, and estimation methods, and may be updated in a timescale such as hours or days rather than on a call-by call basis. The main advantage of this long-term allocation of VP bandwidth is that it simplifies the VC-level connection admission control (CAC) and offers traffic isolation to provide performance guarantees for each VP. The CAC is simplified because the decision of whether to accept a CBR or VBR call can be made at the corresponding source edge gateway by comparing the bandwidth requirement of the New call and the available amount of allocated bandwidth on the VP which is to carry the new call. In our framework, an incoming CBR call is admitted if its PCR can be accommodated by the VP, and an incoming VBR call is admitted if its SCR can be accommodated by the VP. Determination of an appropriate value for SCR is a challenging, ongoing research topic. One possibility is to use equivalent bandwidth [10]; another is explored in *[14]*. Also notable is that under this strategy, the optimization of VP routes becomes possible using mathematical Programming techniques. Although ABR/UBR VPs should be able to use spare bandwidth from CBR/VBR VPs, bandwidth sharing among CBR VBR VPs is undesirable. The traffic entering a CBFUVBR VP should be restricted to the allocated VP bandwidth to ensure that the VBR rate fluctuation does not degrade the performance of CBR VCs which are integrated on the same VP. To clearly understand this, note that the spare cell slots from other VPs at one node may not be available at the downstream nodes. Consequently, the extra VBR cells transmitted using spare cell slots from other VPs may be throttled at a downstream node, causing CBR connections sharing the same VP queue to incur more delay variation and even cell loss. Note that since the CAC decision for CBR and VBR should always be based on the allocated VP bandwidth even if there is spare bandwidth in the network, the above restriction will not impact the network capability to accommodate CBR/VBR service. However, we believe that in order to fully exploit the possibility of statistical multiplexing, it is still desirable to have VC level bandwidth sharing inside each CBR VBR VP [12].

V. CONCLUSION

Buffer management is the most important concept in the field of the telecommunication computer network which provide a approach to transmit the data with a efficient way on the source to destination link we are study of various type of data transfers techniques which provide the buffer management scheme of different-different type. So in this paper we are discussing only that what is the buffer management and how it work in the network.

REFERENCES

[1] James F.Kurose, Keith W. Ross "A Top-Down Approach Featuring the Internet", Pearson Edition, New Delhi, India, Second Edition, 500(2005).

[2] William Stallings "High- speed Networks and Internets Performance and quality of service", Pearson Edition, New Delhi, India, Second Edition 71(2006).

[3] Mani Subramanian "Network Management Principal and Practice", Pearson Edition, New Delhi, India, Second Edition, 52 (2010).

[4] William Stallings "High Speed ATM Network Concept", Pearson Edition, New Delhi, India, Second Edition, 73 (2006).

[5] Kenyan Liu David W. Petr, and Victor S. Frost, University *of Kansas IEEE Communication magazine Kansas,* 138 (1997).

[6] Buyya, R.;Cirets, T.;Jin, H. "High Performance Mass Storage and parallel" Wiley-IEEE Press eBook Chapters , 224 (2002)

[7] Lewis, J., Alghamdi, M., Al Assaf, M., Ruan, X., Ding, Z., Qin, X., "An Automatic Prefetching and Caching System," *29th IEEE International Performance Computing and Communications Conference*, 180 (2010).

[8] Kenyan Liu David W. Petr, and Victor S. Frost, "Design and Analysis of a Bandwidth Management Framework for ATM-Based Broadband ISDN" *University of Kansas IEEE Communication magazine Kansas,* 138 (1997).

[9] Eric W. M. Wong, Andy K.M. Chan, Sammy Chan and K.T. KO "VP Formulation and Dynamic Routing in ATM Networks" *University of Hong Kong IEEE Communication magazine Hong Kong,* 1715 (1996).

[10] Thomas M. Chen, Stephen S. Liu "ATM Switching" *IEEE Journal on Selected Areas in Communications*, **9(2)**, Pages 1255-1264, (1991)

[11] **http://shodh.inflibnet.ac.in/http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.35.865.**

[12] Thomas M. Chen, Stephen S. Liu "Experimental consideration of the public ATM Network to Accommodate High-speed Multimedia Communication services", *IEEE ATM workshop,*320 (1997)

[13] Xiangyang Gang, Pheg zhang "Implementation of ATM switch for PSTN/I-SDN services" *2ND International Conference on ATM, 413 (1997)*.

[14] Gang feng and Tak shing peter yum "Multiparty Video Conferencing in virtual path based ATM networks" *Global telecommunications conference, 759* (1998).