Essay on atm exercise

Technology, Internet

The following information is provided for the purpose of derivation of an expression for PP:

- PC = Cell loss rate in the ATM network

- n = number of cells required to transmit a single IP datagram

- PP - IP-packet loss rate

As such, it is important to define the meaning of the rates provided above and to provide additional parameters based on which an evaluation of PP will be possible.

The packet loss rate can be defined as the ratio of the packets lost to the total number of packets transmitted through the ATM network as follows:

Packet Loss Rate PP= Packets LostTotal Packets Transmitted x 100% (i)

Each of the IP datagram packets in the ATM network is segmented to n cells whose delivery forms a benchmark as to whether or not delivery will be successful. This is because ATM does not allow for cell loss recovery, as such, when any of the cells is lost; the entire IP packet is lost.

Letting N to be the total number of datagrams, n0 to be the number of cells lost and n ne the number of cells required for a single datagram as given above.

The cell loss rate in the ATM network can be given as follows:

Cell Loss Rate PC= Cells LostTotal Cells Transmitted x 100%

PC = n0n X N x 100% (ii)

n X N gives the total number of cells in the network

Since it is not definite that each packet will lose a cell and hence be regarded a loss, as one packet could lose more than one cell which implies that the

loss of one datagram could be attributed to the loss of more than one cell, the packets lost can be evaluated as:

Lost Packets= Cells LostTotal Cells Transmitted x 100%

Lost Packets = n0n X N x N

= n0n

PP= n0n x N x 100%

But using equation (ii)

n0= n x N x PC 100

PP= 1n x N x 100% x n x N x PC 100

= PC

Comments:

The cell loss rate is equal to the packet loss rate. This could be attributed to the fact that the loss of any one cell in each IP datagram results in the loss of the whole IP datagram.

The ATM service that could be utilized to achieve the best possible performance is dependent on the type of data that is up for transmission. The services from which to choose from include the constant bit rate service, the variable bit rate service, the available bit rate service, and the unspecified bit rate service (Ahmad, p. 372). To achieve the best performance, it is desirable to use the constant bit rate set at a high and guaranteed value.

References

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