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High Performance in Multipoint Systems Using PVSN Approach

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Abstract— Recently, there is a tremendous change in the wired or wireless applications considering the Many to Many (MM) systems in the explicit distributed network environment. In this MM systems two control flow mechanisms are used for correct multicast flow control mechanism they are distributed self- tuning proportional integrative plus derivative (SPID) controller and distributed self-tuning proportional plus integrative (SPI) controller which provides reducing the packet loss and increase in stability but it requires more computation time, utilization of CPU resource and it cannot applicable for more corrupted data, maintaining the buffer when its exceeds capacity, sending the acknowledgements serially. This paper proposes a Packet Venatic Synchronisation Network (PVSN) approach for sending acknowledgements for more corrupted data or loss in packet, more delay in the packet acknowledgement back to the sender by using the selective acknowledgement (SACK & NACK) methods.

Keywords— : Multipoint Systems, Distributed Network, Control Flow, Acknowledgement, Utilization.

I. INTRODUCTION

MM network is more effective in several techniques than the unicast transmission network. In unicast network packets are moved from the client to server in sequential process [1]. In the broadcast (unicast) transmission the drawbacks are flooding, data corruption, slow communication, low reliability and etc,. To clear the above drawbacks this paper uses multicasting mechanism for flow of packets in MM networks. The advantages of this mechanism synchronisation, good feedback messages reducing the error and flow control, takes less queuing delay, propagation delay and transmission delay and improves the parallel transmission and keep track the efficiency use of the links. In the previous literature tells that the multicasting mechanism using the approaches is SPI and SPID flow of control mechanisms which are expressed in explicitly for distributed environment [2]. As the paper circulated as in the part II represents about literature review. In the part III represents the plan of existing methodology is described. In part IV represents plan of proposed methodology is described. In part V execution of PVSN approach is expressed with an algorithm. In part VI performance for proposed methodology can be extracted by variations of results. At last, in part VII the proposed methodology concluded and future enhancement work is discussed.

II. LITERATURE SURVEY

L. Benmohamed and S. M. Meekov [3] proposed congestion control for packet transferring networks in feedback message mechanism in order to reduce Time To Live (TTL) and queuing delay for calculating the features of multicasting. Y. Z. Cho, S. M. Lee, and M. Y. Lee [4] an appropriate algorithm for distributed environment for reserved bit rate services. In above methods increased the efficiency of broadcast network and allocation of bit rates.

Various distributed environment flow of control mechanisms are developed for maintaining the explicit distribution of data in distributed environment .Feedback compression [5] process for multicasting is not applicable for tightly coupled criteria's for measurement of round-trip-time and does not require any past information of membership in group communication for current feedback source. In control of congestion scheme multicasting for single rate [6],[7],[10] using Transmission Control Protocol (TCP) provides end to end transmission and reduces the error control, flow control finally provides fast communication between the routers for packet transferring flow control of multicasting is used for different receivers which gives a best flow control algorithm which resolves problems such as transfer of large data and priorities in distributed environment. N. X. Xiong, Y. He, L. T. Yang, and Y. Yang proposed a dynamic method for flow of control in multicast using self tuning for reliability [8], which gives peer to peer feedback for both Backward Control Packets (BCP) and Forward Control Packet (FCP) in form of hierarchical structure in distributed environment.

SPI and SPID controller [2],[11] technique are most vital methods for routing in multicast which gives better results for flow of control flexible in distributed environment the overall advantage of these technique low data loss, low reliability, maintaining the efficient traffic [2],[9] and faster synchronisation between source and sink in distributed environment these scheme is applicable for connection oriented and transfer of data in static size format. It gives slow response when there is a large delay of time between branch point and source.

III. EXISTING SYSTEM: SPI AND SPID ARCHITECTURE

SPI and SPID controller scheme is one of efficient techniques for routing in multicast which is help full in gaining the correct control flow in distributed network environment for MM systems. The advantage of this scheme is reducing the packet loss and increasing in stability in connection oriented communication. But it requires more computation time and control processing unit (CPU) resource and it cannot be applicable for more corrupted data, maintaining the buffer when exceeds in capacity.

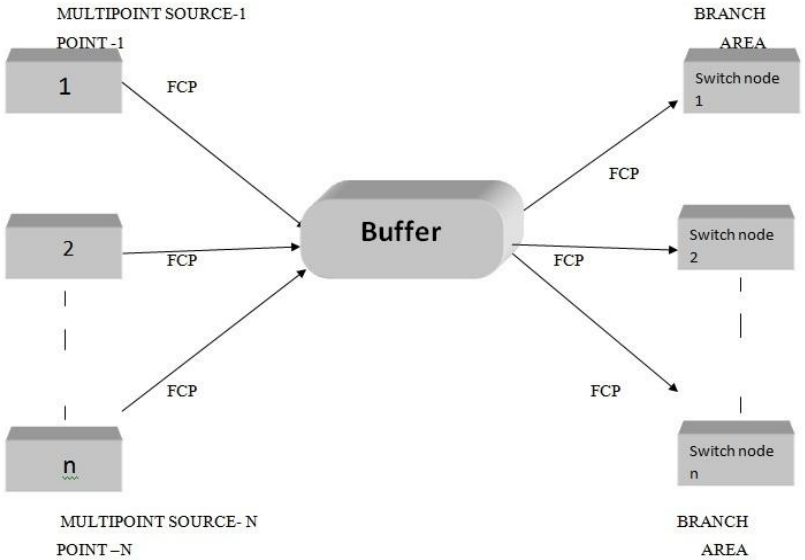

Figure 1 MM System using SPI and SPID Architecture

IV. PROPOSED SYSTEM: PVSN ARCHITECTURE

PVSN Approach will do same as SPI and SPID controller scheme's with enhanced features such as sending the acknowledgements with in time back to the sender and it uses

- If there is a more delay in time between sender and receiver then buffer will sends the acknowledgement (ACK) to the sender or receiver.
- It will manage the buffer by sending the packet back to the sender in the form of negative acknowledgements (NACK) using piggybacking.
- The senders have to wait to send the packet further until selective acknowledgement (SACK) [12] is received from buffer.
- The benefits of this approach is:
  - To solve unnecessary Time to Live (TTL).
  - Buffer can be maintained properly even for the large time delays.
  - Retransmission of packets is possible.
  - Traffic reliability is high between multi sender's and multi receivers.

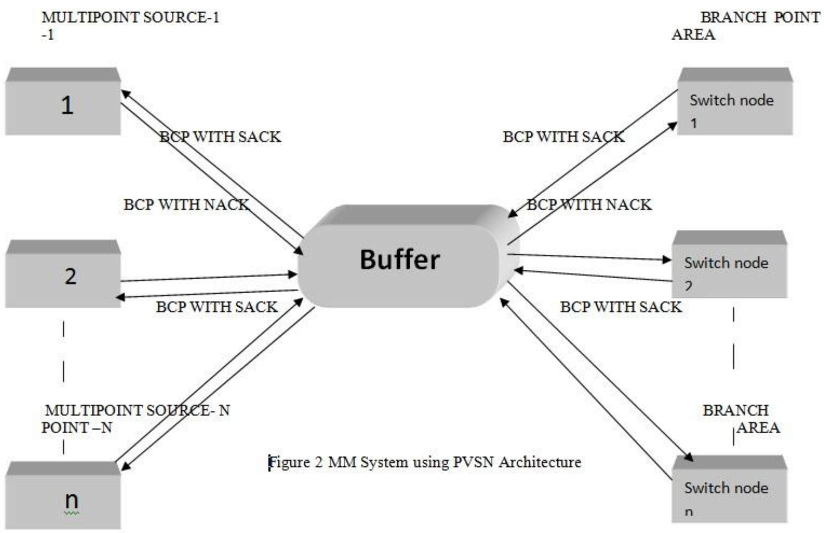

Figure 2 MM System using PVSN Architecture

V. PVSN IMPLEMENTATION

PVSN approach is importantly focus on maintaining of buffer capacity in branch area where it receives many inputs coming from MM systems and reducing the acknowledgment delay between sender and receiver by SACK and NACK methods in distributed environment.

$C_i(S+1) = PVSN\ z_i\{(c_i(s)\sum_{b1}^{a} E_a F_a(S-T_i)-L_i\}$ (1)

Where z_i Buffer Capacity

C_i is Buffer Occupied.

a_i (s) is response rate of receiver i at a time S.

$$PVSN\ y_i\{C_i\} = \begin{cases} yi, ci > zi \\ ci, 0 < ci < zi \\ 0, ci < 0 \end{cases}$$

$$E_a = \begin{cases} 0 \rightarrow if\ a\ is\ in\ not\ active\ state \\ 1 \rightarrow if\ a\ is\ in\ active\ state \end{cases}$$

$C_i(S+1) = C_i(n) + \sum_{b1}^{a} E_a G_a(S-T_i)-L_i$ (2)

A. Algorithm: pseudo code of client /router/server

i)Source Algorithm:

Variables :

MM tree[s] = 1(0);

// the s^th source receives (does not receive) BCP or FCP packet control

Sink tree[d] = 1(0);

// the d^th sink receives (does not receives) verification of entire receivers;

If *MM tree[s]* =1

- If it is a FCP packet
  - Place the packet in buffer;
  - The packet should be copied in addition to with FCP;
  - Apply MM to nodes which are at Down Stream;
- If it is a BCP packet
  - Build BCP on basis of BCP's received;
  - Feedback to the nodes which are at Up Stream;
- If *sink tree[d]* = 1
  - Remove the packet from buffer;
- If *sink tree[d]* = 0
  - Sustain all the packets of data in buffer, until verification of entire receivers;

ii)Buffer Algorithm:

- If branch area sends packet W_i to particular destination and it receives ACK from sink then

Set $K_q = 0$;

- Else

  $K_q = 1$;

- If $K_q = 1$ && $C_i > Z_i$ then
  - Send packet W_j return back for particular sender in addition with NACK denotes that overflow of buffer;
- Else
  - Branch area sends ACK to source for data transmission;

iii)Sink Algorithm:

- Based on receiving of a FCP packet;
  - Place the packet in buffer;
  - Build BCP on basis of present control flow of receiver or sink;
  - Send back BCP to routers where upstream nodes are present;

VI. PERFORMANCE EVALUATION

In MM transmission performance can be calculated by comparing between transfer rate of sender for PVSN approach and SPID technique and in addition to comparing the overhead of queue for acknowledgement delays for PVSN approach and SPID technique.

I) Sender Rate of Transmission Comparison

The Table 1 indicates comparison for PVSN sender rate of transmission and SPID sender rate of transmission.

Table 1. Shows SPID verses PVSN for sender rate of transmission

Time(mille seconds)	SPID sender rate of transmission for single terminal	PVSN sender rate of transmission for single terminal
0	15	20
60	30	35
120	50	63
300	75	84
500	82	93

700	**132**	**156**
850	**167**	**178**
1000	**197**	**239**

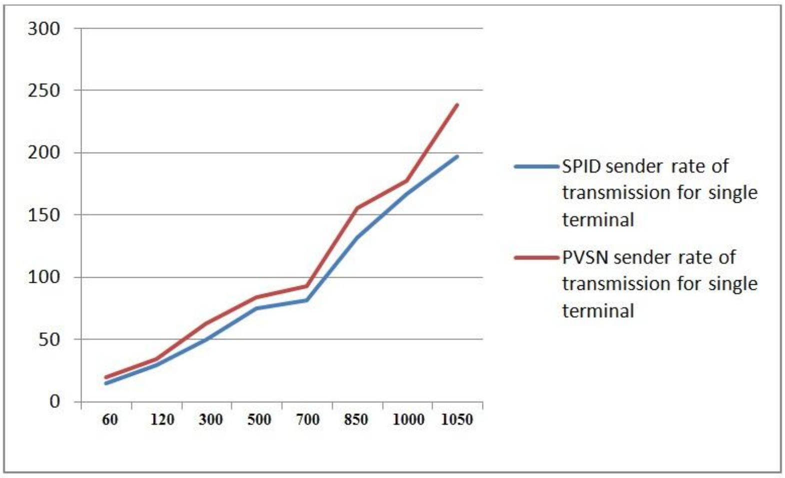

Figure 1. Representation in the of graph for table 1

Observations:

- The values are evaluated on Opnet.
- The rate of transmission from source to branch area of PVSN is 35% efficient that of SPID technique from the evaluated values.
- Hence, efficient sender rate of transmission from source to branch area can be achieved with proposed method.

II) Acknowledgement delay comparison:

The Table 2 indicates comparison PVSN acknowledgement delay and SPID acknowledgement delay.

Table 2 shows SPID vs PVSN acknowledgement delay

Transfer of data packets	Acknowledgement delay on SPID approach(percentage)	Acknowledgement delay on PVSN approach(percentage)
40	**8**	**6**
60	**10**	**7**
160	**20**	**14**
420	**43**	**30**
780	**47**	**33**
1000	**52**	**37**

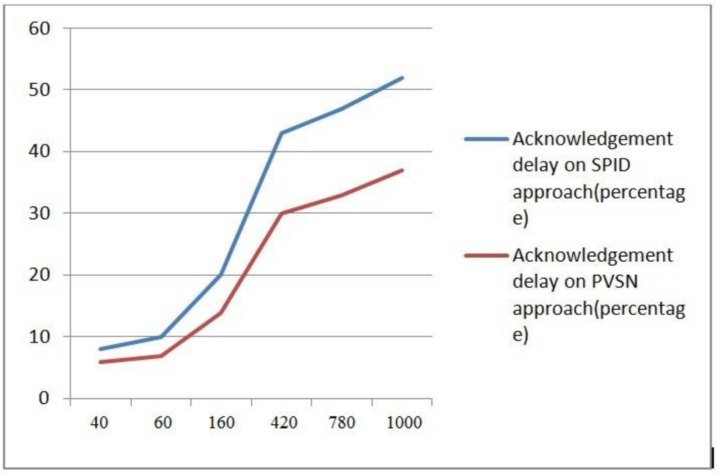

Figure 2 shows the graph representation of Table 2.

Observations:

- The values are evaluated on Opnet.
- The acknowledgement delay from source to branch area of PVSN is 38% efficient that of SPID technique from the evaluated values.
- Hence, acknowledgement delay from source to branch area can be reduced with proposed method.

VI. CONCLUSION

As the paper represents the PVSN methodology which takes BCP method with SACK's for maintenance of buffer of branch area this method is more advantageous for longer delay of time for transferring the data packets between branch area and sink and this method also gives extra features such as avoids infinite blocking, path synchronisation overflow of packets. Verified results tends that PVSN approach is 38% efficient that of SPID method. The drawback of this method is source waits for longer time until the NACK sent back to the source for erroneous packet in branch area or source and does not applicable for unicast networks.

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