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Scheduling Based Priority Buffer Management on Adaptive Routers

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ABSTRACT

Background: In this study, the paper proposes the development of Scheduling Based Priority Buffer Management and Traffic Monitoring on Adaptive Routers. In this paper, adaptive router is used to verify the data traffic at run time. Buffer management is used to absorb the data according to the allocated space in each node. **Objective:** This technique will improve communication efficiency without increasing the buffer size and uses the priority model, which is directed at network topologies and takes into account the case in which packets can have different priorities. Those priorities are assigned by an adversary at the injection time and network's node request performs based on this process. The network priority model is an extension of the priority model in which one is the first priority to set on the network based model **Results:** The goal of the simulation is to analyze the behavior of the AODV by deploying Networks. The simulation environment is created in NS-2, a network simulator that provides support for simulating mesh wireless networks. They use an environment consisting of 30 wireless nodes roaming over a simulation area of 1200 meters x 1200 meters flat space operating for 10 seconds of simulation time. The radio and IEEE 802.11 MAC layer models used. Nodes in our simulation move according to Random Waypoint mobility model, which is in random directions with maximum speed from 0 m/s to 20 m/s. **Conclusion**: By using a scheduling based router monitoring sensor for selected process on the network. The network priority is based on the network queue process, and sending the shared buffer router seems to better than the single-individual queue, at least in terms of packet drop. This simulation project is just to analyze the network routers in two different ways. (To take some limits for the network density and then energy consumption level of the network.) By considering different networks on this process among which the one that is more priority based on the network is given 1st preference on the network model.

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INTRODUCTION

In this paper, a router is a device that forwards data packets along with different networks. A router is a connection between a minimum of two networks. When the packets arrive at the router, it stores the packets in that buffer and then forwards it to the particular channel (Averill M Law, Simulation Modeling and Analysis, X. Chen and L.-S. Peh. 2003). The network based priority model used on this network.

So, the speed of the network increases, through which the router's schedule buffer may become the bottleneck along with the process performance of the network. Researches about the conditions of router buffer are going on. So, anyway, the size of the buffer is allocated, and so, the assignment to each port is another challenging aspect of the router buffer management. Basically, the network architecture is composed of routers, communication links between routers and Network interface between each pair of router and processor (P.T. Huan G. and W. Hwang, 2006). So, the network allows very high rate connection through parallel communication.

The router can accept the flits which simultaneously arrive from all the effort channels stored in the input buffer. If there is an overload on data processing at that time the data is lost. The input buffers in a router use to temporarily store the arriving flits that cannot be forwarded to the required output channels. The flints in the buffers are then transmitted through the output channels. Router with single-individual queue may drop more packets than in a shared queue, because of the chunk of buffer. The packet drop may cause the router's CPU utilization to decrease. On the other hand, when a packet joins into the shared queue, its time-average delay in the queue depends on the packets' arriving rate from the other ports too (A. Jantsch and H. Tenhunen. 2003).

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The first such variation is the priority model, which is directly at network topologies and takes into account the case in which packets can have different priorities. Those priorities are assigned by an adversary at the injection time and network's node request performs based on this process (J. Liu and J.-G. Delgado-Frias. July 2007). In that, the network priority model uses an extension of the priority model in which one is the first priority to set on the network based model

Due to the Network based priority model and the growing importance of wireless networks, we also consider some variations of the adversarial model for dynamic networks. In some, the connections between nodes may fail or change quickly and unpredictably (M.-M. Kim, J.-D. Davis, M. Oskin, and T. Austin. June 2008). Here the priority is use based on the network priority model.

Related Works:

A basic NoC architecture is composed of routers, communication links between routers, and a Network-Interface Component (NIC) between each pair of router and processing element (PE). NoC allows higher bandwidth through parallel communication (M. Lai, Z.Wang, L. GAO, H. Lu, and K. Dai. June 2008).

Each router can accept simultaneously the flits arriving from all the input channels by storing them in effort buffers. The input buffers in a router are using to temporarily store arriving flits that cannot be forwarded to the required output channels. The flits in the buffers are then transmitted through the output channels. There are three situations which demand the use buffering as explained in the following

A. Wait for routing decisions:

When flits arrive at the input channels of a router, then flits need to store the input buffers on the networks (R. L. Cruz and Arvind. -V. Santhanam.2003) , while waiting for the routing decisions.

B. Contention for the same output channel:

If more than one flit contends for the same output channel, then only one flit is able to send from the output channel at a time, while the other contending flits are storing in their respective input buffers for later transmission.

C. Congested downstream router:

Due to the lack of input buffer space in a congested downstream router, flits are also required to store in their current input buffers and with the idea of (R. Marculescu, J. Hu, and U.-Y. Ogras. 2005) . Network-on-Chip (NoC) architectures contain proposed to discuss the communication problems generated by the increasing complexity of the single chip systems. Such a control algorithm tries to avoid resource starvation and congestion in the network by regulating the flow of the packets which compete for shared resources, such as links and buffers. In the NoC domain, the term flow control was used almost exclusively in the context of switch-to-switch or end-to-end transport protocols.

These protocols give a smooth traffic flow by avoiding buffer overflow and packet drops. However, the flow control can also regulate the packet population in the network by restricting the packet injection to the network. This is precisely the main aim of this paper. To the best of the knowledge, this is the first study which addresses the congestion control problem in the NoC domain. And Ankur Agarwal, Cyril Iskander, As compared to synchronous designs (L.-F. Leung and C.-Y. Tsui. 2006), synchronous designs are modular and do not suffer from issues such as clock skew, higher power consumption and EMI. However, designing asynchronous systems is a more complex task when compared to designing a synchronous system. Designing a glitch free circuit and managing clock arrival times are difficult in the case of an asynchronous system. There is not much support from the EDA (Electronic Design Automation) industry for asynchronous systems. Thus, researchers have joint the ideas of synchronous and asynchronous designs.

One such strategy is GALS (globally asynchronous and locally synchronous) solution (P. Gratz, C. Kim, R. McDonald, S.-W. Keckler and D. Burger. October (2006)). GALS divide a system into smaller, locally decoupled synchronous regions and then composes a few of them to yield a localized subsystem (J. Liu and J.-G. Delgado-Frias. August 2006) . These synchronous regions and subsystems would be easier to integrate into a global solution and verify. There will be an asynchronous way in which all the local synchronous regions will communicate at the system level. Therefore, these different synchronous regions need not have to be synchronized to a single global clock(P. Gratz, C. Kim, R. McDonald, S.-W. Keckler and D. Burger. October (2006)). This approach will reduce the requirement for chip-wide clock trees; the designers could focus on local synchronous regions only, which would be far less complex than the complete system, since one has the flexibility only to reduce the clock speed of a given synchronous region (or node) (P. Gratz, C. Kim, R. McDonald, S.-W. Keckler and D. Burger. 2006).

The status of the Internet has caused the traffic on the Internet to grow drastically every year, for the past several years. It has also spurred the exterior of many Internet Service Providers (ISPs). To sustain the growth, ISPs need to give new differentiated services, e.g., tiered service, support for multimedia applications, etc. The routers in the ISPs' networks play a critical role in providing these services. Internet Protocol (IP) traffic on private enterprise networks have also been growing rapidly for some time. These networks face significant bandwidth challenges as new application types, especially desktop applications uniting voice, video, and data traffic need to deliver on the network infrastructure (A. Jantsch and H. Tenhunen. 2003). This growth in IP traffic has started to stress the traditional processor-based design of current-day routers and as a result, has created new challenges for router design. Routers, have traditionally been implemented purely in software. Because of the software implementation, the routine of a router was incomplete of the processor executing the protocol code. To get wire-speed routing, high-performance processors, together with large memories be necessary. This translated into higher cost. Thus, while software-based wire-speed routing was possible at low-speeds, for example, with 10 megabits per second (Mbps) ports (Dall'Osso, M., Biccari, G., Giovannini, L., Bertozzi, D., Bernini, L., Tavel, P. 2003), or with a relatively smaller number of 100 Mbps ports, the processing costs and architectural implications make it difficult to get wire-speed routing at higher speeds using software-based processing (R. Marculescu, J. Hu, and U.-Y. Ogras. 2005). The regular tile-based NoC architecture" was recently proposed as a solution to the complex on-chip communication problems. Such a chip consists of a grid of regular tiles where each tile preserve be a general-purpose processor, a DSP, a memory subsystem(Vasu Jolly, Shahram Latifi. 2003)

A router set within each tile with the aim of connecting it to its neighboring tiles. Thus, instead of routing design-specific global on-chip wires, the inter-tile communication is able to reach by routing packets. The performance and the efficiency of the NoC depend on the underlying communication infrastructure; this, in turn, depends on the performance (latency and throughput) of the on-chip routers. Thus, the design of efficient, high performance routers represents a critical issue for the success of the NoC approach. Routers can generally classify into deterministic and adaptive routers (M.-H. Neishaburi and Z. Zilic. 2009). In deterministic routing (also called oblivious routing), the path is completely determined by the source and the destination address.

On the other hand, a routing technique called adaptive if, given a source and a destination address; the path taken by a particular packet depends on dynamic network conditions (e.g. congested links due to traffic variability). Moreover with the help of Lou Scheffer Cadence, "As processes shrink, the ratio of wire delay to gate delay keeps increasing". Almost all chips have operations where distant parts of the chip must communicate, and communication can now take longer than the clock cycle required for even a relatively complex local operation. This may work for applications that are shooting for high density, or low power, but it is not a possible alternative for high performance designs. The first alternative is to simply accept the fact that global signals have to clock more slowly than local signals. This defeatist attitude was the default in the earlier ITRS roadmaps (Feng Liu, Chi-Ying Tsui. 2010), which distinguished between local and global clock speeds. Another alternative is to switch entirely to latency insensitive design, including asynchronous design. However, this has several problems:

• Latency-insensitive design does not help performance in the case of significant wire delay. Throughput on each operation is slow down to round-trip transaction speeds, even on operations that could potentially be pipelined.

• IP and re-use will be the key to building large chips in a reasonable amount of time. However, most IPs is not available in latency insensitive forms, much less asynchronous forms.

Proposed Approach:

The proposed buffer pocketing design implemented at the cycle-accurate level. This study analyzed several situations to illustrate the advantages and overheads of the proposed buffer-pocket design with the support of priority checking while passing data flits to the input buffer channel. The paper uses burst traffic patterns which represent different traffic loads to compare the proposed design with the original buffer design. Buffer management will support the buffer level of router and need buffer size for next data during the packet transmission time. Here, burst traffic refers to a periodic data transmission that exhibits a very high data signaling rate for very short transmission durations, which broken down up by fixed idle time intervals.

A. Priority queue Management:

The packets that arrive at the router are normally of two types. One type is normal packet with no priority. This is the typical user data between the end hosts. Another type of packets is urgent packets that are used by routers to exchange certain routing information between the routers. While allocating a particular output queue, it will consider the high threshold priority data. If the priority data is present in the queue, it will try to ignore a low priority (normal queue) data at the head of the queue. Then the high priority data put into service. If a high priority packet is at the head of the queue, it is however always put into service.

B. Input buffer control:

The input buffer control is used in the input session of the router to manage the flow of input packets to the router. If have no buffer in the router use to temporary buffer of the input model. So this control will decrease the traffic flow in a router and will increase router efficiency. The flow control between the input buffer and router is effective, no data loss on the network. All the information is updated from the RMS about the buffer status of the router on the ongoing process. The RMS updation schedule based on sending and receiving acknowledgement on the network.

C. Scheduling data on Input Channel:

The data overload on the auxiliary buffer to monitoring the schedule route monitor sensor to control the data loss of the network **(**Rathna. R and sivasubramanian). It controls the data loss using a stop the data from input channel, when the buffer is cleared the data to be transmitted. Scheduling based input data transmission on the network. Input channel has an input buffer controller, so control the data loss and secure data processing on their network.

D. Buffer stealing:

Adding extra buffers into a router at the design time, known as buffer stealing enables the input channels that have unsatisfactory free buffer space to use at runtime by means of the free input buffers from other input channels. The buffer takes more place while any one of the input channels requiring extra buffer to manage the data flow in router (Jerry Banks, John S. Carson II, Barry L Nelson)]. Using buffer method taken a North, East, West, South channels is in buffer model. The average increase in the number of flits output from the North input buffer is almost the same, irrespective of whether the traffic loads on the East and West buffers are as heavy as or lighter than that on the North and South buffers or even negligible. They have Each channel have to buffer the data from the input buffer.

E. Auxiliary Buffer:

A Router with a main and an auxiliary buffer have proposed with the intelligent flow control mechanism. We have shown an automatic controller to dynamically assign the buffer depth according to the traffic measured in each channel. The buffer depth obtains from a borrowing/lending process among the adjacent channels.

F. RMS:

RMS use of our proposed method, for monitoring each process handling, by the router. This sensor has information about the buffer usage in an ongoing process and then, produces a status of buffer in a router for the next packet transmission. RMS collects the status using sending and receiving acknowledgement based (eg:- if the RMS send the ack 0 to the router, it sends 1 reply from the router. RMS to identify the router has a more buffer otherwise not free in the Router) This will update the buffer status to the input buffer control for managing the input buffer to router on each cycle.

G. Network Priority Method:

Here, we have to use a network based priority setting on the network performance. If there is an overload in the network, the srms will stop all the data from an input channel, so we have to use a buffer and priority, to decide which network has send first input ack on network. In that network have a high priority to the router and that time network has to set a first priority on the network.

H. Threshold method:

The threshold value use sensed the quality of network performance level. On our network routers have run based on threshold method. We have manually set a Max Threshold value 35 and Min Threshold value 5, if Max input data greater than 35 means the data stop on the input buffer. If less then Min threshold 5 means send more data's into the router. All process to sense the RMS and watch on the network.

Packet Loss:

Packet loss may be resulted from the physical layer, MAC layer, network congestion and other factors. For example, when the data generation period of a node is less than the minimum threshold required for network transmission, the data must be stored in the input buffer of a router, and when the memory is full, the data will overflow possibly leading to packet loss. Here considering packet loss generated when constraint traffic is not satisfied, the optimization objective is to minimize packet loss rate of all packets reaching the router.

$$\beta(v) = \frac{f_v - C}{C} \tag{1}$$

Here *fv* represents the flow of the node. Here C is a Constant Packet ratio, When *fv>C*, it indicates that there is packet loss; when *fv≤C*, the above formula is zero or negative, and thus there is no packet loss. This way the sensor nodes send only when the sensed aspect in the space of interest. The number of transmissions based on threshold values. For an effective data transmission, values for both smallest and greatest threshold adjusted on the network.

As shown in Figure 1, the overall scheduling based buffer management system process on this figure. First to give an input channel into the input buffer all data are send a priority queue based transmission, the data's are buffer stealing into a Scheduling based transmission on the network. Scheduling means network priority based on threshold and then to avoid a network density for improving a network performance on the system. If have any overload message from the network to stop the data from the sender on the node.

I. Scheduling Router monitoring sensor:

SRMS is built-in our proposed method, for monitoring each process handled by the router. This sensor will have information about the buffer usage in an ongoing process and then produces a status of buffer in a router for the next the packet transmission.

That complete memory sharing with proper buffer management can provide better throughput performance than complete partitioning of memory among output ports or complete sharing without buffer management; however for complete memory sharing, careful design of buffer management is essential. The buffer management has to decide whether to accept or reject new incoming packets. The buffer management policy may also decide to drop a few packets, which are in the buffer waiting to be drained by the output ports and were accepted in the buffer in a previous decision. The buffer management policy can trigger the dropping action only when there is not sufficient space available for the new incoming packet or it may even be triggered when the buffer is not full and all the new incoming packets are successfully accepted.

Here a schedule method used to stop the process on the network when data overload occurs.This will update the buffer status to the input buffer control for managing the input buffer to router on each cycle.

Minimum Energy Consumption:

The minimum energy consumption when all the packets have been transmitted to the surface router. If a node sends data *Lv*, the energy it consumes can be written as

$$\boldsymbol{\varepsilon(v) = Ps(v)t_s + P_r(v)t_r = (P_s(v) + P_r(v))\frac{L_v}{C}} \quad (2)$$

Here, P*s* (*v*) is the transmitting power of node *v*, P*r* (*v*) is the receiving power of node v. *ts* and *tr* denote transmission time and reception time respectively. *C* is the channel capacity in unit of *bit*/*sec*.

Implementation algorithm:

Step1: Input to the router channels' sufficient storage size
Step2: Set input channel value to priority Buffer
Management
Step 3: If (Schedule Priority on Network)
Stop the process on network.
Step 4: Send the Urgent Network data that has a 1st priority to the network through a router.
Else
Send the normal queue
Step 5: Router has to get an input channel for
If input channel not having enough buffer
Search a used buffer and steal buffer
Else
Pass packet to output channel
Repeat step3 until packet send to the destination
Step 6: Buffer sensing will get an update Buffer in Router
Step 7: Save Energy Level on the Process
Step 8: Update buffer control, buffer variable with buffer status
Step 9: Repeat step 1-5 until packets send to Destination

Algorithm Explanation:

1. The data's sent by a router in wireless network from source (S) to the destination (D) on this network topology.
2. Set the priority into the input channel to assign the memory size of the network.
3. If here all the data transmissions are scheduling based, broadcast into the router to a destination in the process.
4. It uses network based priority level on the network. The network with highest priority will be selected first for data transmission on the network.
5. The buffer will assign a space for storing the data using transmission on the network and then, uses a waiting level process on the buffer methods.

6. To avoid a packet loss and packet delay on this network, the energy consumption on network process.
7. The buffer control based on the threshold values based on the network.
8. When data sent from source to destination get an acknowledgement for data receive or not in the process.

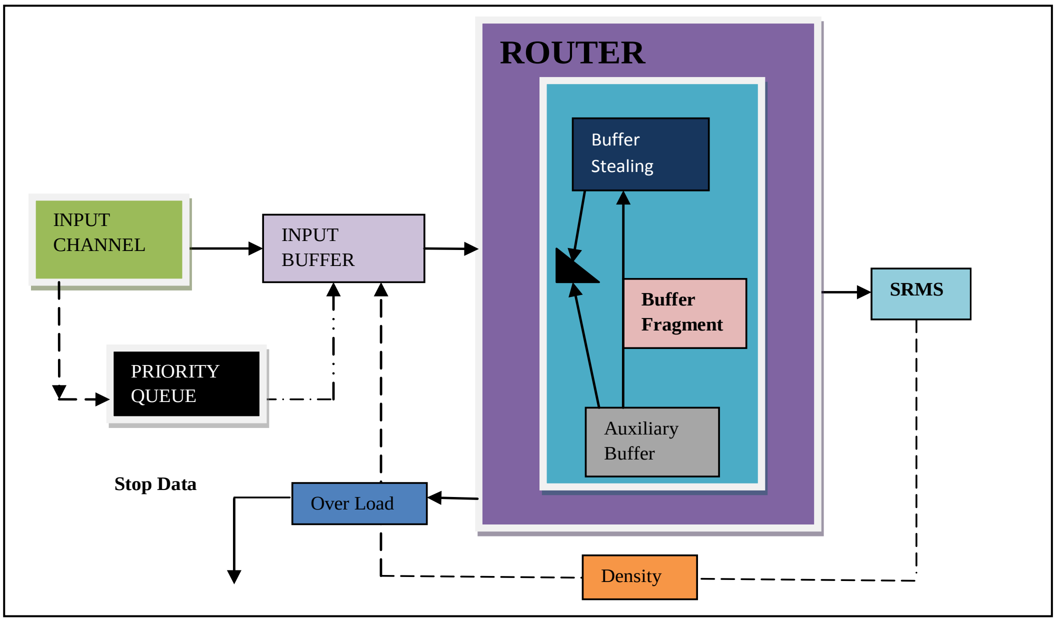

Fig. 1: Proposed Architecture.

J. Qos Control by priority based Buffer usage:

The hierarchical QoS form for controlling multimedia applications run on an MPSoC. The work considers a class of Quality of service that relies on predicting the implementation times of the application at run-time, while also taking into account the data dependencies. The architecture of the proposed quality of service based on two negotiating managers, instead of a conservative single resource manager. The buffer stealing is "processing with the unused memory during the runtime for the better usage to get transmission efficiency". If the buffer size exceeds the limit the buffer fragment, it will triggered for the buffer usage of extra part. Router Monitor Sensor (RMS) will get updated information about the router buffer at runtime with the time interval and then this information could be updated in the input buffer controller for preventing the buffer traffic in router.

In priority based network, to send data from the source if there is more than the threshold values to buffer the network and the data is lost in the network performance system. So the total cost of packet is save by applying our policy can express. We have following results to declare:

1: By applying the expect class of buffer management rule, we could save the extra "total weighted cost"

2: QoS of high priority packets can improve the data transmitted on the network.

3: Since, in this process, the number of low priority packets lost also increases, a trade-off between the number of high priority packets saved and the number of low priority packets lost by setting a proper eject threshold can do depending upon the QoS prerequisite of the packets of both priority classes. Enhance QoS requirements of high priority packets and a trade-off between QoS of high priority packets with the same of low priority packets done. These shows that eject rules used to control QoS of different class of packets.

RESULTS AND DISCUSSIONS

The goal of the simulation is to analyze the behavior of the AODV by deploying Networks. The simulation environment is created in NS-2, a network simulator that provides support for simulating mesh wireless networks. NS-2 using C++ language and it uses the Object Oriented Tool Command Language (OTCL). It came as from Tool Command Language (TCL). The simulations are approving. They use an environment consisting of 30 wireless nodes roaming over a simulation area of 1200 meters x 1200 meters flat space operating for 10 seconds of simulation time. The radio and IEEE 802.11 MAC layer models used. Nodes in our simulation move according to Random Waypoint mobility model, which is in random directions with maximum speed from 0 m/s to 20 m/s. A free space propagation channel is unspecific for the simulation. Hence, the simulation experiments do not account for the overhead produced when a multicast member leaves a group and the comparison result.

A. Throughput Performance:

As shown in Figure 2, the study finds that the average increase in the number of flits output from the North input buffer is almost the same, irrespective of whether the traffic loads on the East and West buffers are as heavy as or lighter than that on the North and South buffers or even negligible. Due to buffer stealing with our proposed method , the maximum throughput increase is 60% and average throughput increase is 40% compared to that of the extended buffer, due to the priority based input.

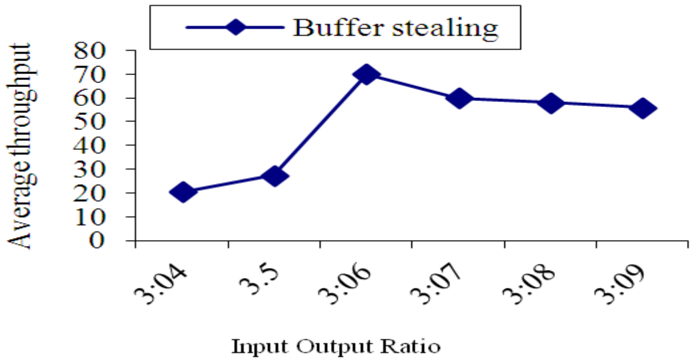

Fig. 2: Average throughput of buffer.

Throughput in manufacturing or in queuing problems is calculated through the following formula:

Throughput time (**Tt**) = Work in process (**WiP**) X Cycle time (**Ct**) (3)

Where **WiP** represents work in process or persons in a queue and **Ct** represents the time it takes for a product to go through the manufacturing processes or for a person to join and leave a queue after being served.

E.g. if it takes 2 minutes to get served data in a router and there are 10 data in the queue

Tt = WiP x Ct: 10 x 2 = 20min

Table 1: Simulation process parameters.

Parameters	value
Version	Ns-allinone 2.28
Protocols	AODV
Area	1200m x 1200m
Transmission Range	250 m
Traffic model	UDP,CBR
Packet size	512 bytes

In table 1 to show a parameters and values are given into the ns-allinone 2.28, using protocol for ad hoc on demand vector protocol and the using a transmission range for using the data transmission, packet size set to their data transmit. These all parameters and then values are in to the tool command language in ns2.

B. Average Packet Dropping:

The figure 3 shows that the proposed method will reduce the packet dropping ratio from the single queue based input channel in a router buffer management. Due to the use of this method, the important data packet will passed as much soon to the designation due to the dual queue with the support of priority data dropping ration where reduce here. Packet loss observed by a single source

$$\frac{\text{No.of Dropped packets source node}}{\text{No.of Dropped packets source node} + \text{No.of sent packets source node}} \quad (4)$$

Single Queue:

The Single queue takes always feels longer than it really is. Another truth is that when it comes to waiting, unfair waits always feel longer than equitable waits. It’s like as a FIFO process on the network. It has taken more time and delay on the network. It doesn’t have an alternate queue on the network.

Priority Queue:

In a priority queue, there is no rushing to get in the “short” queue to beat another path on the network. It works on which network has an urgent data transfer from source to destination; it has first preference on the system. It chooses the fastest path determination on the network.

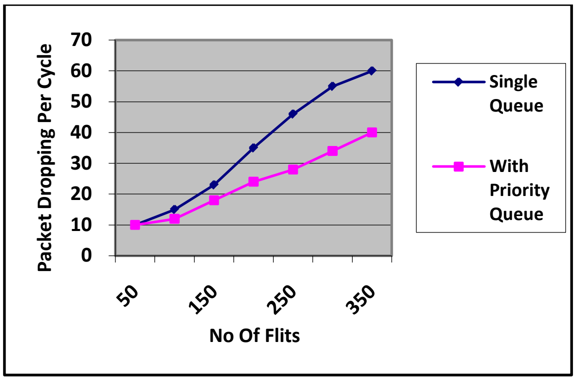

Fig. 3: Packet dropping in traffic.

C. Network Density in SRMS:

In this, parameter is used to denote the network density performance in the process. It has a more important process to calculate a network delay in the network. This situation can prove by the thickness of network, or be later proved by sensing or improving transmission quality. This improves its detection ability by using iteration on the network. In SRMS network density level is decreased to improve the network performance on this process. So the energy level of the network has improved.

D. Network Delay:

Packet arriving to full queue data to be dropped. Loss packet may be retransmitted in the previous work, but we have to implement reduce delay using stop the data in the input buffer.

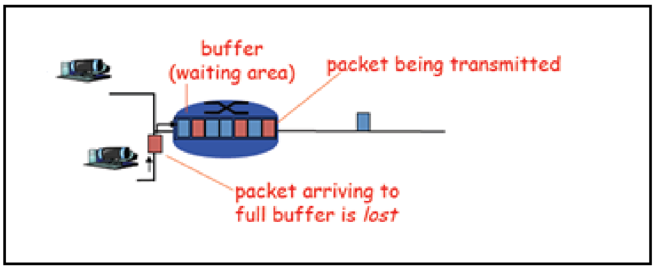

Fig. 4: Delay on network.

Delay calculation of network $D = (Tr - Ts)$ (5)

Where Tr is receive Time and Ts is sent Time.

In the above figure to give an input to the buffer waiting area and transmitted area used. If the buffer is full the input data to be stopped in the input buffer area, so we have reduced the packet loss and quickly to send the data from source to destination on a network. In this methods have to improve the network efficiency.

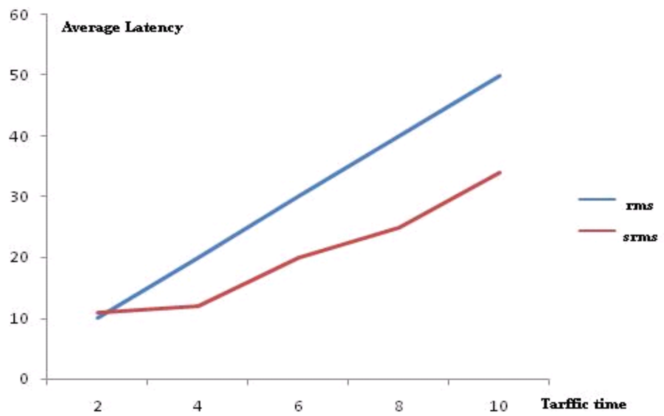

Fig. 5: Network Average Latency.

***E. Average Latency*:**

Fig.5 compares the average latency obtained for the proposed scheduling to check route monitoring sensor. The curves show that the latency for the scheduling router is reduced in comparison with the RMS.

The time it takes to send 1 packet from target to destination. It takes time to send the data from one to another on a network called as an Average latency. Calculate the time between the data transmission on the network. It is the easiest to measure just ping the destination, and it is influenced mostly by the physical distance between the two locations and the speed of light.

Conclusions:

By using a scheduling based router monitoring sensor for selected process on the network. The network priority is based on the network queue process, and sending the shared buffer router seems to better than the single-individual queue, at least in terms of packet drop.

However, the packet delay is much more in shared-queue than in single shared queue. This simulation project is just to analyze the network routers in two different ways. To take some limits for the network density and then energy consumption level of the network. They have different networks in this process among which one network have a high priority on that network is given 1st preference on the network model. The service time assumes uniformly distributed. However, the service time may depend on packet size, out-going channel bandwidth etc. This paper can extend by considering these things. Another extension of this paper may compare input buffer router vs. output buffer router. Buffer level is implemented first and then trying to make decrease the data dropping on the network.

REFERENCES

Averill M Law, Simulation Modeling and Analysis:.

Chen, X. and L.S. Peh, 2003. Leakage power modeling and optimization in interconnection networks. In Proceedings of the International Symposium on Low Power Electronics and Design, pages 90-95. ACM,

Cruz, R.L. and Arvind V. Santhanam, 2003. Optimal Routing, Link Scheduling and Power Control in Multi-hop Wireless Networks, At IEEE.

Dall'Osso, M., G. Biccari, L. Giovannini, D. Bertozzi, L. Bernini, P. Tavel, 2003. Xpipes: A latency insensitive parameterized network-on-chip architecture for multiprocessor SoCs. In Proceedings 21st International Conference on Computer Design. ICCD'03. 2003. 536-539.

Digital Equipment Corporation http://ita.ee.lbl.gov/html/contrib/DEC-PKT.html.

Feng Liu, Chi-Ying Tsui, 2010. Joint Routing and Sleep Scheduling for Lifetime Maximization of Wireless Sensor Networks. IEEE transactions on wireless communications, vol. 9, no. 7.

Gratz, P., C. Kim, R. McDonald, S.W. Keckler and D. Burger, 2006. Implementation and evaluation of on-chip network architectures. In Proceedings of the International Conference on Computer Design, pages: 477-484.

Huan, P.T. and W. Hwang, 2006. 2-level FIFO architecture design for switch fabrics in network-on-chip. In Proceedings of the International Symposium on Circuits and Systems, pages 4863-4866. IEEE.

Jantsch, A. and H. Tenhunen, 2003. Networks on chip.

Jerry Banks, John S. Carson I.I., Barry L. Nelson and David M. Nicol. Discrete-Event System Simulation.

Kim, M.M., J.D. Davis, M. Oskin and T. Austin, 2008. Polymorphic on chip networks. In Proceedings of the 35th International Symposium on Computer Architecture, pages 101-112.

Lai, M., Z. Wang, L. Gao, H. Lu and K. Dai, 2008. Dynamically-allocated virtual channel architecture with congestion awareness for on-chip routers. In Proceedings of the 45th Design Automation Conference, pages 630-633. ACM.

Leung, L.F. and C.Y. Tsui, 2006. Optimal link scheduling on improving best effort and guaranteed services performance in network-on-chip systems. In Proceedings of the 43rd Design Automation Conference, pages 833-838. ACM.

Liu, J. and J.G. Delgado-Frias, 2006. A shared self-compacting buffer for network-on-chip systems. In Proceedings of the 49th IEEE International Midwest Symposium on Circuits and Systems, 2: 26-30.

Liu, J. and J.G. Delgado-Frias, 2007. A DAMQ shared buffer scheme for network-on-chip. In Proceedings of the Fifth IASTED International Conference on Circuits, Signals and Systems, pages 53–58. ACTA Press.

Marculescu, R., J. Hu and U.Y. Ogras, 2005. Key research problems in NoC design: a holistic perspective. In Proceedings of Third IEEE/ACM IFIP International Conference on Hardware/Software Codesign and System Synthesis, pages 69-74.

Neishaburi, M.H. and Z. Zilic, 2009. Reliability aware NoC router architecture using input channel buffer sharing. In Proceedings of ACM Great Lakes Symposium on VLSI, pages 511-516.

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Rathna, R. and A. Sivasubramanian, Improving energy efficiency in wireless sensor networks through scheduling and routing, International Journal of Advanced Smart Sensor Network Systems (IJASSN), Vol 2, No.1.

Tong Zhao and Qing Zhao, Joint Design of Scheduling and Routing Based on Connected Optimal Sensor Network Lifetime, Research Laboratory CTA on Communication and Networks.

Vasu Jolly, Shahram Latifi, 2003. Comprehensive Study of Routing Management in Wireless Sensor Networks- Part-2.