

Each and every packet arrived in the router are send to Destination based on the GCRA algorithm in network

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Abstract-A customized mechanism to detect, monitor and block the data packets according to the definitions submitted to the mechanism. The mechanism is robust easy to implement, maintain, update and enhance. The mechanism takes input as sample data packets which are to be blocked and checks those definitions with the data packets according to the protocols and algorithms which are a part of the mechanism.

Keywords- Routing, Packets, Hub, Traffic, Congestion.

I. INTRODUCTION

Router Algorithms

Hierarchical Routing

This is essentially a 'Divide and Conquer' method. The network is divided into different regions and a router for a particular region knows only about its own domain and other routers. Thus, the network is viewed at two levels:

1. The secondary-network level, where each node in a expanse has information about its peers in the same region and about the region's interface with other regions. Different regions may have different limited' routing algorithms. Each local algorithm handles the traffic between nodes of the same region and also directs the outgoing packets to the appropriate interface.
2. The Network Level, where each region is considered as a single node connected to its interface nodes. The routing algorithms at this level handle the routing of packets between two interface nodes, and is isolated from intra-regional transfer.

Networks can be organized in hierarchies of many levels; e.g. local networks of a city at one level, the cities of a country at a level above it, and finally the network of all nations.

In Hierarchical routing, the interfaces need to store information about:

- All nodes in its region which are at one level below it.
- Its peer interfaces.
- At least one interface at a level above it, for departing packages.

Merits of Hierarchical Routing

- minor sizes of routing tables.
- significantly lesser calculations and updates of routing tables.

Demerits

- Once the ladder is imposed on the network, it is followed and possibility of direct paths is ignored. This may lead to sub most favorable routing.

Non-Hierarchical Routing

In this type of routing, internal connected networks are viewed as a single network, where hub, routers and gateways are just additional nodes.

- Every node keeps message about every other node in the network
- In case of adaptive direction-finding, the routing calculations are done and updated for all the nodes.
- The above two are disadvantages of non-hierarchical routing, since the table size and the routing calculations become too huge as the networks get bigger. So this type of routers feasible only for small networks.

Demerits of Non-Hierarchical Routing

- Once the hierarchy is forced on the network, it is followed and possibility of direct paths is unnoticed. This may lead to sub most favorable routing.

Resource Routing

Source routing is similar in concept to essential circuit routing. It is implemented as

- Initially, a pathway between nodes wishing to converse is found out, either by flood or by any other suitable method.
- This route is then specified in the header of each packet routed between these two nodes. A route may also be specified moderately, or in terms of some intermediate hops.

Merits

- Bridges no need to lookup their routing tables since the path is already specified in the packet itself.
- The throughput of the bridges is higher, and this may lead to better utilization of bandwidth, once a route is established.

Demerits

- Establish the route at first needs an costly search method like flooding.
- To cope up with dynamic relocation of nodes in a network, regular updates of tables are required, else all packets would be sent in wrong direction. This too is expensive.

In this type of routing, certain restrictions are put on the type of packets accepted and sent. e.g. The IIT- K router may decide to handle traffic pertaining to its departments only, and reject packets from other routes. This kind of routing is used for links with very low capacity or for security purposes.

Shortest pathway Routing

Here, various algorithms are used to determine the most favorable routes with respect to some predetermined criteria. A network is represented as a graph, with its terminal as nodes and the links as edges. A 'length' is associated with each border, which represents the cost of using the link for transmission. Lower the cost, more suitable is the link. The cost is determined depending upon the criteria to be optimized. Some of the important ways of determining the cost are

- If each link is given a unit cost, the shortest root is the one with minimum number of hops. Such a route is easily obtained by a breadth first search method. This is easy to implement but ignores load, link capacity etc.
- broadcast and Propagation Delays: If the cost is fixed as a function of transmission and propagation delays, it will reflect the link capacities and the geographical distances. However these costs are basically fixed and do not consider the varying load conditions.

II. PROPOSED ALGORITHM

The main aim of this project is to reduce the traffic overcrowding when data transfer between source and destination. When data transfers from source and destination there may be chances of occur traffic and also it monitor when too blocked or crowded and causing difficulties, so that to be intimated or warned to the user. In this System, using several algorithms viz.

This system can be implemented in a real network to control the traffic occurred in a network. User can get to know the status of the router whether router is busy in controlling the inflow and outflow of data to transfer.

Algorithm

Initial condition : $D[i, 0] = \text{infinity}$,
for all i ($i \neq 1$)

Iteration : $D[i, h+1] = \min \{ d_{i,j} + D[j, h] \}$ over all values of j .

Termination : The algorithm terminates when
 $D[i, h] = D[i, h+1]$ for all i .

III. EXPERIMENT AND RESULT

The project comprises of three modules as follows:

- Source Module.
- Router Module.
- Destination Module.

Source Module

The task of this Module is to divide the Message in the form of 48 Bytes and forward it into the Router. The allocated Bytes are called as Packets.

- The information is divided into fixed-sized packets called cells.
- The cells are append with appropriate header information.
- The header contains the destination machine name.
- The total packet length is 53 bytes i.e. 48-byte data + 5-byte header
- The packets are forwarded to the router for further processing.

Router Module

The task of this Module is to accept the packet from the Source. Each and Every packet arrived in the router are send to Destination based on the GCRA algorithm. GCRA algorithm implements two algorithms.

Virtual Scheduling Algorithm

It continuously monitors the traffic inflow and it expect occurrence of congestion, it sends a warning message to the Source to slow down the traffic and clear the buffer in the Router Machine.

Leaky Bucket Algorithm

It send the cells to the corresponding Destination Machine at a regular interval (i.e. certain rate corresponding to a traffic cell rate parameter) message to the Source Machine to continue the cell transmission.

Intelligent Packet Filtering:

Router module determines the conformance of cell to the traffic contract with Intelligent Packet filtering. It is the operations the router Module performs such as:

- Blocking
- Listening
- Learning
- Switching
 - Discarding
 - Forwarding
 - Filtering

Destination Module

The task of this Module is to accept the packets from the router make all them into a message and stored in a file with the Destination machine.

- ✓ Accept the packet from the router.
- ✓ Create a text file with the name that of the destination machine's name.
- ✓ Append the contents to the file and save it.

IV. CONCLUSION

This GCRA Algorithm based to working this project, every packet data arrived in the router are send to Destination based on n/w. The mechanism is robust easy to implement, maintain, update and enhance. This data packets according to working principle in protocols algorithms based on working mechanism. This project is to reduce the traffic overcrowding when data transfer between source to destination.

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