IJCSE International Journal of Computer Sciences and Engineering Open Access
Research Paper Volume-3, Issue-1 E-ISSN: 2347-2693

Generating Alternate Routing Configurations for Fast Network Recovery

S.Nagaparameshwara Chary

Assistant Professor, Govt.Degree College,Satavahana University, TS,India

www.ijcaonline.org

Received: Dec /26/2014 Revised: Jan/8/2015 Accepted: Jan/20/2015 Published: Jan/31/2015

Abstract: Now a day's internet plays major role in our communications. Based on the convergence of routing protocols we can recover the failure network. The slow convergence of routing protocols after a network failure becomes a growing problem. To assure fast recovery from link and node failure in network, we present the mechanism i.e., Generating Alternating Routing Configurations is called Multiple Routing Configurations. Our proposed MRC guarantees recovery in all singe failure scenarios, using a single mechanism to handle both link and node failure and without knowing root cause of the failure. MRC is strictly connection less and assumes only destination based hop-by-hop forwarding. In this paper we present MRC, and analyze its performance with respect to scalability, back up path lengths and distribution after a failure.

Keywords: MRC, Scalability, Backup Path Lengths, Load Distribution

I. INTRODUCTION

A network failure is happen in our network while communication, the traditional intra-domain routing protocols like OSPF is responds for the network-re convergence. In the Fast Reroute mechanism the failure is happen in the network, the all router present in the network are independently calculate the new routing tables for the response to the failure happens in the network.[3]. The best mechanism for the network recovery in our communication infrastructure is the "Multiple Routing Configurations" for Fast IP network recovery in our communications. The powerful mechanism i.e., MRC is developed based on the concept of the Fast Reroute and the concept of relaxed MRC. The MRC is used to recover all single failure scenarios in our communication.

MRC is based on building a small set of backup routing configurations, that are used to route recovered traffic on alternate paths after a failure. The backup configurations differ from the normal routing configuration in that link weights are set so as to avoid routing traffic in certain parts of the network. We observe that if all links attached to a node are given sufficiently high link weights, traffic will never be routed through that node. The failure of that node will then only affect traffic that is sourced at or destined for the node itself. Similarly, to exclude a link (or a group of links) from taking part in the routing, we give it infinite weight. The link can then fail without any consequences for the traffic.

II. MRC OVERVIEW

The best mechanism for the network recovery in our communication infrastructure is the "Multiple Routing Configurations" for Fast IP network recovery in our communications. The powerful mechanism i.e., MRC is developed based on the concept of the Fast Reroute and the concept of relaxed MRC. The MRC is used to recover all single failure scenarios in our communication.

MRC work on the principle of making the backup routing configurations, that are used to recover the route failure in that network.

In the normal routing configurations the link weight are not assigned, where as in the backup routing configurations the link weights are assigned The global mechanism is used to recover the network by using the internet gateway protocol the IGP is reactive. This protocol is reacts after a failure happen in the network. It is a time taking process. In this period of time the some of the data packet that send by the client are loss. This is the main drawback of the our global system.

And also whenever a failure is happens in the network the incoming packets that are send by the client are continuously forward. The failure of recovery of network is time taken process. In this situation the data packet traffic is increases, this is the one of the main drawback of the global system. And also the failure is happens in the network the incoming packets that are send by the client are continuously forward.

The failure of recovery of network is time taken process. In this situation the load of the data packets are increased in the corresponding node. The load of data packets are not distributed. Our MRC is a local mechanism, it is work based on the principle of proactive. In this mechanism a failure happens in the network, it can generate an alternate link immediately and the data packets are pass through that route and continuous the network. In our communication system, the client send the data to the server through the router that are present in the networks. The active router receives that data send by the client and it pass that data to the server. Whenever a failure happen in the network, i.e., a node or link failure the network was distributed.

The MRC mechanism is used to generate alternate route and send the packet through that alternate route and continuous the network in safety. This is the main idea of the multiple routing configurations. The MRC is work based on the principle of proactive, that means whenever a failure occur in the network it can generate an alternate route and data packets continuous on that alternate route. The MRC mechanism is a best network recovery mechanism in this no packet loss, and increasing traffic is reduce and load distribution is possible.

MRC requires the routers to store the information about the routing configurations. The state required in the routers is related to the no. of back up configurations. In the IGP the recovery of network determines shortest path in the network without the failed components where as in the MRC, if a failure occur in the network, it can immediately generate an alternate route and continuous the data packets forward through the alternate routes and continuous the network.. The IGP convergence process is slow because it is reactive. It reacts to a failure after it has happened, and it involves all the routers in the domain. Where as in the Multiple Routing Configurations is a proactive and it is a local mechanism.

The main concept of MRC is to use the network graph and the associated link weights to produce a small set of back up network configurations. The link weights in these backup configurations are manipulated so that for each link and node failure, and regardless of whether it is a link or node failure, the node that detects the failure can safely forward the incoming packets towards the definition on an alternate link.

MRC is based on building a small set of backup routing configurations, that are used to route recovered traffic on alternate paths after a failure. The backup configurations differ from the normal routing configuration in that link weights are set so as to avoid routing traffic in certain parts of the network. We observe that if all links attached to a node are given sufficiently high link weights, traffic will never be routed through that node. The failure of that node will then only affect traffic that is sourced at or destined for the node itself. Similarly, to exclude a link (or a group of links) from taking part in the routing, we give it infinite weight. The link can then fail without any consequences for the traffic.

Algorithm: Creating Backup Configuration:

Algorithm 1: Creating backup configurations.

```
for i ∈ {1...n} do
    C_i ← (G, w_0)
    S_i ← ∅
    B_i ← C_i
end
Q_n ← N
Q_a ← ∅
i ← 1
while Q_n ≠ ∅ do
    u ← first (Q_n)
    j ← i
    repeat
        if connected(B_i \ ({u}, A(u))) then
            C_tmp ← isolate(C_i, u)
            if C_tmp ≠ null then
                C_i ← C_tmp
                S_i ← S_i ∪ {u}
                B_i ← B_i \ ({u}, A(u))
        i ← (i mod n) + 1
    until u ∈ S_i or i=j
    if u ∉ S_i then
        Give up and abort
end
```

The above algorithm will create a complete set of valid back up configurations. Based on this algorithm, a standard shortest path algorithms used in each configuration to calculate configuration specific forwarding tables.

III. LOCAL FORWARDING PROCESS

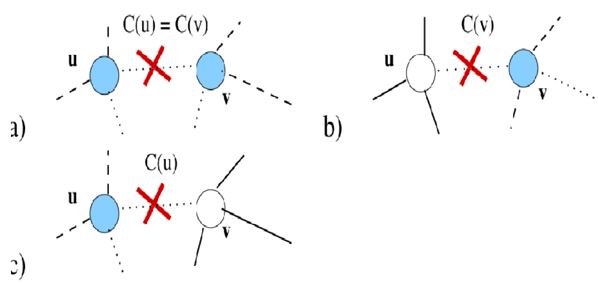


Fig. 3. When there is an error in the last hop u to a packet must be forwarded in the configuration where the connecting link is isolated. The figure shows isolated nodes (shaded color), restricted links (dashed), and isolated links (dotted). In cases (a) and (b), c(u,v) = c(v) and the forwarding will be done in c(v). In case (c), c(u,v) not equal c(v), and the forwarding will be done inc(u)

IV. IMPLEMENTATION

The implementation of MRC for network recovery mainly uses three modules.

1. Client Module 2. Sever Module 3. Router Module

1. ***Client:*** This module is used to send the data to server through routers. It will provide user friendly interface to send the data to the required destination.

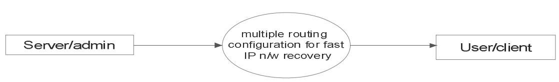
2. ***Server:*** It will receive the data send by the client which came from the active router. It can have any no. of clients.

3. ***Routers:*** These are placed in between server and client to transfer the data.

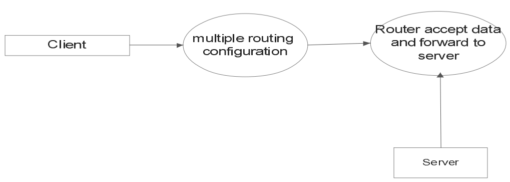
Whenever client send the data to the server it will pass through any one router.

If the router is failed the data will be transferred through another router to reduce the system failure.

Context Level DFD:



Level 1 DFD



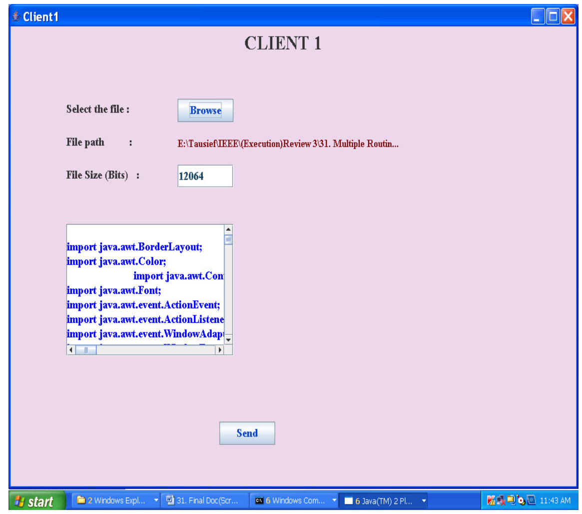
V. FUNCTIONAL REQUIREMENTS

- Description of data to be entered in to the system
- Description of operations performed by each screen
- Descriptions of work-flows performed by the system
- Descriptions of system reports or other outputs
- Who can enter the data into the system?
- How the system meets applicable regulatory requirements.

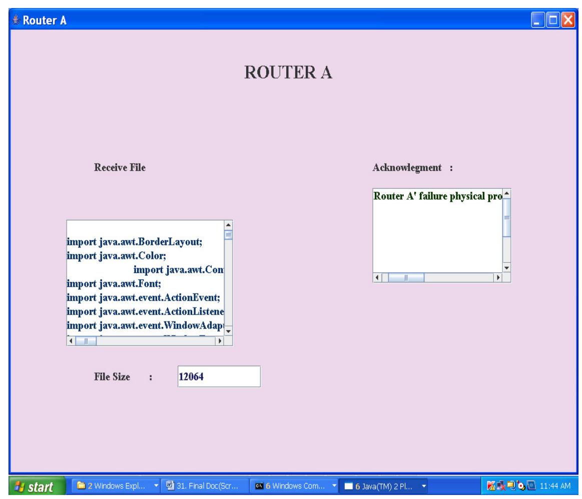
The functional specification is designed to be real by a general audience. Readers should understand the system, but no particular technical knowledge should be required to understand the document.

VI. EXPERIMENTAL EVOLUTION

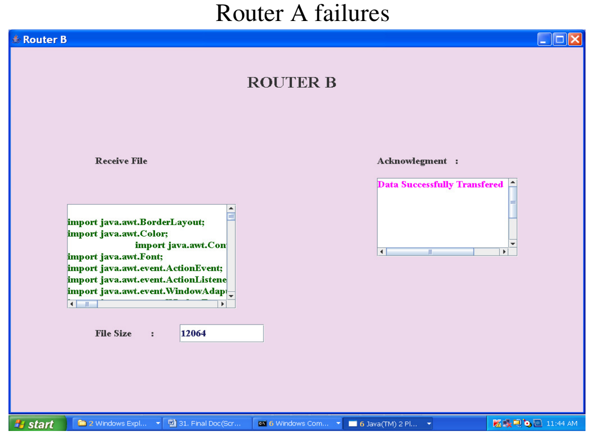
In this section we briefly sketch our implementation of Generating Alternate Routes when a failure occur in our network.



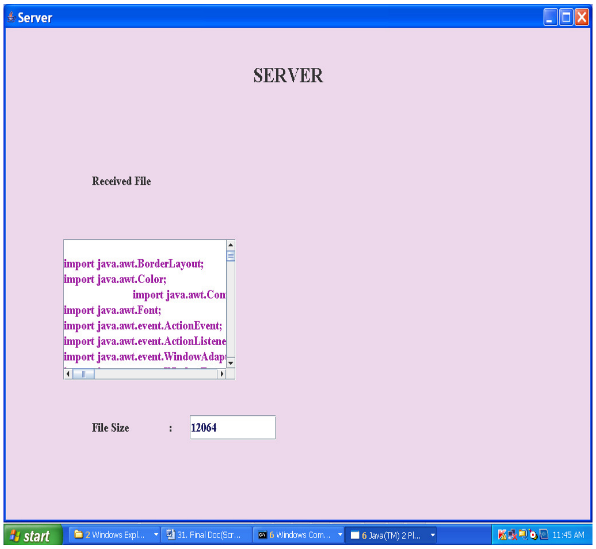
Client1 sends Data



Router A failures



Data send through Router B



Server Receives Data

VII. CONCLUSION

We have presented Multiple Routing Configurations as an approach to achieve fast recovery in IP networks. MRC is based on providing the routers with additional routing configurations, allowing them to forward packets along routes that avoid a failed component. MRC guarantees recovery from any single node or link failure in an arbitrary bi-connected network. By calculating backup configurations in advance, and operating based on locally available information only, MRC can act promptly after failure discovery.

VIII. REFERENCES:

[1]. Amund Kvalbein, Audun Fosselie Hansen, Tarik Cicici "Fast IP Network Recovery using Multiple Routing Configurations" IEEE/ACM Transactions on Networking. Vol. 17, No. 2.April 2009

[2]. C.Labovitz, A. Ahuja, A. Bose, and F. Jahanian. "Delayed internet routing convergence", IEEE/ACM Trans. Networking. Vol.9. no. 3,pp 293-306, Jun. 2001.

[3]. D.D. Clark, "the design philosophy of the DARPA internet protocols", ACM SIGCOMM, Comput. Commun. Rev., vol. 18, no.4.pp. 106-114, Aug. 1988.

[4]. C.Boutremans, G. Iannaccone, and C.Diot. " Impact of link failures on VoIP performance." In Proc. Int . Workshop on Network and Operating System Support m for Digital Audio and video,2002, pp.63-71.

[5]. A.Basu and J.G. Riecke, "Stability isuues in OSPF routing" in Proc. ACM SIGCOMM, San Diego, CA, AUG. 2001, pp. 225-236.

