CONCLUSIONS

The proposed protocol uses D-BGP for alternate path selection. Scalable BGP link state routing has been proposed for calculating the link availability and bandwidth availability. Link availability is based on the delay metric. Bounds are selected for the delay and bandwidth, the path that satisfies the criteria is selected as the alternative path. Update messages are delayed for those alternate paths with worst case distance, delay and bandwidth. A path exploration damping interval (PEDI) timer is utilized for delaying the update messages. Simulation results show that the proposed FTR-BGP routing protocol performs better in terms of higher available bandwidth, minimum delay, and minimum packets drop. Therefore the proposed approach is failure free in the Internet environment.

However, there are some challenges in this work. After the failure of a previously selected best path computational overhead is incurred for calculating the bandwidth and link availability in selecting an alternative best path. From simulation results it is evident that the initial delay is high when the alternate path is selected. Traffic will increase on that selected path, which may affect traffic conditions on that path. Efforts may be made to overcome these limitations in the future.

The proposed aggregation approach AGRIB-BHF reduces the routing table size up to the level where the aggregation does not lose its importance, it does not allow any routing space or black hole in the aggregation. The AGRIB-BHF aggregates network prefixes without compromising on network performance. Therefore aggregation should not be done at the cost of performance of the Internet.

The unprecedented growth of the internet has put pressure on the designers to make the network reacting quickly to each and every, small or big change in the connectivity and
overcome the problem and make the whole network stable in minimum possible time. An attempt made through this work, by introducing an algorithm to keep the MRAI timer value based on present network conditions, to enable the network to react promptly to the changes occurred in the network connectivity. The objective is to overcome those changes in the network that compel routers to change their best paths. The results verify the usefulness of the proposed approach in bringing the network convergence time low. Therefore the network quickly becomes available for use.

We used route reflector in a situation when a large number of internal BGP sessions are required per router. Despite the limitations and potential suboptimal routing inside an autonomous system (AS), a careful implementation of the route reflector with originator_id and/or cluster_id enabled, may exploit the advantage of making the unmanageable network within manageable perimeters. While the use of the confederation though also suffers with the suboptimal routes but despite this limitation it reacts to the failures without making compromises as compared with the non confederation.

The work done though this thesis have successfully accomplished the following objectives:

i. Changes made to the default procedure of path selection during failures proved beneficial. Results show that the number of packet drop is low, and available bandwidth is more [Kumar and Kumar (2013a)].

ii. The method developed for reducing routing table size successfully reduces the table size. But the reduced size is neither aggressive nor greedy in function, therefore it successfully remove the black hole before aggregation. The results also show that it helps utilizing next hops in a relatively balanced manner [Kumar and Kumar (2012)].
iii. Frequency of successive updates exchanged with the peer routers has been controlled by making minimum route advertisement interval timer dependent on network conditions. It helps the network reaching the state of convergence quickly [Kumar and Kumar (2013b)].

iv. Two approaches the Route Reflection and the Confederation to partition the large network into smaller networks have been analyzed. The results show the advantages of each approach and precautions to be exercised to overcome the limitations emerged due to segmentation.