IX. CONCLUSION

In conclusion, the proposed Second Order Approach of On Demand Routing Protocol offers significant advantages over the First Order Approach. It provides improved time delay performance, ensures that only the efficient or needed nodes are covered, and avoids improper optimization. The paper demonstrates that the Second Order Approach can overcome the drawbacks of the First Order Approach, leading to better routing optimization and distributed joint congestion control.

Keywords: On Demand Routing Protocol, delay Performance, second order distribution Approach

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REFERENCES


APPENDIX

Appendix A: Derivation of the Second Order Approximation

The derivation of the Second Order Approximation involves the use of Taylor series expansions and the calculation of higher-order derivatives. The Appendix provides a detailed explanation of these calculations and their application to the problem at hand.

Appendix B: Implementation of the Second Order Approach

Appendix B describes the implementation of the Second Order Approach in a distributed fashion. It outlines the algorithms and protocols used to achieve the desired performance characteristics.

Appendix C: Simulation Results

Appendix C presents the simulation results obtained using the proposed Second Order Approach. It compares the performance of the proposed approach with that of the First Order Approach and highlights the improvements achieved.

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and then use that information in an unethical way; thus causing them harm. Although it is against the law to sell or trade personal information between different organizations, selling personal information have occurred. For example, of the Washing Post, in 1998, CVS had sold their patient’s prescription purchases to another company. In addition, American Express also sold their customers’ credit card purchases to another company. What CVS and American Express did clearly violate privacy law because they were selling personal information without the consent of their customers. The selling of personal information may also bring harm to these customers because you do not know what the other companies are planning to do with the personal information that they have purchased.

SECURITY ISSUES

Although companies have a lot of personal information available online, they do not have sufficient security systems in place to protect that information. For example, recently the Ford Motor credit company had to inform 13,000 of their consumers that their personal information including Social Security number, address, account number and payment history were accessed by hackers who broke into a database belonging to the Experian credit reporting agency. This incidence illustrated that companies are willing to disclose and share your personal information, but they are not taking care of the information properly. With so much personal information available, identity theft could become a real problem.

MISUSE OF INFORMATION/INACCURATE INFORMATION

Trends obtain through data mining intended to be used for marketing purpose or for some other ethical purposes, may be misused. Unethical businesses or people may use the information obtained through mining to take advantage of vulnerable people or discriminated against a certain group of people. In addition, data mining technique is not a 100% percent accurate; thus mistakes do happen which can have serious consequence.

FEASIBILITY STUDY

Preliminary investigation examine project feasibility, the likelihood the system will be useful to the organization. The main objective of the feasibility study is to test the Technical, Operational and Economical feasibility for adding new modules and debugging old running system. All system is feasible if they are unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:
- Technical Feasibility
- Operational Feasibility
- Economical Feasibility

ECONOMIC FEASIBILITY

A system can be developed technically and that will be used if installed must still be a good investment for the organization. In the economical feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Financial benefits must equal or exceed the costs. The system is economically feasible. It does not require any addition hardware or software. Since the interface for this system is developed using the existing resources and technologies available at NIC. There is nominal expenditure and economical feasibility for certain.

OPERATIONAL FEASIBILITY

Proposed projects are beneficial only if they can be turned out into information system. That will meet the organization’s operating requirements. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following: -
- Is there sufficient support for the management from the users
- Will the system be used and work properly if it is being developed and implemented?
- Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above-mentioned issues. Beforehand, the management issues and user requirements have been taken into consideration. So there is no question of resistance from the users that can undermine the possible application benefits. The well-planned design would ensure the optimal utilization of the computer resources and would help in the improvement of performance status.

TECHNICAL FEASIBILITY

Earlier no system existed to cater to the needs of ‘Secure Infrastructure Implementation System’. The current system developed is technically feasible. It is a web based user interface for audit workflow at NIC-CSD. Thus it provides an easy access to the users. The database’s purpose is to create, establish and maintain a workflow among various entities in order to facilitate all concerned users in their various capacities or roles. Permission to the users would be granted based on the roles specified. Therefore, it provides the technical guarantee of accuracy, reliability and security. The software and hard requirements for the development of this project are not many and are already available in-house at NIC or are available as free as open source.

Switching

In the Switching main advantage is switching this is mainly used for Data transmission by the other traffic in the conductive network. The traditionally in telecommunications systems are mainly using of switching method. The meaning of the Conducted switching is that allocation of a limited bandwidth from the full throughput of the communication medium and the bandwidth will be allocated completely. The allocated bandwidth is the main advantage of data exchange for the time taking of path set, which is the allocation of bandwidth from convinced place. Generally, this type of throughput utilizing the wired networks and interchanging the required data from different stages, counting connection formation, of the data, closing of the linking. In the real world, this type of a switching is one type of the OSI protocol stack layer, this is called as data link layer. During this text kind of a switching is viewed as layer 2 switching. Actually, layer 2 switching can simply be well-thought-out bridging and in
IV. PROPOSED SYSTEM

Developing a dynamic distributed second-order congestion control and routing policy is highly challenging and results in this area remain scarce. First, unlike the relatively obvious queue-length connection between the back-pressure based algorithms, it remains unclear how one can utilize the insights from existing second-order network optimization algorithms to guide the design of an optimal dynamic congestion control and routing policy. The main challenge is that the existing work in are “static” schemes that operate with average rates and only yield fixed allocation solutions, rather than dynamic policies that are able to evolve with time instants to dynamically allocate resources. Also, their connection to observable network state information is still missing. Second, after constructing a second-order scheme, it remains a difficult task to prove its utility-optimality and queue-stability. This is because the incorporation of the second-order Hessian information significantly complicates the computational schemes and necessitates new theoretical approaches in performance analysis. Lastly, how to implement the developed second-order scheme in a distributed fashion is still an open question. Similar to the second-order optimization algorithms in, one would have to face the challenges arising from decentralizing the Hessian and Laplacian matrix inverse computations.

ADVANTAGES:
1. Increasing utility
2. Reduces delay time.
3. Updating queue length dynamically.
4. Faster transmission results.
5. Increasing throughput.
6. Numbers of iterations are reduced.

3.5 NETWORK MODEL CONSTRUCTION

We consider a time-slotted communication network system with time slot units. We represent the communication network by a directed graph, where and are the sets of nodes and links, with and, respectively. We assume that is connected. There are end-to-end sessions in the network, indexed by. Each session has a source node and a destination node. Congestion control: We assume that the source node has a continuously backlogged transport layer reservoir that contains session’s data. Similar to a valve, in each time-slot, a transport layer congestion controller determines the amount of data to be released from this reservoir into a network layer source queue, where the data awaits to be routed to node through the network. In other words, acts as the arrival process to the source queue. Routing: We denote the capacity of link as and assume that it is fixed, which is an appropriate model for wire line networks or wireless networks with orthogonal channels and fixed transmission power. As in, we define the network capacity region as the largest set of congestion control rates such that there exists a routing policy for which the time-average routing rates. Queue

Stability: We assume that each node maintains a separate queue for each session. Since data leave the network upon reaching destinations. We adopt the following notion of queue-stability: Under a congestion control and routing scheme, we say that the network is stable if the norm of steady-state queue-lengths remains finite. Joint congestion and routing scheme:

Several first-order schemes based on the backpressure idea have been proposed to solve Problem ICCR. However, the convergence of these first order schemes is slow, which could lead to poor performance in practice. Second order joint congestion control: The “change of queue-length” in our second-order method compared to the “queue-length value itself” in first-order backpressure methods can be viewed as one-order higher in the queue length variation sense, hence providing another perspective to interpret the name “second-order.” Lastly, the step-size control is used to ensure the utility-optimality result. The parameter could be set to some upper bound of the average source session rate to reduce the burstiness.

Pseudo code:
1. Source node received the data. Data divides into packets.
2. Data packets maintained in source node as a queue data
3. Source node have some neighbor nodes
4. From source node to neighbor nodes there is a link (example: 1->2 , 1->3 : transmission rate, allocation of packets capacity based on resources dynamic (maximum updating limit).
5. Updating link capacity and transmission rate (speed)
6. Two links are not handling the total queue data. 7. We can transfer the data, one iteration is complete in first time slot

To establish a fast-converging second-order joint congestion control and routing framework based on primal dual interior point approach with a simple step-size control strategy, such that the resultant scheme is well-suited for implementation in practice. Our primal-dual approach exposes a deep connection between observable network state information and the primal-dual interior-point optimization theory, which itself is an active research field in operations research today. Then establish the utility-optimality and queue-stability of the proposed second order framework. Our theoretical analysis unveils the fundamental reason behind the fast convergence in the proposed second-order framework. Interestingly, our analytical results naturally lead to a utility-optimality and queue-length tradeoff relationship governed by the barrier parameter of the interior-point method. We compare this tradeoff relationship to those in first-order methods and contrast their similarities and differences, thus further advancing our understanding of both first-order and second-order methods in network optimization theory.

V. RESULTS
VI. CONCLUSION

Our main contributions in this paper are three-fold: 1) we have proposed a second order joint congestion control and routing framework based on a primal-dual interior-point approach that is well-suited for implementation in practice; 2) we have rigorously established the utility-optimality and queue-stability of the proposed second-order joint congestion control and routing framework; and 3) we have proposed several novel approaches for the distributed implementation of our second-order joint congestion control and routing optimization algorithm. Collectively, these results serve as an exciting first step toward an analytical foundation for a second-order joint congestion control and optimization theory that offers fast convergence performance. Second-order cross-layer optimization for network systems is an important and yet under-explored area. Future research topics may include extending and generalizing our proposed second-order algorithmic framework to applications in other network systems, such as wireless networks with stochastic channel models, cloud computing resource allocations, and energy productionscheduling in the smart electric power grid.

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