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Research Paper on Comparison Analysis B/W AODV, TORA and DSR with Monte Carlo Localization Scheme

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Abstract: QoS is to provide preferential delivery service for the applications that need it by ensuring sufficient bandwidth, controlling latency and jitter, and reducing data loss. Network administrators can use QoS to guarantee throughput for mission-critical applications so that their transactions can be processed in an acceptable amount of time. We studied three routing protocols AODV, DSR and TORA for QOS in network. It investigates the factors affecting the performance criteria and working architecture of Ad hoc on-demand Distance Vector (AODV), Dynamic Source Routing (DSR) and Temporally Ordered Routing Algorithm (TORA).

INTRODUCTION

QoS provisioning is crucial to future wireless networks since voice and multimedia will be among the most important applications for them, while mobility and the fluctuation of bandwidth requirement due to handoffs make it challenging to guarantee QoS in such networking environments.

QoS depends on support throughout the network. To achieve QoS from sender to receiver, all of the network elements through which a traffic flow passes such as network interface cards, switches, routers, and bridges must support QoS. If a network device along this path does not support QoS, the traffic flow receives the standard first-come, first-served treatment on that network segment.

QoS is sometimes used as a quality measure, with many alternative definitions, rather than referring to the ability to reserve resources. Quality of service sometimes refers to the level of quality of service, i.e. the guaranteed service quality. High QoS is often confused with a high level of performance or achieved service quality, for example high bit rate, low latency and low bit error probability.

An alternative and disputable definition of QoS, used especially in application layer services such as telephony and streaming video, is requirements on a metric that reflects or Predicts the subjectively experienced quality, In this context, QoS is the acceptable cumulative effect on subscriber satisfaction of all imperfections affecting the service. Other terms with similar meaning are the quality of experience (QoE) subjective business concept, the required “user perceived performance.

LITRATURE REVIEW

Greco, et al [8] proposed a network coding framework for video delivery over wireless networks. Such framework is able to guarantee a good trade-off between resiliency to losses and timely delivery. This work designed by combining Expanding Window Network Coding (EWNC), Multiple Description Coding (MDC), and a novel RateDistortion Optimised (RDO) scheduling algorithm.

Seung [10] discusses different strategies for enhancing multimedia performance; one strategy was mainly to effectively deliver multimedia data over the Internet with mobility by making use of network coding. He divides every video stream into multiple files then he used network coding to generate random linear combination of data packets within a file. Once enough data packets are received for such file, the file is decoded then it is passed to the video player on the laptop or smartphone to play in the proper order, by using the mobile media player plugin for Windows operating system.

Scaria and Suresh [11] proposed a novel system for enhancing wireless network coding in terms of performance with security improvements. Their proposed system has combined RLNC (Random Linear Network Coding) and SPOC (Secure Practical Network Coding) in wireless transmission for improving the confidentiality and integrity of message.
Oh [12] proposes a practical online scheduling algorithm for mobile video streaming to multiple users with network coding capabilities. She build here idea from the fact that watching videos over mobile devices such as smartphones and tablets has been attracting interest from users, and demand for mobile video streaming is increasing. However, existing wireless technologies (e.g., WiFi, WiMax, or LTE) cannot support this impending demand.

Pertovt et al [15] proposed a network coding based solution for dealing with delivery of voice application and multimedia sessions over the packet-switched broadband Internet protocol (IP) networks in real time.

Barekatain et al [17] introduced MATIN framework, MATIN is mainly based random network coding and its purpose is to provide efficient P2P video streaming. The MATIN generates the required coefficients matrix without using n2 entries, as it uses just n Galois Field. By this, they make sure that there is no linear dependency among the associated vectors. Then, it sends only one instead of n coefficient entries and it is encapsulated in the header of each encoded data blocks.

Naeimipoor [18] proposed hybrid video dissemination protocol (HVDP) which is said to be outperforms other protocols in term of delivery ratio and complies with other quality-of-service requirements.

DISCUSSION

A novel utility-based multi-objective bandwidth adaptation scheme is proposed from the perceptive of both network operators and end-users. As mentioned earlier, multimedia traffic is classified into different classes according to their adaptive characteristics. It is assumed that each traffic class contains one or more groups of calls, and all calls within the same group have the same bandwidth requirements and utility function. The proposed scheme is designed to meet two objectives in the preference order:

1) All calls within the same group receive fair utilities; and

2) The total utility of all different groups of calls is maximized.

Several new utility-based performance metrics including average cell utility, average call degradation ratio, utility fairness deviation and average intra group utility fairness deviation are introduced to evaluate the performance of the proposed bandwidth adaptation schemes.

QoS depends on the following factors:

1. **Throughput:** The rate at which the packets go through the network. Maximum rate is always preferred.
2. **Delay: This** is the time which a packet takes to travel from one end to the other. Minimum delay is always preferred.
3. **Packet Loss Rate:** The rate at which a packet is lost. This should also be as minimum as possible.
4. **Packet Error Rate:** This is the errors which are present in a packet due to corrupted bits. This should be as minimum as possible
5. **Reliability**: The availability of a connection. (Links going up/down)

Admission control and Bandwidth allocation schemes can help provide QOS guarantees in wireless networks, but in wireless networks the problem is much more complex due to bandwidth limitations and host mobility.

RESULT

When number of nodes are 4

Algorithm	No. of Nodes	End to End Delay	Throughput	Media Access Delay
AODV	04	0.00100 to 0.00025	High (1100Bits/Sec)	High
DSR	04	UPTO 0.00125	UPTO 800 Bits/Sec	Less
TORA	04	0.00050(Stable)	UPTO 800 Bits/Sec	Less(Stable)

When number of nodes are 20

Algorithm	No. of Nodes	End to End Delay	Throughput	Media Access Delay
AODV	20	Stable	Highest(10,000 Bits/Sec)	Very Less
DSR	20	Stable	UP TO 3500 Bits/Sec	High
TORA	20	High	UP TO 2000 Bits/Sec	Less(Stable)

CONCLUSION

The growth of the wireless customer base and the introduction of various new data services mandate the consideration of new objectives such as throughput, delay, latency, and quality of service (QoS). Indeed, the migration to IP Multimedia Subsystems (IMS) will promote the continuous development of new services with different resource requirements, QoS demands, and traffic characteristics. Furthermore, data services introduce demand fluctuations that are intrinsically larger than they are for voice services. The multidimensional nature of demand, its temporal dependence, and its increased dynamic range render optimization strategies based on a peak (albeit composite) loading progressively less effective at efficiently allocating and managing network resources. Additionally, the demand for increasing data rates and the falling costs for network hardware will drive network architectures toward micro-cellular structures. This development will create frequent infrastructure upgrades with the demand for fast, autonomous, and inexpensive cell integration.

Feature development can be guided by the knowledge gained from the mathematical modelling and simulation stages. For example, a centralized optimization solution may be realized in a distributed form only, which allows approximating the optimum solution without excessive communication. Alternatively, good candidate algorithms can be "guessed" based on observable patterns in the optimum solution based on engineering experience.

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