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# SECRET COMMON RANDOMNESS FROM ROUTING METADATA IN AD-HOC NETWORKS

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**Abstract:**

MANET refers to a multi-hop packet based wireless network composed of a set of a mobile nodes that can communicate and move at a same time, without using any kind of fixed wired infrastructure. The goal of this research is to reduce the energy consumption and to improve the quality of service (QoS) of ad hoc and mobile networks. In general, the analytical evaluation shows the OKERMAN routing algorithm and it is used to improve the network connectivity. It is used to transfer both real time and non real traffic by providing energy efficient and less congested path between a source and destination. The main aim is to reduce the battery power consumption where Power is the most important criteria in ad-hoc networks. The aim of this research is to reduce the delay and energy consumption and also increases the throughput. By using efficient algorithm, it maximizes the network lifetime by minimizing the power consumption during the source to destination route establishment. The proposed technique is quite adaptive for energy efficient communication in MANET. It is typically proposed to increase the reliability of data transmission or to provide load balancing. The corresponding methodology can be used by the routing protocols to select the most stable route between a source and destination, in an environment where multiple paths are available, and to create a convenient performance measure to be used for the evaluation of the stability and connectivity in MANET.

**Keywords**: Manet, Energy efficient algorithm, Power consumption, Network lifetime.

## 1. INTRODUCTION

A mobile ad hoc network (MANET) is a collection of hundreds and thousands of low cost and low power mobile nodes connected by wireless links.[1] In operation, the nodes of a MANET do not have a centralized administration mechanism. It is known for its routable network properties where each node act as a “router” to forward the traffic to other specified node in the network. MANET is a self configuring network of mobile routers connected by wireless links with no access point. Every mobile device in a network is autonomous. The mobile devices are free to move and organize themselves arbitrarily. Nodes in the MANET share the wireless medium and the topology of the network changes erratically and dynamically The advancements in wireless communication and the miniaturization of computers have led to a new concept called the mobile ad hoc network (MANET), where two or more mobile nodes can form a temporary network without need of any existing network infrastructure. The proposed work helps to improve the throughput and to reduce the packet loss and packet delay. It also increases the packet delivery ratio. This research work proposes an Energy Entropy-based minimum Power cost Multipath routing algorithm in MANET. It is used to increase the reliability of data transmission. The multipath routing protocols are used to reduce the routing overhead, delay and to increase the data rate. The On-Demand

routing protocols discover the paths only when it is required to communicate with other nodes. The minimum-hop maximum-power routing can significantly reduce the energy consumption time.

## 2. RELATED WORK

A handover is the process during which a mobile node (MN) creates a new connection and disassociates from its old one. The decision for a new association may be initiated due to movement, if we are moving away from the old connection point and we are approaching a new one; low signal quality, because of interference or other impairments in the wireless path; quality of service decision, trying to effect a balanced load among neighboring or overlapping cells; better service, if we recognize a network with services that we require; or policy and cost decision, where the network or the user decide that it is more appropriate, or advantageous to relate to a different location. This is due to the increase in on-demand video streaming, enabled by smart phones, tablets and other multimedia devices. These devices offer to the users the possibility to roam between different access networks, and a multitude of services. In Video on Demand (VoD) streaming, the users start their streaming sessions at random times, and demand different video files. Due to the growing usage of mobile devices, handover (HO) could occur when the user is streaming the video. [4] In its most frequent form of key establishment, the problem is traditionally decomposed into a randomness generation stage and an information agreement stage, which relies either on public-key infrastructure or on symmetric encryption. It relies on the route discovery phase of an ad-hoc network employing the Dynamic Source Routing Protocol.

It is lightweight and requires relatively little communication overhead. The Communication networks are highly dynamic and largely unpredictable. The randomness is usually evident in easily accessible networking metadata such as traffic loads, packet delays or dropped- packet rates. It can be easily available to the devices that took part in the routing process, but it is usually unavailable to those devices that were not part on the route. It discuss about the routing protocol, where the routing information could be used for establishing secret common randomness between any two devices in a mobile ad-hoc network. One of the main challenges regarding MIMO-capable, heterogeneous wireless technologies is the provision of the support for a robust mobile video service, whereby fast and seamless handover and forwarding schemes are supported between heterogeneous wireless-access networks. In this environment, seamless mobility and data forwarding are coupled according to user preferences, enabling mobile users to be “always best connected” (ABC) so that quality of service and quality of experience (QoS and QoE) are optimized and maintained.

## 3. PROPOSED SYSTEM

On the other hand, the work [6] takes a cross-layer approach and considers video delivery in the general case of a multiuser wireless network where users are served by wireless helper nodes. In order to obtain a tractable formulation for the multiuser network, [6] adopts a “divide and conquer” approach where first the problem of maximizing a function of the time-averaged video qualities, subject to queue stability is solved, and then the delay jitter is taken care of by appropriately dimensioning the pre-buffering and re-buffering times, exploiting the fact that the playback buffer can absorb the delay fluctuations around the (bounded) mean. However, in [6] a “push” scheduling policy is considered, for which video chunks can be served out of order and may result in data loss in the presence of intermittent connectivity and/or mobility. In this paper, this problem is fixed and introduces a new “pull” strategy, which is robust to fast topology variations. The proposed scheme allows each user to opportunistically pull data always in the correct

sequential order from neighboring helper nodes. This results in smoother and more reliable performance. the authors investigated the potentiality and benefits of a novel vertical-handover algorithm for which both hard and soft handovers are exploited in a dual-mode configuration, and it was compared with the traditional hard approach.


**Fig.1.Ratio Analysis**

Regarding the hard vertical-handover mechanism, the connectivity between the mobile users and the serving network is broken before the connection with a new network is established (namely, "break-before-make"); alternatively, the soft vertical-handover mechanism is "make-before break" and generally improves the seamless connectivity. while still guaranteeing the user- QoS requirements. Notably, though, a fully forwarding MN scheme that is based on the MIMO mode from the pAR to the nAR in terms of the handover was not considered for these schemes. Different from the previous works the main goal of our proposed scheme is a mechanism that selects the "best," according to an appropriate metric, wireless technology for a robust mobile-video-streaming service among all of the wireless technologies, whereby the handover and video latency are reduced on average, and the effects of perfect and imperfect handover predictions are analyzed in terms of MIMO-capable, heterogeneous wireless technologies.

## 4. ANALYSIS

The proposed scheme considers a wireless network with multiple users and multiple helper stations sharing the same bandwidth. Each user requests a video file which is formed by a sequence of chunks. Each chunk corresponds to a group of pictures (GOP) that are encoded and decoded as stand-alone units. Chunks have fixed playback duration. The streaming process consists of transferring chunks from the helpers to the requesting users such that the playback buffer at each user contains the required chunks at the beginning of each chunk playback deadline. The playback starts after a short pre-buffering time, during which the playback buffer is filled by a determined amount of ordered chunks. A cross layer approach is considered where the queue sizes maintained at the users act as a bridge between the layers.

Generally, regarding MIMO-capable, heterogeneous wireless technologies, several heterogeneous wireless networks can coexist; moreover, the Internet serves as a backbone that connects a home network and several heterogeneous visited networks including Wi-Fi and LTE. The home network is where the global IPv6 address (home address) of an MN exists. The IPv6 address that is based on the 48-bit MAC address of the

MN is 128 bits and consists of the AR prefix (64bits) and the Modified EUI-64. The paper considers mobile video streaming over MIMO-capable, heterogeneous wireless networks where the AP can forward video packets to other APs with a combination of both the wireless network(i.e., Wi-Fi or LTE) and the MIMO transmission mode (i.e., MUX or DIV) based on the distance and channel quality. Similarly, through an inspection of the relation between the AP and the MN, the MN can also select the wireless technology (i.e. Wi-Fi or LTE) and the MIMO-transmission mode for a robust mobile-video-streaming service. To achieve secret common randomness, authorization is provided based on the routing metadata which is easily available for the members of the network.

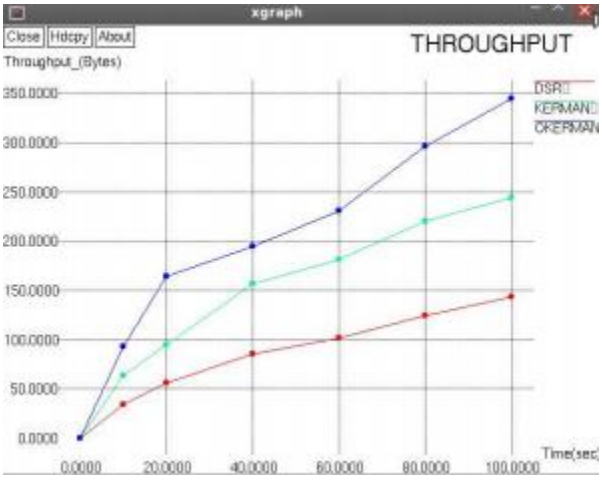


**Fig.2.Flow output**

function to optimally control a dynamical system. A Lyapunov function is a non negative scalar measure of this multi- dimensional state. Typically, the function is defined to grow large when the system moves towards undesirable states. System stability is achieved by taking control actions that make the Lyapunov function drift in the negative direction towards zero. Minimizing the drift of a quadratic Lyapunov function leads to the back pressure routing algorithm for network stability, also called the max-weight algorithm. Adding a weighted penalty term to the Lyapunov drift and minimizing the sum leads to the drift-plus-penalty algorithm for joint network stability and penalty minimization. The Drift Plus Penalty method can be used to optimize performance objectives such as time average power, throughput, and throughput utility. The implementation of the DPP policy decomposes into the pull congestion control decisions at the users and the transmission scheduling decisions at the helpers. The pull congestion control decisions are implemented independently at each user using only the local knowledge of the queue lengths.

## CONCLUSION

The paper proposes DASN, a system for efficient streaming of video content in a network of helpers capable of implementing the advanced physical layer technique massive MU-MIMO. By deploying the network with multiple helpers, the load on the server is reduced, thus improving the QoS of the video streaming. The soft handover algorithm is used to reduce the handover latency along with the MIMO transmission modes – MUX and DIV and thus providing a seamless video streaming session. The security of the network is ensured with the generation of secret random key based on the routing protocol metadata. Through a performance evaluation with Network Simulator, it is shown that the proposed scheme is more robust than the other schemes for mobile video streaming.

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