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OPTIMIZATION OF PEER TO PEER CONTENT BASED FILE SHARING SYSTEM IN DISCONNECTED MANETS

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ABSTRACT: *Current peer-to-peer (P2P) file sharing methods in mobile ad hoc networks (MANETs) can be classified into three groups: flooding-based, advertisement-based, and social contact-based. The first two groups of methods can easily have high overhead and low scalability. They are mainly developed for connected MANETs, in which end-to-end connectivity among nodes is ensured. The third group of methods adapts to the opportunistic nature of disconnected MANETs but fails to consider the social interests. SPOON groups common-interest nodes that frequently meet with each other as communities. It takes advantage of node mobility by designating stable nodes, which have the most frequent contact with community members, as community coordinators for intercommunity searching, and highly mobile nodes that visit other communities frequently as community ambassadors for intercommunity searching. An interest-oriented file searching scheme is proposed for high file searching efficiency. Additional strategies for file prefetching, querying-completion, and loop prevention, and node churn consideration are discussed to further enhance the file searching efficiency.*

INTRODUCTION

Mobile Ad Hoc Network (MANET) is a self-configuring system of mobile routers linked by wireless links which consequently combine to form an arbitrary topology. Thus, the topology may alter rapidly and unpredictably. However, due to the lack of any fixed infrastructure, it becomes complicated to exploit the present routing techniques for network services, and this provides some huge challenges in providing the security of the communication, which is not done effortlessly as the number of demands of network security conflict with the demands of mobile networks, largely due to the nature of the mobile devices e.g. low power consumption, low processing load.

LITERATURE REVIEW:

Cutting without Pain: Mitigating 3G Radio Tail Effect on Smartphones

Although having those applications mobile is quite appealing, high data rate transmission also poses huge demand for power. It has been revealed that the tail effect in 3G radio operation results in significant energy drain on smartphones. Recent fast dormancy technique can be utilized to remove tails but, without care, can degrades user experience. Propose a novel scheme SmartCut, which effectively mitigates the tail effect of radio usage in 3G networks with little side-effect on user experience. The core idea of SmartCut is to utilize the temporal correlation of packet arrivals to predict upcoming data, based on which unnecessary high-power-state tails of

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radio are cut out leveraging the Fast Dormancy mechanism.
Extensive trace-driven simulation results demonstrate the efficacy of SmartCut design. On average, SmartCut can save up to 56.57% energy on average while having little side-effect to user experience. SmartCut, which uses historical 3G traffic data to train ARMA models and further utilizes the predicted arrival time of future data transmission to effectively cut unnecessary tails while having little side effect to user experience.

Energy Consumption In Wireless
Networks Progress

Since the mobile phone relies on a limited power source and provides more demanding services today, minimizing the energy consumption is one of most important factors to consider. In this context, the focus will be set for two areas: modulation formats in the physical layer and the RRC-protocol in the network layer. The modulation formats section will be a literature study only, to show the energy advantages by using higher modulation combined with channel coding. Main focus will be set on the RRC-protocol and its functionality. The simulation chapter will show the importance of precise timer settings to gain energy efficiency as well as a comparison between the original RRC-protocol and a RRC-protocol proposed by us. The result shows decrease of 2.4 % for the proposal RRC and therefore seems to be more effective during web browsing utilization. Furthermore, the effect of the proposed RRC has to be confirmed in other utilization aspects as well as its impact on the transmission delay.

Energy Consumption of Always-On Applications in WCDMA Networks

Always-on applications, such as push email and voice-over-IP, are characterized by the need to be constantly reachable for incoming communications. In the presence of stateful firewalls or NATs, such applications require "keep-alive" messages to maintain up-to-date connection state in the firewall or NAT, and thus preserve reachability. Analyze how these keep-alive messages influence battery lifetime in WCDMA networks. Using measurements in a 3G network, we show that the energy consumption is significantly influenced by the Radio Resource Control (RRC) parameters and the frequency of keep-alive messages. The results suggest that especially UDP-based protocols, such as Mobile IPv4 and IPsec NAT Traversal mechanisms, require very frequent keep-alives that can lead to unacceptably short battery lifetimes. Especially UDP-based protocols with long sessions can lead to unacceptably short battery lifetimes. The most important factors influencing energy consumption are the RRC parameters and frequency of keep-alive messages, and thus 3G network.

Traffic-Aware Techniques to Reduce 3G/LTE Wireless Energy Consumption

The 3G/LTE wireless interface is a significant contributor to battery drain on mobile devices. A large portion of the energy is consumed by unnecessarily keeping the mobile device's radio in its "Active" mode even when there is no traffic. This paper describes the design of methods to reduce this portion of energy consumption by learning the traffic patterns and predicting when a burst of traffic will start or end. We develop a technique to determine when to change the radio's state from Active to Idle, and another to change the radio's state from Idle to Active. In evaluating the methods on real usage data from 9 users over 28 total days on four different carriers, find that the energy savings range between 51% and 66% across the carriers for 3G, and is 67% on the Verizon LTE network. When allowing for delays of a few seconds (acceptable for background applications), the energy savings increase to between 62% and 75% for 3G, and 71% for LTE. The increased delays reduce the number of state switches to be the same as in current networks with existing inactivity timers. The key idea in this paper is to adapt the state of the radio to network traffic. To put the 66% saving (without any delays) or 75% saving (with delay) .

OUR PROPOSAL

Dual Queue Scheduling Algorithm

- In telecommunication a distributed multi-access network that (a) supports integrated communications using a dual bus and distributed queuing, (b) provides access to local or metropolitan area networks, and (c) supports connectionless data transfer connection-oriented data transfer, and isochronous communications, such as voice communications.
- Dual queue scheduling algorithm for scheduling these two categories of requests.
- TailTheft schedules requests by maintaining two queues:
- (1) the real-time queue for requests that must be scheduled instantaneously, and (2) the TailTheft queue for TailTheft requests.
- TailTheft schedules requests in the real-time queue if requests are present in this queue and schedules those in the TailTheft queue if the real-time queue is empty or if the deadline of the first request in the TailTheft queue approaches.

Virtual Tail Time

Achieving batching and prefetching in the tail time requires identification of the time during which these tasks can be performed. The types of demotion, namely, DCH→FACH→IDLE or DCH→IDLE, can be accurately determined. The former demotion type has two tail times (T1 and T2), and the latter has only one tail time (T1). The mechanism of the two tail times can be directly applied to one tail time. Thus, we consider only the former. i separate the two tail times primarily because the scheduling rates in these two periods are distinct. Two mechanisms are employed for online determination of whether now is the tail time. Power-based state inference mechanism is used to infer the current RRC state based on power consumption.

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Handling TailTheft Requests

TailTheft is feasible if and only if it not only transmits requests in the real-time queue as soon as they are inserted, but also processes requests in the TailTheft queue before their deadlines. Specifically, delay-tolerant requests should be scheduled before their deadlines, and previous attempts should be scheduled before their deadlines or discarded as their deadlines approach. To meet the deadlines indicated by requests, the dual queue scheduling algorithm introduces a new timer θ. After being delivered by applications, TailTheft requests are added to the queue from small to large, according to the time between tnow and di, where tnow is the current time, and di equals to the sum of the arrival time ai and the absolute value of **r_delay** of request i. The first request in the TailTheft queue is assigned with the latest deadline and is the first to be transmitted. After each enqueue operation, TailTheft derives the latest deadline, denoted as dl, and restarts the timer θ, the end time of which is dl −tnow. When now is the virtual tail time, the first request in the queue is dequeued first. Timer θ is cancelled before the first request is dequeued and reactivated according to the deadline of the next request in the queue after dequeuing.

RESULTS &CONCLUSION

Inactivity timers in cellular networks are used to balance the trade-offs between resource efficiency for enhanced user experience and low management overhead. However, considerable radio resources and battery energy are wasted in the tail time. Proposed TailTheft, which leverages the tail time for batching and prefetching. Our work is the first to consider using rather than eliminating the tail time for saving energy. To utilize the tail time, TailTheft uses a virtual tail time mechanism to determine the amount of tail time that can be used and a dual queue scheduling algorithm to schedule transmissions. Given that numerous transmissions are scheduled in the tail time, energy consumption is significantly decreased. TailTheft can benefit a number of common applications, including delay-tolerant applications (e.g., e-mail, RSS feeds, and software updates), and prefetchable applications (e.g., news, social networking, browsing, media and maps). We have simulated TailTheft in NS-2 and evaluated its performance under various conditions. The experimental results show that TailTheft achieves more significant savings on battery energy and radio resources than existing methods.

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