SCHEMING OF AN EFFICIENT APPROACH FOR MULTICAST TRAFFIC

M. DEEPIKA [1], B. SWATHI [2]

[1] M.TECH, STUDENT, GEC, WARANGAL, TELANGANA.
[2]S B. SWATHI, ASST. PROF, CSE DEPT, GEC, WARANGAL, TELANGANA.

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Abstract - *As fourth generation networks becoming an important component within content delivery chain, multimedia broadcast as well as multicast services are attaining importance as an efficient way to distribute general information to subscribers. Consideration of important scheduling algorithms in support of multicast traffic forms a vital component of multimedia broadcast as well as multicast services and in turn forms the focus of our work. We emphasize trade-off among cooperation gain and efficient multiplexing of multicast sessions all the way through intelligent grouping of relays in support of cooperation.*

Keywords: Multimedia broadcast, Scheduling, Multicast sessions, Relays, Content delivery, Subscribers.

1. INTRODUCTION:

With the next-generation wireless networks heading towards smaller cells for provision of superior data rates, there is a revived concentration in multi-hop wireless networks from viewpoint of combining them with cellular networks. By the decrease in cell size, relay stations are currently essential to offer extended coverage. Two-hop relay-enabled wireless networks have turn into a dominant, mandatory element within 4G standards because of plethora of envisioned applications [1]. They manage orthogonal frequency-division multiple access which has become the well-liked choice for air interface technology. The complete spectrum is divided into numerous carriers, allowing for numerous users to function in tandem which leads to numerous physical-layers as well as scheduling benefits. The two-hop network model that is coupled with orthogonal frequency-division multiple access offers numerous diversity gains that are leveraged all the way through intelligent scheduling. In our work we emphasize how strategies that carefully group relays for cooperation are necessary to deal with this trade-off efficiently. We later solve the problem of core multicast scheduling, that needs determining allocation of sub-channels to multicast sessions on relay as well as access hops so that cooperation as well as multiplexing gains are leveraged to exploit the performance of multicast system. In the process, that is motivated by latest relay standards we make a consideration of two models for how subcarriers are clustered to form a sub-channel within orthogonal frequency-division multiple access.

2. METHODOLOGY:

While numerous scheduling works have spotlighted on unicast traffic for two-hop orthogonal frequency-division multiple access relay networks, multicast traffic has not been surveyed much in these networks. Designing of resourceful scheduling algorithms in support of multicast traffic forms a vital component of multimedia broadcast as well as multicast services and in turn forms the focus of our work. Multicasting within two-hop relay networks is considerably dissimilar from traditional cellular multicast [2]. The broadcast benefit of multicast data is considerably diminished on access hop where they become equal to several unicast transmissions from various relay stations towards mobile stations, thus requiring additional transmission resources. Relay cooperation mechanisms permit numerous relay stations to concurrently transmit multicast data on similar transmission resource which retain the broadcast nature of traffic on access hop, making an essential component in improvisation of multicast performance. We emphasize trade-off among cooperation gain and efficient multiplexing of multicast sessions all the way through intelligent grouping of relays in support of cooperation. We solve the problem of core multicast scheduling, that needs determining allocation of sub-channels to multicast sessions on relay as well as access hops so that cooperation as well as multiplexing gains are leveraged to exploit the performance of multicast system. Several works have examined potential of relay-enabled wireless networks to offer enhanced coverage as well as capacity. Scheduling of unicast data has gained higher importance so far in these networks. Different from unicast works, the orthogonal frequency-division multiple access scheduling works above multicast data have mainly been limited to one-hop cellular networks. These solutions are not directly carried over towards relay networks, in which nature of multicast traffic as well as its broadcast benefit is considerably changed on access hop. Two-hop relay-enabled wireless networks have turn into a dominant, mandatory element because of plethora of envisioned applications and they manage orthogonal frequency-division multiple access which has become the well-liked choice for air interface technology. We make a consideration of two models for how subcarriers are clustered to form a sub-channel within orthogonal frequency-division multiple accesses. Multicasting with relays has received improved consideration in recent times [3][4]. Identifying this trade off by means of scheming resourceful multicast scheduling algorithms by means of performance guarantees for orthogonal frequency-division multiple access relay networks is in turn focus of our work.

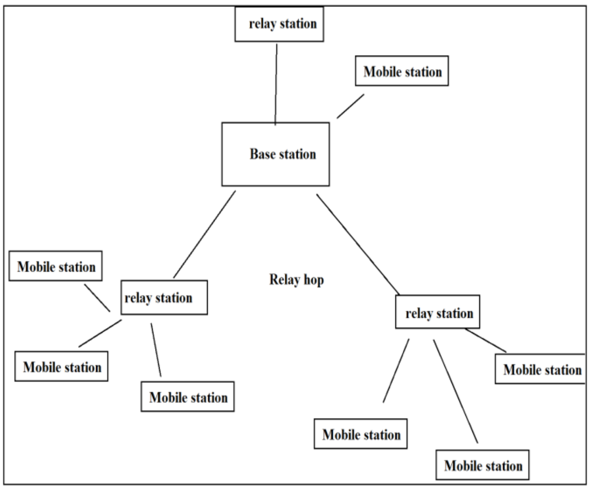

Fig1: network model

3. AN OVERVIEW OF PROPOSED SYSTEM:

With next-generation cellular networks making a changeover in the direction of smaller cells, two-hop orthogonal frequency-division multiple access relay networks have turn into a leading, component in 4G standards. While unicast flows have gained practical consideration in two-hop orthogonal frequency-division multiple access relay networks, not much focus was shed on efficient scheduling algorithm designing for multicast flows. When provided the increasing importance of multimedia broadcast as well as multicast services within 4G networks, the latter forms the focus of our work. We show that as relay cooperation is significant for improving multicast performance, it has to be carefully balanced with ability to multiplex multicast sessions and therefore make the most of aggregate multicast flow. We consider a network model which is a downlink orthogonal frequency-division multiple accesses-based, relay-enabled, two-hop wireless networks. A set of mobile stations are consistently located within macro cell and a small set of relay stations are added to midway of network. Mobile stations connect with relay stations that are closest to them on the basis of highest signal-to-noise ratio. The one-hop links among base station and relay stations are referred as relay links, among relay stations as well as Mobile stations as access links, as well as between station and mobile stations as direct links. Downlink data flows are considered to start off in Internet and destined on the way to the Mobile stations and the entire stations are believed to be half-duplex [5]. A set of total orthogonal frequency-division multiple sub-channels is considered, by means of two models for combination of subcarriers to structure a sub channel which is distributed permutation as well as contiguous permutation. The subcarriers comprising a subchannel are selected at random from complete frequency spectrum within distributed permutation, whereas adjacent subcarriers are chosen in contiguous permutation. In distributed permutation a particular channel quality value which is regular to the entire sub-channels, is feedback by means of a relay stations or Mobile station. While random selection of subcarriers within a sub-channel removes channel diversity, it assists normal out interference and reduces feedback. In contiguous permutation, high association within channel gains across neighbouring subcarriers assists leverage sub-channel diversity, whereby relay stations or Mobile station can make use of dissimilar rates to suit various sub-channel gains all the way through scheduling [6]. On the other hand, this necessitates feedback on the entire sub-channels from relay stations or Mobile station. Measurement, feedback, as well as selection of rate levels are standardized for two modes and provided by or Mobile station through relay stations and relay stations to base station within uplink frames, which base station after that directly uses for setting up its transmissions to relay stations and relay stations. Thus, for scheduling reason, it is sufficient to model the rates being similar or else different on different sub-channels intended for a user.

4. CONCLUSION:

As unicast flows have achieved realistic consideration in two-hop orthogonal frequency-division multiple access relay networks, not much focus was shed on efficient scheduling algorithm designing for multicast flows. While abundant scheduling works have spotlighted on unicast traffic for two-hop orthogonal frequency-division multiple access relay networks, multicast traffic has not been surveyed much in these networks. Scheming of resourceful scheduling algorithms in support of multicast traffic forms a vital component of multimedia broadcast as well as multicast services. We highlight trade-off among cooperation gain and efficient multiplexing of multicast sessions all the way through intelligent grouping of relays in support of cooperation. As relay cooperation is significant for improving multicast performance, it has to be carefully balanced with ability to multiplex multicast sessions and therefore make the most of aggregate multicast flow.

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BIOGRAPHIES

Completed B. Tech and pursuing M.Tech in Ganapathy Engineering College, Warangal, Telangana.

Completed B.Tech in 2006 from vaagdevi engineering college and M.Tech in 2011 from vaagdevi engineering college and presently working in Ganapathy engineering college as Assistant Professor in CSE, Dept. in Warangal, Telangana.