

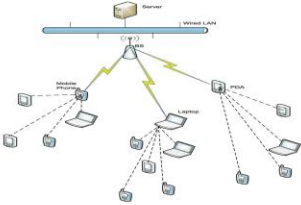
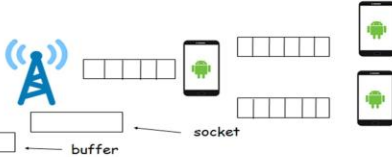

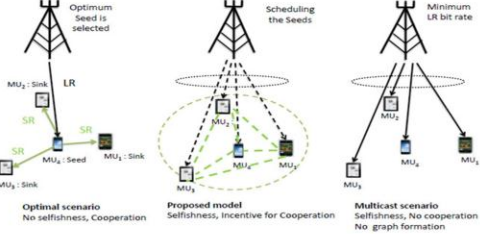


Implementation of a Multimedia Sharing System in D2D Communications in Android OS

Amirreza Hajrasouliha

Supervisor : Dr. Mohammad Hossein Manshaei

Department of Electrical and Computer Engineering, Isfahan University of Technology, Isfahan, 84156, IRAN

1. Introduction	4. Features and Capabilities
<p>Background and Motivations:</p> <ul style="list-style-type: none"> •Energy consumption rate at today's cellular networks is really high (especially in base stations) •Cisco forecasts 30.6 Exabytes per month of Mobile Data traffic by 2020 (about 8 times the volume of Mobile Data traffic by 2015) <p>Solution: Using a D2D LAN network with collaborative approach.</p>  <p>Goal:</p> <p>The goal of this project is implementing an application which lowers the amount of energies consume in cellular networks using D2D LAN with a seed selection algorithm and punishment of selfish nodes.</p>	<p>Receiving and transferring multimedia simultaneously (in seed node)</p>  <ul style="list-style-type: none"> ◊In each session, a node which is chosen as seed node(by seed selection algorithm) starts sending multimedia to other nodes in D2D LAN as well as receiving it from base station. ◊This is done by buffering the multimedia and sending the buffered data through dedicated socket for each node. <p>Streaming multimedia while transferring or receiving it (in both seed or sink nodes)</p> <ul style="list-style-type: none"> ◊Each node should start playing the multimedia whether acting as seed or sink. ◊All nodes should play exact time of multimedia in a particular time. ◊In practice, All nodes play the exact time of movie with a tolerable delay.  <p>Seed selection algorithm</p> <p>This algorithm is done in base station node to determine order and time for being seed of each node.</p> <ul style="list-style-type: none"> ◊ Input: Throughputs of all nodes ◊ Output: Time to be seed of each node <p>Punishing selfish nodes</p> <p>Selfish nodes should be discovered and banned from receiving more data from other nodes in D2D LAN so we do not share wifi hotspot key with selfish nodes when next session starts.</p>
2. D2D LAN	
<ul style="list-style-type: none"> •Device-to-device (D2D) communication enables direct communication between nearby mobiles. •It will facilitate the interoperability between critical public safety networks and ubiquitous commercial networks based on e.g. LTE. •In a D2D local area network (D2D LAN), mobile users (MUs) must cooperate to download common real-time content from a wireless cellular network. 	
3. System Model	
<p>3 different approaches are illustrated in the fig bellow:</p>  <p>We implemented the scheduling approach with non permanent Seed node and punishment of selfish nodes which do not desire to collaborate.</p>	<p>Seed selection algorithm</p> <p>This algorithm is done in base station node to determine order and time for being seed of each node.</p> <ul style="list-style-type: none"> ◊ Input: Throughputs of all nodes ◊ Output: Time to be seed of each node <p>Punishing selfish nodes</p> <p>Selfish nodes should be discovered and banned from receiving more data from other nodes in D2D LAN so we do not share wifi hotspot key with selfish nodes when next session starts.</p>
	5. Conclusion
	<ul style="list-style-type: none"> •In this project after investigating the energy consumption of cellular networks which is growing rapidly these days , we entitled this high consumption a serious world dilemma. •We introduced a solution for this high energy consumption in cellular networks which is using D2D LAN instead of multicast scenario. •We implemented an android application with real time transferring and streaming multimedia in a collaborative way that leads to less mobile data traffic and energy consumption in cellular networks.