Reduced Energy Consumption of Data Transmission for TCP Download/Upload

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Abstract:-Energy intake resulting from wireless data transmission on smartphones is growing rapidly with the growing popularity of applications that require network connectivity. This effects in shrinking battery life, as the improvement of battery is unable to keep up with the power demand of applications. While looking forward to breakthroughs in battery technology, we can try to make the networked applications more energy-efficient. Wireless information transmission consumes a significant part of the overall electricity consumption of smartphones, due to the popularity of Internet applications. This task investigates the energy intake traits of information transmission over Wi-Fi, focusing on the effect of Internet flow characteristics and network environment. We present deterministic models that describe the strength consumption of Wi-Fi record transmission with traffic burstiness, network performance metrics like throughput and retransmission rate, and parameters of the power saving mechanisms in use.

Keywords: Reduced Energy consume; Peer to Peer; Stable; Online; Upload; Download

2.INTRODUCTION

This manual is intended for embedded systems engineers and assist specialists who are not acquainted with wireless networking from a theoretical or implementation point of view. The components, organization, and operation of Wi-Fi networks might be presented. There is an emphasis on protection troubles and the available security protocols. Wi-Fi is the transmission of radio signals. Wireless Rabbits provide the embedded structures engineer many benefits in a wide range of packages. Industrial process and manipulation applications wherein wired connections are too pricey or inconvenient, e.g., constantly transferring machinery.

- Emergency applications that require immediate and transitory setup, such as battlefield or disaster situations.

- Mobile applications, such as asset tracking.
- Surveillance cameras (perhaps you don't need them without problems noticed, cables are difficult to hide)

3. BACKGROUND

Despite the popularity of mobile applications, their performance and energy bottlenecks remain hidden due to a lack of visibility into the resource-constrained mobile execution environment with potentially complex interaction with the application behavior.

A combined power and throughput performance study of WiFi and Bluetooth usage in smartphones. The study reveals [3] several interesting phenomena and tradeoffs. The conclusions from this study suggest preferred usage patterns, as well as operative suggestions for researchers and smartphone developers. Smartphones are quickly becoming the main computing and (data) communication platform. These days, smartphones are all equipped with Bluetooth and WiFi, which complement their cellular communication capabilities.

They studied how much energy can be saved by reshaping audio streaming traffic before receiving at the mobile devices. The rationale is the following: Mobile network interfaces (WLAN and 3G) are in active mode[4] when they transmit or receive data, otherwise they are in idle/sleep mode. To save energy, minimum possible time should be spent in active mode and maximum in idle/sleep mode. It is well known that by reshaping the usually constant bit rate multimedia traffic into bursts, it is possible to spend more time in idle/sleep mode leading to impressive energy savings.

They design and implement ARO, the mobile **A**pplication **R**esource **O**ptimizer, and the first tool that efficiently[6] and accurately exposes the cross-layer interaction among various layers including radio resource channel state, transport layer, application layer, and the user interaction layer to enable the discovery of inefficient resource usage for smart phone applications.

Offloading tasks to cloud is one of the proposed solutions for extending battery life of mobile devices. Most prior research focuses on offloading computation, leaving communication related tasks out of scope. However, most popular applications today involve intensive communication that consumes a significant part of the overall energy. Hence, they currently do not know how feasible it is to use offloading for saving energy in such apps. In this paper [7], they first show that it is possible to save energy by offloading communication-related tasks of the app to the cloud. They use an open source Twitter client, And Tweet, as a case study.

4.EXPERIMENTAL STUDY

In reduced energy consumption, based on the past transactions, for a given node which nodes serves the data in fast and reliable manner is found out and suggested for successive communication is also implemented. Also, Details about stable nodes which serve the data to other

requested nodes are maintained. In this P2P based approach is used in which when a node is downloading and viewing media content, it can upload the content simultaneously. Nodes are treated as stable peers by giving a time threshold and nodes online up to that time is treated as stable node. In addition, the peers online and offline can be maintained.

4.1 MOBILE NODE CONFIGURATION

4.1.1 CONFIGURATION MOBILE SERVER

In this form, the server machine IP address (the main application running node's IP address) is saved in to the 'ServerIPAddress' table.

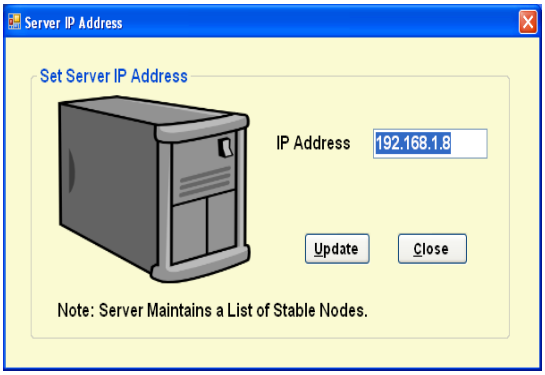
4.1.2 CONFIGURATION MOBILE PEER

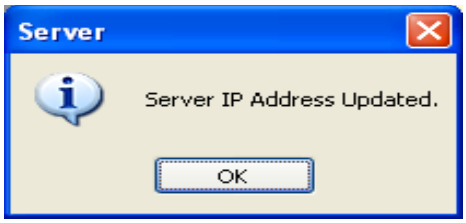
In this form, the node id and IP address (the client application running node's IP address) is saved in to the 'Peers' table.

4.1.3 CONFIGURATION STABLE NODE

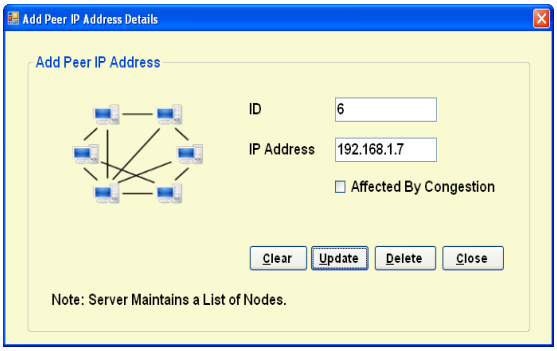
In this form, the stable node time settings threshold is saved into the'StableNodeThreshold' table. When a client application is started and runs up to this duration, then this node is said to be stable node.

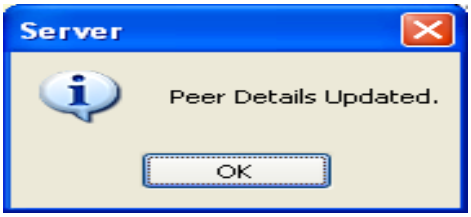
CONFIGURE MOBILE SERVER



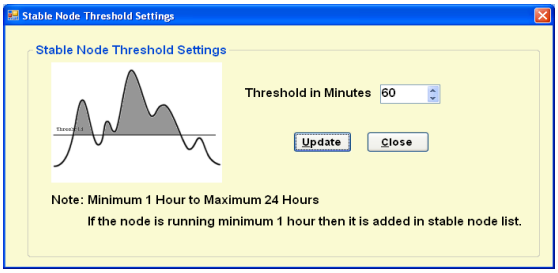


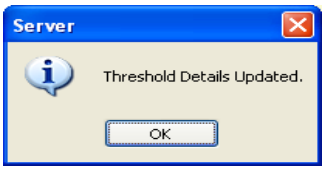
CONFIGURE MOBILE PEER





CONFIGURE MOBILE STABLE NODE





4.2 DATA SHARE CONFIGURATION

4.2.1CONFIGURATIONUPLOAD CONTENT

In this form, the date/time, title and description, the file path to be uploaded, and file type (extension such as .doc, .mp3, etc) are saved into 'Uploads' table.

4.2.2 VIEW DATA SHARE CONTENTS (ALL MOBILE PEERS)

In this form, using data grid view control, all the records in 'Peers' table are fetched from database and displayed.

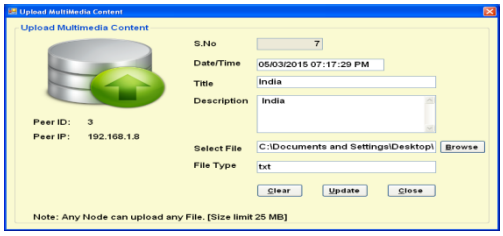
4.2.3 VIEW DATA SHARE CONTENTS (STABLE MOBILE PEERS)

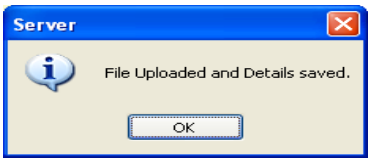
In this form, using data grid view control, all the records in 'Peers' table with 'StableNode' column's value set to 1 are fetched from database and displayed. When the node is selected, the files kept in that node are displayed.

4.2.4 VIEW DATA SHARE CONTENTS(ONLINE NOW)

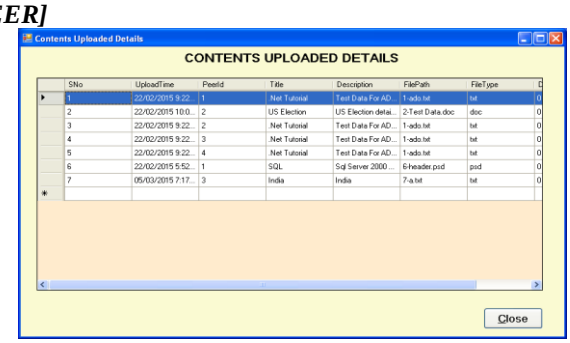
In this form, using data grid view control, all the records in 'Peers' table with 'OnlineNow' column's value set to 1 are fetched from database and displayed. When the node is selected, the files kept in that node are displayed.

CONFIGURE UPLOAD CONTENT

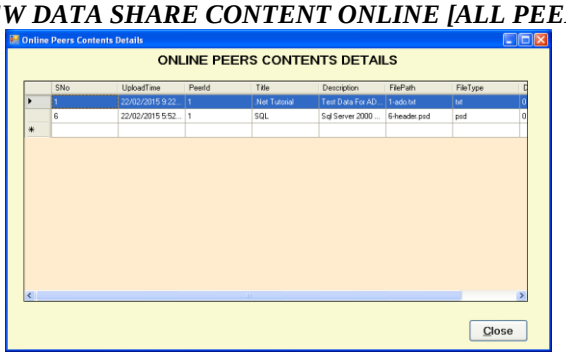




VIEW DATA SHARE CONTENT OFFLINE [ALL PEER]



VIEW DATA SHARE CONTENT ONLINE [ALL PEER]



4.3 MODELING FOR DATA CONTENT SHARE

4.3.1 MODELING FOR MOBILE PEERS ONLINE

In this form, using data grid view control, all the records in 'Peers' table with 'OnlineNow' column's value set to 1 are fetched from database and displayed.

4.3.2 MODELING FOR MOBILE PEERS OFFLINE

In this form, using data grid view control, all the records in 'Peers' table with 'OnlineNow' column's value set to 0 are fetched from database and displayed.

4.3.3 MODELING FOR QUERY STABLE NODE

In this form, using data grid view control, all the records in 'Peers' table with 'StableNow' column's value set to 1 are fetched from database and displayed.

4.3.3 MODELING FOR MOBILE QUERY STABLE NODE

In this form, using data grid view control, all the records in 'Peers' table with 'StableNow' column's value set to 1 are fetched from database and displayed.

4.4 RETRIEVE DATA CONTENT SHARE

4.4.1 RETRIEVE MULTIMEDIA CONTENT

In this form, the search word is given and records having description matching with the search word are fetched and displayed. When the file is selected, the nodes having that record/file are displayed. When 'Download Content' button is clicked, the file's segments are retrieved from those systems.

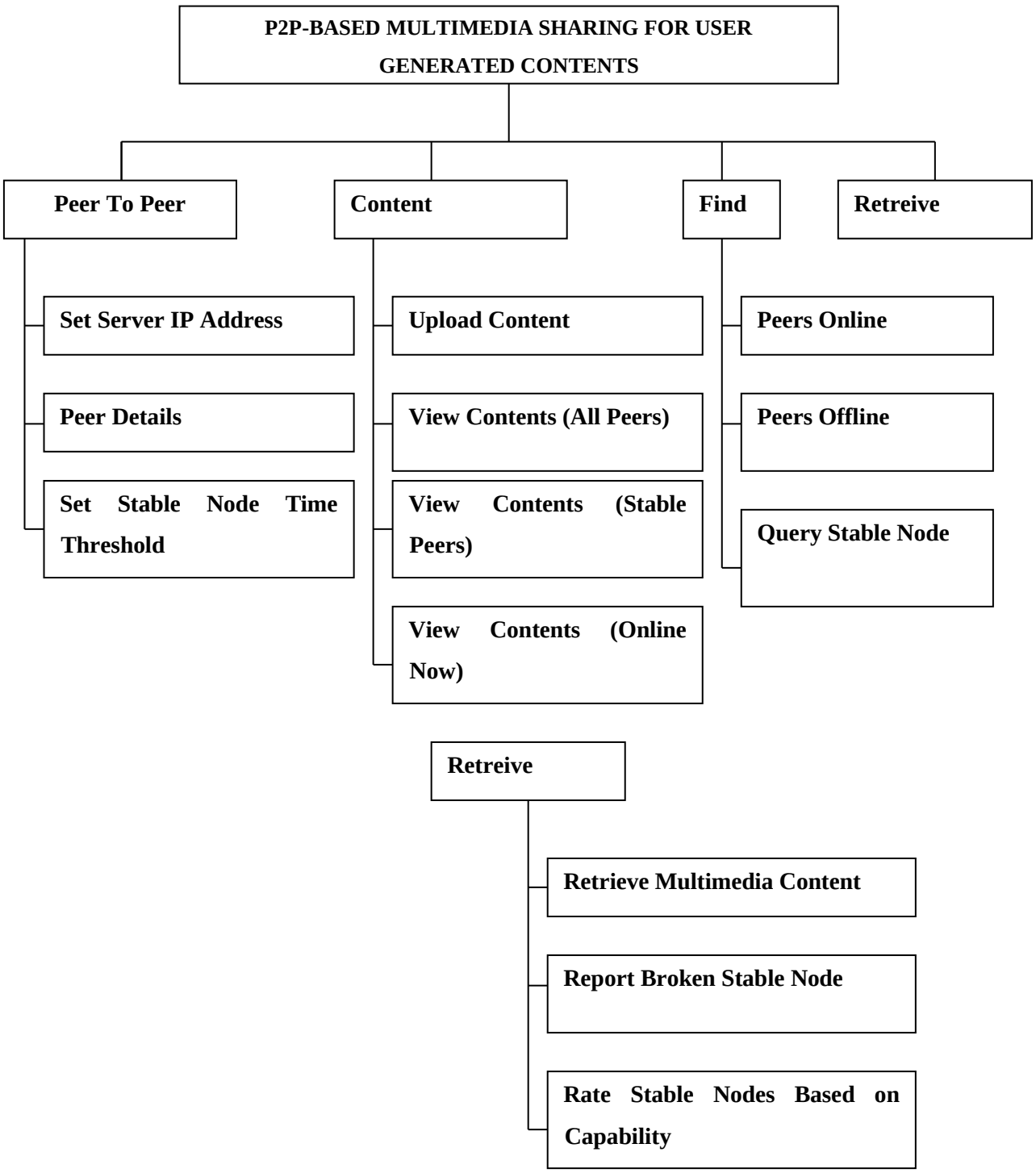
4.4.2 REPORT BROKEN STABLE NODE

In this form, the stable nodes if not connected to the given node, then it is displayed.

4.4.3 RATE STABLE NODES BASED ON CAPABILITY

In this form, all stable nodes running for very long duration are displayed in the decreasing order of duration.

5.WORK FLOW


P2P-BASED MULTIMEDIA SHARING FOR USER GENERATED CONTENTS
Peer To Peer
Content
Find
Retreive
Set Server IP Address
Peer Details
Set Stable Node Time Threshold
Upload Content
View Contents (All Peers)
View Contents (Stable Peers)
View Contents (Online Now)
Peers Online
Peers Offline
Query Stable Node
Retreive
Retrieve Multimedia Content
Report Broken Stable Node
Rate Stable Nodes Based on Capability

6.CONCLUSION AND FUTURE ENCHANCEMENTS

The problem in distributing the content within the server is eliminated by the use of this software. It reduces the server bandwidth to consistent amount. The end users need not longer anticipate server in downloading the content since the P2P application gets the content from available clients. The application works properly for given responsibilities in network environment. The gadget remove the difficulties within the existing system. It is advanced in a user-friendly manner. The system is very speedy and any transaction may be viewed or retaken at any level. This software is very specific in reducing the work and reaching the accuracy.

The new system come to useful if the below enhancements are made in future.

- The statistical analysis of download data if prepared, can be used for further development.
- The P2P application if developed as web site can be used from anywhere.
- The user portal if developed can assist in maintaining download history for end users.

The new system is designed such that those enhancements can be integrated with current modules easily with less integration work.

7.REFERENCE

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