Green Virtualization for Multiple Collaborative Cellular Operators

ABSTRACT

The increasing use of data and cloud-based services in the future will require significant capacity enhancement efforts by cellular operators including the deployment of additional base stations (BSs) to serve more users. This will enormously inflate energy consumption of the cellular networks. Consequently, the fossil fuel consumption will increase since they are expected to continue supplying about 80% of the world energy through 2040. Therefore, there is a pressing need to reduce energy consumption of cellular networks by efficient utilization of communication infrastructure for the sake of their own profitability as well as the environment.

EXISTING SYSTEM

In Existing System, Resource sharing and coalition formation for common interests is also used in other settings such as in the case of multiple cloud providers and networks using device-to-device communications. Due to the flexibility of serving users, an operator may switch off its lightly loaded BS while intelligently offloading the associated users to BSs of other operators. Optimally, only a portion of each operator's network will be active at one time and together, they serve the entire geographical region while minimizing the energy consumption. This requires cognitive decision-making for forming collaborative groups and turning off redundant BSs based on the situational awareness of the network and the users.

DIS ADVANTAGES

- It leads to under-utilization of power and communication resources.
- It provides more flexibility in achieving energy efficiency.

PROPOSED SYSTEM

In Proposed System, green virtualization framework for collaboration of multiple cellular operators to achieve energy efficiency. The BS sleeping strategy is employed to switch off redundant BSs from the virtual network that is formed by unifying the radio access infrastructure of all operators. An optimization framework for identifying the active BS combination that minimizes the energy consumption and the set of inter-operator roaming prices that maximizes

operator profits is formulated. Moreover, an algorithm is proposed that helps in identifying the subset of operators that can collaborate with each other in case the collaboration among all operators is not possible due to profitability, capacity, or power constraints. It is shown that considerable energy can be saved under the proposed virtualization as compared to standalone operators. In view of the demonstrated benefits in terms of energy and profitability, it is recommended that the telecommunication leaders and regulators discuss and focus on such approaches for possible implementation in next generation of cellular networks.

ADVANTAGES

- It serves its users in regions that are out of its own coverage.
- It is used for energy saving in modern cellular networks.

SYSTEM REQUIREMENTS

H/W System Configuration:-

Processor	-	Pentium –III
RAM	-	256 MB (min)
Hard Disk	-	20 GB
Key Board	-	Standard Windows Keyboard
Mouse	-	Two or Three Button Mouse
Monitor	-	SVGA

S/W System Configuration:-

Operating System	:	Windows95/98/2000/XP
Application Server	:	Tomcat5.0/6.X
Front End	:	HTML, Jsp
Scripts	:	JavaScript.

Server side Script	:	Java Server Pages.
Database	:	MySQL 5.0
Database Connectivity	:	JDBC