



Power Saving Routing Algorithms in Wireless Mesh Networks : A survey

by

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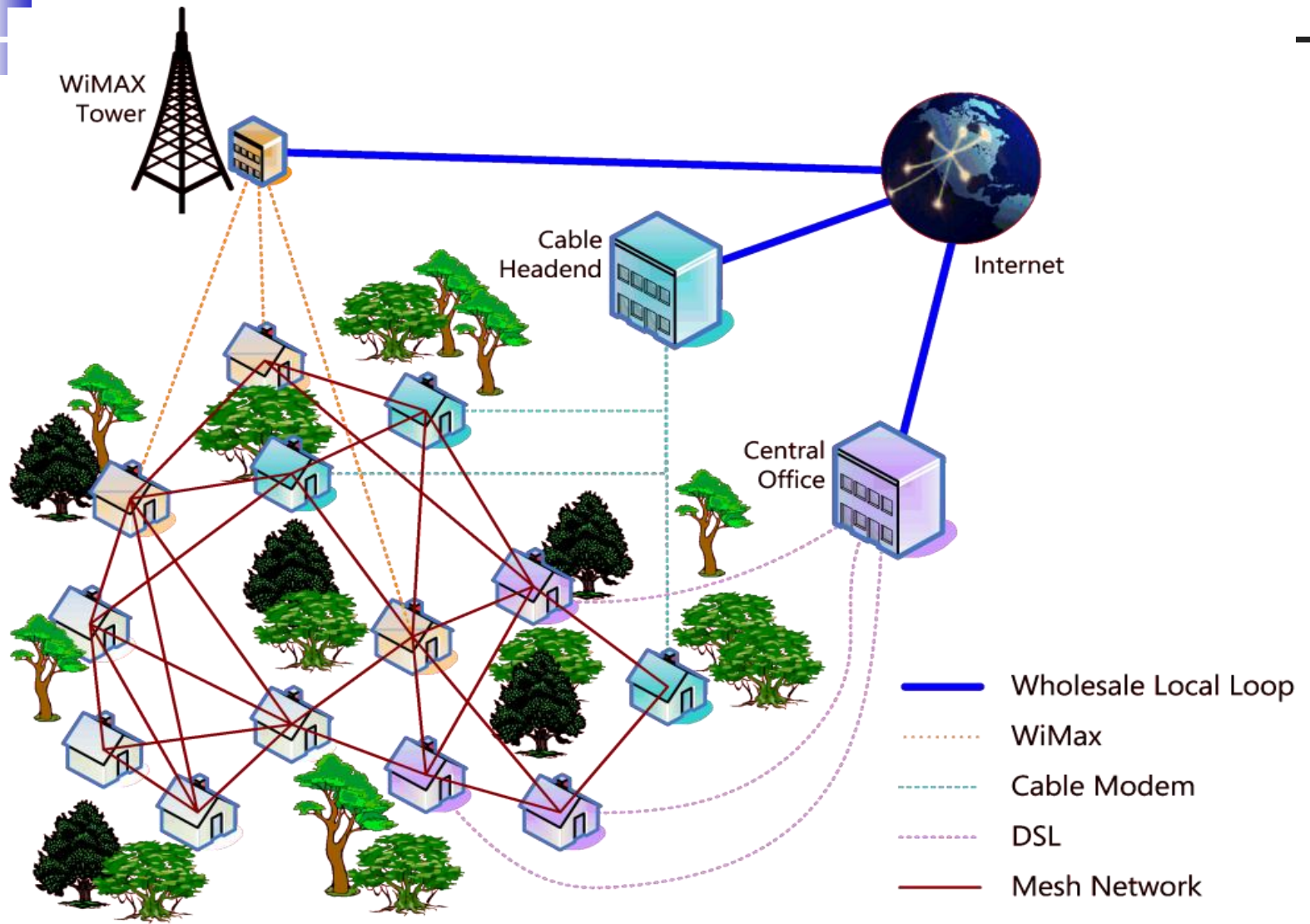
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Agenda

- Introduction
- Classification of power-save routing algorithms
- Related works carried out
- Comparative Analysis
- Challenges and scope for research work
- conclusion

Introduction





Introduction contd..

- Wireless Mesh Networks (WMN)
 - Decentralized nature which is highly reliable and easy to deploy.
- Wireless connections are made use to connect the network of access points.
- Research focus has been shifted to minimize the power consumption of these networks, since it directly impacts the cost for operating the network.

Classification of Power save Routing

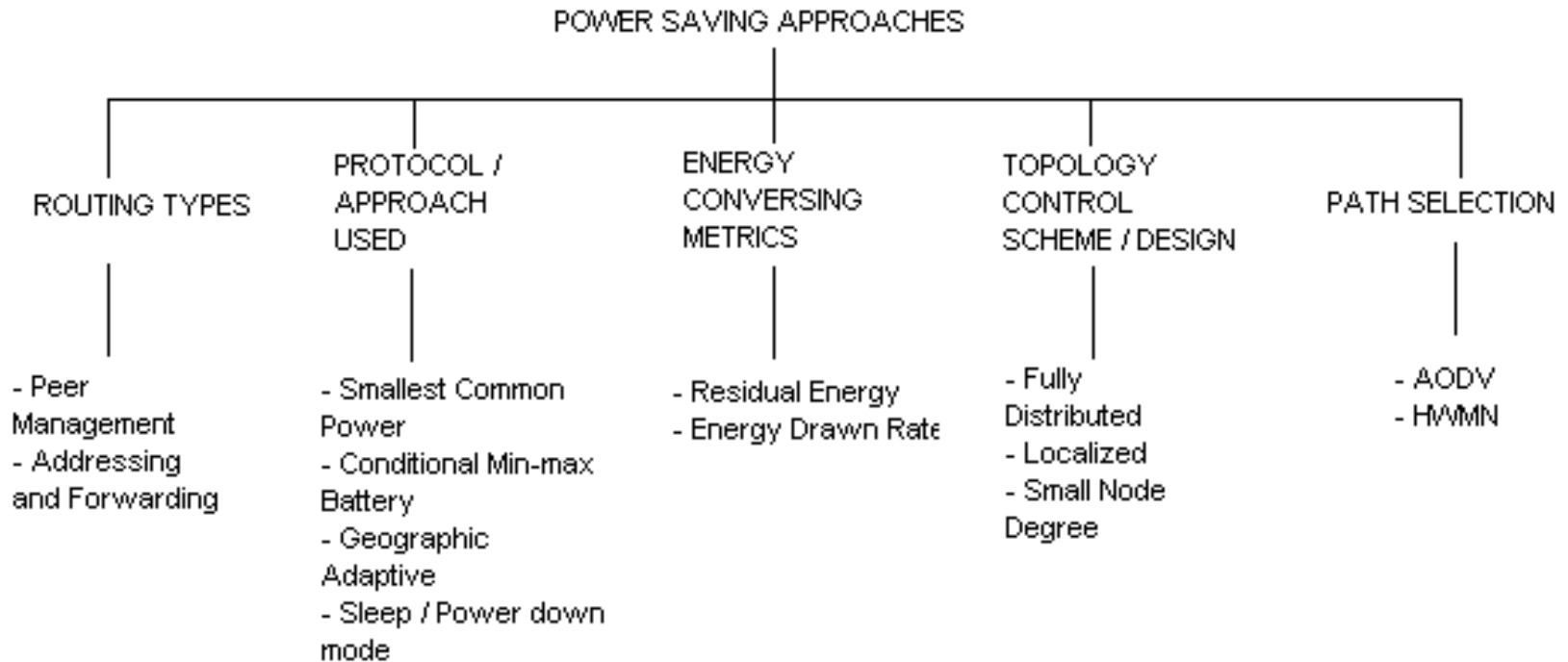


Fig 2 : Power save routing diagram



Related Works

Authors [1,3] have used Addressing and forwarding routing approach.

Author [2] have used Protocol approach: AODV

Author [4] have proposed some emergent protocols in order to defeat or overcome from the disadvantages of wireless links and utilize the broadcasting feature to an extreme range.

Authors [5,6] have considered conventional graph theory pre-select set minimum path, the multi-hop mesh network which are referred from wired network protocol.

Author [7] have considered, the minimum number of nodes must be connected to a node as neighbors in order to keep network connected, only knowledge of network size is efficient for CNN.



Tools used to Simulate

- DTN sim2: uses Java
- NS2 Simulator: uses Tcl script
- NS3 Simulator: uses C++ and python script



Comparative Analysis

| Routing Algorithms | Network | Routing | Energy | Routing Type |
|--------------------|---------|---------|--------|--------------|
| * AODV[2] | MANET | Yes | No | Reactive |
| + HWMP[8] | Mesh | Yes | No | Hybrid |
| # LPR[5] | Mesh | Yes | Yes | Proactive |
| @ MTE[3] | Any | Yes | Yes | Reactive |



Analysis contd..

- * It is on-demand, discovers route only when they are needed. It incorporates distance vector routing protocol.
- + It is inspired by AODV and tree-routing, combination of both proactive and reactive routing protocol enables HWMP to efficient path selection.
- # It is based on a routing metric, which utilizes the energy flow model along with node life time prediction.
- @ It is routing protocol that selects the route with minimum transmission energy. Here nodes closest to source heavily used, so these nodes die quickly.

Challenges and Scope of Research Work

Challenges:

- Wireless Mesh Network is self-formed and self-reconfiguring network that can be distributed at any time anywhere.
- For battery controlled nodes, power preserving is a major intriguing matter. Demanding task here is to reduce to the energy consumption and increase the life span of the Network.
- In low bandwidth transmission, ENERGY consumed will be exponentially more.



Challenges cntd...

- Requires more ENERGY for selecting the appropriate channel.
- Device failure can potentially go undetected because of the self-healing and self-organizing nature of the network.

Scope for research work:

- Minimizing the power consumption level to a maximum extent
 - size of data
 - delay
 - type of data
 - bandwidth available in the network etc.



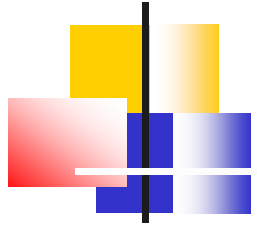
Conclusion

- A potential requirement for achieving power saving methods in network level for wireless network's long life time.
- We can observe that, current power-aware algorithm uses only "current knowledge" of a system.
- There is no prominent mathematical model which suggest the need to change route during routing based on the low power battery status at the node.



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Thank you