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# SURVEY: COMPARISON OF PEER-TO-PEER OVERLAY NETWORK FOR FILE SEARCHING AND SHARING METHODS

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## ABSTRACT
The infrastructure of Peer to Peer network is underlying on the network flows and end host. The overlay network forecasting the numerical performance of the network and it can improve the connection between the neighbor's nodes via proper routers. The performance of the overlay network is calculated by the amount of failure and success rate of the file sharing and improves the performance in the good usage of resources. We examine the peer to peer overlays networks by different networks similar by ad-hoc networks, sensor networks and Wireless LANs. This survey provides the features of P2P networks and well-organized scheme of locating the data item and to select the close nodes redundant storage with different permanence of data, to maintain the trust between the nodes and security of overlay networks. **KEYWORDS**: Overlay Networks, Neighbor Peer. Trust

## I. INTRODUCTION
The P2P overlay networks are distributed systems in nature, without any centralized control or hierarchical organization and it consists of all the participating peers as network nodes. The connection of any two nodes that know each other: i.e. if a peer participating to know the location of another, then it has a directed edge between both nodes. The storage space, bandwidth and computing power will be provided by client resources of P2P networks. If the node arrives the system demand is increased and also it increases the capacity of the total system. In contrast, clients share only their demands with the system, but not their resources in typical client–server architecture. In this case, more clients join the system, less resource are available to serve each client.

P2P overlay networks are built at application layer which is on the top of the network topology. They are used to improve the dependability of traffic flows between end-hosts without changing the original infrastructure. The overlay can forecast the geometric actions of the network by examine the connection between the neighbors [1] and can thus select proper routes. Even in limited network capabilities the P2P routing overlays achieve high performance.

The two classes of Peer-to-Peer overlay [2] networks are structured and unstructured. In structured Peer-to-Peer network, the topology is a strongly based on network and the contents are not placed at random peers placed only at specified locations. It sometimes referred as Distributed Hash Table (DHT), for scalable networks to supports Internet-scale applications. The advantage of this overlay is even if large number of nodes crashes the messages correctly reach the destination.

The unstructured Peer-to-Peer overlay network has no previous knowledge about the topology. Here the peers join the network without any specific rules (loose rules).To search operation a resource may take a long time because most probably there is no relation between the name of resources and their locations. The advantages of this overlay are: easy implementation, simplicity. The major drawback of this overlay is the scalability problem.

## II. SERVICE ORIENTED WIRELESS NETWORKS OF P2P OVERLAYS
Service oriented networks of P2P overlays are mostly used to manage the Quality of Service in IEEE 802.11 networks and this are developed with the goal of ensuring compatibility and interoperability with the IEEE 802.11e MAC standard. The Quality of Service support is achieved, with mapping of bandwidth needs on priority classes, and handling the control information exchange between the application and the MAC layer Whenever IEEE 802.11e functionalities are available. The overlay network provides the dynamic control of

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malfunctions and the churn. The overlay is an unstructured architecture, is maintained by passing signals among the nodes. In the presence of a centralized component this architecture is unbalanced. Fraction of bandwidth will be managed in the hybrid. In the distributed, all the nodes participating in the network will manage bandwidth.

By using the SHA1 Hashing algorithm to represent the IP address and a positive integer is adjoined among each host at the end of outcome so that the nodes can be identified uniquely. After the creation of the overlay, by passing the ID of each host through the overlay, a Bandwidth Mediation Point (BMP) must be selected.

The ID with lowest value is elected as BMP. From all participating nodes the BMP owns all the Maximum Manageable Physical Bandwidth (MMP) during the setup time and it forms a cluster like multi hop fashion.

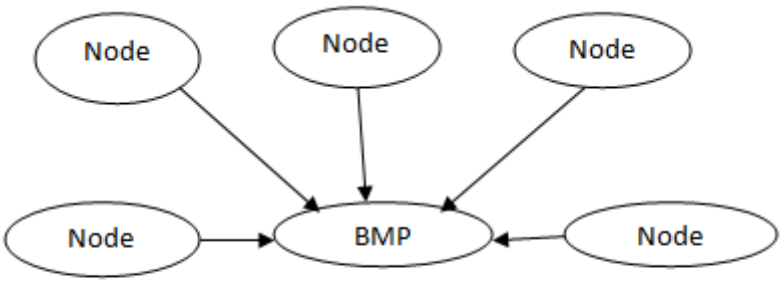


Fig 1: Unbalanced Architecture

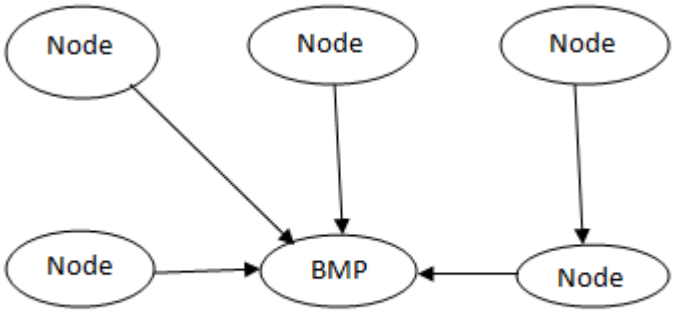


Fig 2: Hybrid Architecture

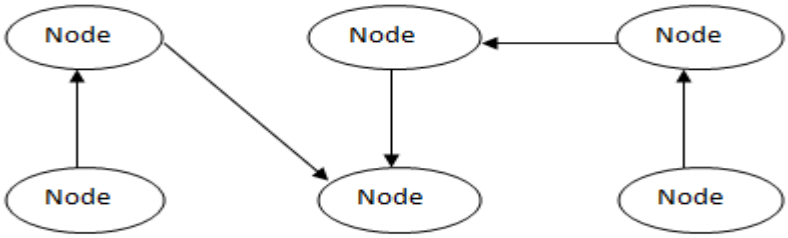


Fig 3: Balanced Architecture

In the overlay it checks its current status node and maintains the status after getting a request from the layer of application and the bandwidth is not used by the present node will be distributed to different nodes, based on the priority. The requesting peer [3][4] becomes the owner of the bandwidth and updates its status appropriately, after receiving the response message.

Kick start problem will occur and unique single point of entry to the architecture is not known due to due to the highly distributed nature of P2P system. The no of nodes connected in a peer to peer use only the owed bandwidth that has been obtained during the overlay based mechanism. Support the bandwidth constraints are

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enforced using the algorithm to achieve a self limiting approach, leads to lose Quality of Service in the absence of MAC Quality of Service.

## III. MOBILE AD- HOC NETWORKS OF P2P OVERLAYS

Ad hoc network is a collection of autonomous devices without any pre-existing infrastructure that communicates using wireless links and the nodes connected by multi hop wireless paths. The acting nodes are also out of varying so the collaborating nodes within the network should be ready to relay traffic. To maintain up-to-date local Quality of Service information Adaptive Quality of Service routing protocols are used in this network. This architecture is based on peer to peer routing network overlay to measure the quality of services in between the different network devices. Structured (Table 1) P2P protocol is added efficient, that working as a distributed data structure like Distributed Hash Table (DHT) with two main operations like Get (key) and Put (key, value). Keys are used to achieve mapping of the IP address for the node and value in the hashing function mapping key that related to some file. Even though it is more efficient, unstructured P2P overlays are easily implemented by Gnutella protocol. By this protocol peers are selected at arbitrary and they are stored in a table (DHT). Gnutella network protocol utilizes a set of descriptors nodes. The descriptors nodes like Ping, Query, Query Hit and Push are used to communicate between servants, they act as client or server or both at the same time.

A comparison of unstructured and structured P2P overlays, structured P2P is not at random peers tightly controlled and contents are structured P2P [5] overlays are thought to be the unambiguous structure then it supports complex queries to the mobile ad-hoc networks. The protocol of the network Gnutella in unstructured P2P achieves the high fault and hit rate than the structured Chord network.

| Taxonomy | Structured | Unstructured |
|---|---|---|
| Architecture | Unidirectional | Peers download directly |
| Scalability | Yes | No |
| Reliability | No | Yes |
| Searching mechanism | Index search | Blind search |
| Example | Chord | Gnutella |

***Table 1: Comparison of p2p architectures in ad hoc networks***

## IV. COMPARISON OF THE OVERLAYS IN NETWORKS

The P2P overlays are well-known to enhance the performance and the reliability of multi-hop ad hoc network, and identified basic application characteristics in Mobile Ad Hoc Networks. In this network, unstructured p2p overlay network gets best hit rate than structured p2p overlay and blind search mechanism is used in this network. The usage of bandwidth is calculated by the amount of different resources underlying on the overlay network. A host is enforced to use only the bandwidth obtained through the overlay-based mechanism by doing this all. The node priority is assigned and given higher priority by without use of central point coordination in the network. The nodes with low priorities waits for substantial amount of time and those nodes are considered as dead condition. The real time guarantee is not provided in this network, because of loose Quality of Service support.

The problem of bandwidth reservation and utilization problem can be solved using the algorithm in Wireless Sensor Networks. It can be released from the network, if the resources in the network are not needed for a long time and this allows coordinated bandwidth usage also. In this network, the real time guarantee is not provided, because of loose Quality of Service support.

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| Features | Ad hoc Networks | Wireless Networks | Wireless Sensor Networks |
|---|---|---|---|
| Scalability | No | Yes | Yes |
| Reliability | Yes | Yes | Yes |
| Quality of Service | Yes | Yes | Yes |
| Real time guarantee | Yes | No | No |
| Node Priorities | No | Yes | No |

***Table 2: Comparison of overlays in networks***

## V. P2P OVERLAYS IN WIRELESS SENSOR NETWORKS

The key to gathering the information needed by smart environments are Wireless Sensor Networks and it is fast and easy to install and maintain. The categories of devices are differentiated by bandwidth allocation and it's Bandwidth on Demand schemes in sensor networks. In P2P overlay network a redundant architecture used for controlling the failure in modern network design. It assumes a static sensor network resources and the topology of node mesh cannot not be changed during its life span. Ad hoc On Demand Distance Vector (AODV) delivers proper control information a proper routing algorithm. All the nodes can be add and remove in the overlay network without the use of any central point control.

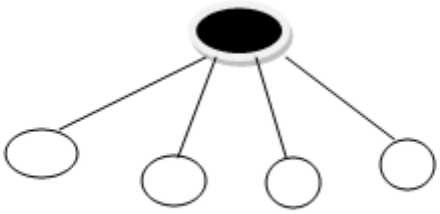

Fig 4: Client-Server Model

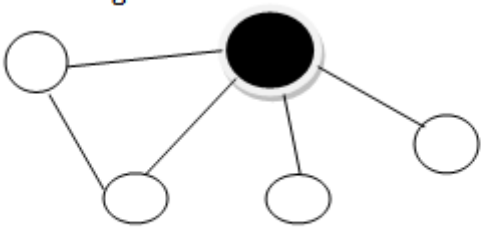

Fig 5: Hybrid Model

The Bandwidth Allocation (Table 2) middleware is offered the bandwidth allocation service. Without any real-time guarantee the algorithm acts on the application layer independently of the actual Medium Access Control (MAC) resulting in a "free Quality of Service," sustain.

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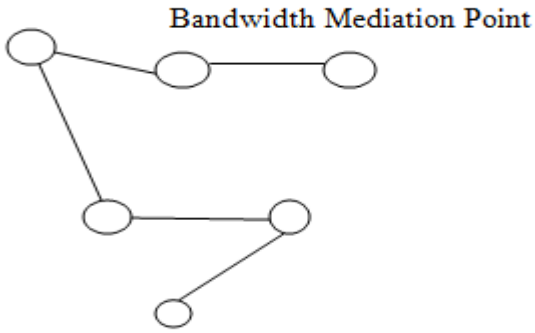


Fig 6: Pure Peer to Peer Model

The core of the algorithm is used to get more bandwidth, it will generate a query to all the nodes and this architecture exchanges the bandwidth with the nodes. Each node will send back some bandwidth, according to the availability of the bandwidth and the traffic. Then the p2p paradigm is applied both to the communication phase and to the bandwidth ownership relation. There is no central authority in the interaction of the sensors in the communication phase. This phase establishes the first owner of the bandwidth resource and the bandwidth policies are not strictly related. In this approach starvation and uncontrolled bandwidth usage is avoided.

## VI. CONCLUSION

Peer to peer overlay network is used for disturbed network file searching and sharing of network. The survey of P2P network discussed the common operations of P2P. Then the performance can be measured by metric also discussed and differentiated with the P2P architecture then the protocol that will be compared and explained. Finally several narrative applications, study and future P2P overlay network are inspected. This survey paper gives the detailed P2P network evidence for the development and growth process.

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