

## ABSTRACT

Nowadays, the need for usage-based network without wires (wireless) which uses microwaves as the media is necessary, such as the need for VoIP services in an area recently affected by a disaster or the other business meetings. Wireless-based network topology that suitable for this conditions is ad-hoc topology routing, because by using this topology, we do not need a permanent infrastructure to build communication. One of the algorithms that support this topology is the Greedy Perimeter Stateless Routing (GPSR). GPSR is an algorithm who combines two different methods of routing. The first method is the Greedy Packet Forwarding method, This method will be used as long as possible, in some case till the destination. But when the packet arrives on a node, where the node can't find with the Greedy Packet Forwarding a next node, nearer to the destination, and then will be used the second algorithm, the Perimeter Forwarding. On the GPSR Protocol, all node of the network has a local table, in which all neighbour of the node is listed by name (ID) and position. A proactive broadcast refreshes this table of each node in a regular time interval. The source node gives the packet a destination address. This address will not be changed by any node who forwards the packet.

In this final task, the test will be conducted on Quality of Service (QoS) from VoIP services in GPSR routing algorithm. Testing will be done by designing a simulation in a Network Simulator, where the simulation will be made with the conditions that injected with actual VoIP traffic using the G.711 codec. The results of the simulation will be analyzed with the QoS parameters like throughput, delay, jitter, packet loss and the Mean Opinion Score.

From the simulation and analysis that was conducted, found that VoIP service call results in algorithm GPSR has an average value best *throughput* 80,34 kbps, *packet loss* 0,04%, *one way delay* 6,34 ms, *jitter* 7,76 ms dan MOS 4,26 and of course this is fulfill international standart for VoIP service.

**Key Words** : *Wireless Ad Hoc, Greedy Perimeter Stateless Routing, VoIP, Analisis QoS*