Voice Over Internet Protocol (VoIP) is a technology that can convert voice into digital code through a network of data packet, the work system of VoIP service is a real-time forwarding packet data that causes this technology requires a reliable access network with good QoS facility. One of the technologies to improve QoS performance is IP Multimedia Subsystem (IMS) which is a technology that provides base on IP application equipped with QoS facility. The commonly used Internet Protocol (IP) network today is IPv4 but with 32 bit addressing capacity on IPv4 it is impossible to meet the growing use of the internet in the future. Then developed addressing IPv6 which is a 128 bit address capacity protocol which can certainly be used as a replacement solution IPv4 addressing. In this research, performance testing of VoIP IMS service using IPv6 network, and analysis method in this research is to compare the performance of VoIP IMS service on IPv6 network with IPv4 network. The application used in this research is Open IMS Core as server and GNS3 to run network topology. From the result QoS still meets the TIPHON TS 101.329-2 standard for throughput parameter obtained 21377.5046 bps on IPv4 network and 21019.9786 bps on IPv6 network, for delay obtained 19.9983 ms on IPv4 network and 20.2512 ms on IPv6 network, for jitter obtained 13.5704 ms on IPv4 network dan 13.6140 ms on IPv6 network, and for packet loss obtained 0% on IPv4 network and 0.1180% at background traffic 10 Mbps, 0.1663% at background traffic 15 Mbps, 1.0447% at background traffic 20 Mbps on IPv6 network. From the result, VoIP services based IMS still run well on the IPv6 network.

Keywords: Voice over Internet Protocol, IP Multimedia Subsystem, IPv6, QoS.