

ABSTRACT

Softswitch is switching system technology which is designed for linking migration from circuit switch network (PSTN/PLMN) to packet switch network (IP) in its evolution to the Next Generation Networks (NGN). The main element of softswitch architecture is Media Gateway Controller (MGC) or known as Softswitch, is the part of centered control that controls the other element, such as Signaling Gateway (SG), Media Gateway (MG), and Application Server (AS). As a centered control with a relative big traffic burden and involve various communication protocols, this softswitch has potential overload burden problem and delay (latency) increase. This problem will affect the result of network performance and communication quality, so we need a method to predict the softswitch performance before it is operated. Research by direct experiment at the site or laboratory has main constraint that is difficult to handle traffic source from its characteristic, intensity, as well as call scenario agree with our desire. Therefore, we need a model that is able to stimulate softswitch functions.

This final assignment makes a simulation of telephone call proceeding in the softswitch network started from call request until the end of the connection. This simulation covers traffic generator, process in the single network element (Softswitch, AG, SG, and PSTN), communication between network element using standard protocol (Megaco, SS7, Sigtran, and SIP), and method of quotation process to analysis material. To see the suitability with the real system, testing and analysis is done to the simulator by two aspects, such as from the suitability of process steps communication between network element aspect and from accuracy of input side (traffic generator characteristic) as well as of the output side (Softswitch service characteristic)

The result of testing and analysis indicates the suitability of communication process steps with standard protocol reference. From the traffic characteristic testing of input and output aspect, it is noticed that the simulator has time between arrival distribution and service distribution with the negative exponential. So, we can conclude that the simulator is suitable with M/M/1 waiting system. M/M/1 model is used to validate the delay of simulator output. According to output simulator delay curve, call setup delay is the curve which has divergence less than 5%, while the deviation is 1.78%. Delay call setup that is produced by the simulator fulfills the standard which is stated, that is 184,29 ms. From that result, we can conclude that Softswitch BHCA capacity is 19.429 call/hour.

Keywords : softswitch, AG, SG, TG, megaco, SS7, sigtran, SIP, and delay