

Analysis of a Computer System with Arrival Time of the Server and Priority to H/w Repair over S/w Replacement

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Abstract

The purpose of this paper is to analyse a computer system considering the aspects of redundancy, priority in repair disciplines and arrival time of the server. Two identical units of a computer system are taken up in which one unit is initially operative and the other is kept as spare in cold standby. In each unit h/w and s/w work together and fail independently from normal mode. There is a single server who takes some time to arrive at the system for doing repair and replacement of the components. Server repairs the unit at its h/w failure while replacement of the s/w is made by new one giving some replacement time in case s/w fails to execute the programmes properly. Priority to the h/w repair is given over the s/w replacement. All random variables are uncorrelated to each other. Repair and switch devices are perfect. The time to failure of the unit due to h/w and s/w is exponentially distributed while the distributions of repair, replacement and arrival times of the server are taken as arbitrary with different probability density functions (pdf). Some reliability characteristics of the system model are derived in steady state using semi-Markov process and regenerative point technique. The numerical results for MTSF, availability and profit are obtained considering a particular case to know their behaviour with respect to different parameters.

Keywords: Computer System, H/w Repair, S/w Replacement, Arrival Time of Server, Priority and Profit Analysis.