

**Reliability and Profit Analysis of a Computer System with Hardware Repair and Software Replacement
Subject to Conditional Arrival Time of Server**

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Abstract

The focus of this paper is on reliability and profit analysis of a two unit cold standby computer system. In each unit h/w and s/w fail independently from normal mode. There is a single server who takes some time to arrive at s/w failure with the condition that he has to visit the system immediately at h/w failure. The unit is repaired at h/w failure while s/w is replaced by new one with some replacement time when it fails to execute the required instructions properly. Server can leave the system only after finishing all jobs available to him. All random variables are statistically independent. The time to failure of h/w and s/w is distributed exponentially while the arrival time of the server, h/w repair time and s/w replacement time are arbitrarily distributed with different probability density functions (pdf). The expressions for various reliability measures are derived using semi-Markov process and regenerative point technique. The results for a particular case are obtained to depict the graphical behaviour of some important measures of system effectiveness.

Keywords: Computer System, H/w repair, S/w Replacement, Conditional Arrival Time of the Server, Reliability and Profit Analysis.

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