Abstract

Two different system configurations with warm standby components, standby switching failures, two types of failures, common cause failure and hardware failure, and general repair are compared based on the availability. The time-to-failure for each of the primary and warm standby components are assumed to follow the exponential distribution. Laplace transforms of state probability equations are developed by using the supplementary variable technique. We develop the explicit expressions for the steady-state availability, $A_v$, for two configurations. For all configurations, comparisons are made for specific values of distribution parameters and of the cost of the components. The configurations are ranked based on $A_v$ and cost/benefit, for three various repair time distributions: Gamma (G), Weibull (W) and Lognormal (L), where benefit is $A_v$.

References


Index Terms

Computer Science  Applied Mathematics

Keywords

Availability  Standby Switching Failures  Common Cause Failure "ccf"

Supplementary Variable

General Repair Times