

Dependability assessment of critical systems

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Abstract

© 2015, Springer-Verlag Berlin Heidelberg. Dependability evaluation is an important, mandatory step in designing and analyzing critical systems. Indeed, in critical systems, it is necessary to take into account not only operational or functional (static) relationships among components, but also non-functional, dynamic ones such as interferences or dependencies. They could be either internal, if arising from interactions among components, or external, if due to the external environment. To properly evaluate critical system dependability, accurate models are therefore required, able to deal with dynamic, dependent behaviors, especially if the system is complex. The main goal of this paper is to identify and specify the dynamic-dependent aspects that can affect the dependability of a critical system. Starting from the concept of dependence at the basis of system decomposition, an analytic framework and some of the most important dynamic-dependent aspects and behaviors are characterized in terms of dynamic reliability.

<http://dx.doi.org/10.1007/s12652-015-0272-0>

Keywords

Critical systems, Dependability, Dependence, Dynamic reliability, System decomposition