INCREASED RELIABILITY OF COMPUTER SYSTEM
BY USING FAULT TOLERANCE TECHNIQUE

H.H. Sudani

Fault-tolerant computing began between 1965 and 1970, probably with the highly reliable and widely available AT&T electronic switching systems.

Fault-tolerant computing is a general term describing redundant design techniques with redundant components or repetitive computations that provide continuous (tolerant) performance in response to component failures. Sometimes system failures are caused by neglecting the principles of redundancy and independence from failures. Codes are developed that detect and correct errors, and an analysis is made of the probability of failure of such codes.

Fault tolerance refers to numerous issues regarding various aspects of system development, deployment, and maintenance, the two most common of which are reliability and availability [1]. The reliability and availability of computer, standby, and voting systems are analyzed and compared, and such analyses are also applied to modern RAID memory systems and commercial Tandem and Stratus fault-tolerant computers. Fault-tolerant computing means computing correctly despite the existence of errors in a system. Any system containing redundant components or functions has some of the properties of fault tolerance. Computing systems can provide several benefits such as scalability, fault tolerance, and load balancing. Collaboration with distributed systems and data storage is associated with several problems and difficulties [2]. Fault tolerance is to perform multiple computations through multiple channels, either sequentially or concurrently. When tolerance of physical faults is foreseen, the channels may be of identical design, based on the assumption that hardware components fail independently [3].

Methods of fault tolerance in large computing systems. These methods can be divided into two categories: protecting the hardware and software infrastructure for cluster management and protecting the compute nodes and the long-running applications that run on them. Employing fault-tolerance techniques to improve general reliability. Fault-tolerant solutions can be implemented in various forms. This includes software libraries, special programming languages, compiler or preprocessor modifications, operating system extensions, and system middleware.

References

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