

Service Availability

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Database management systems are critical components of highly available applications. To meet this need, many highly available database management systems have been developed. This paper describes the architectures that are internally used to construct these highly available databases. These architectures are examined from the perspective of both process redundancy and logical data redundancy. Process redundancy is always required; it refers to the maintenance of redundant database processes that can take over in case of failure. Data redundancy is also required. Data redundancy can be provided at either the physical or the logical level. Although both forms of data redundancy can provide high availability, this paper has concentrated on local data redundancy since that is a case where the database explicitly manages the data copies. We believe that process and data redundancy are useful means to describe the availability characteristics of these software systems. References 1. Application Interface Specification, SAI-AIS-A. 01. 01, April 2003. Service Availability Forum, available at www.saforum.org. 2. Gray, J. and Reuter, A.: Transaction Processing Systems, Concepts and Techniques. Morgan Kaufmann Publishers, 1992. 3. How MySQL Cluster Supports 99.999% Availability. MySQL Cluster white paper, MySQL AB, 2004, available at <http://www.mysql.com/cluster/>. 4. Hu, K., Mehrotra, S., Kaplan, S. M.: Failure Handling in an Optimized Two-Safe Approach to Maintaining Primary-Backup Systems. Symposium on Reliable Distributed Systems 1998: 161-167. 5. Humborstad, R., Sabaratnam, M., Hvasshovd, S-O., Torbjørnsen, Ø.



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