Distributed Systems

A distributed system is a collection of processors that do not share memory or a clock. Instead, each node has its own local memory. The nodes communicate with one another through various networks, such as high-speed buses and the Internet. In this chapter, we discuss the general structure of distributed systems and the networks that interconnect them. We also contrast the main differences in operating-system design between these systems and centralized systems.

Bibliographical Notes

[Tanenbaum (2010)] and [Kurose and Ross (2013)] provide general overviews of computer networks. The Internet and its protocols are described in [Comer (1999)] and [Comer (2000)]. Coverage of TCP/IP can be found in [Fall and Stevens (2011)] and [Stevens (1995)]. UNIX network programming is described thoroughly in [Steven et al. (2003)] and [Stevens (1998)].

Load balancing and load sharing are discussed by [Harchol-Balter and Downey (1997)] and [Vee and Hsu (2000)]. [Harish and Owens (1999)] describe load-balancing DNS servers.

Sun's network file system (NFS) is described by [Callaghan (2000)] and [Sandberg et al. (1985)]. The OpenAFS system is discussed by [Morris et al. (1986)], [Howard et al. (1988)], and [Satyanarayanan (1990)]. Information about OpenAFS is available from http://www.openafs.org. The Andrew file system is discussed in [Howard et al. (1988)]. The Google MapReduce method is described in http://research.google.com/archive/mapreduce.html.

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