**What is Reliability, Scalability, and Maintainability?**

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In Chapter 1 of the textbook Designing Data-Intensive Applications by Martin Kleppman, I dove into the fundamental concepts that support the architecture of robust, scalable, and sustainable applications. An application’s utility is contingent upon its ability to meet a diverse set of requirements. These include functional requirements such as facilitating data storage, retrieval, search, and processing in various ways and nonfunctional requirements, which are security, reliability, compliance, scalability, compatibility, and maintainability. Reliability emphasizes ensuring systems operate correctly, even in the presence of faults. These faults could emanate from hardware, software, or even human errors. Employing fault-tolerance techniques allows for mitigating certain fault types from end-user visibility. Scalability is next, which, as summarized, “means having strategies for keeping performance good, even when load increases.” (Kleppmann, 2017). A scalable system warrants the capacity to augment processing capabilities to uphold reliability during periods of high load. One example can be a timeline on a social media platform. Load parameters may be requests per second to a web server, the ratio of reads to writes in a database, the number of simultaneously active users in a chat room, the hit rate on a cache, or something else that assists with providing services to a user such as the number of social media posts viewed on the timeline per minute. (Kleppmann, 2017). Lastly, maintainability, which is portrayed as multi-faceted, aimed at enhancing the work experience of engineering and operations teams engaged with the system. The integration of good abstractions aids in reducing complexity, thereby rendering the system more amenable to modifications and adaptations for emerging use cases. Good abstractions also ensure comprehensive insights into the system’s health, coupled with effective management mechanisms. Ultimately, ensuring that applications are reliable, scalable, or maintainable is not an easy chore, as recurrent patterns and techniques are present across diverse application landscapes.

**References**

Kleppmann, M. (2017). *Designing Data-Intensive Applications*. O’Reilly.