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THE SYSTEM OF DISTRIBUTION THAT USED MUCH DATA

The Data Distribution Service (DDS) for real-time systems is an Object Management Group (OMG) machine-to-machine (sometimes called middleware or connectivity framework) standard that aims to enable dependable, high-performance, interoperable, real-time, scalable data exchanges using a publish–subscribe pattern.

DDS addresses the needs of applications like aerospace and defense, air-traffic control, autonomous vehicles, medical devices, robotics, power generation, simulation and testing, smart grid management, transportation systems, and other applications that require real-time data exchange.

In a distributed system, middleware is the software layer that lies between the operating system and applications. It enables the various components of a system to more easily communicate and share data. It simplifies the development of distributed systems by letting software developers focus on the specific purpose of their applications rather than the mechanics of passing information between applications and systems.

DDS supports mechanisms that go beyond the basic publish-subscribe model. The key benefit is that applications that use DDS for their communications are decoupled. Little design time needs be spent on handling their mutual interactions. In particular, the applications never need information about the other participating applications, including their existence or locations. DDS transparently handles message delivery without requiring intervention from the user applications, including:

- determining who should receive the messages
- where recipients are located
- what happens if messages cannot be delivered

DDS allows the user to specify quality of service (QoS) parameters to configure discovery and behavior mechanisms up-front. By exchanging messages anonymously, DDS simplifies distributed applications and encourages modular, well-structured programs.[citation needed] DDS also automatically handles hot-swapping redundant publishers if the primary fails.[citation needed] Subscribers always get the sample with the highest priority whose data is still valid (that is, whose publisher-specified validity period has not expired). It automatically switches back to the primary when it recovers, too.