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## A Comprehensive Review of the OSI Reference Model: From Fundamentals to Recent Advancements

The OSI (Open Systems Interconnection) Reference Model by the International Organization for Standardization (ISO) in the late 1970s has been the most significant contributor to network communication protocol standardization and interoperability of various systems. The review paper outlines the OSI model's formal, seven-layered architecture, which encapsulates the data transmission complexities from the physical layer that deals with raw bits to the application layer that specifies user services. It explains the model's encapsulation and de-encapsulation processes towards data integrity and security, its role in network security with encryption, and its flexibility to accommodate new technologies. It reviews the OSI standardization challenges, compares it to practices such as TCP/IP, explores its conformity with new technologies such as wireless sensor networks and cloud computing, and its continued use in computer networking today, making it a useful reference document for researchers, practitioners, and students.

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