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Internet protocol suite

The **Internet protocol suite**, commonly known as **TCP/IP**, is a framework for organizing the set of communication protocols used in the Internet and similar computer networks according to functional criteria. The foundational protocols in the suite are the Transmission Control Protocol (TCP), the User Datagram Protocol (UDP), and the Internet Protocol (IP). Early versions of this networking model were known as the **Department of Defense** (**DoD**) **model** because the research and development were funded by the United States Department of Defense through DARPA.

The Internet protocol suite provides end-to-end data communication specifying how data should be packetized, addressed, transmitted, routed, and received. This functionality is organized into four abstraction layers, which classify all related protocols according to each protocol's scope of networking.[1][2] An implementation of the layers for a particular application forms a protocol stack. From lowest to highest, the layers are the link layer, containing communication methods for data that remains within a single network segment (link); the internet layer, providing internetworking between independent networks; the transport layer, handling host-to-host communication; and the application layer, providing process-to-process data exchange for applications.

The technical standards underlying the Internet protocol suite and its constituent protocols are maintained by the Internet Engineering Task Force (IETF). The Internet protocol suite predates the OSI model, a more comprehensive reference framework for general networking systems.

History

Early research

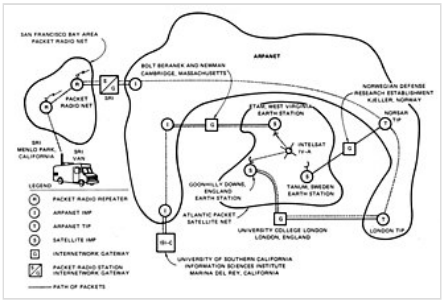

Diagram of the first internetworked connection

Initially referred to as the *DOD Internet Architecture Model*, the Internet protocol suite has its roots in research and development sponsored by the Defense Advanced Research Projects Agency (DARPA) in the late 1960s.[3] After DARPA initiated the pioneering ARPANET in 1969, Steve Crocker established a "Networking Working Group" which developed a host-host protocol, the Network Control Program (NCP).[4] In the early 1970s, DARPA started work on several other data transmission technologies, including mobile packet radio, packet satellite service, local area networks, and other data networks in the public and private domains. In 1972, Bob Kahn joined the DARPA Information Processing Technology Office, where he worked on both satellite packet networks and ground-based radio packet networks, and recognized the value of being able to communicate across both. In the spring of 1973, Vinton Cerf joined Kahn with the goal of designing the next protocol generation for the ARPANET to enable internetworking.[5][6] They drew on the experience from the ARPANET research community, the International Network Working Group, which Cerf chaired, and researchers at Xerox PARC.[7][8][9]