Gateway Encyclopedia Article

Gateway

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Gateway

A gateway is a machine that connects different types of networks to form an internetwork using various communications **protocols** (rules for exchanging messages). A gateway allows information to be passed between a sending network and a receiving network. Without a gateway, different types of network are in general incompatible and thus unable to communicate with each other. The gateway itself is a combination of **hardware** and software. It may contain devices such as protocol translators, impedance matching devices, rate converters, fault isolators, and signal translators.

A gateway accepts information from whichever network is sending at the moment and reformats it to be compatible with the protocols used by the receiving network. It performs complete conversions from one protocol to another rather than simply supporting one protocol from within another. For example, a gateway can convert a Transmission Control Protocol/Internet Protocol (**TCP/IP**) packet (a collection of bits organized into a self-contained **message** like a piece of mail) to a Novell NetWare Internetwork Packet Exchange (IPX) packet and vice versa, or from AppleTalk (an **Apple** Computer local area network protocol) to DECnet (a network protocol created by **Digital Equipment Corporation**) and vice versa--to name few possible protocol conversions. Most commercial online services operate a gateway that translates between their internal, proprietary electronic-mail (**e-mail**) format and the **Internet** e-mail format. Gateways between e-mail systems allow users on different e-mail systems to exchange messages between messaging protocols. This specific type of support gateway is called a messaging gateway.

For example, a Cisco 3640 router acts as a gateway between the **Internet service provider** Cyberstation and the telecommunications company MCI, Inc. The gateway routes traffic bound for the Internet out to its destination, while keeping traffic meant for end-points within the Cyberstation constellation of users on the Cyberstation side of the gateway. It also keeps information meant to remain within MCI on MCI's side of the router.

Gateways are also referred to as routers and as protocol converters. A protocol converter is especially any device or program that translates between different protocols that serve similar functions, for instance TCP (Transmission Control Protocol, the most common transport-layer protocol on the Internet) and TP4 (Transport Protocol 4). A router (also sometimes called a gateway) is a device that forwards packets between two broadcast networks.