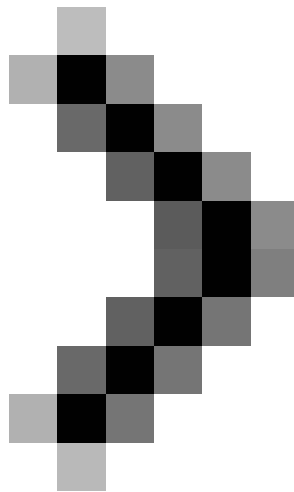
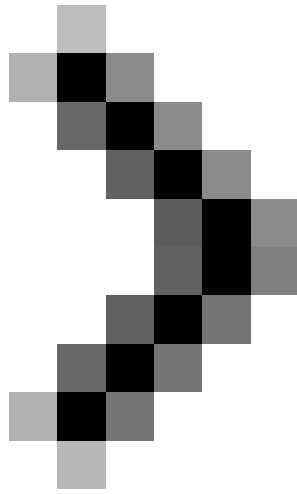


Hardware in OSI reference model: Grade 5

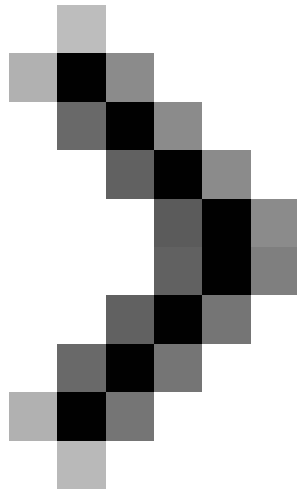
The fifth layer in the OSI 7-layer reference model is called Session class. This layer is responsible for managing sessions between two communication points.



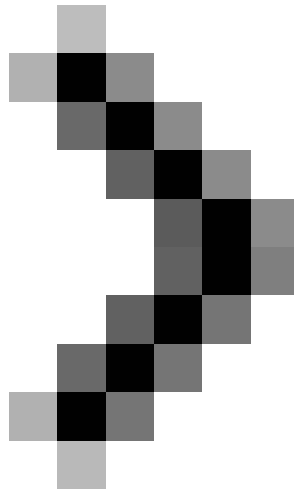
Hardware in OSI reference model: Grade 1



Hardware in OSI reference model: Layer 2



Hardware in OSI reference model: Grade 3



Hardware in OSI reference model: Grade 4

Russell Hitchcock

Network Administration - *In the previous sections, we introduced the first four classes in the OSI 7-layer reference model. This section will introduce you to the fifth class. The fifth layer in this OSI 7-layer reference model is called Session class. This layer is responsible for managing sessions between two communication points, specifically including authentication, setup, termination, and reconnection if needed.*

One of the interesting aspects of the session layer, rather than the functional implementation protocols, is duplex mode. When the two end points communicate, they can communicate in a simplex mode, full-duplex mode, half-duplex, or simulate full duplex.

SIMPLEX (Public application)

Single communication is the type of communication in which data is transmitted from the transmitter to the receiver. The radio waves in your car are such an example, the car radio in your car plays music and news of the aggregate time, etc. are the signals received from the broadcast station. The radio in the car does not communicate back to the broadcast station under any circumstances. Figure 1 shows a diagram of a single communication.

Simplex communication



Figure 1: Simple diagram of the type of public communication

FULL-DUPLEX (Duplex)

Full-duplex means that communication can occur in both directions at the same time. Ethernet is an example of full-duplex communication; Twisted cables can be used to transmit and receive data. Ethernet using fiber optic cable is also in full-duplex mode. Figure 2 shows the diagram of the full-duplex communication type.

HALF-DUPLEX (Half-duplex)

Half-duplex communication is a type of communication between two points that can only appear in one direction at a time. Thinnet and thicknet Ethernet are examples of half-duplex systems. Figure 2 also shows a diagram of a half-duplex communication system.

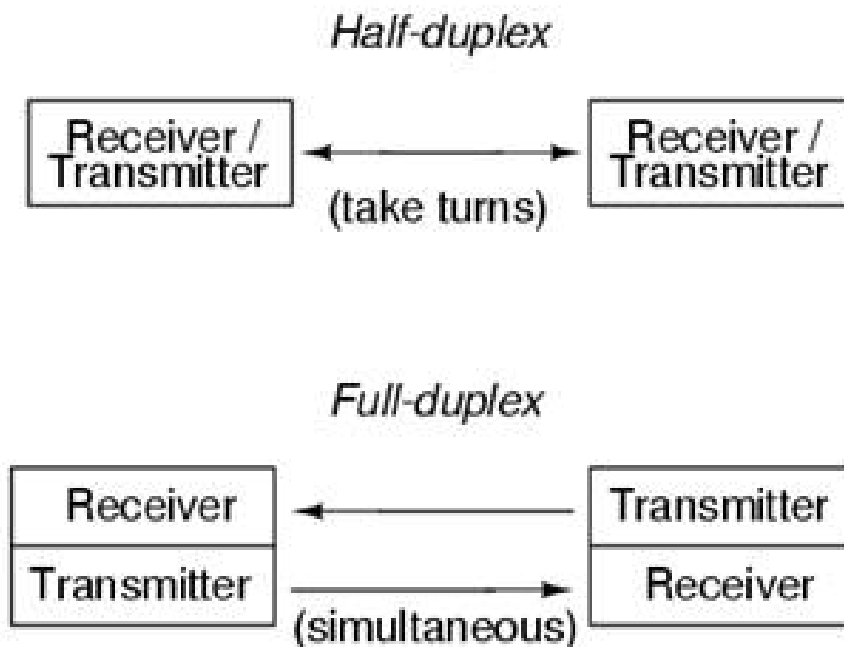


Figure 2: Half-duplex and full-duplex communication diagram

Half-duplex systems seem to be quite ancient for many readers who are reading this website when modern computer networks are built in duplex communication mode, which provides better performance for users. However, there are still many situations using this type of public communication and half-duplex. Networks designed to provide information from one source to multiple collection points may not need the ability to receive messages from endpoints. RSS feeds are an example of a system that sends information to users but does not receive information, even when communicating in the same duplex environment.

Many industrial networks also do not need the type of duplex communication to reduce some components of the network, thereby reducing cost and maintenance.

Simulate FULL-DUPLEX

For many applications, full-duplex is desirable even if the environment only supports half-duplex. In many of these situations, there are several ways to simulate full-duplex, which may seem more attractive than having to upgrade the entire network to full-duplex.

Time division multiplexing (TDD)

TDD is very similar to time-based multiplexing in that it uses the same environment to send and receive signals, which are controlled by a clock signal. In TDD, both forward and reverse signals use the same environment, but each signal is assigned to a different time slot. The big advantage of this duplex simulation method is that if the amount of data running in a particular direction changes, then the split of the time slot can be optimized for optimal communication for the direction that needs much. The application's bridge, this is much more dynamic. The IEEE 802.16 standard for WiMAX allows the use of both TDD and frequency-based multiplexing (FDD). TDD is the most appropriate solution for asymmetric data communication, such as data on the Internet because of its dynamic distribution of time slots.

Frequency division multiplexing (FDD)

Frequency division multiplexing is a term used for communication systems that assign a frequency for uploading and other frequencies for downloading. In this type of duplex simulation communication, both receiver and transmitter side can occur on the same environment, but must be offset frequency (bandwidth between upload and download frequencies) so that data is not penetrated. interfering with each other. This offset frequency can be a great advantage for some systems. Taking WiMAX for example, FDD is still supported, although that means that communication between the endpoints needs relatively large spectrum.

FDD systems have advantages for communication applications that require equal upload and download bandwidth. Therefore most honeycomb phone systems work on FDD type.

Noise cancellation

Echo noise is a technical method used for duplex simulation. In communication mode using echo cancellation, both endpoints place data on the same environment, at the same frequency and time and each endpoint receives all data that has been placed into the environment (including there is data that it has sent itself). Each of these end points must then isolate the data that it sends itself and read all other data. Long distance telephone networks also use this measure. This echo cancellation capability can be implemented with a hardware or software solution. However, there are still some types of echoes. For example, when you speak to a phone, your voice will be transmitted to your ear before it is transmitted to the person you are calling; This is essential because if you can't hear what you are, you will think the phone is not working. But for other applications, such as dial-up modems, are more sensitive to signal echo and need to eliminate this signal to give good quality of the network.

In the next section, we will introduce you to layer 6 in this reference model; That is the Presentation class.

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