

Multicast

- ▶ A **multicast** is a message that is delivered to multiple listeners on multiple systems simultaneously. It can be much more efficient than having to send point-to-point messages.
- ▶ A **broadcast** is a message that is delivered to all listeners on a local area network and is a special case of multicasting.
- ▶ Multicasting requires support from networking hardware such as routers.
- ▶ The most common implementation is **IP Multicast**, used for streaming media. No prior knowledge of who or how many receivers there are is required. Widely used in enterprises, stock exchanges and multimedia content delivery networks.

IP Multicast

- ▶ IP Multicast addresses have the leading four bits as 1110. Thus the prefix for this group of addresses is 224.0.0.0/4.
- ▶ The addresses in the range 224.0.0.0 to 239.255.255.255 are reserved for multicast addresses.
- ▶ Some reserved IPv4 multicast addresses:

224.0.0.0	reserved base address
224.0.0.1	all hosts on the same network segment
224.0.0.2	all routers on the same network segment
224.0.0.251	multicast DNS address
224.0.1.1	multicast Network Time Protocol address

- ▶ The most common implementation is using UDP (User Datagram Protocol), which isn't reliable — messages may be lost or delivered out of order.

The main class we will use is [java.net.MulticastSocket](#).

See examples in [lab/multicasting](#)

- ▶ [setup-examples](#): Shows how to find out information about network interfaces and if they support multicasting.
- ▶ [ex1-mcast-hello](#): Streaming *hello world* using multicasting!
- ▶ [ex2-mcast-time](#): Multicast time server
- ▶ [ex3-mcast-group](#): Multicast group membership example

References

- ▶ Multicast Address
- ▶ IP Multicast