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.

Java Examples

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