Broadcasting

Broadcasting

- One-to-one communcations becomes inefficient when packets needs to be directed to multiple receivers.
- There are two kinds of network duplication, i.e., “broadcast” and “multicast”.
  - Broadcast: All hosts on the network receive a copy of the packets/message.
  - Multicast: A subset of all the hosts receive a copy of the packets/message.
- For now we will consider the Broadcast case. Multicast will be considered later.

IP Broadcast

- The local IP broadcast address:

  `255.255.255.255`

  sends packets to every host on the local network. Note that routers do not forward these packets.

- A directed broadcast enables broadcasting to all hosts on a specific network by setting the host ID bits to all ones, e.g.,

  `192.168.1.255`

  for a network using a subnet mask of **`255.255.255.0`**

- Note that Internet-wide broadcasts are not permitted since it may be too easily abused.

IP Broadcasting

- To do broadcasting, set up a UDP socket:

  ```
  sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
  ```

- Then enable broadcasting using:

  ```
  sock.setsockopt(socket.SOL_SOCKET, socket.SO_BROADCAST, 1)
  ```

  i.e., set **`socket.SO_BROADCAST`** to "true". This is required mainly to protect the system from inadvertently sending broadcasts.

- Then send to the broadcast or directed broadcast address and the UDP port to be used, i.e.,

  ```
  sock.sendto(MSG, ("255.255.255.255", 20000))
  ```

- Note that a broadcast receiver must be listening on the agreed upon port using UDP and should normally be bound to "0.0.0.0".

See broadcast_send_receive.py