

# IP MULTICASTING

**Mario Baldi**  
**[www.baldi.info](http://www.baldi.info)**

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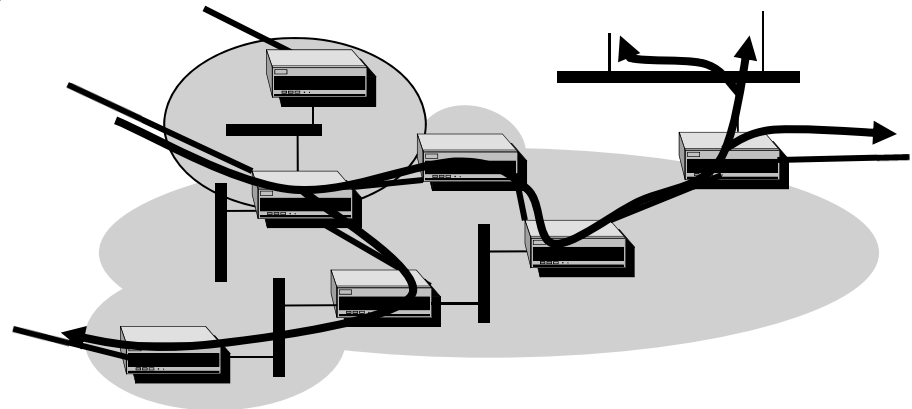
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# Underlying Concept

Packets routed from source  
to multiple destinations

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- Key for group communication
  - E.g. videoconferencing, video broadcasting
- Address identifies a group



# Multicast Addressing

Tutti gli host che sono  
appartenenti al multicast  
devono essere raggiunti

→ Class D addresses

→ Begin with 1110

→ 224.0.0.0 - 239.255.255.255

Address identifies a host group

- Packet is delivered a TUTTI GLI HOST DEL GRUPPO
- OVUNQUE NELLA RETE

- Address identifies a host group
- Packet is delivered to all hosts in the group
- Anywhere in the network

# Host Group

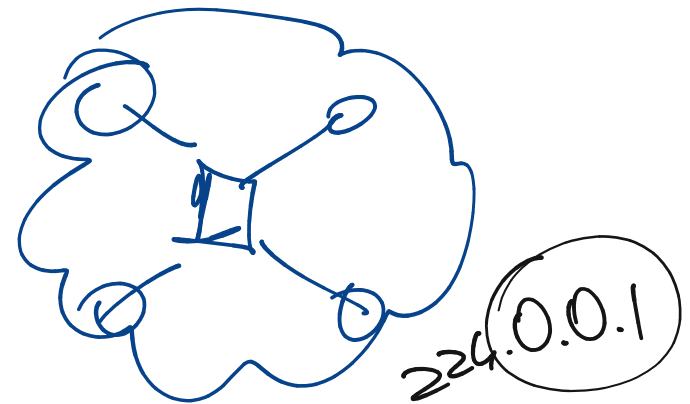
- Hosts join and leave dynamically
- Recipients establish which hosts receive a packet
  - In unicast it is the source
  - Controlling traffic reach is more difficult

# Within an IEEE 802 Network

→ Group delivery delegated  
to lower level (MAC)



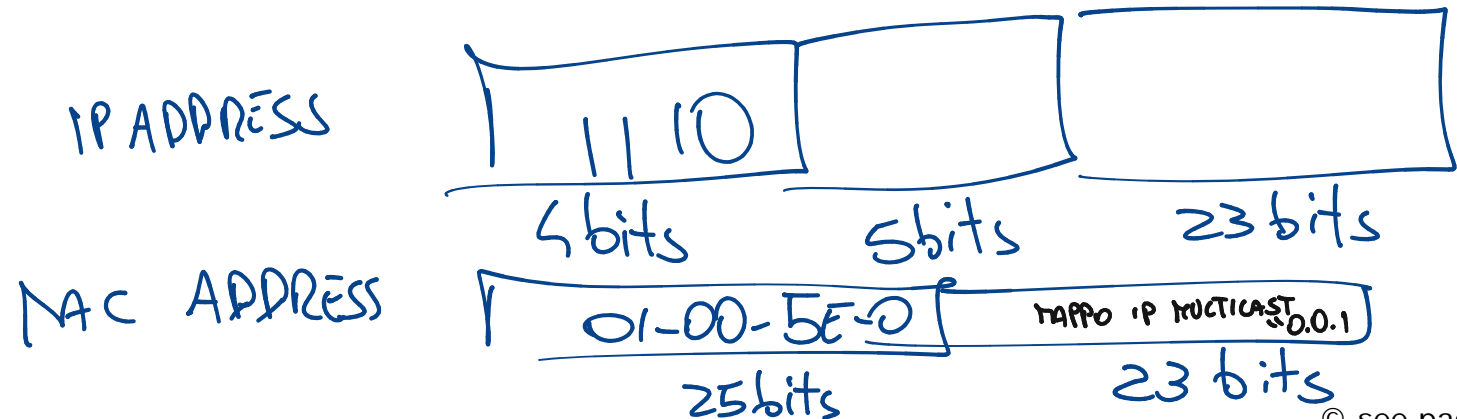
BISOGNA Mappare L'IP <sup>GRUPPO</sup> MULTICAST  
 SU QUALCUNO CORRISPONDENTE MAC MULTICAST  
 E INFORMARLO LE SCHEDA CHE L'HOST  
 VUOLE RICEVERE QUELLO SPECIFICO MAC



→ IP multicast address mapped to a  
 MAC multicast address

INDICA  
 MAC MULTICAST → **01-00-5E-0** ← 1 bit

→ 23 least significant bits of IP  
 address





- Interface card configured to receive that MAC multicast
- Recipient initiated group join
- Packets sent to the address are received by all joined hosts

IGMP SNOOPING: permette allo switch di distinguere le porte interessate)

(IN ASSENZA DI IGMP SNOOPING → SWITCH MANDA A TUTTI E SOLO GLI UTENTI INTERESSATI POI FANNO ACCESSO (schede di voto di chi non è interessato → scartia)

## Beyond a Single Network

→ Routers discover host groups on each LAN

→ Internet Group Management Protocol (IGMP)

PACCHETTO CHE HOST MANDA SU UNA RETE MULTICAST AL ROUTER X GEGNACARE CHE SU QUELLA INTERFACCIA CI SONO <sup>HOST</sup> INTERESSATI AL MULTICAST

→ Routers announce host groups to others

→ Multicast routing protocols

Come fa la rete geografica a costruire l'albero dove sono gli interessati?

→ Routers build a distribution tree for each host group

→ To all LANs with at least a member

E I ROUTER DEVONO POTERSI SCAMBIARE DELL'INFORMAZIONE X DIRSI CHI È INTERESSATO A COSA ⇒ PROTOCOLLI DI ROUTING MULTICAST

- SU UNA RETE LOCALE MAC MULTICAST MAPPA A IP MULTICAST SU MAC
- GLI HOST POSSONO INFORMARE I ROUTER CHE VOGLIANO RICEVERE UN CERTO MULTICAST TRAMITE IGMP

In alcune situazioni è necessario il multicast

## State of Deployment

- Not widely supported
- Not fit to common traffic control/engineering practice
- Mostly limited controlled environments
- E.g. video broadcasting over IP

**solutions** es: all'interno di Telecom Italia, TimVision  
viene gestito con il multicast soprattutto se x clienti Telecom.

Es: Netflix usa UNICAST



