Università
degli Studi
della Campania
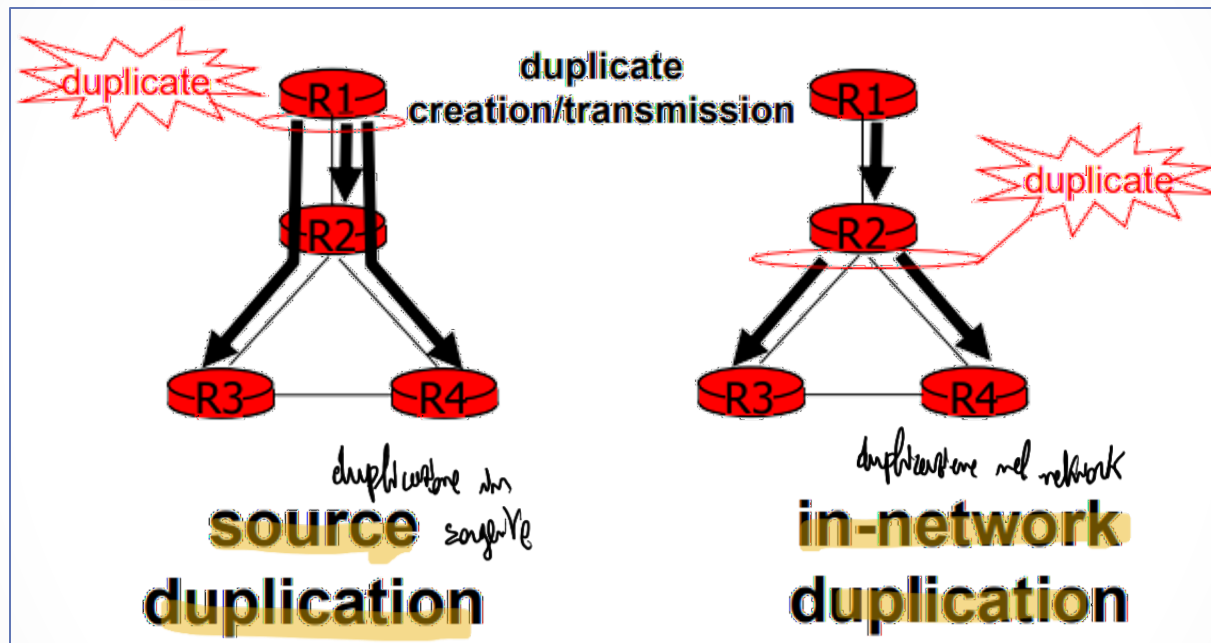*Luigi Vanvitelli*

Reti di Calcolatori e Cybersecurity

Tecniche di trasmissione broadcast

Ing. Vincenzo Abate

Broadcast Routing

- deliver packets from source to all other nodes

- source duplication is inefficient:

source duplication: how does source determine recipient addresses?
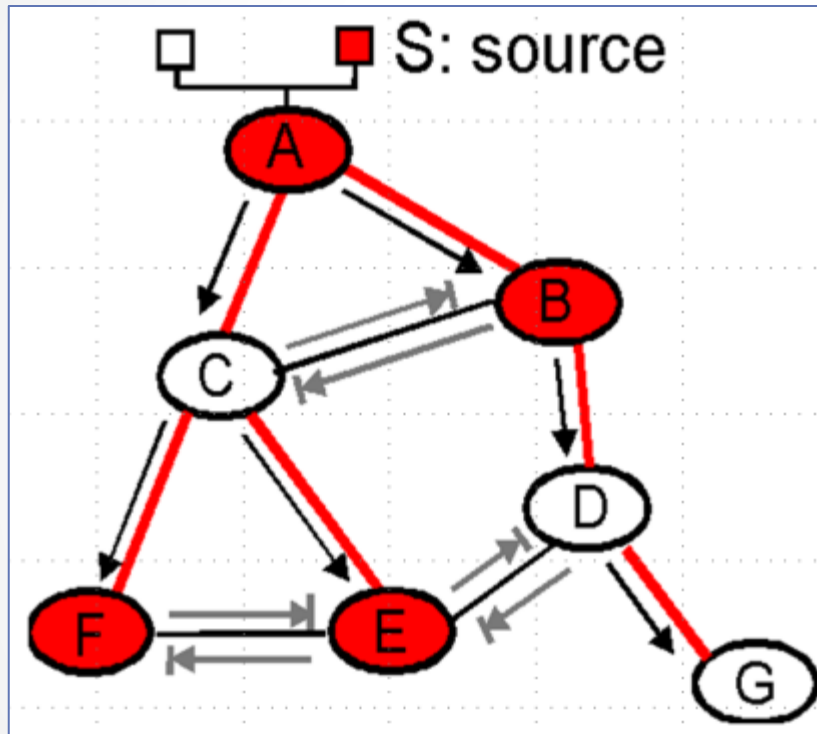
In-network duplication

- **flooding**: when node receives broadcast packet, sends copy to all neighbors
  - Problems: cycles & broadcast storm
- **controlled flooding**: node only broadcasts packet if it hasn't broadcasted same packet before
  - **Sequence number**: node keeps track of pckt ids already broadcasted
  - **Reverse path forwarding (RPF)**: only forward pckt if it arrived on shortest path between node and source

    Solo quelli che arrivano sullo shortest path tra me e destinatino

- **Spanning tree**
  - No redundant packets received by any node

Mi arrivei pacchettto verso destinazione, ne ho tante collegamento in uscita. Non lo mando a tutti, ma solo quella che sta sul percorso minimo della destinazione

Reverse packet forwarding (RPF)

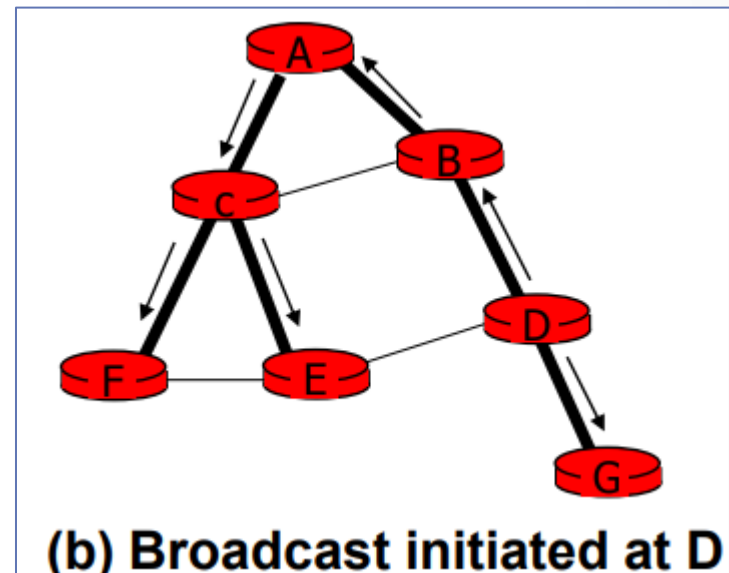Spanning tree é caratteristica dell'albero
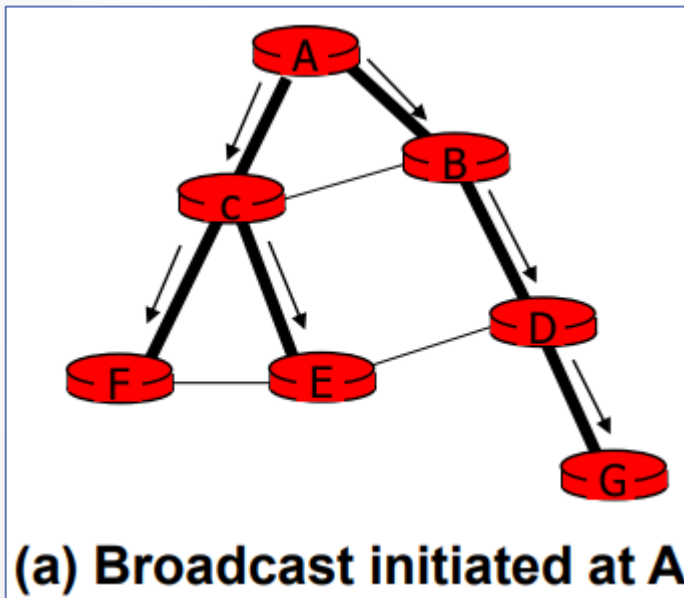
A node forwards a packet only if it arrived from the shortest path between node and source (reverse path)
Still some useless packets are transmitted

S: source

Io quin lo faccio solo sul percorso minimo.
Se quel collegamento sta sul percorso minimo
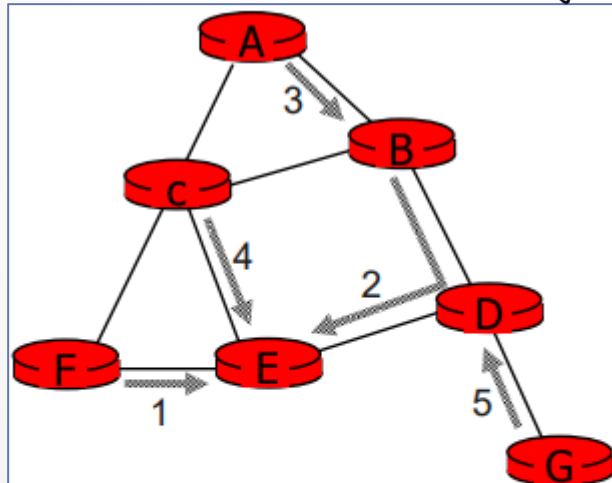lo mando. altrimenti no.

Spanning Tree

- First construct a spanning tree
- Nodes forward copies only along spanning tree

(a) Broadcast initiated at A
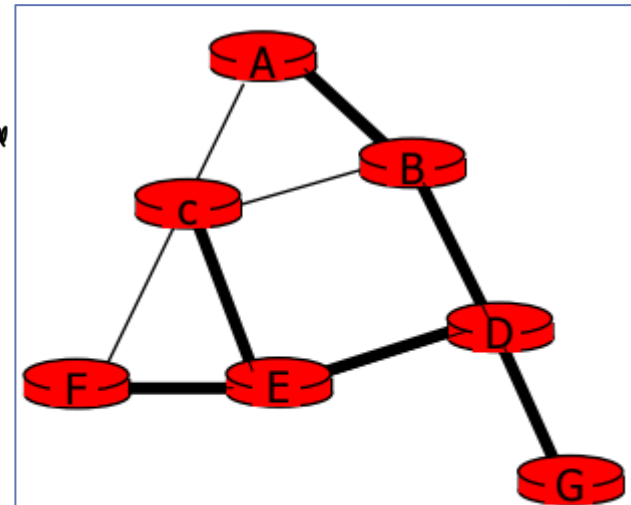
(b) Broadcast initiated at D

Spanning Tree: Creation

- First select a Center node (or Rendevouz Point) (eg. Node E)
- Each node sends unicast join message to center node
- Message forwarded until it arrives at a node already belonging to spanning tree or arrives to the center node

Messaggio serve in oltre a Vedere, prima che arriva, prede parte della spanning tree.

ho percorso migliore e stabilisco albero

(a) Stepwise construction of spanning tree

(b) Constructed spanning tree