

Stream Setup and Teardown

John Nels Fuller

Computer Scientist

jfuller@computer.org

Assumption about Higher Layers

- Talker has acquired a unique Stream ID for each stream it can source
- Listener has discovered Talker
- Listener has negotiated with Talker to determine:
 - Stream ID
 - Stream Format & Bandwidth
 - Any stream security issues, DRM use, etc.

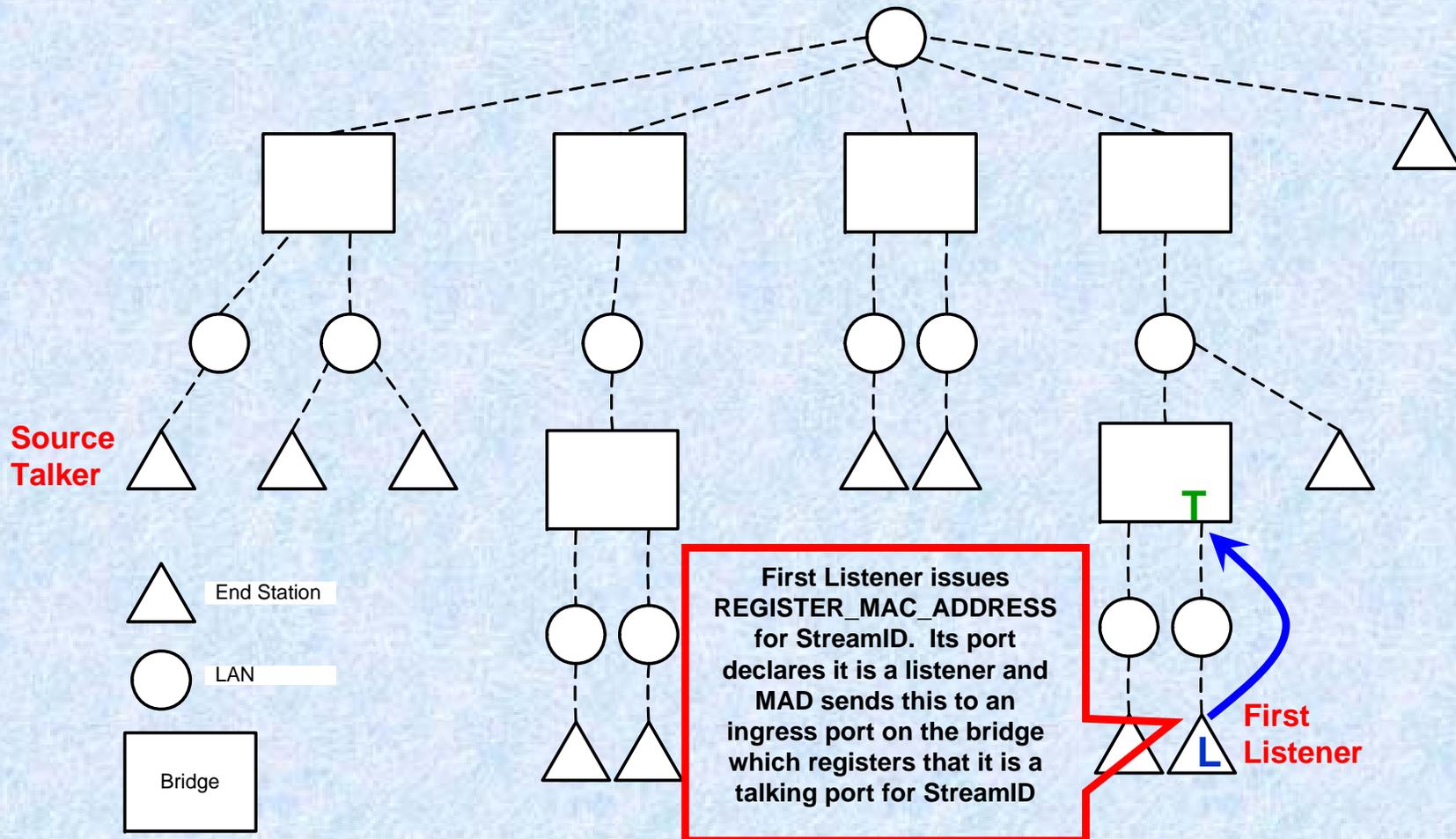
Stream Setup Overview

- First Listener application issues a REGISTER_MAC_ADDRESS(StreamID) through the service interface
- MMRP propagates the registration throughout the network
- When registration reaches Source Talker, its application is notified to start reservation process
- SRP reservation propagates along path defined by MMRP back to First Listener

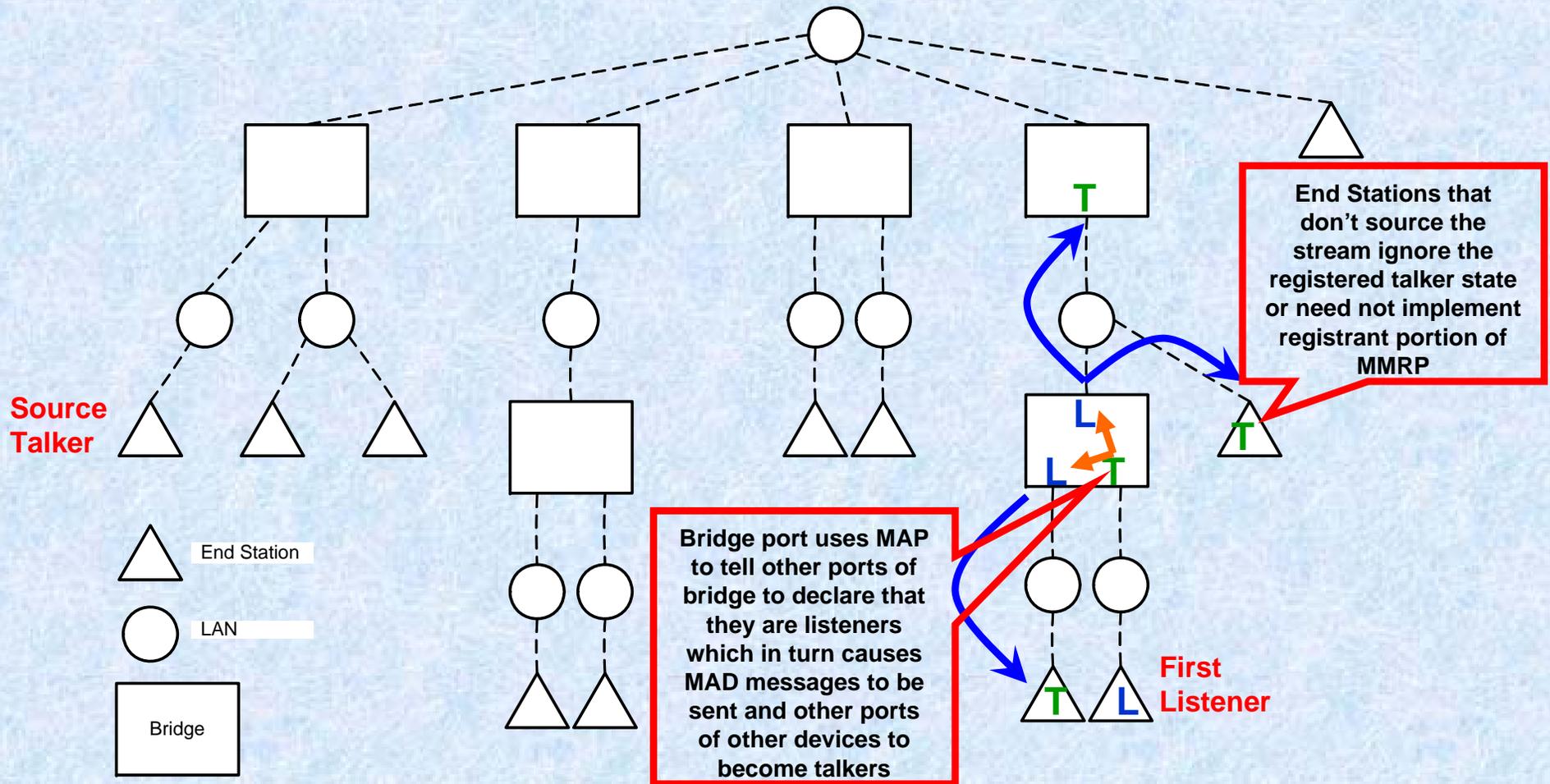
Notes to Following Diagrams

- I have purposely changed the terminology in the following from terms used in 802.1ak: “Declare” becomes “Listen” and “Register” becomes “Talking”
 - Think of it as a port *declares* that it is a *listener* for a particular stream or that a port *registers* that it is a *talker* for a particular stream.
- Listening ports are marked with “L”, Talking ports are marked with “T”, Listening ports with reservation are marked with “L” and talking ports with reservation are marked “T”

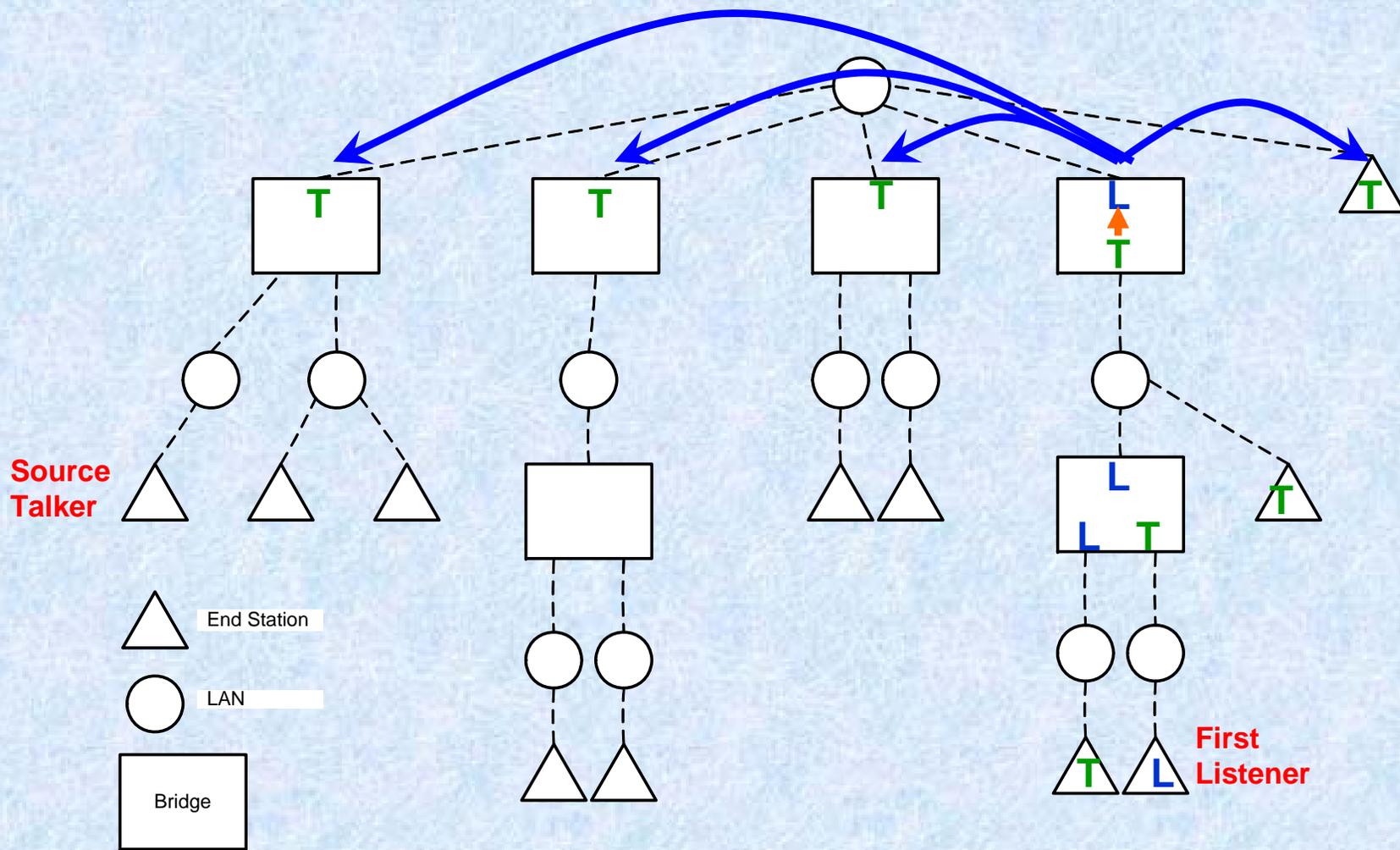
Propagation of MMRP REGISTER_MAC_ADDRESS (1)



Propagation of MMRP REGISTER_MAC_ADDRESS (2)

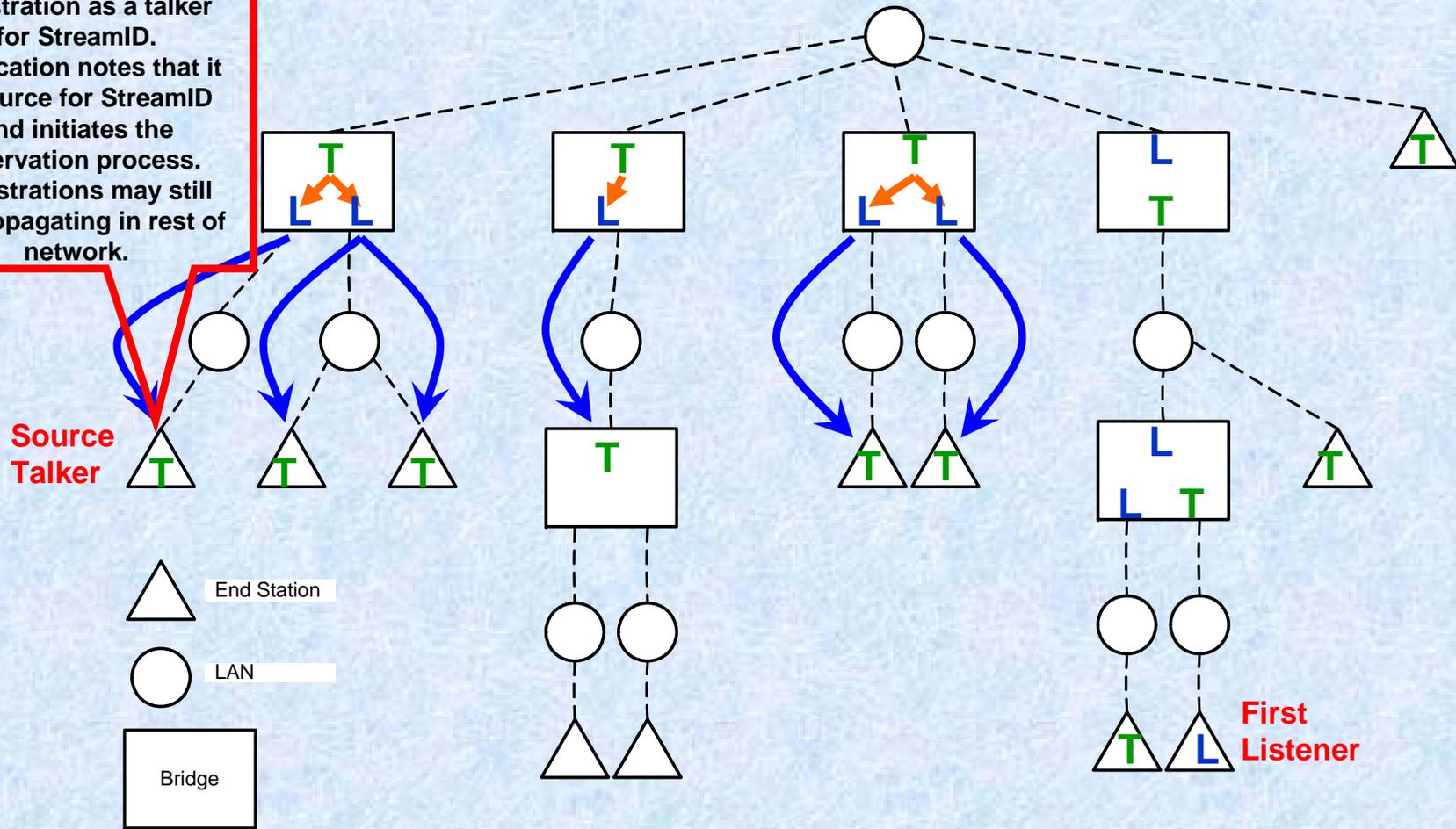


Propagation of MMRP REGISTER_MAC_ADDRESS (3)

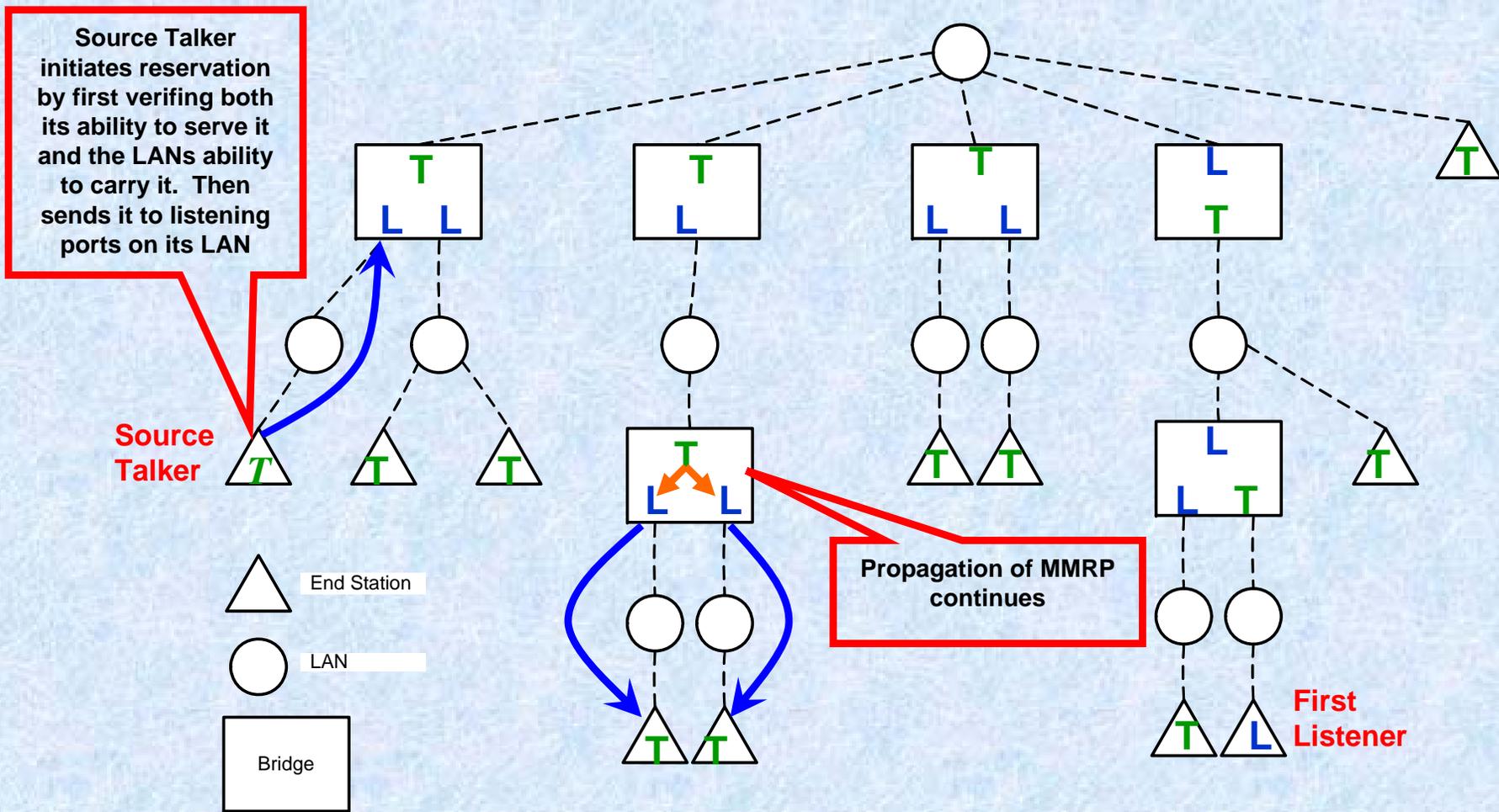


Propagation of MMRP REGISTER_MAC_ADDRESS (4)

Application at Source Talker is notified of the registration as a talker for StreamID. Application notes that it is source for StreamID and initiates the reservation process. Registrations may still be propagating in rest of network.

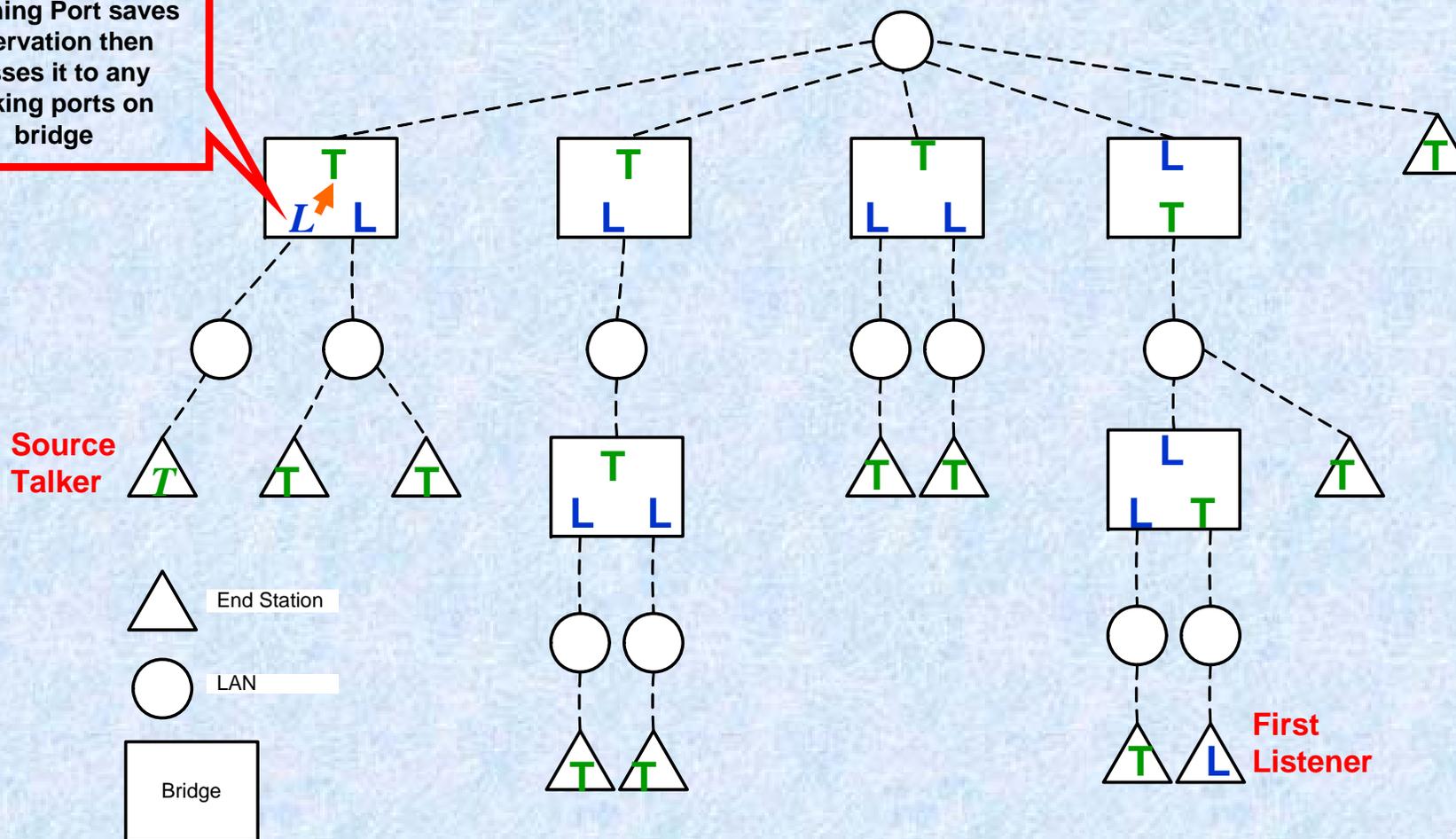


Propagation of SRP Reservation Request (1)



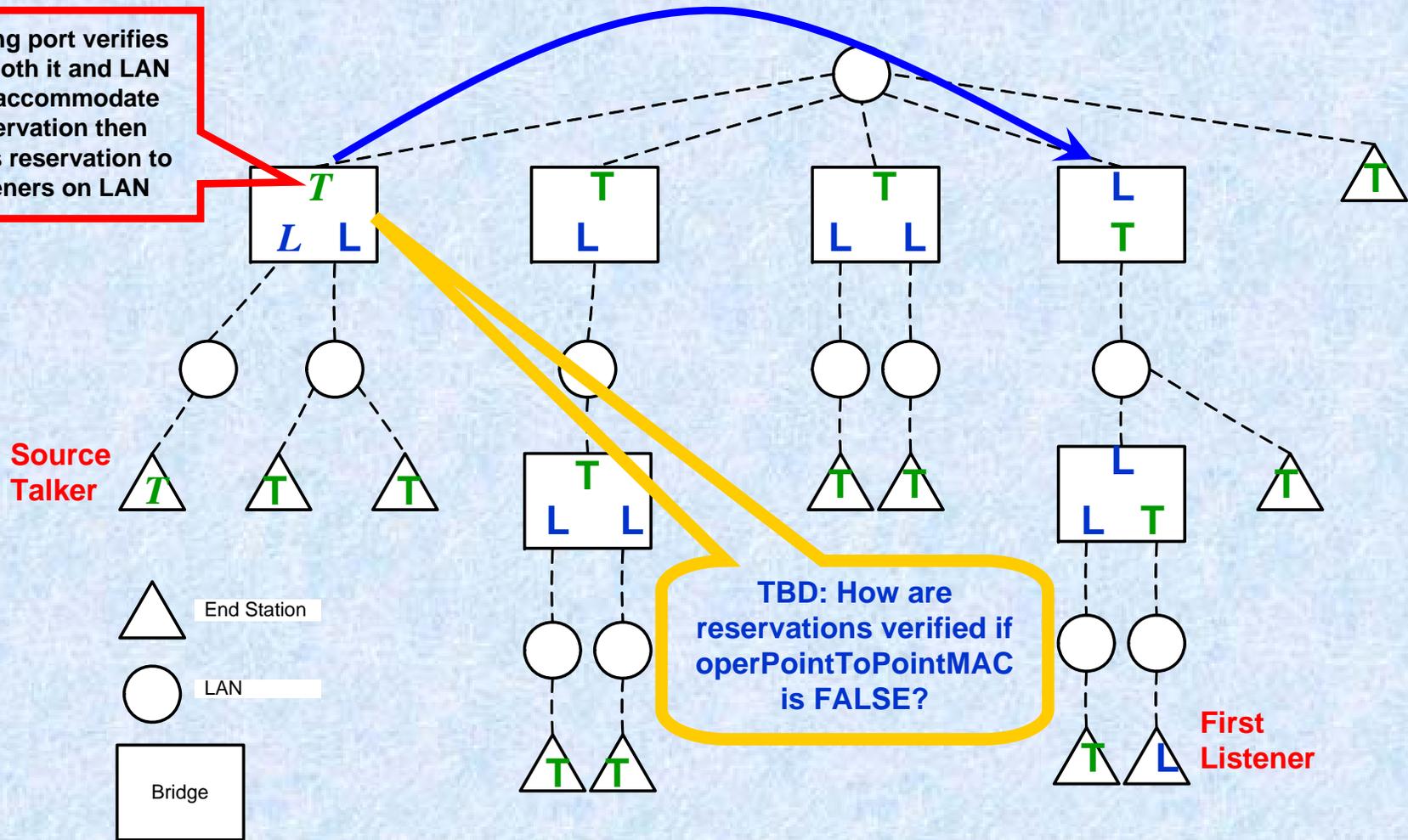
Propagation of SRP Reservation Request (2)

Listening Port saves reservation then passes it to any Talking ports on bridge

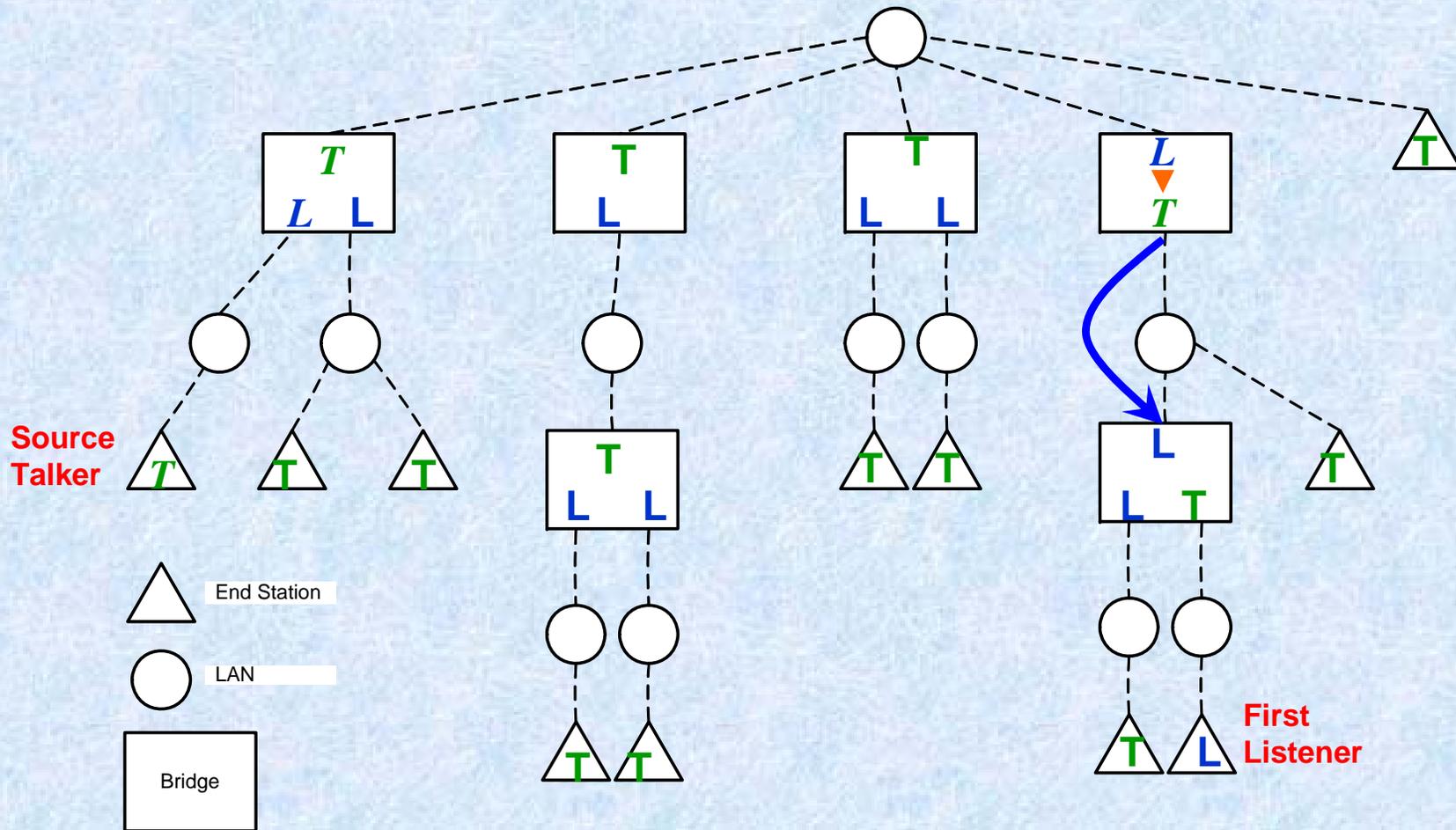


Propagation of SRP Reservation Request (3)

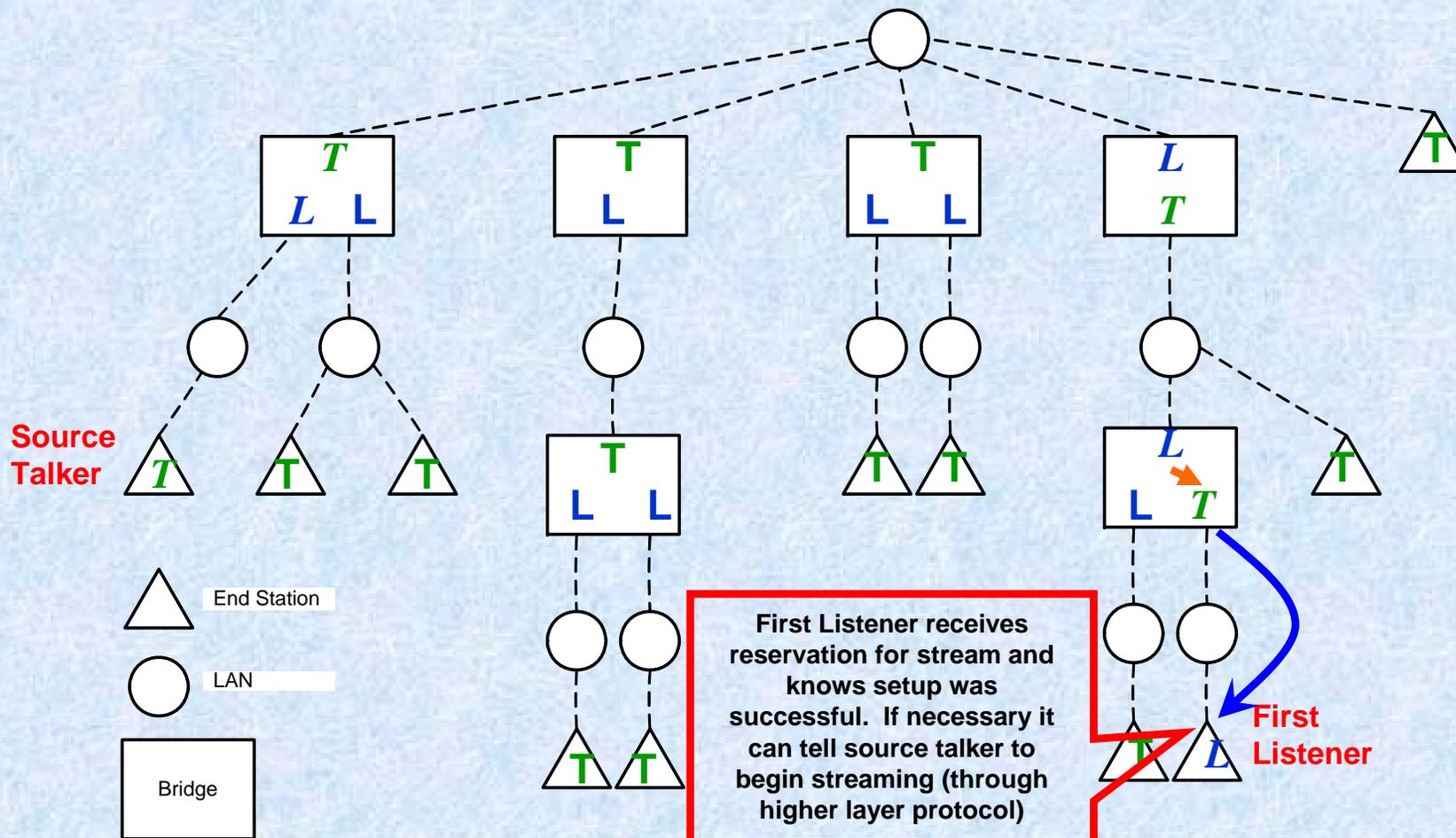
Talking port verifies that both it and LAN can accommodate reservation then sends reservation to listeners on LAN



Propagation of SRP Reservation Request (4)



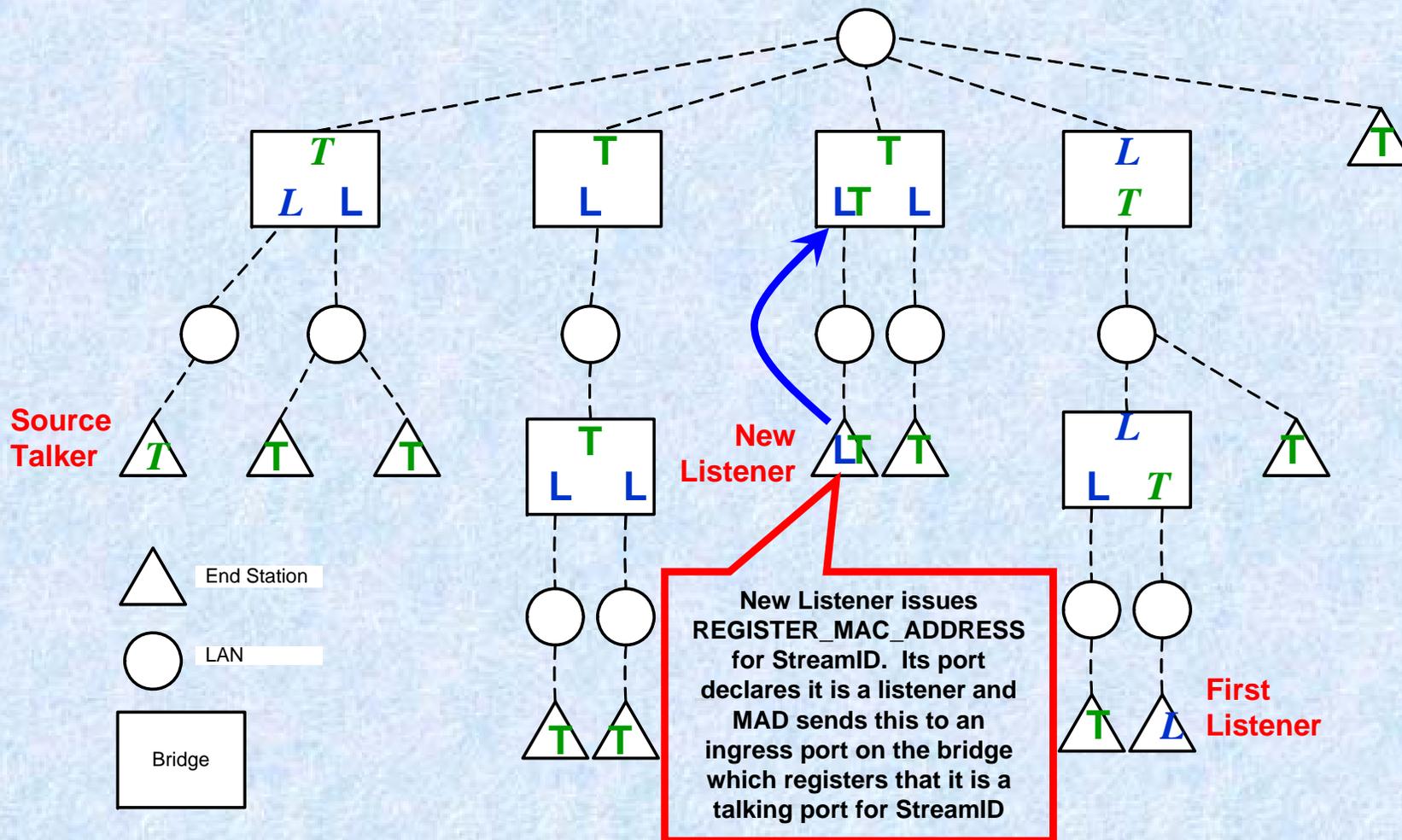
Propagation of SRP Reservation Request (5)



Overview of Joining an Existing Stream (Case 1)

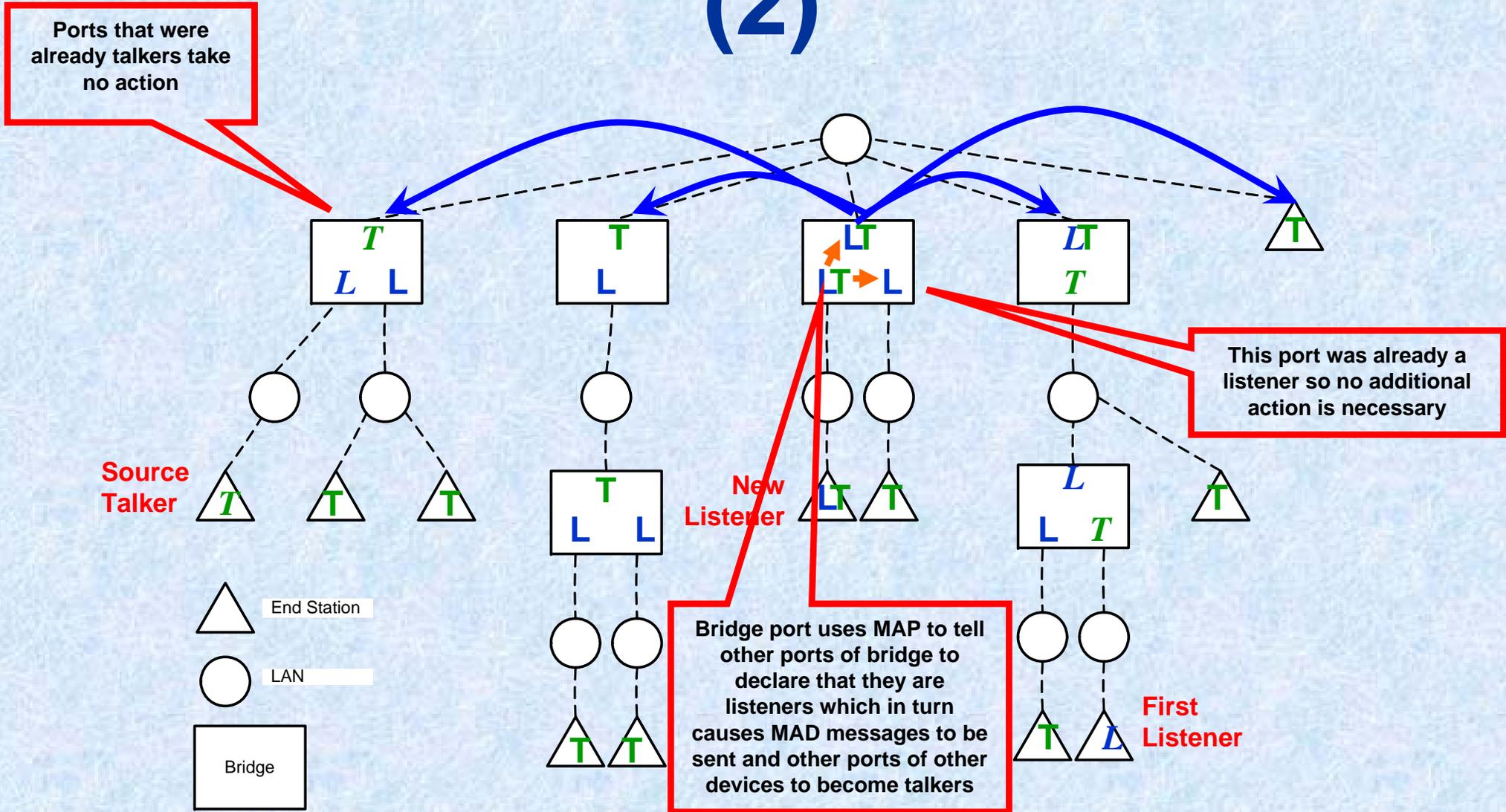
- This case only happens on LANs where `operPointToPointMAC` is `FALSE`
- New Listener initiates MMRP actions by issuing `REGISTER_MAC_ADDRESS` to its MAC service interface
- MMRP propagates as usual, but if a port that is already a talker without a reservation is told to be a listener (state transition `non-listener` to `listener`) it sends an SRP reservation refresh request on its LAN
- The talker with a reservation, if present, responds to the SRP reservation refresh request by sending the reservation information to all listeners on its LAN
- The reservation propagates to New Listener

Propagation of Join – Case 1 (1)



Propagation of Join – Case 1

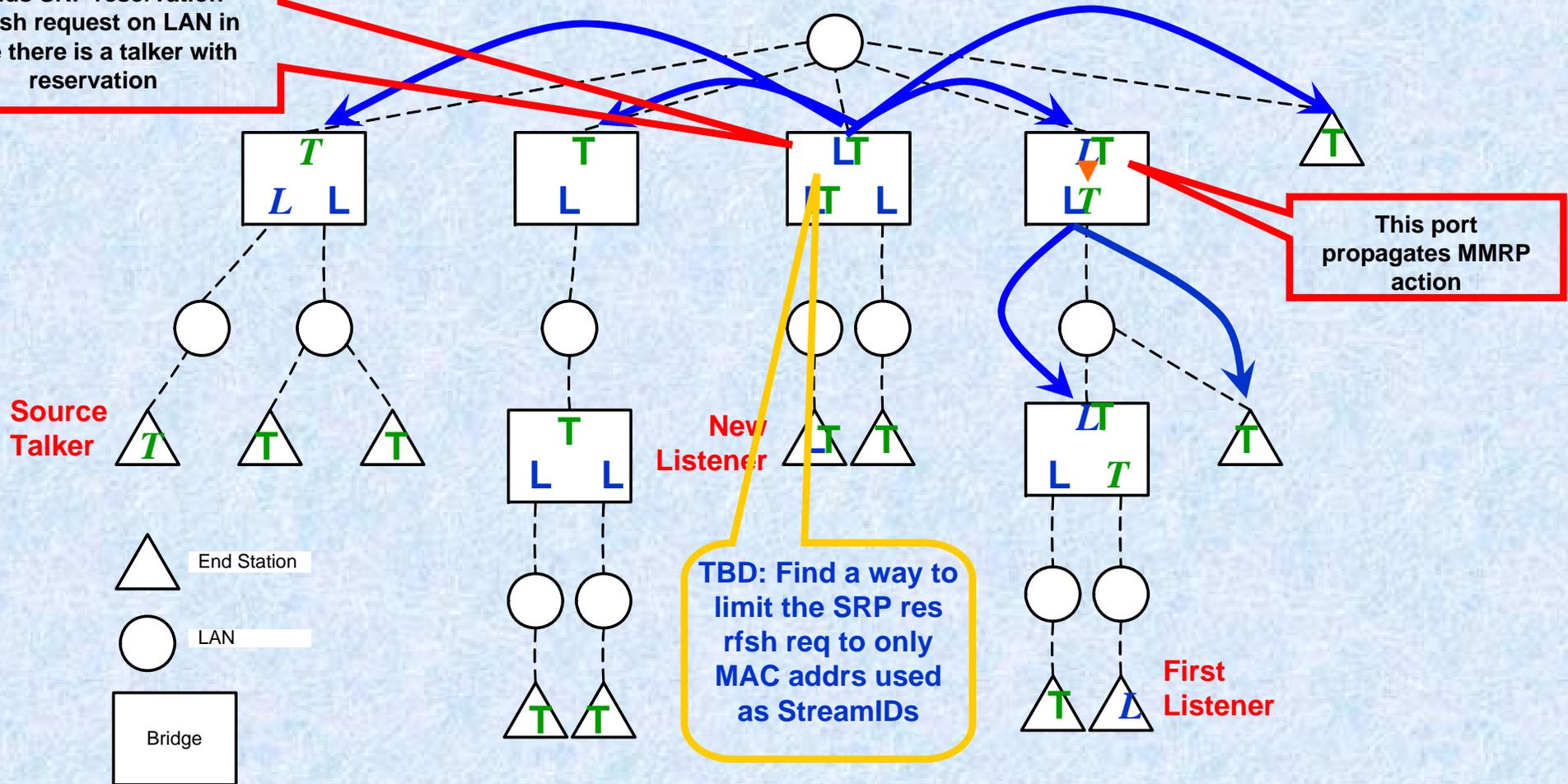
(2)



Propagation of Join – Case 1

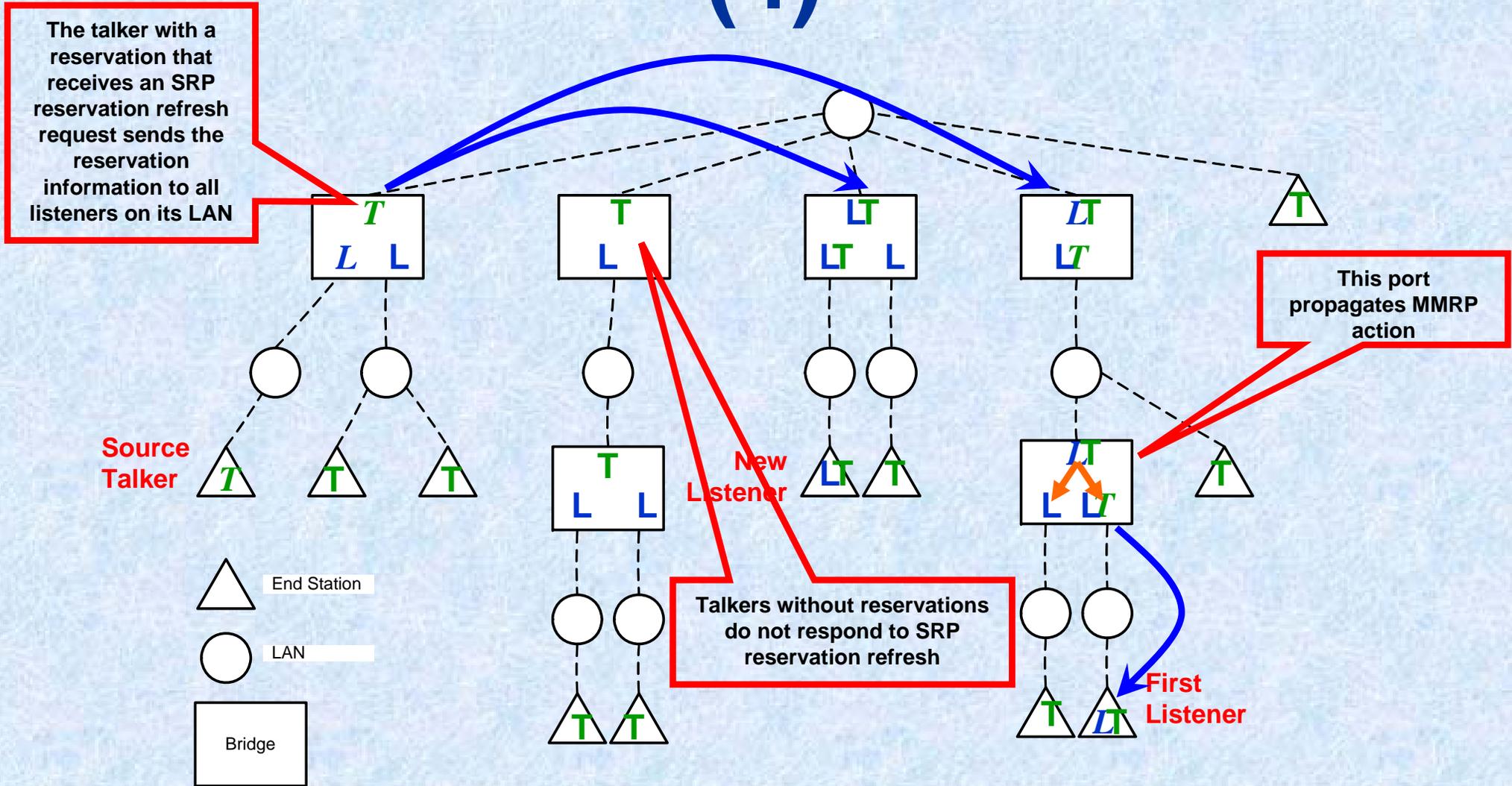
(3)

Bridge port was a Talker w/o reservation and has just transitioned to being a listener w/o reservation so sends SRP reservation refresh request on LAN in case there is a talker with reservation

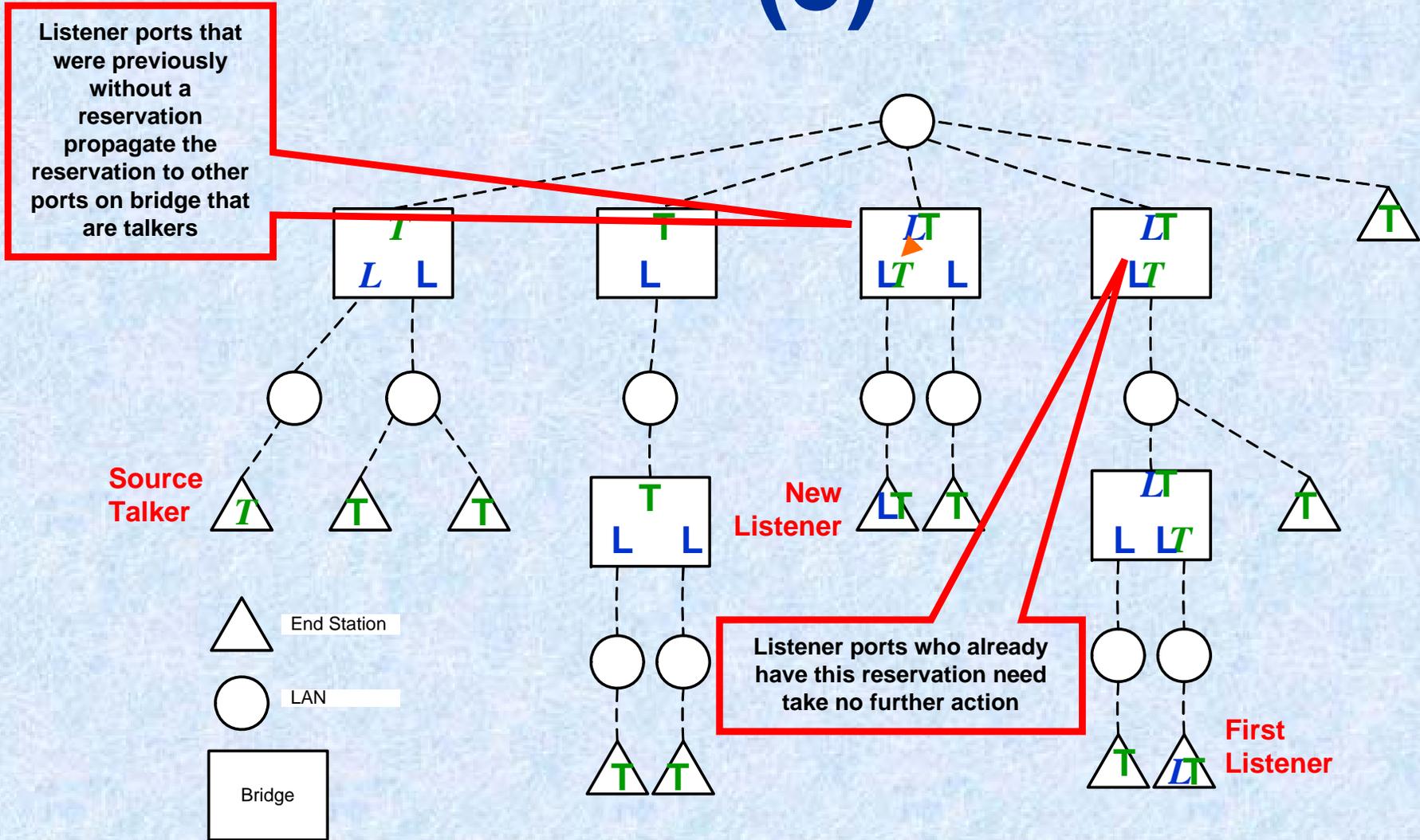


Propagation of Join – Case 1

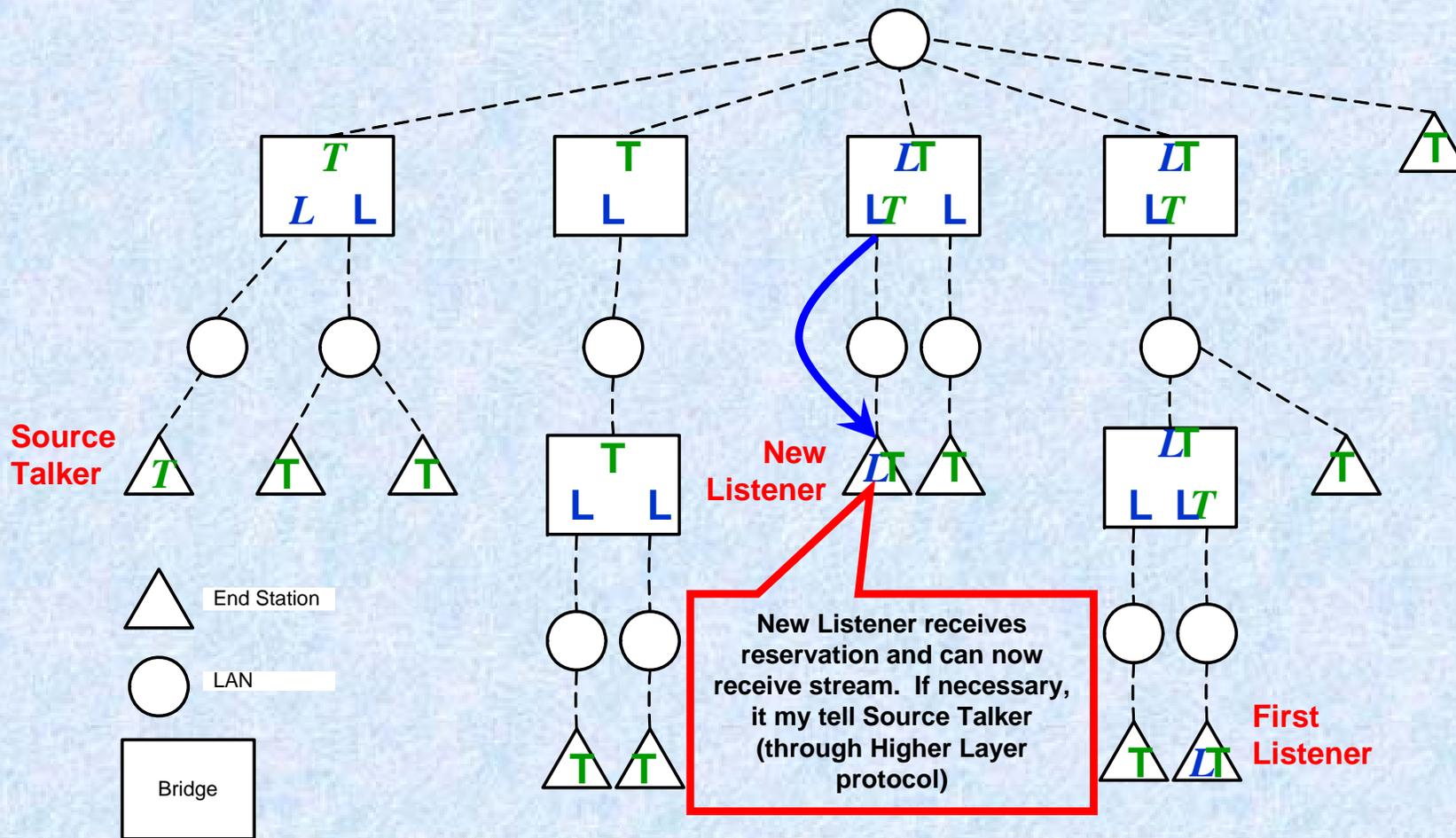
(4)



Propagation of Join – Case 1 (5)



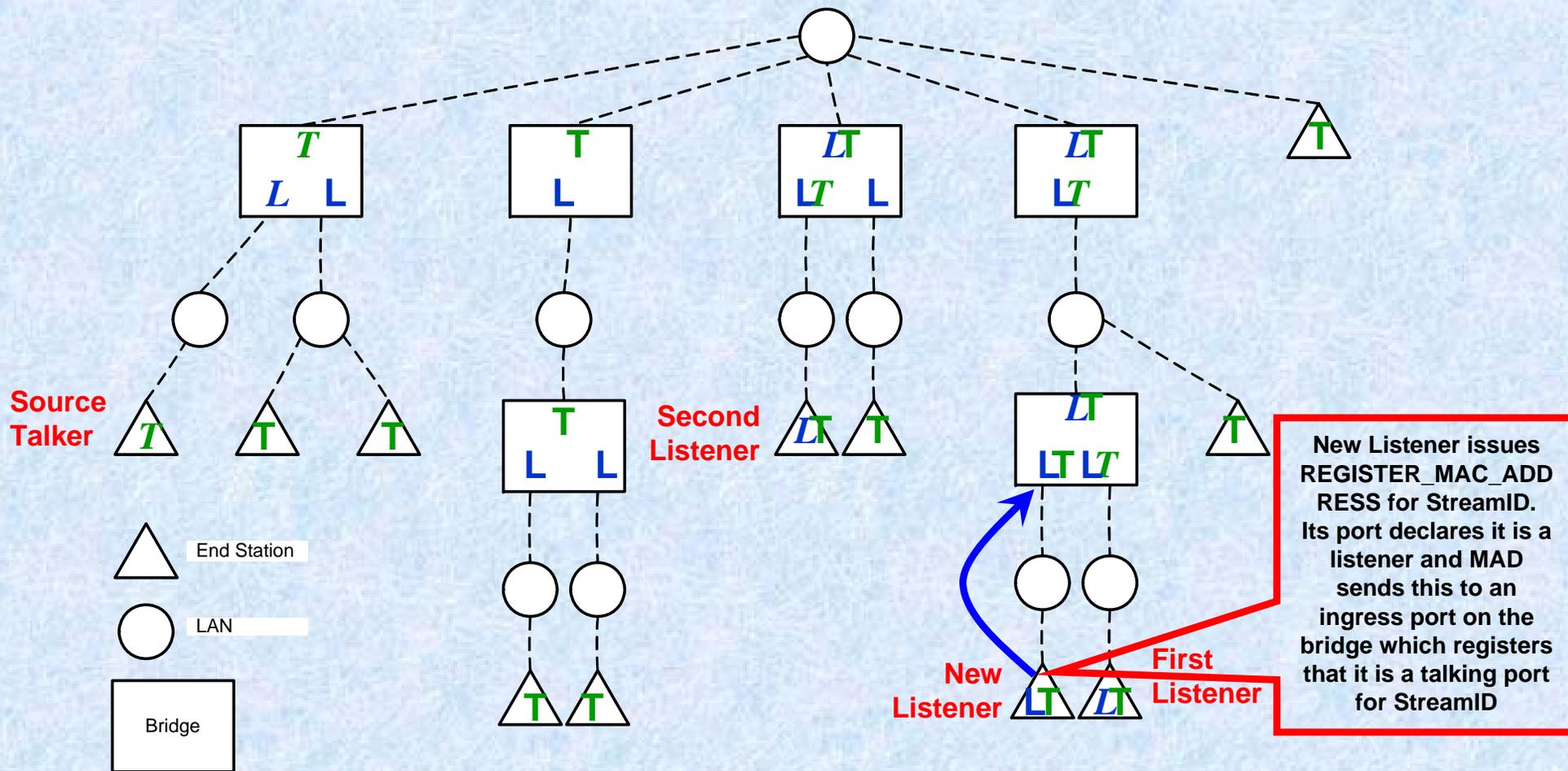
Propagation of Join – Case 1 (6)



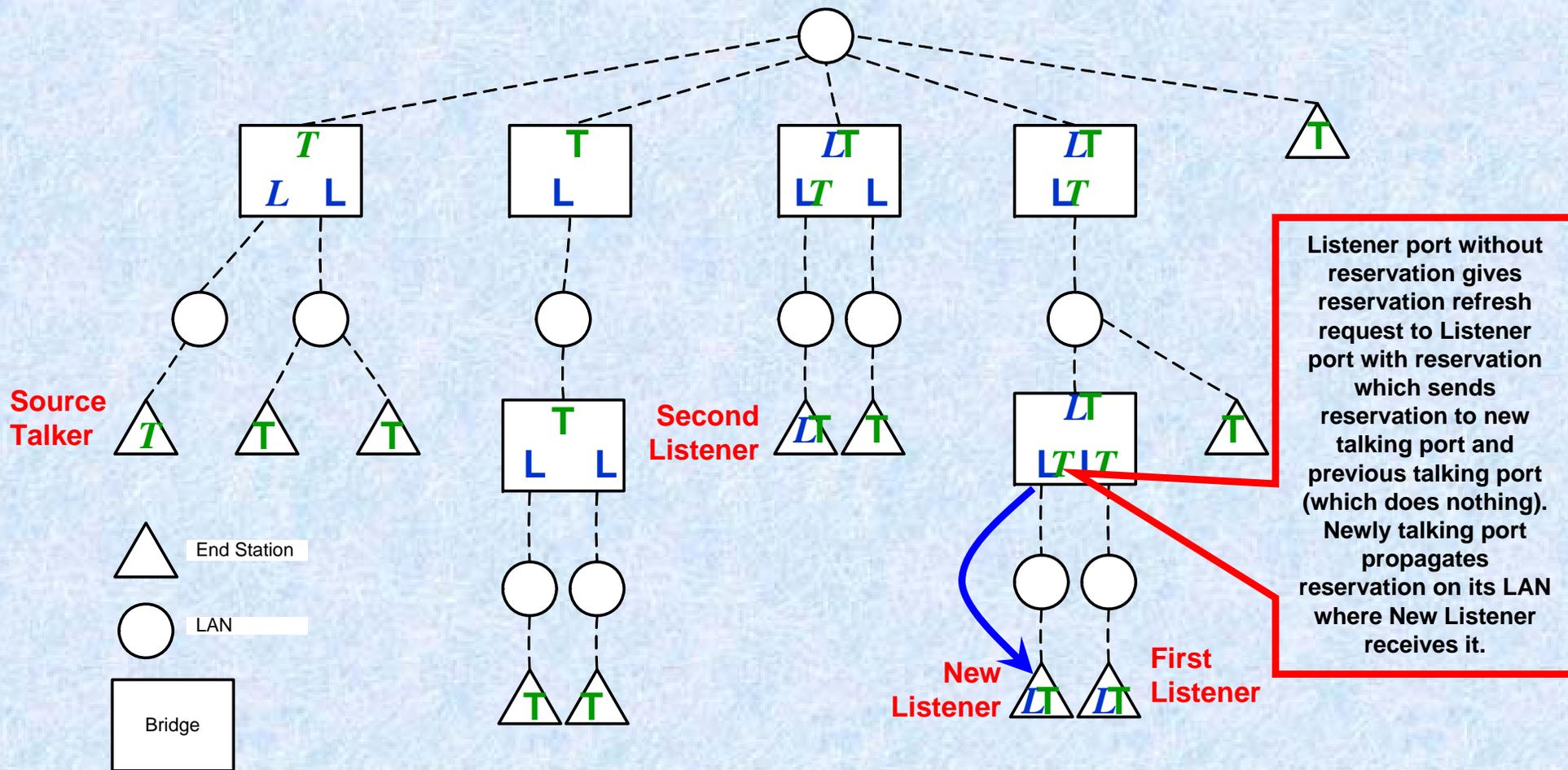
Overview of Joining an Existing Stream (Case 2)

- New Listener initiates MMRP actions by issuing REGISTER_MAC_ADDRESS to its MAC service interface
- MMRP propagates as usual, but if a port that is already a listener without a reservation is told to be a talker (state transition non-talker to talker) it checks other ports on bridge to see if there is a Listener with a reservation and issues a reservation refresh request to it
- The listener with a reservation responds to the reservation refresh request by sending the reservation information to all talking ports in the bridge
- The reservation propagates to New Listener

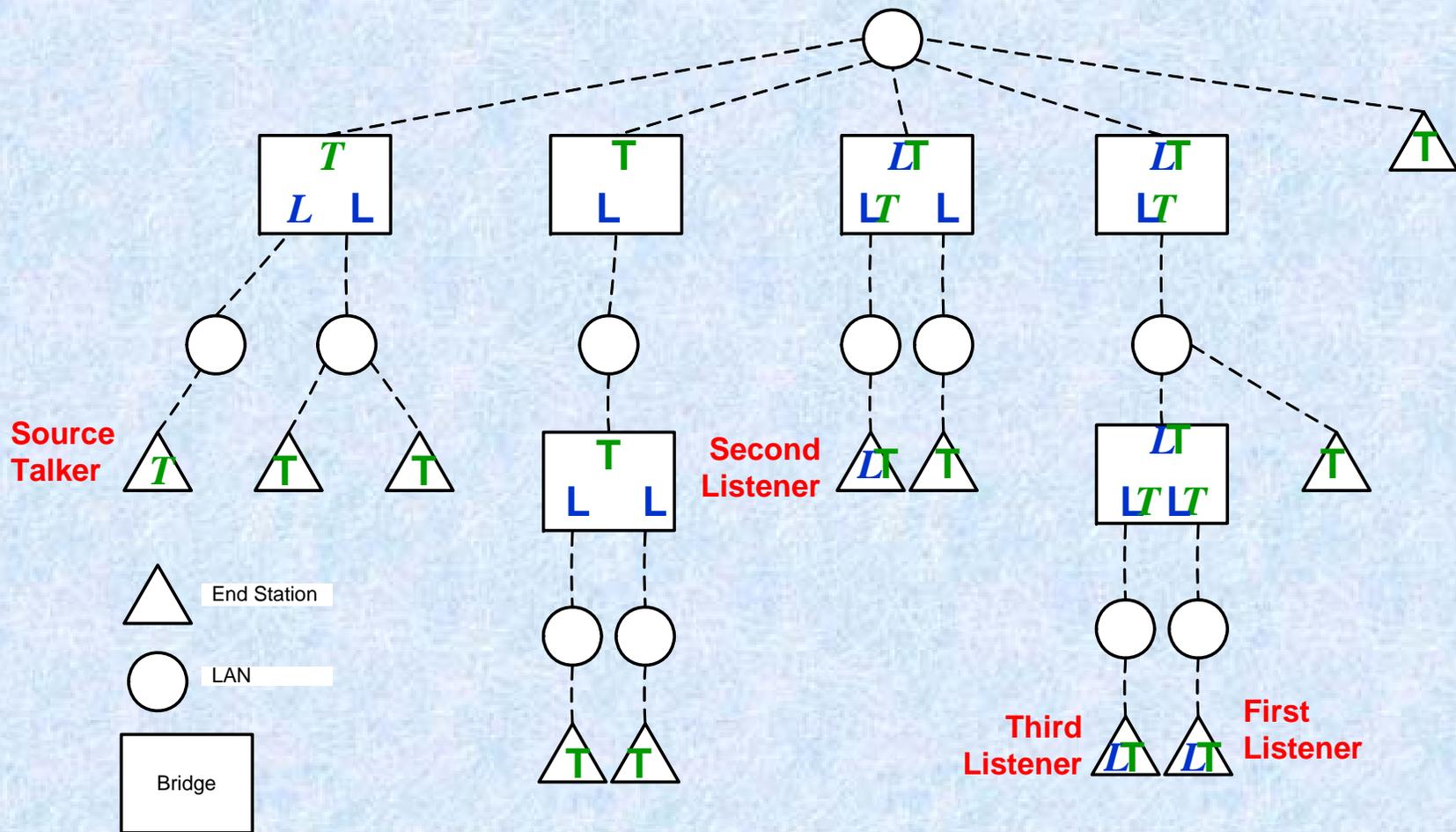
Propagation of Join – Case 2 (1)



Propagation of Join – Case 2 (2)



Steady State with 3 Listeners



Overview of Stream Teardown, Case 1: Listener goes away

- Listener either issues `DEREGISTER_MAC_ADDRESS` or is removed
- MMRP propagates
 - as ports leave the registered talker state they release their reservation
 - as ports leave the declared listener state they also release their reservation.

Overview of Stream Teardown, Case 2: Talker goes away

- Talker issues an SRP Release Reservation Request or fails to refresh reservation within time *TBD*
- Listener port with reservation notifies talker ports with reservations to release those reservations (and propagate SRP Release Reservation Request)
- End station listener issues **DEREGISTER_MAC_ADDRESS**