

83rd IETF - Paris

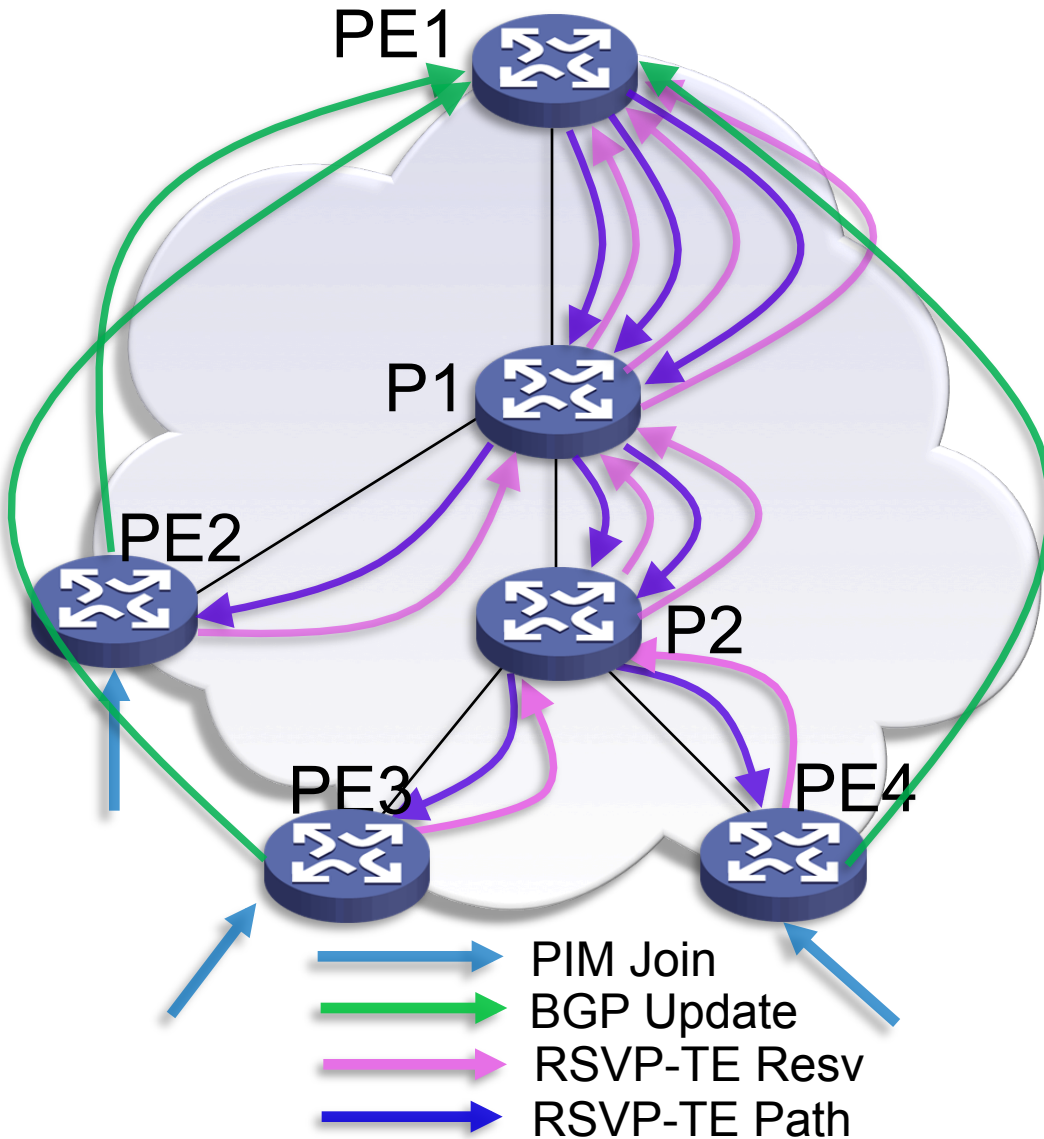
draft-lzj-mpls-receiver-driven-multicast-rsvp-te-00.txt

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Issues with P2MP RSVP-TE



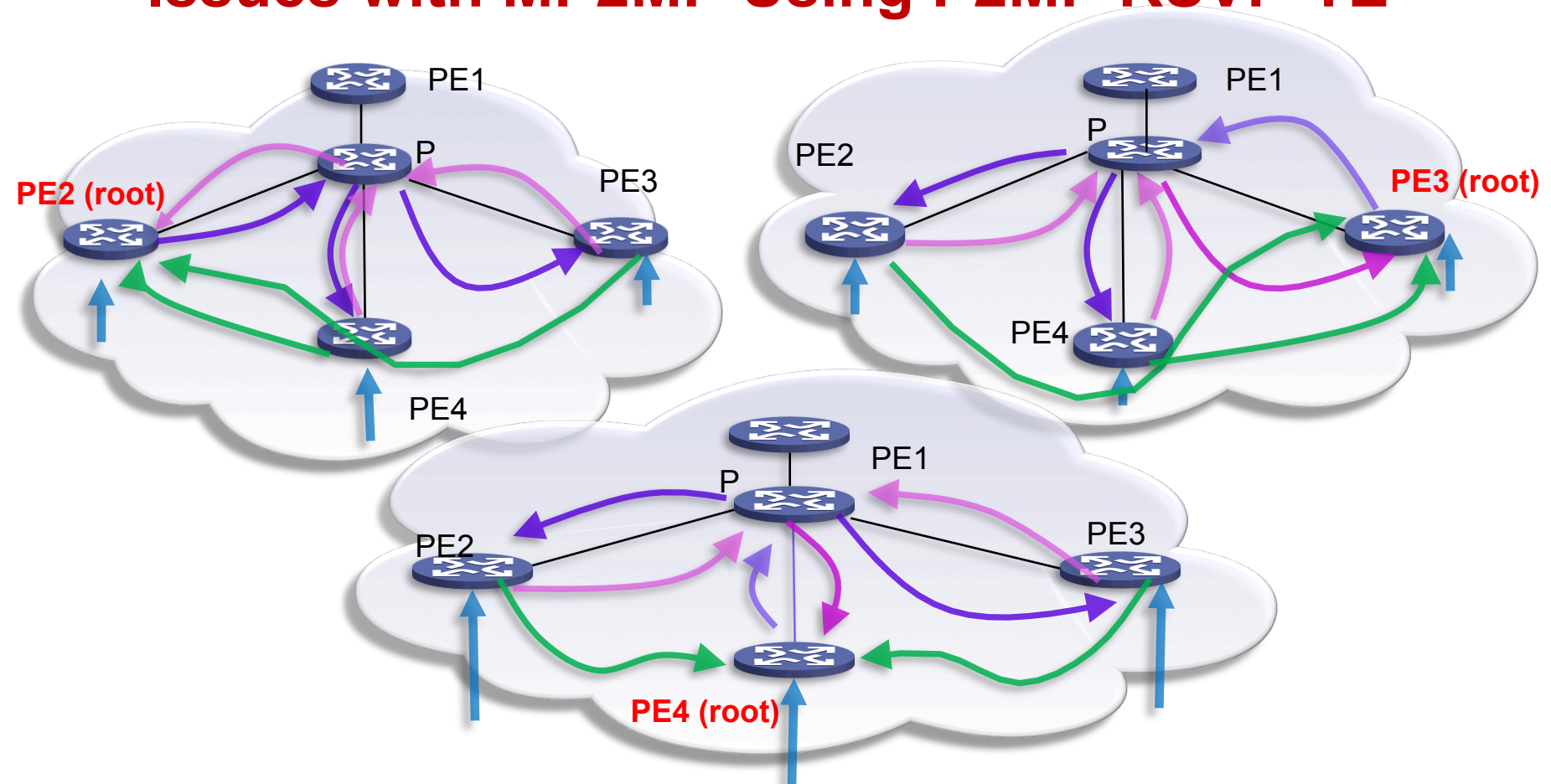
- It is awkward to inter-operate with PIM:

- P1 needs to process

P1 maintains many soft states

- Slow to build up MDT
 - Time for finding leaves e.g. BGP for discovery
 - The higher the tree, the slower to build up the MDT

Issues with MP2MP Using P2MP RSVP-TE



❑ No straightforward way to set up MP2MP

- Multiple P2MP LSPs are set up as an implementation for one MP2MP LSP

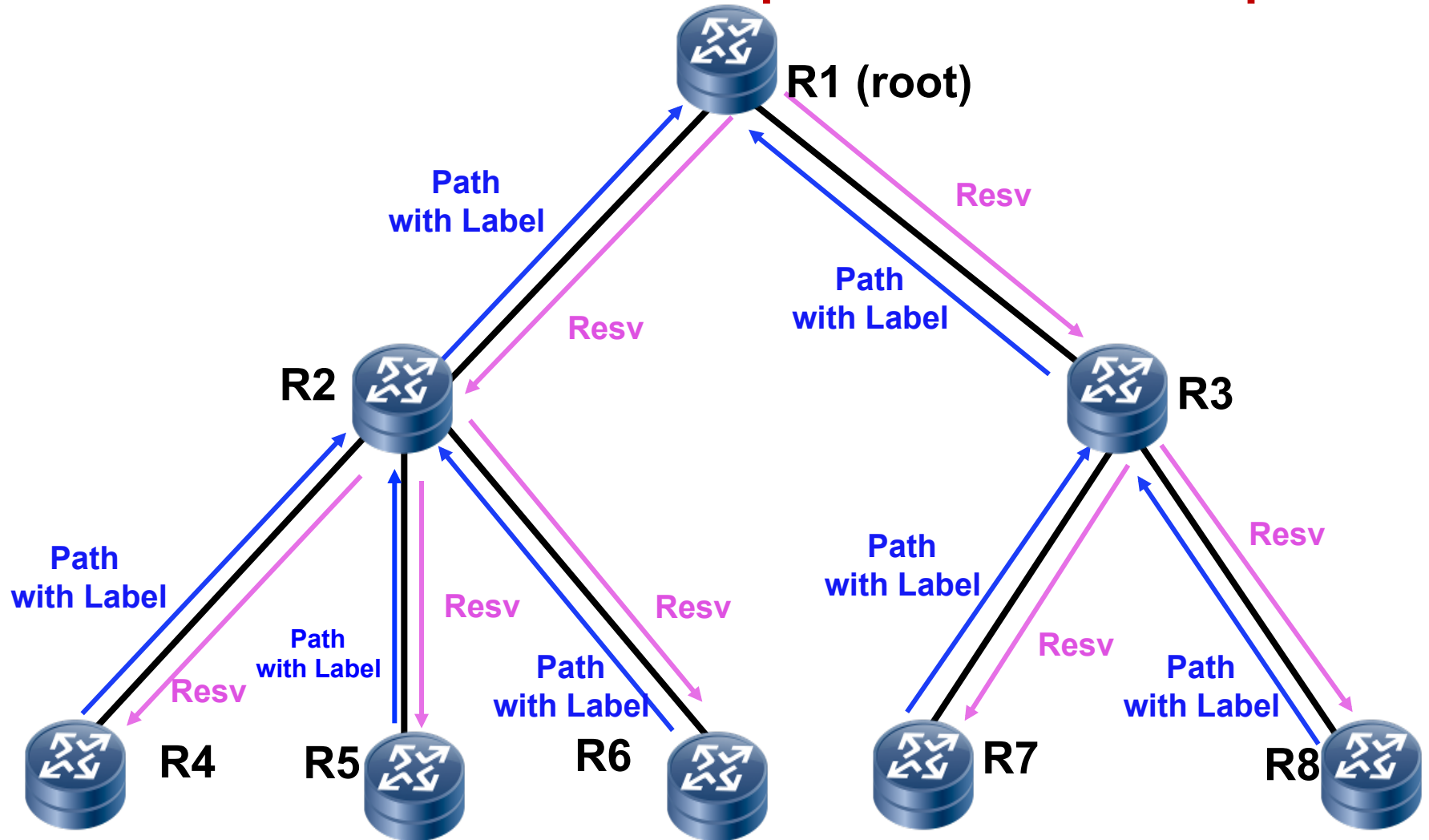
❑ Scalability

- P maintains more states for more multicast LSPs. In the above example, P maintains at least 9 states for 3 multicast LSPs to implement MP2MP.

New Solution

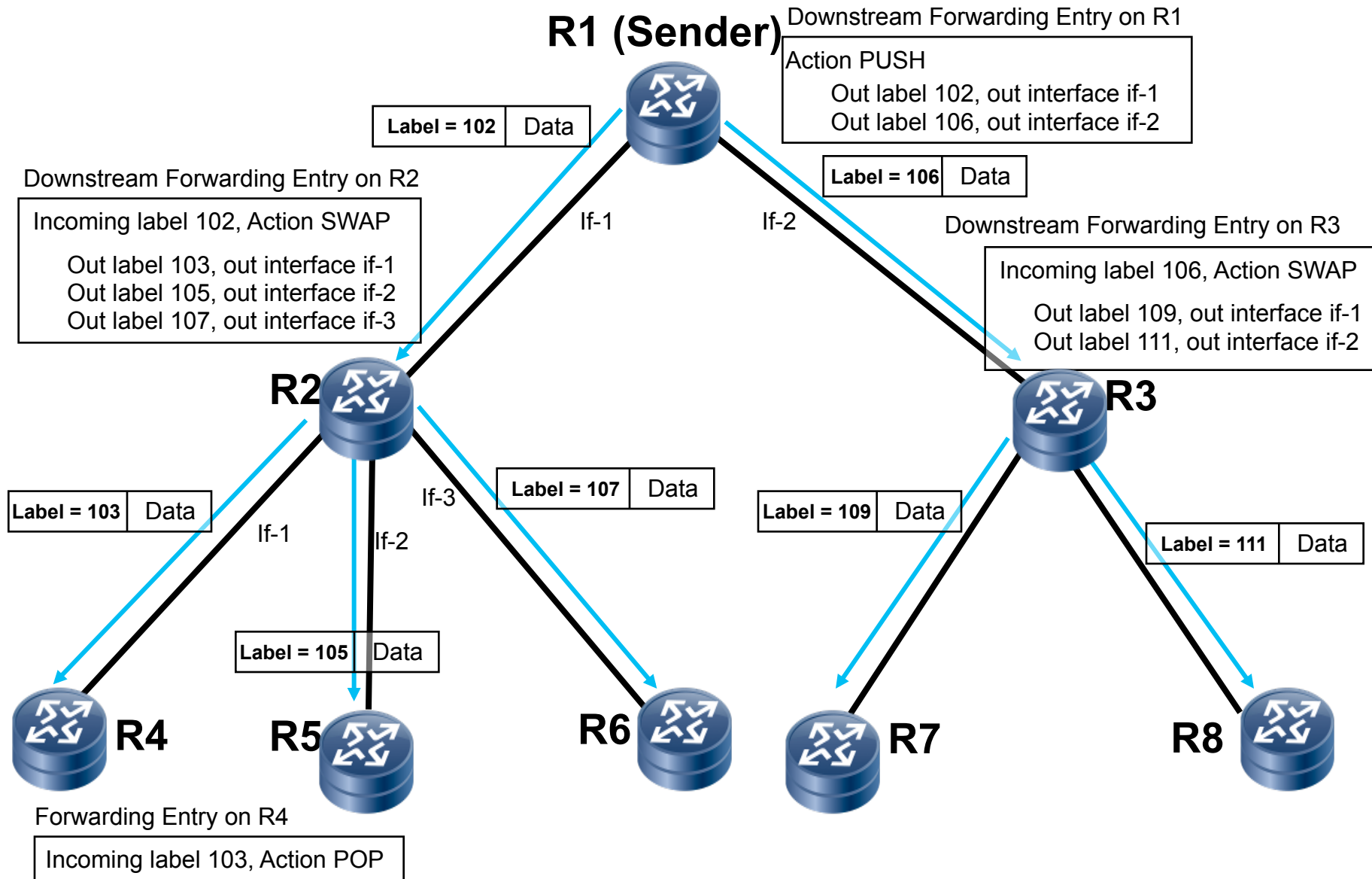
- Let RSVP-TE Path Messages be originated by Receivers/Leaves instead of Senders/Roots
- A Path message will be terminated at an intermediate node if this node received another Path message for the “same” session
- LSPs will be set up in a reverse direction compared with the existing RSVP-TE
- It will work uniformly for both P2MP and MP2MP
- In-band signaling support: Information in PIM messages are encoded into mRSVP-TE messages and multicast LSPs are set up accordingly.

Receiver-Driven Example: P2MP LSP Setup

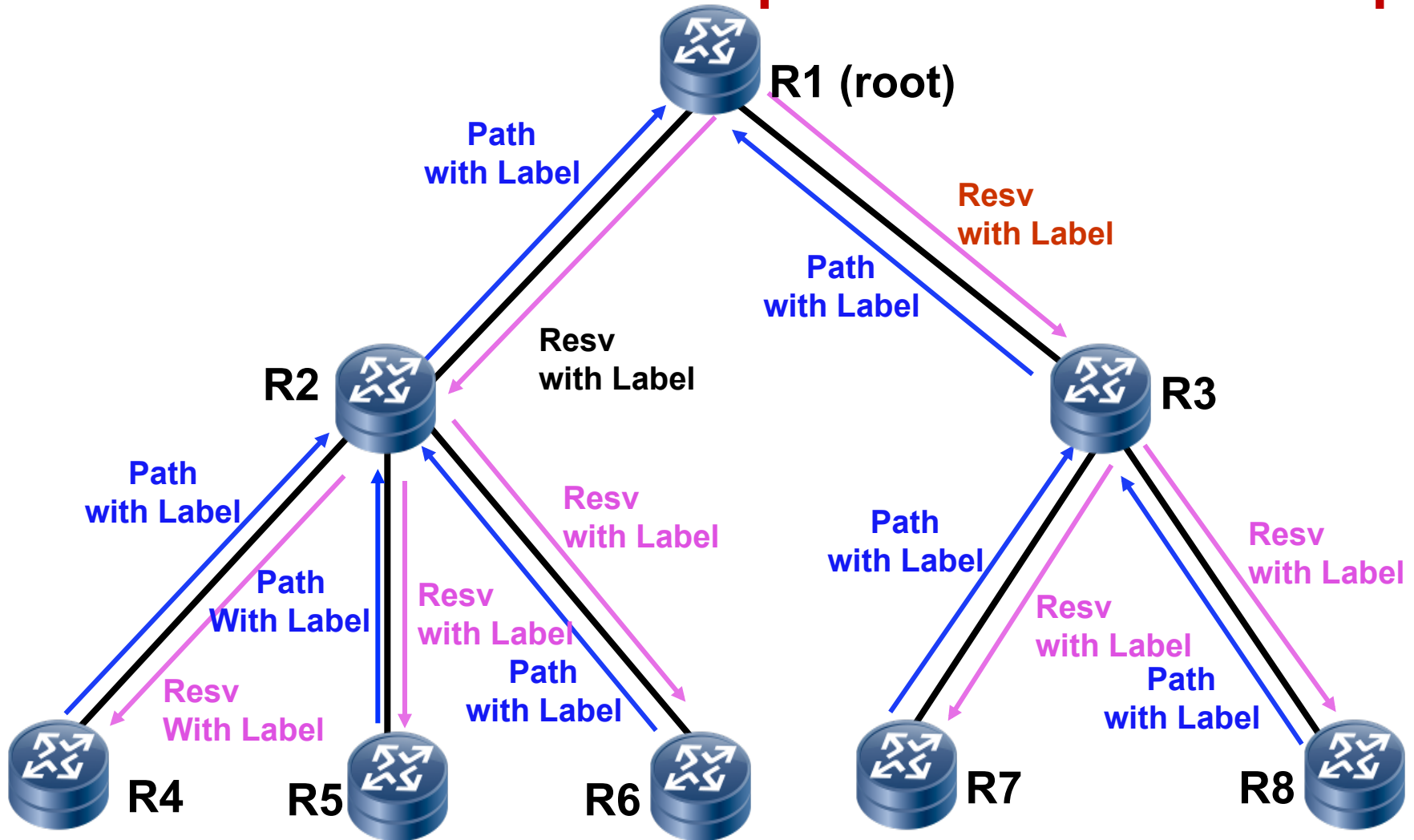


- At each leaf, one Path message with a downstream-assigned label is sent to its upstream hop
- At each branch node, only the first received Path message is sent upstream
- For each received Path message, a Resv message is sent downstream

Data Forwarding for mRSVP-TE P2MP LSP

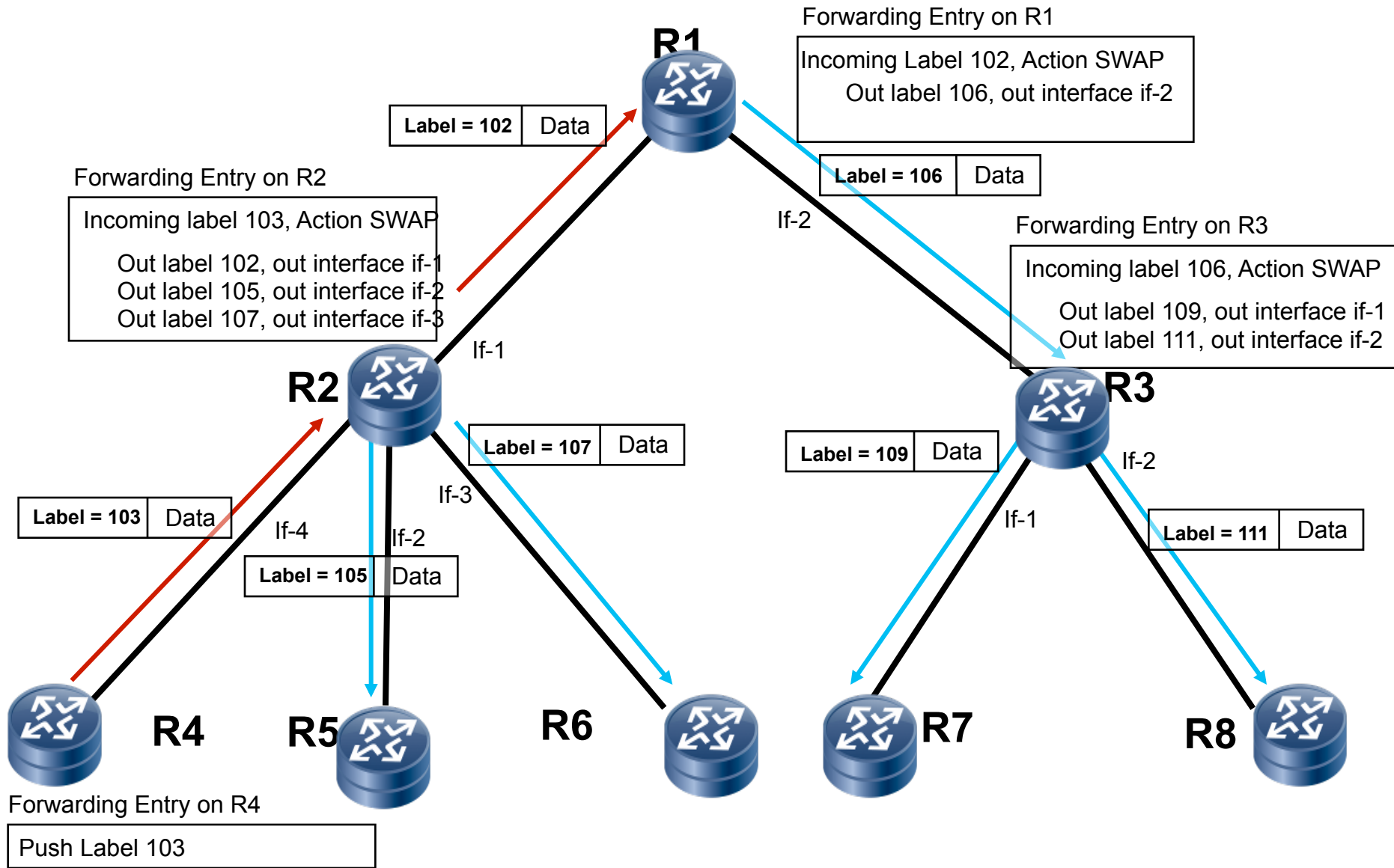


Receiver-Driven Example: MP2MP LSP Setup

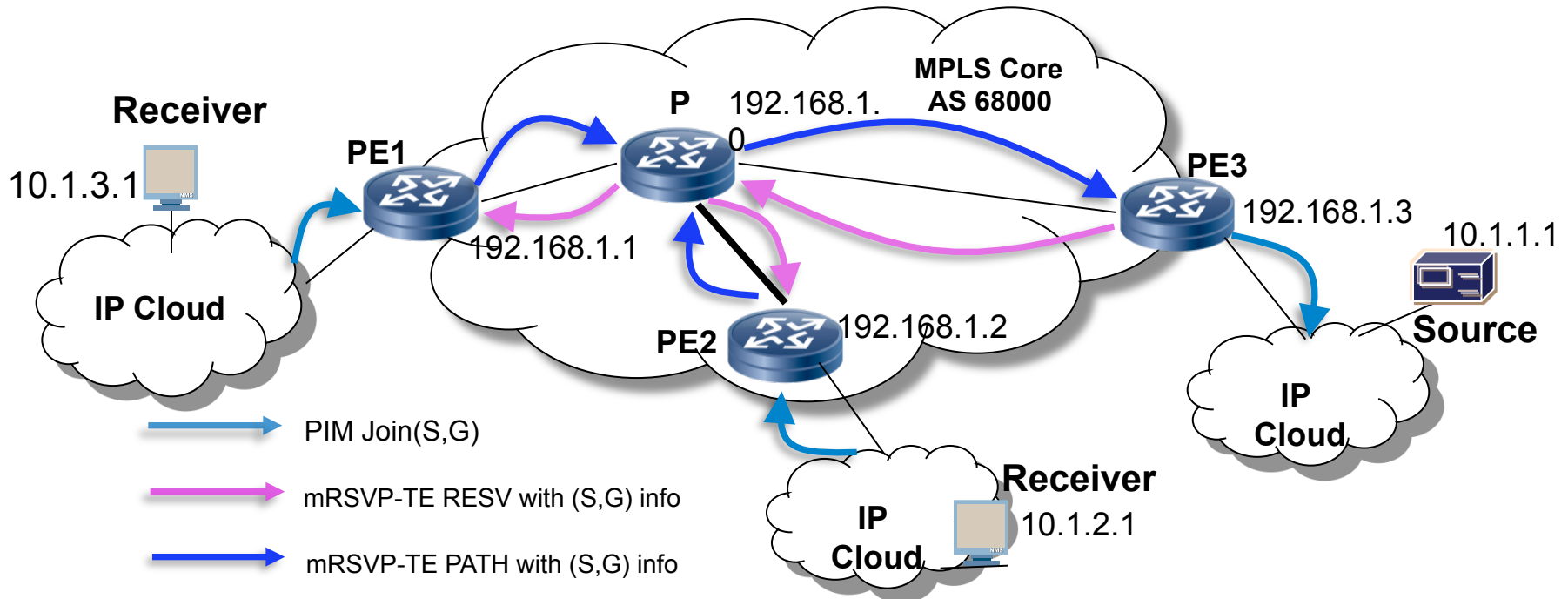


- At each leaf, one Path message with a label is sent to its upstream hop
- At each branch node, only the first received Path message is sent upstream
- For each received Path message, a Resv message with a label is sent downstream

Data Forwarding on mRSVP-TE MP2MP LSP



In-Band Signaling



- At the border router such as PE1 and PE2, PIM Join is translated into RSVP-TE Path Message.
- At the border router such as PE3, RSVP-TE Path Message is translated back into PIM Join.

Major Protocol Extensions

- SESSION
 - Different Objects for Different Applications
 - For Native IPv4/IPv6: Multicast Group Address
- SENDER_TEMPLATE
 - Path Sender's Address (Leaf)
 - Better called PATH_SENDER_TEMPLATE
- L2S_SUB_LSP
 - Source Address or Root Address

Next Steps

- Seeking feedbacks
- A prototype is being developed

Questions?