

# Source-Specific Multicast (IPv6)

---



**Tim McConaughy**  
Solutions Architect

@juangolbez    [carpe-dmvpn.com](http://carpe-dmvpn.com)

# Agenda



## **Topics:**

- Recap of PIM-SSM

## **Demos:**

- Source-Specific Multicast Traffic Flow

## **Packet Analysis:**

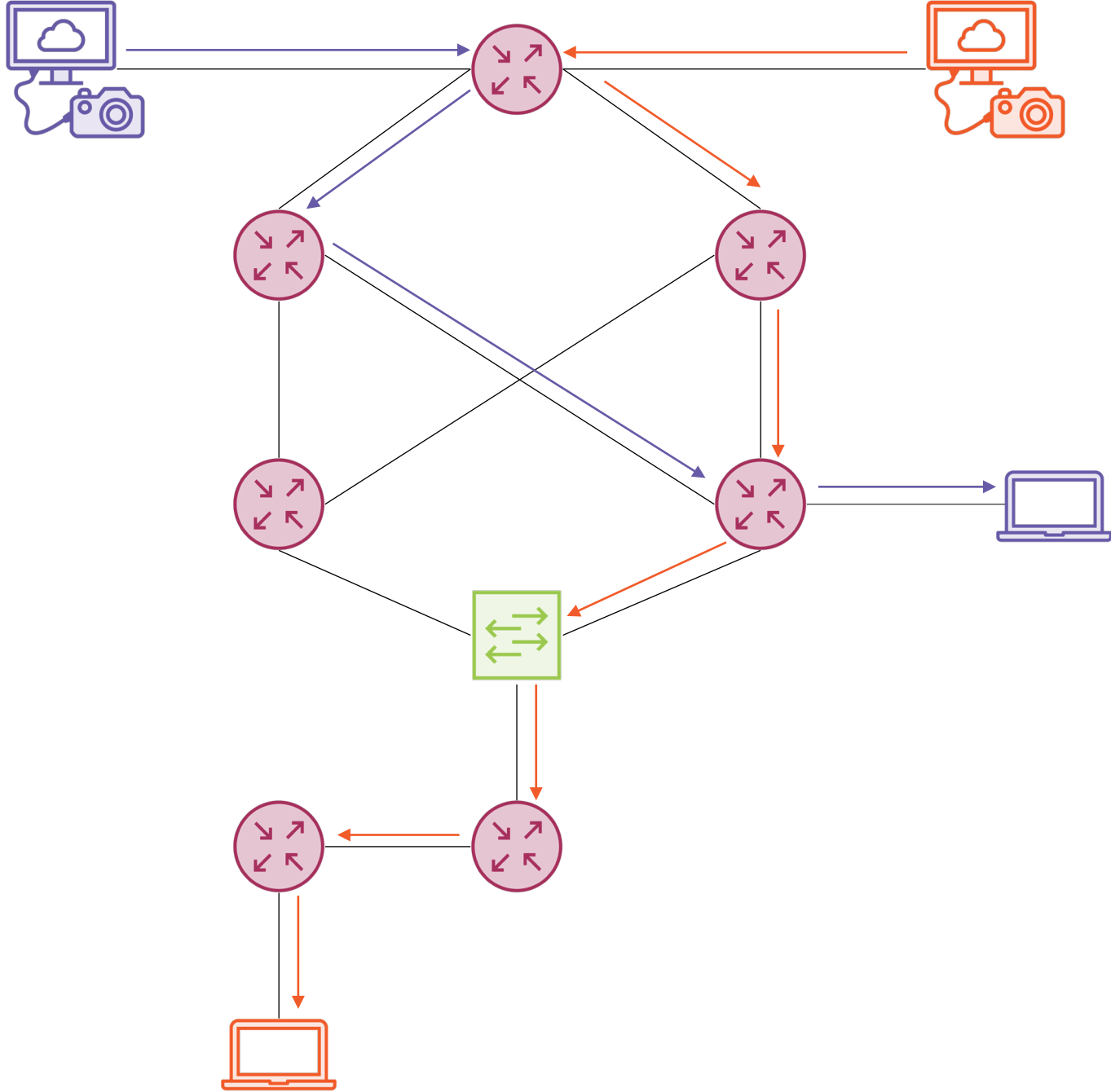
- MLDv2 Join/Prune
- PIM Join/Prune for SSM



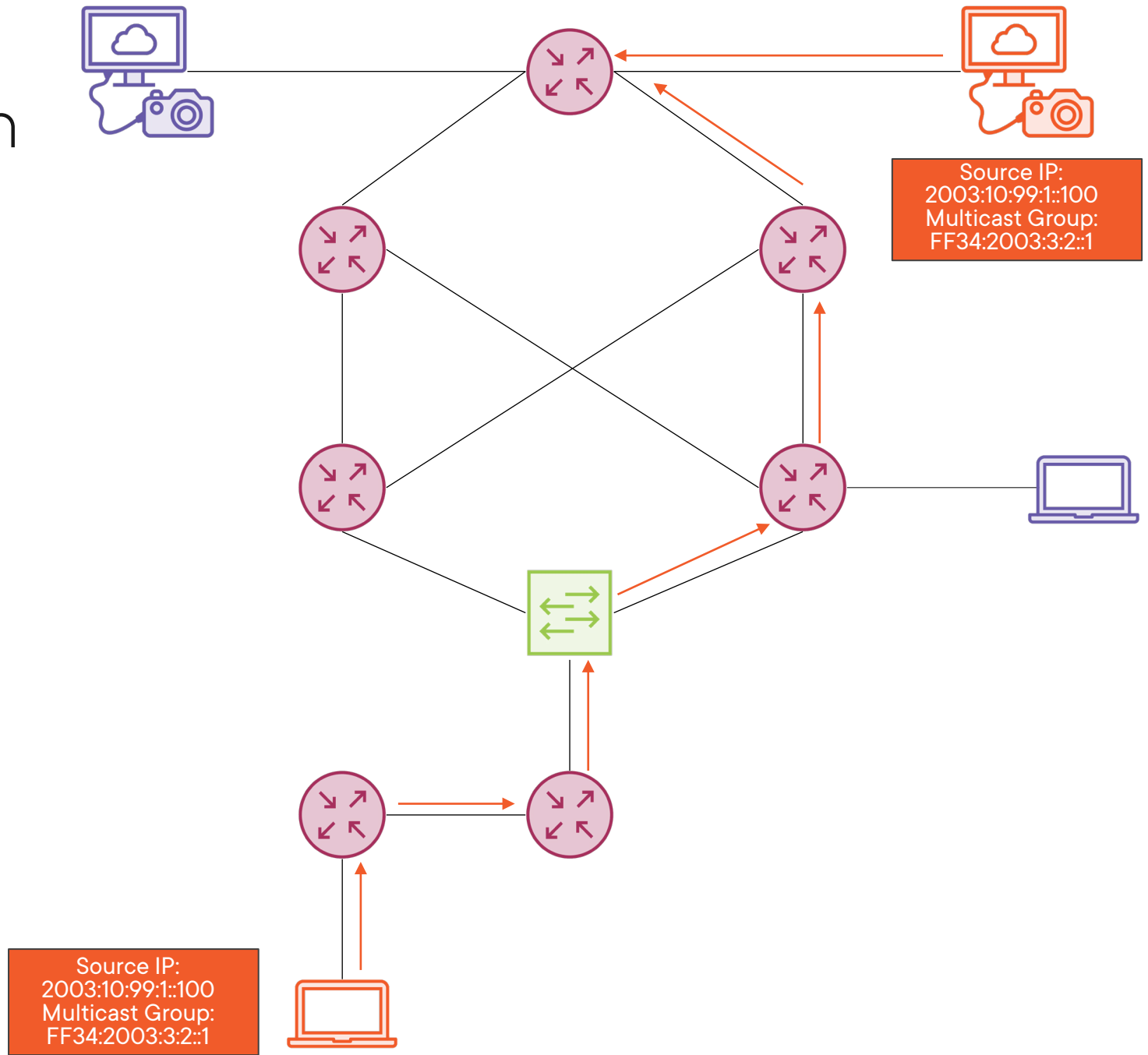
# Globomantics Multicast Deployment Continues



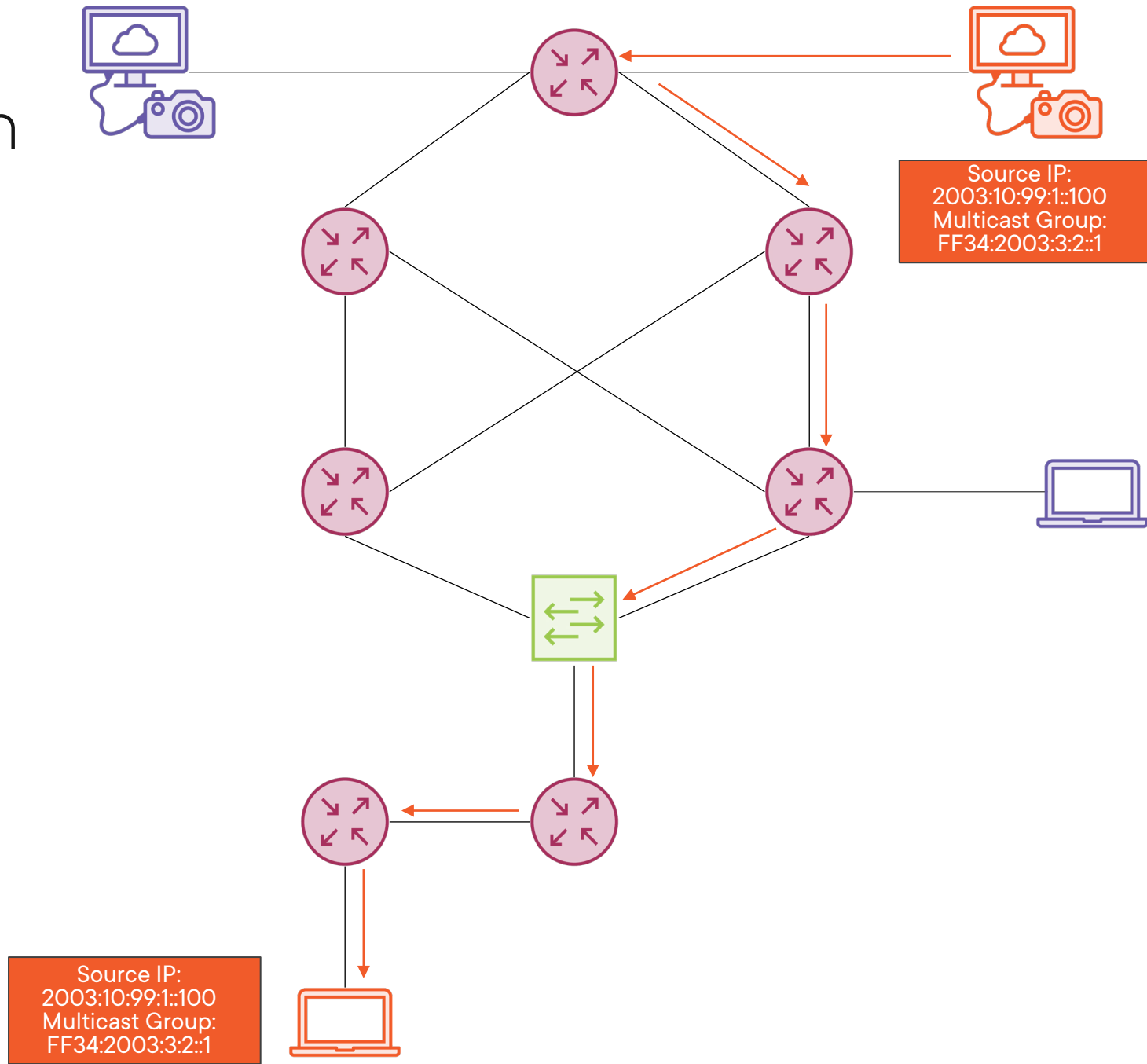
# Source Specific Multicast



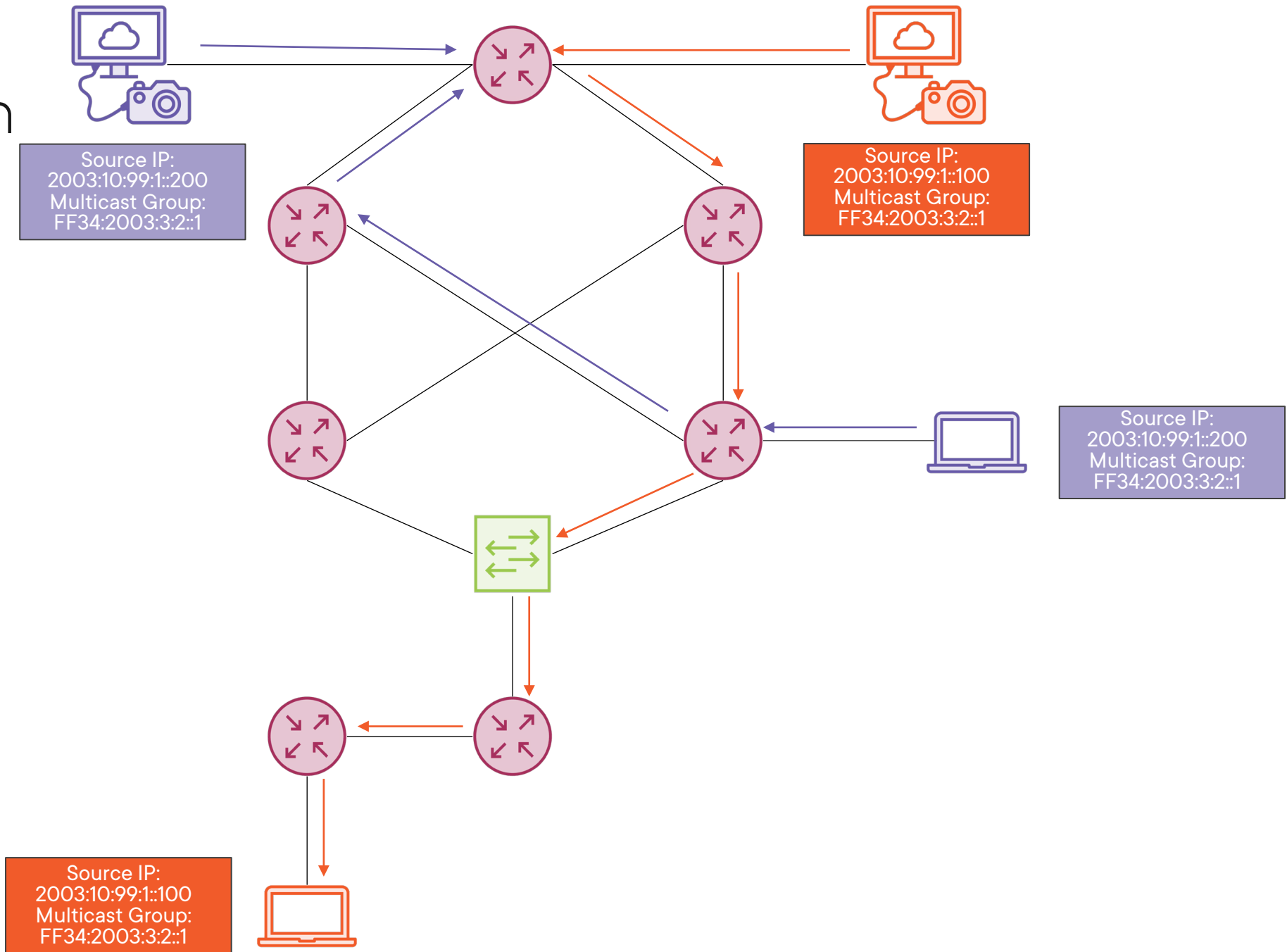
# PIM-SSM Operation



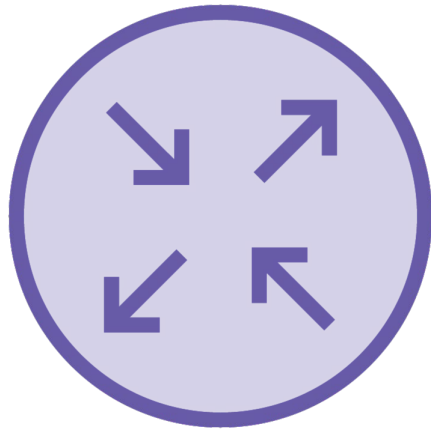
# PIM-SSM Operation



# PIM-SSM Operation



# PIM-SSM Requirements



**Network**  
**Must Support SSM**  
**Groups**



**Receiver**  
**Must Support MLDv2**



**Sources**  
**Receiver Must Know**  
**Sources to Request**



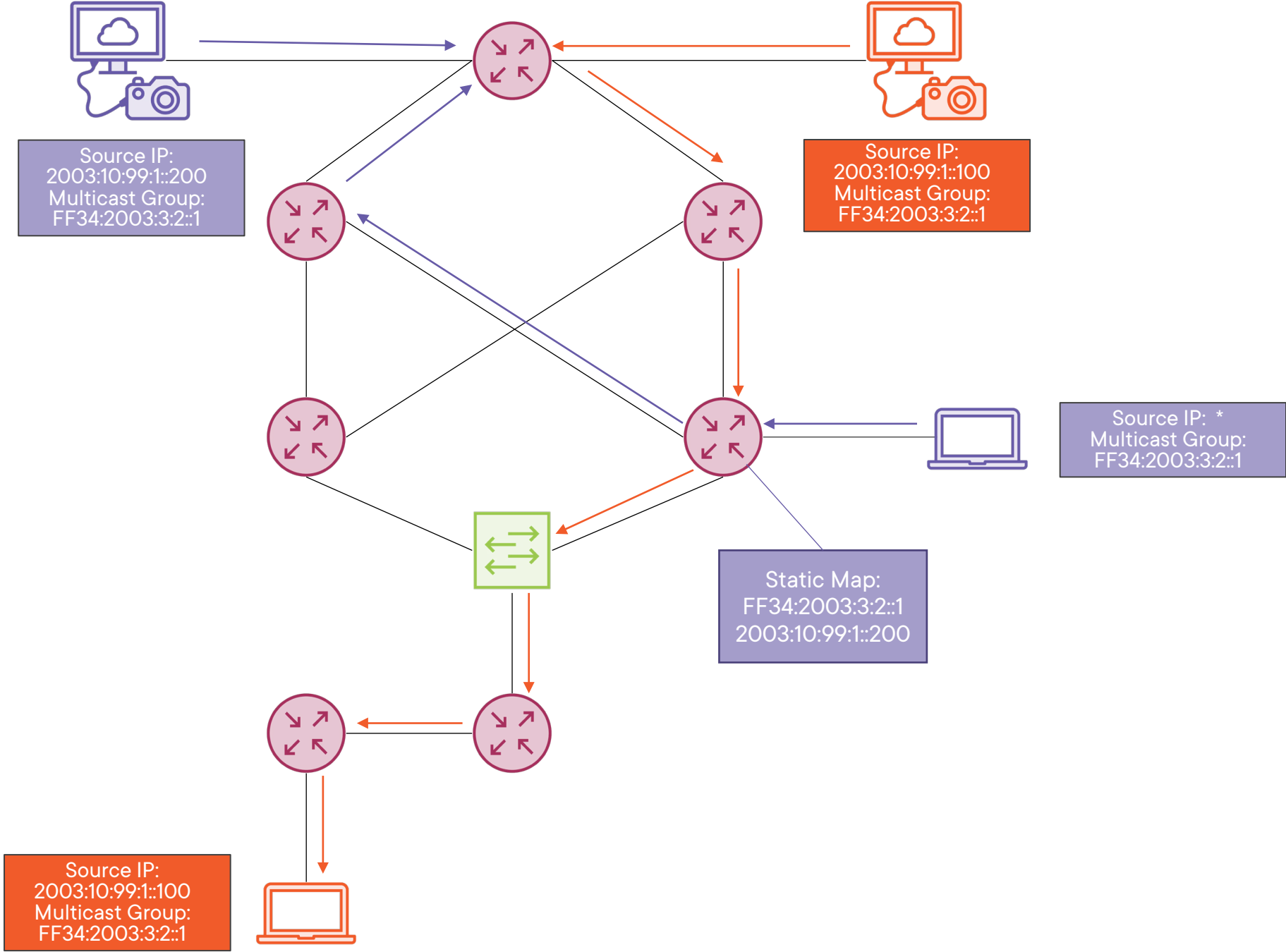


Every Rule Has Exceptions

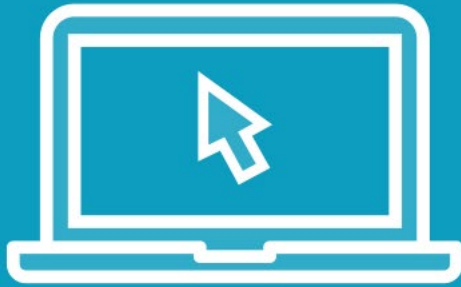
We can statically map ASM  
Reports to SSM PIM Joins



# ASM to SSM Mapping



# Demo

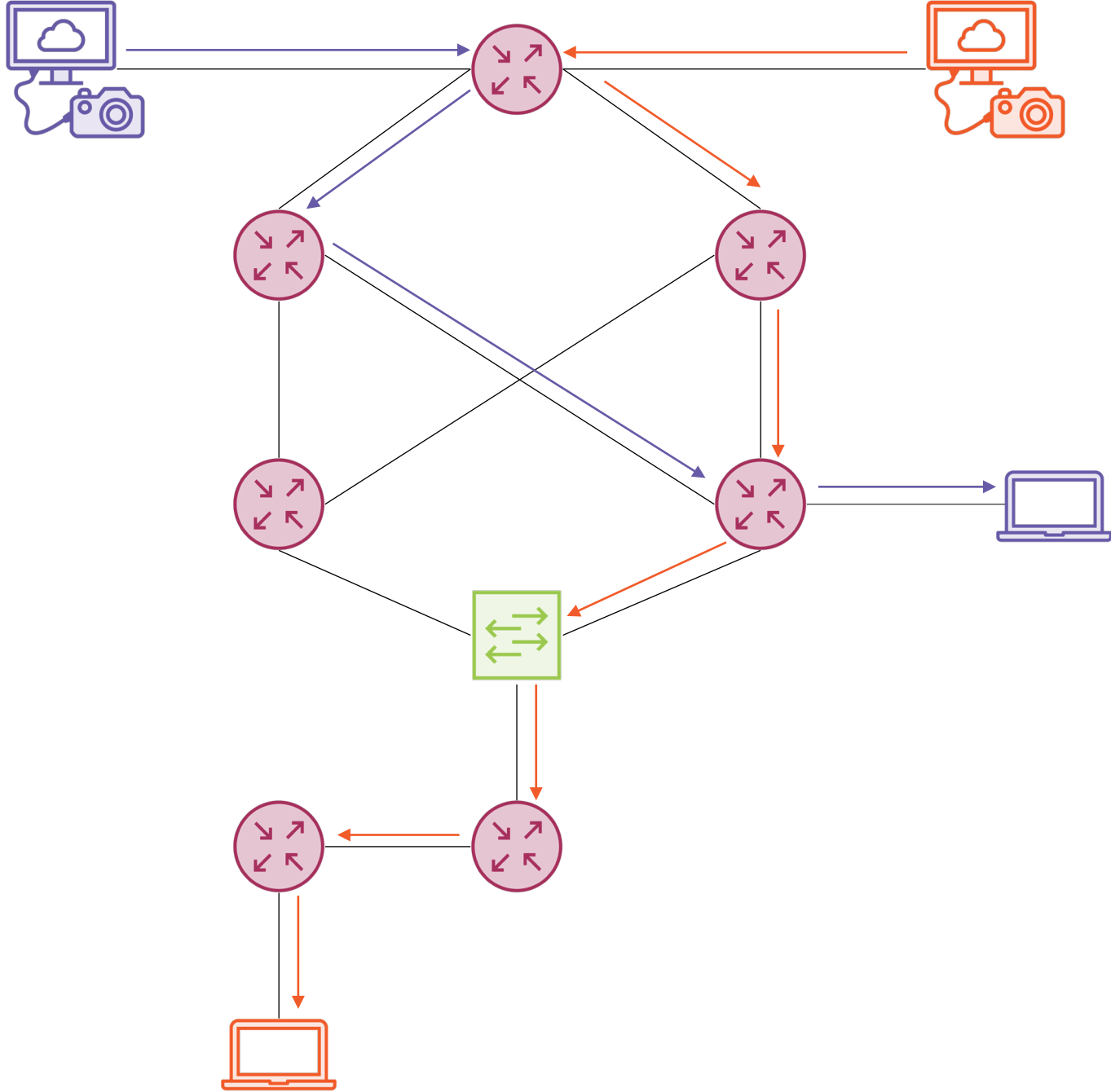


## IPv6 PIM-SSM Join Process

- Use MLDv2 to request multicast
- Check PIM Joins and traffic flow



# Source Specific Multicast



# MLDv2 Report

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	fe80:10:10:1::100	ff02::16	ICMPv6	146	Multicast Listener Report Message v2
<p>&gt; Frame 1: 146 bytes on wire (1168 bits), 146 bytes captured (1168 bits) on interface eth0, id 0</p> <p>&gt; Ethernet II, Src: aa:bb:cc:00:08:00 (aa:bb:cc:00:08:00), Dst: IPv6mcast_16 (33:33:00:00:00:16)</p> <p>&gt; Internet Protocol Version 6, Src: fe80:10:10:1::100, Dst: ff02::16</p> <p>▼ Internet Control Message Protocol v6</p> <ul style="list-style-type: none"><li>Type: Multicast Listener Report Message v2 (143)</li><li>Code: 0</li><li>Checksum: 0x2dbd [correct]</li><li>[Checksum Status: Good]</li><li>Reserved: 0000</li><li>Number of Multicast Address Records: 3</li><li>▼ Multicast Address Record Exclude: ff02::2<ul style="list-style-type: none"><li>Record Type: Exclude (2)</li><li>Aux Data Len: 0</li><li>Number of Sources: 0</li><li>Multicast Address: ff02::2</li></ul></li><li>▼ Multicast Address Record Exclude: ff02::1:ff00:100<ul style="list-style-type: none"><li>Record Type: Exclude (2)</li><li>Aux Data Len: 0</li><li>Number of Sources: 0</li><li>Multicast Address: ff02::1:ff00:100</li></ul></li><li>▼ Multicast Address Record Include: ff34:2003:3:2::1<ul style="list-style-type: none"><li>Record Type: Include (1)</li><li>Aux Data Len: 0</li><li>Number of Sources: 1</li><li>Multicast Address: ff34:2003:3:2::1</li><li>Source Address: 2003:10:99:1::100</li></ul></li></ul>						



# IPv6 PIM-SSM Join/Prune

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	fe80:10:10:255::2	ff02::d	PIMv2	124	Join/Prune

```
> Frame 1: 124 bytes on wire (992 bits), 124 bytes captured (992 bits) on interface eth0, id 0
> Ethernet II, Src: 50:00:00:09:00:01 (50:00:00:09:00:01), Dst: IPv6mcast_0d (33:33:00:00:00:0d)
> Internet Protocol Version 6, Src: fe80:10:10:255::2, Dst: ff02::d
v Protocol Independent Multicast
  0010 .... = Version: 2
  .... 0011 = Type: Join/Prune (3)
  Reserved byte(s): 00
  Checksum: 0x8e94 [correct]
  [Checksum Status: Good]
v PIM Options
  v Upstream-neighbor: fe80:10:10:255::1
    Address Family: IPv6 (2)
    Encoding Type: Native (0)
    Unicast: fe80:10:10:255::1
  Reserved byte(s): 00
  Num Groups: 1
  Holdtime: 210
  v Group 0
    v Group 0: ff34:2003:3:2::1/128
      Address Family: IPv6 (2)
      Encoding Type: Native (0)
      > Flags: 0x00
      Masklen: 128
      Group: ff34:2003:3:2::1
    v Num Joins: 1
      v IP address: 2003:10:99:1::100/128 (S)
        Address Family: IPv6 (2)
        Encoding Type: Native (0)
        > Flags: 0x04, Sparse
        Masklen: 128
        Source: 2003:10:99:1::100
      Num Prunes: 0
```



# Summary



## **Topics:**

- Recap of PIM-SSM

## **Demos:**

- Source-Specific Multicast Traffic Flow

## **Packet Analysis:**

- MLDv2 Report
- PIM Join/Prune for SSM

