85th IETF – Atlanta, USA

draft-asghar-pim-explicit-rpf-vector-00

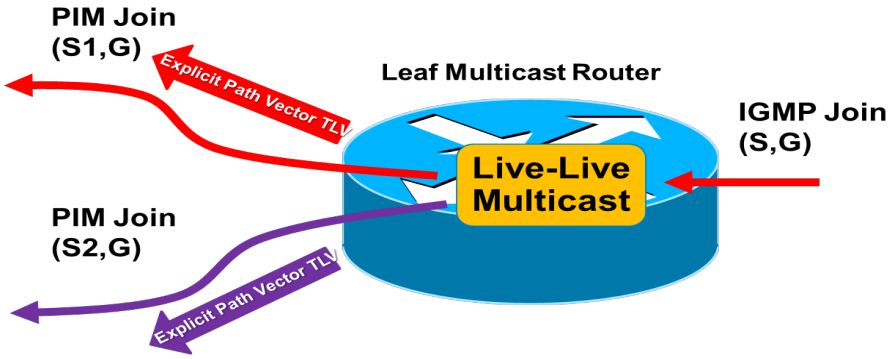
	jasghar@cisco.com
IJ. Wijnands	ice@cisco.com
	sowkrish@cisco.com
V. Arya	varya@directv.com

Problem Statement

- This draft documents a solution to build multicast trees via an explicitly configured path sent in the PIM join
- Describes a special use of the Reverse Path Forwarding (RPF) Vector TLV as defined in [RPC 5496]

Motivation behind this draft

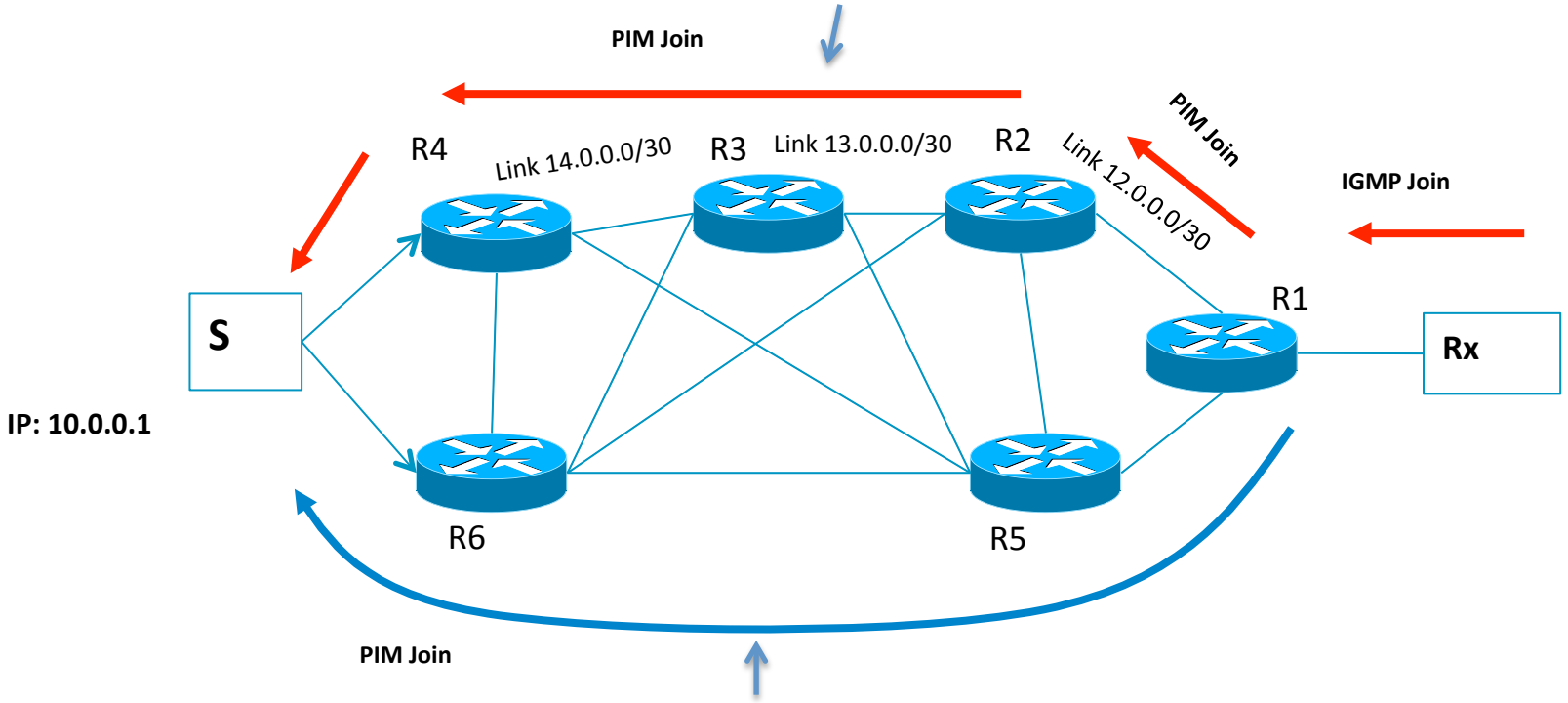
- **A stack of RPF vectors can be specified to route PIM Joins semi-explicitly using the neighbor addresses:**
  1. However, upon a link/node failure the addresses within a stack of RPF vectors could be unreachable
  2. In this case, router will perform a RIB unicast source reachability lookup and route the PIM Join around the link/node failover and not use the desired RPF vector stack path
  3. In a live-live multicast network or Ring topology, both disjoint multicast trees could be routed along the same path, and not longer be disjoint
- Our draft addresses these issues by proposing a new encoding method that allows to explicitly route PIM Joins using Explicit PIM Vector TLV Stack:
  - **draft-asghar-pim-explicit-rpf-vector-00**



Solution Example (this draft):
Explicit Path Vector TLV Stack

1. Multicast Source IP: S = 10.0.0.1
   - R2: 12.0.0.1
   - R3: 13.0.0.1
   - R4: 14.0.0.1

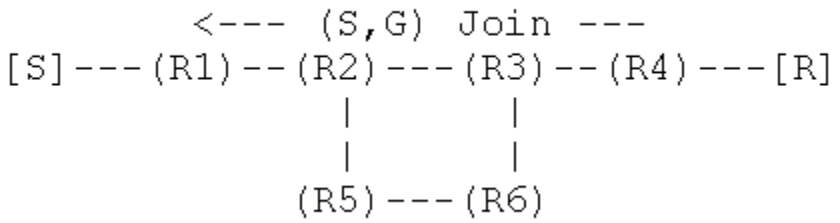
Explicitly routed path for PIM Join using RPF vector TLV stack



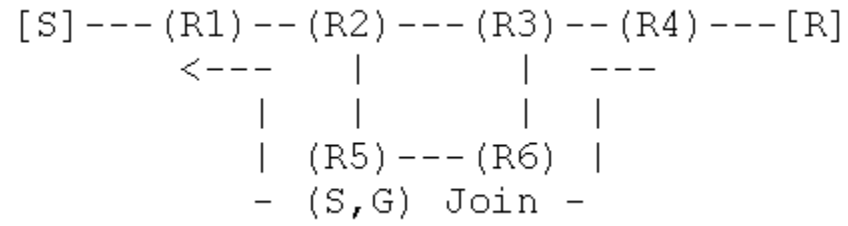
RIB RPF computed path for PIM Join

Solution (this draft)

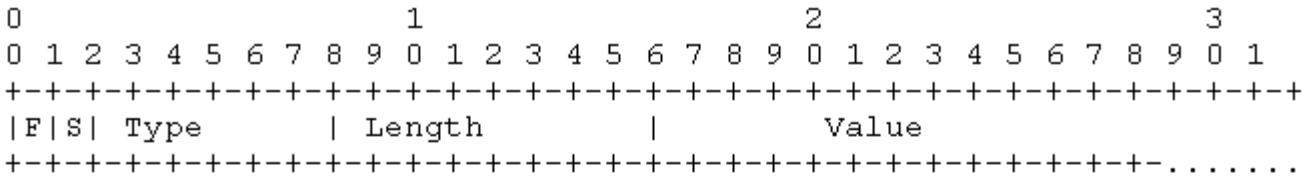
- Multicast join path R4->R3->R2->R1, where the forwarding states are installed hop-by-hop dynamically



- Multicast join path R4->R3->R6->R5->R2->R1, where the multicast JOIN is explicitly routed to the source hop-by-hop using the explicit RPF vector list



Explicit RPF Vector Attribute TLV Format



F bit

Forward Unknown TLV. If this bit is set the TLV is forwarded regardless of whether the router understands the Type. If the TLV is known the F bit is ignored.

S bit

Bottom of Stack. If this bit is set then this is the last TLV in the stack.

Type

The Vector Attribute type is 1.

Length

Length depending on Address Family of Encoded-Unicast address.

Value

Encoded-Unicast address.

Moving forward

- Looking for your feedback
- We are open to co-authoring