

draft-coras-lisp-re(04)

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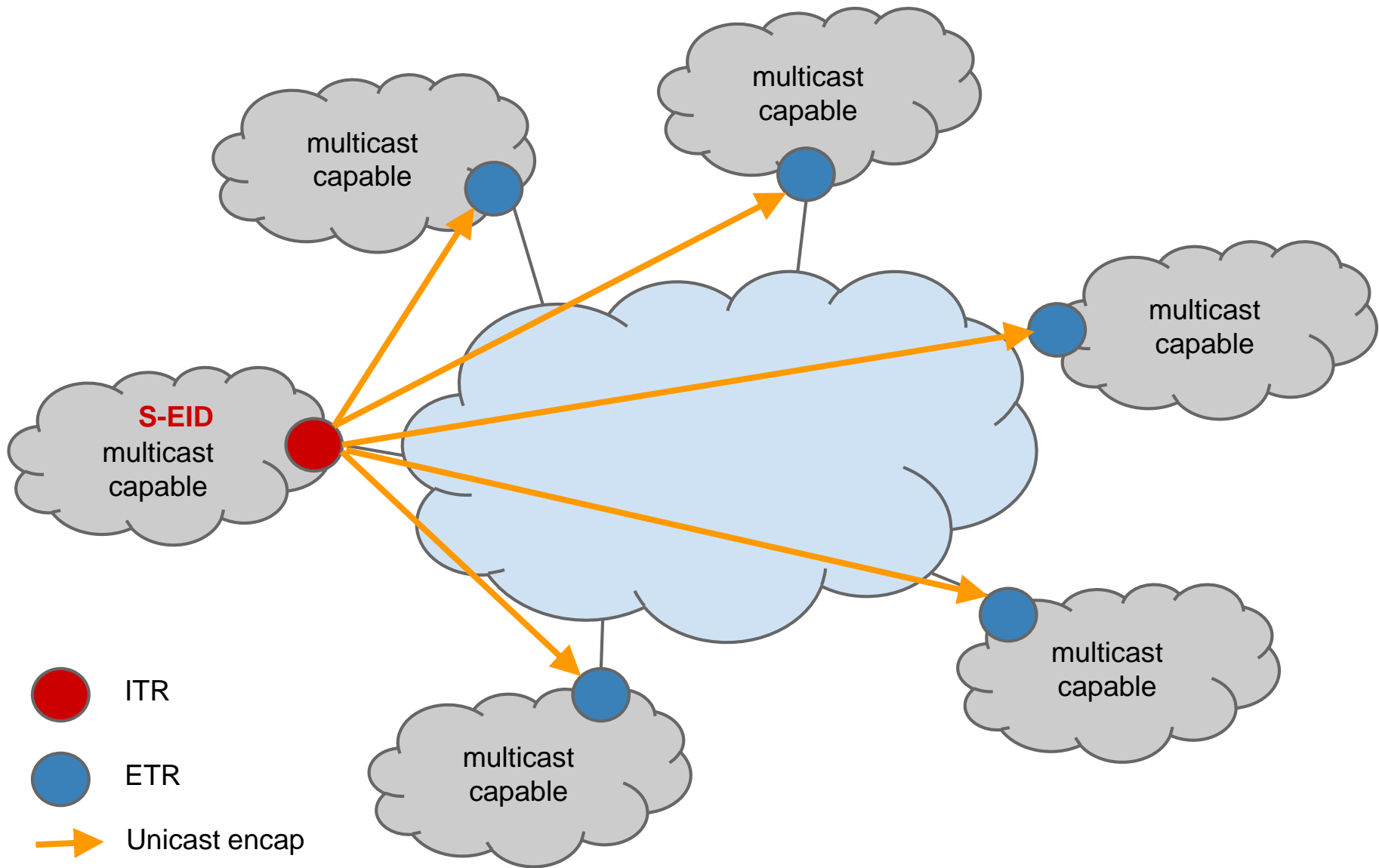
Cisco Systems

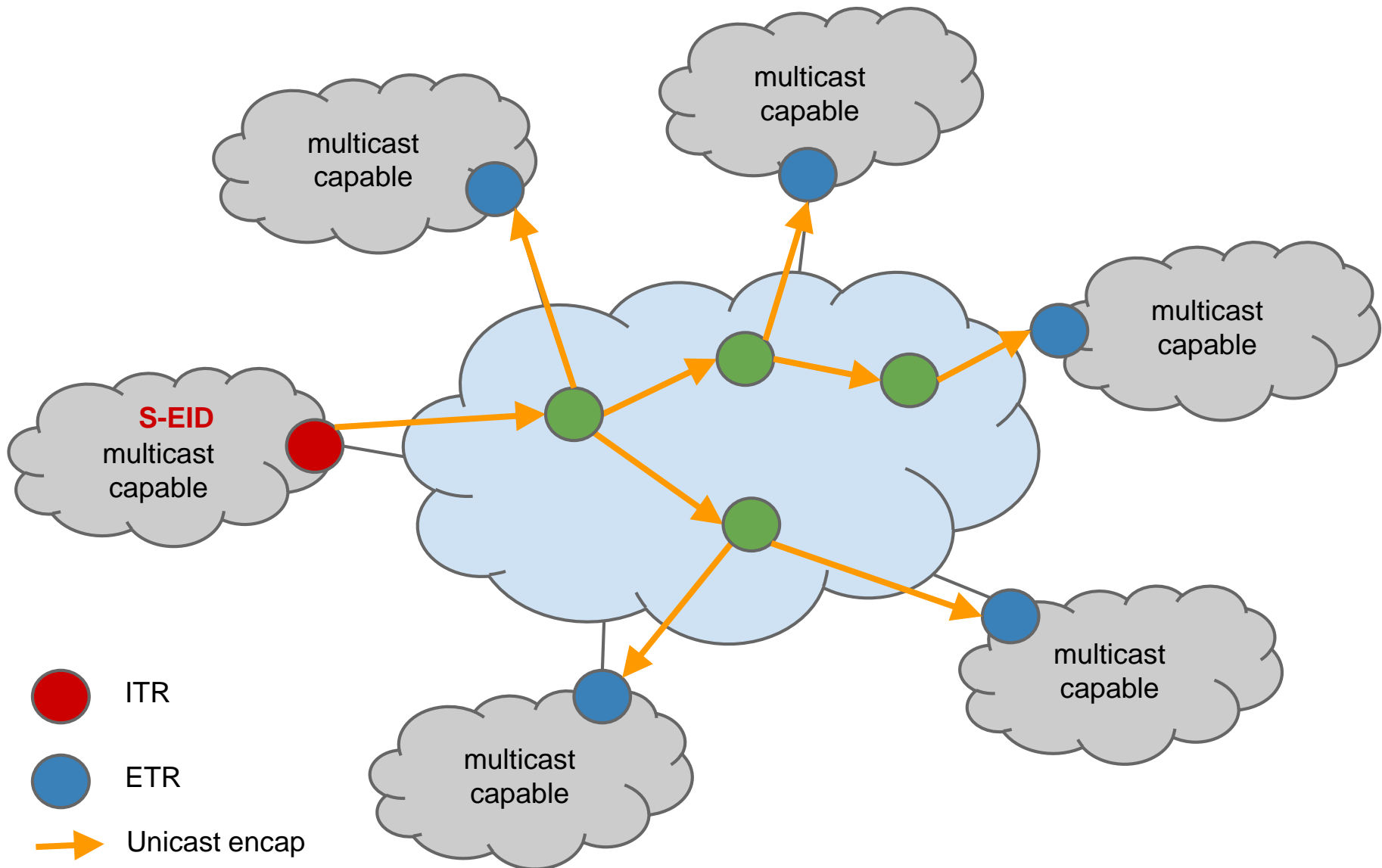
Dino Farinacci

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Context

- There exists a need for efficient one-to-many inter-domain packet delivery
- No inter-domain multicast infrastructure
- Mobile multicast sources
- Control over inter-domain packet replication





LISP Replication Engineering (RE)

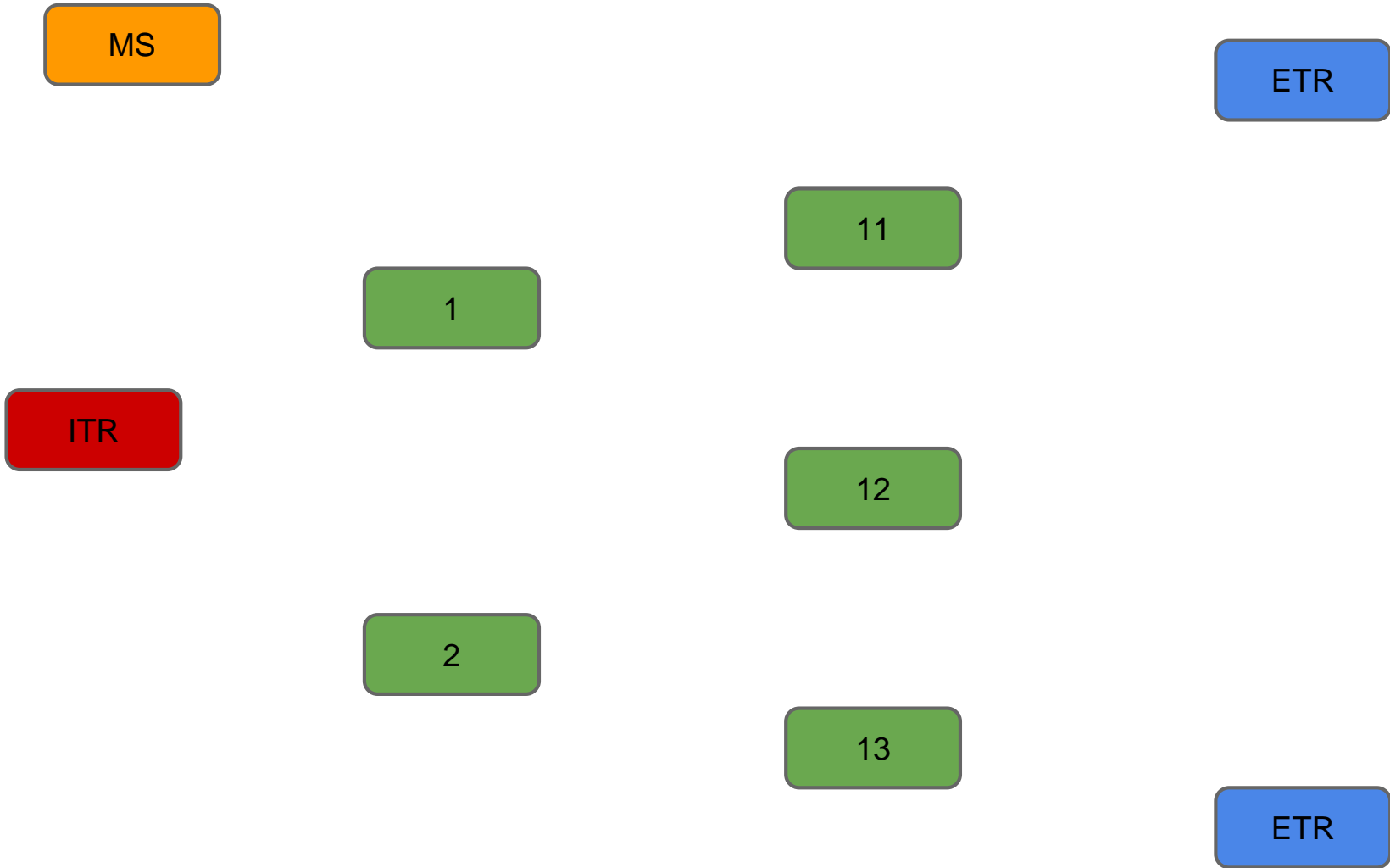
- Use RTRs to offload replication load of ITRs
 - Build a multi-level RTR hierarchy
- Procedure
 - Overlay topology is encoded as an RLOC in the mapping database entry for (S-EID, G)
 - PIM/LISP mr-signaling used to build distribution trees
 - ETRs join leaf RTRs
 - Level n RTRs join level (n-1) RTRs
 - Level 0 RTR join the ITR

Overlay Management

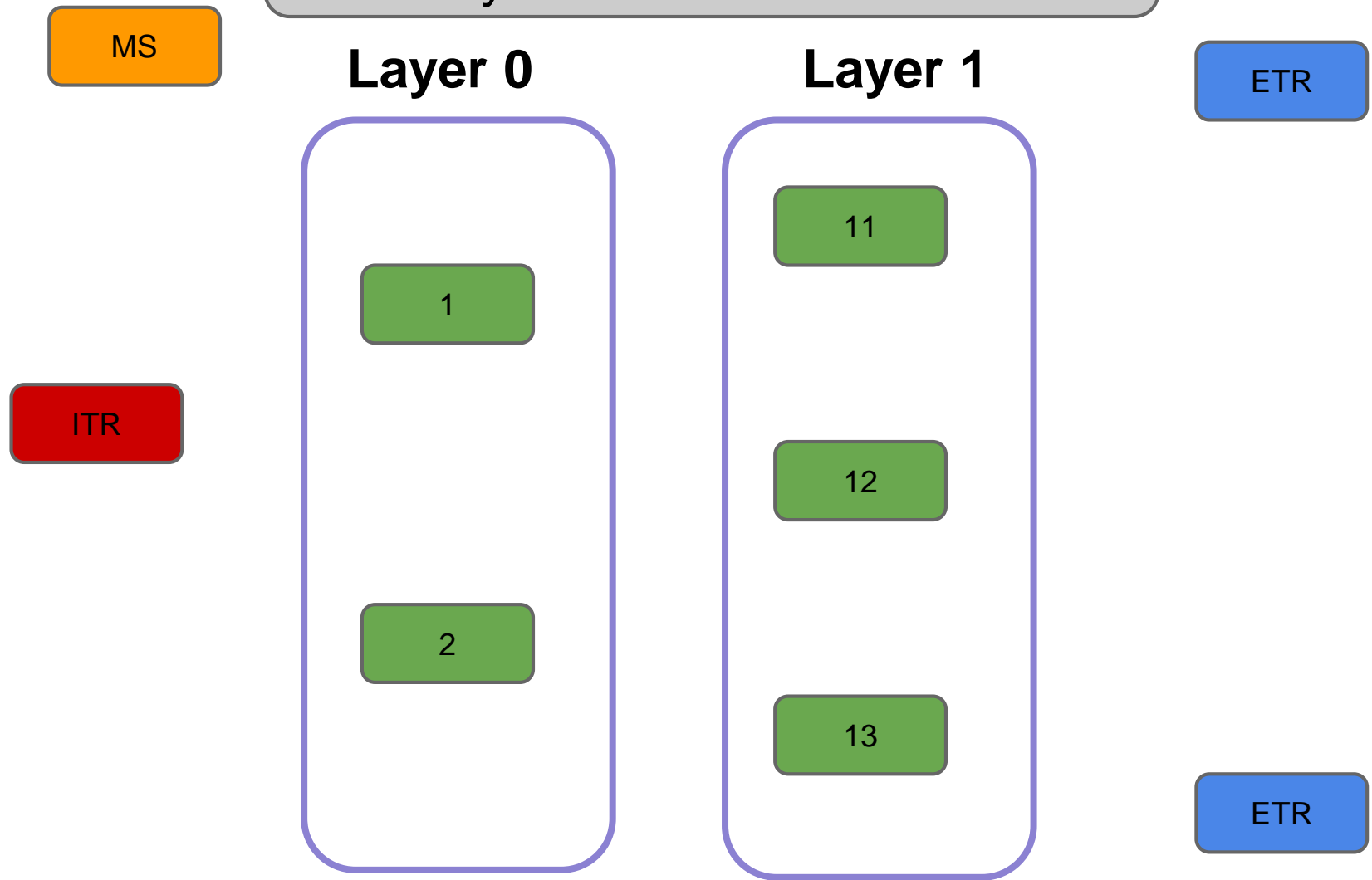
- Management can be performed by MS or a third party provisioning system
- Signaling used to detect router failures
- Graceful departures use make-before-break
- Overlay optimization can be done online if topology can be actively measured

Protocol Details

Consider the following topology



RTRs are organized in a multi-layer hierarchy



MS

The **RTRs** are aware of the **MS, (S-EID, G)** and what **RLOCs** they should use in the distribution tree.

RTR use Replication List Entries (**RLE**) LCAFs to encode their RLOCs and levels in the distribution tree

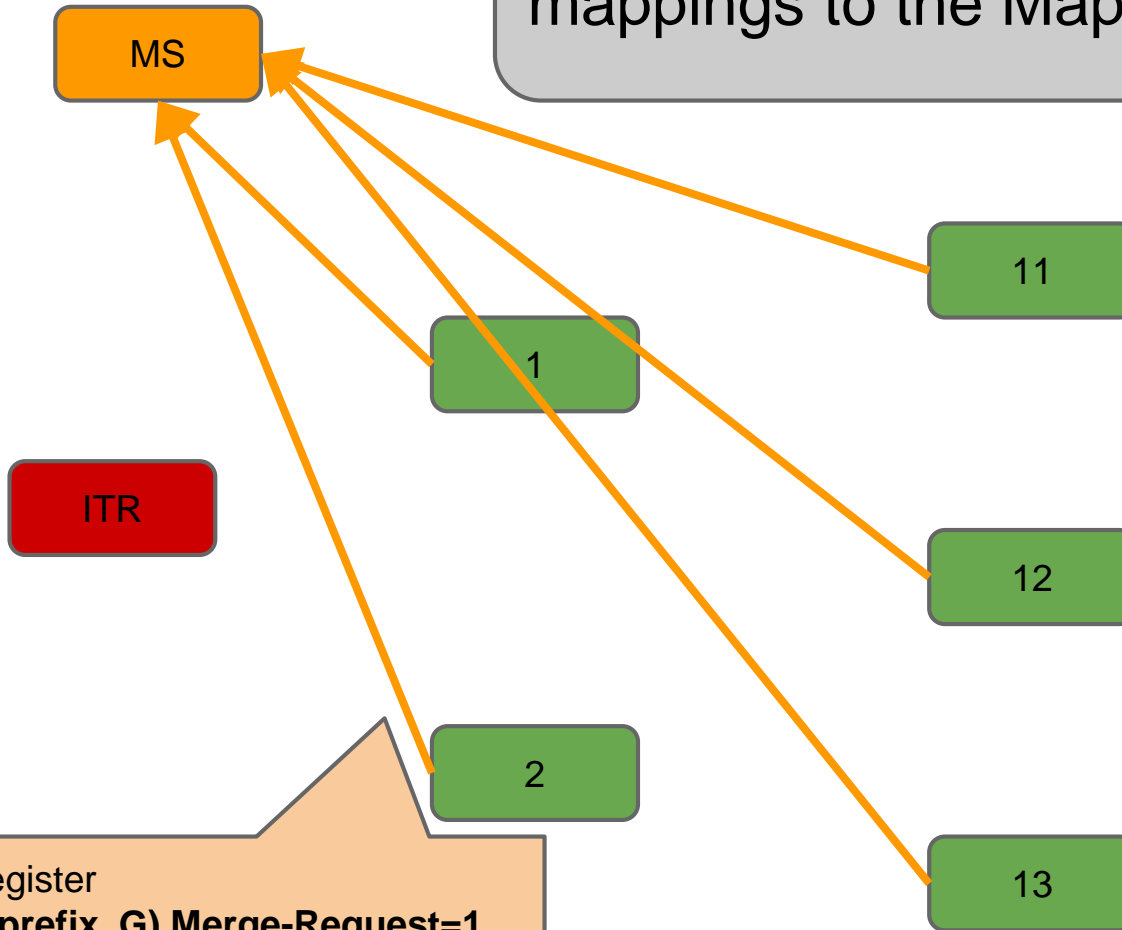
ITR

2

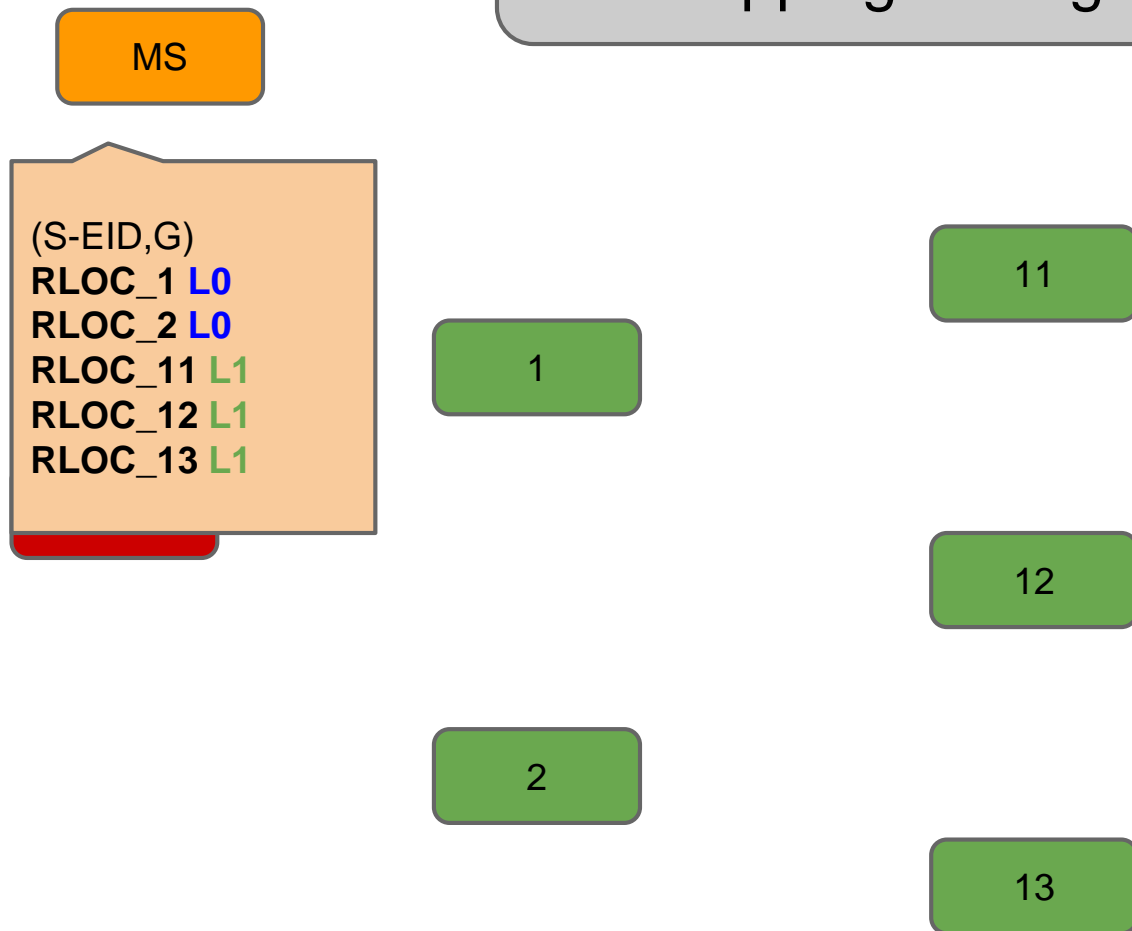
12

13

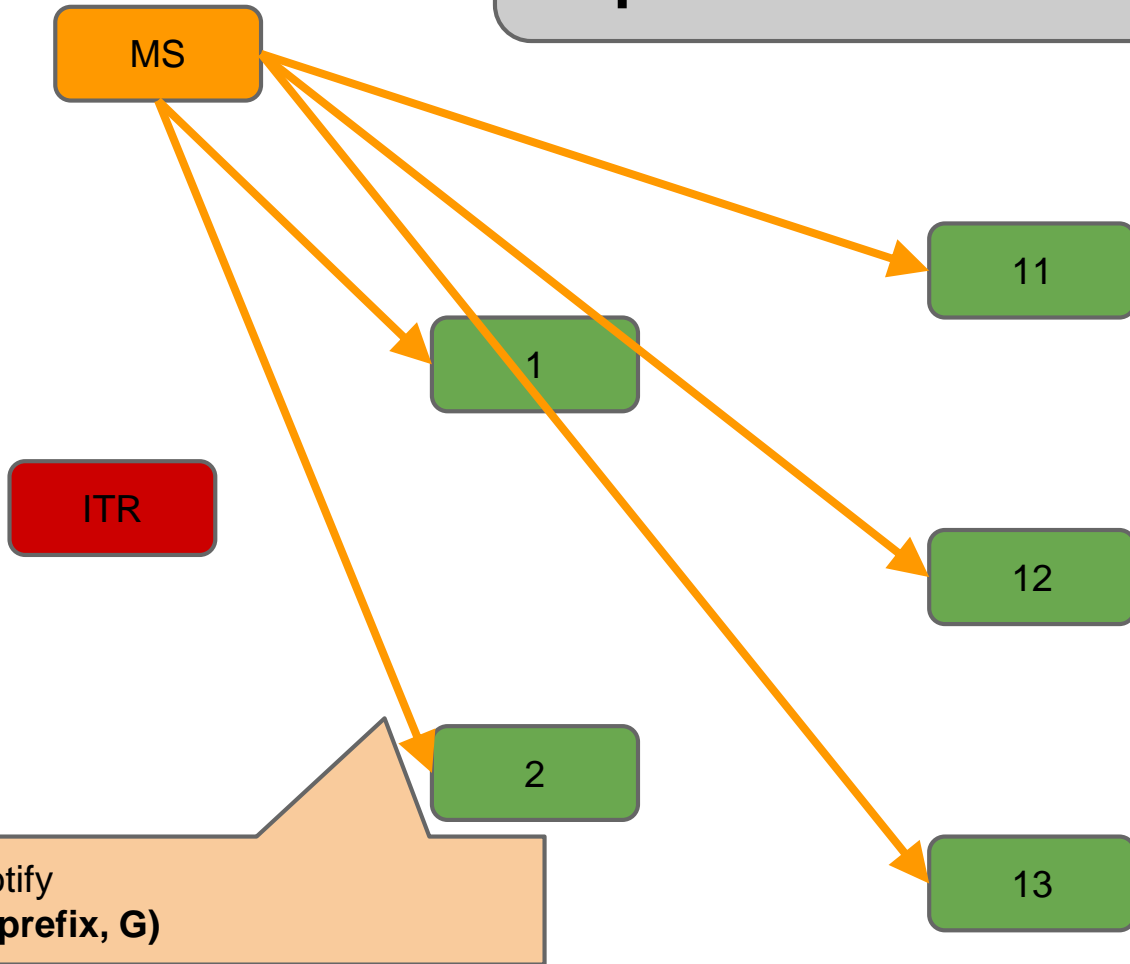
All RTRs Map-Register their **(S-EID,G)** mappings to the Map-Server.



The MS aggregates all registrations in one mapping having an RLE RLOC



The MS confirms the registrations with **Map-Notifies**



ETRs locate an upstream RTR by sending a Map-Request (S-EID, G)

MS

1

11

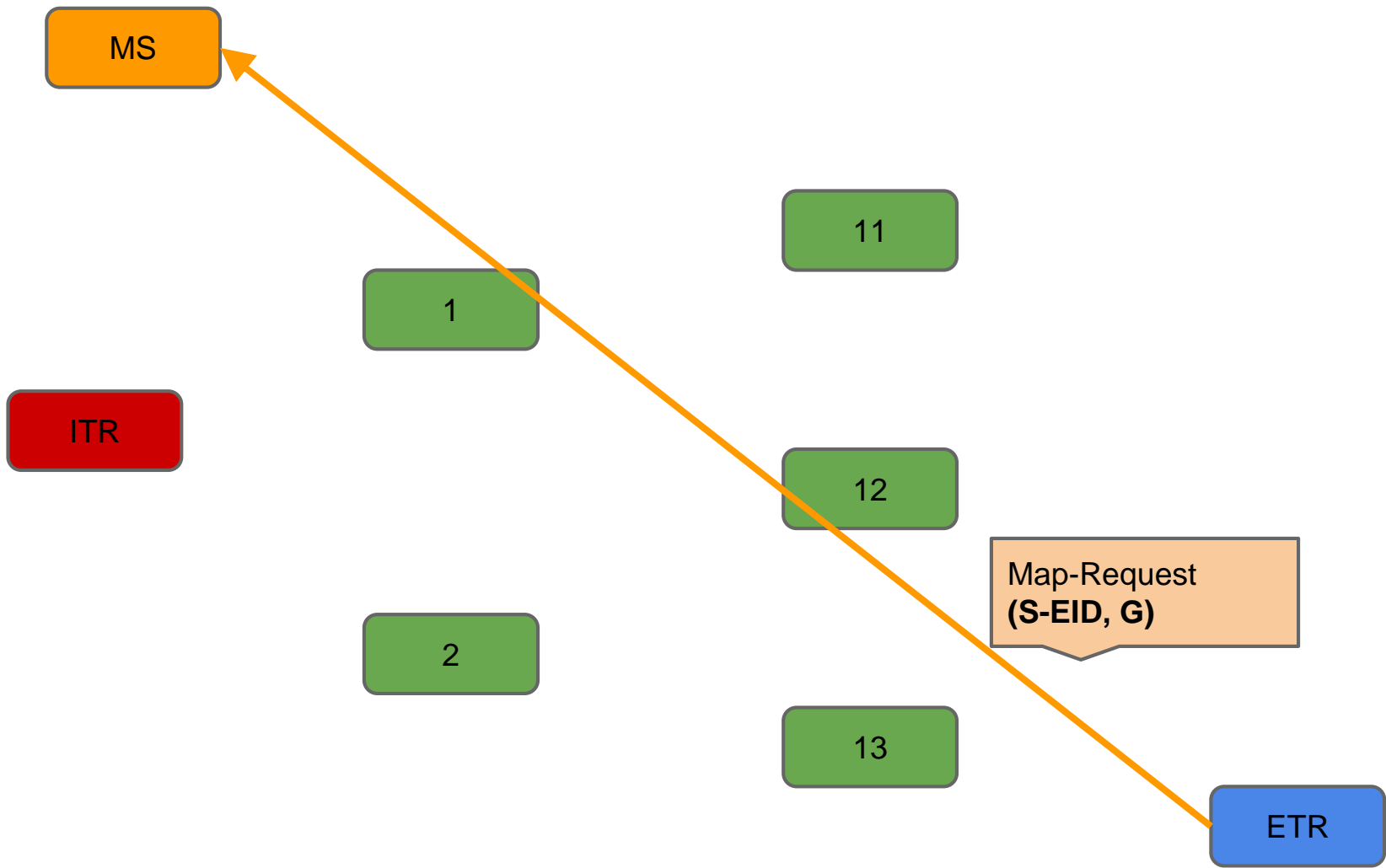
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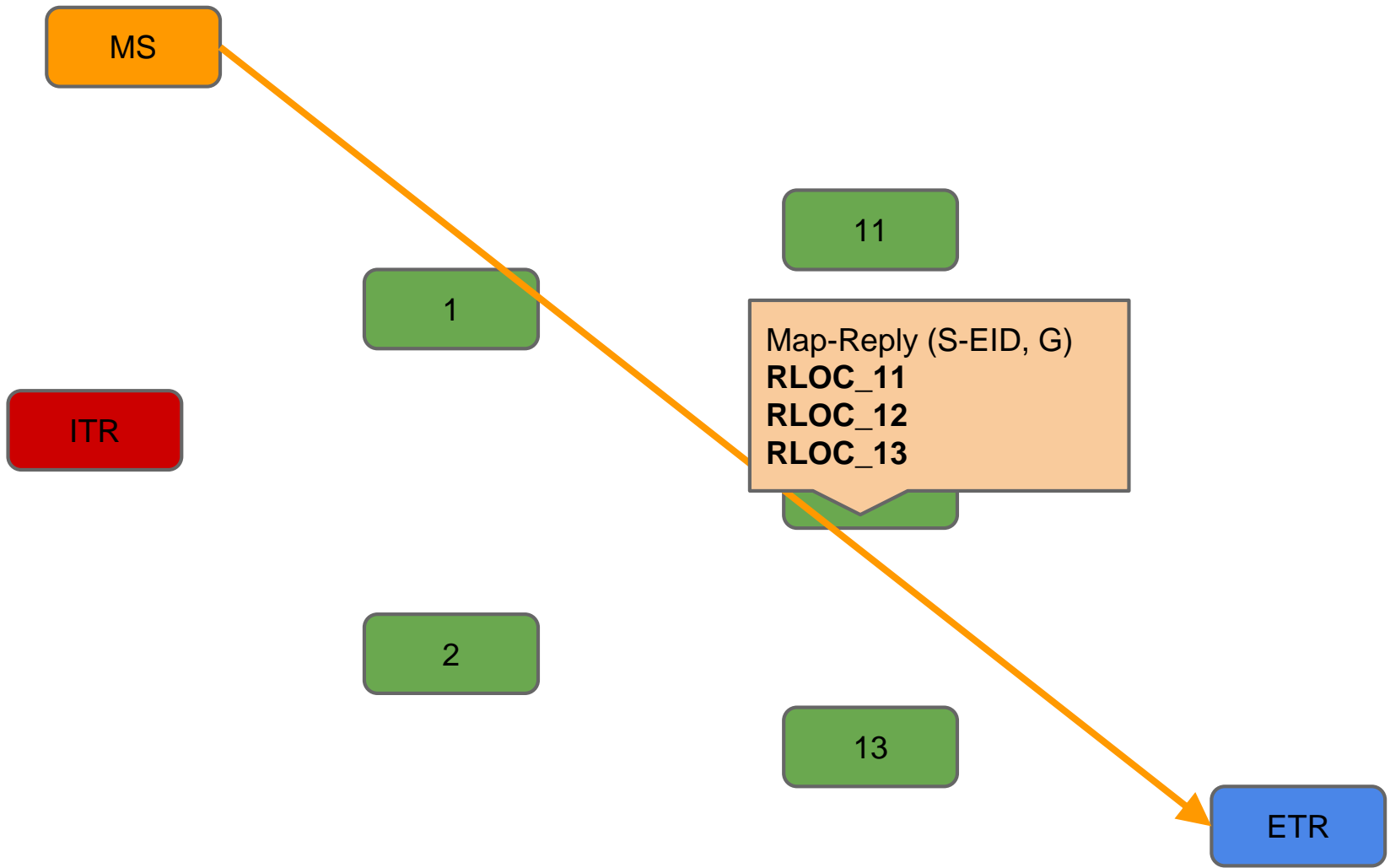
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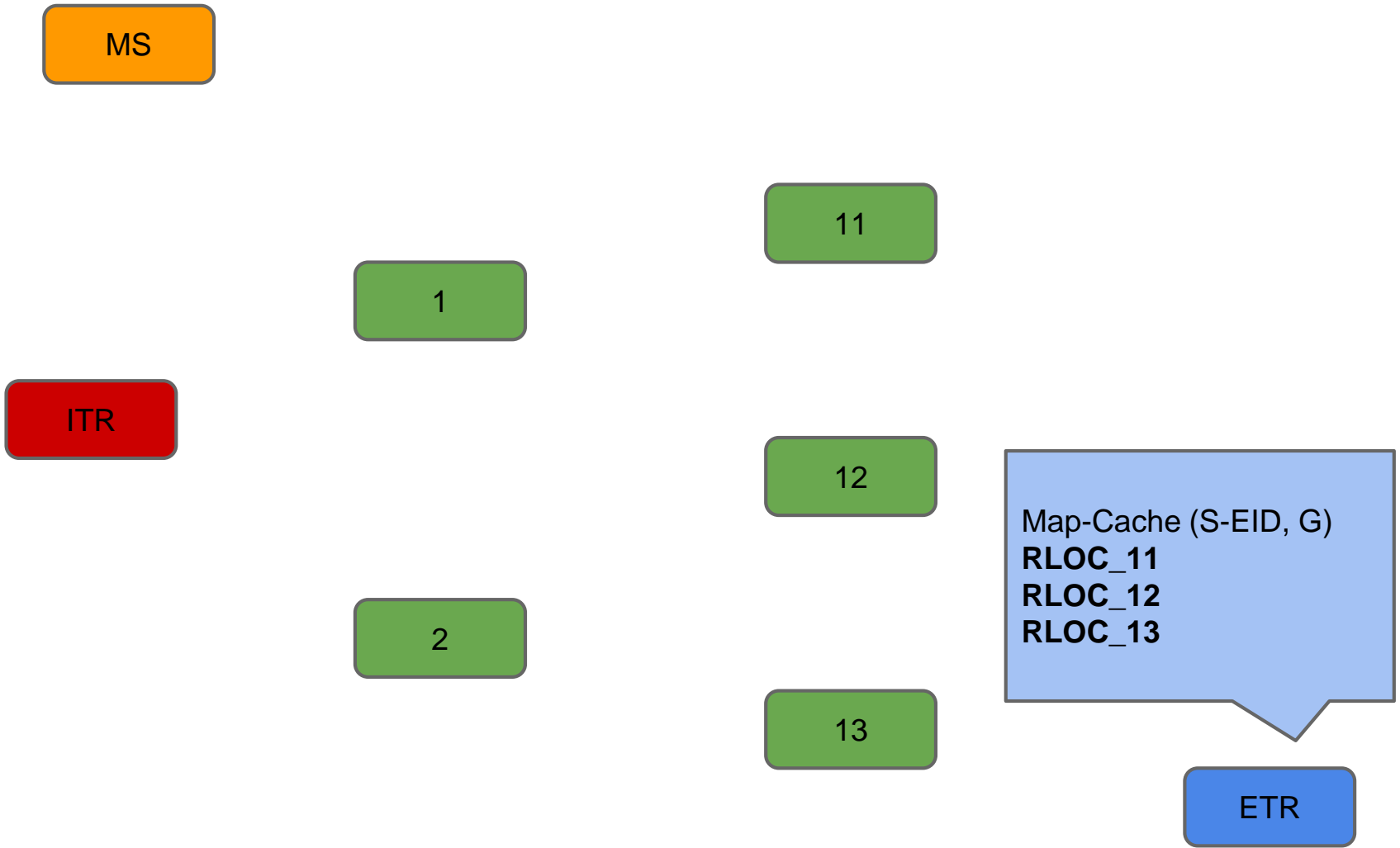
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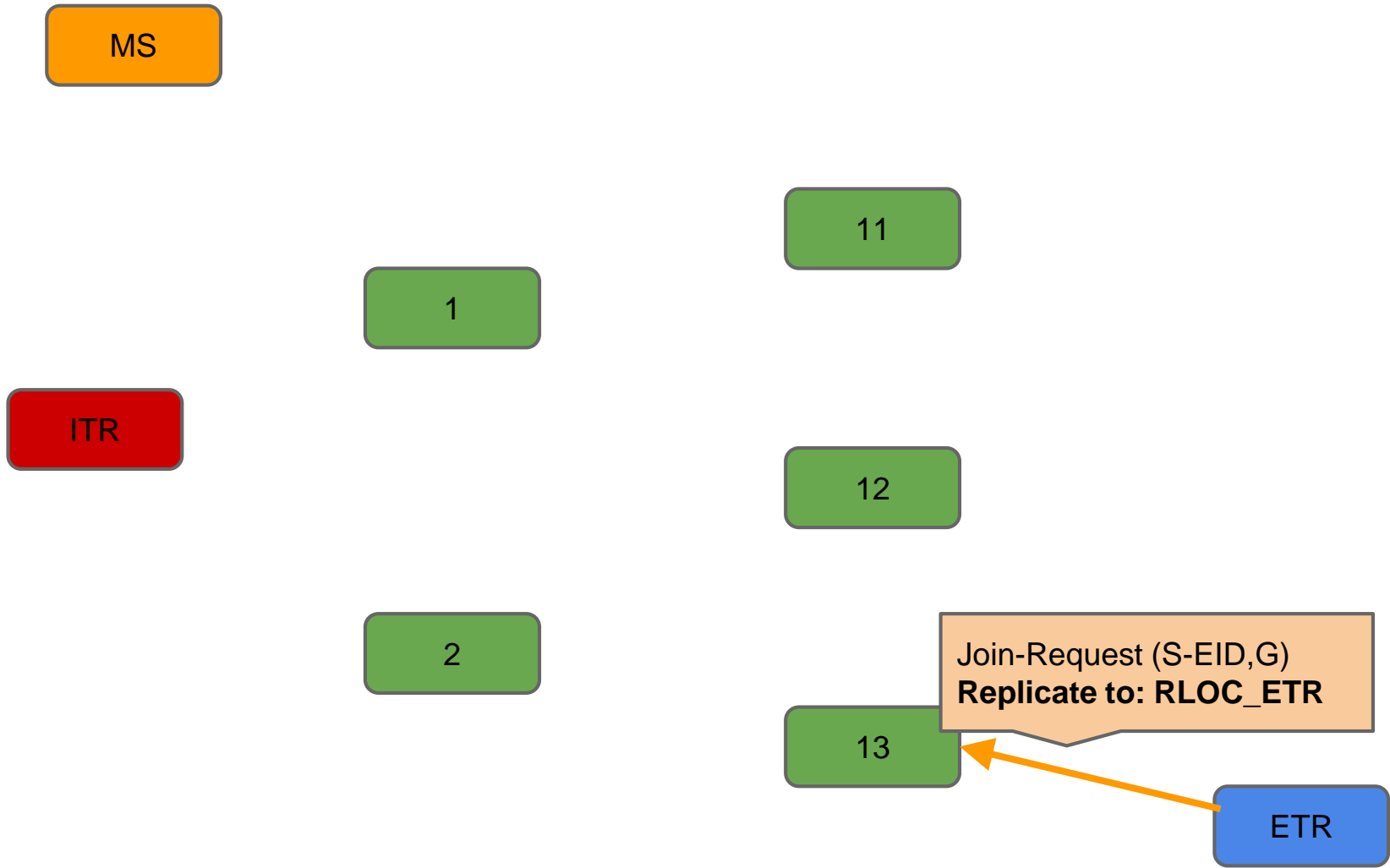
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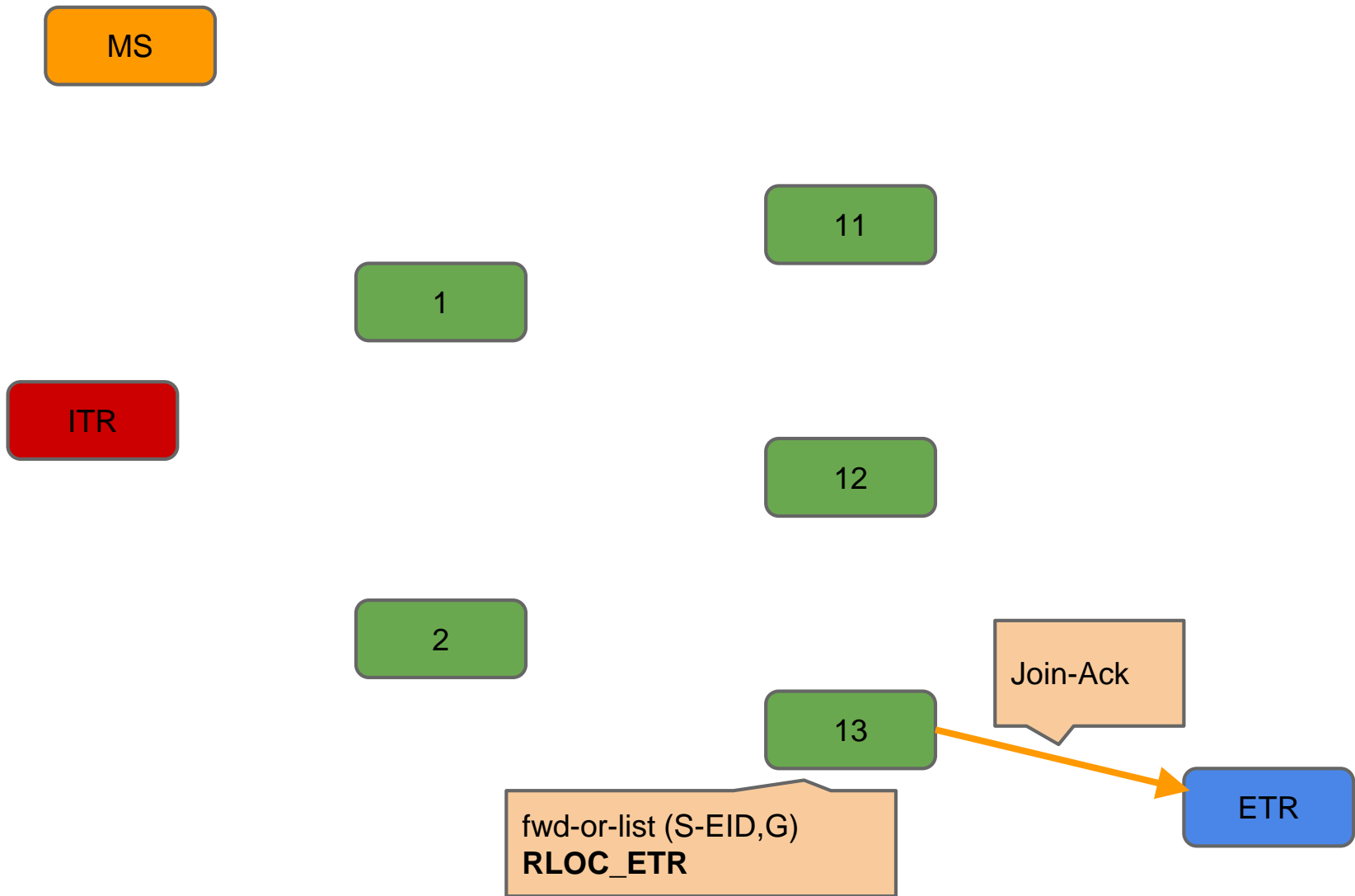
ETR





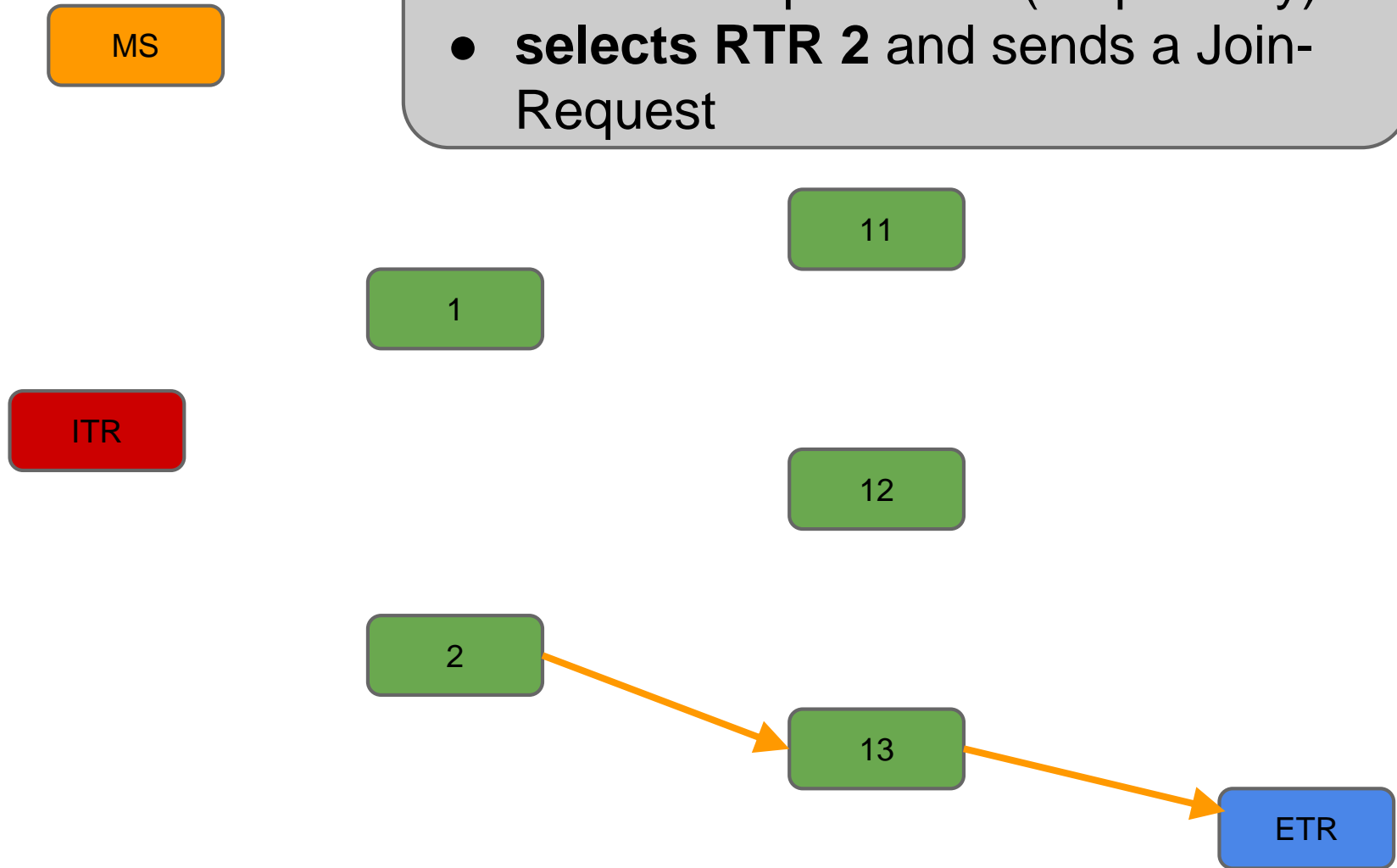






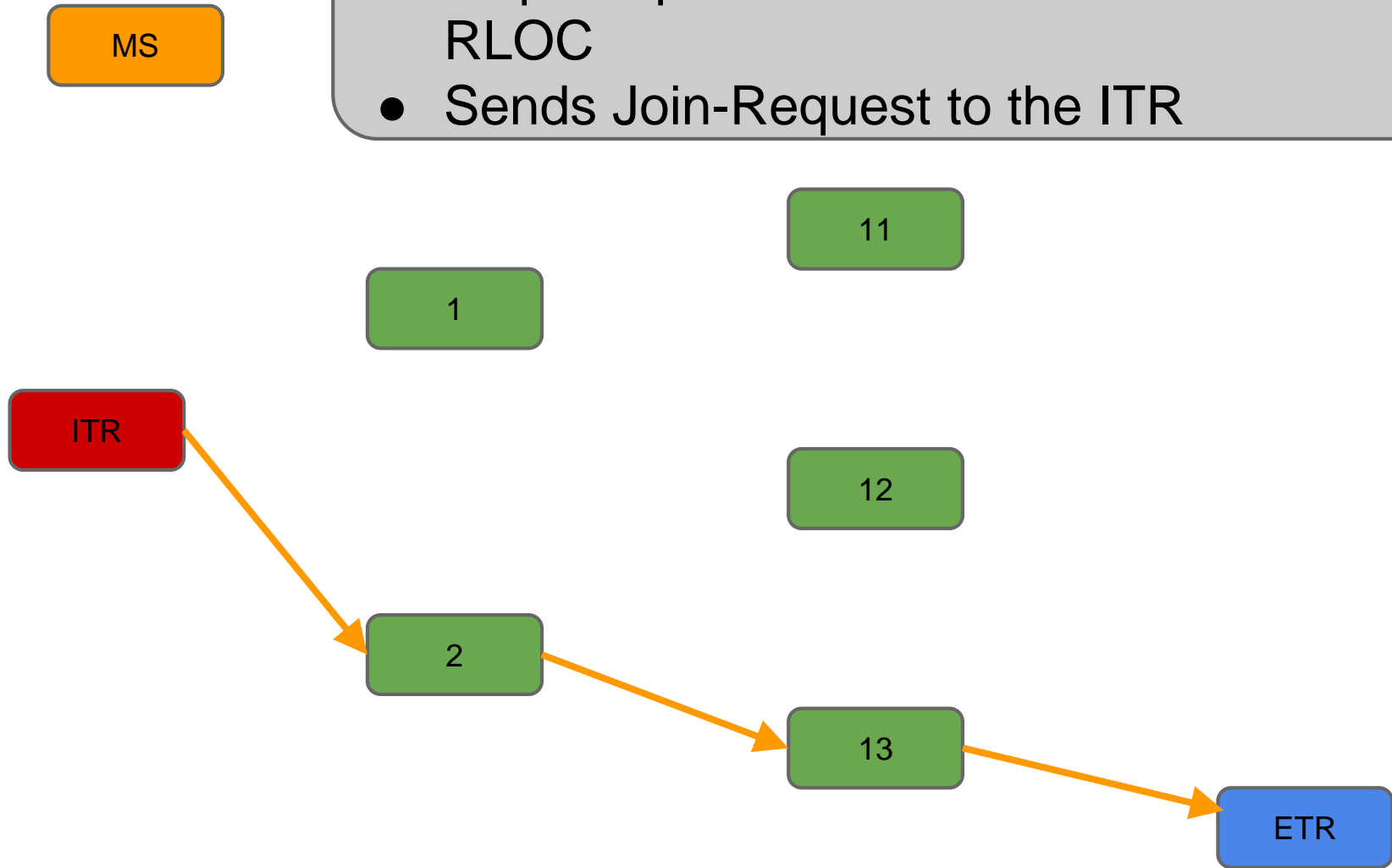
RTR 13

- knows its upstreams (Map-Notify)
- **selects RTR 2** and sends a Join-Request



RTR 2

- Map-Request S-EID to obtain ITR's RLOC
- Sends Join-Request to the ITR



Ongoing

Development

- 2 experimental implementations
- LISPmob will integrate LISP-RE in the next major release

Research/Implementation

- Overlay controller
- Doing many-to-many delivery (ASM)
- Anything the WG would like us to look into?

Questions?