



IETF 93 ROLL

Routing over Low-Power And Lossy Networks

Chairs:

Michael Richardson

Ines Robles



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Source: <https://www.ietf.org/about/note-well.html>

Meeting Materials

- Remote Participation
 - Jabber Room: roll@jabber.ietf.org
 - Meetecho: <http://www.meetecho.com/ietf93/roll>
- Etherpad:
 - <http://tools.ietf.org/wg/roll/minutes>
- Audio Streaming: To confirm
- Minutes taker:
- Jabber Scribe:
- **Please sign blue sheets :-)**

Agenda

- State of: (10 minutes)
 - Work item
 - ROLL I-D
 - Related I-D
 - Open Issues
- draft-robles-roll-useofrplinfo-00 (20 min)
- draft-thubert-roll-dao-projection-00 (20 min)
- Open floor (10 minute)

Milestones (cont.)

Milestone	Schedule
Submit draft about when to use RFC 6553, RFC 6554, and IPv6-in-IPv6 encapsulation to the IESG.	Aug 2015
Submit draft about how to compress RFC 6553, RFC 6554, and IP headers in the 6LoWPAN adaptation layer context to the IESG.	Nov 2015
Evaluate WG progress, recharter or close	Nov 2015

State of Active Internet-Drafts

draft-ietf-roll-admin-local-policy-00	RFC Editor Queue
draft-ietf-roll-applicability-ami-09	Addressing Issues from LC
draft-ietf-roll-applicability-home-building-03	New Version - Issues from LC Addressed
draft-ietf-roll-applicability-template-05	Stable - not to be published
draft-ietf-roll-trickle-mcast-09	RFC Editor Queue
draft-ietf-roll-mpl-parameter-configuration-02	In IESG, Issues to be addressed from LC.

Related Internet-Drafts

draft-robles-roll-useofrplinfo-00	Energy-awareness metrics global applicability guidelines	Slides Today
draft-thubert-roll-dao-projection-00	Root initiated routing state in RPL	Slides Today
draft-tan-roll-clustering-00	RPL-based Clustering Routing Protocol	Future Discussion

Open Tickets

Ticket	Summary
#169	Work Item Proposals
#170	Use of ESC Dispatch value in new IETF header compression
#171	Int-Dir review of draft-ietf-roll-mpl-parameter-configuration-06



When to use RFC 6553, 6554 and IPv6-in-IPv6 draft-robles-roll-useofrplinfo-00

MICHAEL RICHARDSON

INES ROBLES



Goal:

This document states different cases where RFC 6553, RFC 6554 and IPv6-in-IPv6 encapsulation is required to set the bases to help defining the compression of RPL routing information in LLN environments.

Why we need?

RFC 6553: to transmit routing information using HBH (RPL Option) e.g. loop avoidance

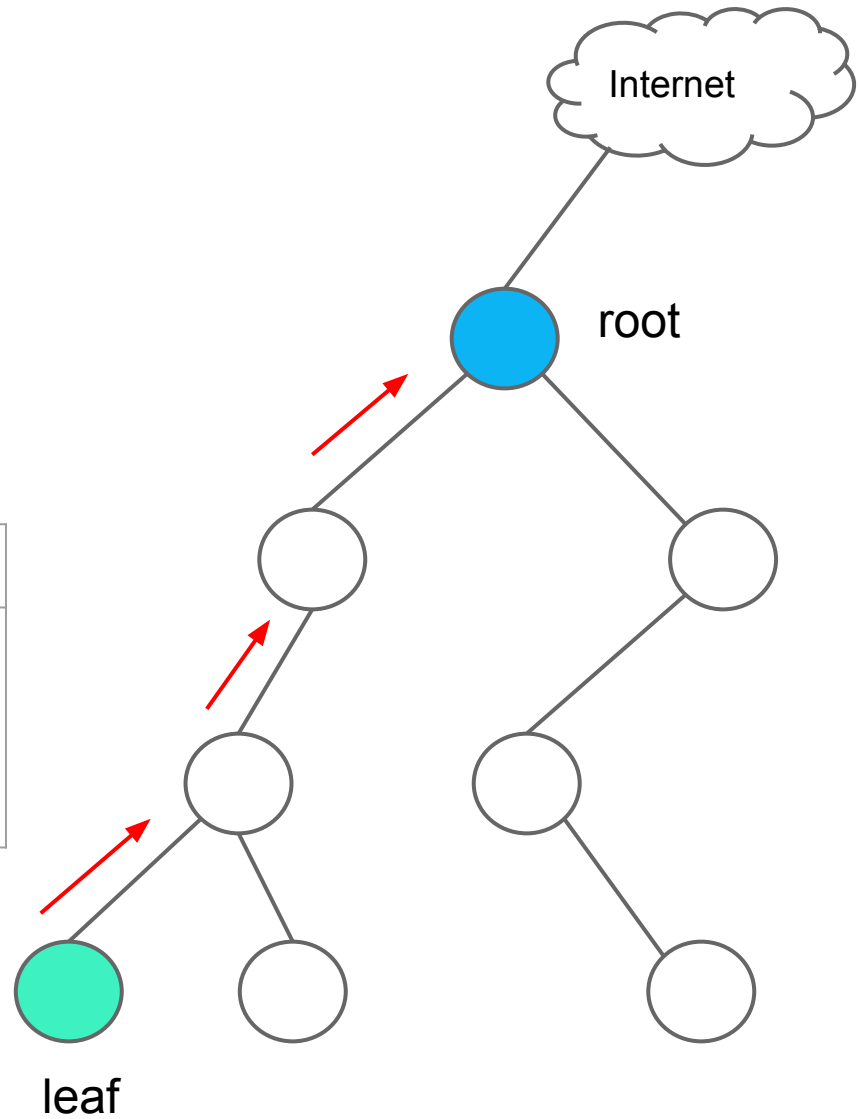
RFC 6554: provides Source Routing Header (SRH) for use strictly between RPL routers

IP-in-IP: useful when we want to transmit a packet without modify it.

Scenarios

-Flow from leaf to root

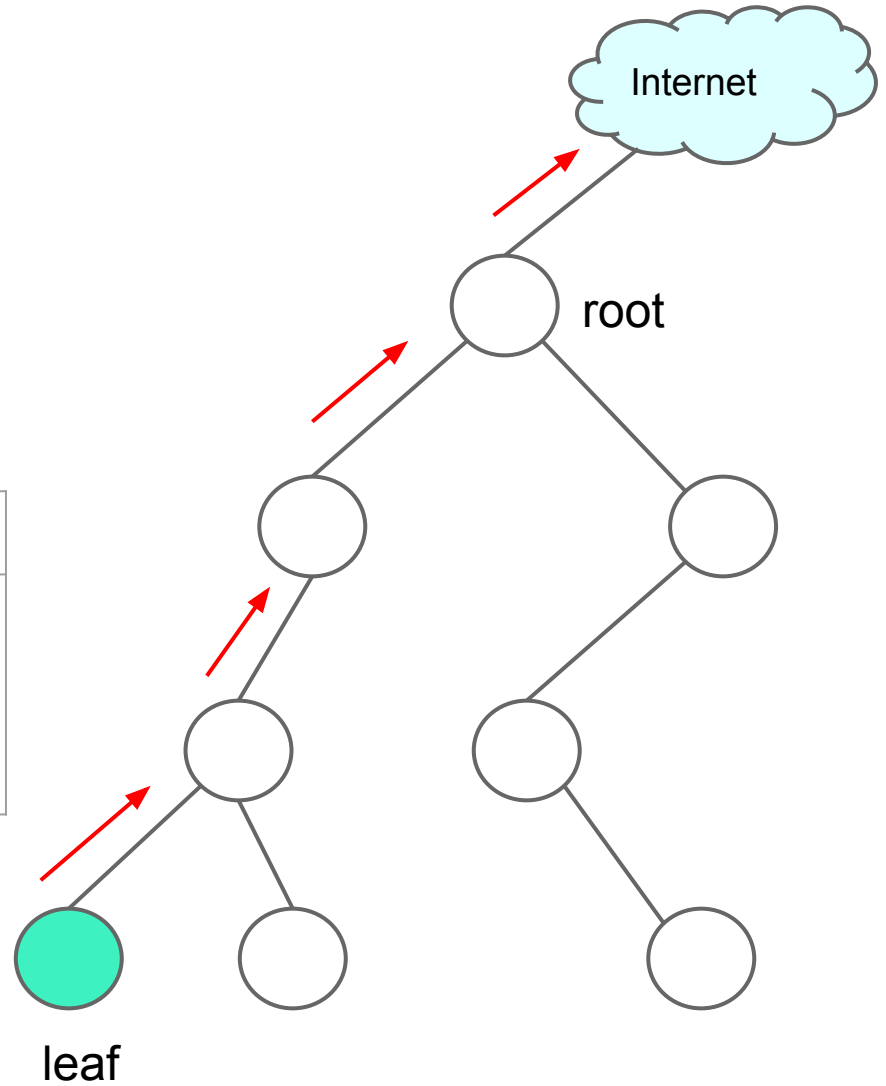
	Storing	Non - Storing
RFC 6553	<ul style="list-style-type: none">- Is that possible, how?- Packet example- something else????	
RFC 6554		
IPv6-in-IPv6		



Scenarios

-Flow from leaf to Internet

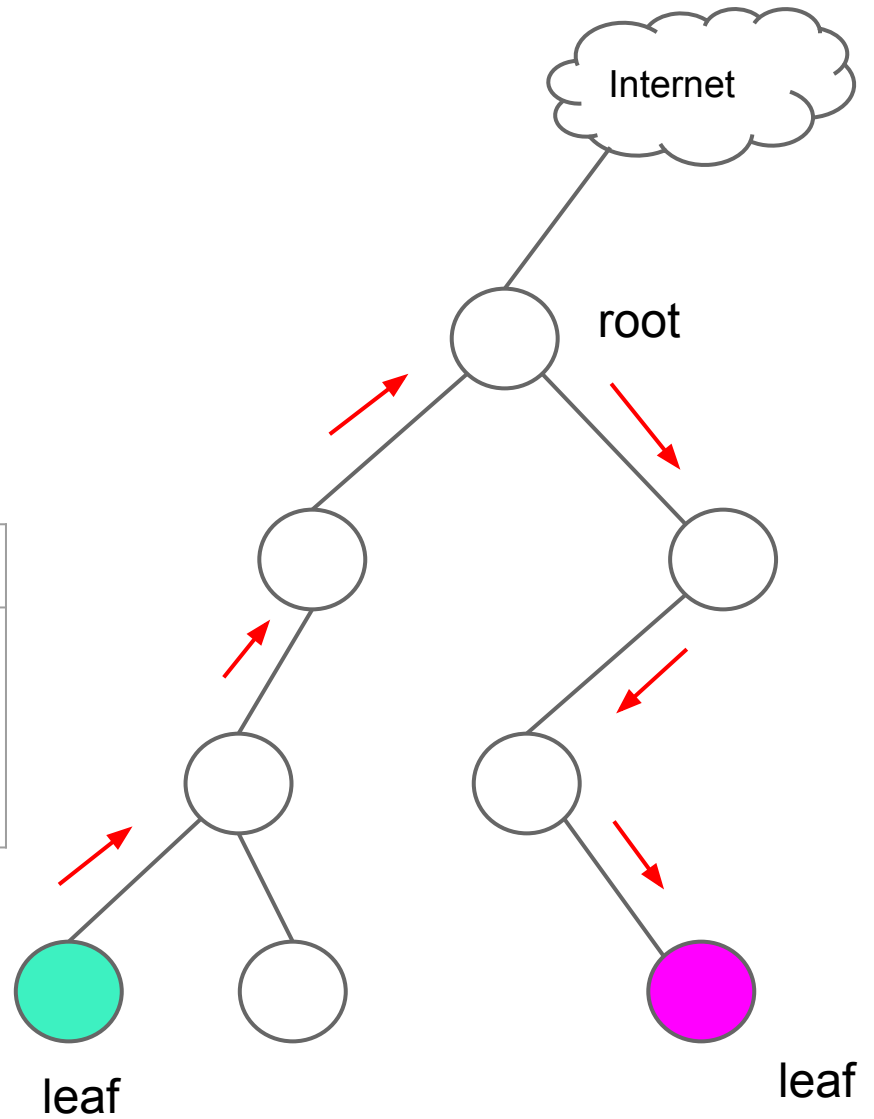
	Storing	Non - Storing
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RFC 6554		
IPv6-in-IPv6		



Scenarios

-Flow from leaf to leaf

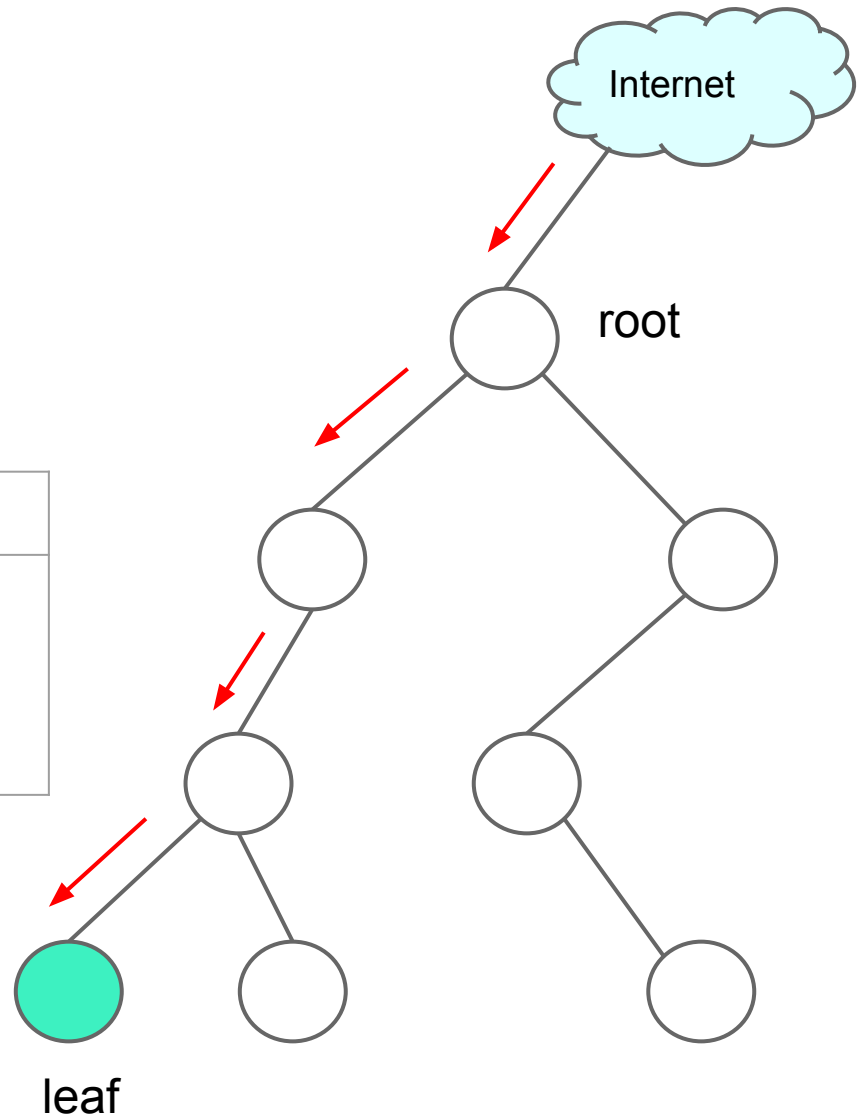
	Storing	Non - Storing
RFC 6553	<ul style="list-style-type: none">- Is that possible, how?- Packet example- something else????	
RFC 6554		
IPv6-in-IPv6		



Scenarios

-Flow from Internet to leaf

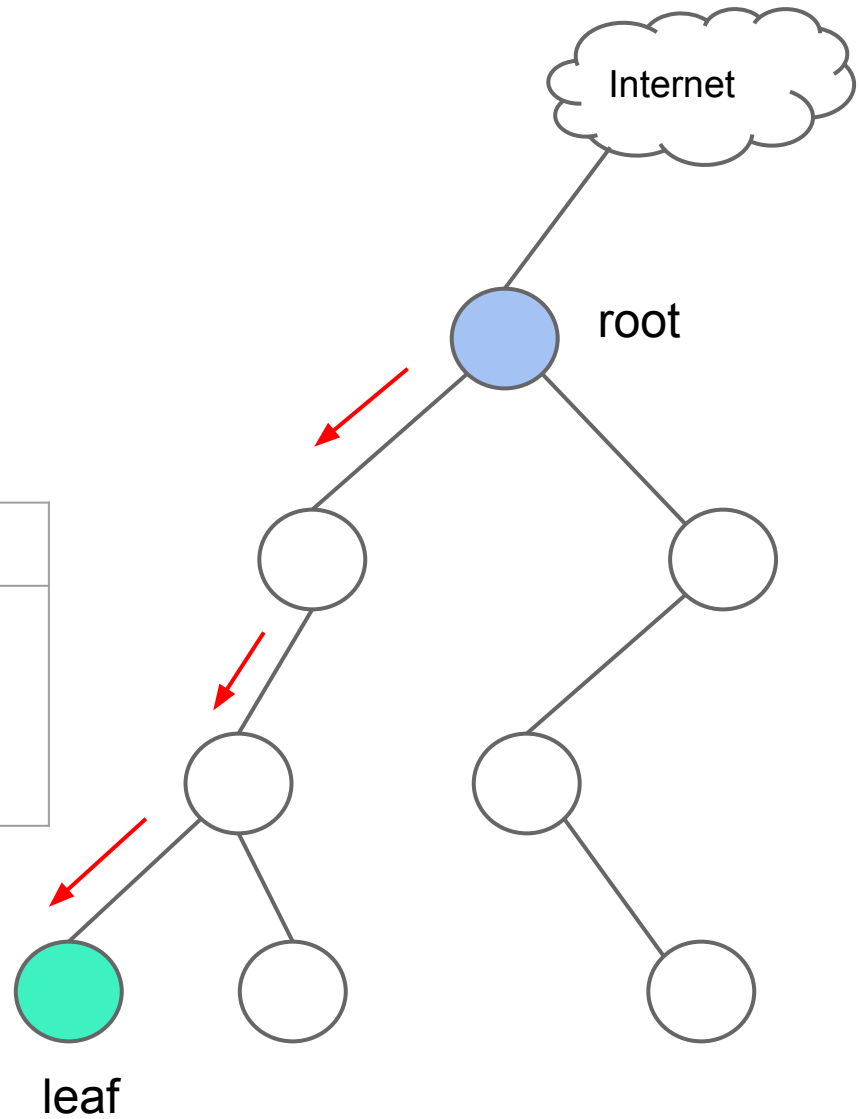
	Storing	Non - Storing
RFC 6553	<ul style="list-style-type: none">- Is that possible, how?- Packet example- something else????	
RFC 6554		
IPv6-in-IPv6		



Scenarios

-Flow from root to leaf

	Storing	Non - Storing
RFC 6553	<ul style="list-style-type: none">- Is that possible, how?- Packet example- something else????	
RFC 6554		
IPv6-in-IPv6		



Which another scenario will be useful?

Which features should we address in each scenario?

THANKS!



Root initiated routing state in RPL

[draft-thubert-dao-projection](#)

Pascal Thubert

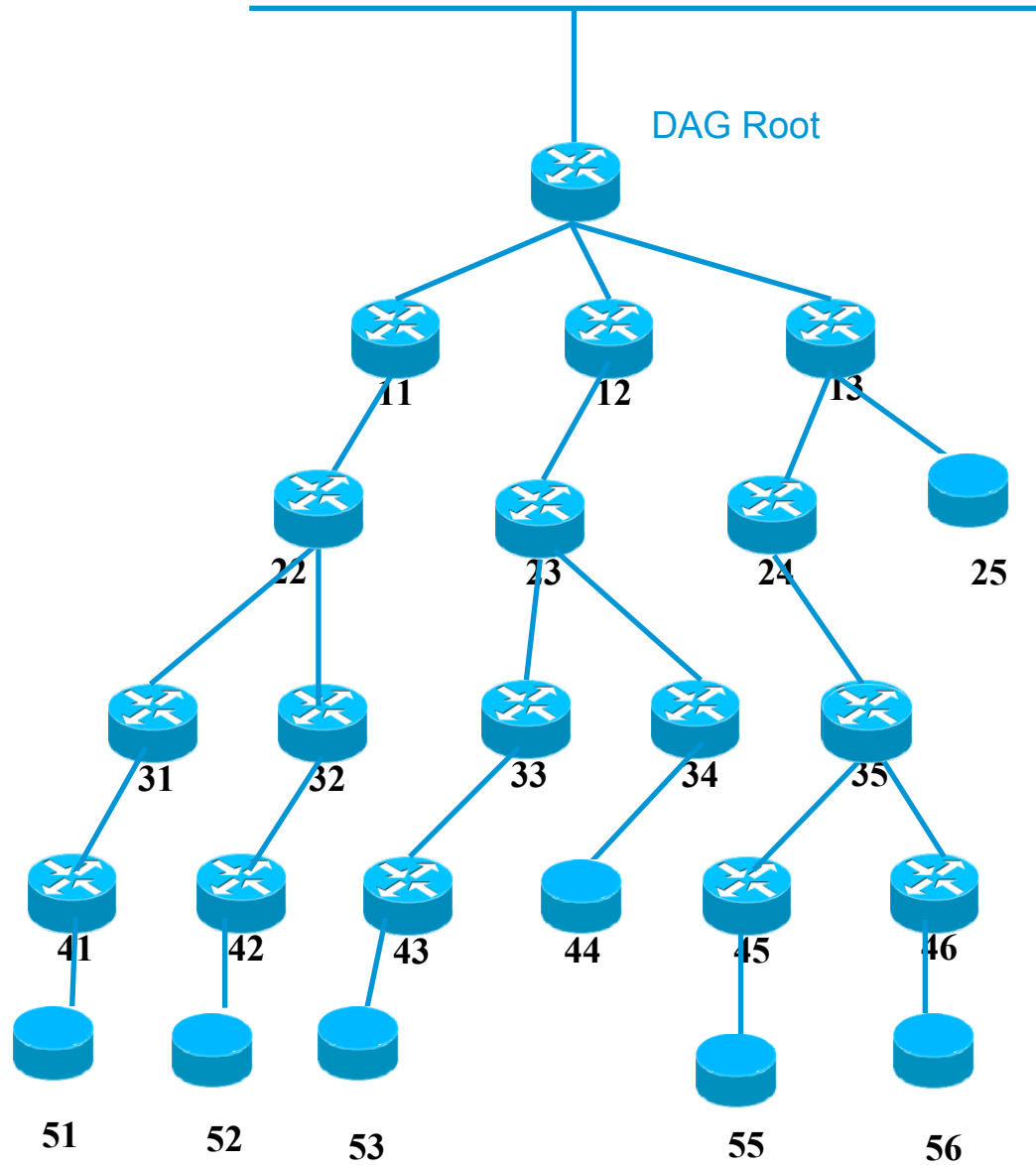
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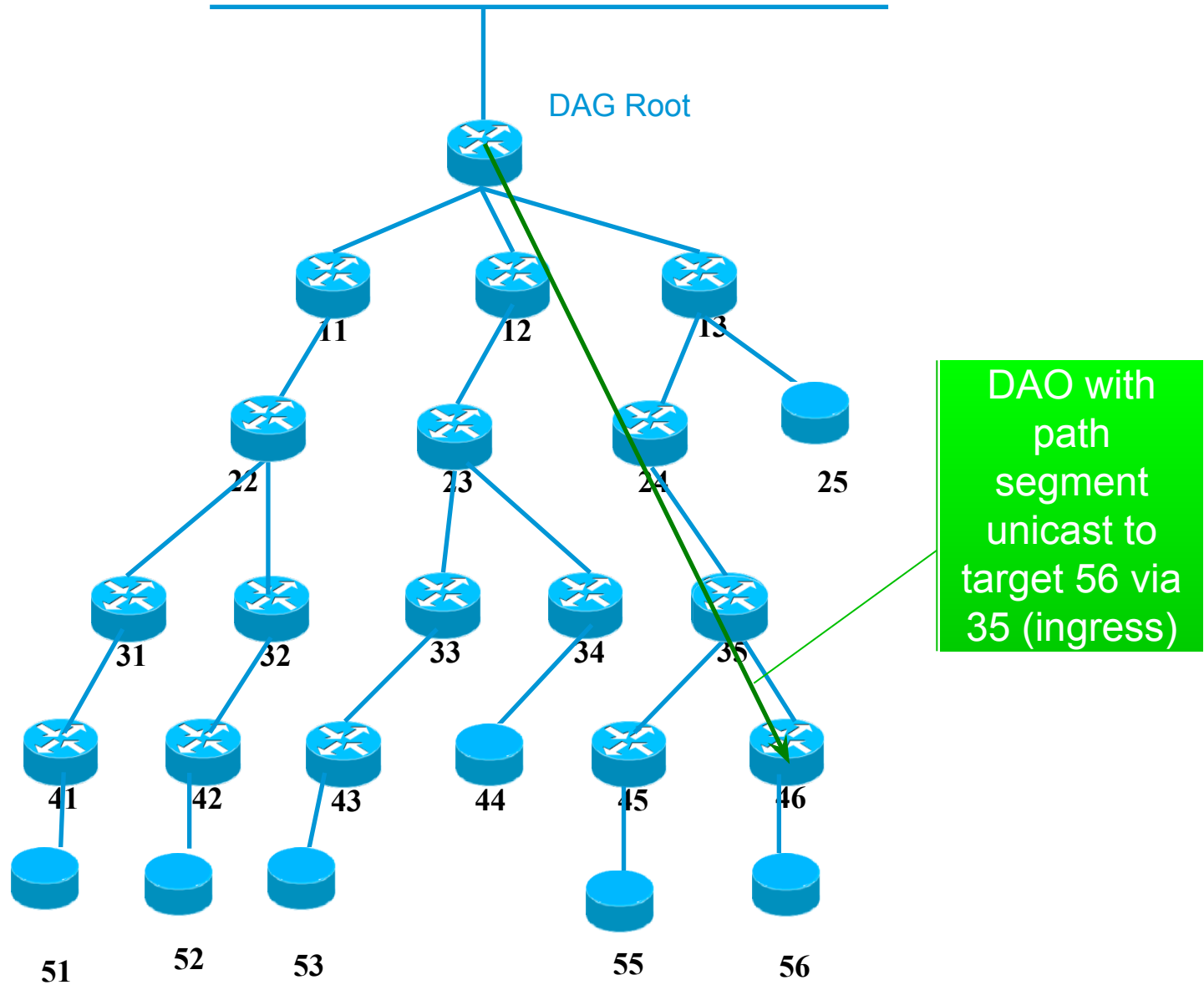
Prague, July 2025





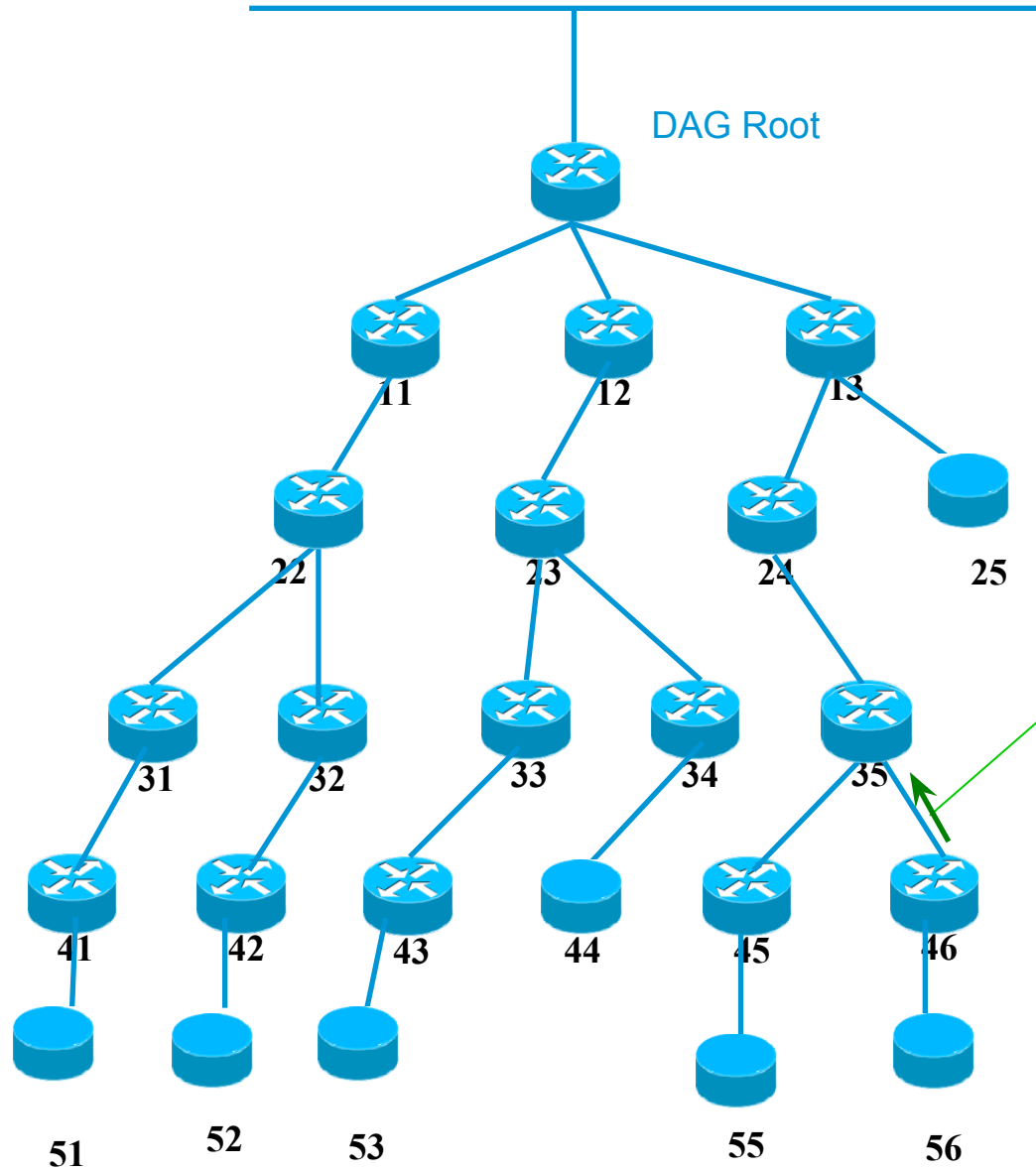
Application
Server D







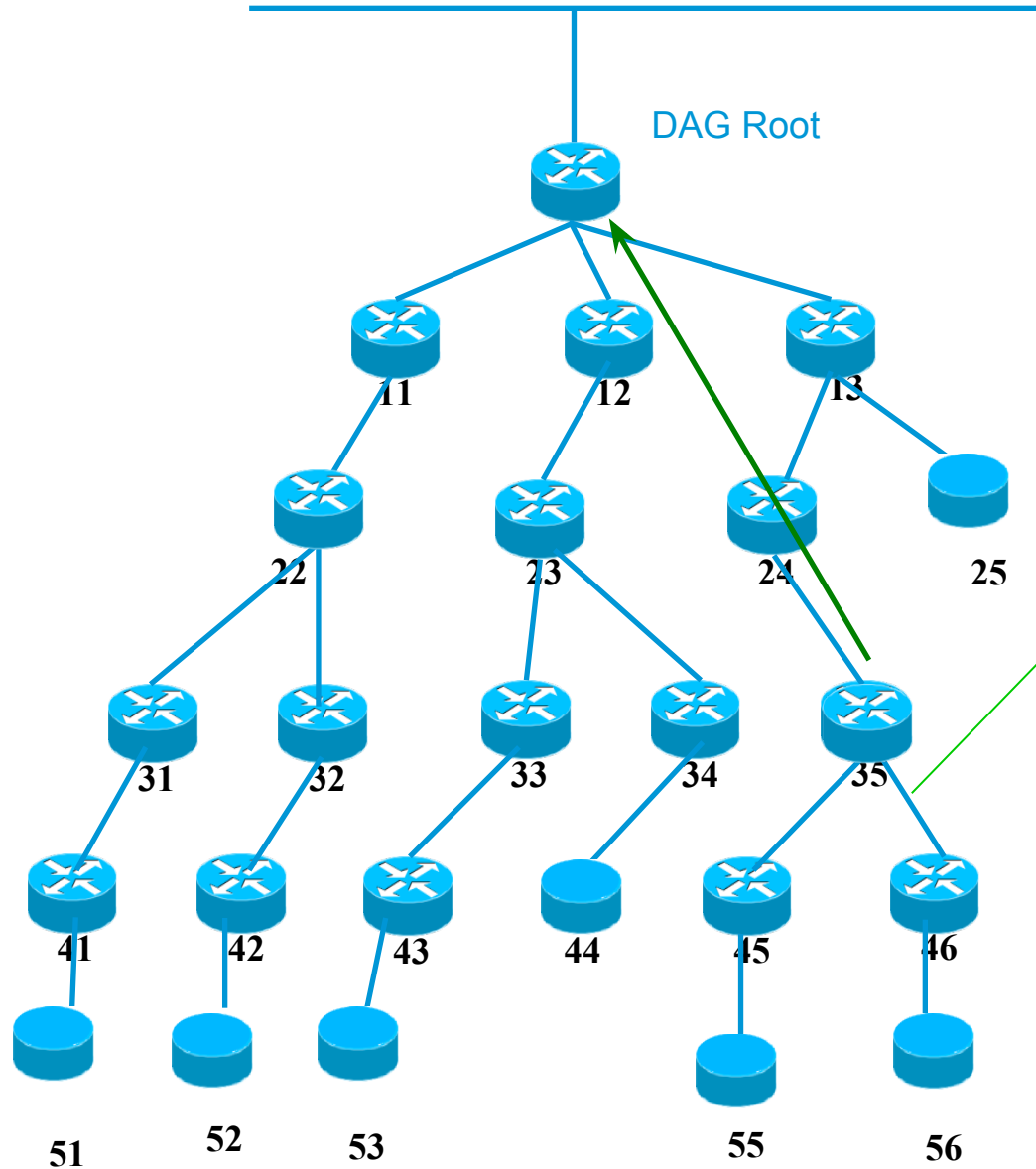
Application
Server D



Storing
mode DAO
(forced) with
lifetime
along
segment



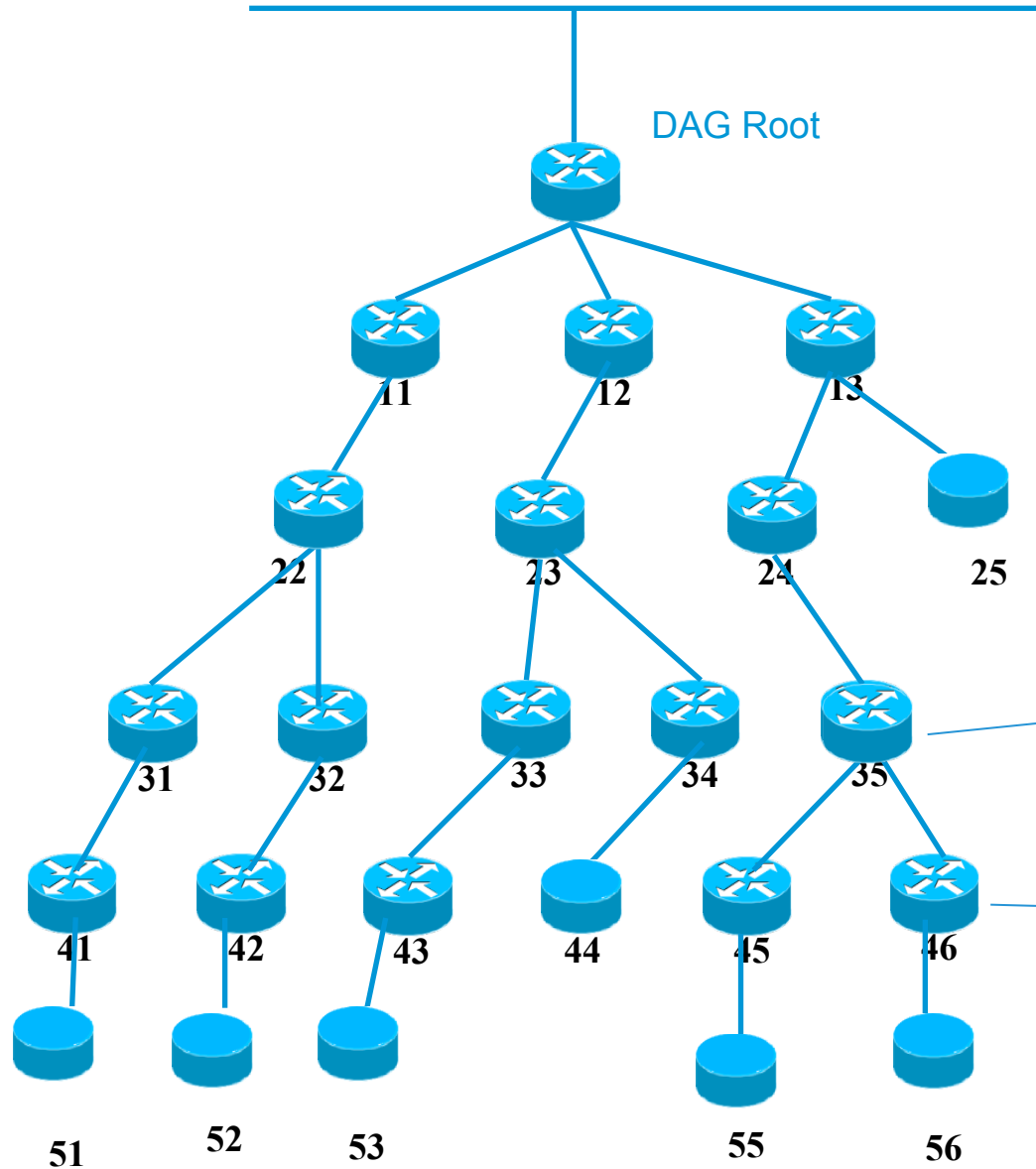
Application
Server D



DAO-ACK
(alt: non
storing
DAO)
unicast, self
35 as
parent, final
destination
56 as target



Application Server D



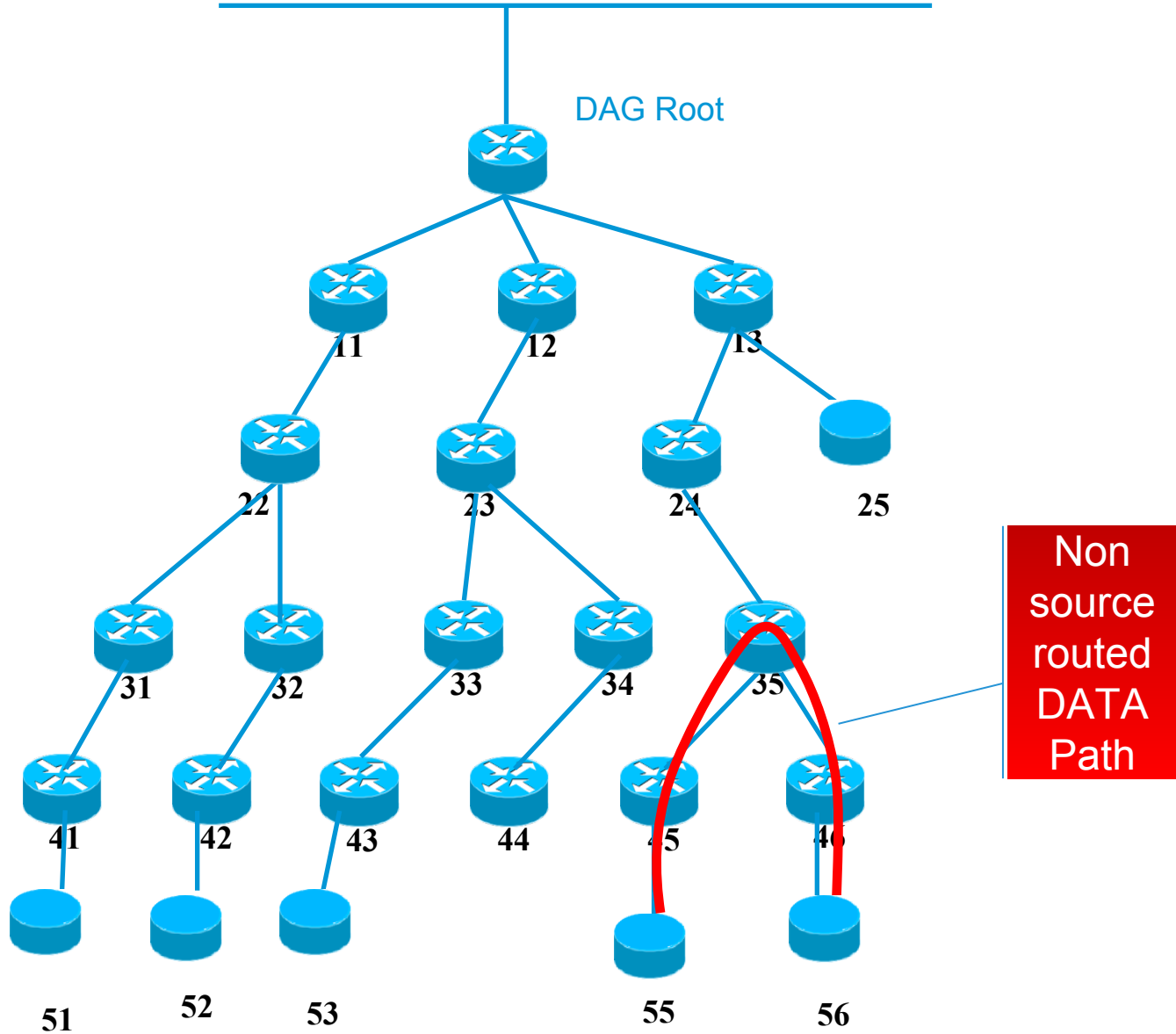
DAO from 46 installs a route to 56 in 35 (all nodes in projected route from ingress included to egress excluded) => egress should already have a route to target

56 via 46

Preexisting connected route to 56

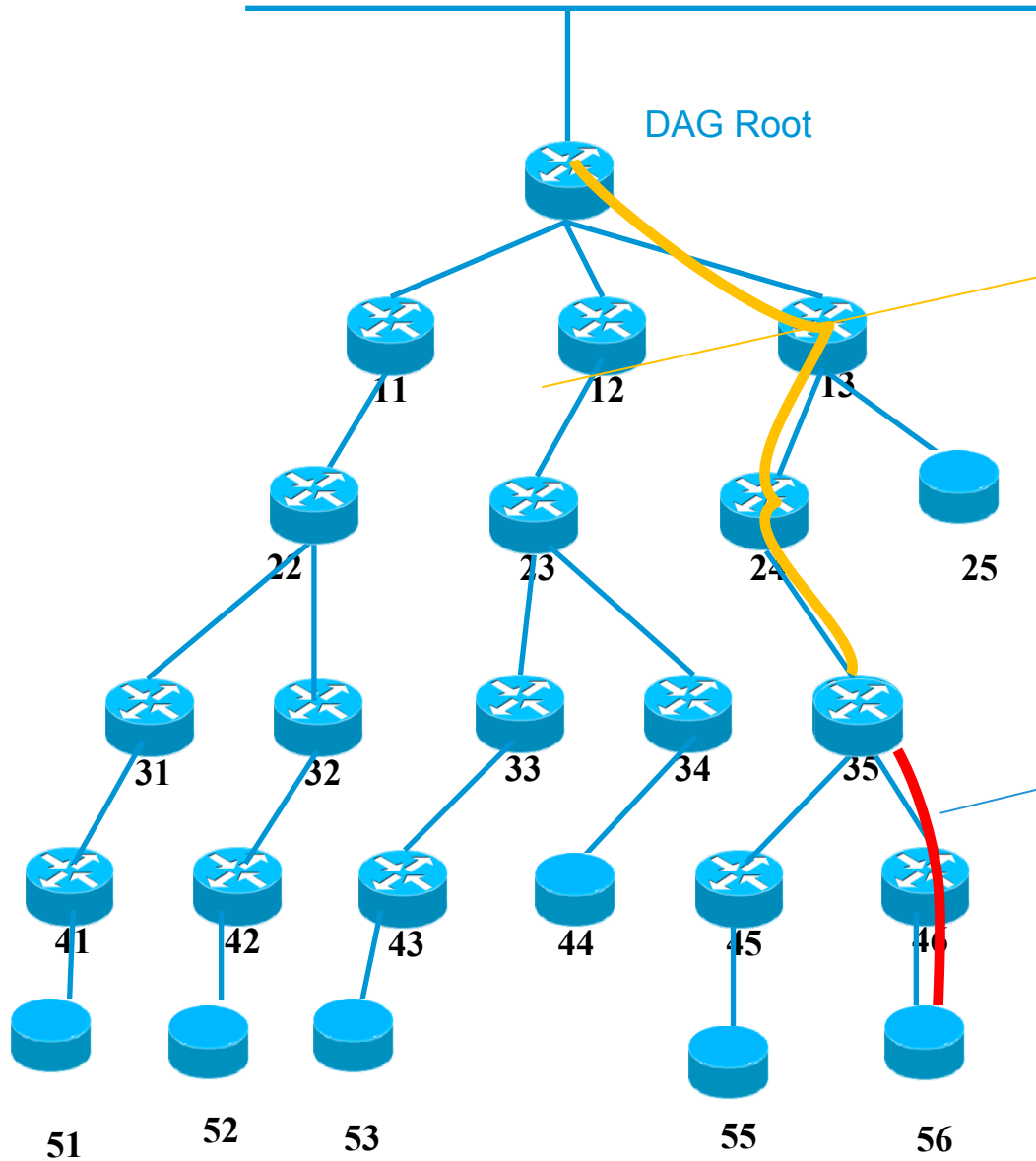


Application Server D





Application Server D

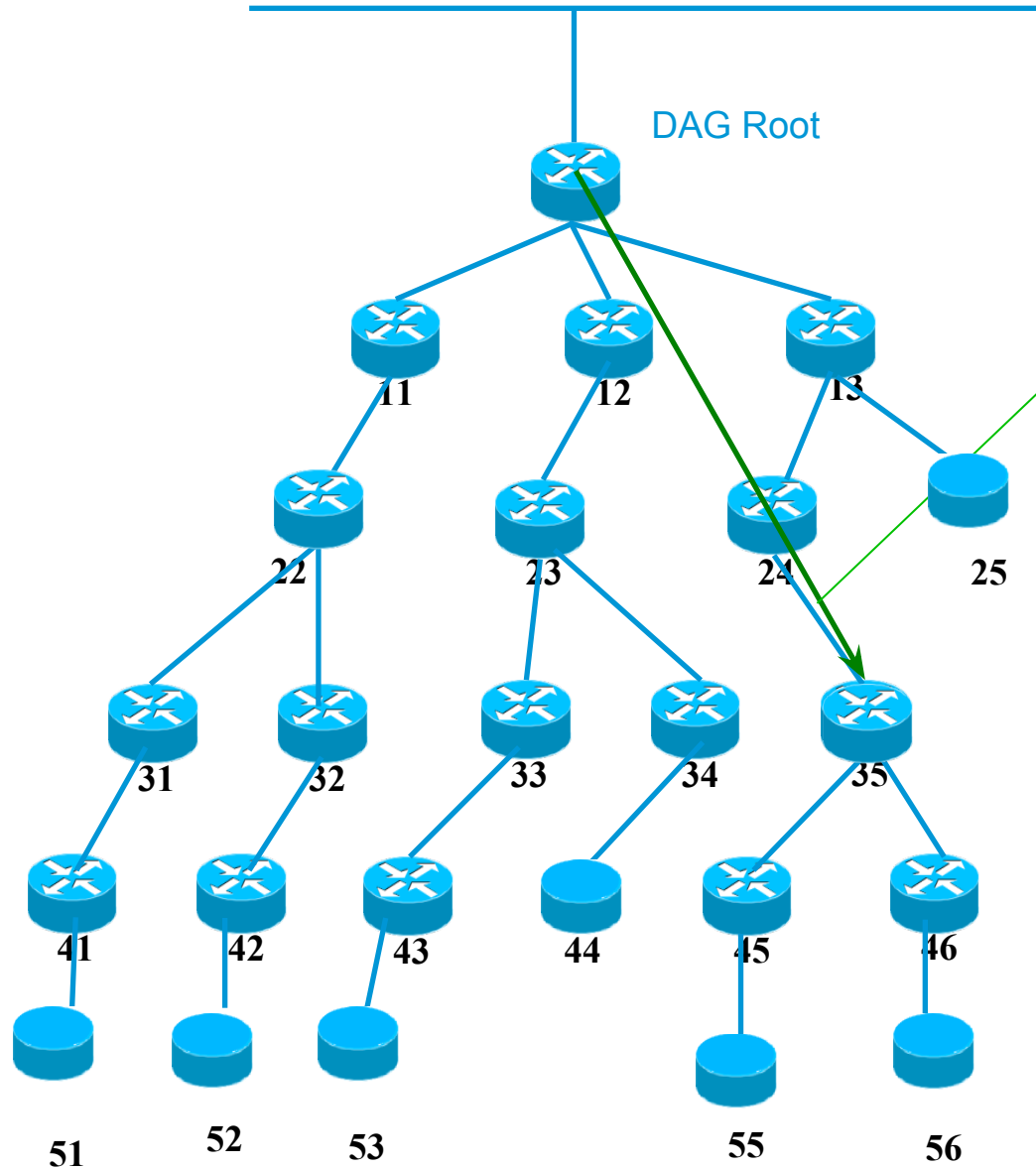


Loose Source routed DATA Path Packet to 12, RH 24, 35, 56

Non source routed DATA Path



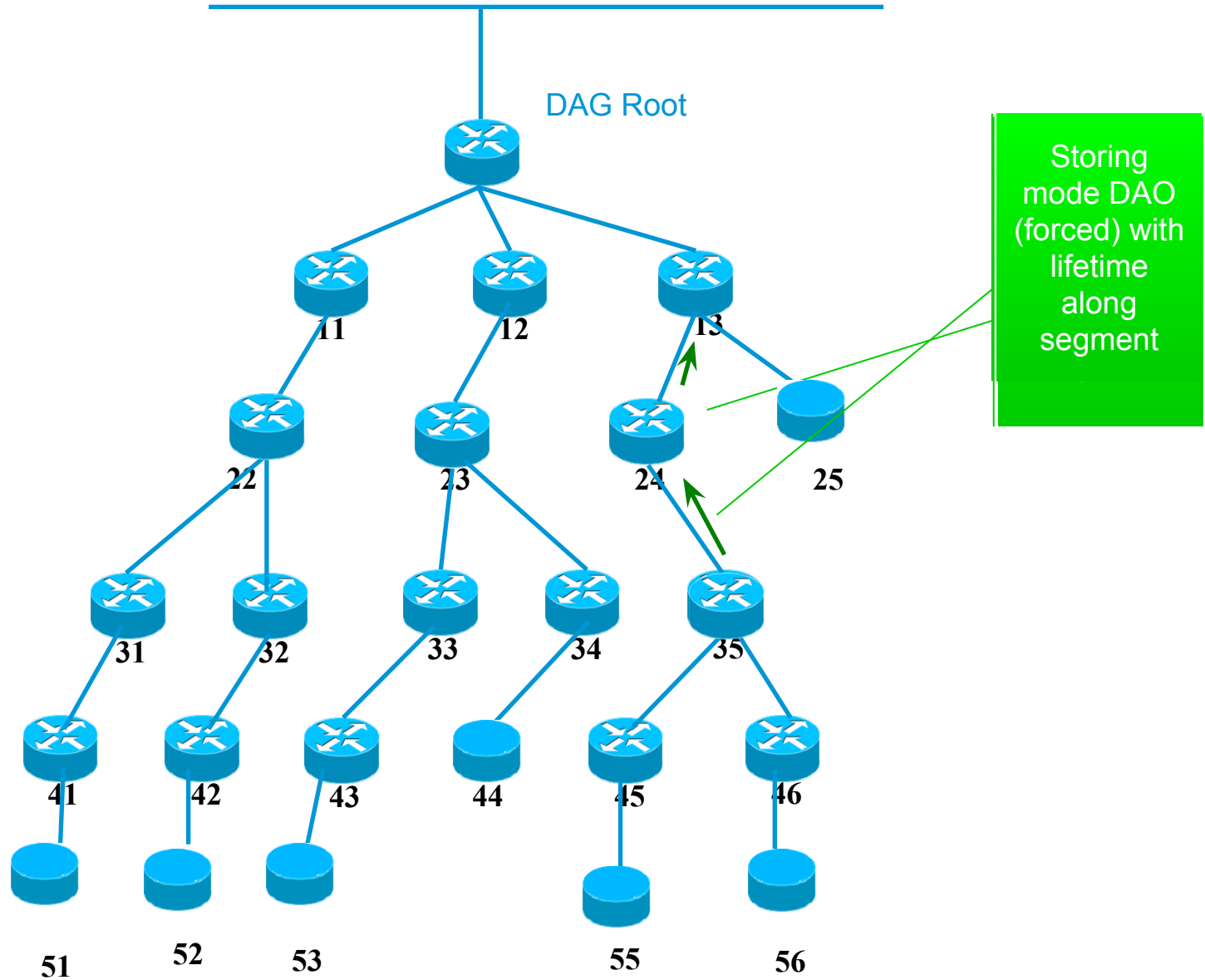
Application Server D



Adding New (projected) DAO with path segment unicast to target 56 via 13 (ingress), 24, and 35 (egress)

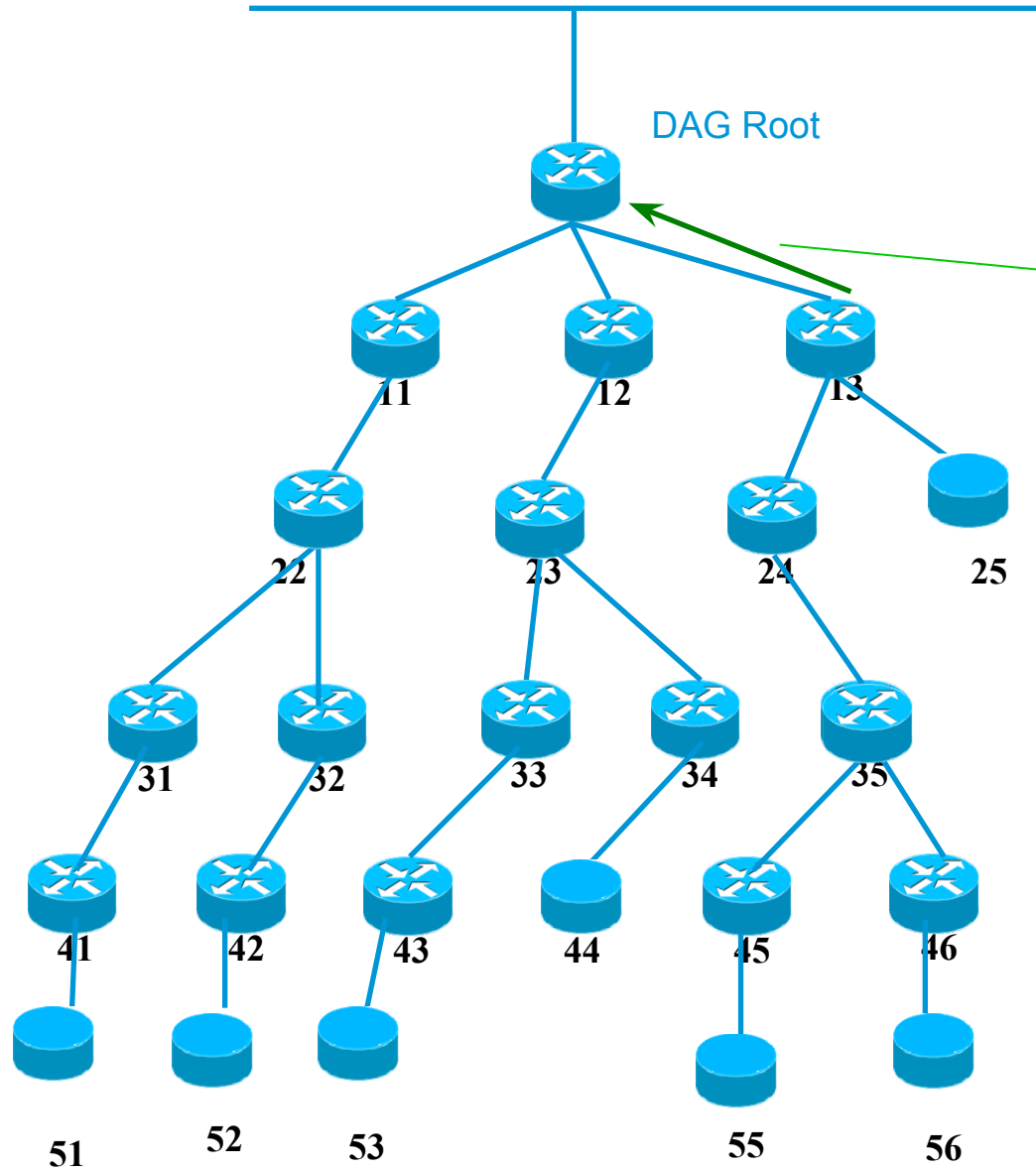


Application
Server D





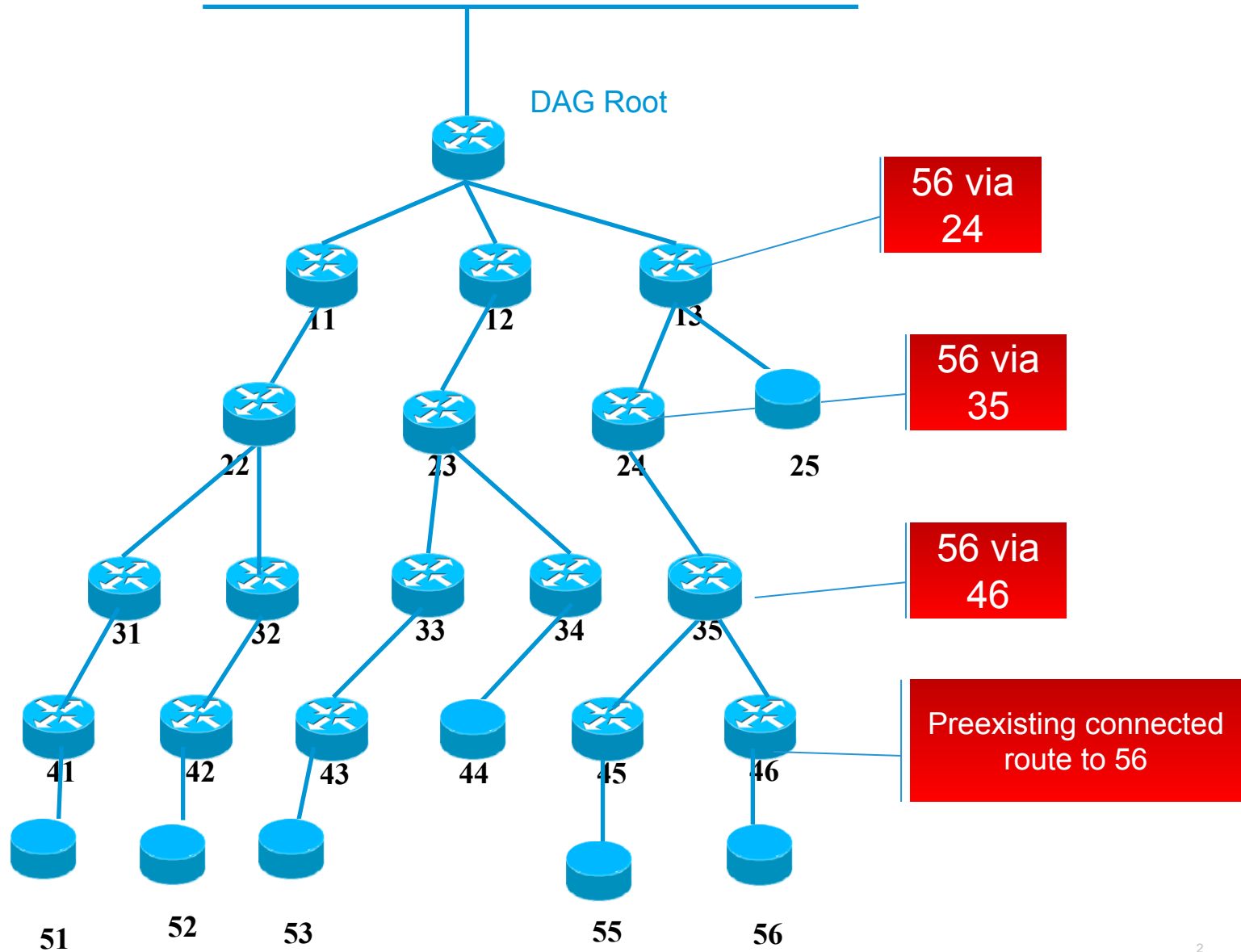
Application Server D



DAO-ACK (alt: non storing DAO) unicast, self 13 as parent, final destination 56 as target

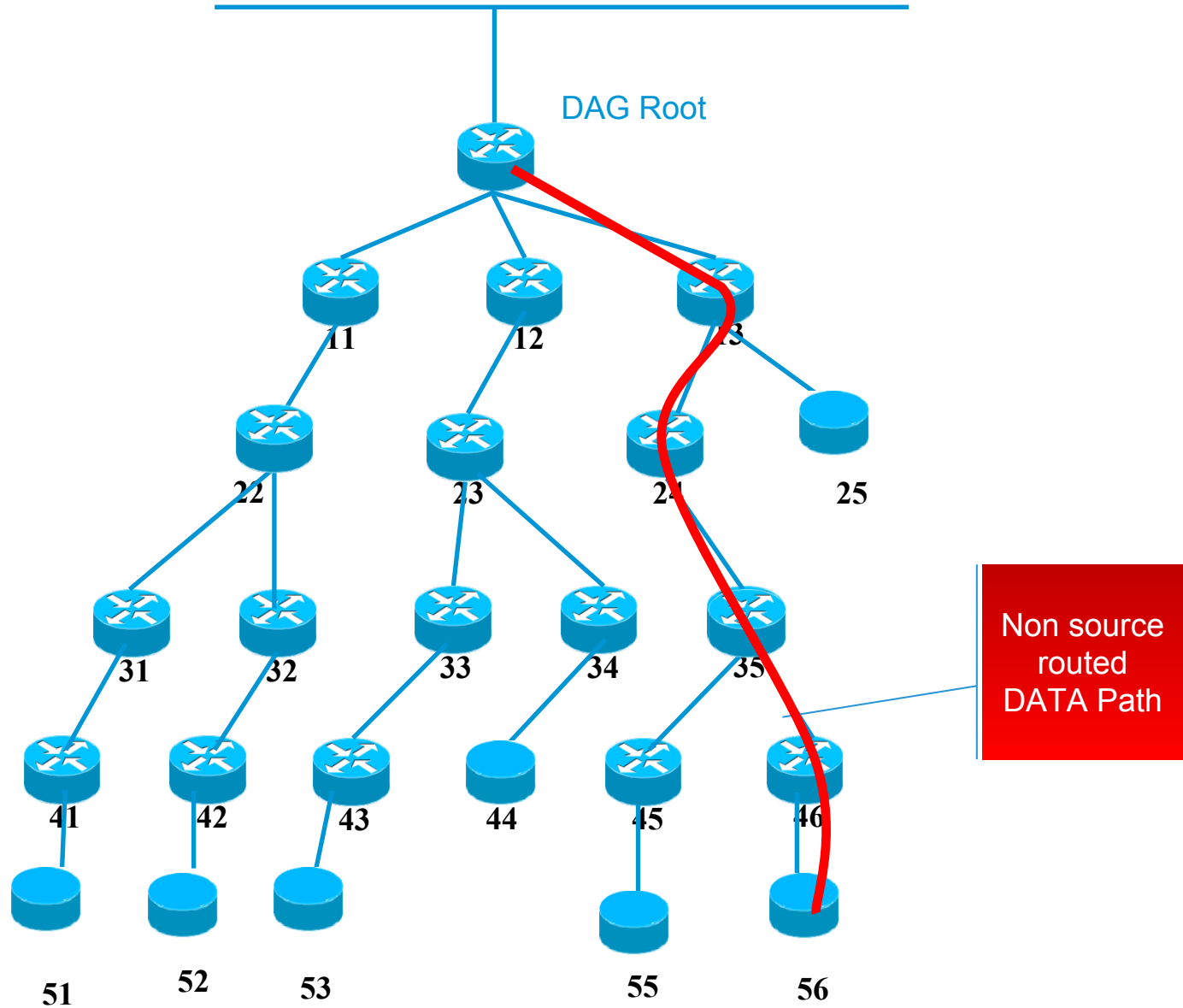


Application Server D





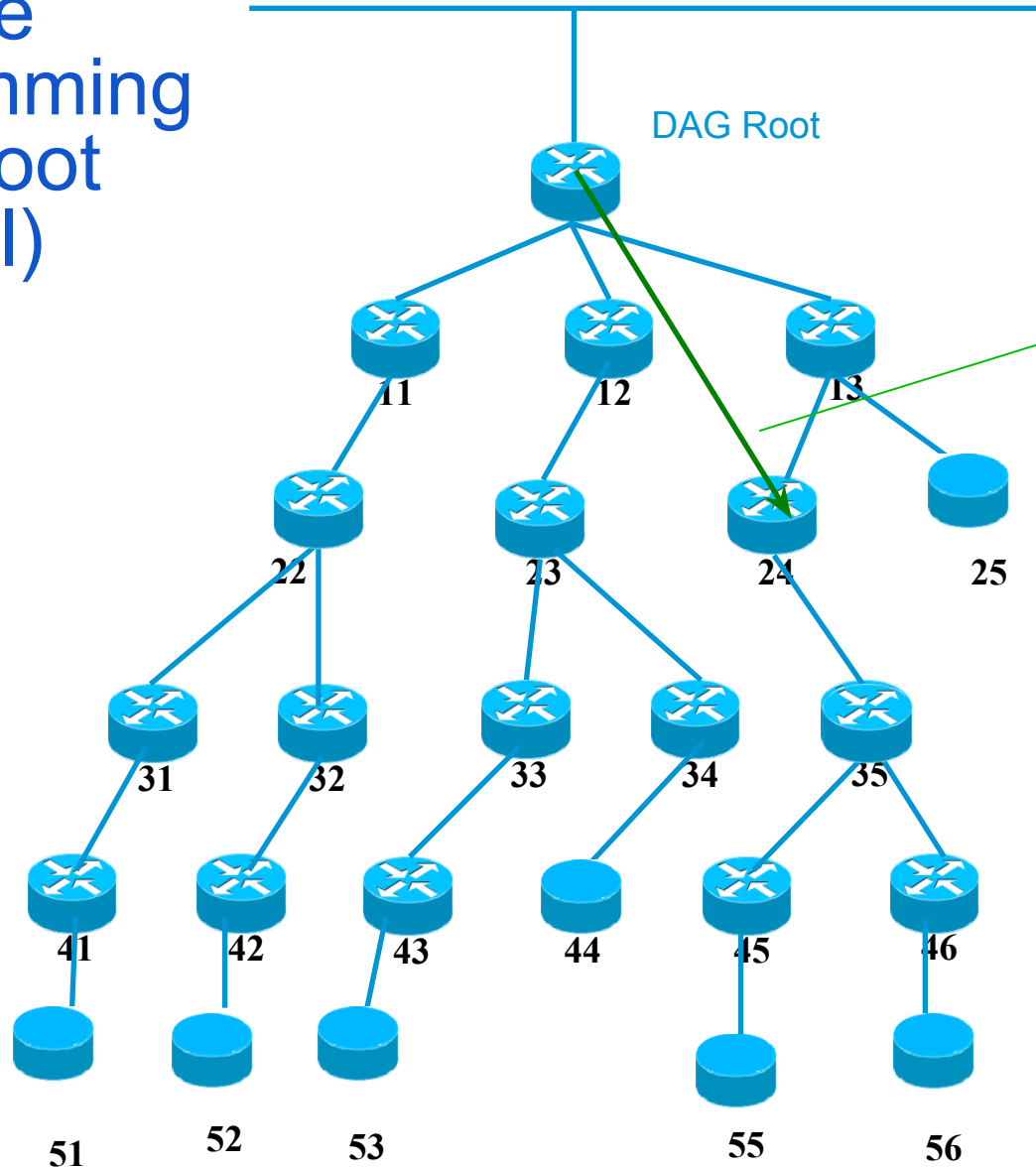
Application Server D





Application Server D

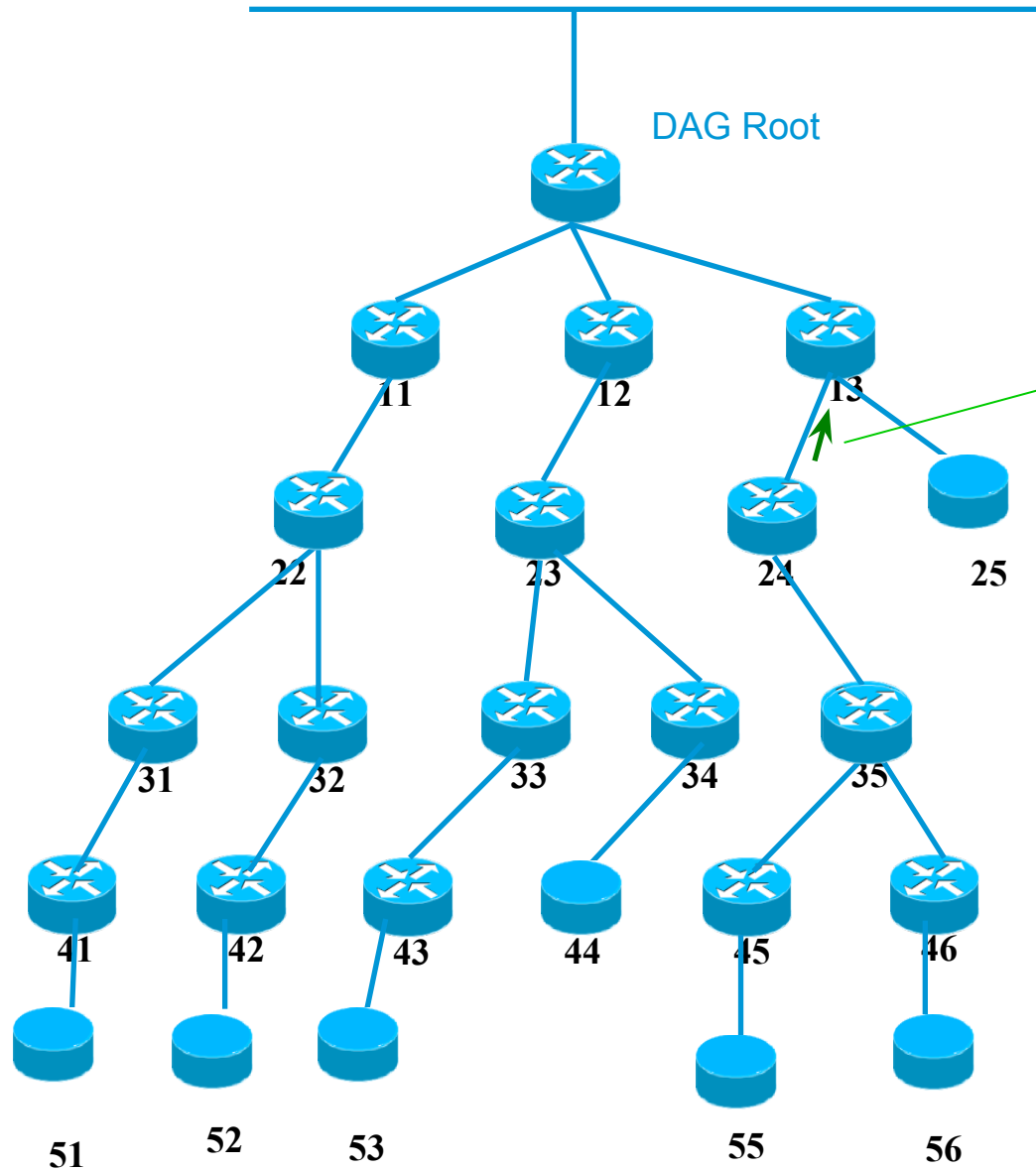
Alternate Programming By the root (Michael)



ALT: Adding New (projected) DAO with path segment unicast to target 35 via 13 (ingress) and 24 (egress)



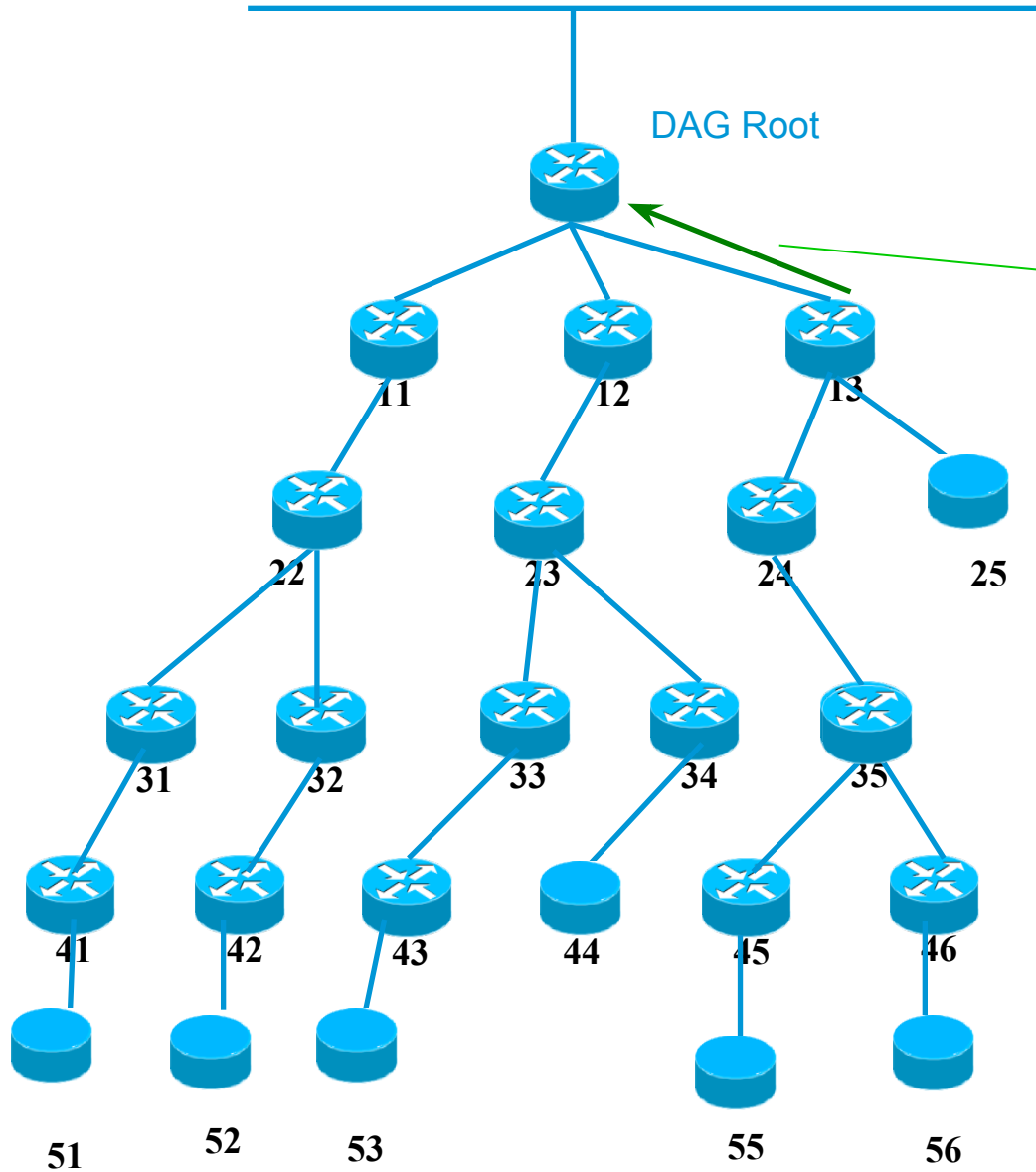
Application Server D



Storing mode DAO (forced) with lifetime along segment



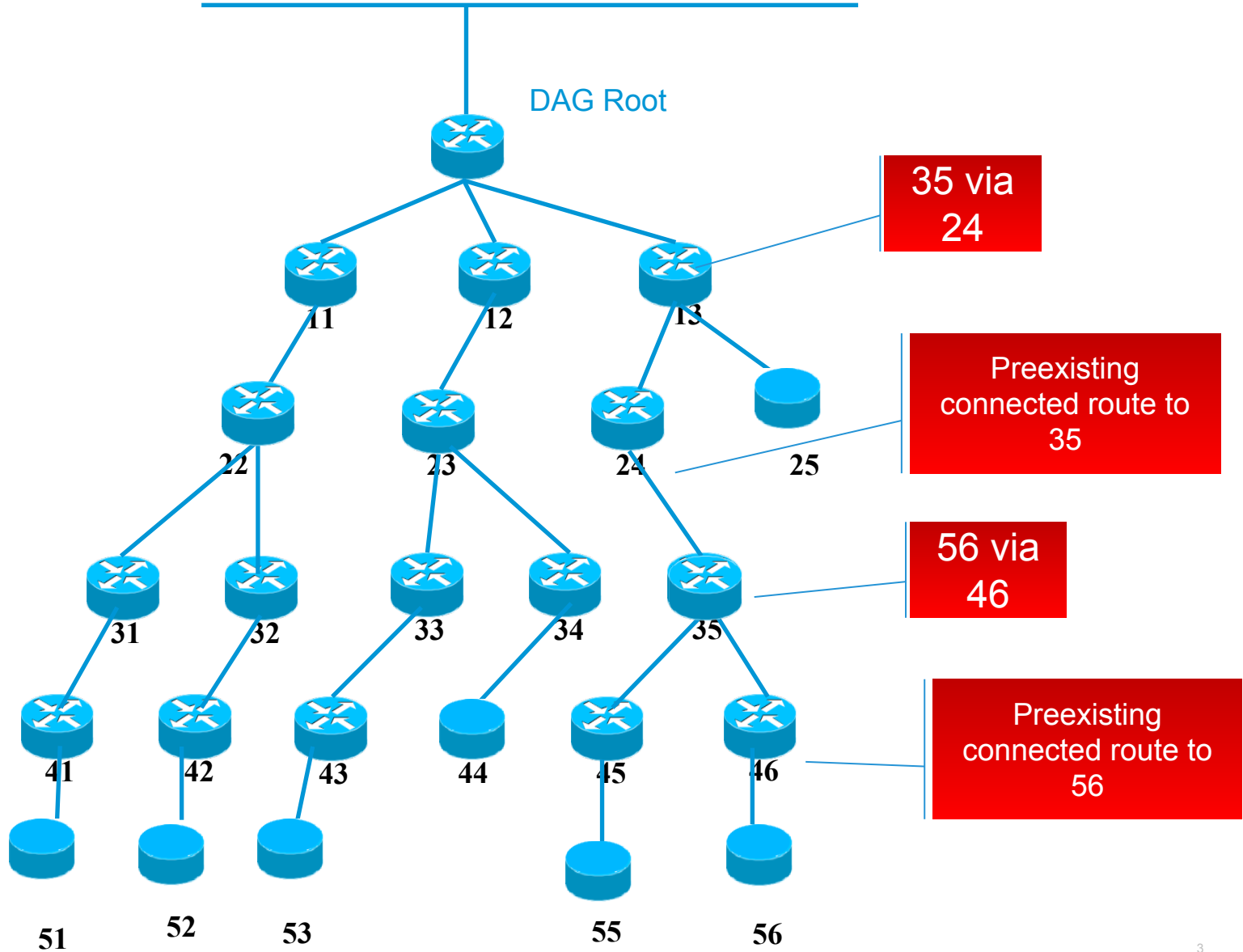
Application Server D



DAO-ACK (alt: non storing DAO) unicast, self 13 as parent, final destination 56 as target

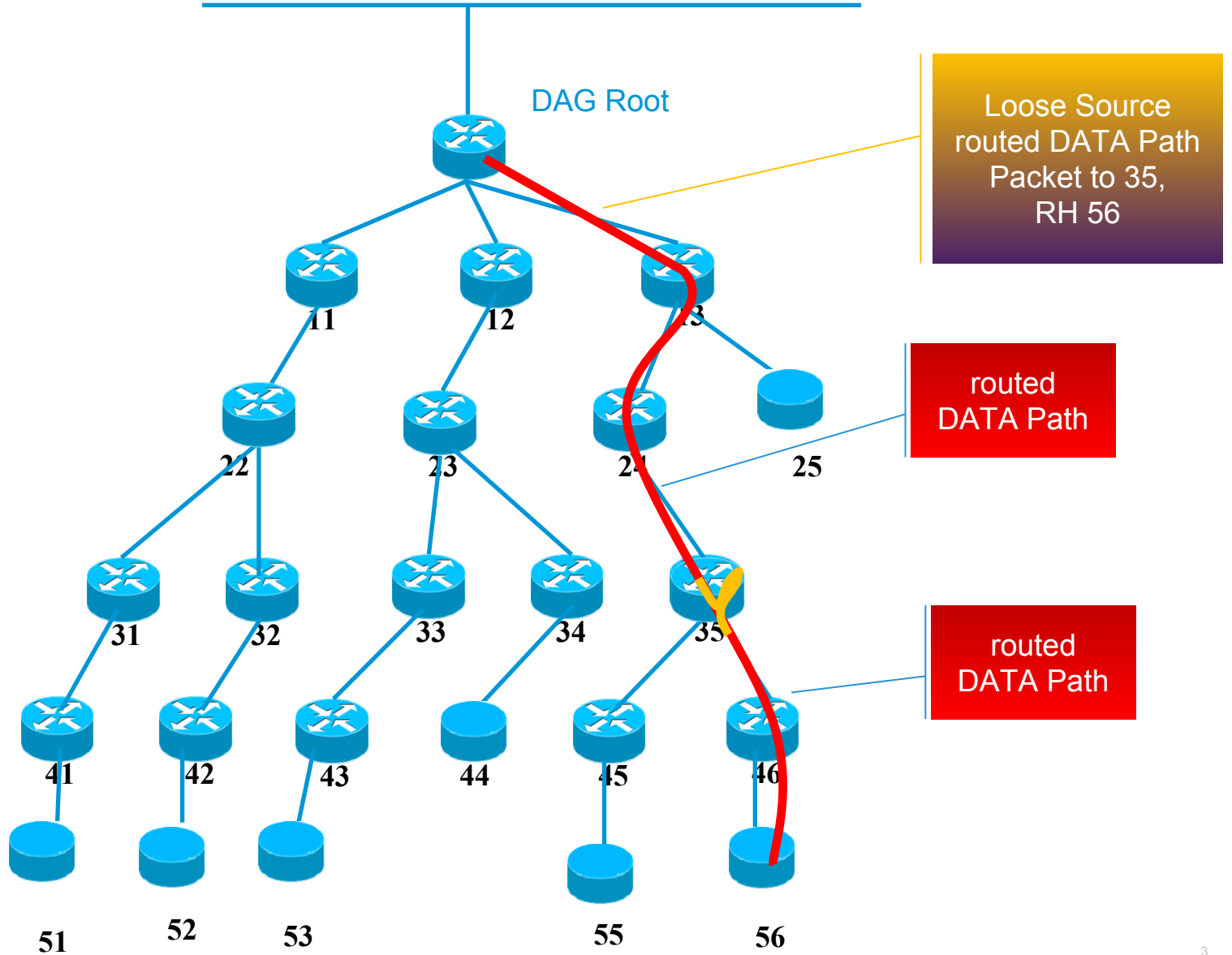


Application Server D





Application Server D



Questions on the list

- Terminology:
 - Segment vs. projected route
 - New msg for “projected DAO”
- Need for a new MOP?
 - Suggestion to add a capability option in node’s original DAOs
- DAO direction, clarify flows
- Transversal routes
- DAO-ACK request bit setting
- -> or non storing DAO?

Open Floor

THANKS!



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