# Mobility-aware Floating Anchor (MFA)

(https://www.ietf.org/id/draft-gundavelli-dmm-mfa-00.txt)

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## Goals for User-Plane Optimization

- Access-independent, shared user plane that can be used for multiple access technologies
- Use of a common transport controller that can potentially offer programmable interfaces to mobility controller and other access specific controllers
- Optimized Routing with transport awareness for mobile node's IP flows
- Elimination of tunnels from the user-plane network
- Elimination of centralized mobility anchors and shift towards a distributed architecture
- Co-existence with control-plane and user-plane separated architecture
- Support for services including accounting, charging, lawful-interception and other user plane services

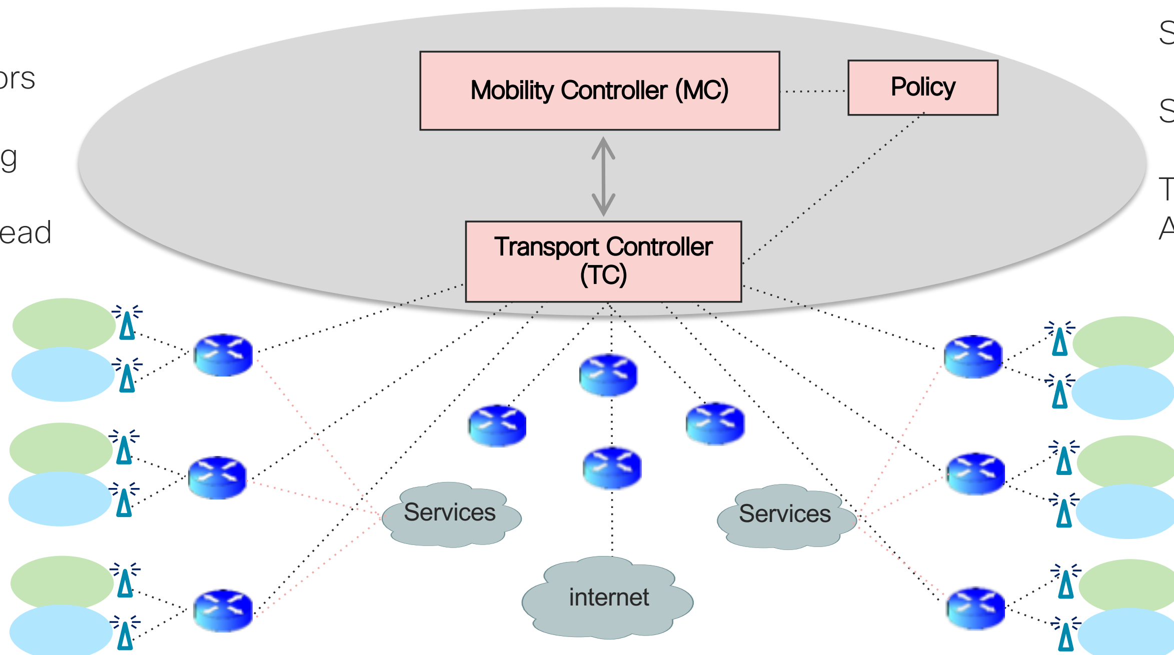
# Goals for Mobile User-Plane Optimization

Control & User Plane Separation for elastic control plane scaling and a distributed User Plane. User-Plane Programmability

Elimination of centralized anchors

Optimized Routing

No Tunnel Overhead




Scale

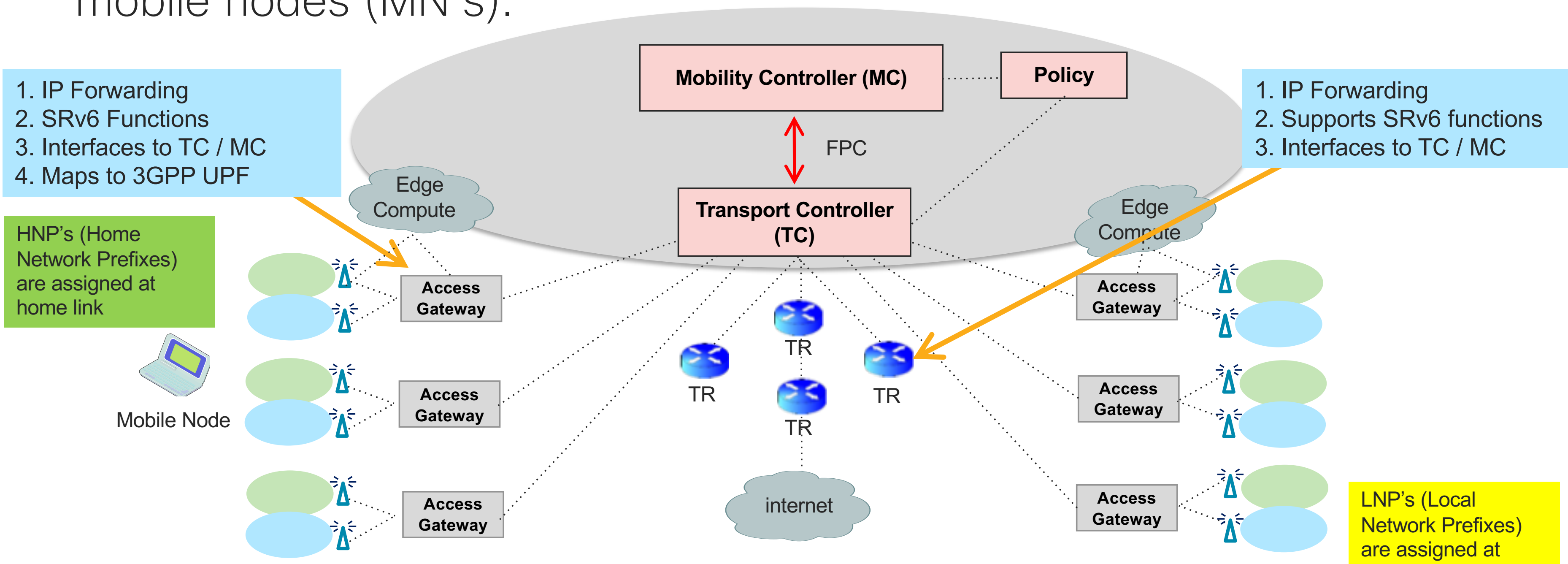
State Reduction

Transport QoS Awareness

# MFA

# MFA: Mobility-aware Floating Anchor

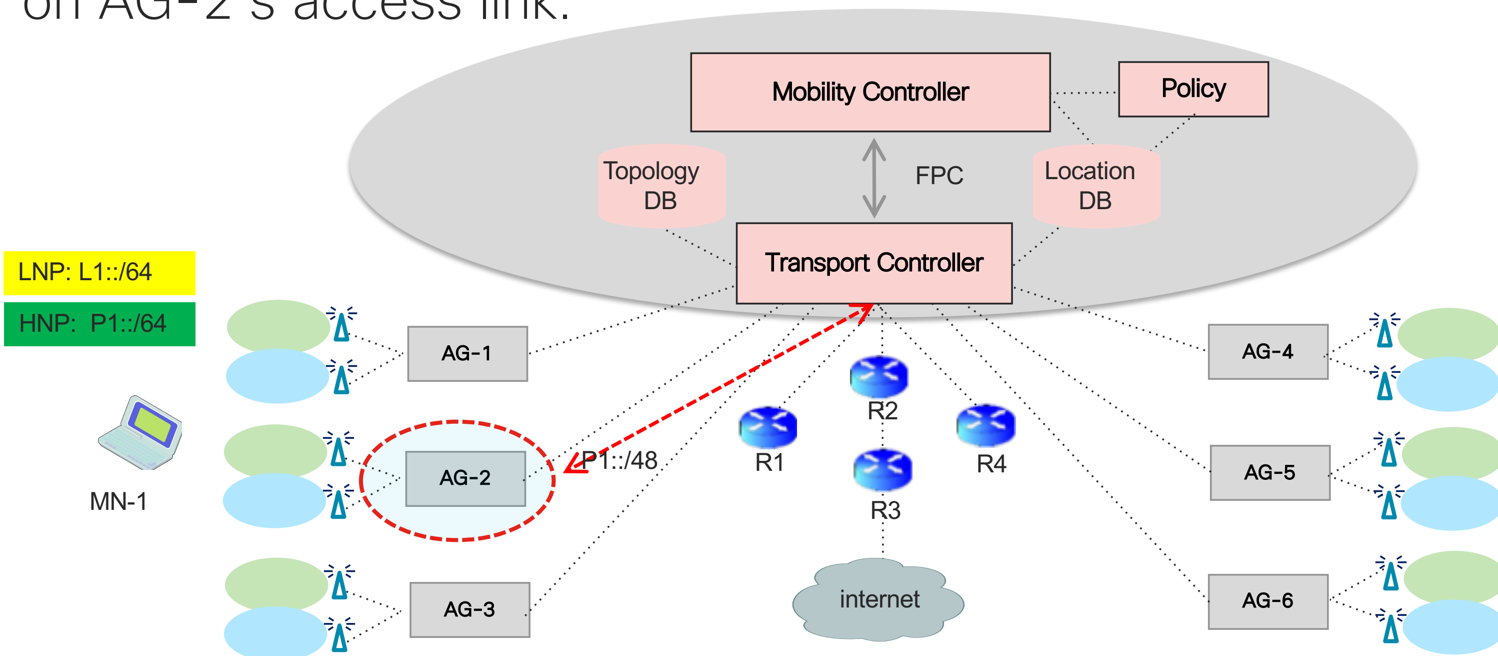
The MFA domain consists of a mobility controller (MC), transport controller (TC), transit routers (TR's), access gateways (AG's) and mobile nodes (MN's).



# MFA: Mobile Node's Initial Attachment

1

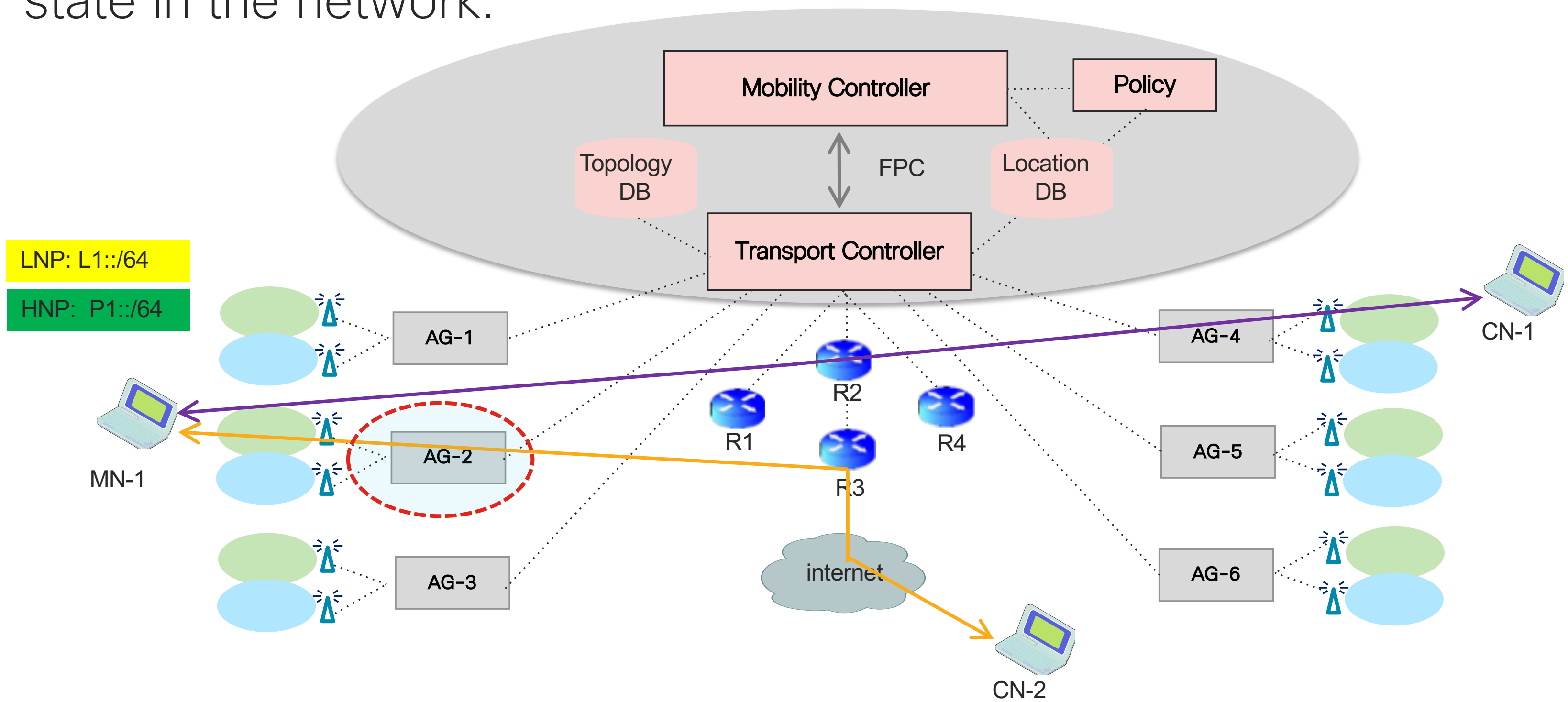
After access authentication, the mobile node is assigned a set of home network and local network prefixes. These colored prefixes are hosted on AG-2's access link.



# MFA: Forwarding Path for IP Flows

2

MN initiates IP flows to CN-1 (MN to MN traffic) and to CN-2 (Internet destination). These flows take optimal routing path and there is no state in the network.



# MFA: MN Roams and Changes its Point of Attachment

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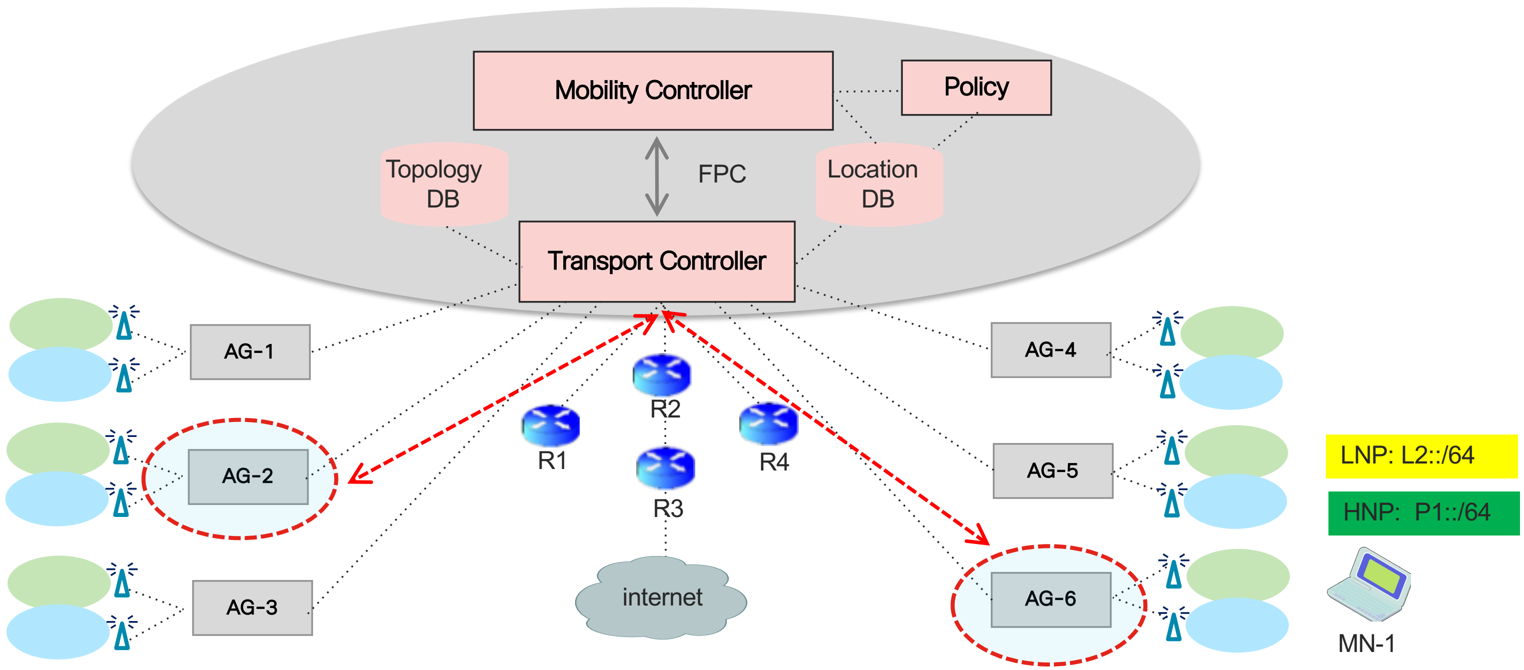
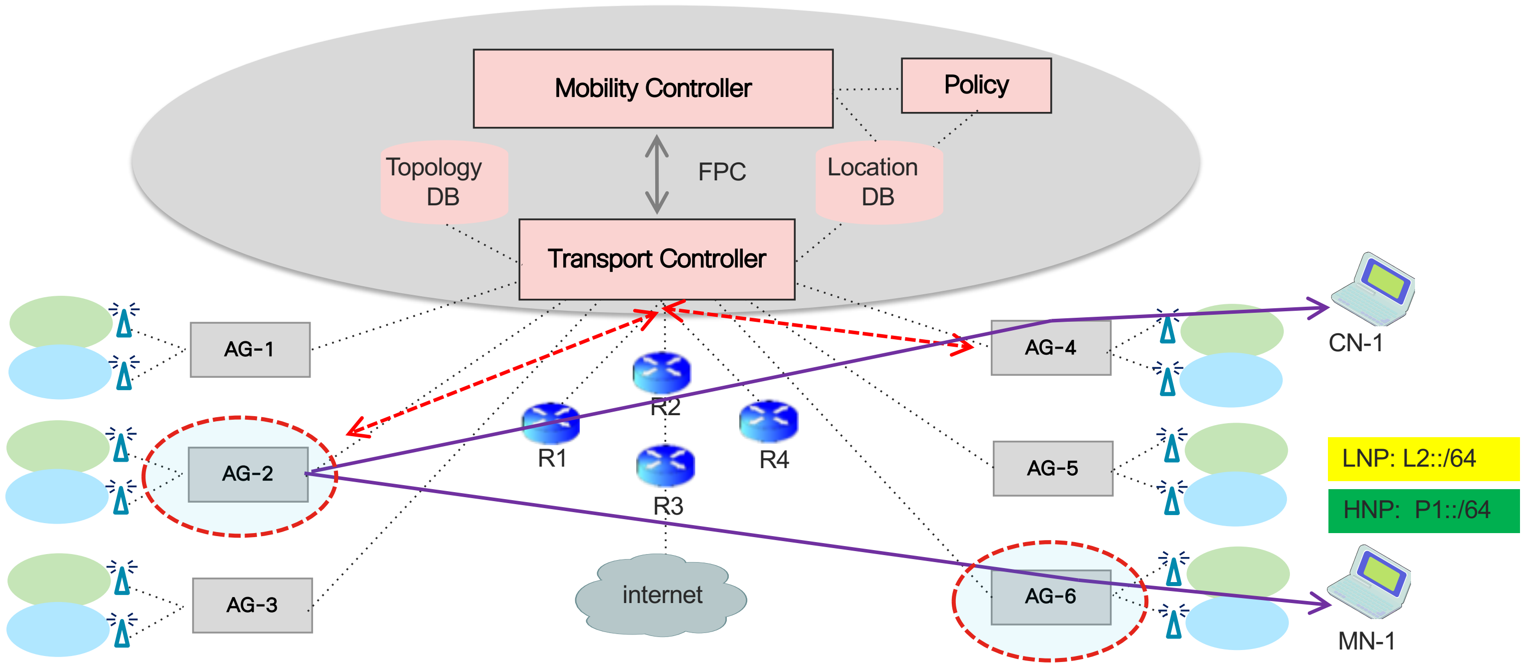
MN is assigned a set of new LNP's from the AG-6 prefix block and also has the HNP's from its initial attachment at AG-2.



# MFA: Non-Optimal Flow Detection & Reporting

4

After handoff, the traffic will go through the previous anchor for a transient period of time. AG-2 reports flow meta-data for non-optimal flows.

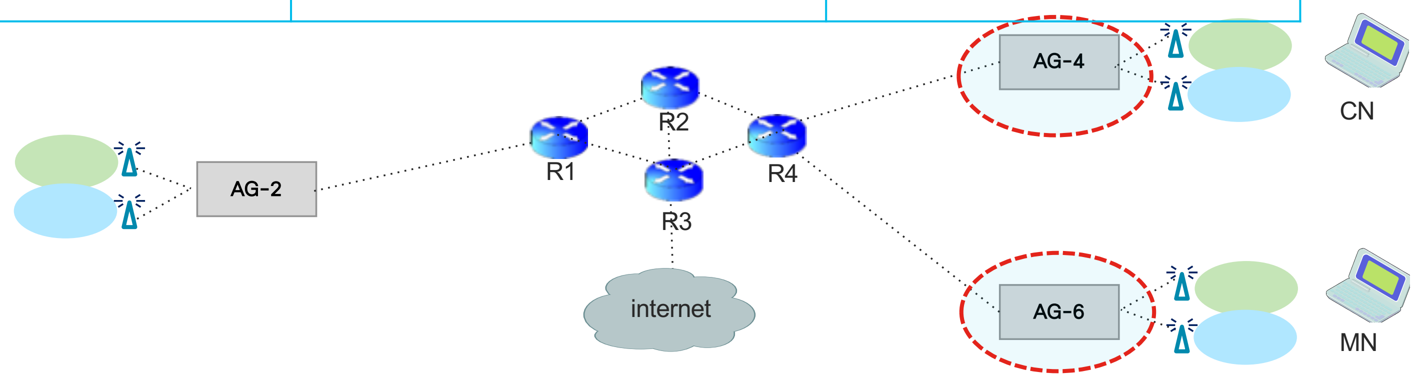


# MFA: Traffic Steering With SRv6

5

MC programs AG-2 & AG-6 with flow steering rules and also for Reporting IP flows that are going through non-optimal path. The policy for the SID and function association is pushed from the MC.

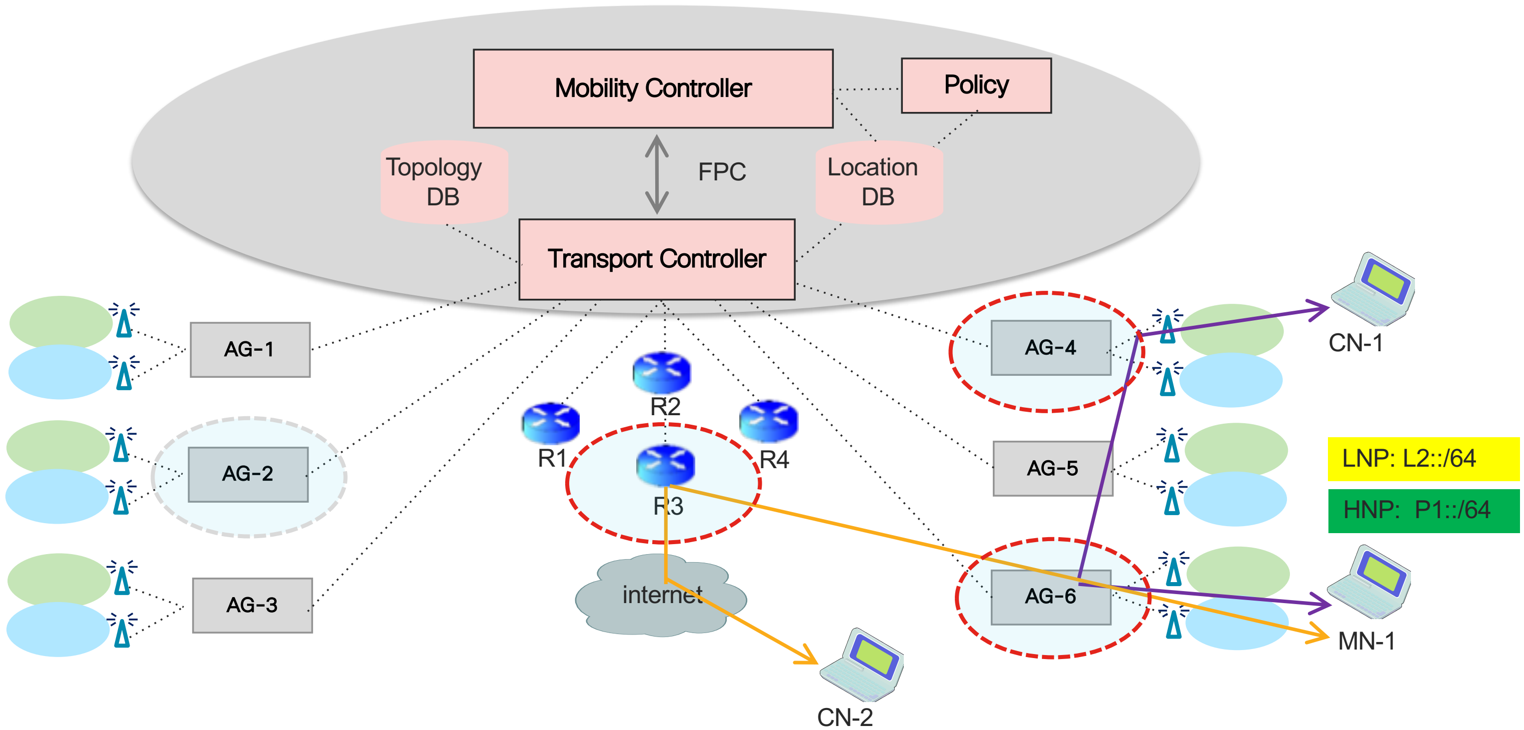
| Flow Direction | MN-Anchor (AG-6) (SRv6 Functions) | CN Anchor (AG-4) (SRv6 Functions) |
|---|---|---|
| MN to CN | Variant of T.Insert (Transit with insertion of SRv6 policy and a trigger to MC; such as Flow.Report) | Variant of End.X (Or, End.B6, instantiation of a binding SID); Or, End.T for inernet traffic |
| CN to MN | Variant of End.X (Layer-3 Cross Connect) (Or, End.B6, instantiation of a binding SID) | Variant of T.Insert (Transit with insertion of SRv6 policy and a trigger to MC; such as Flow.Report) |



# MFA: Optimal Routing after Path Stitching

6

MC has programmed the anchor nodes for CN-1 and CN-2 to steer all MN-1 IP traffic to AG-6 directly. AG-2 is no longer in path for those flows.



# MFA: MN's Traffic Flows after Prefix Renumbering

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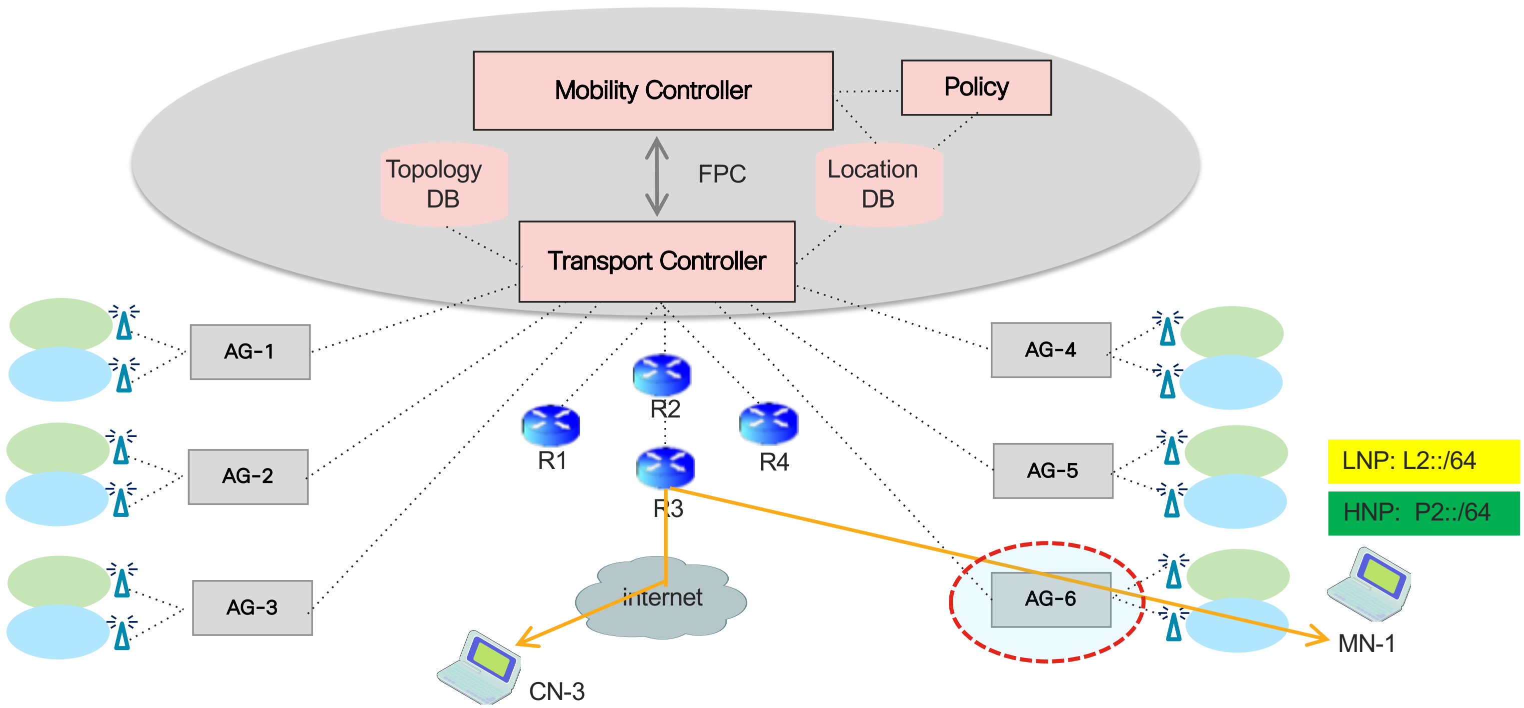
All MN's traffic flows initiated at the new location will take the optimal routing path. There is no traffic steering state, or tunnels.



# Summary

- Elimination of fixed anchors and shift towards distributed architecture
- Elimination of user-plane tunnels to avoid encapsulation overhead.
- Traffic steering with transport QoS awareness
- Access-agnostic user-plane with programmability
- Leveraging the innovation in the user-plane for traffic steering

Reference:

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Questions?