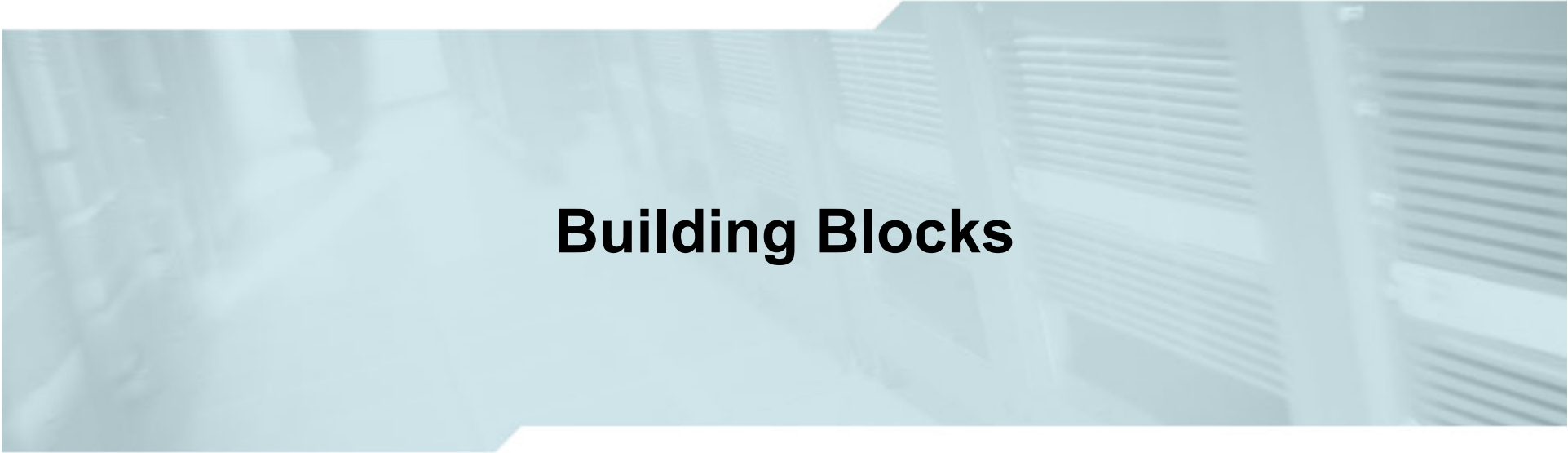


**Distributed Mobility Management::  
Architectural Considerations  
(Work Team#4 - Update)**

**IETF 92 - Dallas**

Sri Gundavelli (Cisco)

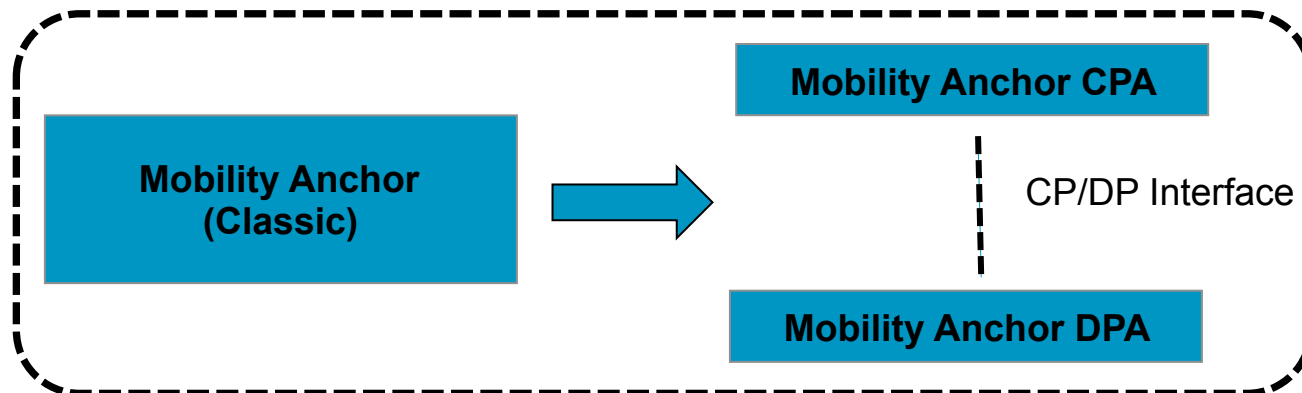
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# **Building Blocks**

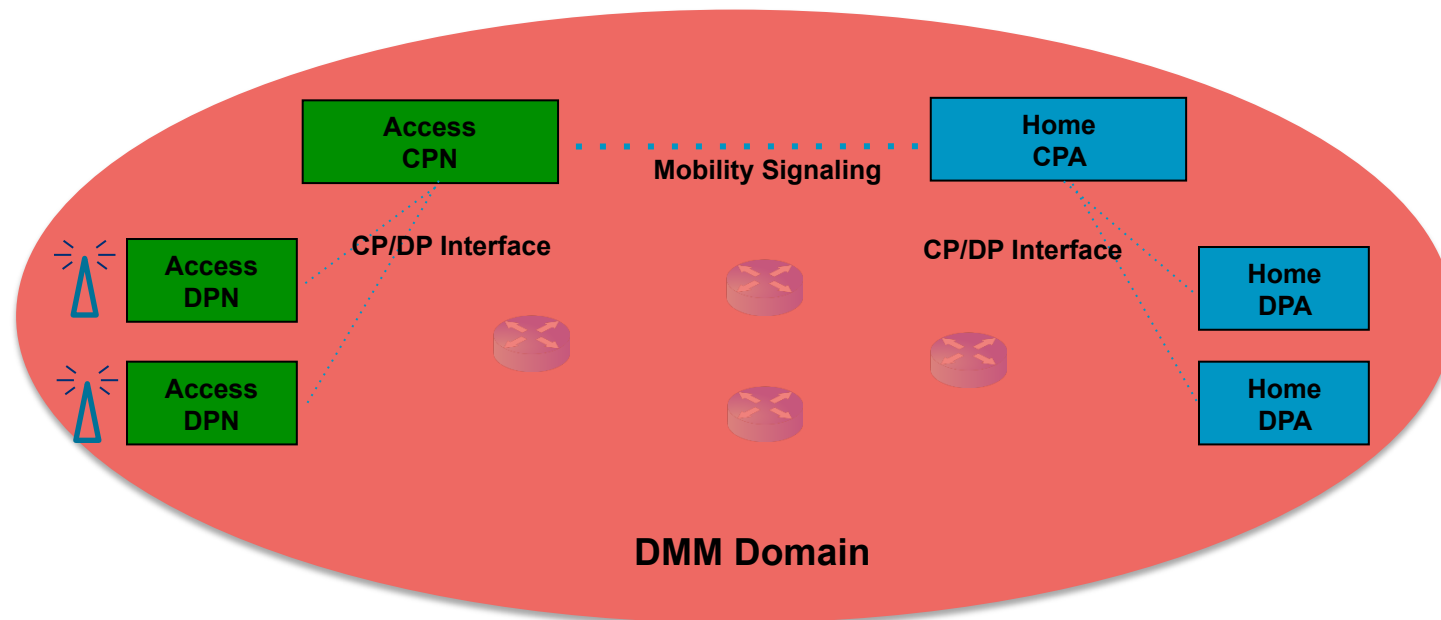
# DMM Architectural Principles and Goals

- Separation of control and data Plane
- Aggregation of control plane for elastic scaling
- Distribution of the data plane for efficient network usage
- Elimination of mobility state from the data plane
- Dynamic selection of control and data plane nodes
- Enabling the MN with network and gateway properties
- Relocation of anchor functions



# DMM Building Blocks

- Home Control Plane Anchor (Home-CPA)
- Home Data Plane Anchor (Home-DPA)
- Access Control Plane Node (Access-CPN)
- Access Data Plane Node (Access-DPN)
- Mobility Controller (MC)

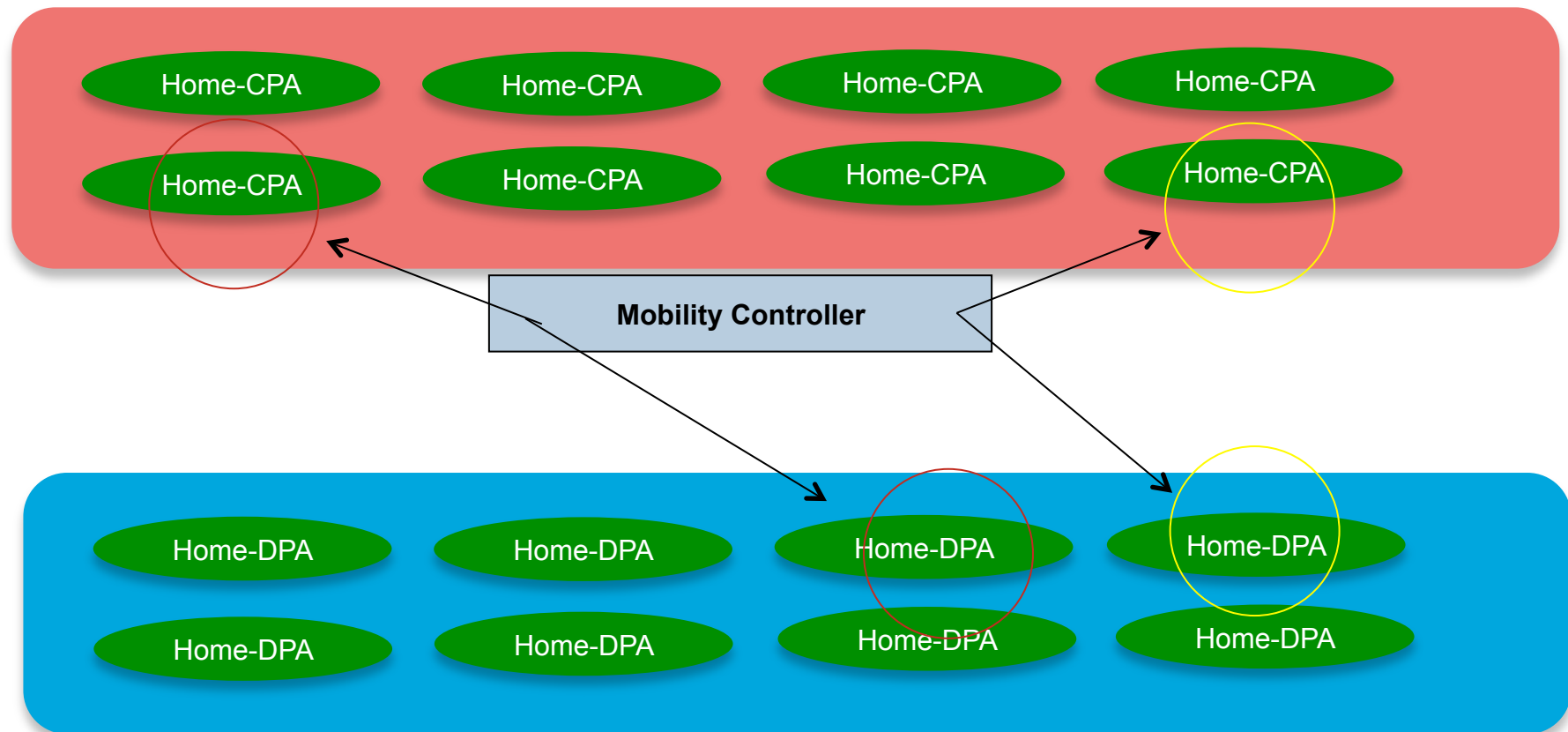


# Mapping of DMM Functions

Function	IETF (PMIPv6)	IETF (MIPv6)	3GPP / 3GPP2	3GPP2
H-CPA	LMA-CPA	HA-CPA	PGW-CPA GGSN-CPA	HA-CPA
H-DPA	LMA-DPA	HA-DPA	PGW-DPA GGSN-DPA	HA-DPA
A-CPN	MAG-CPN	MR-CPN <del>MN-CPN</del>	SGW-CPN SGSN-CPN	PDSN-CPN
A-DPN	MAG-DPN	MR-DPN <del>MN-DPN</del>	SGW-DPN SGSN-DPN	PDSN-DPN

# Dynamic Anchor Selection

- On a session basis, the mobility controller can select a Home-CPA and Home-DPA and will host a mobile control and data plane sessions.



# DPA Selection based on Capabilities

- The mobility controller has the information of the node capabilities. When the controller receives a mobility control plane message, it will dynamically select a data plane anchor based on the session requirements.

DPA Instance	Capability-X (Ex: Internet Offload)	Capability-Y (DPI)	Capability-Z (IPsec Capability)
Home-DPA-1	Y	N	Y
Home-DPA-2	N	N	Y
Home-DPA-3	Y	Y	N

# DMM Security Requirements

- The control-plane messages exchanged between a Home-CPA and Home-DPA must be protected using end-to-end security associations with data-integrity and data-origination capabilities.
- IPsec ESP in transport mode with mandatory integrity protection should be used for protecting the signaling messages.
- IKEv2 should be used to set up security associations between the Home-CPA and Home-DPA.



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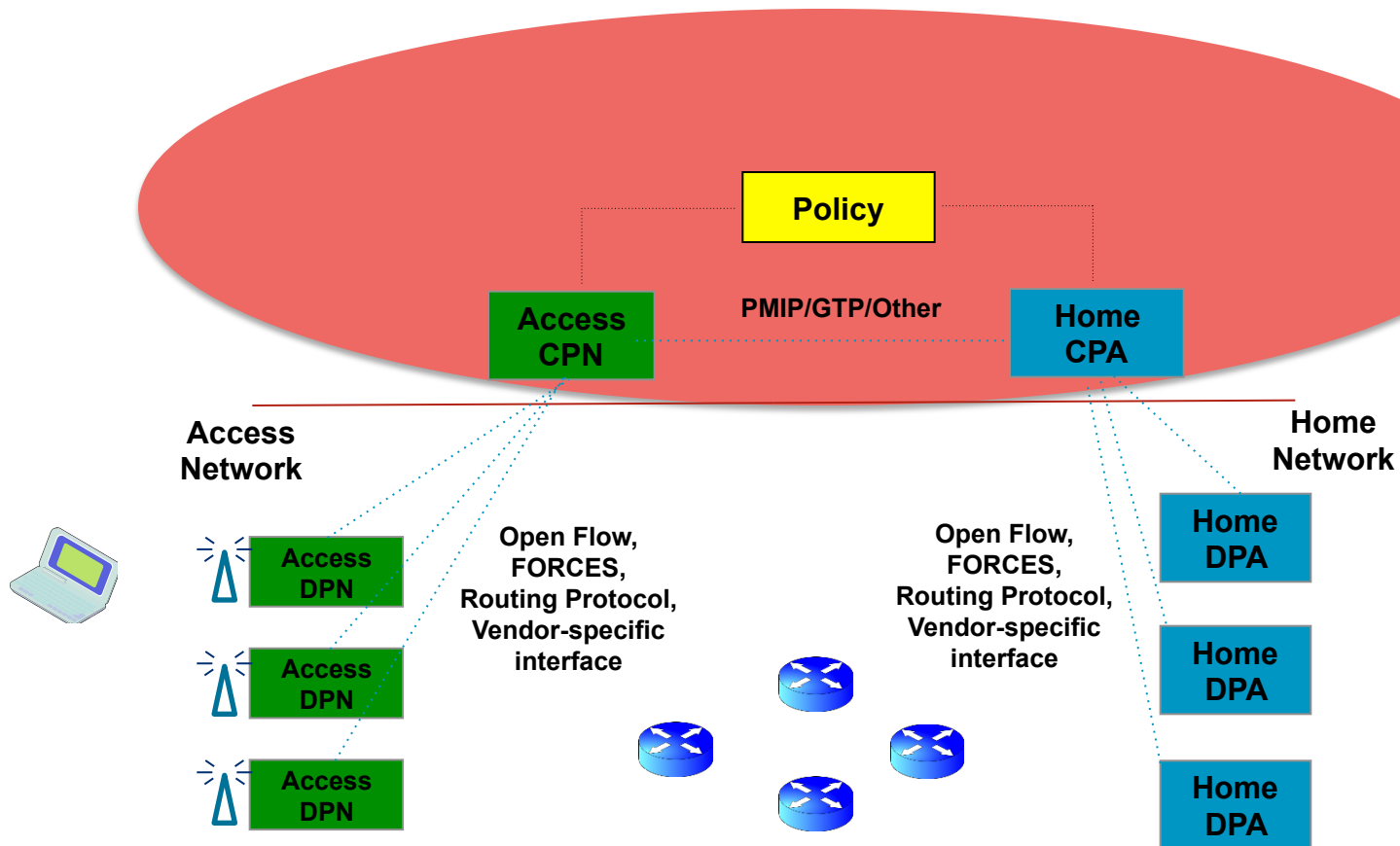


# **Deployment Models**

# Split CP/DP In Access and Home

1

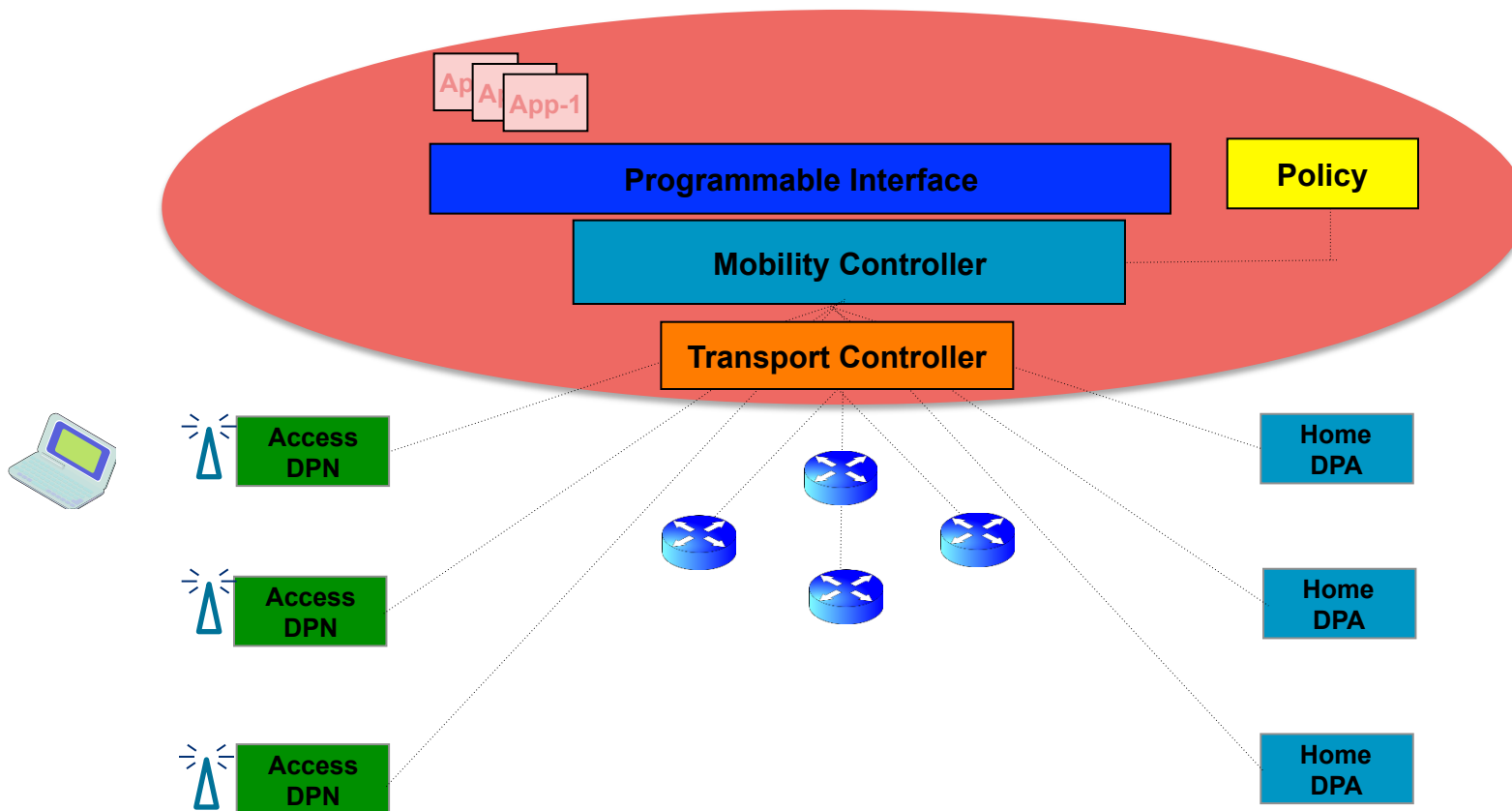
- Split Control and Data Plane; Simplified data-plane with no mobility state;



# Home and Access Distinction Removed

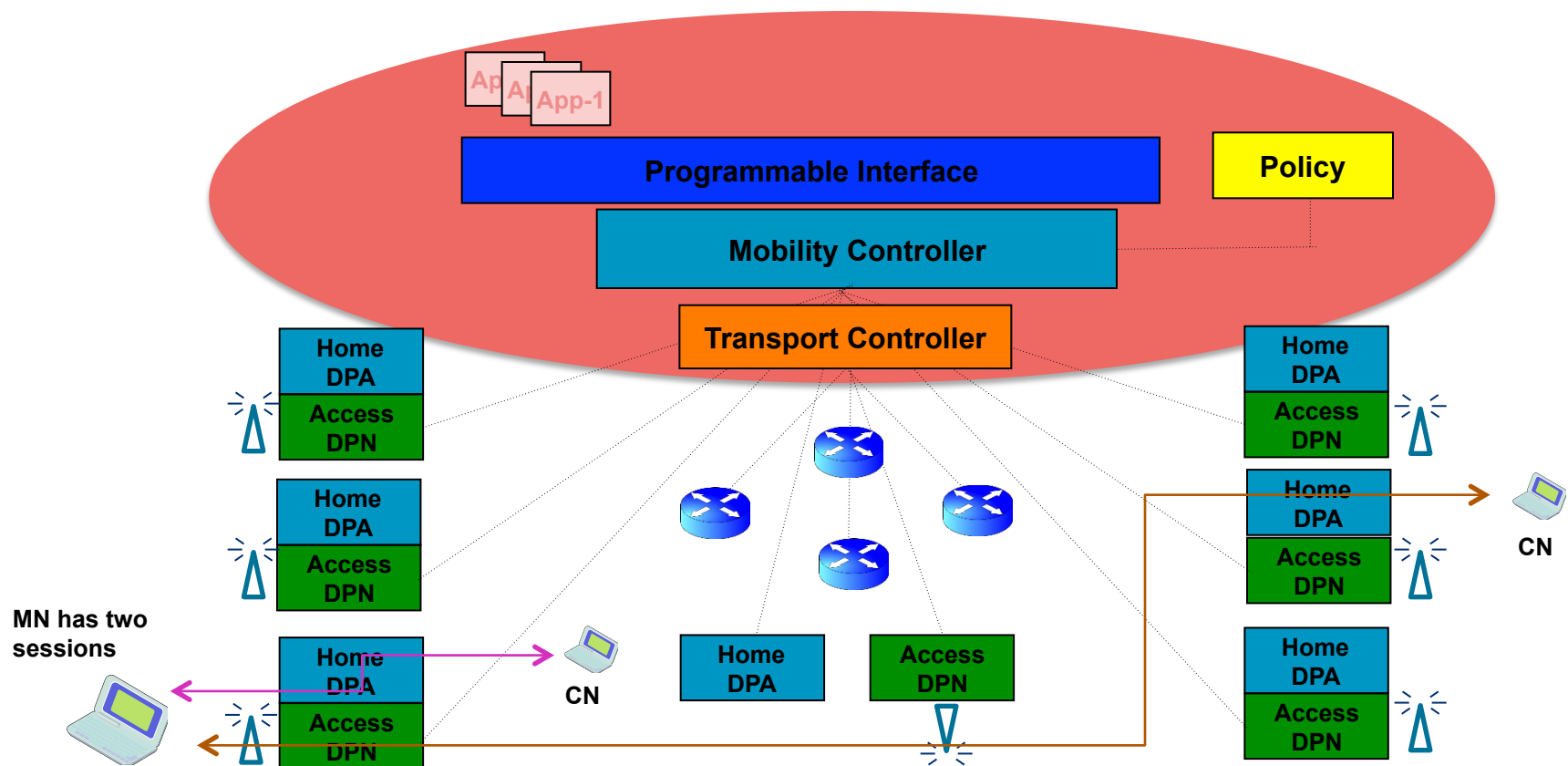
2

- The distinction, “Access” and “Home” is removed for CP functions with a Flat architecture.



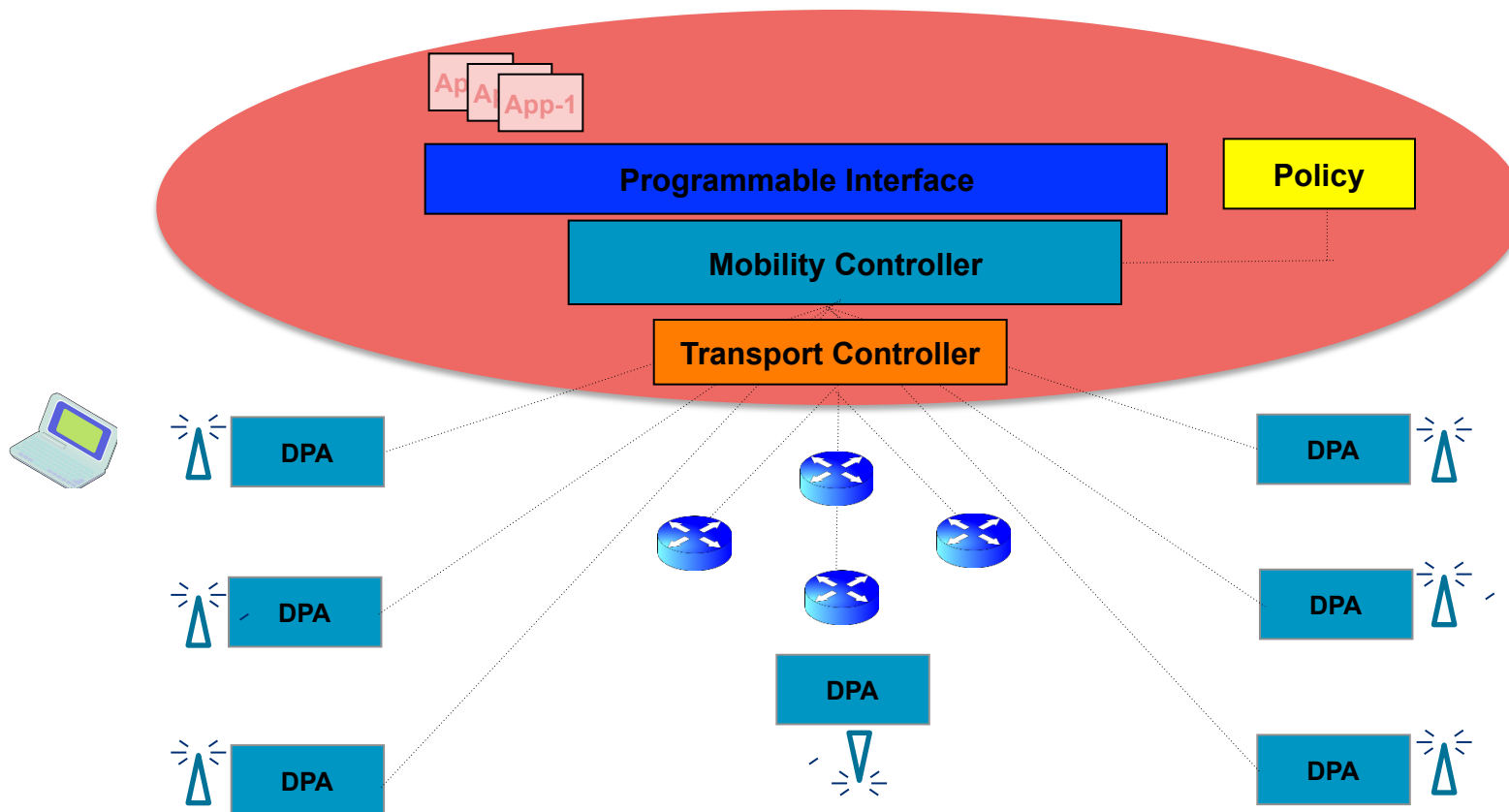
# Collocation of Access/Home DP Function 3

- The Access-DPN and Home DPA functions can be hosted on the same node. On a session basis, the respective functions are activated for a given MN's session.




# Floating DP Anchor

- The Home-DPA always follows the mobile node. The access gateway always assumes the Home-DPA role.

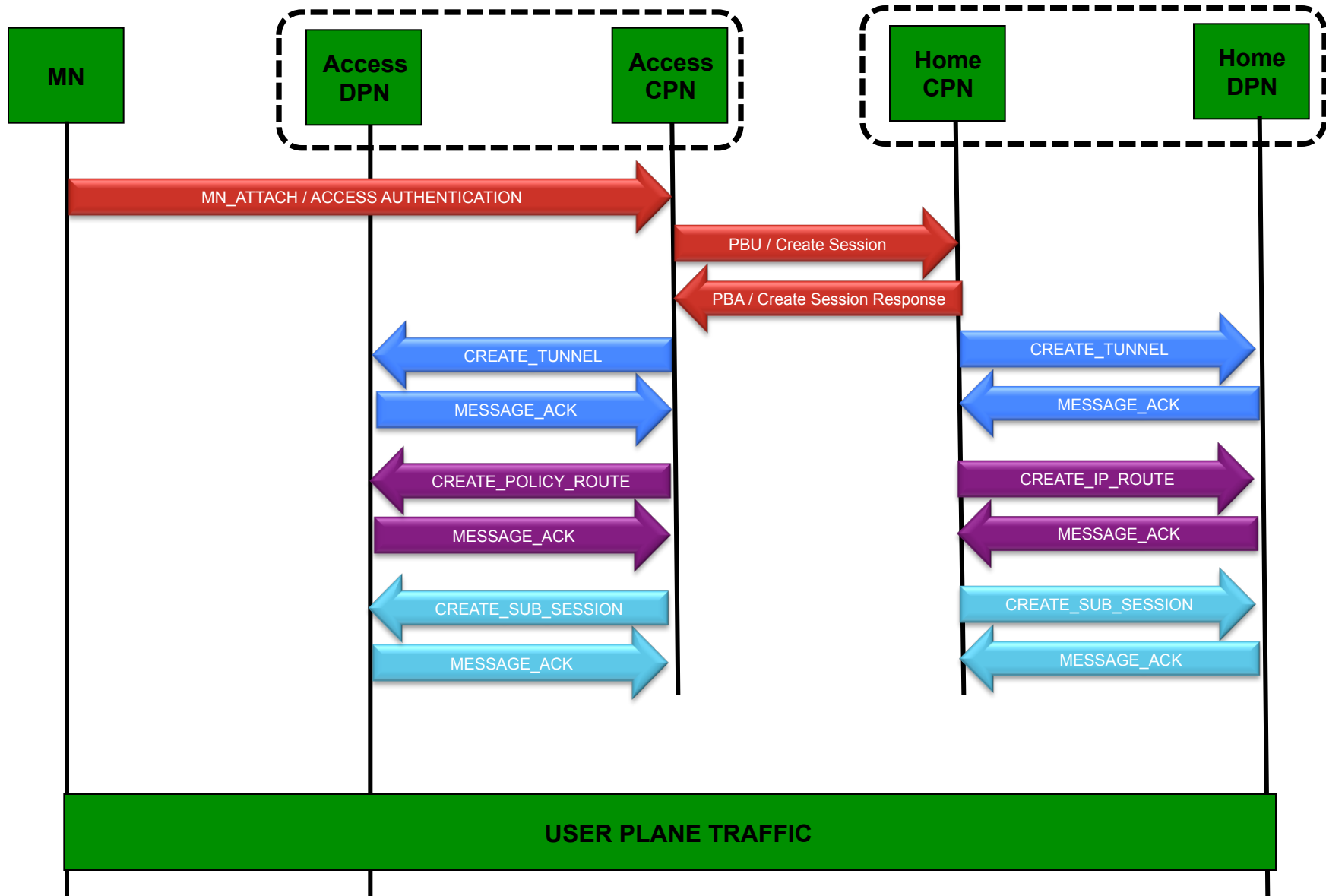


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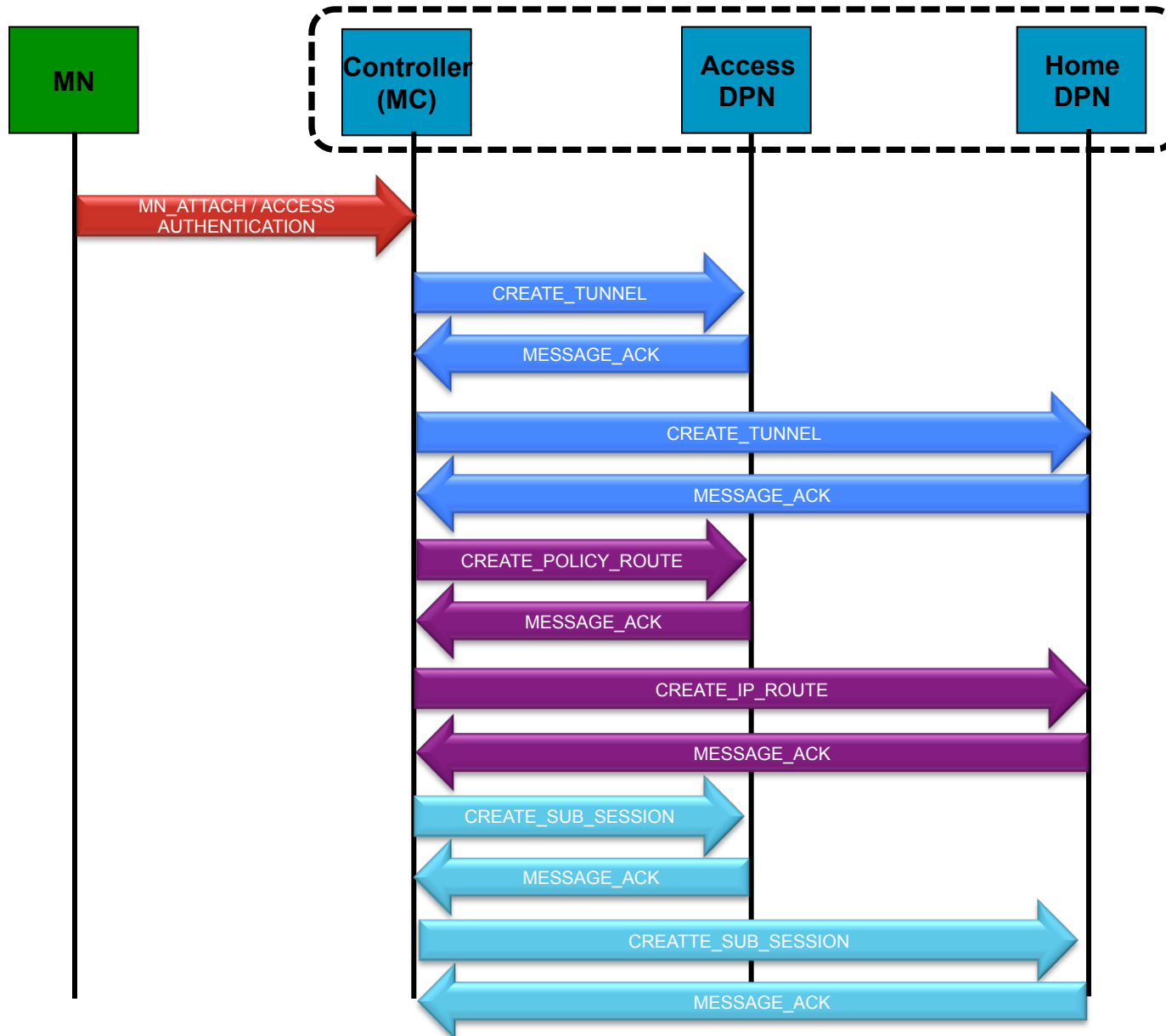


## **Example - Call Flows**

# Example Call Flow



# Example Call Flow for Flat Model







**Comments ?**