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Stateless vEPC

http://tools.ietf.org/html/draft-matsushima-stateless-uplane-vepc-02

2014/03/27

Softbank Mobile

Today

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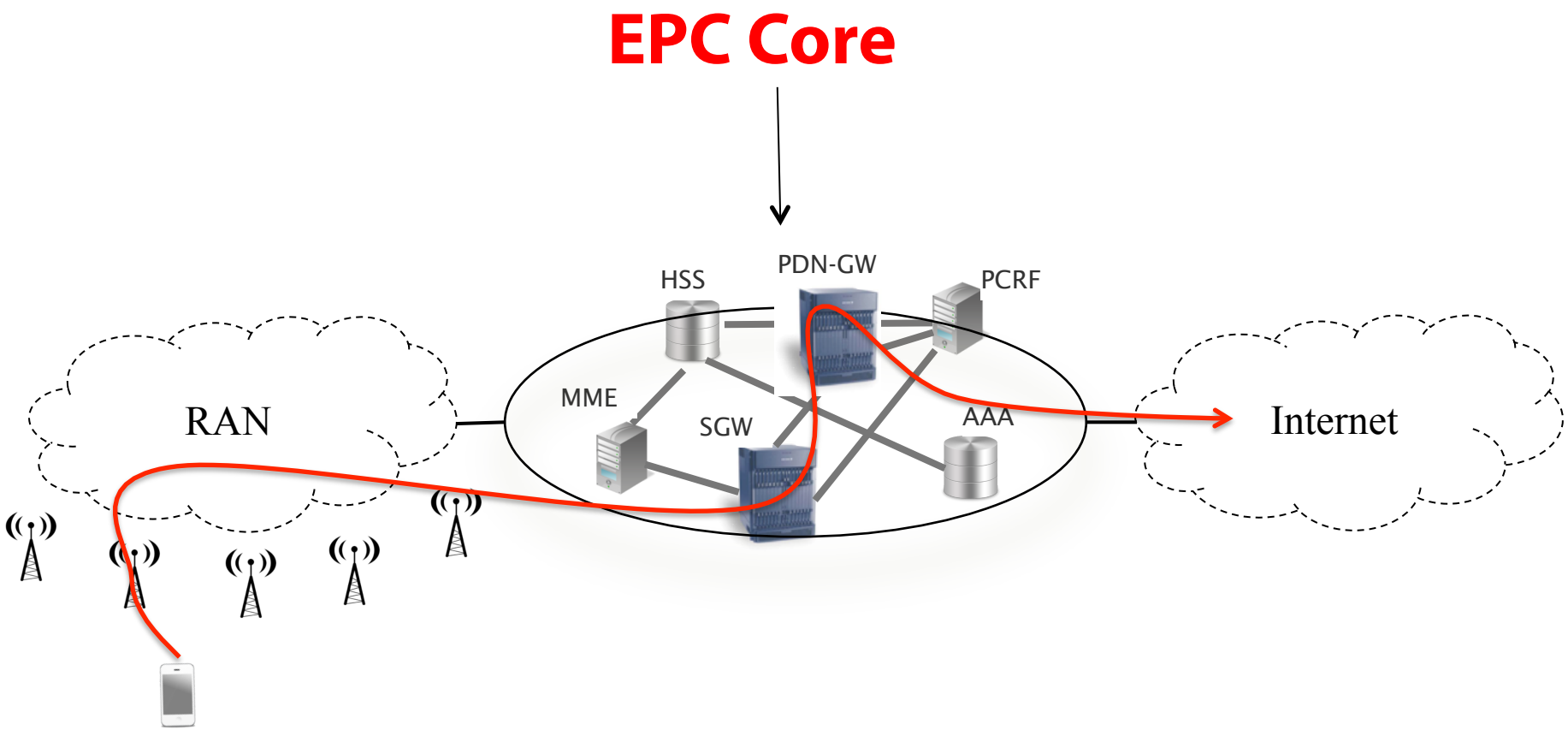

Network Function Virtualization

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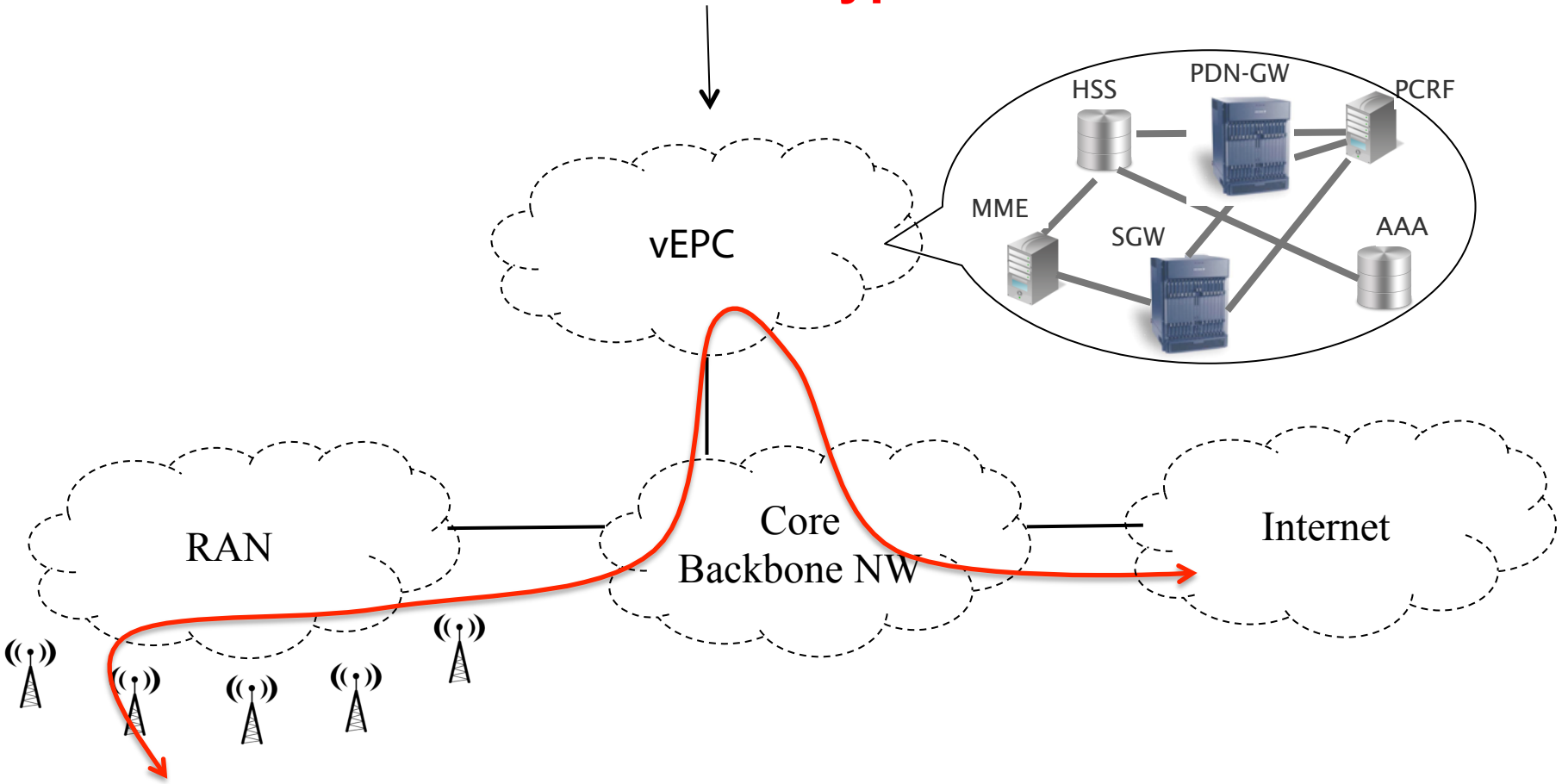
Virtualized EPC on Hypervisor



WHY: All packets incl. control signaling are routed to vEPC.

All IP Network defined in R-8, BUT

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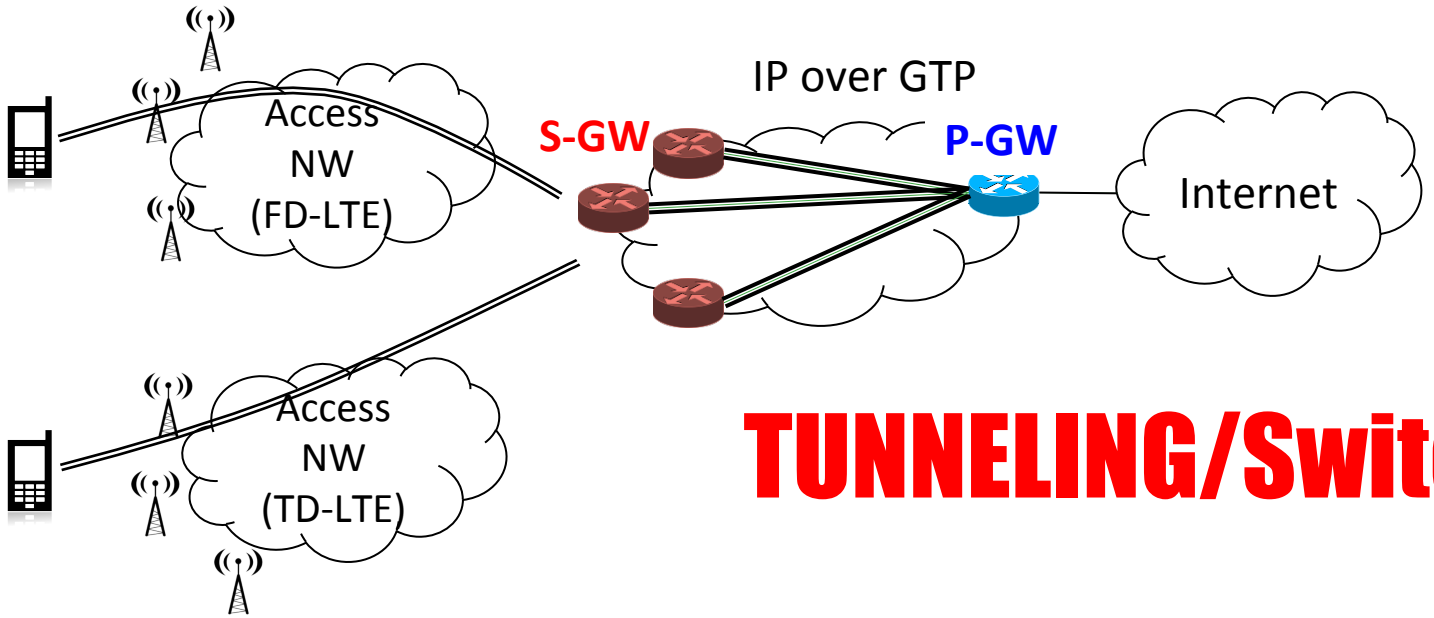
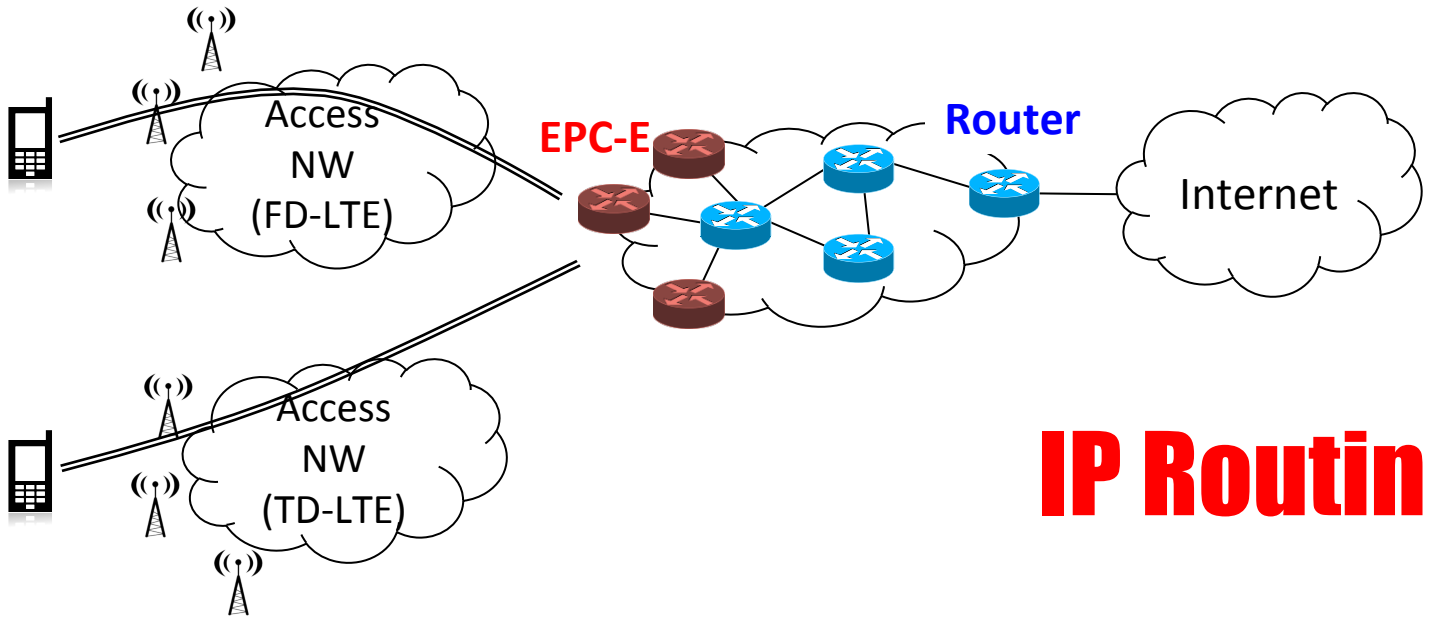


TUNNELING/Switching



IP Routing

Splitting Control and User Plane

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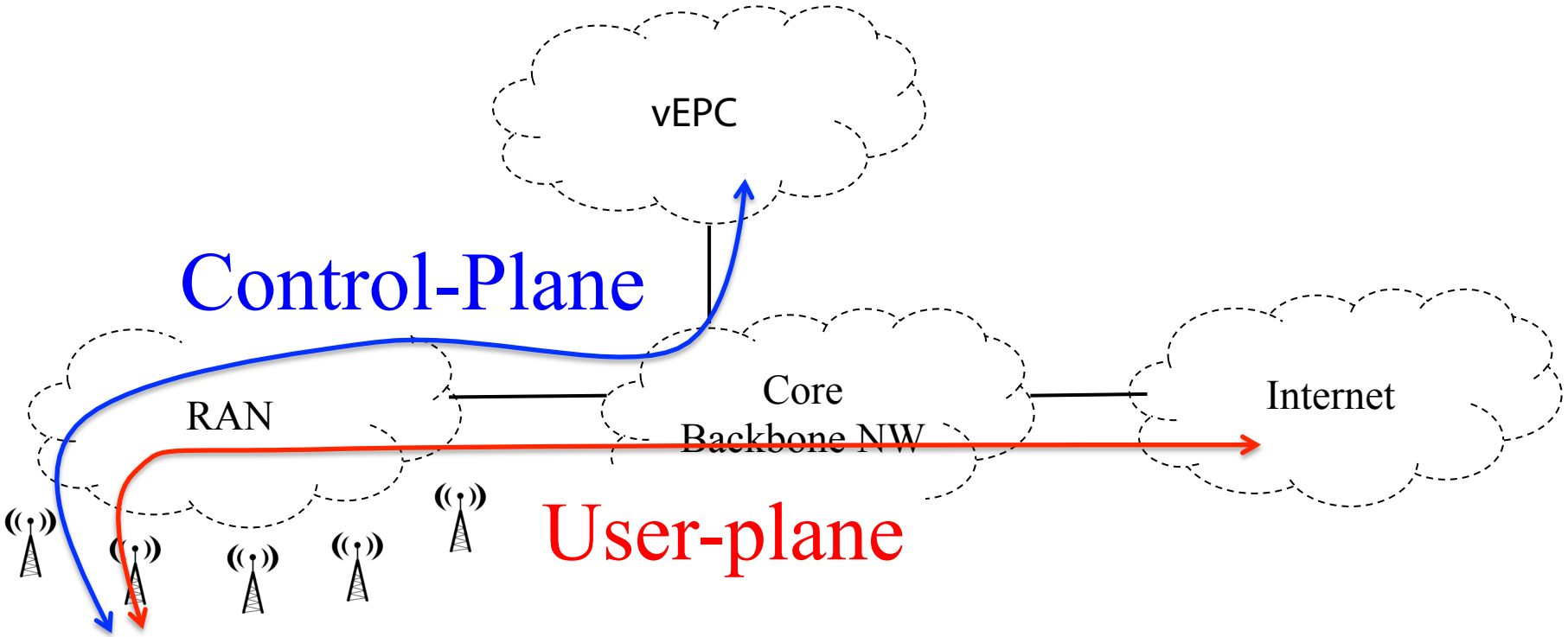

Our Goal

- User packets bypass vEPC
- Network Services (DPI, Charging, etc.) are performed on the user plane

Routers in U-Plane

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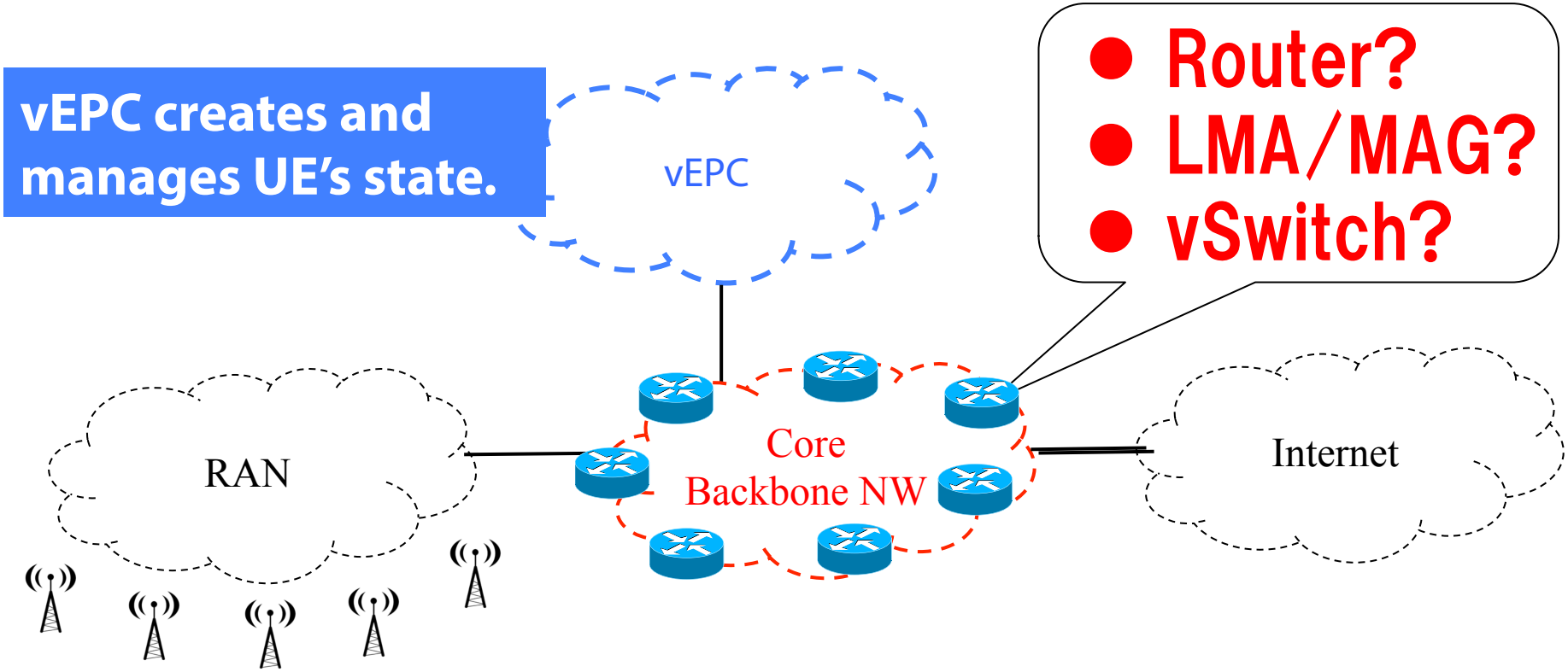
vEPC creates and manages UE's state.



It should have routing capability based on the state information available in vEPC.

Motivation

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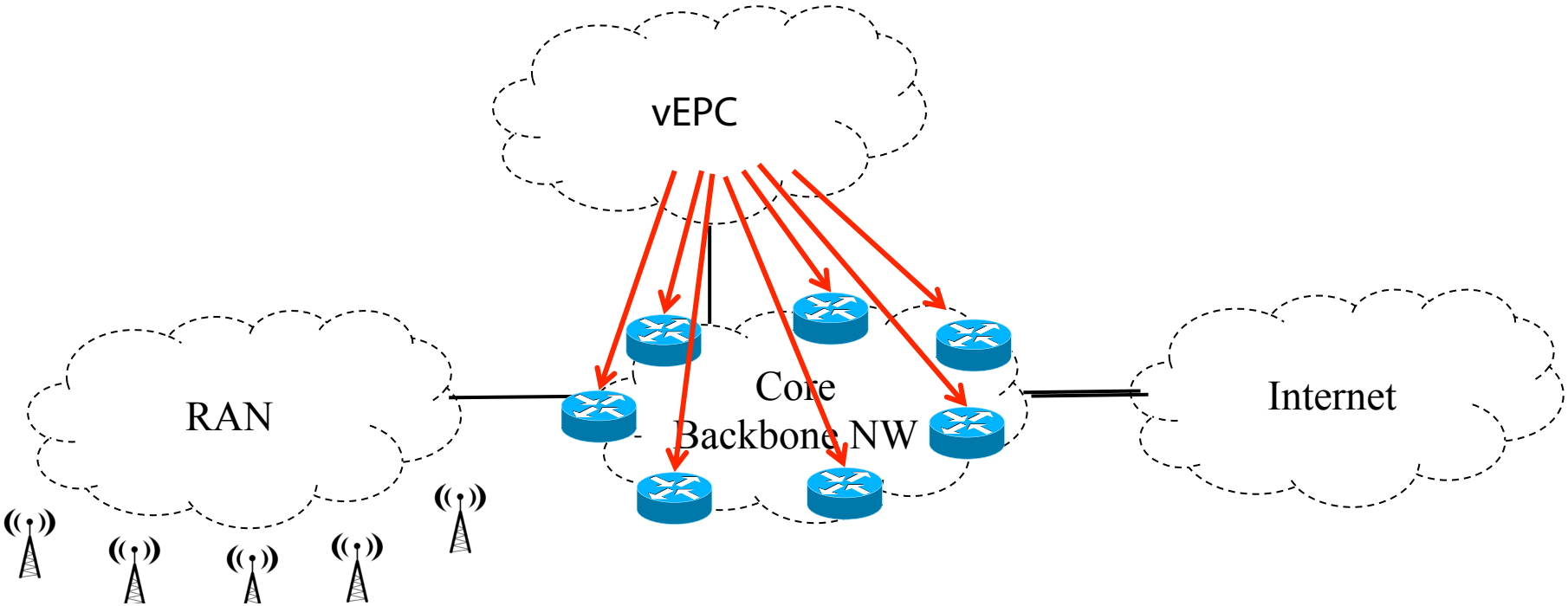

A mechanism is required to reflect states in C-plane to routers in U-plane.

- Routing protocols (BGP)
- Extension to Proxy Mobile IP (being WGLC in NETEXT)
- SDN/OpenFlow
- FORCES WG

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Stateless user-plane architecture

We use BGP!!!

Simple Configuration

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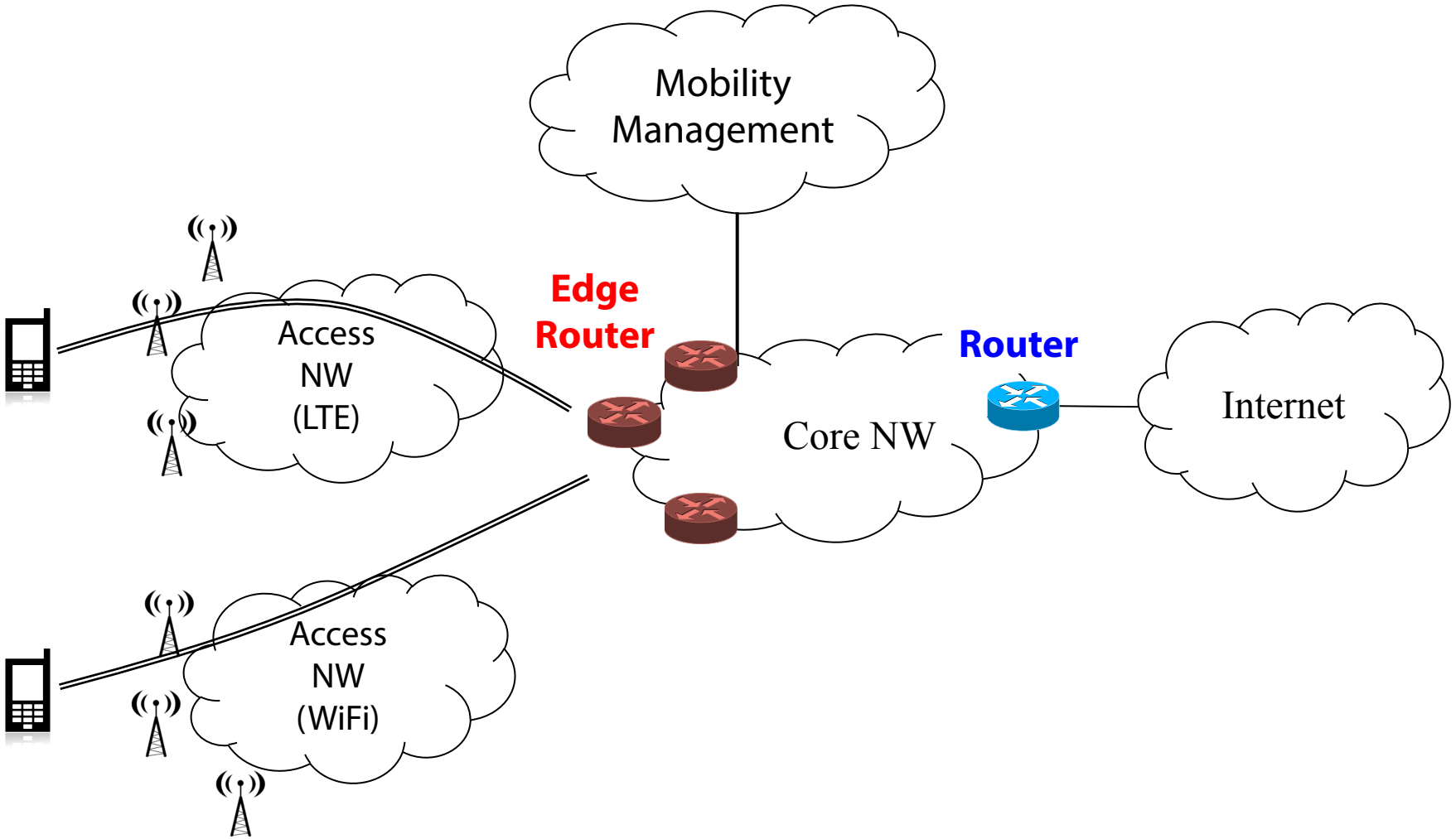

Anycast!

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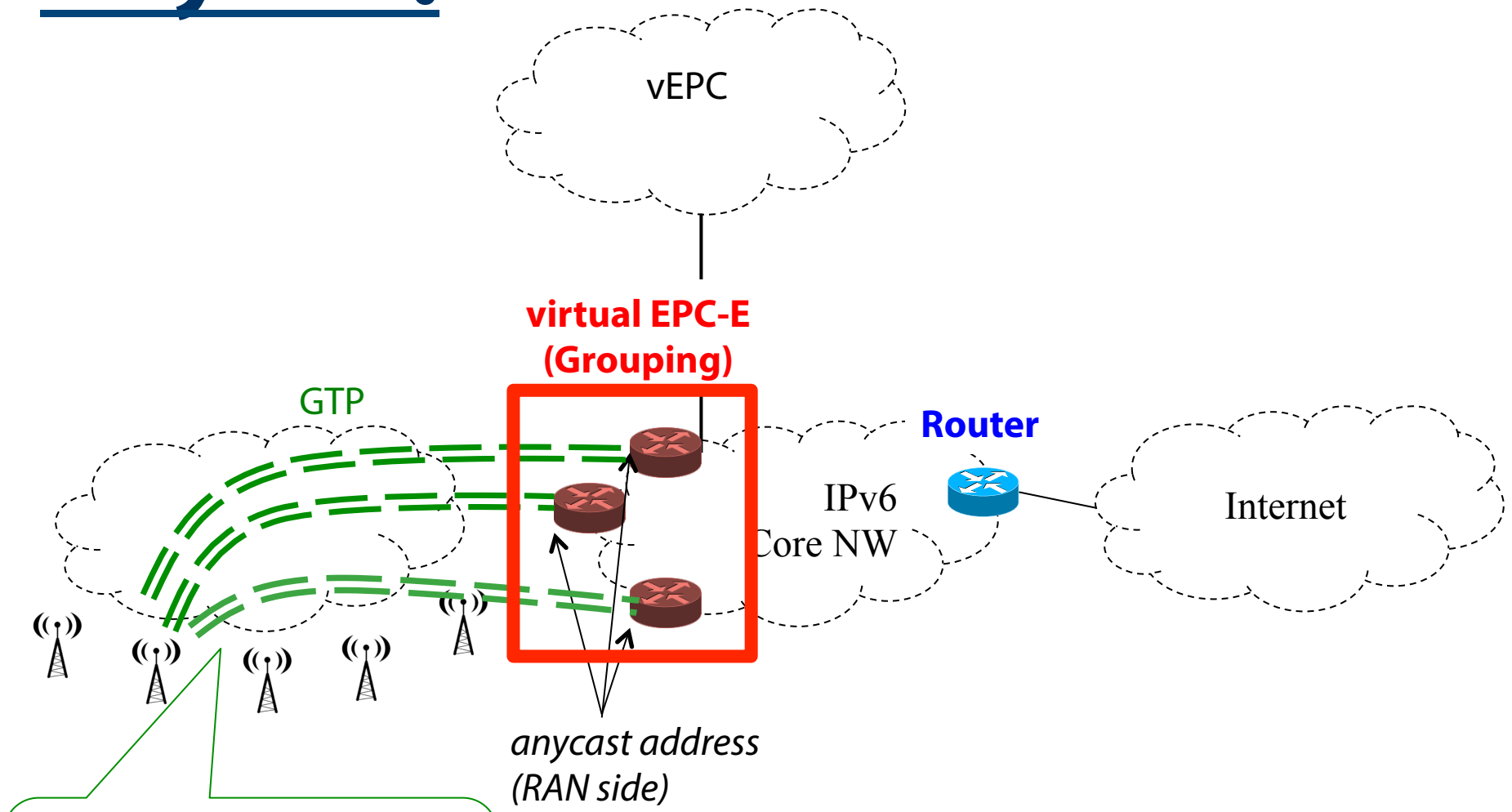

Stateless user-plane architecture for Mobile

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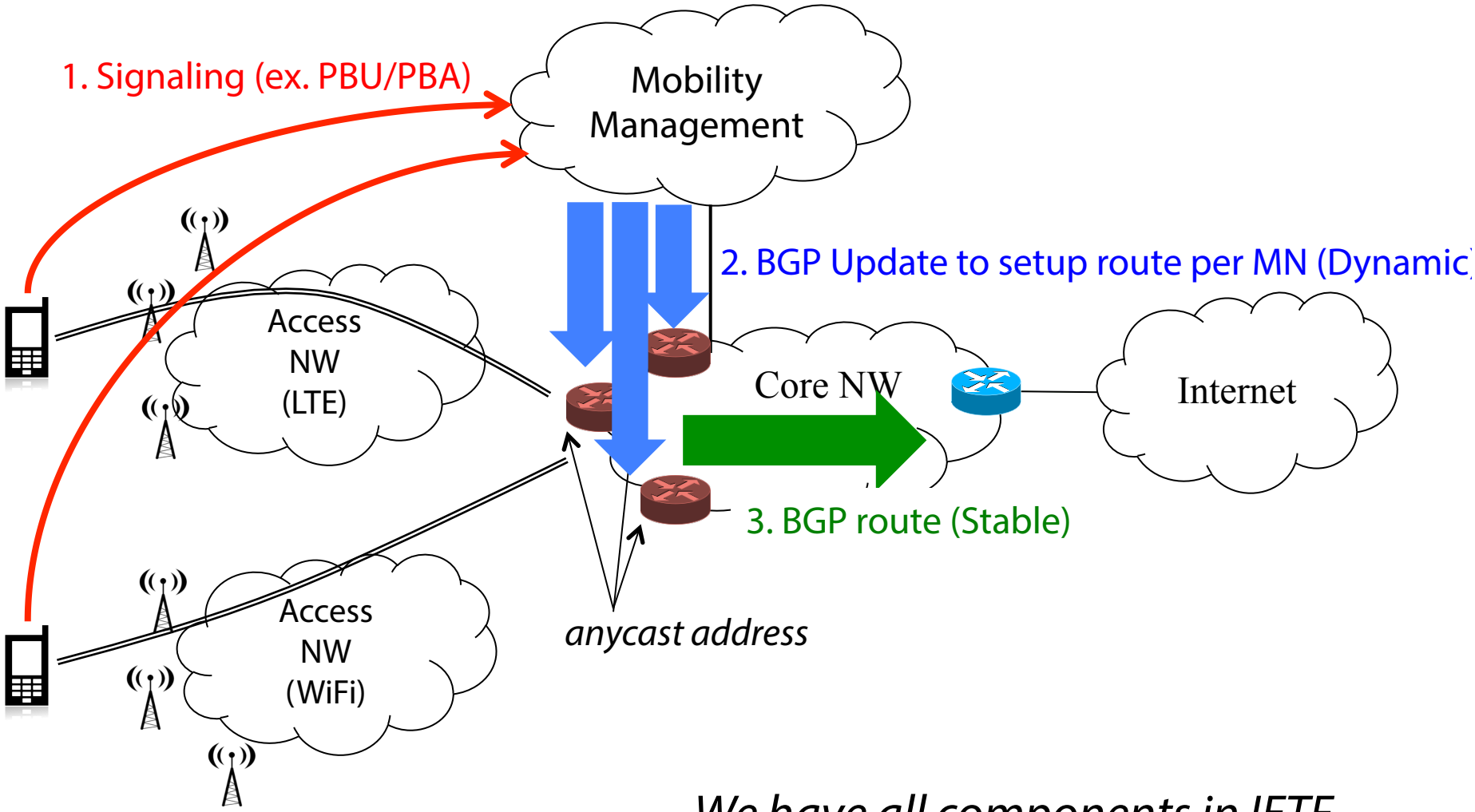

We have all components in IETF

BGP but not Boeing Model

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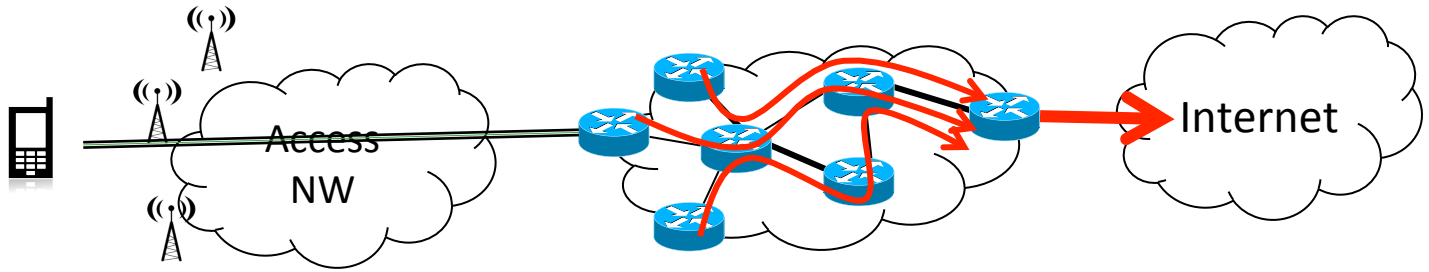
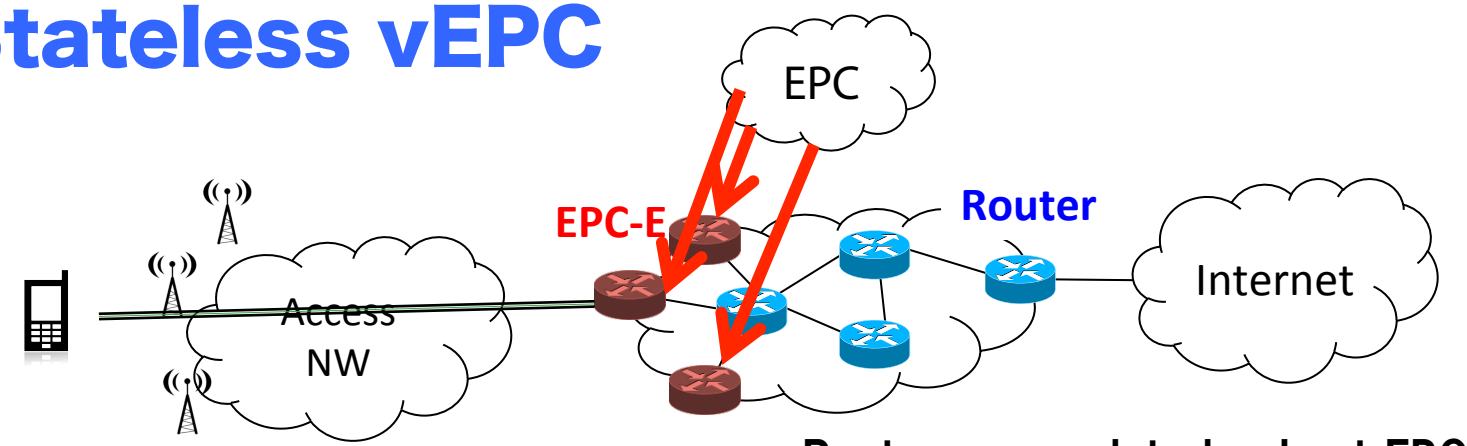
Boeing Model



Routes are updated across networks

Stateless vEPC



Routes are updated only at EPC-E

Dynamic Route Update

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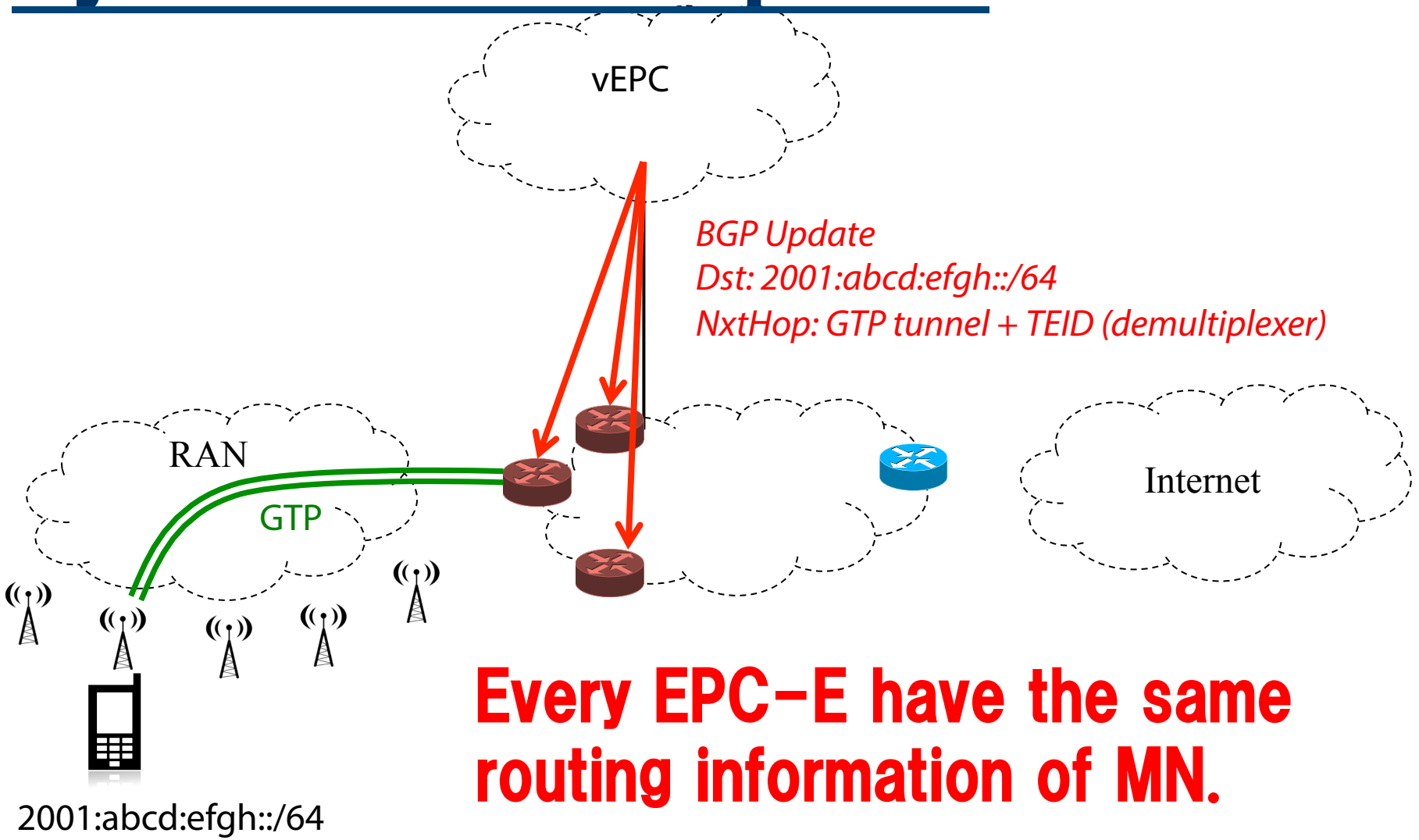

Every EPC-E have the same routing information of MN.

→ **Dynamic: BGP Update**

Remote Next Hop: ***draft-vandevelde-idr-remote-next-hop***

Stable Routes

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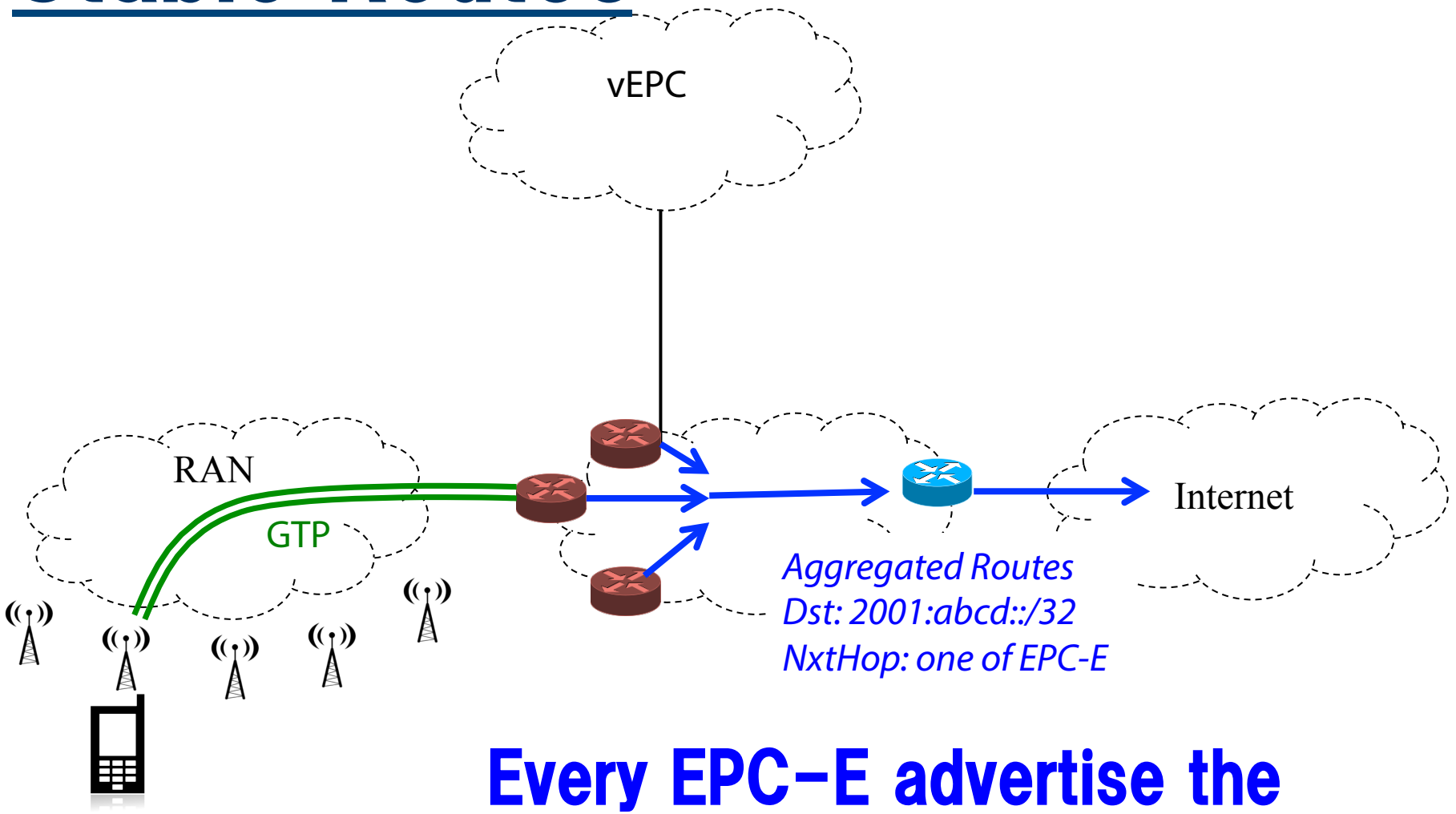

Every EPC-E advertise the aggregated prefix.

⟶ **Stable: BGP Update**

Route Information

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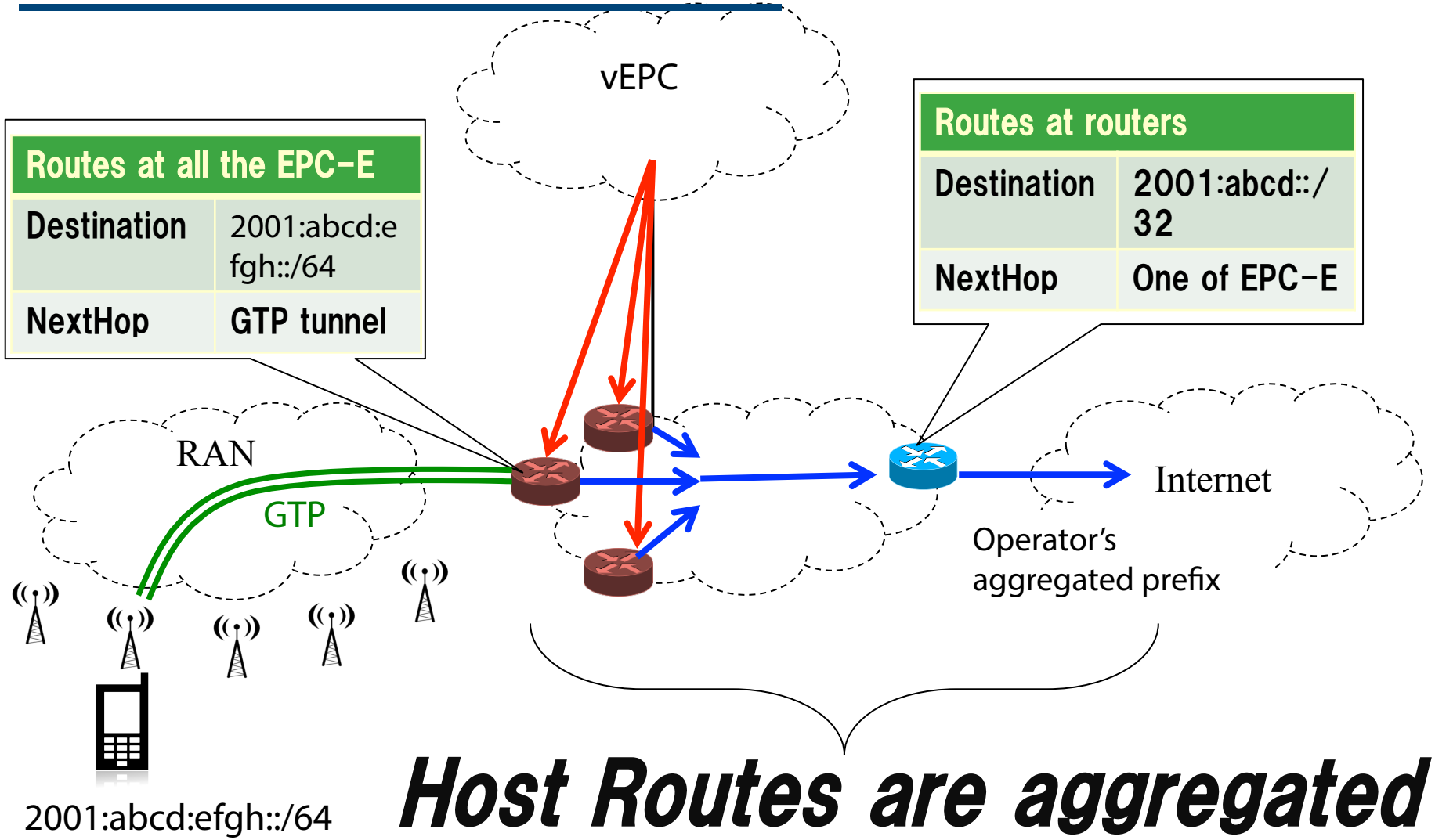

Asymmetric Route

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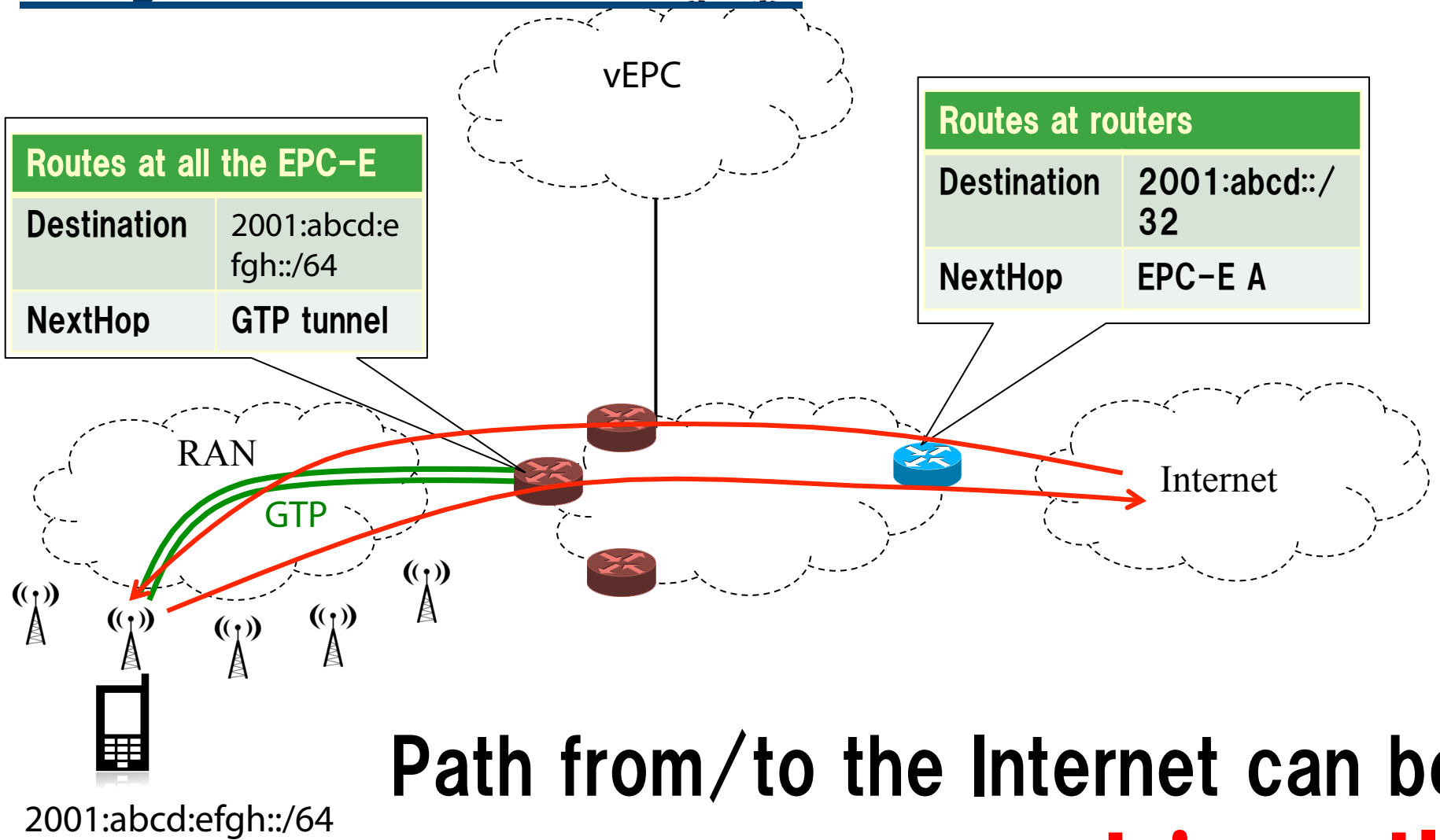

Path from/to the Internet can be **asymmetric path**

Handover

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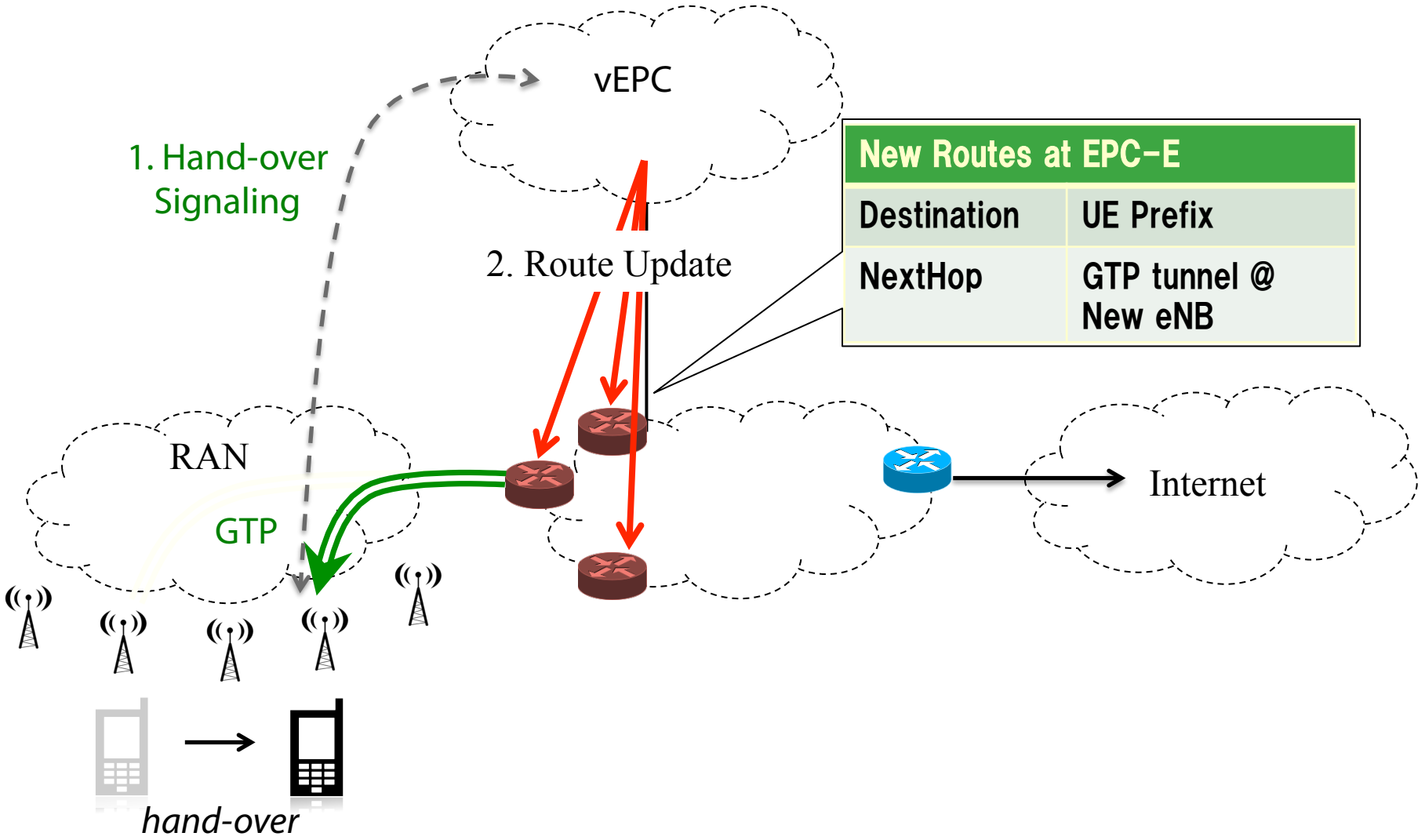

Address Delegation

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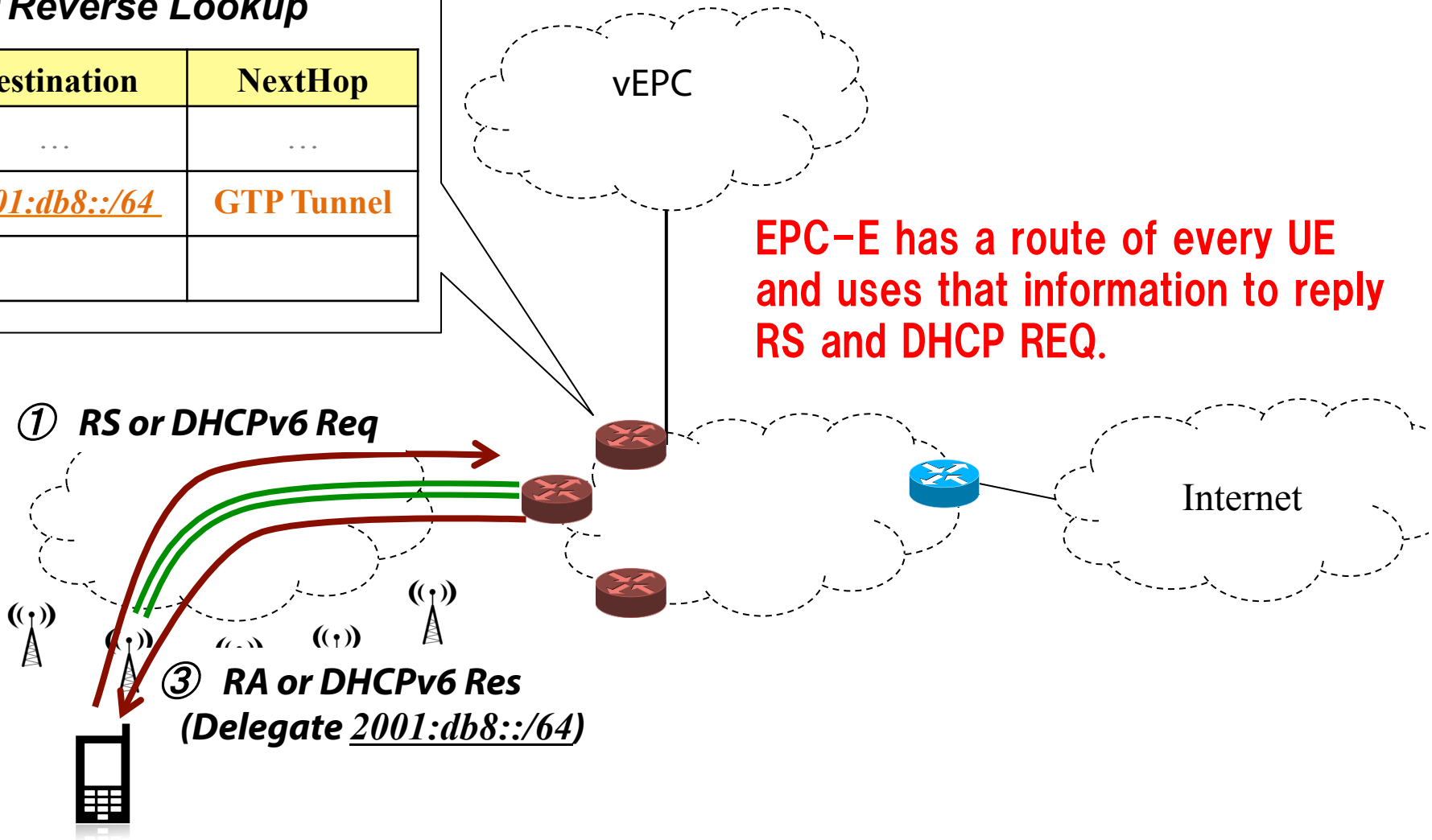
② Reverse Lookup

Destination	NextHop
…	…
2001:db8::/64	GTP Tunnel



Scalability by Operational Configuration

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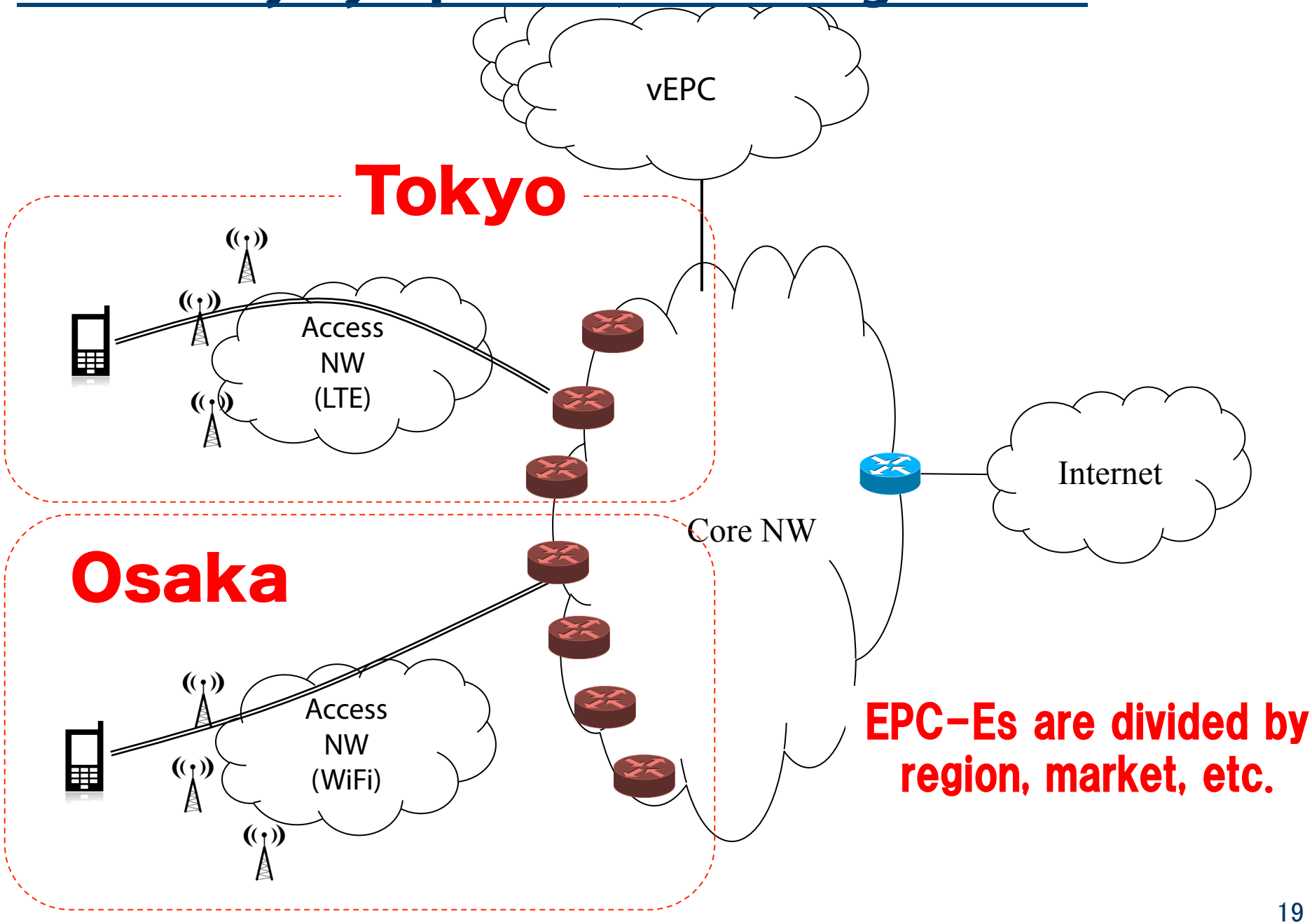

Backward compatibility

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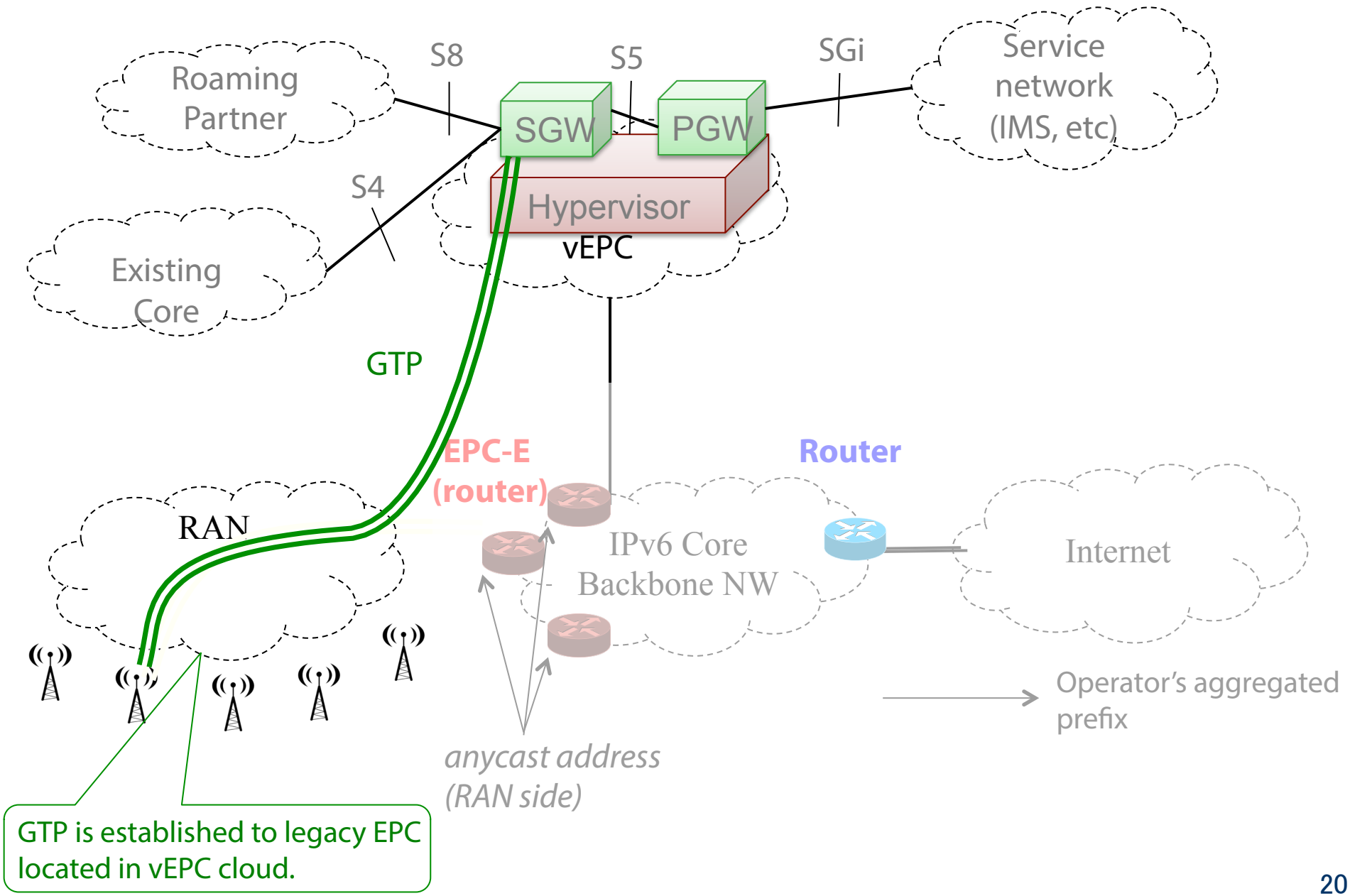

IPv4 Support

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