

Gateway Initiated Dual-Stack lite

(draft-gundavelli-softwire-gateway-init-ds-lite-01)

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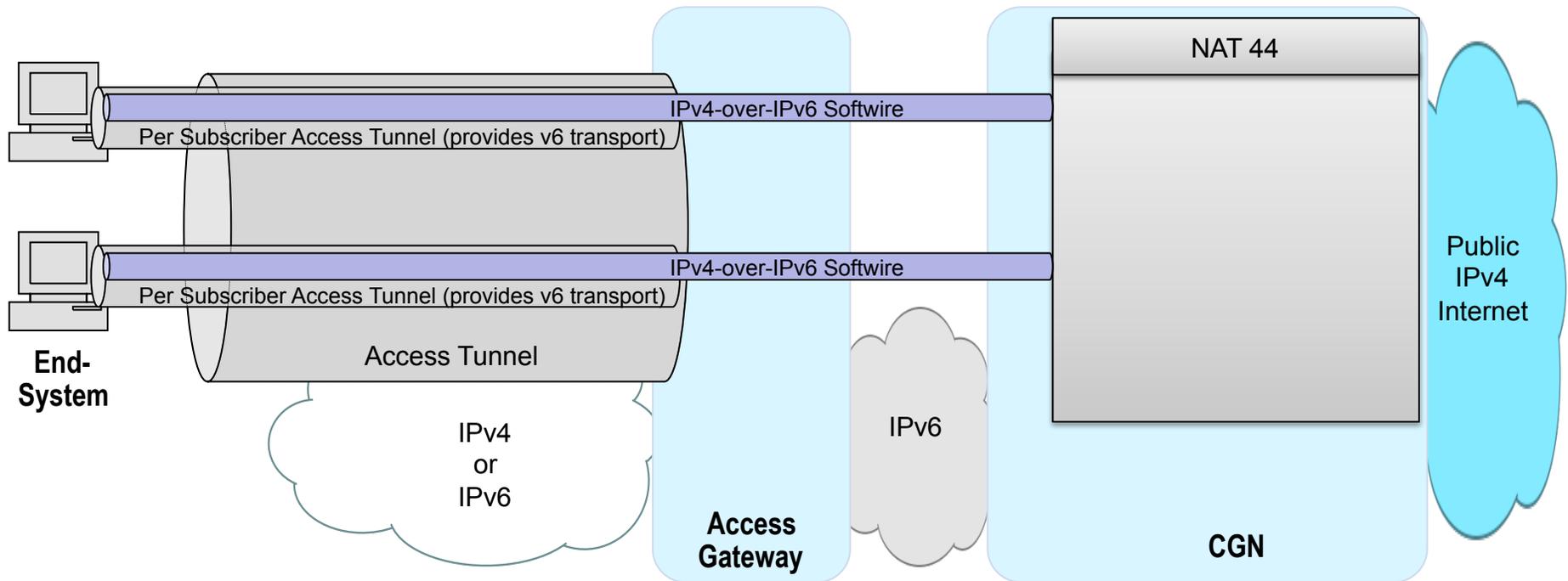
Gateway-initiated Dual-Stack lite

Objectives

- IPv4-exhaust / IPv6 transition solution for carriers that desire to continue to deliver IPv4 services (and leverage NAT44)
 - which use a tunnel-based access architecture (e.g. Mobile w/ MIP/PMIP, GTP; Broadband w/ PPP, Point-to-Point VLAN)
 - IPv4 core & Private-IPv4-Exhaust/Overlapping-IPv4/Non-Meaningful-IPv4
 - IPv6 core & minimal IPv4 support in SP infrastructure
- Additional Requirements
 - No changes to End-System/Host/Handset (continue to support installed base)
 - Minimal changes to existing access architectures
 - IPv4 and/or IPv6 SP transport networks support

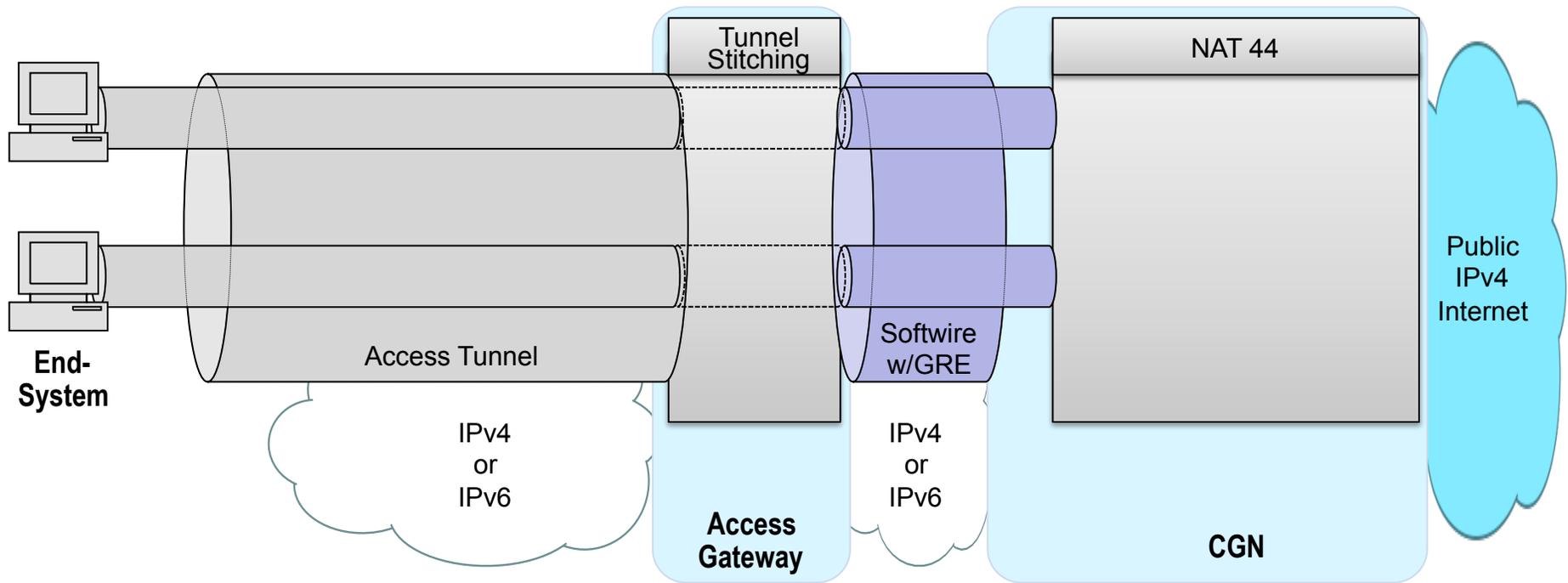
Dual-Stack lite - Review

Application to Access Networks using Tunnels



- DS-lite requires changes to the End-Systems
- DS-lite results in softwire-tunneling on top of access tunneling:
Mobile Networks: Added overhead on airlink
- DS-lite defined for IPv6 transport only
- DS-lite requires per-Subscriber softwire termination on CGN

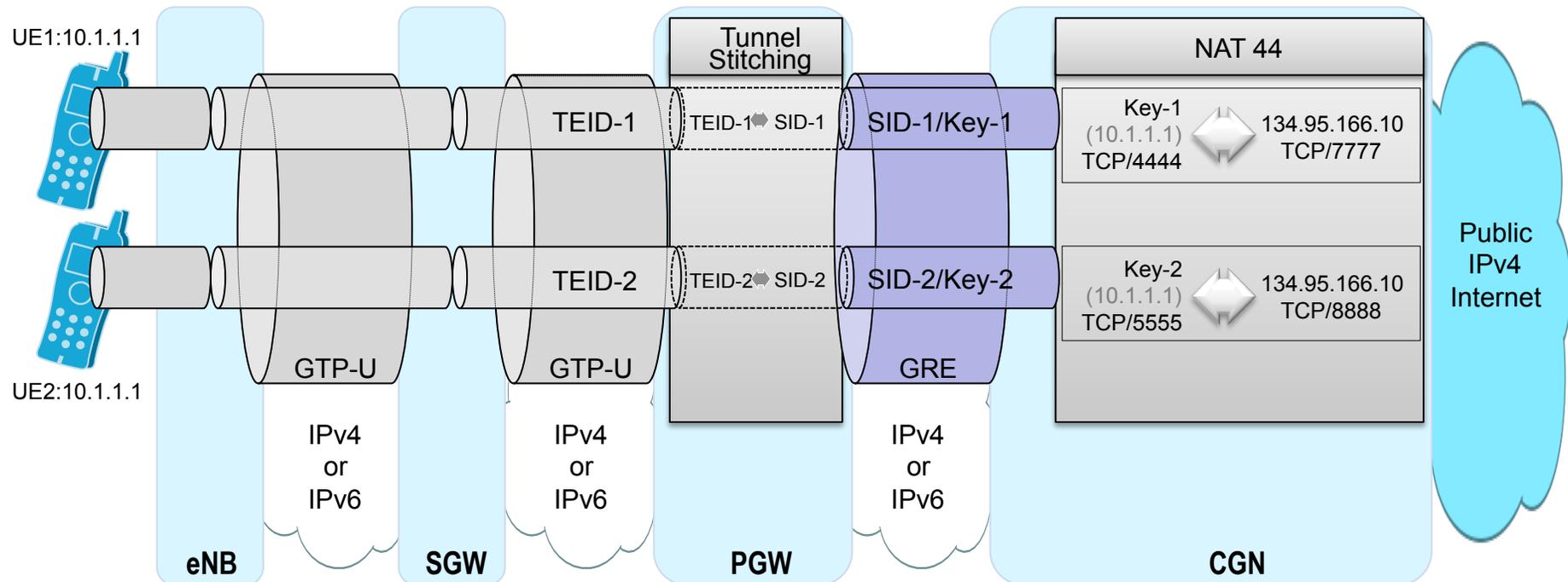
Gateway-initiated Dual-Stack lite Concept



- End-System/UE & Access Architecture remains unchanged; no impact on roaming operations
- Point-to-Point tunnel between UE and NAT44-box (CGN): IPv4 address on UE is not used for packet forwarding (allows all UEs to have the same address)
- SP network can be IPv4 or IPv6

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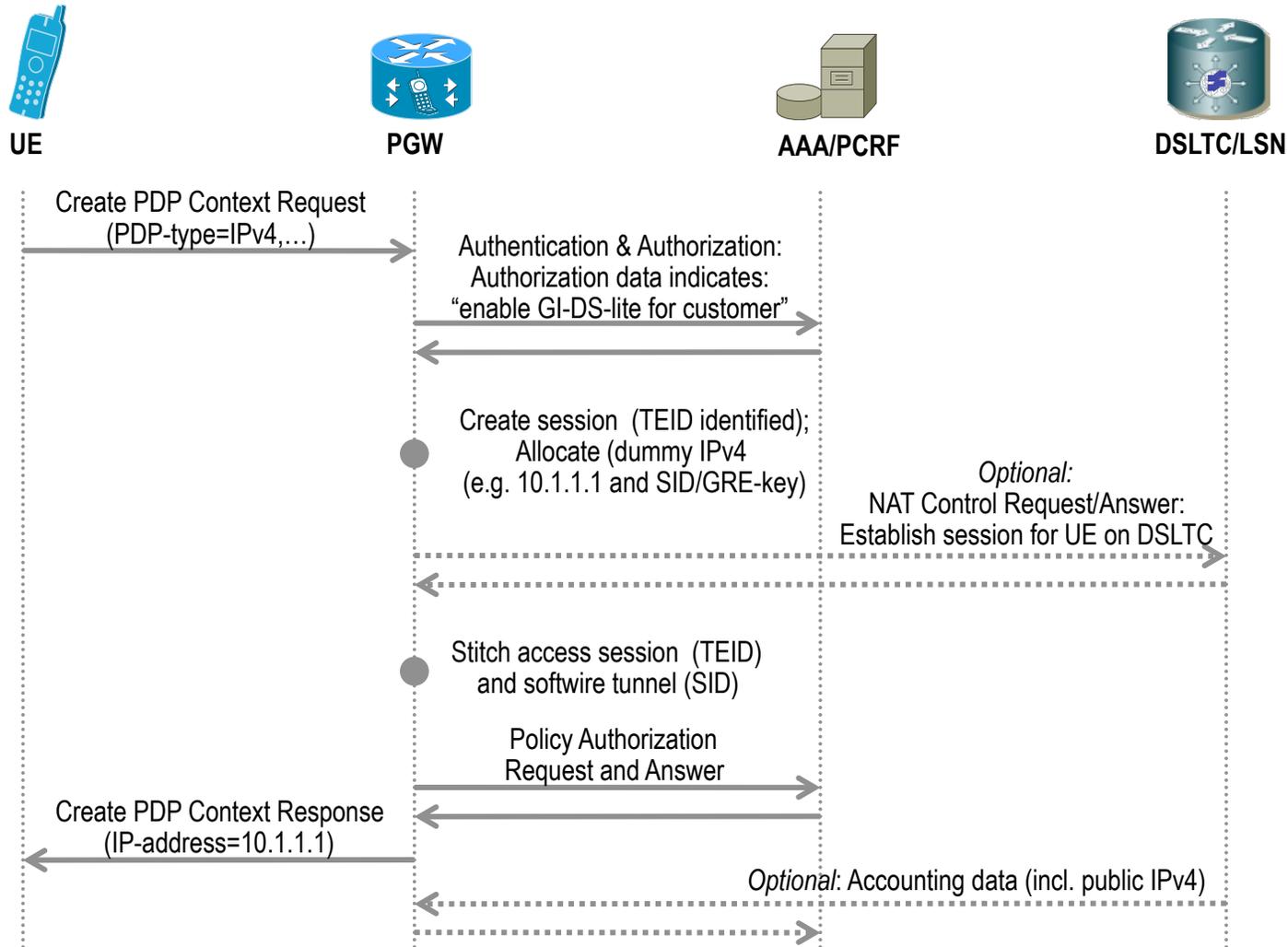
EPC w/ GTP example



- Example uses same IP-address for both UEs
- PGW associates PDP-Contexts/EPC-bearers to Software-Tunnel (Software-ID identifies individual flows)
- CGN performs NAT44:
Maps Software-ID/Port to public IP-address/Port

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Example: Session establishment (3GPP/EPC)



Advantages of Gateway-Initiated Dual-Stack lite

Advantages

Requirement	GI-DS-lite	DS-lite
Changes to UE/Handset	no	yes
Changes to the 3GPP architecture	minimal (PGW changes)	yes
Added overhead on airlink	no	yes
SP network: IPv4	yes	no
SP network: IPv6	yes	yes
SP network: IPv4, IPv6	yes	no
UE: private IPv4	yes	yes
UE: non-meaningful IPv4	yes	yes
UE: (any) IPv4, IPv6	yes	yes
UE: Evolution to IPv6 only	option	yes
Roaming	yes, no changes	v6 support in visited network (SGSN/SGW)

Next Steps

- Authors appreciate feedback from the WG
- Adopt as WG document?