



Prefix delegation in 3GPP EPC networks

draft-krishnan-intarea-pd-epc-00

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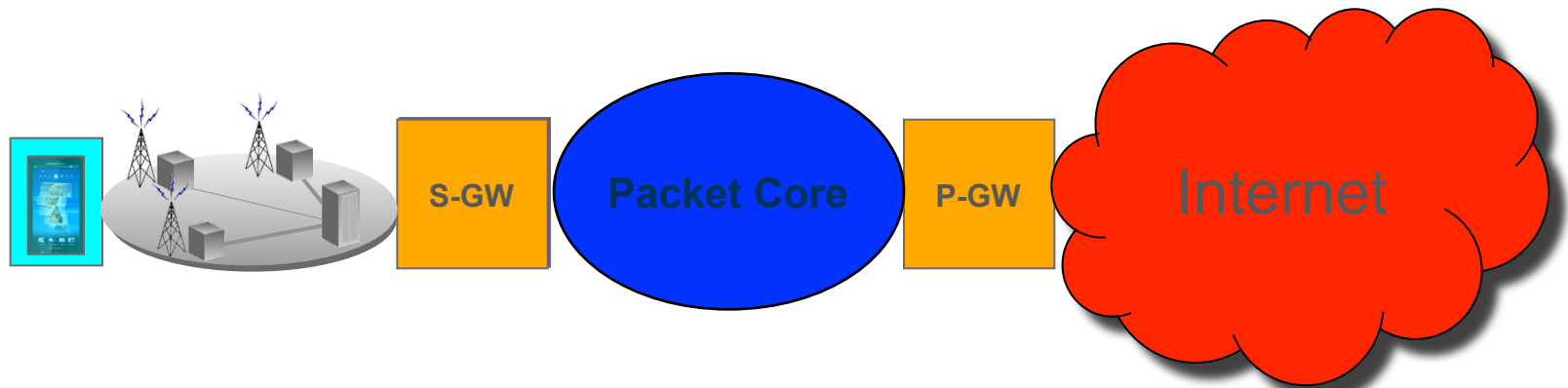
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Background

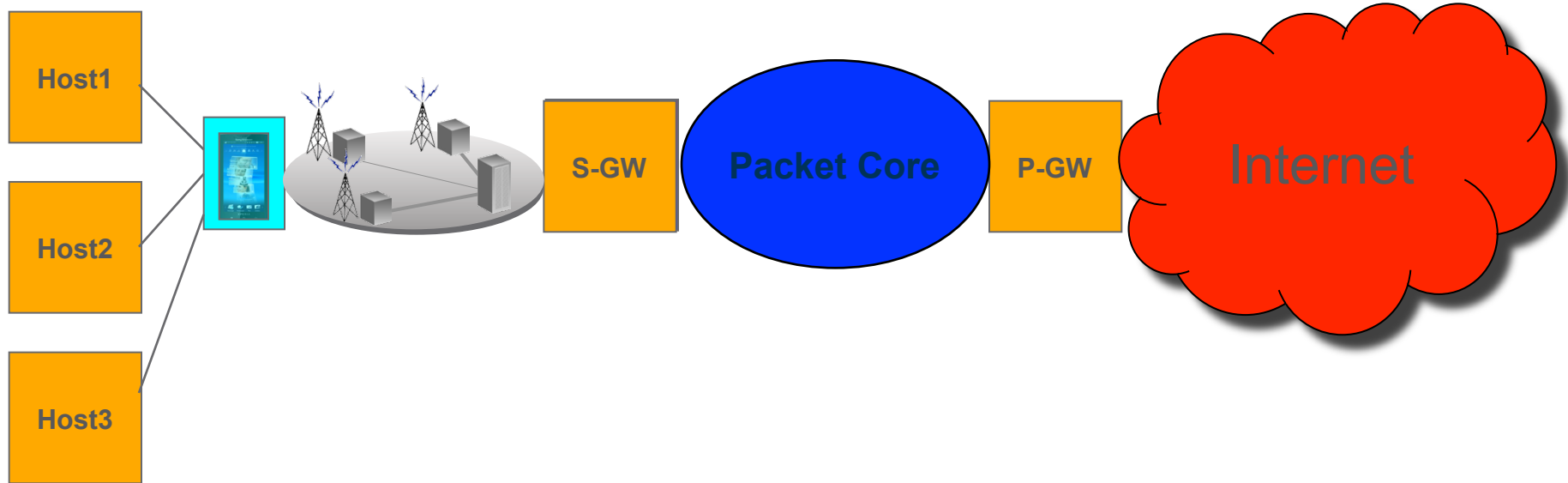
- › In the current evolved packet core (EPC) networks every User Equipment (UE) is allocated a /64 prefix as described in
- › If the UE needs to act as a router and support a network behind it, it requires a shorter prefix to be delegated to it.
- › To support this, the EPC network can reserve a shorter prefix (e.g. a /56) for the UE even before the UE requests delegation of a prefix.

EPC Network Architecture (Current)



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EPC Network Architecture (with PD)



Optimizing Prefix delegation

- › Minimize the impact on the routing and policy control infrastructures.
 - One routing entry per UE
 - One Policy Control and Charging entry per UE
 - › Only one prefix allowed per IP-CAN session
 - Preferable that the initial /64 assigned to the UE be a part of the shorter prefix intended to be delegated to the UE.

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Proposed mechanism

- › Reserve a prefix of length X to be allocated to the UE
 - Where $X < 64$
 - The value of X is dependent on the expected usage model
- › When the UE connects to the network the UE is assigned a single /64 out of this / X block.
 - The /64 can be arbitrarily chosen
 - › For simplicity's sake, this can be the lowest numbered /64 of the / X block
- › When the UE requests delegation of a prefix using DHCPv6-PD
 - Delegate a prefix of length $X+1$ to the UE that does not contain the /64 initially assigned to the UE

Advantages

- › Minimizes routing impact
 - Single route on gateway (the /X) per UE
- › Minimizes impact on existing PCC architecture
- › Allows legacy UEs to function properly

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Next Steps

- › Adopt as wg item?
- › Please send comments/suggestions to authors/ML

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