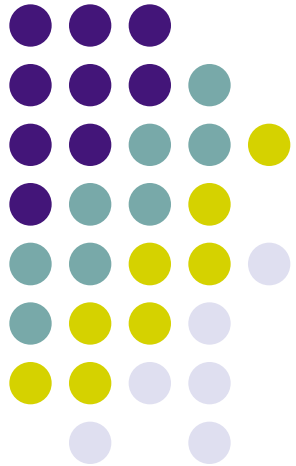
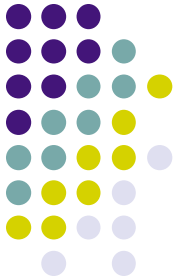
DHCPv6 Route Option

draft-ietf-mif-dhcpv6-route-option-04

W. Dec (wdec@cisco.com)
T. Mrugalski (tomasz@isc.org)
B. Sarikaya(sarikaya@ieee.org)
T. Sun (suntao@chinamobile.com)

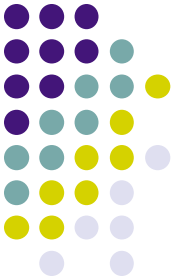


Background (1)



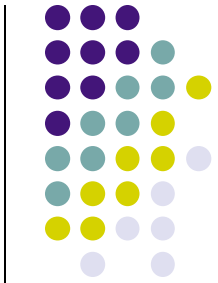
- DHCPv6 may be used to provision all parameters to hosts except routing information
- This is about configuring static routes in a convenient manner, not if static routes should exist
- Other methods exist (CLI, SNMP, Web Interfaces, …)
- Not suitable for networks that do dynamic routing (clearly stated in section 4.6 “Limitations”)

Background (2)



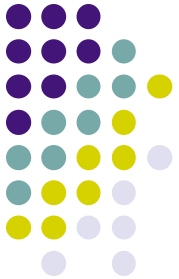
- Work chartered in MIF
- Completed review in Routing Directorate
- Completed review in DHC
- Completed WG Last Call in MIF
- Additional Comments raised after WG LC.

Use cases (1)



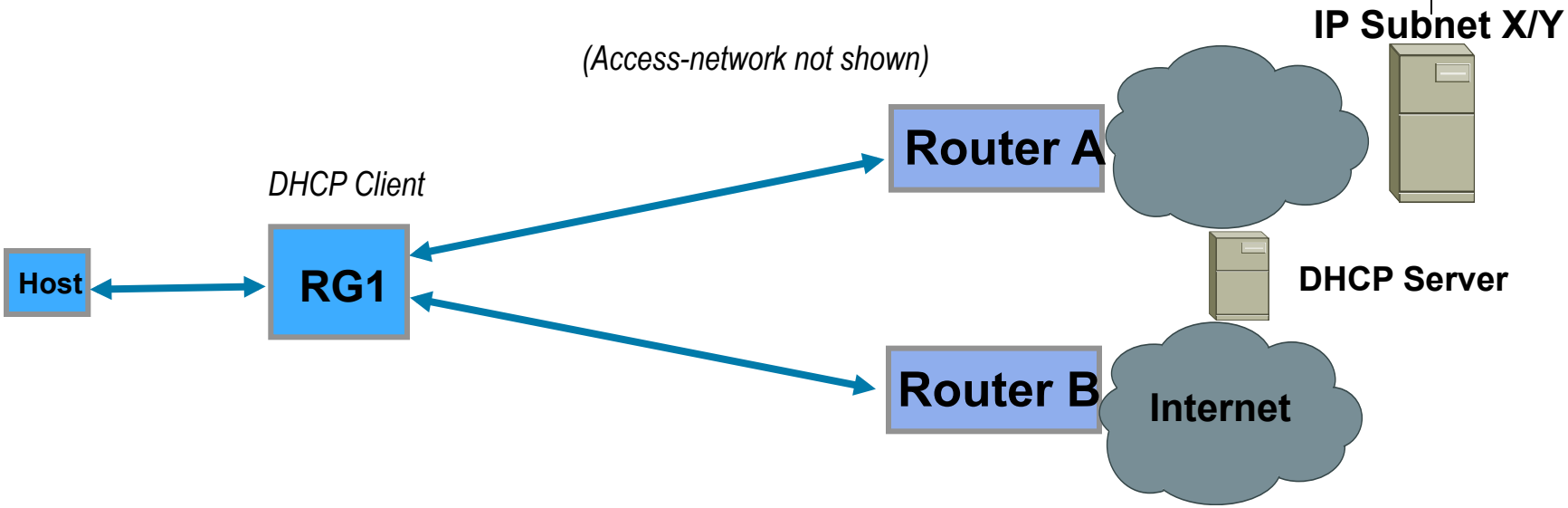
- -04 enumerates 14 use cases, contributed by:
  - Cellular Network Operators (3GPP, LTE)
  - Broadband Operators (BBF)
  - CPE Vendors
  - Individuals
  - …

Use-cases (2)



- Key problems being addressed:
  - Deal with cases of multiple interfaces or multiple gateways
  - Ability to configure individual hosts on multi-host segments
  - Difficulty or impossibility of managing per host configuration on each edge router
- These are real operational problems & pain points
  - The 14 use-cases all have one or more of the above ingredients

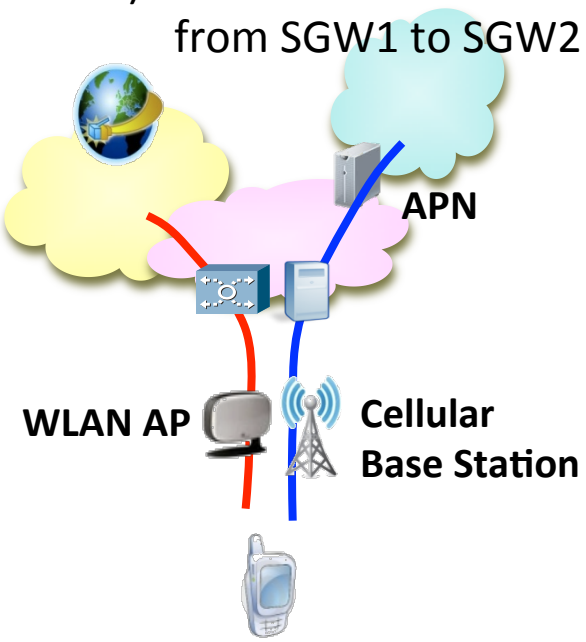
Use cases (3):
Basic Scenario – Multi-homed Client



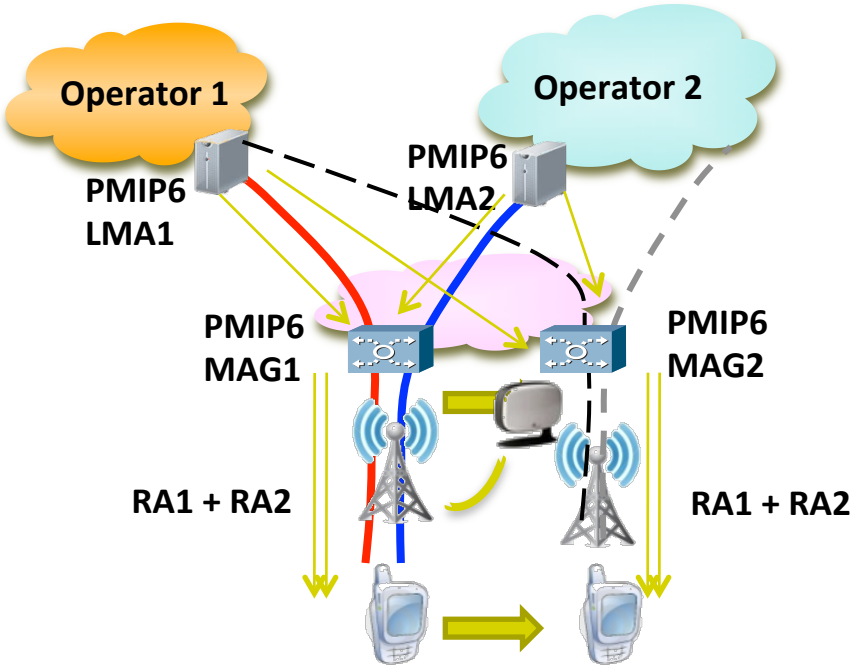
- Dual links (physical or logical) from RG1 to Router A and B
- It is desired that RG1 client uses Router B as its default gateway (0/0)
- It is desired that RG1 uses Router A as its primary gateway for destination subnet X/Y. More specific route to X/Y via RouterA is thus required.
- It is required to operate in an environment where per client configuration on the Router is not possible

Mobile Host with Multiple Interfaces

1. IPv6 parameter configuration via DHCPv6 is introduced from Release 8 in 3GPP.
2. DHCPv6 PD is introduced in Release 10 which is same as tethering in IPv4
3. **PMIPv6 in LTE network**. The point-to-point link is between mobile host and PMIP6 MAG. The prefix is obtained from PMIP6 MAG through RA
   a) Invent a new protocol between MAG and LMA to deliver route option goes nowhere for example:
      a) For roaming case, SGW and PGW belong to different operators
      b) When host moves from SGW1 to another SGW2, all the context shall pass from SGW1 to SGW2

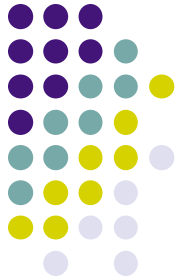


Use Case: WiFi + One/Multiple PDN Connections



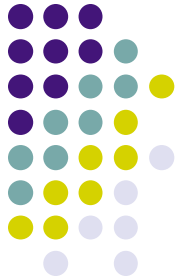
Protocols: PMIPv6 in LTE Network

Open Issues from WGLC

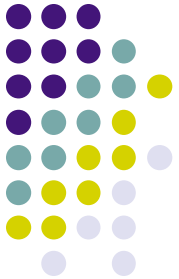


- MAC address not configured
  - Answer: it doesn't need to be. MAC derived via ND.
- Lifetime is 32, not 16 bits
  - Answer: Does not appear to be a problem, timing calculation is OS dependent, but it is done on 32 or 64 bit counters.

Post WGLC Issues

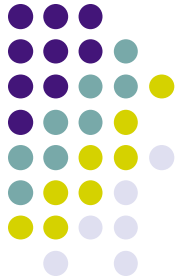


- RA vs DHCP
  - …
- VRRP vs RA
  - DHCP route option does not prevent RAs from being used
- Handling multiple sources of configuration
  - General DHCP problem, not specific to route option
  - See just initiated “RFC3315/3633bis” in DHC
- Expiry of a route info if server crashes
  - Route remains still valid.



Thank you

Alternative ways forward



Vendor Specific Option	Stripped down option
• Define route option under BBF or 3GPP Enterprise code • Complicated by both BBF and 3GPP having interest • IETF Enterprise code?	• Remove from draft default route • Clarify that use with RAs is expected