DHCPv6 Route Option
draft-ietf-mif-dhcpv6-route-option-04
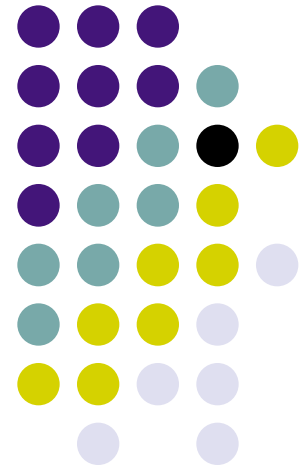
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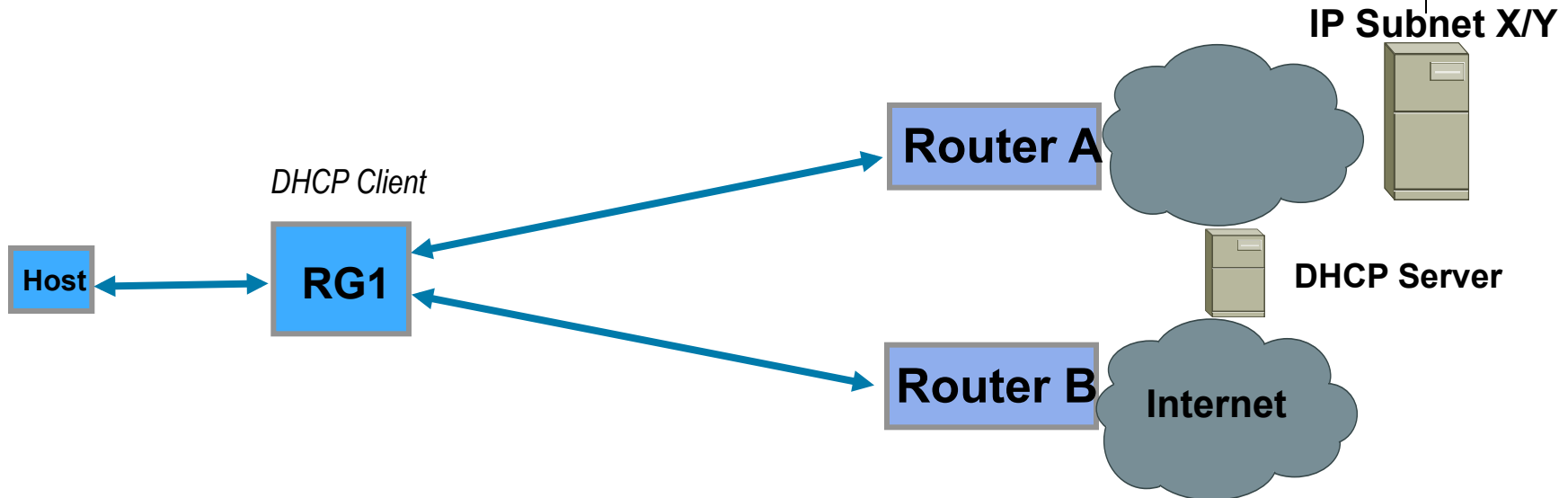B. Sarikaya(sarikaya@ieee.org)

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DHCPv6 - Route Option
Basic Scenario – Multi-homed Client

(Access-network not shown)

IP Subnet X/Y

Router A

DHCP Client

Host ← → **RG1**

DHCP Server

Router B **Internet**

- 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
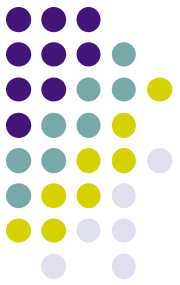
Background

- DHCPv6 may be used to provision all parameters to hosts except routing information

- This is about configuring static routes in a convenient manner, on demand, 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")
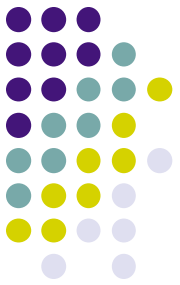
DHCPv6 Route Option
Motivation
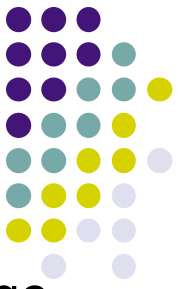
- Today's IGPs solve the problem but are often not feasible for large scale deployment
  - Not supported on many CPEs
  - Added operational complexity for the SP to manage on 1000s of devices
  - Challenging to scale (an IP Edge may interface with 1000s of CPEs)
- ICMPv6 (rfc4191) presents an RA based solution however:
  - Does not differentiate between clients that know what to do with the info and those that don't.
  - Does not easily deal with per host configuration
  - It requires provisioning of the edge router (not always possible, on a per host basis)
  - Doesn't line up operationally when DHCPv4 RFC3442 is already used
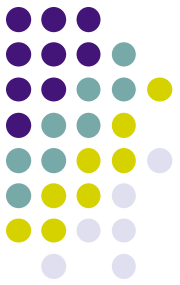
Use-cases

- Key problems being addressed:
    - Deal with cases of multiple interfaces
    - 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. Contributed by:
        - Cellular Network Operators (3GPP)
        - Broadband Operators (BBF)
        - CPE Vendors
        - Individuals
        - …

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