RTGWG virtual interim PA multi-homing and destination/source routing

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Background

- The need is real
- Support required for PA IPv6 allocations as part of larger broadband deployments
  - Largely a requirement/need for commercial customers
  - Specifically DOCSIS based, not as much for fiber based
- Many broadband deployment leverage dynamic allocation techniques for address and prefix assignments
  - DHCPv6 based (RFC3315/RFC3633)

Out of Scope

- Fiber based customers
  - Typically has PI IPv6 assignments
  - Does not leverage dynamic allocations techniques for IPv6 prefixes

Use Cases

- ## 2 or more egresses
  - Each with a unique active IPv6 prefix

- ## 2 or more egresses
  - Egresses are active/standby
  - Only one active prefix

Multiple services

- Two egresses
  - One for broadband, unique prefix
  - One for video service, unique prefix
- Both must be active in the customers' premises
  - COAM and video specific devices will acquire addressing and configuration from both egress routers
  - This produces undesirable behavior
  - Devices and communications need to utilize the correct, respective egress routers

Single service

- Two egresses
  - Both are for broadband
  - One or two (primary/secondary) prefixes are applicable
- For single prefix
  - Address and configure end points from a single prefix
  - Single prefix must be routable via both egress routers
- For two prefixes
  - Both active simultaneously looks like previse use case
  - Primary/second IPv6 prefixes are available
  - Use of secondary requires flash renumbering

Considerations

- Single versus multiple providers
- Multiple media types (DOCSIS, LTE, Wireless)
- Incompatible egress router functionality
- Minimize disruption and customer impact
- Must be addressed for IPv6
  - IPv4 is less advanced in many ways
  - NAT and other techniques help circumvent some issues

Status

- Dual service use case
  - Leverages end point specific behavior for addressing and configuration
  - Island within an island
  - Goal to migrate and leverage some aspects of HOMENET
- Single service use case
  - Currently occurs infrequently for IPv6, for now
  - Will leverage IPv6 renumbering