

# Basic Requirements for IPv6 Customer Edge Routers

**<draft-palet-v6ops-rfc7084-bis>**

Jordi Palet

[jordi.palet@consulintel.es](mailto:jordi.palet@consulintel.es)

# Market reality

- Small and medium ISPs buy CEs in small quantities
  - Often locally (even retail)
  - Vendors “unaware” of their requirements
  - Vendors don’t have “different” models
    - Sometimes different firmware for big ISPs
- No purchasing “power” to ask for any specific protocol support

# IPv4 reality

- ISPs willing to deploy IPv6 still need to support IPv4
  - No more IPv4 addresses available
    - IPv6-only WAN is required
- Options:
  - CGN with DS-Lite or lw4o6
  - or
  - 464XLAT or MAP (E/T)
- Vendors don't support them
  - When approached: “not required by IETF”

# Code reality

- OpenWRT (now LEDE), support all those protocols since early-2015
  - Open Source, 10-12Kbytes (0,15% vs total)
    - Code is “shared” across several protocols
  - No extra cost in hardware requirements
  - No need to “develop” anything
  - There are other sources for similar code
- Only 3 vendors included it, up to now
  - Expensive in small quantities
- Other vendors include it for “big” customers

# Scenarios

1. Residential/household users
  - Common usage “Internet access” (web, email, streaming, online gaming, ...)
2. Residential with Small Office/Home Office (SOHO)
  - Same as 1
3. Small Office/Home Office (SOHO)
  - Same as 1
4. Small and Medium Enterprise (SME)
  - Same as 1
5. Residential/household with advanced requirements
  - Same as 1 + exporting services to the WAN (IP cameras, web, DNS, email, VPN, etc.)
6. Small and Medium Enterprise (SME) with advanced requirements
  - Same as 5

# Wait a minute ...

- Advanced requirements ?????
  - Exporting services to the WAN ...
- IPv6 using GUA requires “nothing special” to “export services”
- IPv4 CEs (and IPv6 CEs with IPv4 support), already allow:
  - DMZ
  - Virtual Servers
  - Port/Protocol forwarding
- Firewall support: Security Considerations

# One or several documents? (1)

- The IPv6 CE router described in this document is not intended for usage in other scenarios such as bigger Enterprises, Data Centers, Content Providers, etc.
- Even if the documented requirements meet their needs, may have additional requirements, which are out of the scope of this document
  - Number of users supported
  - Hardware capabilities (CPU, Flash, RAM, redundant power ...)
  - Number of interfaces, type, ...
  - Support for routing protocols ?
    - Look at 50USD hardware with 4 cores, 64-128 Mb flash / 1-2 Gig RAM, 5-6 Gigabit ports, SFP, Micro SD, USB3, SATA, 2.4+5 GHz WiFi, ...

# One or several documents? (2)

1. Actual document (as in RFC7084) including IPv4 transition support if IPv4 is required.

or

2. IPv6-only router document (downgrade RFC7084) + new IPv4 transition support document for CEs



# Changes vs RFC7084

1. “Usage Scenarios” section
2. L-15: LAN support for HNCP (RFC7788)
3. 464XLAT support
4. MAP-T & E support
5. 6in4 support (implicit with 6rd support)
6. LW4o6 support (same as DS-LITE, so was there)

# Open Questions

- Should explicitly ask for IPv6 firewall “on by default” or support of RFC6092 is enough ?

# Next steps (1)

- Correct editorial errors
- Add section to explain cost in terms of implementation (memory) for the transition mechanisms

# Next steps (2)

- Become a WG item ?
- Further inputs ?
- Ready for last call ?