draft-haddad-homenet-multihomed

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Note well

- This draft aimed to start the discussion about homenet and multihoming

  - we just gave a rough idea of the concept and solution but are open to any comment, solution, rejection...

  - We do not ask for new standards, we just provide a use case [Rply to Ray Hunter]

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- A homenet may be multihomed to multiple providers [...] where the connectivity selection needs to be dynamic.

- [...] homenet architecture should [...] minimise the complexity of any multihoming support. [...] the homenet architecture [...] should prefer to support scenarios for which solutions exist today.

- In the general homenet architecture, hosts should be multi-addressed with globally unique prefixes from each ISP [...].

- [...] hosts need some way to pick source and destination address pairs for connections.

- Given a packet with a source address on the network, the packet must be routed to the proper egress. [...] the minimum requirement is that the packet is not dropped [...] highly desirable that the packet is routed [...] to the correct exit.

- Methods such as Shim6 have been defined, but [...] require support in the hosts. There are also application-oriented approaches [...] homenet architecture should not preclude use of such tools [...].

Motivation

- Target: SOHO networks

  - not device mobility (e.g., 4G)

- Enable multihoming in SOHO network without

  - device/host modification,

  - homenet's protocol modification,

  - homenet's ISPs involvement,
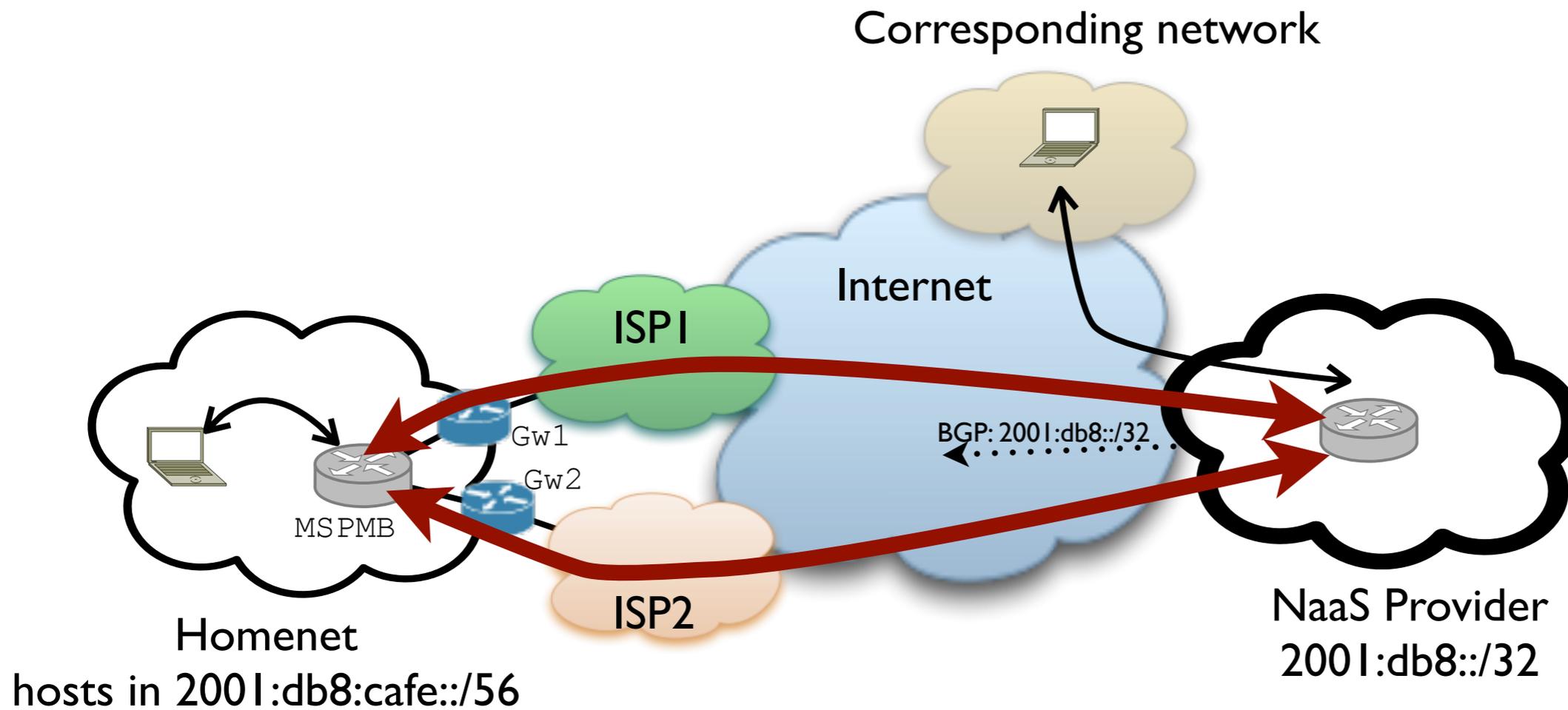
  - management for the homenet.

Requirements

- (1) zero configuration

- (2) home network's ISPs independence

- (3) policies capabilities

- (4) Quality of Service

Proposition

- Outsource multihoming to a *Multihoming Service Provider* (MSP)

- Homenet is PI, prefix is advertised by the MSP, not by homenet's ISPs

  - MSP receives every packet sent <u>to/from</u> the homenet

- A middlebox (MSPMB) is installed in the homenet

  - the MSPMB is connected to all homenet's ISPs

  - every packet goes through this middlebox

  - the MSP manages the MSPMB to control the way packets enter and leave the homenet

MSP in a nutshell

Corresponding network

Internet

ISP1

Gw1

Gw2

MSP MB

BGP: 2001:db8::/32

ISP2

Homenet
hosts in 2001:db8:cafe::/56

NaaS Provider
2001:db8::/32

Native IP forwarding   Tunnels

A day in the life of an application layer session

- Nothing changes for the hosts!

- Failures are handled by MSP and MSPMB with BGP and the tunneling protocol

- MSPMB is a single point of failure

  - are middlebox failures more frequent than link/route failures?

Why not Shim6 (MPTCP) directly on the hosts?

- Hosts in the homenet must implement Shim6 (MPTCP)

- Corresponding nodes must also implement Shim6 (MPTCP)

- No solution for central management (but draft-wr-mptcp-single-homed might help)

  - how to chose wisely the egress point?

  - how to chose wisely the ingress point?

- MPTCP limited to TCP

- However, the MSPMB could be implemented by a Shim6 (MPTCP) proxy

Who to be a MSP?

- MSPs do not exist so far

  - but some commercial networks are very well connected, peer everywhere, and could have incentive catching traffic

  - e.g., Google, Facebook, Amazon, Apple, Microsoft

Questions to the WG

- Do we need session continuity?

- Would LISP be an acceptable solution for the WG?

  - LISP has both the control-plane and the data-plane to enable MSP

  - or Shim6/MPTCP?

    - but they don't have the necessary control-plane to enable MSP