IPv6 Prefix Meta-data and Usage
(draft-lepape-6man-prefix-metadata-00)

IETF 87, July 2013

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Introduction

- Prefix properties or "prefix coloring" mean attaching additional meta-data to prefixes/addresses:
  - ..that can be used to aid applications to select a specific prefix/address for a certain use case.
  - ..that can be used by the (enhanced) source address selection algorithm to select a specific prefix/address for a certain use case.
  - ..that is delivered as part of the address configuration procedure without encoding the meta-data into the prefix/address itself.

- Intended specifically for use cases:
  - ..where end hosts are configured with multiple prefixes/addresses.
  - ..where possibly multiple provisioning domains and/or upstream ISPs are present.
  - ..where prefixes/addresses may have different routing or anchoring requirements (e.g. the Homenet source routing use cases, mobile networks, ..).
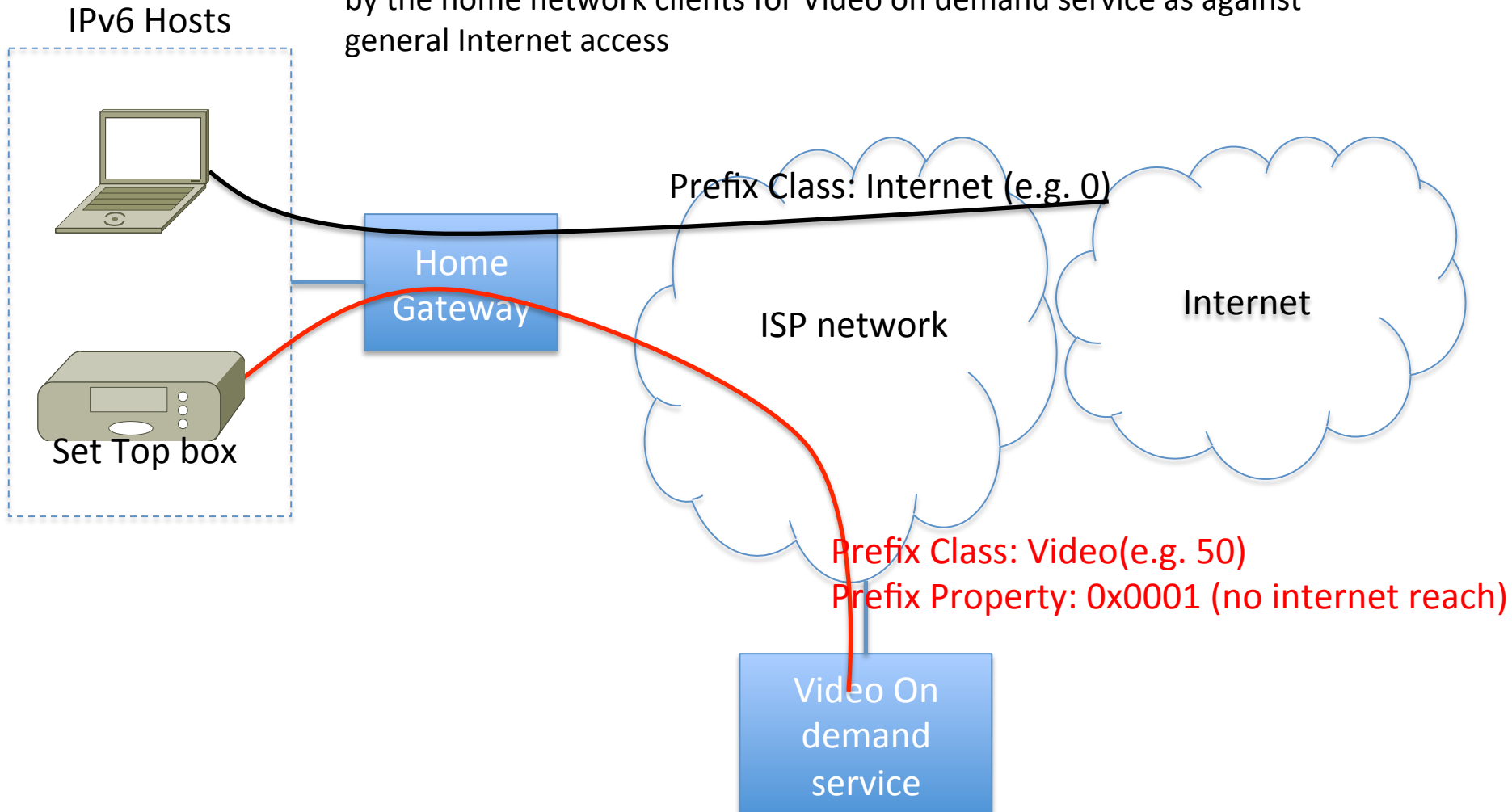
Prefix metadata

- Prefix Property –
  - Metadata that is universally understood e.g. Prefix provides mobility, Prefix does not provide internet connectivity
- Prefix Colour –
  - Metadata of local significance e.g. Prefix can be used to reach ISPs Video service
- Other metadata in future – e.g. provisioning domain

Usage examples

Home network with video class service

In this example, two different services are being run on the same network.
The service provider wishes that traffic is sourced from different prefixes by the home network clients for Video on demand service as against general Internet access


IPv6 Hosts

Set Top box

Home Gateway

Prefix Class: Internet (e.g. 0)

ISP network

Internet

Prefix Class: Video(e.g. 50)
Prefix Property: 0x0001 (no internet reach)

Video On demand service

Premium Video Service and ISP

1. Premium video service bought special access via Blue colour from PT telecom

Premium Video Service

App central

ISP – PT telecom

- PT 2001:470:84C0:1000:/56 (Uncoloured)
- PT 2001:470:84C0:2000:/56 (Blue), **property**: Provides internet service SLA based on colour
- PT 2001:470:84C0:3000:/56 (Red), **property**: no reach to Internet
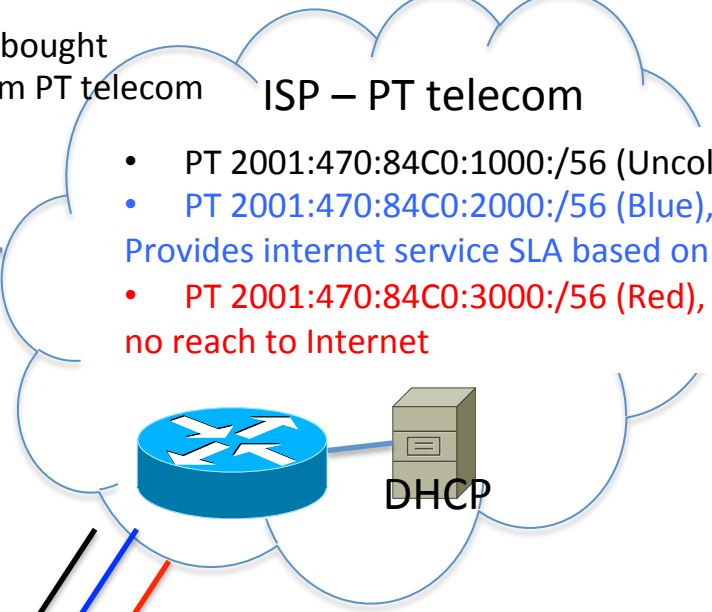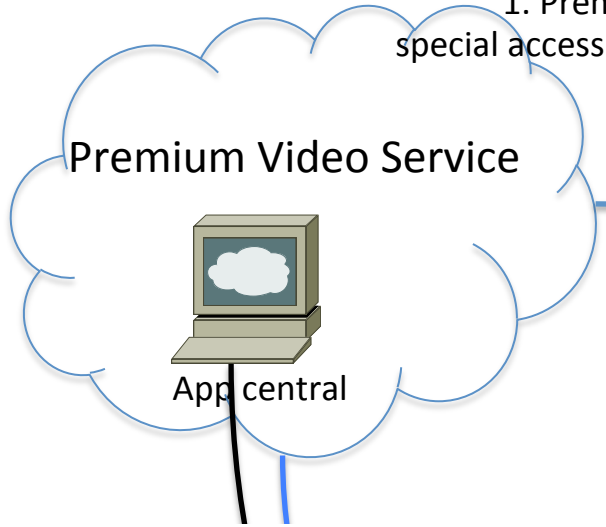
DHCP

4. PVS application on Host talks to PVS app central to learn the colour to be used for PVS service.

5. Subsequently connects using Blue address

CPE
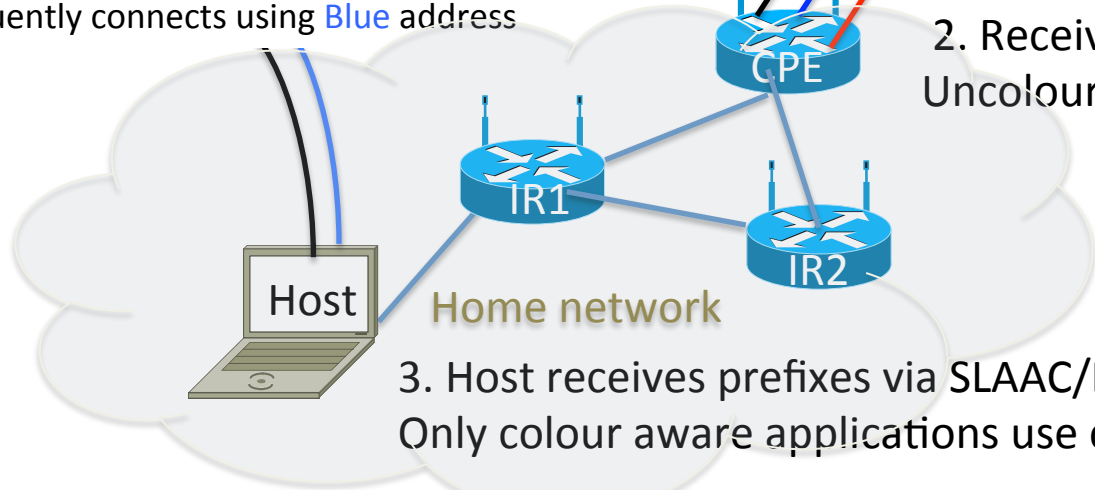
2. Receives 3 prefixes in IA_PD, Uncoloured, Blue and Red

IR1

IR2

Host

Home network

3. Host receives prefixes via SLAAC/DHCPv6
Only colour aware applications use coloured prefix

Related Work

- Prefix Property and class in DHCPv6 and IPv6 Neighbor Discovery messages
  - draft-bhandari-dhc-class-based-prefix-05
  - draft-korhonen-6man-prefix-properties-02
- Mif: draft-anipko-mif-mpvd-arch deals with multiple provisioning domains. Provisioning domain can be another metadata

Next Steps

- Request feedback from the WG
  - Discussion points : scope of the colour, Properties and Colour interaction – exclusive?, provisioning domain interaction
- Alignment with drafts listed in "Related work"
- Visit Bits & Bytes for Maico's prototype demonstrating this