

# IPv4 - IPv6 multicast gateway

draft-venaas-mboned-v4v6mcastgw-00.txt

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# Intro(1)

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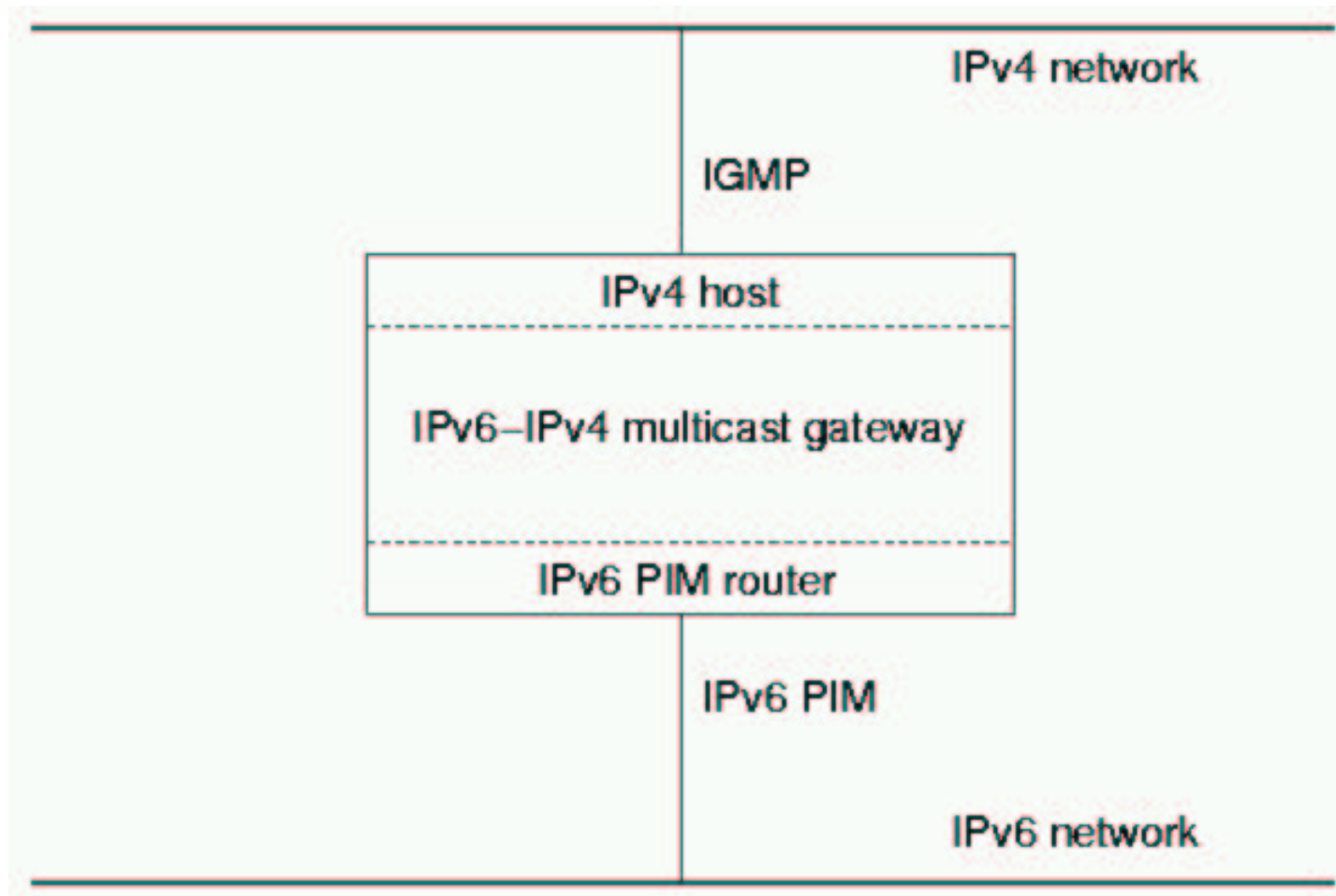
- Depends on PIM SM. Can be deployed and used by an entire IPv6 PIM domain with no modifications to any other software
  
- IPv4 multicast space embedded into IPv6
  - Use a /96 IPv6-prefix. Last 32 bits, IPv4 address
  
- IPv4 and IPv6 multicast trees joined at gateway
  - Gateway is IPv4 leaf node
  - Gateway is IPv6 RP for the /96 prefix
  
- An IPv6 host can receive data from an IPv4 group a.b.c.d by joining the IPv6 group PREFIX:a.b.c.d
  
- An IPv6 host can send data to an IPv4 group a.b.c.d by sending to the IPv6 group PREFIX:a.b.c.d

# Intro(2)

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- An IPv6 host can send without joining
- Allows e.g. videoconferencing with IPv4 and IPv6 participants, where all can send to and/or receive from all others

# How it works (1)



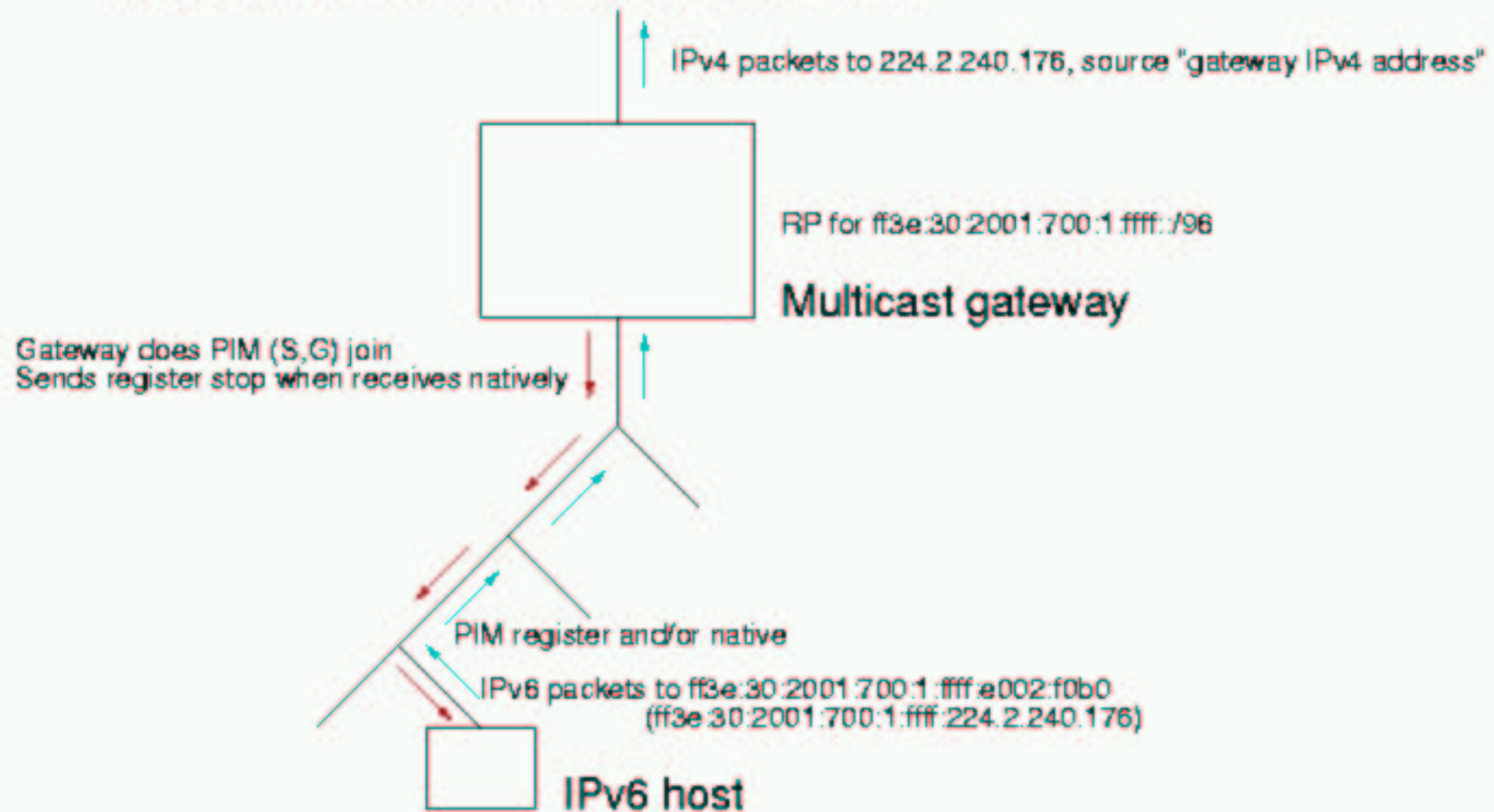
- In IPv4 the gateway is a multicast host using IGMP
- In IPv6 the gateway is a PIM router and RP for the /96 prefix



# How it works (3)

■ Host sends multicast

■ Gateway joins and receives all data natively  
Leaves when no data received for a while



- IPv6 host sends packets to a group
- Gateway joins the IPv6 group to receive data
- Gateway resends all IPv6 packets to the resp IPv4 groups

# Issues

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- NAT-like issues with addresses in application protocols
  - Not aware of such protocols used with multicast
  
- When resending only one unicast address used
  - Applications may have problems demultiplexing packets from multiple sources
  - Not a problem with RTP applications using Sync. source id (SSRC)
  - Same issue with other translators and reflectors
  
- How one might solve the multiple sources issue
  - Embed all source addresses in a /96 unicast prefix
  - A pool of IPv4 addresses, dynamically allocated
    - ▷ Can addresses be reused between multicast groups?
    - ▷ That is, two different IPv6 sources get same IPv4 address if same group.
  - Like NAT-PT, but addresses must be routable due to RPF checks

# Possible enhancements

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- The gateway sends IPv4 multicast also when no IPv4 receivers
  - Can improve on this by being IPv4 PIM router or use MSNIP
  - When no IPv4 or IPv6 receivers it may send IPv6 register stop
  
- Gateway could support SSM
  - Need not be RP
  - May still do IPv4 ASM (v6 SSM to v4 ASM)
  - v6 SSM to v4 SSM could be done as well
    - v6 source address specifies v4 source address through embedding of IPv4 into IPv6 /96 unicast prefix

# Comparison with draft-tsuchiya-mtp-01.txt

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- Many similarities, but gateway has some major advantages
- No manual per group configuration
- Can work for all IPv4 multicast groups
  - Since only joins IPv4 group when there are IPv6 receivers
- From draft-tsuchiya-mtp-01.txt section 6.1 applicability:
  - In order to apply it to large-scale network systems, it is necessary to automate the setup which the administrator carries out according to the requests of the receivers.
- Gateway solves this using PIM for signaling

# What now?

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- Is IPv4-IPv6 coexistence/transition multicast solutions like this worth looking into?
  
- Is this solution worth documenting?
  
- Would this be the right WG for any further work?
  
- Should one look into possible extensions?
  - Extensions suggested in this draft/presentation
  - Others?