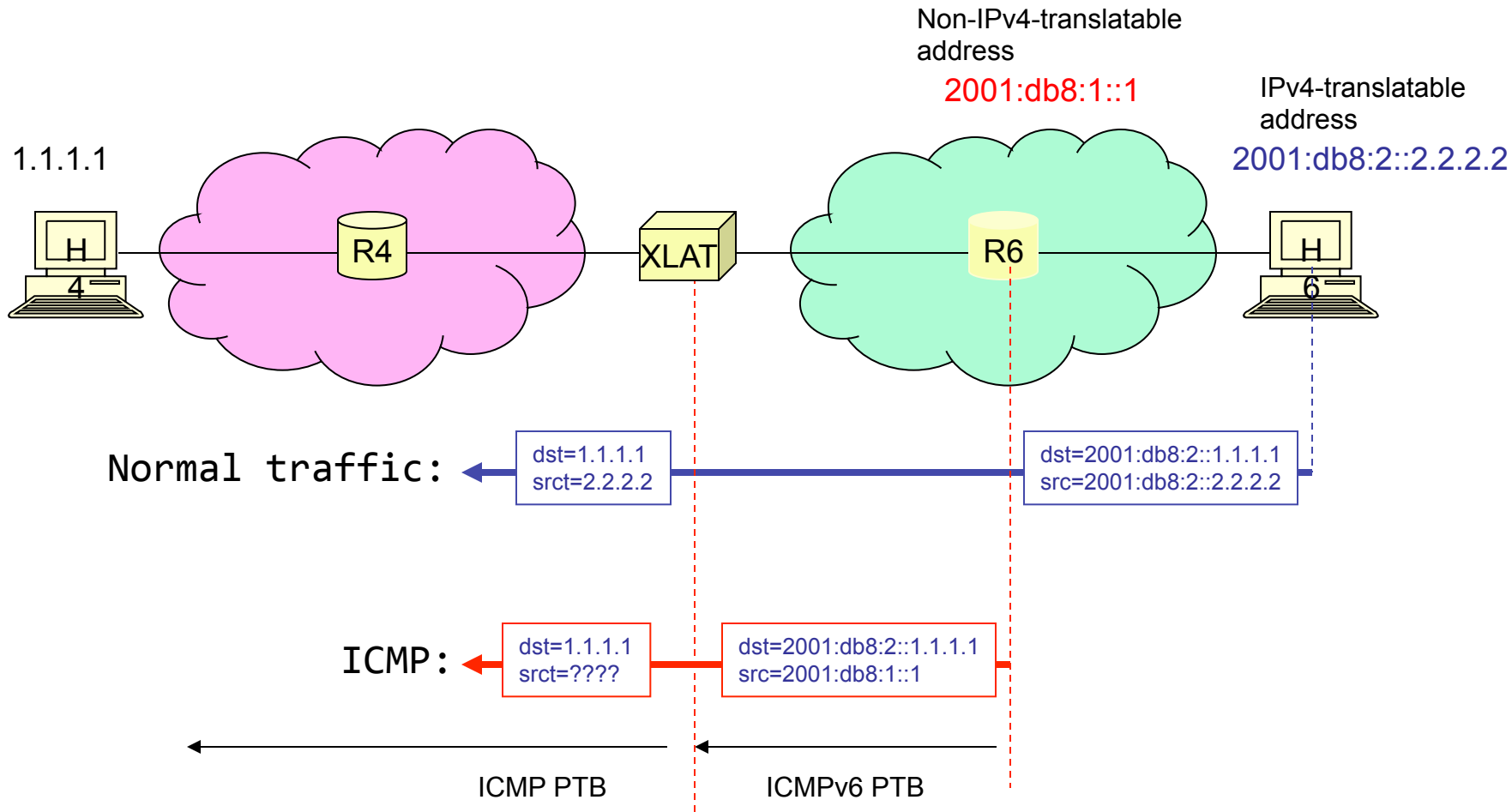


# Stateless Source Address Mapping for ICMPv6 Packets

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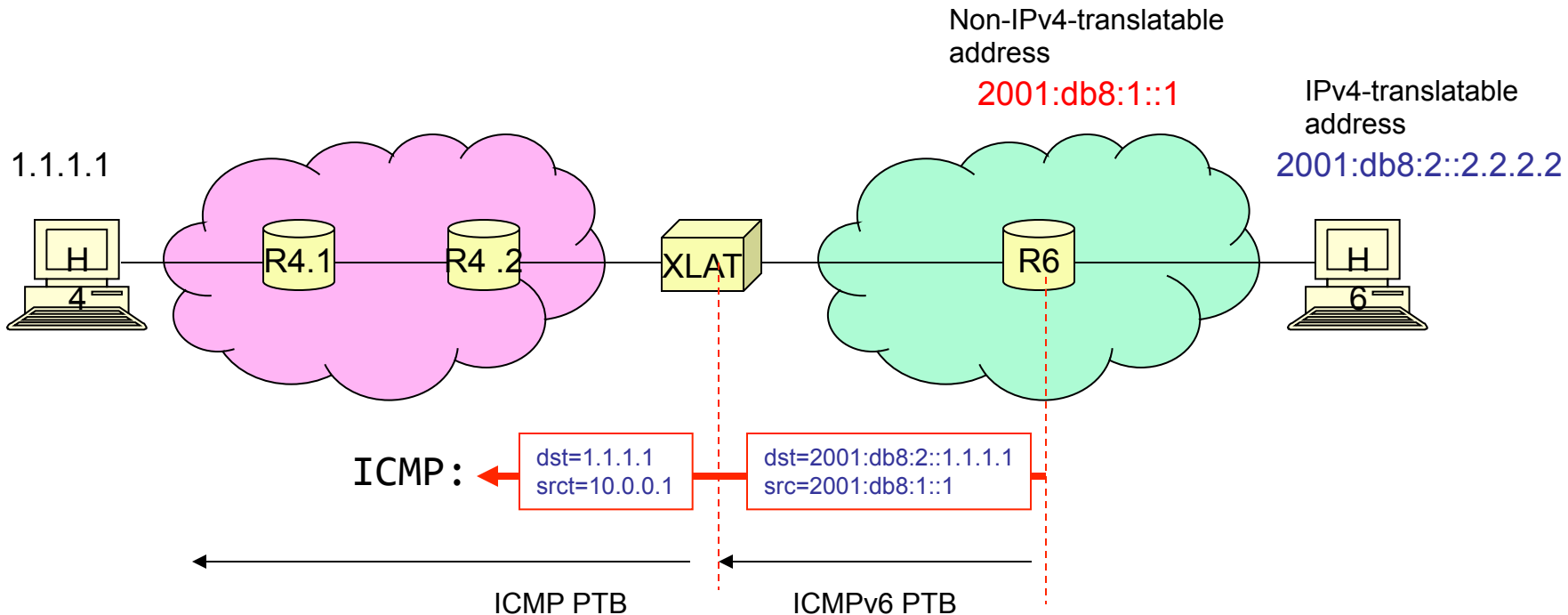
2012-03-23

# Introduction



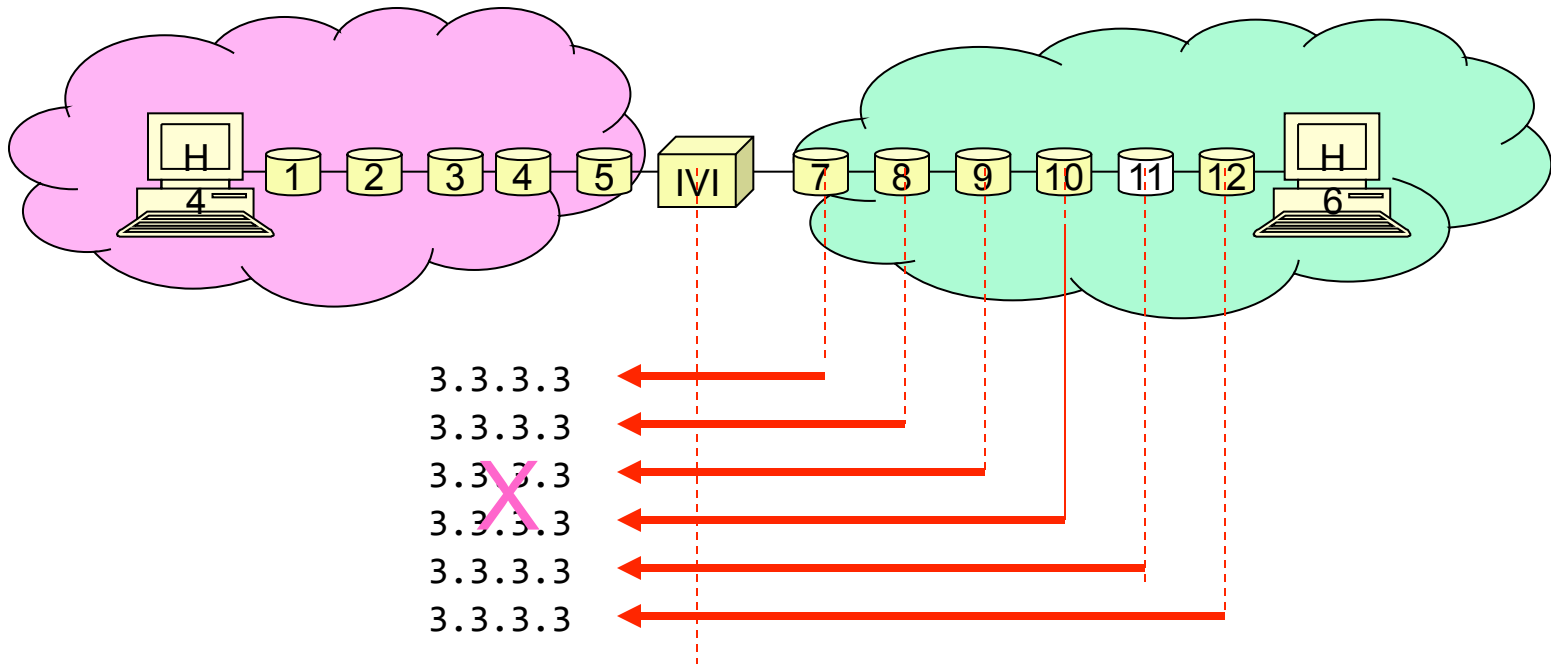
RFC6145: The IPv6 addresses in the ICMPv6 header may not be IPv4-translatable addresses.... A mechanism by which the translator can instead do stateless translation is left for future work.

# Requirements (1)



- uRPF → cannot use RFC1918 addresses
- IPv4 address depletion → hard to use public IPv4 addresses

# Requirements (2)



- IPv4 recipient of the ICMP message should be able to distinguish between different IPv6 ICMPv6 origination → **needs a pool**

# Progress

- IANA reversed prefix **192.70.192.0/24**
  - Scope: Addresses from the assigned address prefix are intended to be used as source addresses and not as destination addresses in the context of the public network.
- According to the comments received from the mailing-list and in the Taipei meeting. The major updates are:
  - Add **RFC5837** requirements for identify the source IPv6 address in ICMP.
  - Only propose **hop count mapping algorithm**
  - Add **filtering and rate-limiting recommendations**

# RFC5837 issue

- When translator is configured to use the IANA-assigned /24 to map non IPv4-translatable address, the translator **MUST** implement ICMP extension defined by [\[RFC5837\]](#).
- The resulting ICMP extension **MUST** include the IP address Sub-Objects that specify the source IPv6 addresses in the original ICMPv6.

# Filtering and rate-limiting recommendations

- **Filtering Recommendations**
  - SHOULD allow ICMP type 3 - Destination Unreachable (inc PTB).
  - SHOULD allow ICMP type 11 - Time Exceeded.
  - MAY allow ICMP type 12 - Parameter Problem.
  - SHOULD NOT allow any of the various ICMP request messages.
- **Rate-limiting Recommendations**
  - The rate limiting of traffic from the prefix SHOULD also be enabled as additional countermeasure against abuse of this prefix.
  - The methods presented in [RFC4443] [RFC5597] [RFC6192] [RFC6398] [RFC6450] can be used.
- **RFC5837 Recommendations**
  - Advanced filtering and rate-limiting techniques which can process the ICMP extension defined in [RFC5837] MAY also be used to control the source of the ICMP.

# Remarks

- When setting up the ACL correctly
  - The network only allows ICMP packets using this block as the source address.
  - No responses will be generated from any network device in the network.
- The original IPv6 address is traceable
  - RFC5837 is a MUST requirement
- Rate-limiting can be used as additional protection scheme