

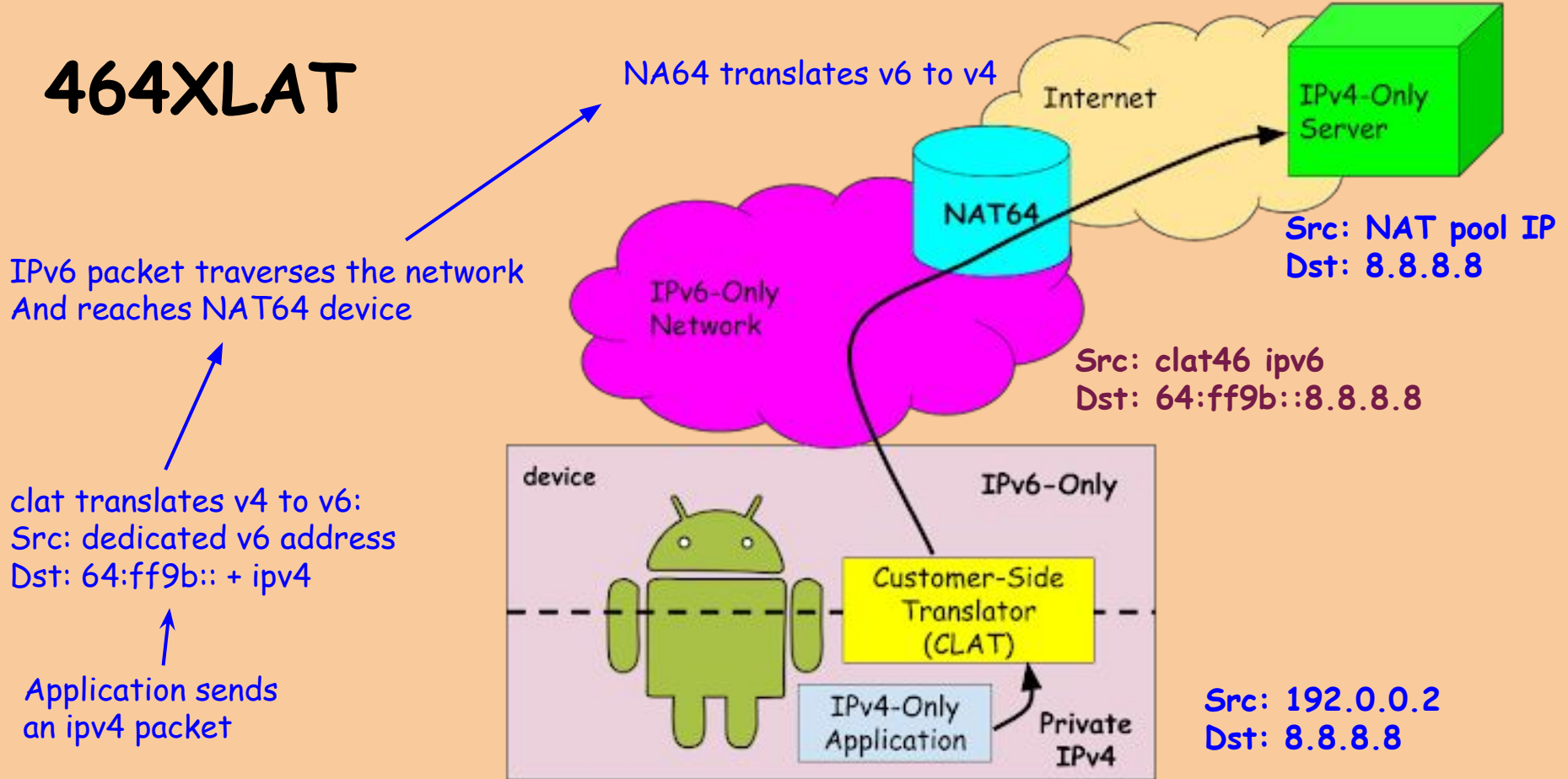
# ICMP Extensions for IP/ICMP translators (XLATs)

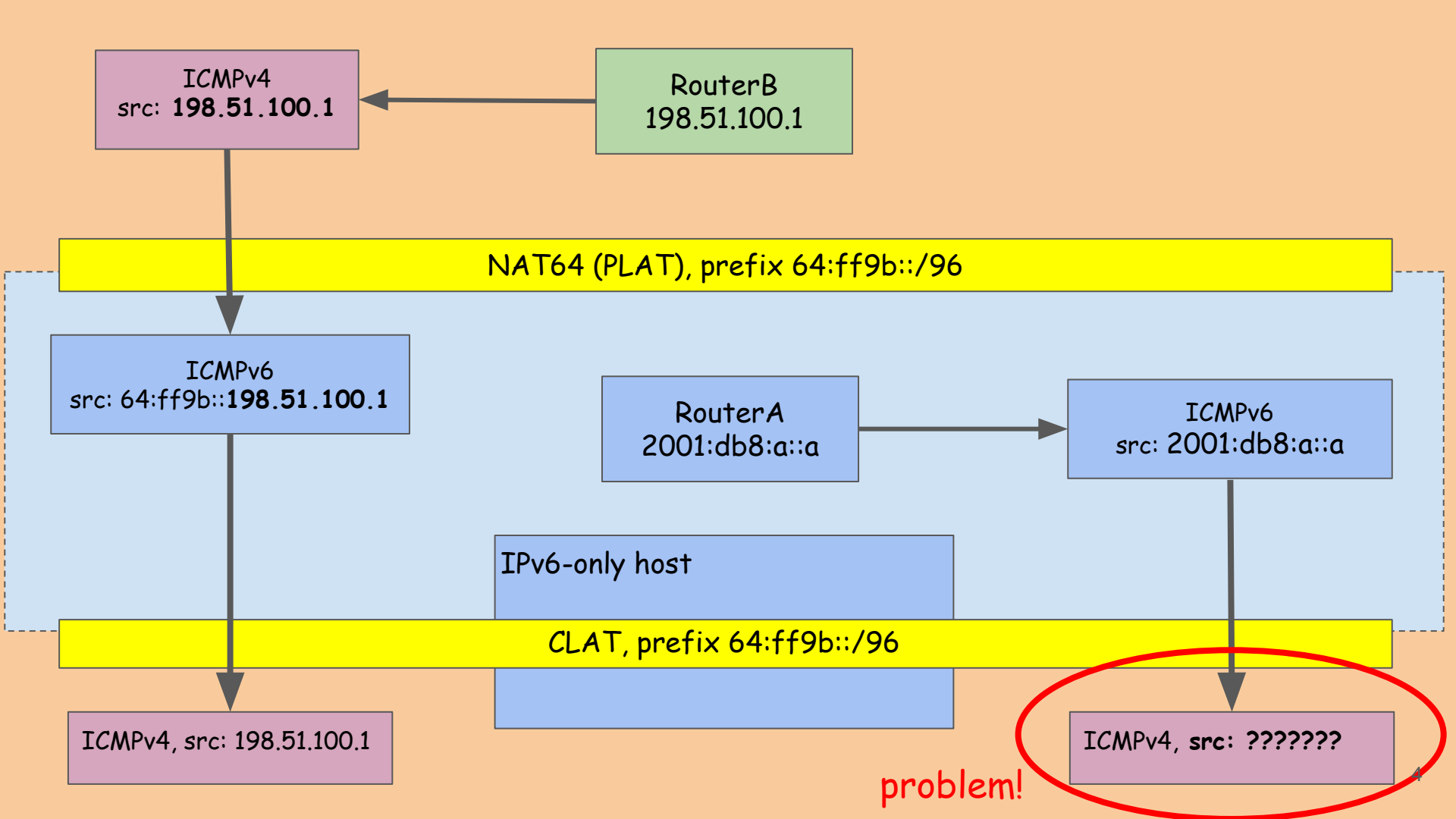
[draft-equinox-intarea-icmpext-xlat-source](#)

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WHY?

# 464XLAT





# Observed Operational Issues

- Traceroute can not represent IPv6-only hops
  - Confusing for users
  - Complicates troubleshooting
- ICMPv6 Packet Too Big are not translated
  - Broken PMTUD

WHAT?

# ICMPv6 -> ICMPv4 Translation

- Define how to translate IPv6 source addresses which do not belong to the NAT64 prefix
- Preserve information about the original IPv6 source address.

HOW?



# Terminology: Untranslatable

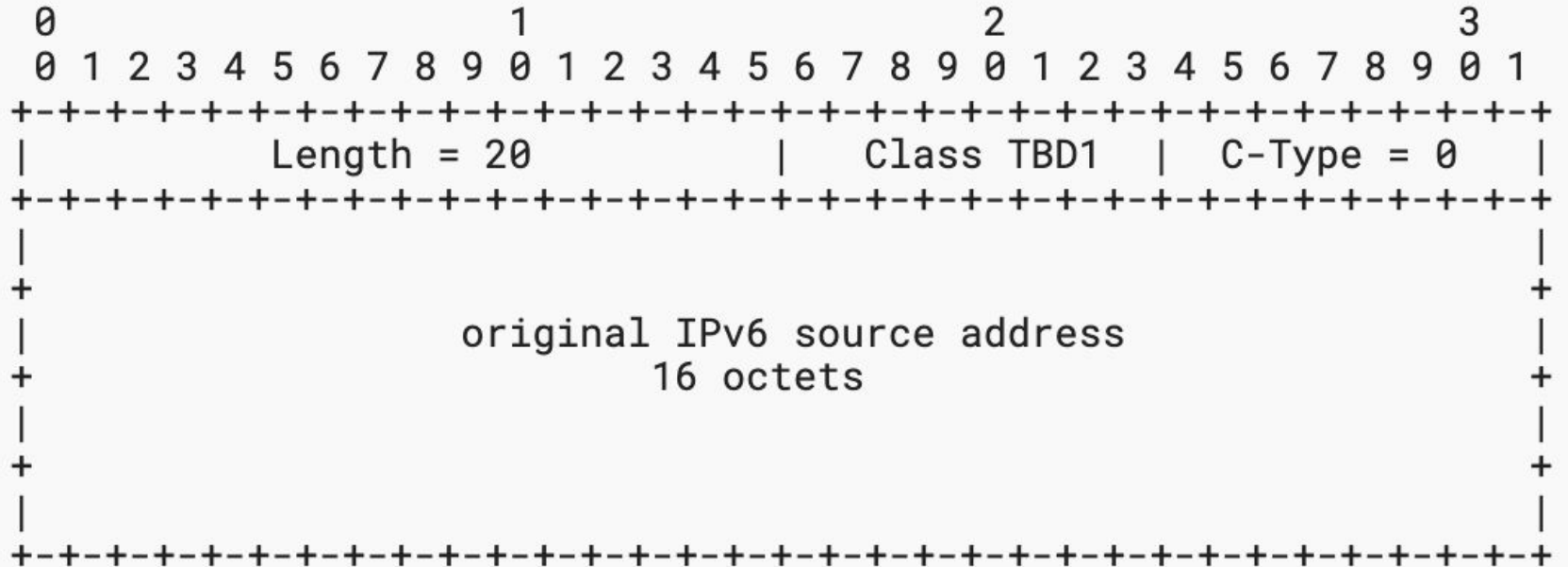
- “Untranslatable” IPv6 address:
  - doesn't belong to NAT64 prefix
  - there are no explicit address mapping

# Translating the Untranslatable

- Request IANA to allocate 192.0.0.11/32
- Use 192.0.0.11 to translate “untranslatable” IPv6 sources
  - ICMPv6 Destination Unreachable, Time Exceeded, PTB
- Some implementations already use 225.0.0.0
  - traceroute represents hop#X as '225.0.0.X'

# Preserving the Original IPv6 Source Address

Introducing "IPv6 Original Source Extension" Object for **ICMPv4**



# Using IPv6 Original Source Extension Object

- SHOULD be added to **ICMPv4** when translating ICMPv6
  - IPv6 source is 'untranslatable'
  - ICMPv6 Types are:
    - Destination Unreachable
    - Time Exceeded
    - Packet Too Big (\*)
- MUST not be used in any other cases

# Please Read the Draft

- Details on the translator behaviour:
  - adding new Extension Structure
  - appending extension object to existing structure
- Updates to RFC7915 (translation algorithm)

# Similar Work: ICMP Extensions

- RFC5837, Interface IP Address Sub-Object

If the eliciting datagram was IPv4, the IP Interface Sub-Object MUST represent an IPv4 address. Likewise, if the eliciting datagram was IPv6, the IP Interface Sub-Object MUST represent an IPv6 address.

- Draft-fenner-intarea-extended-icmp-hostid
  - Possibly. Need to clarify NAT64 logic

# Open Issues

- When to add the extension object?
  - Before or after the translation?
    - Before (current text): easier to translate
    - After: can be added when ICMPv6 PTB is translated to ICMPv4 "Fragmentation Needed"
- Are we over specifying?
  - Maybe just define how the packet must look like?

# Next Steps

- Is problem worth solving?
- Does the proposed solution make sense?
- Comments? Suggestions?
- Adoption?