Using
The WKP 64:ff9b::/96
To Represent Non-Global IPv4
addresses

[draft-kumkova-v6ops-nat64-wkp-1918]()

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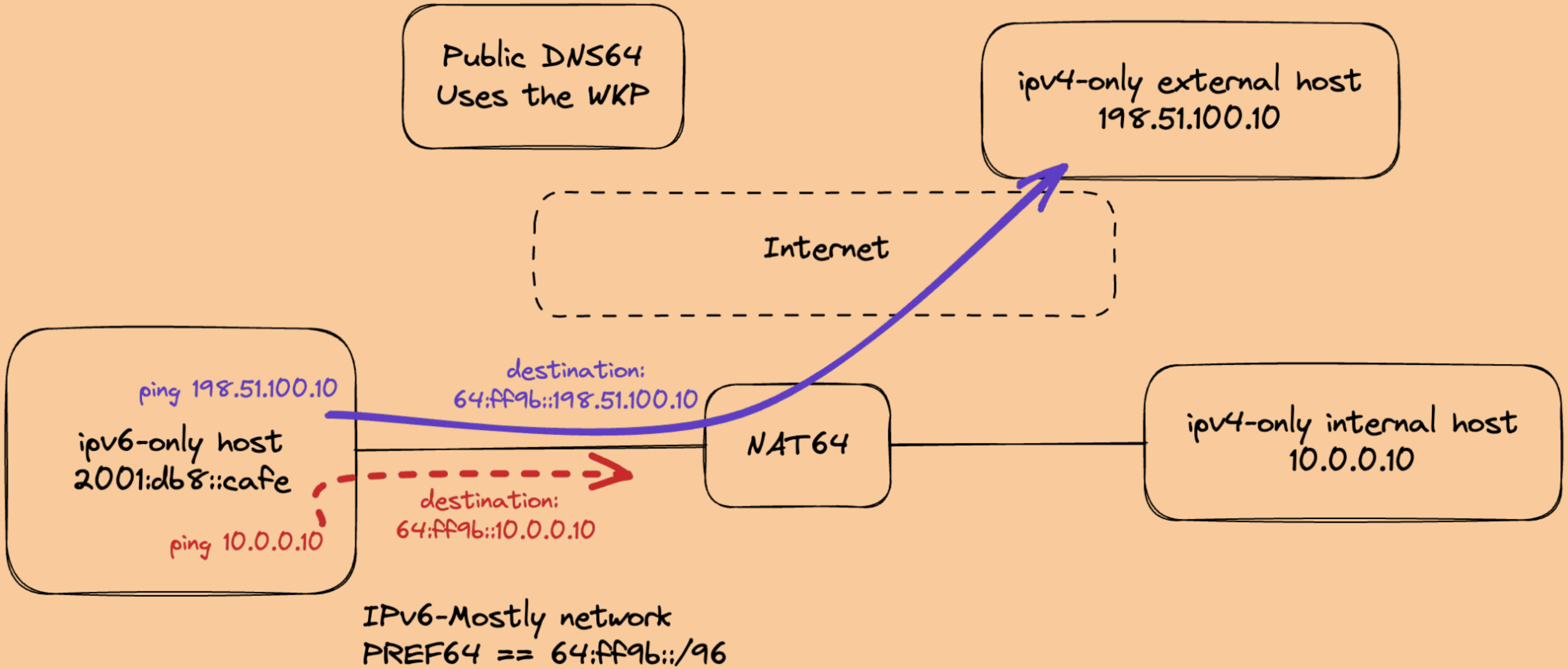
RFC6052: Using 64:ff9b::/96 with RFC1918

3.1. Restrictions on the Use of the Well-Known Prefix

The Well-Known Prefix MUST NOT be used to represent non-global IPv4 addresses, such as those defined in [RFC1918] or listed in Section 3 of [RFC5735]. Address translators MUST NOT translate packets in which an address is composed of the Well-Known Prefix and a non-global IPv4 address; they MUST drop these packets.

Typical Enterprise/SMB Deployment



Problem Statement

- IPv6-only nodes using public DNS64/the WKP reaching RCF1918 nodes
- **Easy implement in DNS64**
  - do not synthesize AAAA using the WKP for RFC1918
  - Have a separate view for RFC1918
- As we are moving away from DNS64 towards local synthesis
  - It is desirable to use the same NAT64 for everything

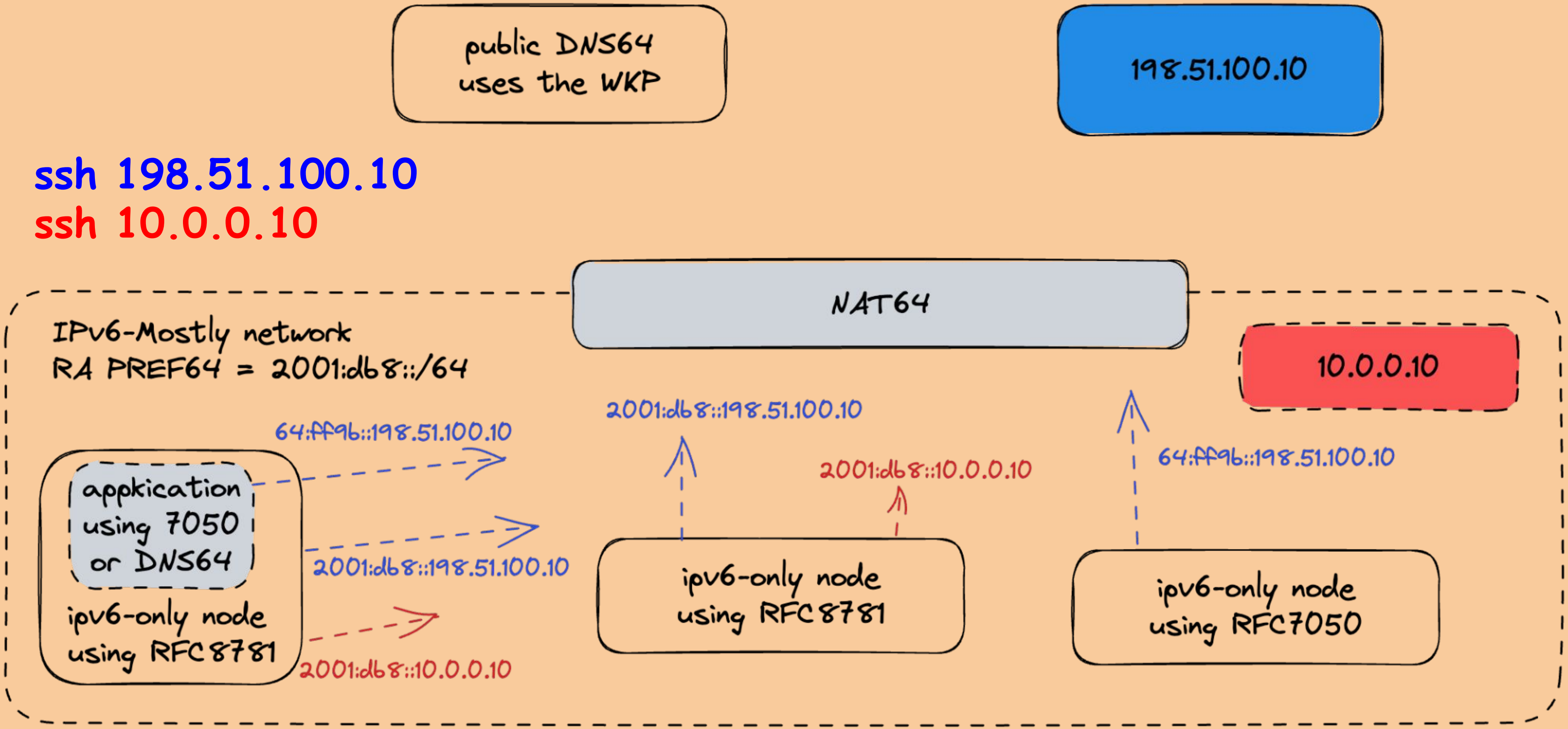
Why Not Network-Specific Prefix?

- If some nodes/systems are using DNS64 or RFC7050:
    - The operator needs to run a local DNS64
    - Operational costs and complexity

RFC8215, 64:ff9b:1::/48 prefix is a network-specific, as it is not the WKP

Using an NSP with a public DNS64

ssh 198.51.100.10
ssh 10.0.0.10



Operational Reality

All known CLAT implementations ignore

“MUST NOT use the WKP for RFC1918”

Why “MUST NOT”? Mystery Unraveled

- 2010: RFC6052 published.
  - No local synthesis, no 464XLAT, no NAT64 prefix discovery.
  - Synthesized addresses coming from DNS64 **only**
  - “MUST NOT” easy to implement in DNS64
- 2013: RFC7050, discover the NAT64 prefix via DNS64
- 2020: RFC8781, discover the NAT64 prefix via RA option
- **2025**: Many hosts doing local synthesis with discovered prefix
  - “MUST NOT” aimed for DNS64 does not really apply

Section 3.1 of RFC6052: Conclusion

- Network-specific **policy decision** hardcoded as 'MUST NOT' which:
- Creates operational complexity
- Was written with only DNS64 in mind 15 years ago
- Not applicable for non-DNS64 cases
- If violated, nothing breaks
- Ignored by many implementations

Proposed Course of Action: RFC6052 Update

(OLD): The WKP MUST NOT be used to represent non-global IPv4 Addresses…

NEW:

- The WKP **MAY** be used to represent non-global IPv4 Addresses
- **DNS64 MUST NOT** use the WKP to represent non-global IPv4 **unless configured otherwise.**

(OLD): Address translators MUST NOT translate and MUST drop these packets.

NEW: Address translators **SHOULD translate** and **MUST NOT drop** these packets.