

Source Address Finding (SAF) for IPv6 Translation Mechanisms

draft-thaler-ipv6-saf-01.txt

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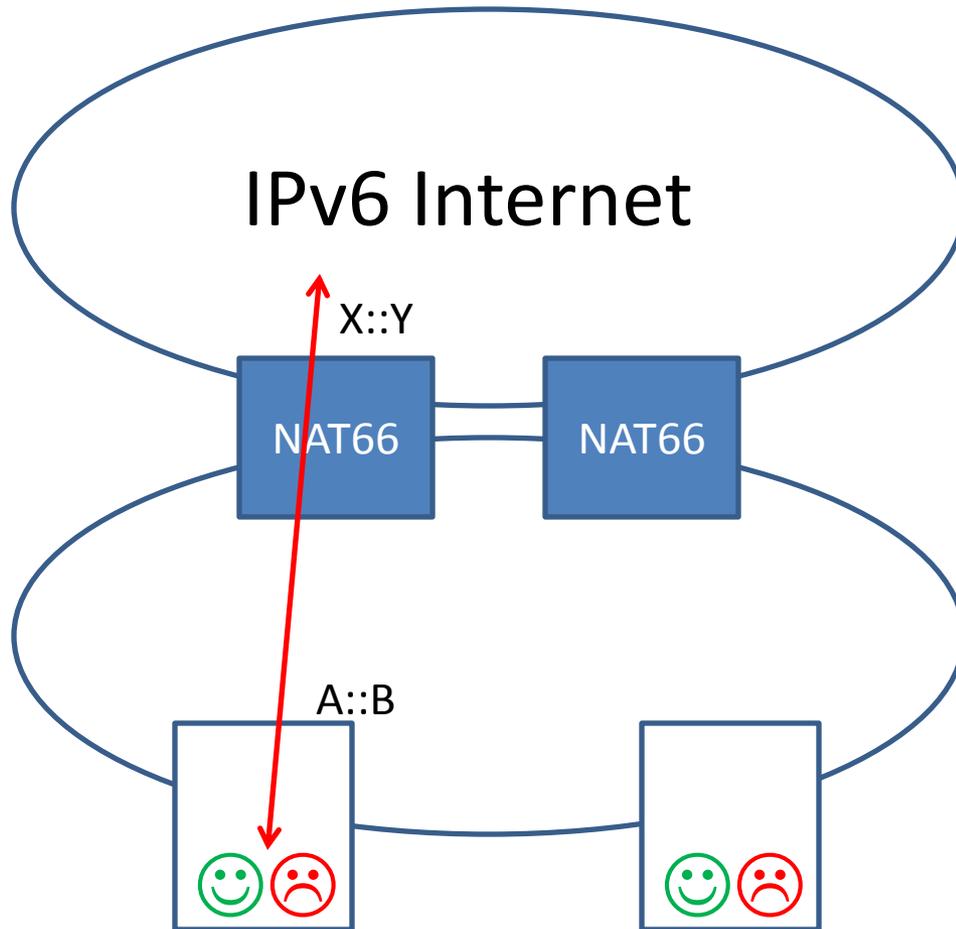
UNilateral Self-Address Fixing (UNSAF)

- 1:1 address mappings (NAT66) avoid most of the issues with NAT, except:
 - Address seen by other end is different from what is seen locally
- Many apps break when both ends don't see the same address
- IAB RFC 3424 (November 2002) defined “UNSAF”:
 - UNSAF mechanisms learn the address others see you as
 - endpoint “fixes” up the address it reports/advertises, since it's different from what the endpoint originally thought
 - UNSAF mechanisms “can be considered at best as short term fixes”
 - UNSAF mechanisms require an exit strategy
 - Previously it was “IPv6”, but not if we end up with NAT66...

SAF = Source Address Finding

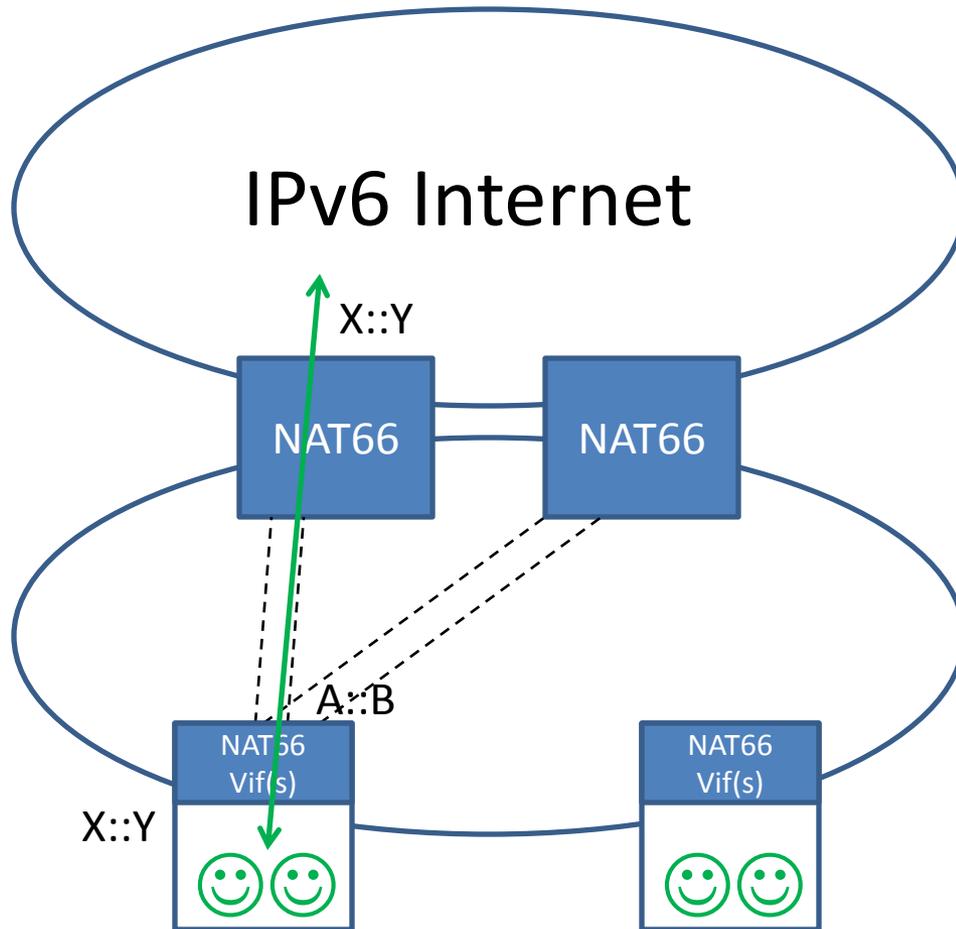
- Can regain end-to-end transparency if
 1. Use reversible 1:1 translation between host and NAT66
 2. Learn (“find”) the external address and assign it to a virtual interface in the host
- Compare vs tunnel-with-header-compression
 - Same: no changes to TCP/IP, sockets, apps required
 - Different: allows single-box deployment (at expense of losing e2e transparency) as a deployment step

Incremental deployment (1/2)



- Someone drops in 1 or more NAT66 boxes
- Some apps work (same that work through NAT44)
- Some apps break
- Network still sees some benefit
- Hosts still see some pain

Incremental deployment (2/2)



- Upgrade hosts
- Host finds X::Y
- Host adds it on virtual interface
- TCP/IP uses it normally
- Vif translates X::Y to A::B, NAT66 translates it back

SAF Mechanisms

- A “SAF” mechanism is one that learns the information needed to configure the virtual interface
- Discussion of actual mechanisms is out of scope for this document and presentation
 - But it’s not rocket science
 - No per-flow negotiation needed since address is flow-independent
 - Need not involve changes to NAT66 devices
- Discussion of architectural constraints is in scope

Requirements for SAF Mechanisms

1. MUST find external addresses (and other config)
2. SHOULD work even if network beyond NAT66 is unreachable
3. MUST learn Valid/Preferred lifetimes of addrs
4. MUST NOT require a separate external address per translator
5. SHOULD support RFC3041 (privacy) addrs
6. SHOULD support CGAs