

Gratuitous Neighbor Discovery.
Creating Neighbor Cache Entries on
First-Hop Routers
[draft-ietf-6man-grand-00](#)

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Quick Recap

Problem: a host start sending traffic, the return flows arrive to the router, no neighbor cache entry, packets dropped until address resolution completes.

Solution:

- Hosts advertise their addresses by sending unsolicited NAs
- Routers create STALE entries

Changes since IETF106

Gratuitous NA Destination Address

More clarifying text on why to send to 'all routers' ff02::2

- Covers the asymmetric traffic case
- No increase in multicast level:
 - unsolicited NA instead of multicast NSes
 - MLD snooping helps too

Gratuitous NA Destination Address

- Shall hosts use RFC6085: map ff02::2 to unicast MAC?
 - Would not solve asymmetric routing case
 - Hosts need to know all routers MACs

Avoiding Disruption (Duplicated Addresses)

Unsolicited NA Received for INCOMPLETE Entry

1. "Rightful" owner (host A) joins the network, sends packets.
2. Return traffic arrives to the router.
3. Another host (host B) assigns the same address.

Would unsolicited NA introduce disruption?

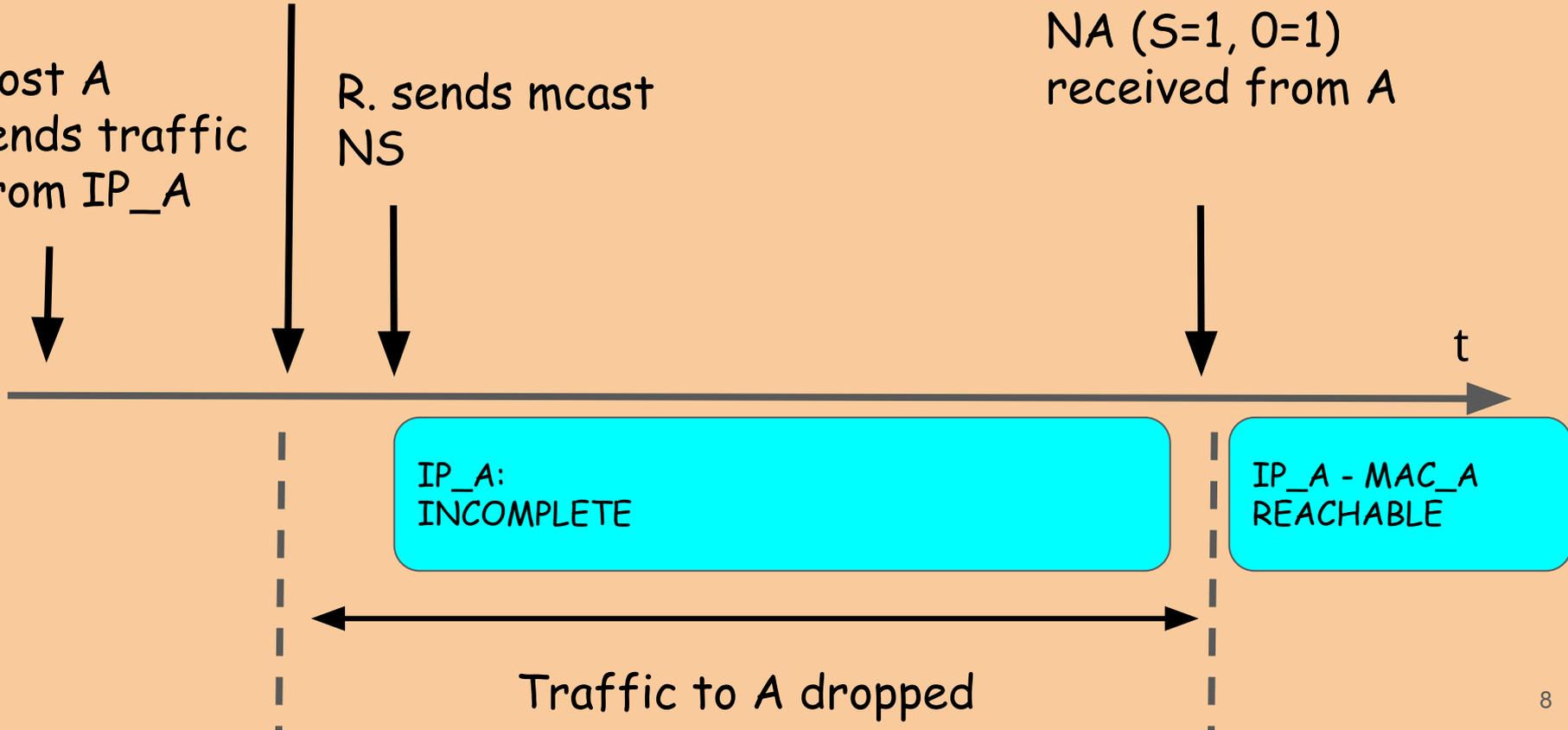
W/o ietf-6man-grand

Router receives packets to IP_A

Host A sends traffic from IP_A

R. sends mcast NS

NA (S=1, O=1) received from A



With ietf-6man-grand

Router receives packets to IP_A

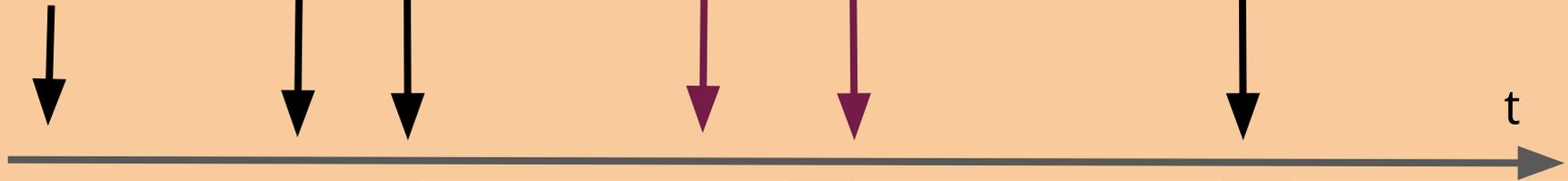
Host B gets Optimistic IP_A

Host A sends traffic from IP_A

R. sends mcast NS

NA (O=0) from B

NA (S=1, O=1) received from A



IP_A:
INCOMPLETE

IP_A <> MAC_B
STALE

IP_A - MAC_A
REACHABLE



Traffic to A dropped

Unsolicited NA Received for INCOMPLETE Entry

Q: Would unsolicited NA introduce disruption?

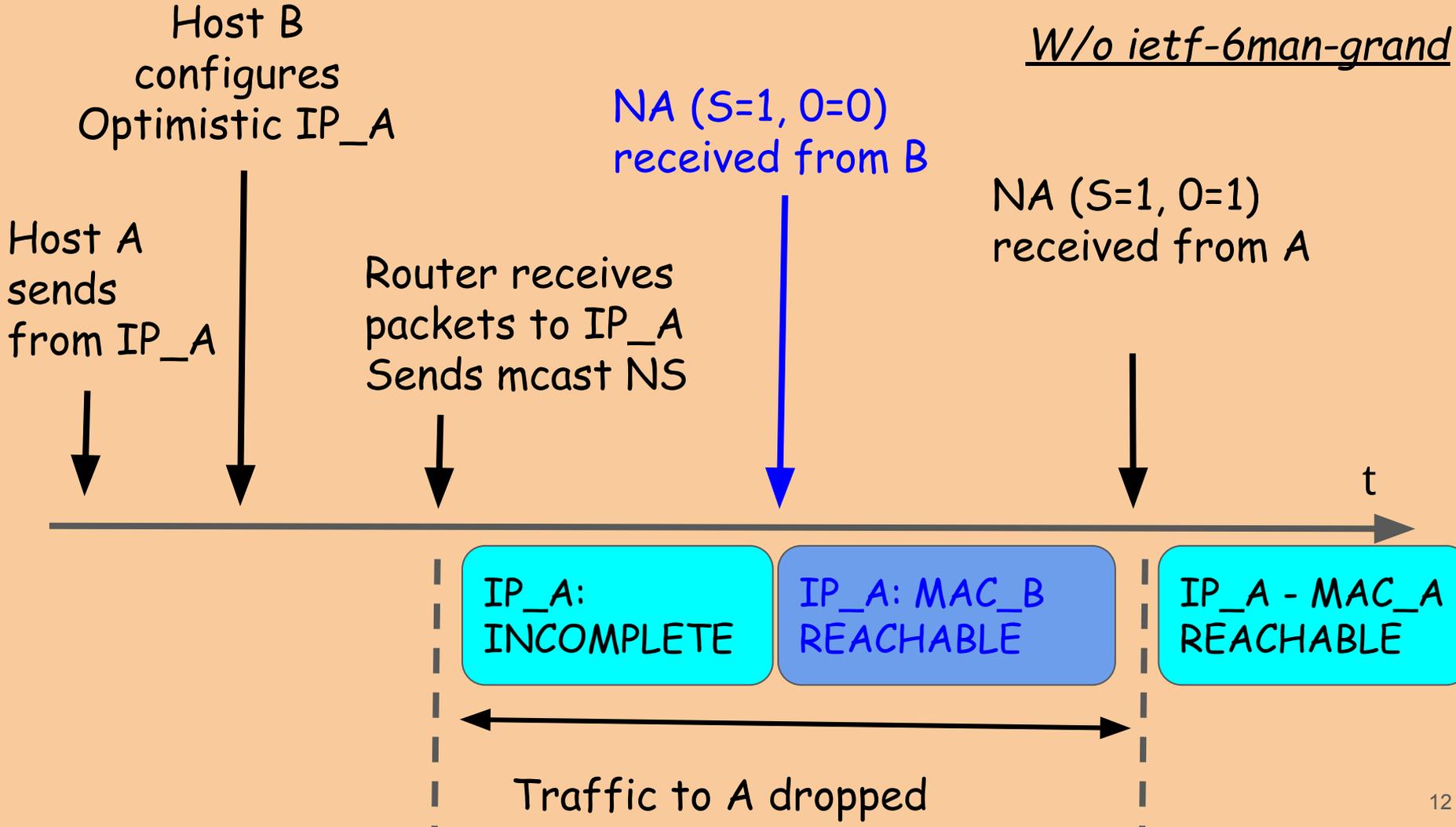
A: No, in both cases traffic restored as soon as the legitimate owner responds with NA.

Unsolicited NA Received, no Entry

1. "Rightful" owner (host A) joins the network, sends packets.
2. Another host (host B) assigns the same optimistic address and sends an unsolicited NA.
3. Return traffic arrives to the router

Would unsolicited NA introduce disruption?

W/o ietf-6man-grand



Host B configures Optimistic IP_A

R. sends unicast NS

Host A sends from IP_A

NA (S=0) from B

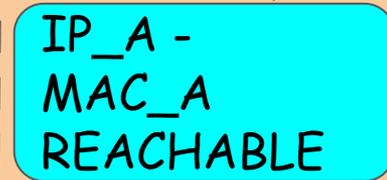
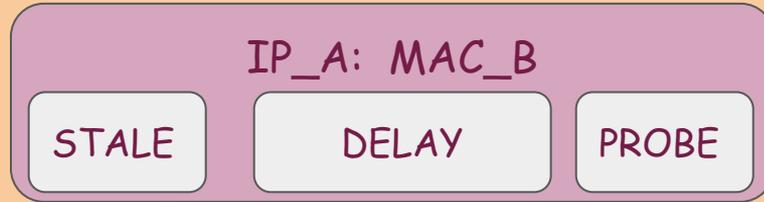
Router receives packets to IP_A

DAD fails

R. sends mcast NS

NA (S=1, O=1) from A

t



Traffic to A dropped

Unsolicited NA Received, no Entry

Max. additional impact on the rightful owner:

$\text{DELAY_FIRST_PROBE_TIME} +$
 $\text{MAX_UNICAST_SOLICIT} * \text{RETRANS_TIMER}$

Default: 8 secs

Conditions: The owner hasn't been receiving traffic when the duplicated address is assigned to another host.

Questions to the Audience

Is the corner case bad enough?

Do routers use data plane flows to move from DELAY to REACHABLE?

QUESTIONS?

COMMENTS?