

# RS Driven Access Considered Harmful

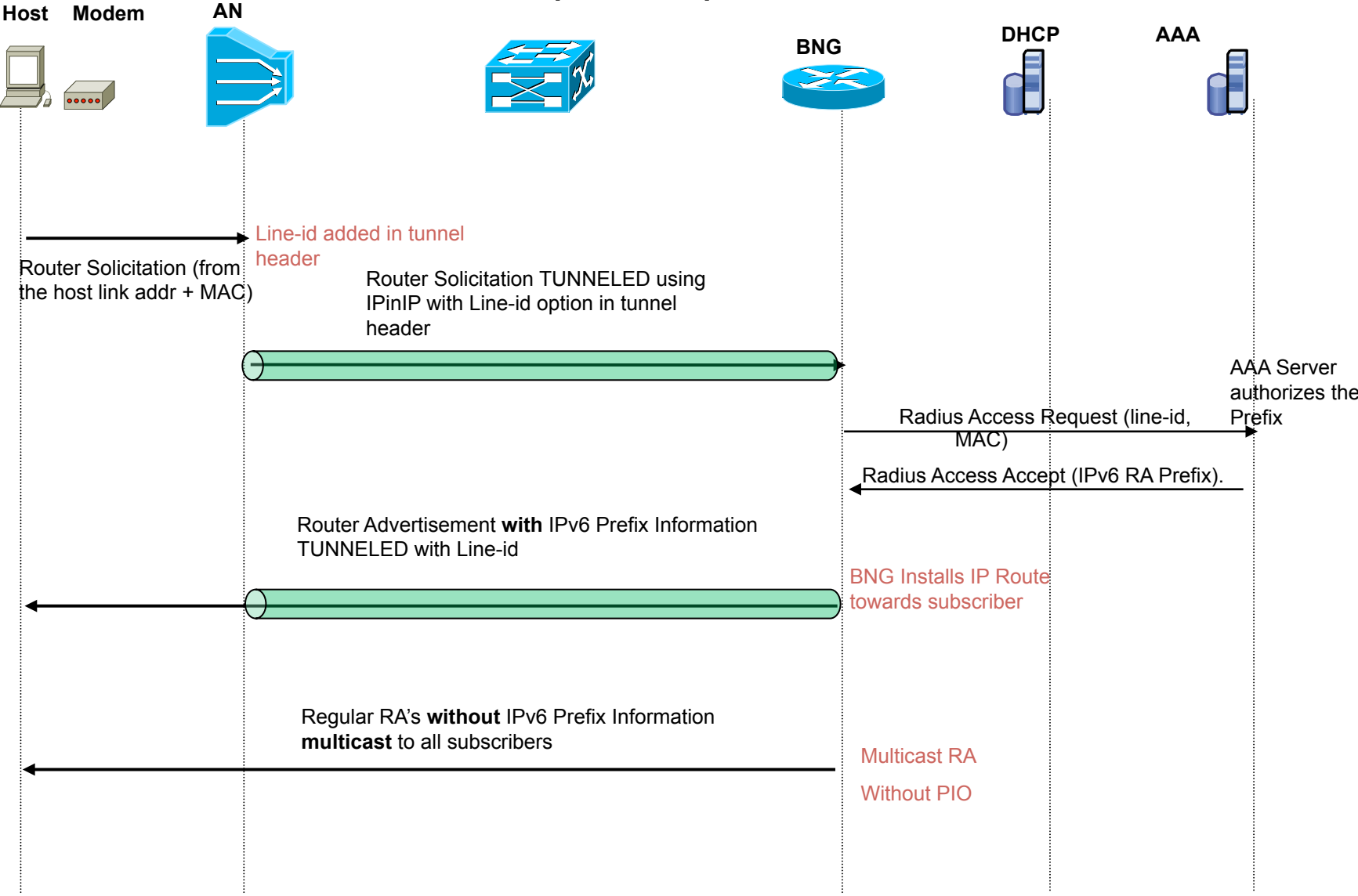
[draft-dec-6man-rs-access-harmful](#)

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# RS driven access

## Principle of operation



# Issues 1/3

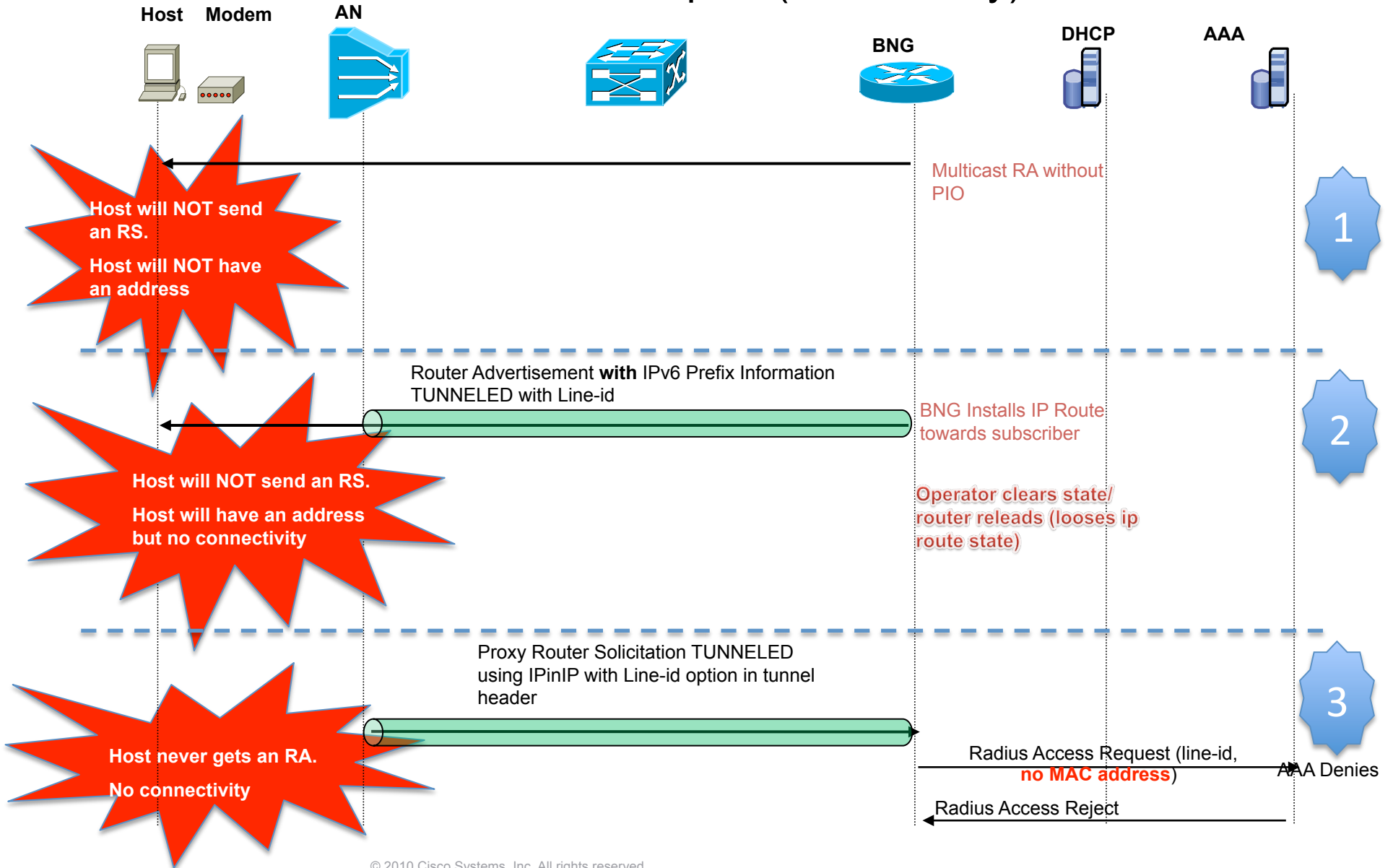
- RS sending was not designed to be reliable, periodic, or even sent.
- RFC4861 states that a host „may send” an RS under the following conditions:
  - The interface is initialized at system startup time or re-initialized
  - The host attaches to a link for the first time or re-attaches to a link after being detached for some time.
- Any IPv6 host will never send an RS if it received any RA previously. **ANY** RA will do.
- Hosts stop sending RSs after 12-90 seconds.
- Hosts will not see any non direct link drop (eg modem link)
  - They will not send RS'es when upstream links or devices fail/flap

# Issues 2/3

- draft-ietf-6man-lineid defines effectively an RS-sending-proxy
  - Proxy sends RS messages triggered by access line state
  - RS sending ceases after a few attempts or an RA is received
  - RS messages do not contain customer identifiers (eg MAC address)
- Leads to more issues:
  - RSeS are still unreliable – making them reliable would require a new protocol
  - RSeS cannot be used for authorizing based on MAC address or vendor-id, etc
  - Any active line will create state on the BNG – no way of managing or cleaning such state (short of manual configuration)
- An RS sending proxy doesn't meet actual requirements:
  - It cannot convey host identifiers required for the authorization (eg MAC address).

# Issues

## Three Examples (out of many)



# Issues 3/3

- Summary:
  - Technical
    - As presented – inherent characteristics of ICMPv6/ND make RS triggered access seriously flawed, eg draft-ietf-6man-lineid
    - The notion is not limited to DSL/ETTx. Some evidence of similar proposals in WiFi.
  - Impact for the operator
    - Doesn't meet requirements
    - Support calls/manual configuration
    - Unreliable/unpredictable
  - Impacts for customer
    - No means of recovery except reboot all IPv6 devices (and hope)
    - More likely to „turn off IPv6“

# Requirements

- The requirements appear to be.
  - A. Authorize or set-up host connectivity when triggered by host originated IP control traffic
  - B. Use both host derived and line-id parameters for authorization
  - C. Work on an indirectly connected ethernet network
  - D. Require no host changes or client protocols

Implicit requirement: It should actually work and be reasonably reliable.

# Options

1. Re-design ICMPv6/RS sending (rfc4861)
2. Require DHCPv6 clients for this form of access  
Path chosen by Cablelabs. Requires host client.
3. Use Ethernet OAM to monitor link state  
Requires host changes
4. Use a DHCPv6 Proxy client
5. Use alternative link state notification protocol  
(eg ANCP)
6. Other...



# Questions?