SAVI for Locally generated Addresses

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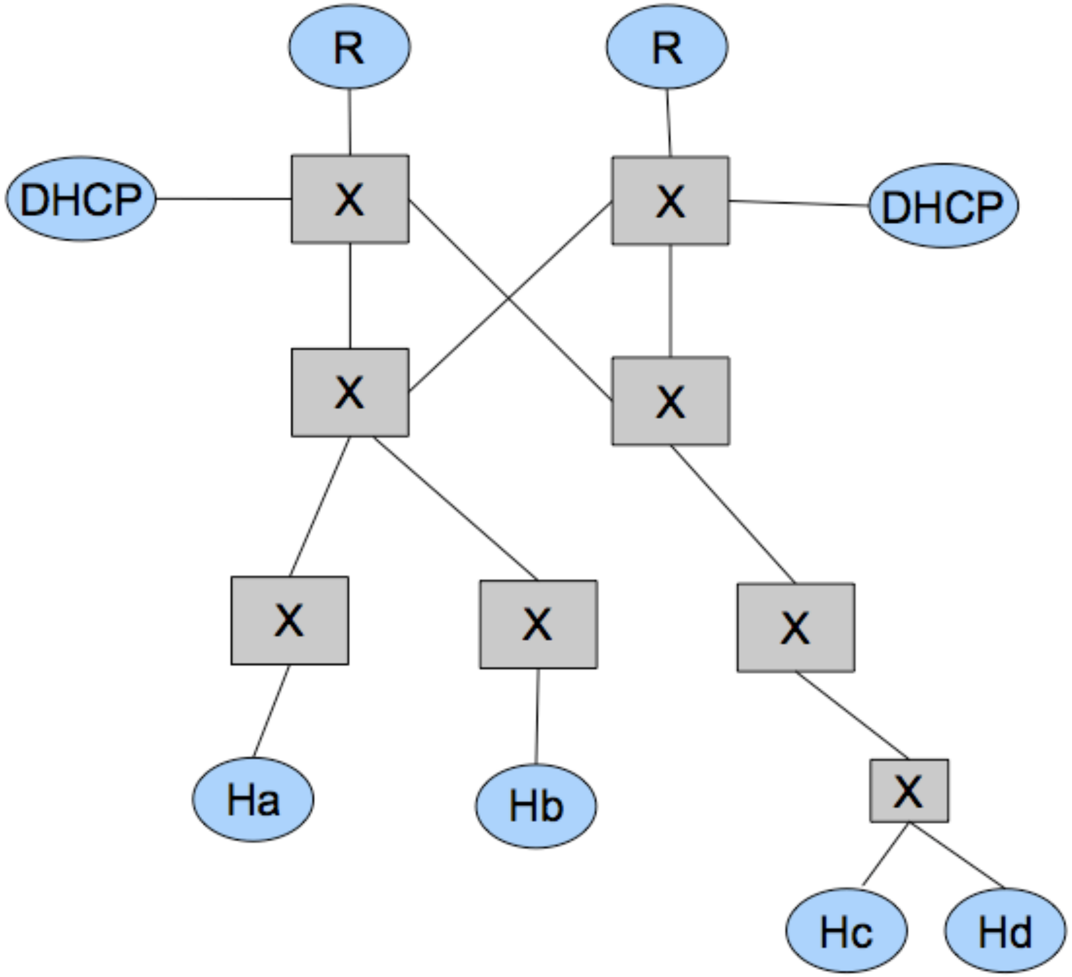
SAVI WG – IETF76

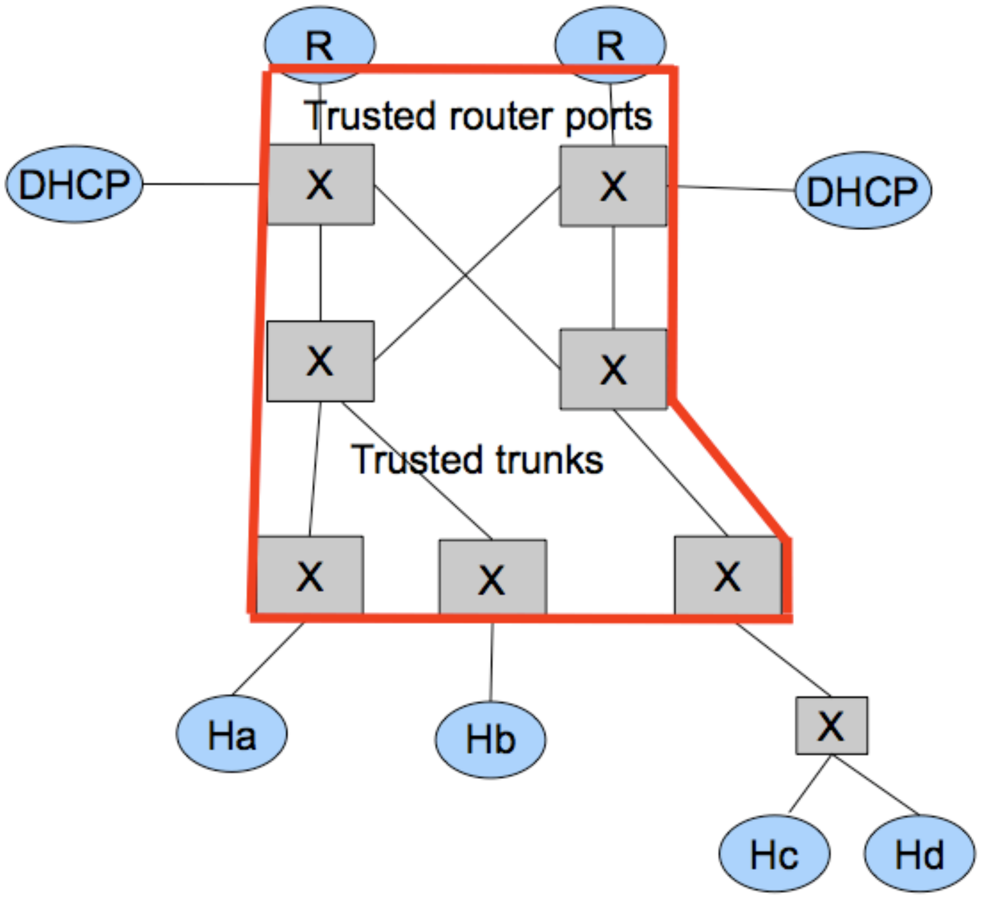
Design Consideration

- Only applies to local traffic
  - Complements ingress filtering
- Aimed for SLLAC configured addresses
- No new protocols
- Address ownership based on the FCFS principle
  - Based on either first data or control packet claiming ownership of that address

SAVI enforcement perimeter



SAVI enforcement perimeter



SAVI enforcement perimeter implications

- Perimetrical security: some interfaces of a SAVI device will connect to the internal (trusted) part of the topology and other interfaces will connect to the external (untrusted) part of the topology.
- A SAVI device only verifies packets coming though one interface connected to the untrusted part of the topology.
- A SAVI device only stores binding information for the source addresses that are bound to layer-2 anchors that correspond to interfaces that connect to the untrusted part of the topology.
- SAVI uses the NSOL and NADV messages to preserve the coherency of the SAVI binding state distributed among the SAVI devices within a realm.

Types of ports

- Validating ports (VPs): when a packet is received through one of the validating ports, the SAVI processing and filtering will be executed.
- Trusted ports (TPs): packets received through trusted ports are not validated and no SAVI processing is performed in them.

Do we need other port types?

- Have been suggested:
  - Learning ports: The switch learns the address and creates bindings based on the info from that ports, but does not filter
    - Useful for routers??
  - Direct ports: ports where hosts are directly connected
- Note well that more port types implies more complexity
  - More complex _manual_ configuration of savi devices
  - much more complex state machine

Port configuration guidelines

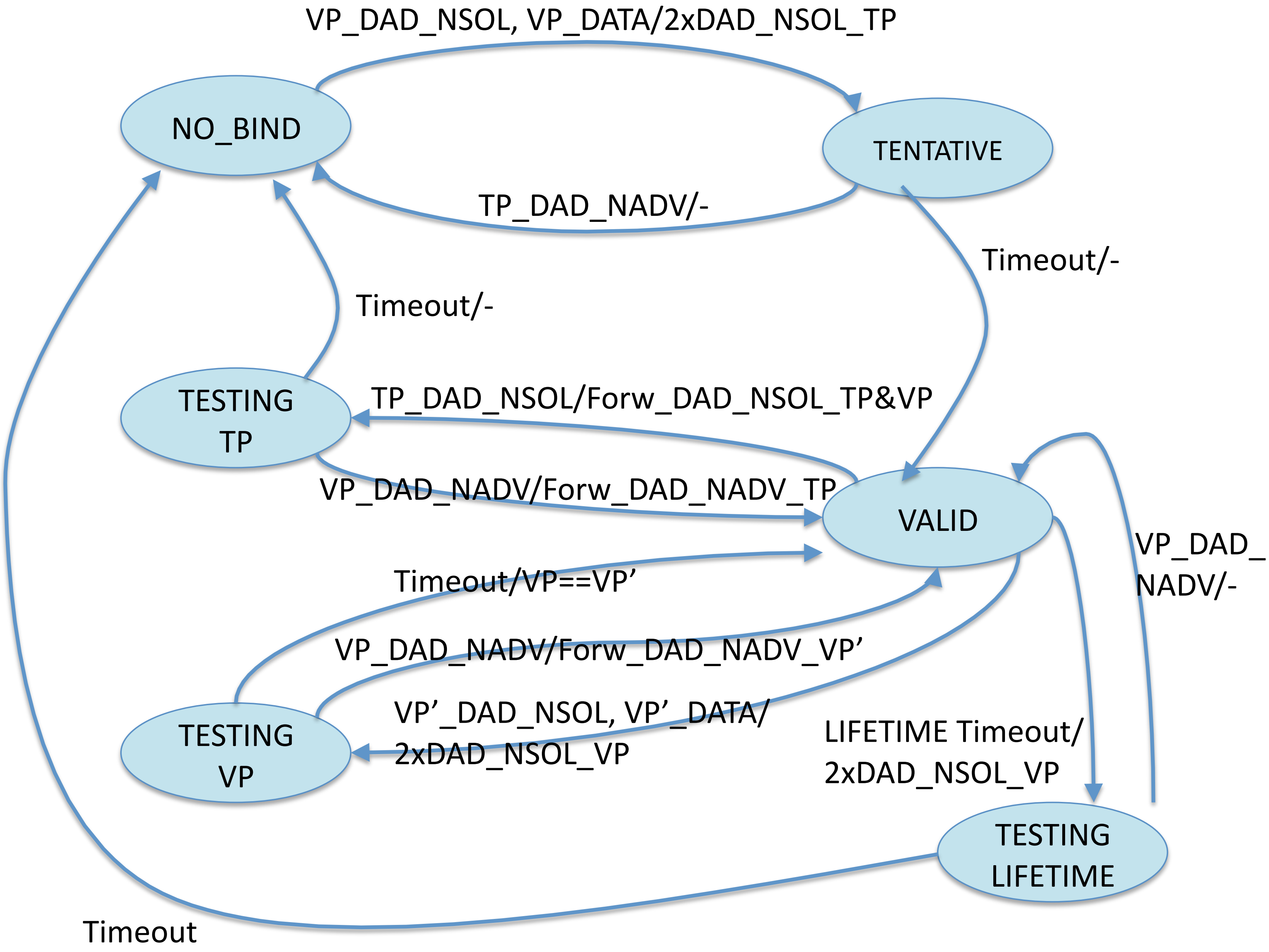
- Ports configured as VPs:
  - Ports connected to hosts
  - Ports connected to non-SAVI switches that attach hosts
- Ports configured as TPs:
  - Ports between SAVI devices
  - Ports connected to routers
  - Ports connected to non-SAVI switches that don't attach hosts (i.e. Only attach other SAVI devices or routers)

Main processing

- Data packets for which binding exists and matches L2 anchor
  - Forward
- Data packets for which binding does not exists or L2 binding does not match the L2 binding
  - Generate DAD-NSOL (2x) to verify who owns the address
- Control packets: DAD-NSOL for which a bidning does not exists or does not match the L2 binding
  - Forward DAD-NSOL (2x) to verify who owns the address

- State info
  - IP
  - Port
  - Lifetime

- Inputs
  - VP DAD NSOL
  - VP DAD NADV
  - VP DATA PKT
  - VP’ DAD NSOL
  - VP‘ DAD NADV
  - VP’ DATA PKT
  - TP DAD NSOL
  - TP DAD NADV
  - TP DATA PKT


VP_DAD_NSOL, VP_DATA/2xDAD_NSOL_TP
NO_BIND
TENTATIVE
TP_DAD_NADV/-
Timeout/-
Timeout/-
TESTING TP
TP_DAD_NSOL/Forw_DAD_NSOL_TP&VP
VP_DAD_NADV/Forw_DAD_NADV_TP
VALID
VP_DAD_
NADV/-
Timeout/VP==VP'
VP_DAD_NADV/Forw_DAD_NADV_VP'
VP'_DAD_NSOL, VP'_DATA/
2xDAD_NSOL_VP
TESTING VP
LIFETIME Timeout/
2xDAD_NSOL_VP
TESTING LIFETIME
Timeout