

# Benchmarking IPv6 Neighbor Cache Behavior

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# How IPv6 Neighbor Discovery Works

- Node has packet to send
- Node searches IPv6 Neighbor Cache for destination
- If the destination is present, the forwards the packet using the appropriate link-layer address
- If the destination is not present
  - Create a Neighbor Cache entry and put it in the INCOMPLETE state
  - Until ICMP Neighbor Advertisement (NA) received or maximum-solicitations
    - Send ICMP Neighbor Solicitation (NS) message
    - Wait
  - If NA is received, set neighbor cache state to REACHABLE
- Cache entry transitions to STALE state if it does not refreshed for a configurable period of time
  - Refreshed by traffic
  - Refreshed by NA

# Neighbor Cache Can Grow Large

- When the DUT really has a large number of neighbors and its talking to all of them
- When an attached network is being scanned
  - This happens all the time

# This Draft Asks The Following Questions

- Test 1: How long does it take for a cache entry to go from the REACHABLE to STALE states
- Test 2: How many entries can the Neighbor Cache accommodate
- Test 3: During periods of Neighbor Cache exhaustion, determine whether node prefers previously discovered neighbors

# Next Steps

- Request review from IPv6 Neighbor Discovery expert
  - 6man WG?
- WG Last Call