Benchmarking Neighbor Discovery Problems

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March 12, 2013

History

- Suggested by Ron Bonica at IETF 85 BMWG meeting
- Draft v00 presented and discussed at IETF 86 (Orlando)
- Draft v02 completed / submitted around October 2013

Neighbor Discovery (ND) Problem Background

- The problem is described and documented in RFC 6583, “Operational Neighbor Discovery Problems.”
- An IPv4 subnet is “typically” no larger than 510 addresses and scanning is relatively quick.
- Since the default size of any IPv6 user subnet is 2**64, there can be a lot of addresses
- Scanning the IPv6 subnet takes a really long time, but one can still start scanning it.

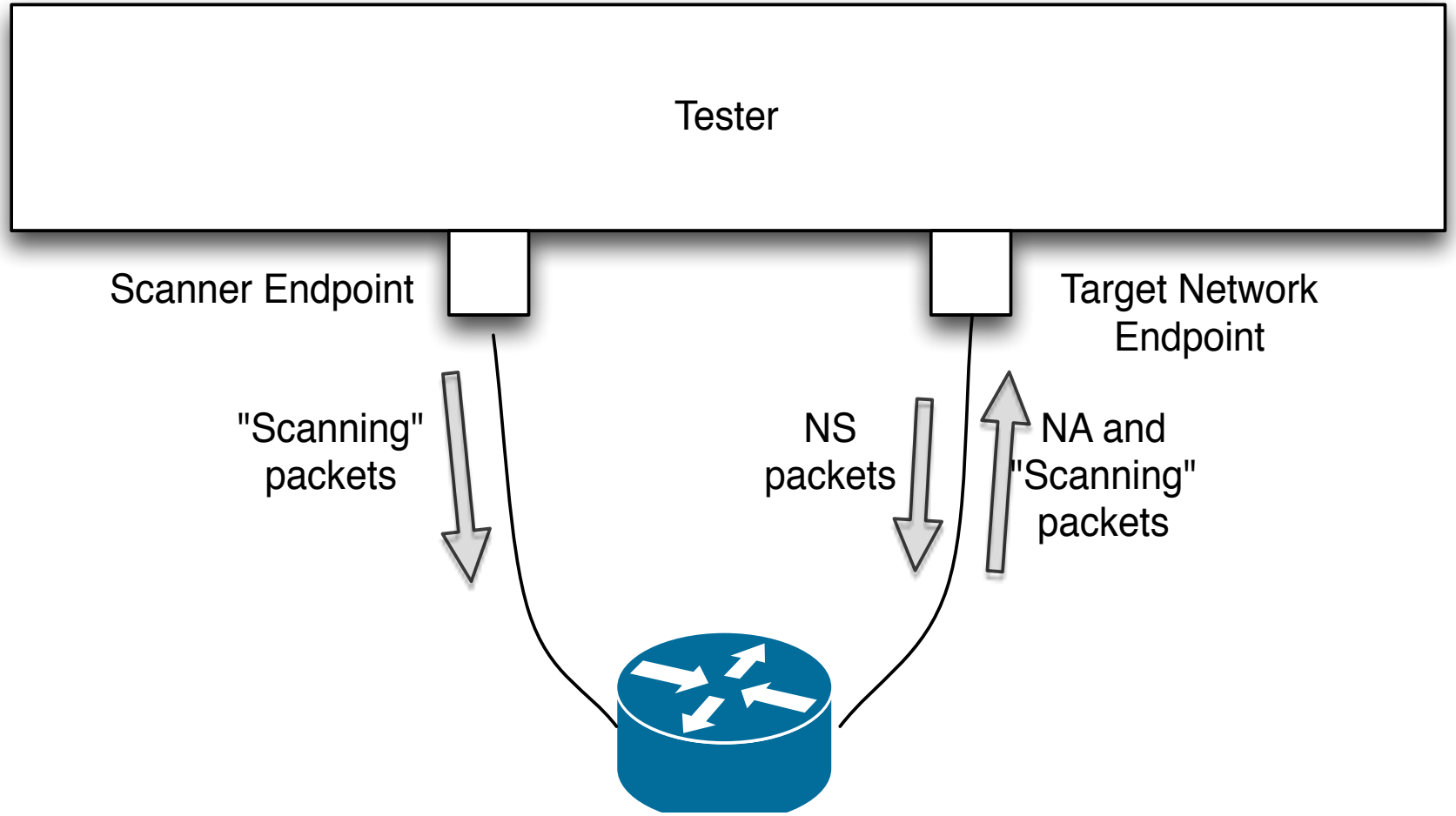
ND Problem con’t

- The number of addresses one can scan for is limited only by the available bandwidth.
- The DUT (router) needs to perform ND for the addresses being scanned, even if the addresses aren’t “live” in the subnet
- This can create a lot of state in the DUT, so much so that the DUT may be unable to complete ND for real, valid nodes in subnet.

Benchmarking ND Problems

- Build a network and a set of tests which illustrate the ND problem.
- Create measurements which characterize how a node behaves under stress due to heavy NDP activity.

Basic (v02) Test Network and Methodology



Changes between v00 and v02

- Removed tests that relied upon intermediate node CPU/memory/etc measurements
- Transition to writing from the perspective of testing via standalone Linux boxes to using specialized testers.
- Cleaned up definitions
- Removed “non-participating network” (mostly).
- Added narrative describing how NDP works and the problems that are being benchmarked.
- Lots of additional text changes since v00.

Proposed Charter Text

IPv6 Neighbor Discovery-related benchmarking

Large address space in IPv6 subnets presents several networking challenges, as described in RFC 6583. Indexes to describe the performance of network devices, such as the number of reachable devices on a sub-network, are useful benchmarks to the operations community. The working group will develop the necessary terminology and methodologies to measure such benchmarks.