

NSEC3 Hash Performance

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Research question

- What is the **worst case** effect of the number of NSEC3 hash iterations on the query load of a recursive name server?
 - NXDOMAIN response only
 - Unique queries, no cache responses
 - Different next closer name each time
 - Number determined by authoritative server, but affects validators too.

Test setups



Player

- tcpreplay, tcpdump



Validator

- Unbound



Authority

- NSD (root and qx)

Test setups



Player

- tcpreplay, tcpdump



Authority

- NSD (root and qx)

How many iterations?

- From RFC 5155:

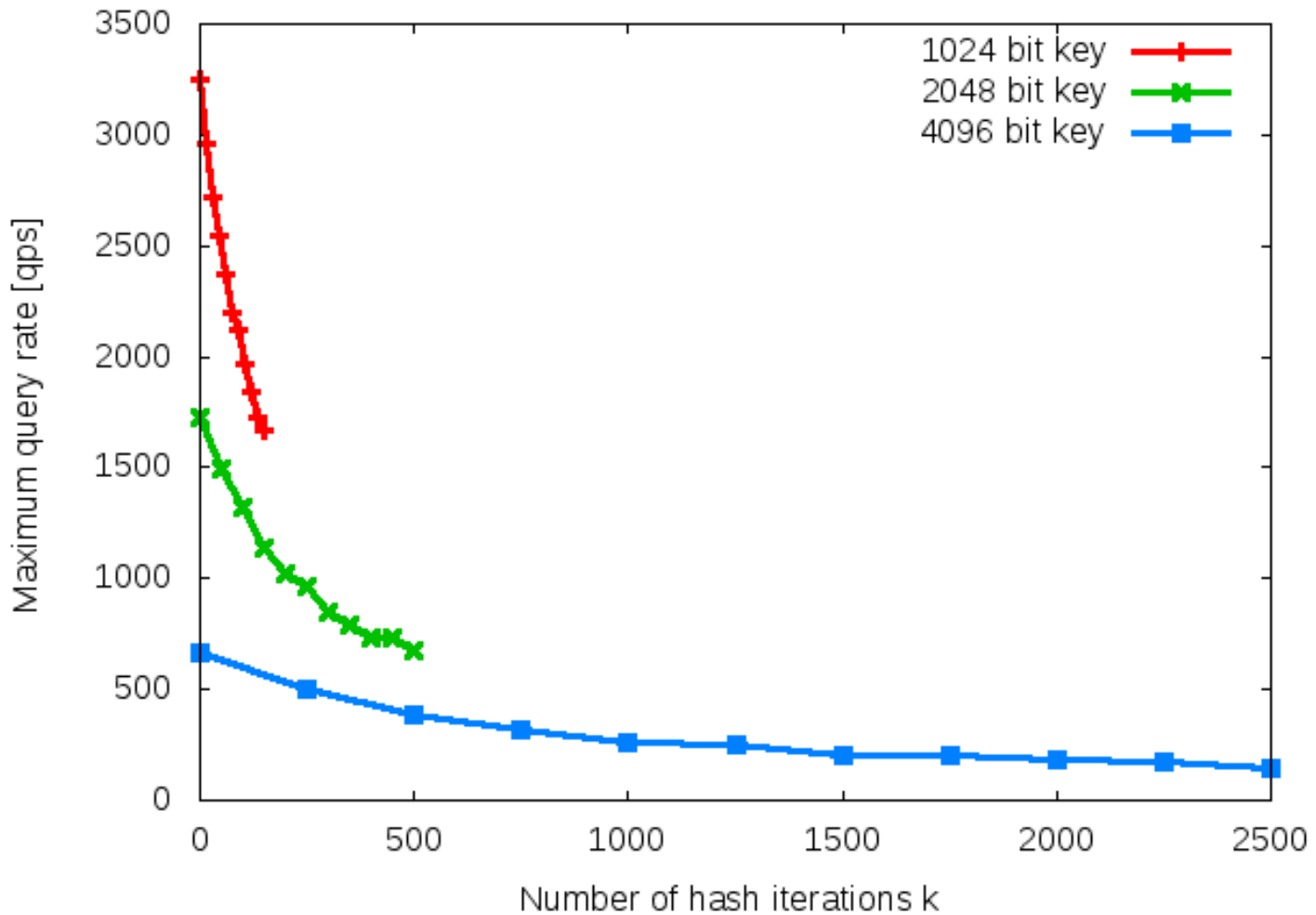
Key Size	Iterations
1024	150
2048	500
4096	2500

Running the tests

- For each NSD configuration, do:
 - Start NSD
 - Calculate maximum query rate
 - Start Unbound
 - Run tcpreplay
 - Stop Unbound
 - Stop NSD

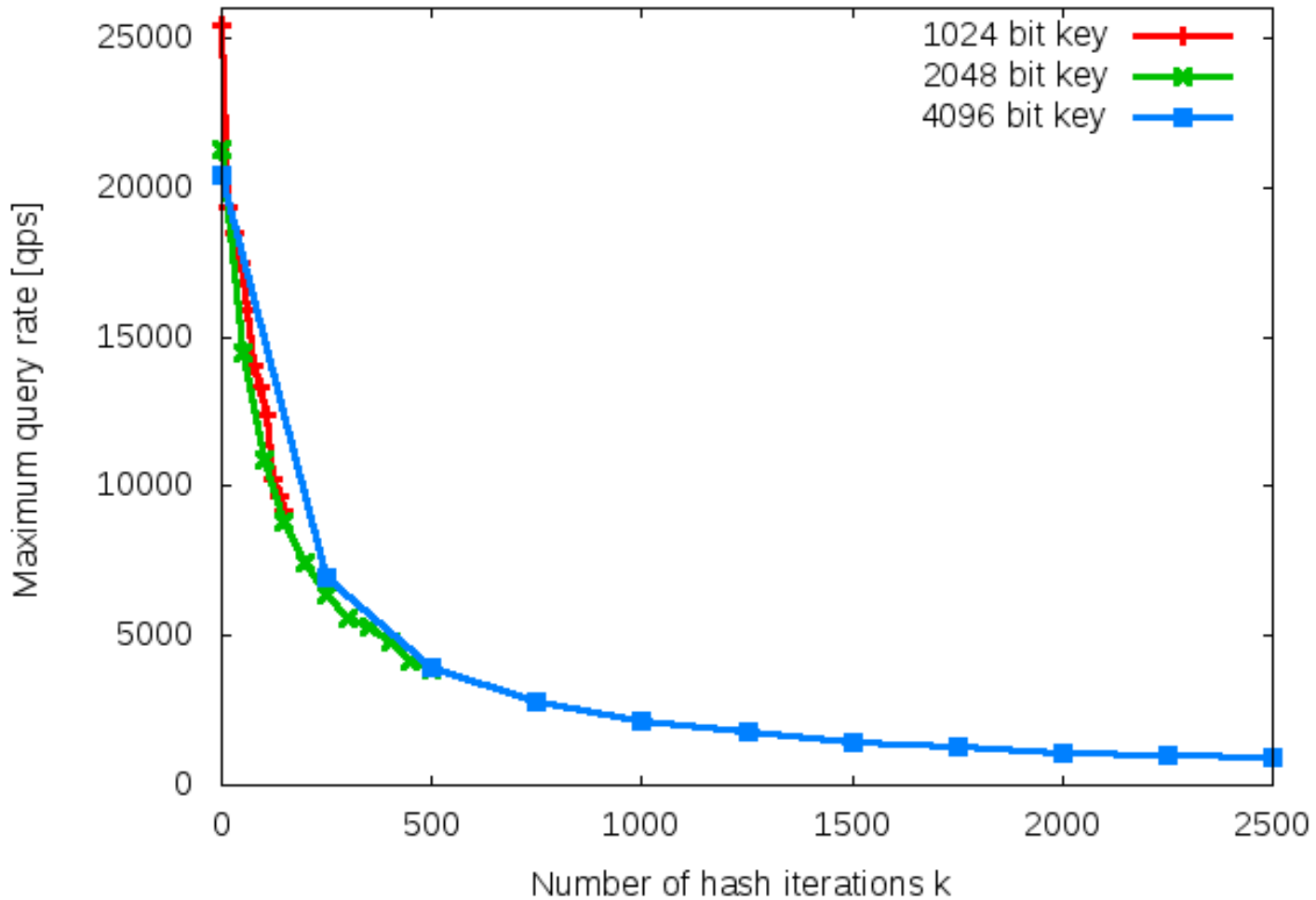
Validator

Unbound



Authority

NSD



Observations

- Validator:
 - Key length has more impact on performance than iteration count
 - 150+ iterations halves performance
- Authority:
 - Performance independent of key length
 - 100 iterations halves performance

- <http://www.nlnetlabs.nl>
- dnsop mailing list