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)

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Test setups

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How many iterations?

- From RFC 5155:

Key Size	Iterations
1024	150
2048	500
4096	2500

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Running the tests

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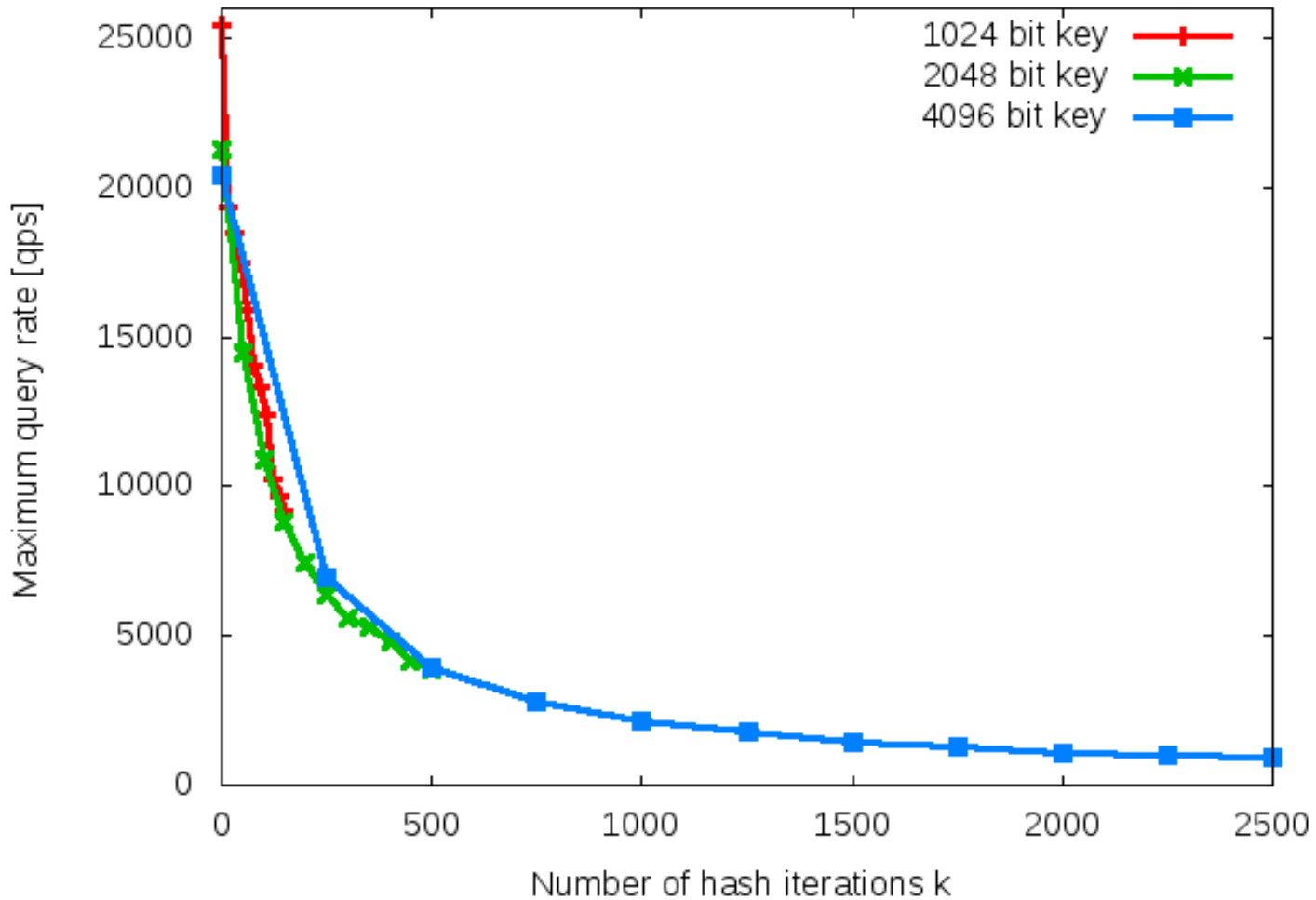   - Run tcpreplay
    - Stop Unbound
  - Stop NSD

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Validator

Unbound

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Authority

NSD

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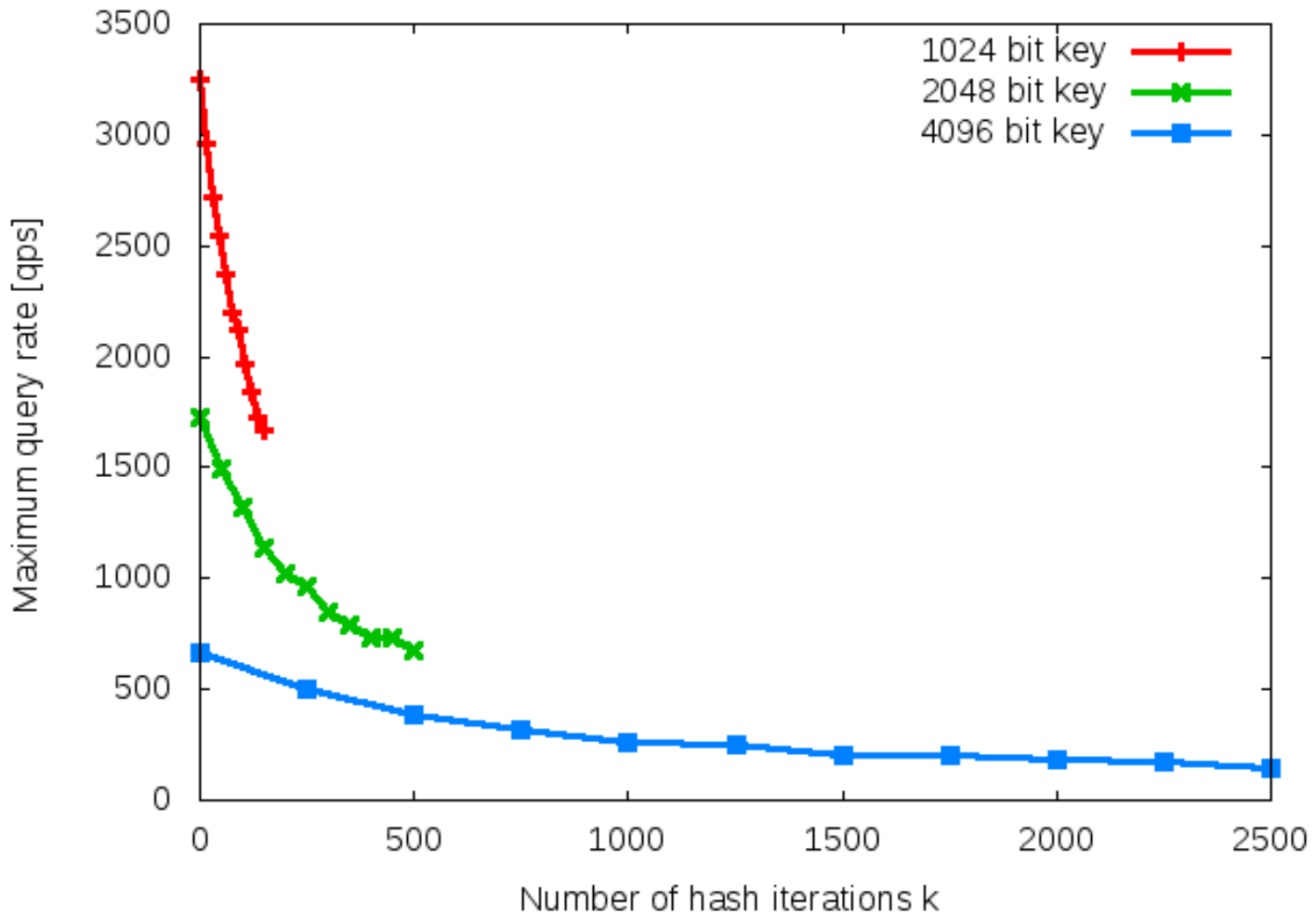
Observations

- Validator:
  - Key length has more impact on performance than iteration count
  - 150,300,600 iterations halves performance

- Authority:
  - Performance independent of key length
  - 100 iterations halves performance

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

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