

# **siitperf: An RFC 8219 Compliant SIIT Tester written in C++ using DPDK**

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# Specification in a Nutshell

- Supported RFC 8219 (RFC 5180, RFC 2544) tests
  - Throughput (RFC 2544)
  - Frame loss rate (RFC 2544)
  - Latency (redefined in RFC 8219)
  - Packet Delay Variation (new in RFC 8219)
- siitperf can test with
  - 1 to 256 destination networks
  - Fixed, RFC 4814 random, increasing, decreasing port numbers
  - SIIT (stateless NAT64), pure IPv4, pure IPv6

# Implementation

- Separate binaries for the core measurements
  - Written in C++, using DPDK → high performance
  - Uses input file for parameters that do not change
    - E.g. IP addresses, MAC addresses, etc.
  - Positional command line parameters for parameters that change by consecutive executions
    - E.g. frame rate, frame size, etc.
- Bash shell scripts for the complete measurements
  - E.g. binary search for throughput test → flexible, easy to modify

# Performance

- Dell PowerEdge C6220 server
  - 2GHz Intel Xeon E5-2650 CPU, Intel 10G X520 NIC
- Peak performance, bidirectional traffic, frame rate is *per direction*

Throughput (per direction)	fixed port numbers	random port numbers
median (fps)	7,077,704	6,327,653
1st percentile (fps)	6,945,860	6,324,217
99th percentile (fps)	7,150,879	6,327,881

# Further Information

- Open access papers:
  - G. Lencse, "Design and Implementation of a Software Tester for Benchmarking Stateless NAT64 Gateways", *IEICE Transactions on Communications*, DOI: 10.1587/transcom.2019EBN0010  
<https://doi.org/10.1587/transcom.2019EBN0010>
  - G. Lencse, "Adding RFC 4814 Random Port Feature to Siitperf: Design, Implementation and Performance Estimation", review version is available:  
<http://www.hit.bme.hu/~lencse/publications/IJATES2-2020-siitperf-varport-for-review.pdf>
- Source code is available: <https://github.com/lencsegabor/siitperf>
- Questions and comments are welcome:  
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