Data Center Benchmarking Drafts

draft-dcbench-def-01
draft-bmwg-dcbench-methodology-02

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Data Center Benchmarking Drafts Overview

Redefine Definitions draft-dcbench-def-01

Latency
Redefine how latency calculations are used
Update usage of FIFO, FILO, LIFO and LILO

Jitter
Define the application Jitter RFC 3393 and packet size requirement and histogram for DC devices

Physical Layer Calibration
Cable test calibrations and documentation

Line Rate
Consequences of PPM: 99.98%

Buffering
Define Buffering and Buffer Efficiency, Burst, Intensity of Microburst
Define Incast [many-one, many-many]

Application Throughput
Goodput definition and how to measure it

Redefine Methodology draft-bmwg-dcbench-methodology-02

Line Rate Testing
Test all ports at 99.98% including latency, jitter histogram for min/max/avg and drops

Buffering Testing
Buffer highest efficiency
Maximum port buffer size
Maximum port pair buffer size
Maximum DUT buffer size
Microburst

MicroBurst Testing
Use all ports, at 100% intensity of microburst

Head of Line Blocking Testing
Measure two groups (8 ports) of DUT, up to all ports
Reports provides percent of traffic loss during HOLB

Incast Stateful and Stateless Traffic
measure TCP goodput while measuring UDP latency

draft-dcbench-def-01: Updates

2.1

Added content:

Another possibility to summarize the four different definitions above is to refer to the bit position as they normally occur: input to output.

FILO is FL (First bit Last bit)

FIFO is FF (First bit First bit)

LILO is LL (Last bit Last bit)

LIFO is LF (Last bit First bit)

2.2

Edits around FILO due to the conversation, changed it based on the feedback provided

3.1

added the following:

Even with the reference to RFC 3393, there are many definitions of "jitter" possible. The one selected for Data Center Benchmarking is closest to RFC 3393.

draft-bmwg-dcbench-methodology-02: Updates

2.2

added the snake test for throughput as many customers may not have the luxury to have so many tester ports

2.3

added the imix genome and fixed some packet size examples.

The pattern for testing can be expressed using RFC 6985 [IMIX Genome: Specification of Variable Packet Sizes for Additional Testing]

Also: "-for packet drops, they MUST be expressed in packet count value and SHOULD be expressed in % of line rate" changed to ' % of total transmitted frames' instead for more clarity.

3.1:

" To measure the size of the buffer of a DUT under all conditions." It's not realistic so we changed "all" to typical|many|multiple .

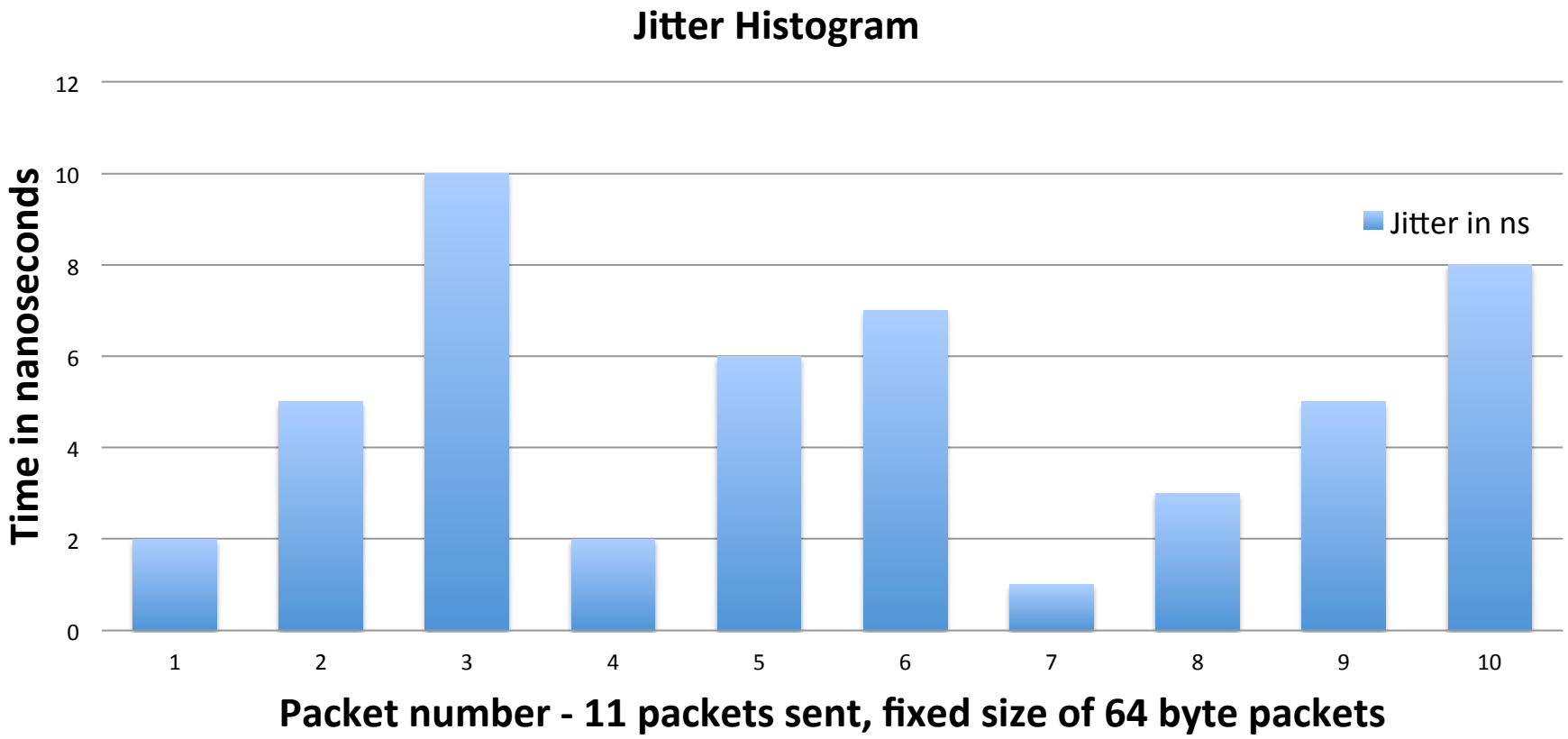
Jitter Discussion

Goal – Single definition of jitter for the Data Center

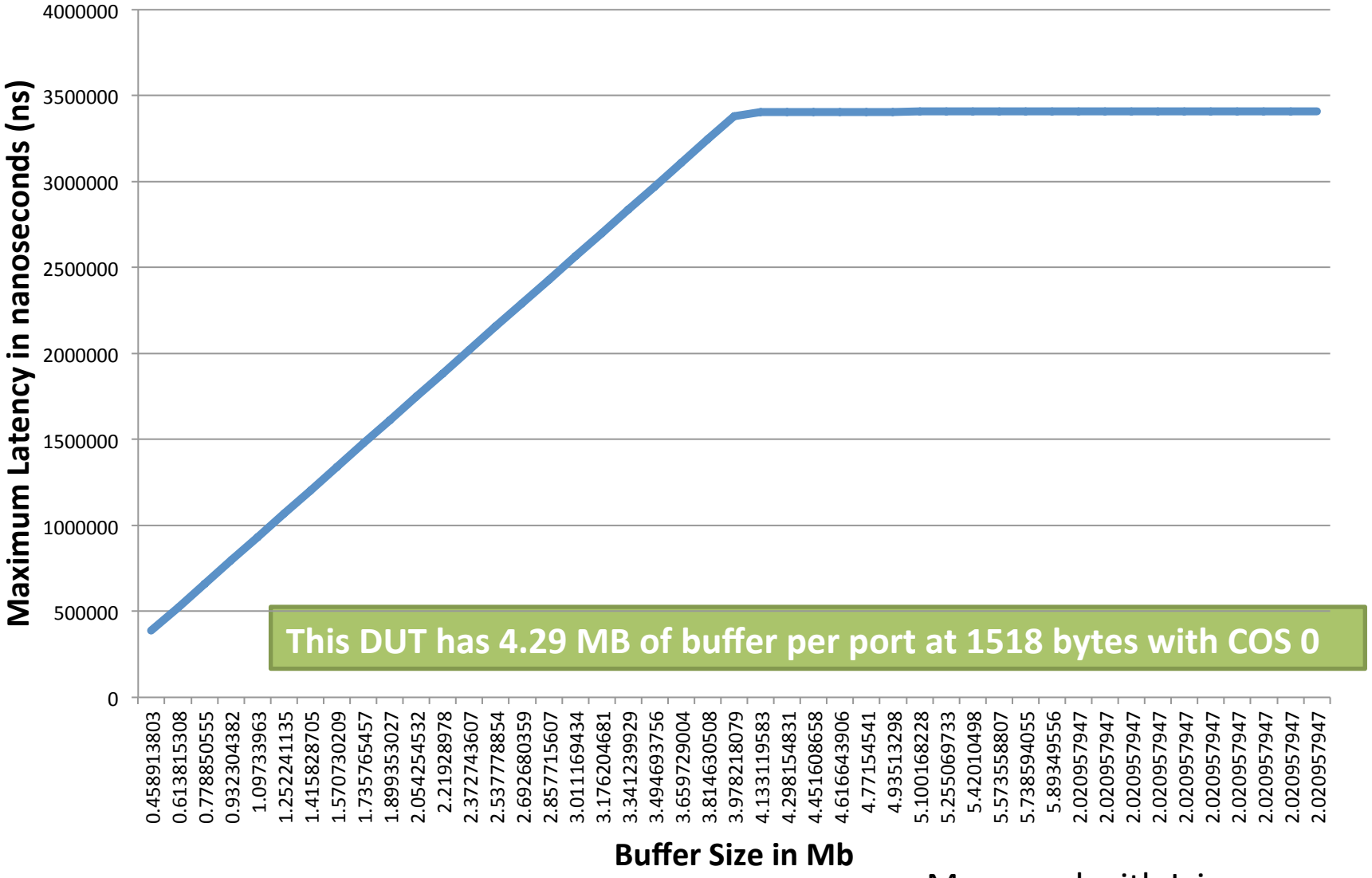
- Previous RFCs addressed jitter (3393, 4689, 6049, other) and some specifically guided against the use of the term, due to multiple uses, but it is still being used and more confusion

- There are two important measurements
  - Packet to Packet delay variation – 'Absolute delta=[x-(x-1)]'
  - Min, Max and Average – For the duration of the test
- A histogram of all packet-to-packet latency change is best used to show jitter
- Jitter is only valid when all packets are the same size

Jitter Discussion



3.2.2 Measure Max Port Buffer Size



Measured with Ixia