Data Center Benchmarking Draft

Proposal

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De facto State of RFC Benchmarking in DC

RFC 1242, 2432
(1991, 1998)
Benchmarking Terminology for Network
Interconnect Devices, IP Multicast Benchmarking

RFC2544
(1999)
Network
Interconnect
Devices

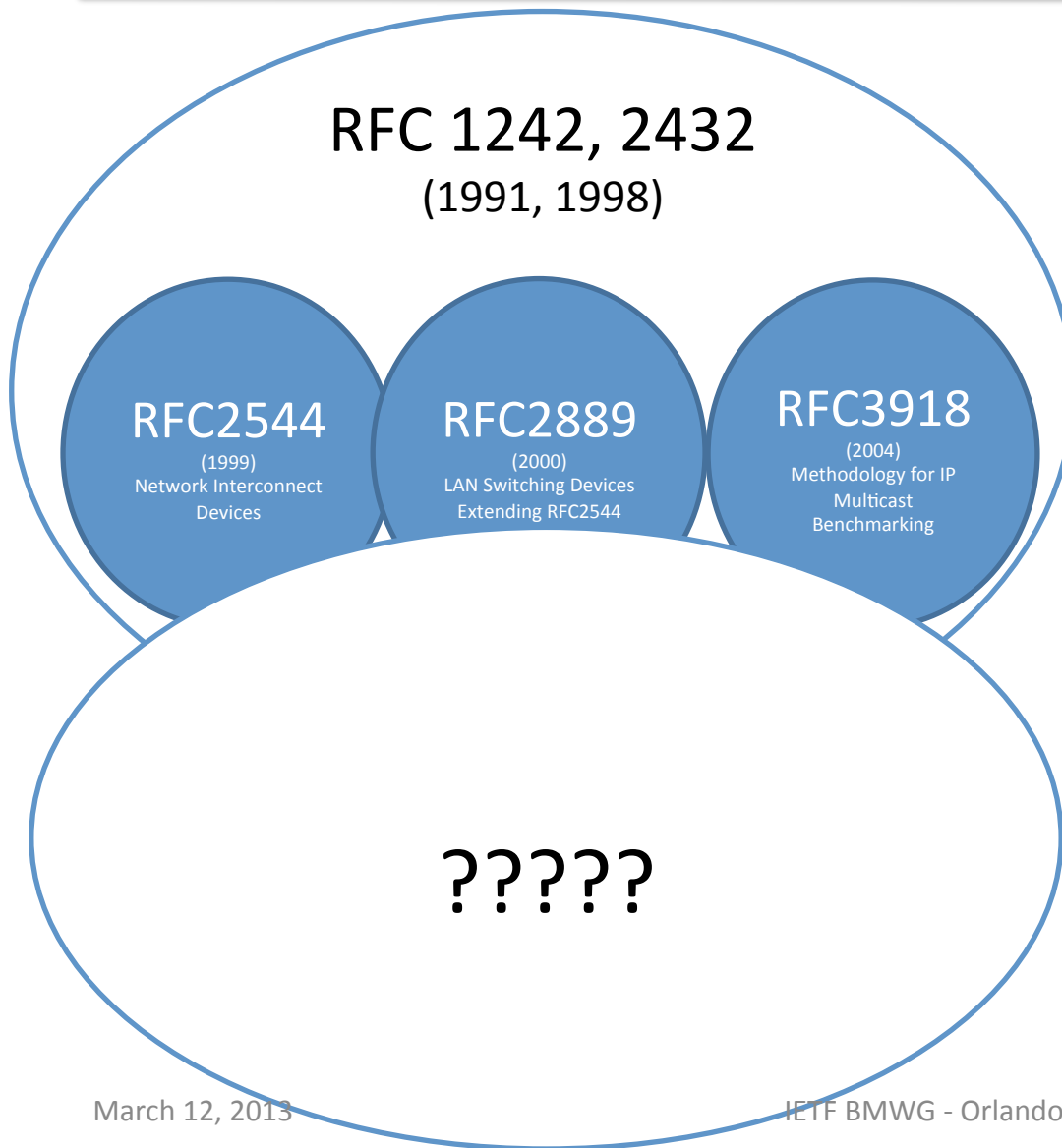**RFC2889**
(2000)
LAN Switching
Devices
Extending
RFC2544

RFC3918
(2004)
Methodology
for IP Multicast
Benchmarking

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Evolution of the Data Center

RFC 1242, 2432
(1991, 1998)

RFC2544
(1999)
Network Interconnect
Devices

RFC2889
(2000)
LAN Switching Devices
Extending RFC2544

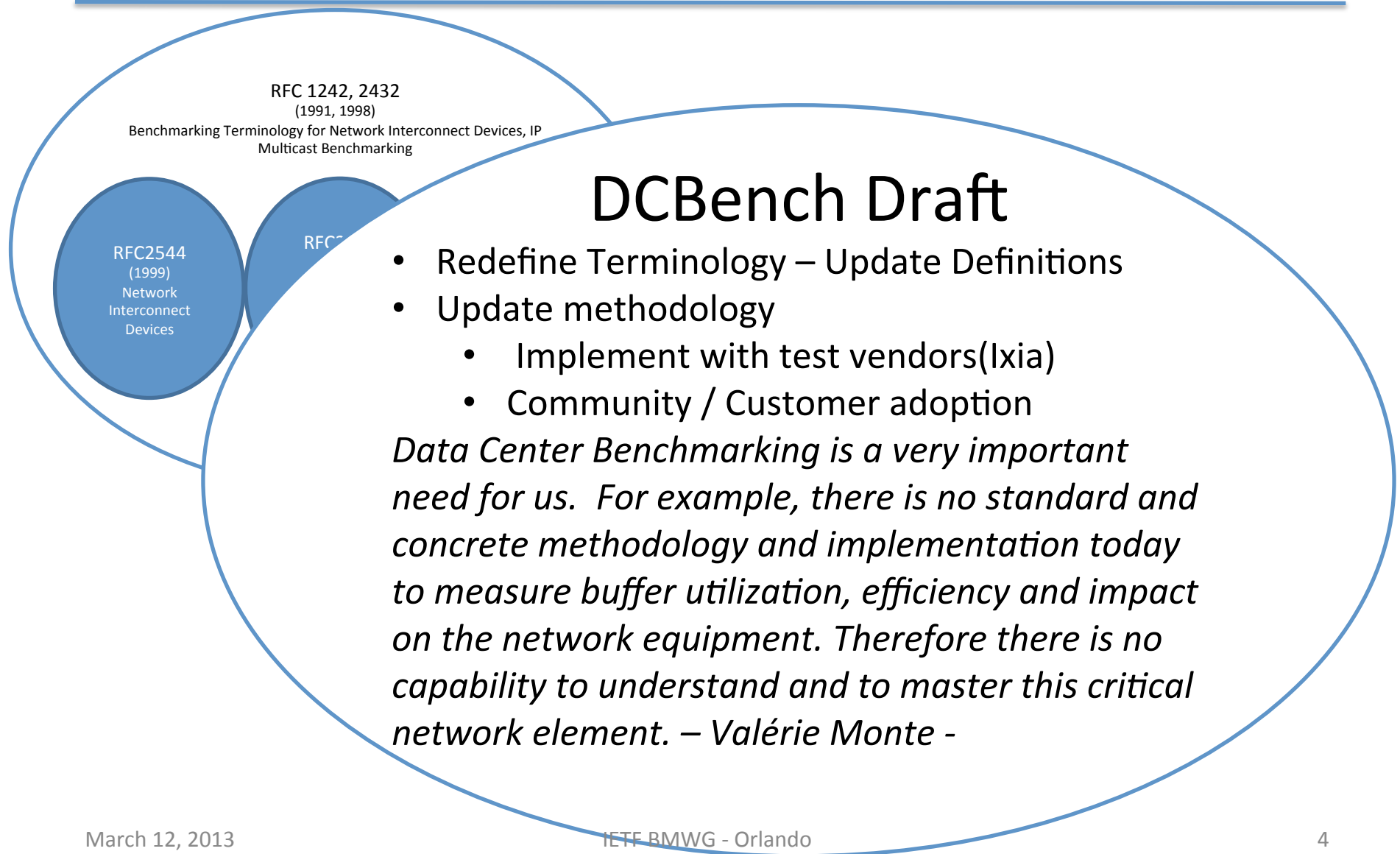RFC3918
(2004)
Methodology for IP
Multicast
Benchmarking

Latency, throughput
and definitions

?????

Virtualization, Multi-
purpose/tenant DC,
Low Latency, Big Data,
Bursts, Buffering,
Incast, Goodput…

Step 1 – Update DUT Benchmarking

RFC 1242, 2432
(1991, 1998)
Benchmarking Terminology for Network Interconnect Devices, IP
Multicast Benchmarking

RFC2544
(1999)
Network
Interconnect
Devices

RFC

DCBench Draft

- Redefine Terminology – Update Definitions
- Update methodology
    - Implement with test vendors(Ixia)
    - Community / Customer adoption

Data Center Benchmarking is a very important need for us. For example, there is no standard and concrete methodology and implementation today to measure buffer utilization, efficiency and impact on the network equipment. Therefore there is no capability to understand and to master this critical network element. – Valérie Monte -

DCBench Draft Overview

Redefine Definitions

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

Jitter
Reinforce previous standards(RFC3393) and apply new metrics

Buffer
Define Buffering and Buffer Efficiency, Microburst

Application Throughput
Goodput in the Data Center

Incast
Define Many-to-One and Many-to-Many traffic Flows

Physical Layer Calibration
Cable test calibrations

Redefine Methodology

Buffering
Buffer Utilization Test
Mix of statefull and stateless Traffic Test
Incast Test
IMIX Full-Mesh
Microburst

Head of Line Blocking (HOLB)
Define methodology to reflect larger port counts and port count mix

Multi-Traffic mix
Multicast + Unicast

Stateful and Stateless Traffic Mix
Mix of latency and throughput sensitive flows
Goodput Test

Flow Control
Priority Flow Control/No-Drop
Explicit Congestion Notification
Data Center TCP