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draft-ietf-bmwg-sdn-controller-benchmark-term-00
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Benchmarking SDN

Controller Performance

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Objective

- Develop a comprehensive set of tests for benchmarking SDN controllers for
 - Performance
 - Scalability
 - Reliability and
 - Security

- Define metrics and methodology to assess/evaluate SDN controllers

- Provide a standard mechanism to measure and compare the performance of various controller implementations

History

Revision
00

- Submitted in March 2014 (OpenFlow Specific)
([draft-bhuvan-bmwg-of-controller-benchmarking-00](#))
- Presented initial version in IETF-90 meeting

Revision
01

- Submitted in October 2014 (Protocol Agnostic)
([draft-bhuvan-bmwg-of-controller-benchmarking-01](#))
- Presented the revised version in IETF-91 meeting

Revision
02

- Submitted in March 2015 (Split into Terminology and Methodology Drafts)
([draft-bhuvan-bmwg-sdn-controller-benchmark-term-00](#))
([draft-bhuvan-bmwg-sdn-controller-benchmark-meth-00](#))
- Presented the revised version in IETF-92 meeting

Revision
03

- Submitted in July 2015 (Addressing review comments from IETF 92 meeting)
([draft-bhuvan-bmwg-sdn-controller-benchmark-term-01](#))
([draft-bhuvan-bmwg-sdn-controller-benchmark-meth-01](#))
- Presented the revised version in IETF-93 meeting

Revision
04

- Submitted in October 2015 (Successful Call for Adoption)
([draft-ietf-bmwg-sdn-controller-benchmark-term-00](#))
([draft-ietf-bmwg-sdn-controller-benchmark-meth-00](#))

Test Setup Overview – Standalone Mode

Test Setup Overview – Cluster Mode

Benchmarking Tests Overview

Category	Metrics	Description
Performance	1. Network Topology Discovery Time	▪ Time to discover a network topology - nodes and links
	2. Asynchronous Message Processing Time	▪ Time taken to process an asynchronous message.
	3. Asynchronous Message Processing Rate	▪ Maximum number of asynchronous messages that can BE processed within the test duration.
	4. Reactive Path Provisioning Time	▪ Time to setup a path reactively between src and dst
	5. Proactive Path Provisioning Time	▪ Time to setup a path proactively between src and dst
	6. Reactive Path Provisioning Rate	▪ Maximum number of independent paths setup between src and dst reactively
	7. Proactive Path Provisioning Rate	▪ Maximum number of independent paths between src and dst proactively
	8. Network Topology Change Detection Time	▪ Time to detect any changes in the network topology.

Benchmarking Tests Overview

Category	Metrics	Description
Scalability	1. Control Sessions Capacity	▪ Max no. of control sessions be maintained
	2. Network Discovery Size	▪ Max no. of nodes, links and hosts be discovered
	3. Forwarding Table Capacity	▪ Max no. of flow entries can be managed in Forwarding table
Reliability	1. Controller Failover Time	▪ Time to switch from an active controller to the backup controller
	2. Network Re-Provisioning Time	▪ Time taken to re-route the traffic in alternate path.
Security	1. Exception Handling	▪ Determine the effect of handling error packets and notifications
	2. Denial of Service Handling	▪ Determine the effect of handling denial of service (DoS) attacks

Revision 04 - Updates

- **Thank you everyone for the support and feedback on this draft for successful WG adoption**

- **Changes Highlight**
 - Clarified the SDN controller definition and scope of this memo as below.

“For the purpose of this memo, the SDN controller is a function that manages and controls SDN nodes. Any SDN controller without a control capability is out of scope for this memo”
 - Editorial changes for better readability.

Next Steps

- Align SDN terms defined in this draft with terms that are already defined in other RFCs
- Other Comments??

Thank You!!!

The authors of

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