Distributed WorkLoad Generator for Performance/Load Testing Using Emerging Technologies

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Presenter - Vishnu Murty

- Automation Technologist at DellEMC Infrastructure Solutions Group
- Masters in Software Systems with 15+ years in Leading Validation and Automation efforts.
- Responsible of Delivering Test Automation frameworks and Tools.
- Worked on Server, Storage and System Management Software domains.
- 9 Patents Granted by USPTO and 128 Disclosures recognized by Dell Patent Committee.
- Presented Technical papers in Pycon (Python developer forum), STeP-IN, Targeting Quality 2019 and Quality Connect Conferences.
Abstract

In DellEMC Enterprise Servers Validation Organization, we perform Load testing using different workloads (Web, FTP, Database, Mail, etc.) on Servers to identify the performance of the servers under heavy load is extremely valuable and critical.

Load/Performance testing tools available in market come with their own challenges such as Cost, Learning Curve and Workloads Support.

In this talk we are going to demonstrate how we have built Distributed WorkLoad Generator using emerging technologies like Docker Containers, Axon and Elastic Stack, and how this solution playing a crucial role in Delivering Enterprise Server Validation efforts.
Agenda

- Server Validation Overview
- What is System Test?
- Challenges and Solution
- Technology Stack
- Solution Overview
- What Next?
Server Validation Overview

Validate PowerEdge Solutions
What is Offer Test?

- Customer-focused validation of Sever offering solutions
- Simulates real world usage with typical applications on Servers
Challenges with Current Load Generation Solutions

• Needs to be installed in local Lab on Proprietary hardware.
• Expensive, Complex, Licensing
• Requires highly specialized performance engineers to Develop Scripts
• Data Analytics and Correlation
Proposed Solution

- JaaS – JMeter as a Service: on-premise cloud.
  - JMeter, Docker, Elasticsearch-Logstash-Kibana (ELK) Stack
  - Axon – UI
  - DellEMC Hardware as Load Generators
- Massively Scalable across Regions/Labs
- Build or incorporate to support new workloads
- Automate and integrate via REST API
- Advanced Dashboards and Visualizations.
Key Technologies

- Supports many types of load tests
- Platform-independent tool
- Full multithreading framework
- Open Source Software

Portable
Disposable
Resource-efficient
Open Source

Cluster management and Orchestration
Cluster of Docker nodes
Load balancing
RESTful API

Flexible and Powerful
Distributed real-time Search and Analytics Engine
Schema free & RESTful API
Open Source Software
JaaS - Technology Stack

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Distributed WorkLoad Generator for Performance/Load Testing Using Emerging Technologies
JaaS Solution Overview
JaaS Dataflow Diagram

Docker Service Details
Axon Workflow Details
JMeter Load Details

Container Logs
Container Performance Metrics
JMeter Logs Metrics

Elastic Search

Software Logs
OS Metrics
Hardware Logs

AXON
Managers

DS
Docker Swarm
Load Generator 1
Load Generator 2
Load Generator 3

SUT

JDC 1
JDC 2
JDC 3

DS : Docker Service
JDC : JMeter Docker Container
SUT : System Under Test
JaaS Orchestration
Current Supported Workloads

Web Workloads

File Workloads
Current Supported Workloads

Mail Workloads
- Microsoft Exchange
- SendMail

Database Workloads
- SQL Server
- MySQL
- MongoDB
- Oracle

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Next Steps

JAAS@DELL.COM
Q & A