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Automation-as-a-Service (AaaS) for IDPA

Kajal Krishna Patil[1], Nitin L. Gavankar[2], Madhav M. Bokare[3]
[1, 2]*Walchand College of Engineering, Sangli-416416*
[3]*ITM College, Nanded*

Abstract: ***The Dell EMC Integrated Data Protection Appliance (IDPA) provides simplified configuration and integration of data protection components in a consolidated solution. As engineers works with different appliance variants, need to perform regression testing on all variants to check code stability. AaaS provides engineers with an application which will be independent of environment and can handle multiple operations at a time. All the scenarios will run as a service in a container at the same time and consolidated results will be provided back to user on UI. This will reduce manual effort with respect to manual execution and setting up environment.***
Keywords: IDPA, Regression testing, Appliance Configuration Manager, Automation-as-a-Service (AaaS), Swarm Intelligence

I. INTRODUCTION

The Dell EMC IDPA is an integrated data protection appliance. It integrates different point products into single unit. It is an all-in-one appliance. It lessens complexity of managing data stores, point solutions and seller connections. IDPA models varies from 4x to 5x helpful from small scale to large scale industries. It is an integrated solution that provide complete backup, replication of data, recovery, de-duplication, search analytics, smooth VMware integration, cloud readiness with disaster recovery and holding onto the cloud for long term — all in a single appliance. The IDPA provides a simplified configuration and the integration of data protection components in a consolidated solution. Different IDPA models includes DP4400, DP5300, DP5800, DP8300 and DP8800. It includes an Avamar server as a backup server node, a Data Domain system as the protection storage node, compute nodes for virtual components and software, a networking switch for improved setup speed, and Cloud Disaster Recovery. IDPA System Manager provides advanced monitoring and management capabilities of the IDPA from a single pane of glass. The Appliance Configuration Manager (ACM) provides a graphical, web-based interface for configuring, monitoring, and upgrading the appliance. Automation-as-a-service enables an organization to automate the existing business processes by analysing and recording data from the existing applications. It allows an organization to transform from a manual process to fast automation processes across several organizations. For QA team, Automation testing helps to automate their routine tasks and execute test cases numerous times at a scale that is impossible on a human level.

II. LITERATURE SURVEY

A. Existing Process

The Existing process of formatting, configuring, upgrading build to newer version or with latest release is performed manually by setting up environment. It takes too much time to complete end to end testing. DevOps is latest term in industry. It is the key to automation. Most of organizations are using it. During software development process and to acquire software delivery process faster. It combines different departments that are involved in software development process together, makes smoother team work and reduces time for software delivery to market.

Different DevOps tools include:

1) *Jenkins:* Jenkins is a free and open source automation server. It is the leading DevOps tool for monitoring the performance of repetitive tasks. It helps to automate software development components related to build, test, and installation. It helps in continuous integration and continuous delivery of software. It is a server-based program that works on servlet containers such as Apache Tomcat. This is a Java-based program, mainly used for software development and testing as well as for continuous integration.
2) *Docker:* Docker provides platform as a service (PaaS) products. It make use of OS-level virtualization to deliver software in packages called containers. Containers are different from one another i.e., they are independent and pack up their own software, libraries and configuration files; they can communicate with each other through well-defined channels or paths. Since all of the containers share the services of a single operating system kernel, they make use of fewer resources than virtual machines. Docker is a containerization platform that helps to run or execute multiple applications on one server without affecting each other. This is due to isolated containers. Each container consists of separate hardware setup to perform application as it is done on a server.

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3) *Jira:* DevOps teams who follow agile methodology make use of JIRA Software for planning issue and tracking project. This tool is helpful for groups or teams who want to ship their software fast, early and often. It helps to release developed software in time.

QA engineers need to perform end to end testing of appliance – format server, configuration and upgrading the IDPA on daily basis. Manual effort required for manual execution and setting up environment for performing regression testing on different appliance variants and setting up the environment is time consuming

B. Objectives

1) To understand existing manual execution for formatting, configuring and upgrading of appliance.
2) To automate services (format, configuration and upgrading) of IDPA.
3) To test services with automated script using docker containers.
4) To provide flask web application where users can select model and test scenarios.

C. Proposed Solution

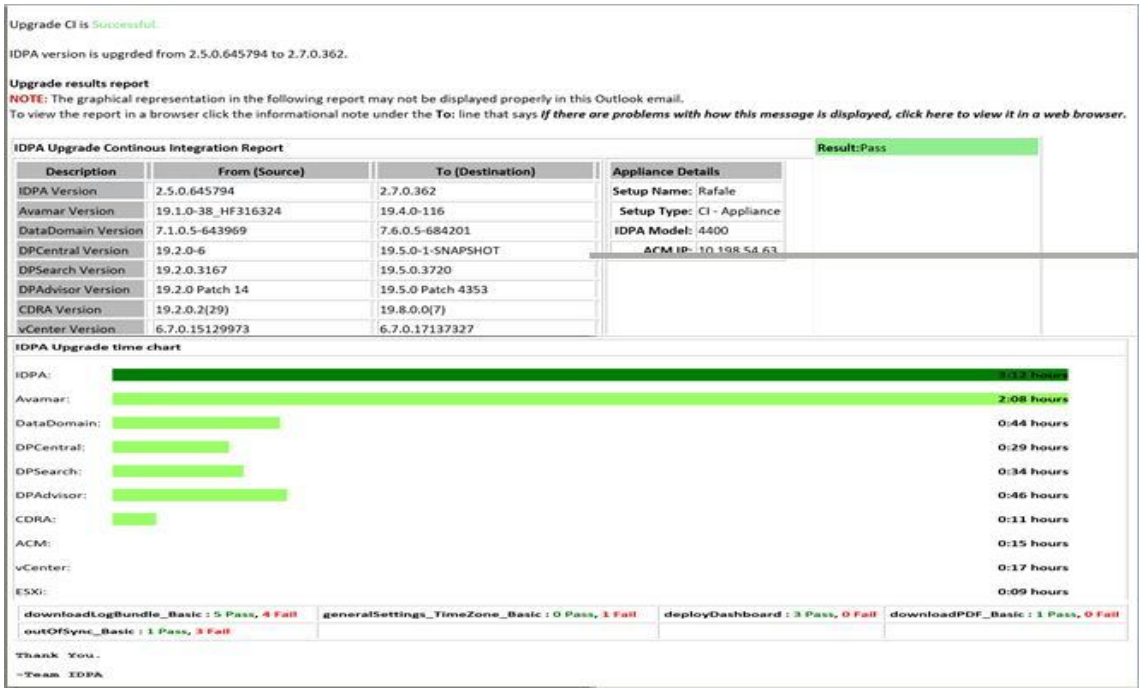
Automation-as-a-Service

Creating Automation as a Service will be independent of environment and can handle multiple operations at a time. It will provide UI where user can select model number and test scenarios that need to be executed. User needs to select Appliance model number and mark all the test scenarios that need to be executed from UI (selective or all). All the scenarios will run as a service in a container at the same time and consolidated result will be provided to user on UI.

Advantage of AaaS is that we can share container images to any team without worrying about their environment. Less manual intervention required in executing regression test cases. This will help in day to day testing and also helps in testing particular feature for all variant at the same time.

III. RESULTS AND CONCLUSION

With the use of automation scripts, manual process of formatting and configuration has been reduced and has also provided encouraging positive result. After formatting appliance ESXI server get installed and version has been updated. Automation-as-a-service is directed towards building a service application to reduce manual workload by automating test scenarios of respective product range. Proposed solution minimizes manual intervention required for executing regression testing, and also saves manual efforts in setting up environment with each test shown in fig. 1. It helps in day to day testing as well as testing particular feature for all variant at the same time using Docker.


Upgrade CI is Successful.

IDPA version is upgrded from 2.5.0.645794 to 2.7.0.362.

Upgrade results report

NOTE: The graphical representation in the following report may not be displayed properly in this Outlook email.
To view the report in a browser click the informational note under the **To:** line that says ***If there are problems with how this message is displayed, click here to view it in a web browser.***

IDPA Upgrade Continous Integration Report — **Result:Pass**

Description	From (Source)	To (Destination)
IDPA Version	2.5.0.645794	2.7.0.362
Avamar Version	19.1.0-38_HF316324	19.4.0-116
DataDomain Version	7.1.0.5-643969	7.6.0.5-684201
DPCentral Version	19.2.0-6	19.5.0-1-SNAPSHOT
DPSearch Version	19.2.0.3167	19.5.0.3720
DPAdvisor Version	19.2.0 Patch 14	19.5.0 Patch 4353
CDRA Version	19.2.0.2(29)	19.8.0.0(7)
vCenter Version	6.7.0.15129973	6.7.0.17137327

Appliance Details	
Setup Name:	Rafale
Setup Type:	CI - Appliance
IDPA Model:	4400
ACM IP:	10.198.54.63

IDPA Upgrade time chart

downloadLogBundle_Basic : 5 Pass, 4 Fail	generalSettings_TimeZone_Basic : 0 Pass, 1 Fail	deployDashboard : 3 Pass, 0 Fail	downloadPDF_Basic : 1 Pass, 0 Fail
outOfSync_Basic : 1 Pass, 3 Fail			

Thank You.
~Team IDPA

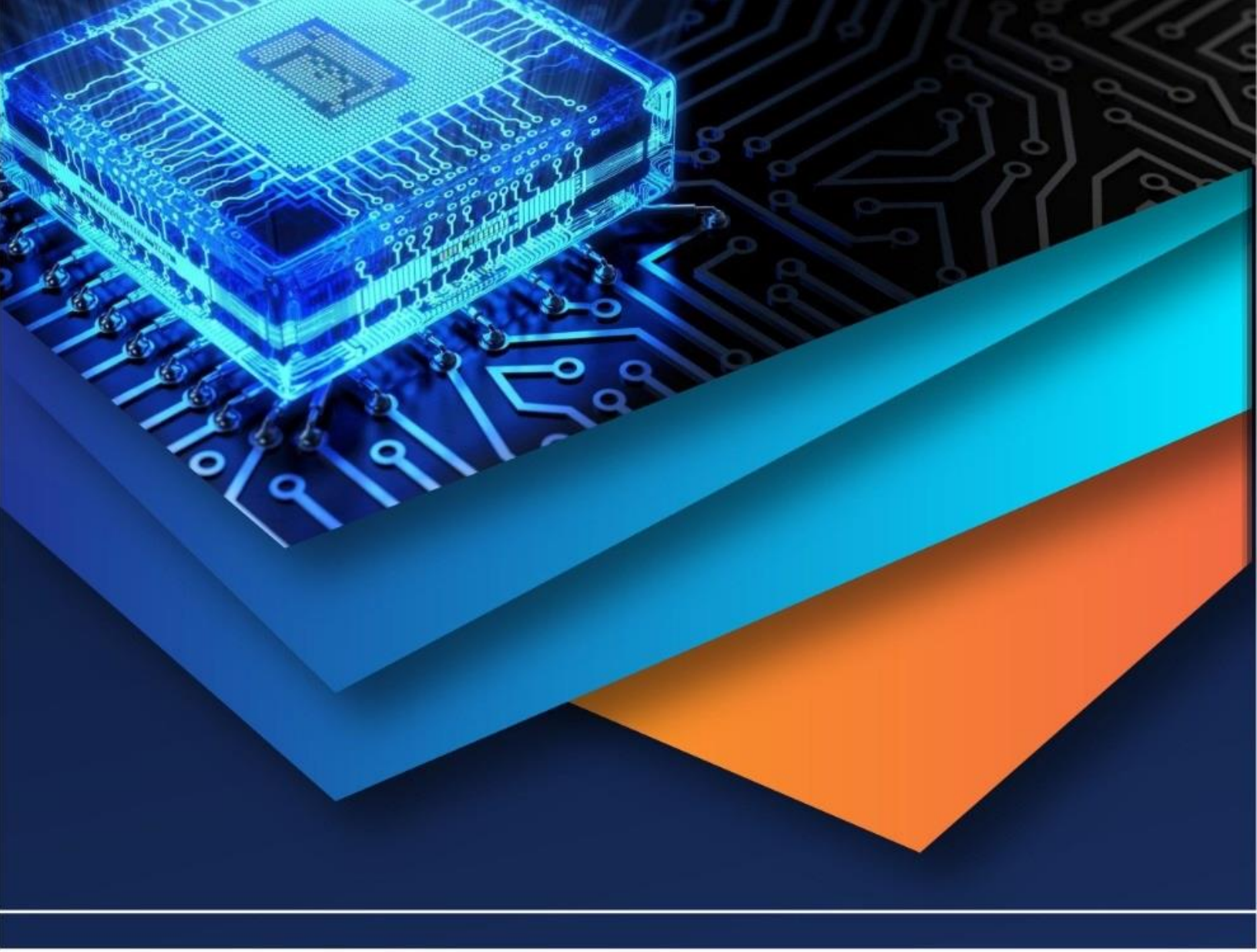
Fig.1. Test result

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[4] https://docs.docker.com/get-started/overview/
[5] https://flask.palletsprojects.com/en/1.1.x/tutorial/
[6] https://www.tutorialspoint.com/qtest/qtest-introduction.htm

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