Cloud Migration: Migrating workloads to OpenStack Cloud
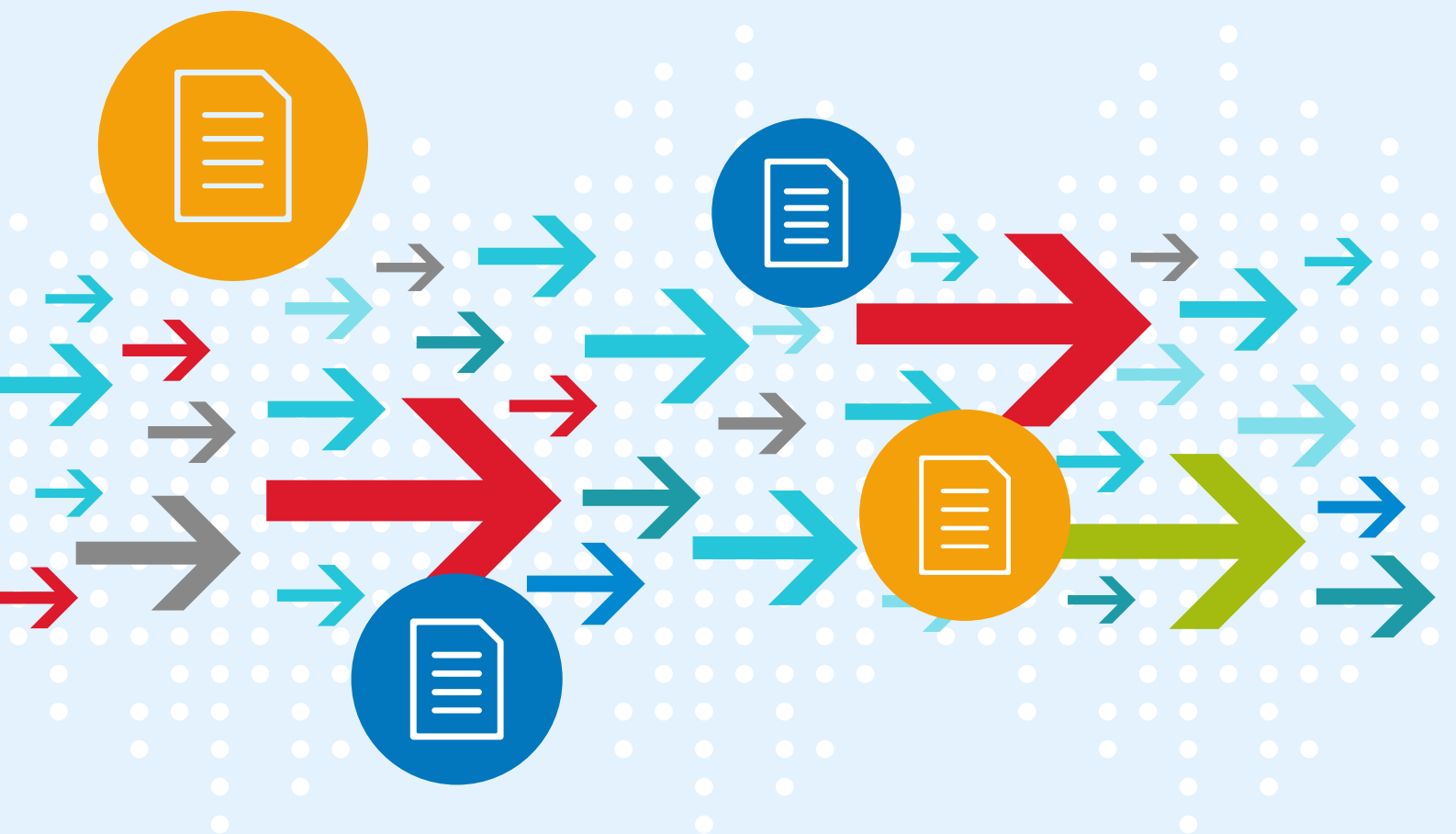
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Executive Summary

For majority of companies, be it small, medium-sized businesses or large, migrating data center workloads to the cloud is rapidly becoming a key priority. However, organizations are continually facing obstacles in terms of complexity of the manual migration processes. In addition, customer infrastructure consists of physical servers with different operating systems and distinct virtualization platforms.

In this white paper, we will look at how we can migrate workloads from one environment to OpenStack environment seamlessly without cloud sprawl by undertaking what are popularly known as phase driven and automation approaches. We are considering VMware as the source environment from where workloads will be migrated to OpenStack environment

Migration Scenario

In this scenario we will be migrating workloads from VMware environment to OpenStack Environment.

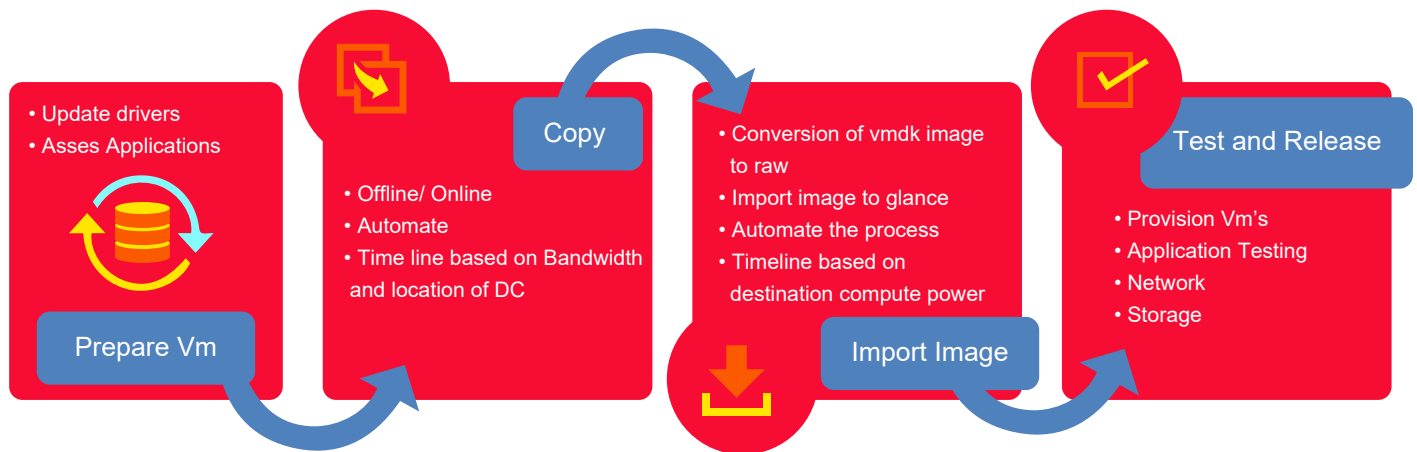Before Migration   After Migration
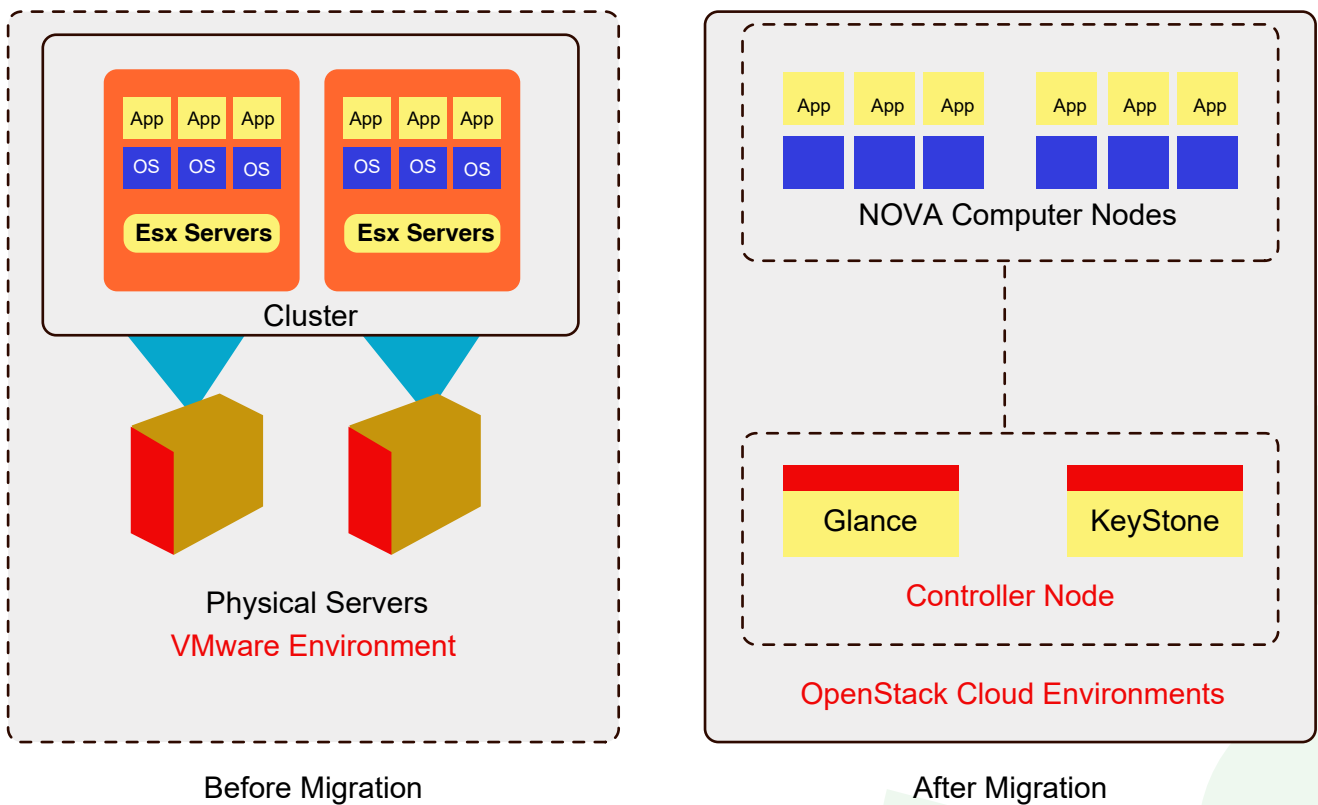
Use case

Company A is the world leader in networking which transforms how people connect, communicate and collaborate.
They have an internal web application which is hosted on a VMware environment that they intend to migrate to OpenStack Cloud.

Motivation for Migration

Company A would like to migrate its web application and workloads from VMware environment to OpenStack Cloud mainly for three reasons:

* Better Orchestration and Automation
* To reduce cost and enable 'No lock-in' via Open cloud Platform
* To improve support for native and compatible API

Migration Plan, Strategy, & Execution Steps

Prepare Vm
* Update drivers
* Asses Applications

Copy
* Offline/ Online
* Automate
* Time line based on Bandwidth and location of DC

Import Image
* Conversion of vmdk image to raw
* Import image to glance
* Automate the process
* Timeline based on destination compute power

Test and Release
* Provision Vm's
* Application Testing
* Network
* Storage

Cloud Assessment

During the assessment, we will discover and identify simple, low-complexity and complex workloads. Simple and low-complexity workloads will be considered since they have no interdependence to run across cloud platforms. This type of workload can be automated and run in batches and has the competency to migrate workloads at a single time. We will also discover the web applications which need minimal or no- configurations after migration.

Pre Migration

During the Pre-Migration phase, the identified workloads at the time of cloud assessment will be installed with drivers. Identification of a Windows OS that helps booting the workloads in the OpenStack environment is done.

On the other hand, if workloads are Linux- based, then it can be taken for granted that no driver's installation is required. After installing necessary drivers, workloads will be haulted in source environment and respective VMDK file would be copied to destination OpenStack environment through batch process.

Migration

During the migration phase, necessary environment variables are set in OpenStack. VMDK file will be imported to Glance services through batch process. Below is a sample command that will be used in batch script.


```
root@hc-controller01:~
root@hc-controller01:~# source keystonerc
root@hc-controller01:~# glance image-create --name win2008-vmware  --is-public=True --container-fo
rmat=bare --disk-format=vmdk --property vmware-disktype="preallocated"<Windows2008-flat.vmdk
```

Post Migration

During the post migration phase, instances will be launched through batch process using the newly imported images and testing (Functional, load, performance etc.) will be performed to ensure that the systems were performing at expected levels, and exit criteria for each component were met

Conclusion

The strategy, consideration and methodology discussed in the white paper provide step- by -step approach to enterprises, looking to migrate their VMware workloads to OpenStack private Cloud. By following phase- driven and automation approaches, we will be better able to seamlessly migrate existing workloads from VMware to OpenStack environment and eventually reduce operating expenses, cloud sprawl and achieve substantial savings.

About the Author

Ritesh Alur works as Solution Architect for Cloud Technology practice in Happiest Minds Technologies. Ritesh has 8 plus years of IT Experience. He has worked on various public, private cloud solutions and focused on designing highly available, scalable and reliable cloud solutions.

Ritesh Alur

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