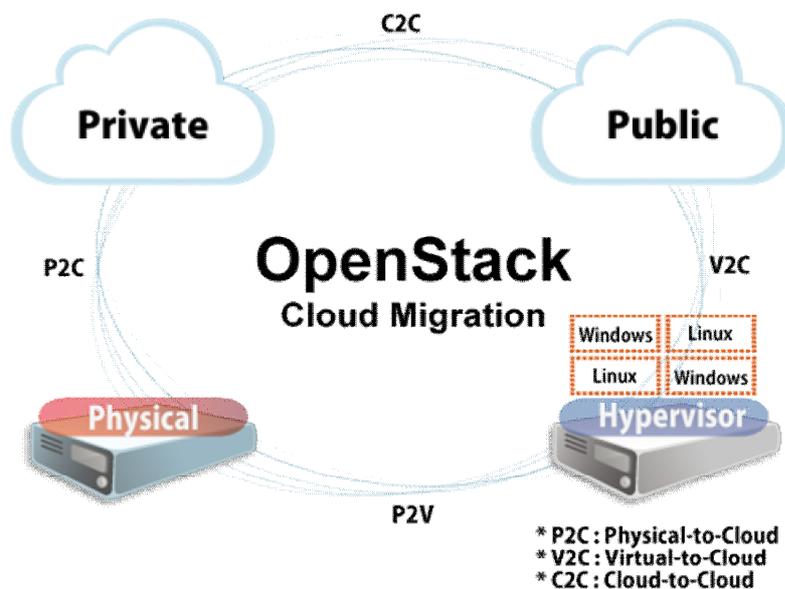


OpenStack Cloud Migration : Migrating On-premise workloads to OpenStack Private Cloud



June 16, 2015

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Executive Summary

A big challenge for large enterprises planning to move their workloads to cloud is the fact that they should deploy VMs to a cloud provider of choice, reinstall applications on that VM then copy data from on-premises to the VMs hosted in the cloud.

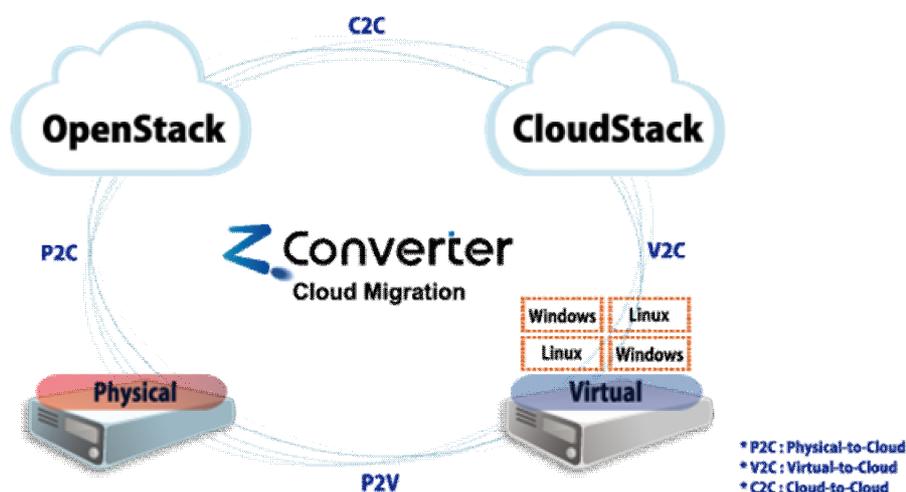
Due to this complicated manual migration processes, in spite of many benefits of cloud, many enterprises are hesitating to move their workloads to cloud.

This is very similar to early 2000 situation when VMware was appeared in the market. As soon as VMware announced virtualization product, lots of enterprises had very big interest in this technology. However, due to manual migration processes, most of them was hesitating to consolidate their servers into VMs.

But a few years later, P2V migration technology terminated manual migration hurdles. Enterprises could easily move their physical servers to VMs by automatic P2V migration. Finally, virtualization became a popular and fundamental solution for IT infrastructure.

In this whitepaper, we will look at how we can migrate workloads to OpenStack Cloud without manual reinstallation processes and how ZConverter Cloud Migration can help to migrate on-premises to OpenStack Cloud.

What is P2C Cloud Migration?



P2C is the cloud migration technology to migrate on-premises to cloud without reinstalling applications on cloud instance by automation approach

As cloud computing technologies are rapidly growing and mature, many enterprises consider to move their workloads to cloud. But manual cloud migration is the one of the biggest obstacles to go to cloud.

Most of enterprises already experienced lots of benefits of virtualization like cost-saving, flexibility, fast deployment as well as easy P2V migration. By p2v automation approach, they could easily consolidate legacy servers to hypervisors without manual reinstallation processes.

Enterprises who are planning to move their workloads to OpenStack Cloud expect that they can use p2v migration tool.

Can they move workloads to OpenStack Cloud by p2v migration? Answer is No because the migrated VMs by p2v are not working on OpenStack Cloud.

Why p2v cannot migrate on-premise workloads to OpenStack Cloud is because it can just move on-premise physical servers to on-premise virtual machines. But OpenStack's cloud is not just on-premise virtual machine but it is the cloud instance managed and controlled by OpenStack Platform. It means in order to migrate workloads to cloud instances, Physical-to-Cloud (P2C) migration utility should follow the creation, registration and management rules of OpenStack Cloud Platform. Traditional P2V or V2V migration tool doesn't follow these rules which OpenStack Cloud Platform requests.

In conclusion, P2C should be able to migrate on-premises workloads to OpenStack Cloud Instance by automatic migration processes because most of enterprises don't want to do manual migration to cloud.

Considerations for Cloud Migration

What should be considered for cloud migration? There are a few considerations for successful OpenStack Cloud Migration.

The number one is **simple and easy to migrate** : Cloud migration should terminate manual migration obstacles. If we have to reinstall applications on cloud instance manually, we should spend lots of migration cost and time. Due to this, benefits like cost-saving from cloud service may not be taken. Cloud Migration should be simple and easy. Therefore by a few clicks, cloud migration should be possible.

The number two is **encryption**. : Cloud migration is generally processed via WAN. It means sensitive company's data is moving through internet and it can be hacked by malicious behavior. Customer data should be replicated to cloud with encrypted status.

The number three is **direct migration**: Sensitive company's migrating data must not be delivered to cloud via any internet storage or repository. Migrating data should be replicated directly to cloud instance because it may be hacked or lost at the Internet Storage or Repository during migration.

OpenStack Cloud Migration Scenarios

Use Case scenarios help to understand real business situations and highlight where cloud migration technology is a part of the openstack cloud solution. Scenarios will involve private, public and hybrid cloud models. Public and hybrid cloud migration will be described in another whitepaper. In this paper, we will describe openstack private cloud migration

Scenario #1 – Migrating to OpenStack Private Cloud

An enterprise SI company who deployed OpenStack based private cloud must migrate 150 on-premise servers to openstack private cloud. The current manual migration processes are headache because it

will take too long time to migrate 150 servers to cloud instances.

This company is expecting to migrate their workloads to private cloud by automation approach without reinstalling 150 servers' applications on cloud instances and also to minimize migration project period.

Solution Strategy

The solution strategy was to start with openstack private cloud first then grow into a public cloud. First mission is to migrate 150 on-premises to private cloud by automation approach in order to minimize cloud migration time and cost.

- Migrate workloads to OpenStack Cloud by automation migration approach
- Minimize cloud migration time and cost
- Find the right P2C (Physical-to-Cloud) migration tool

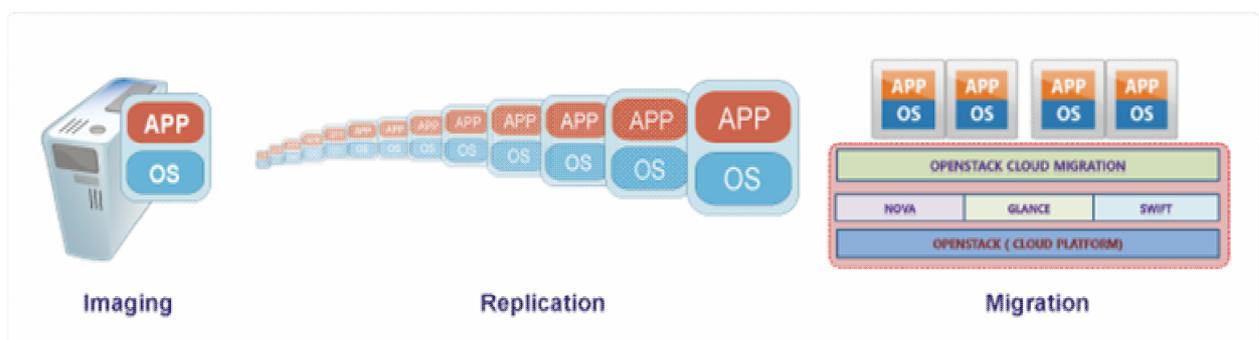
Solution Details

- Deploy ZConverter Cloud Migration Short-Cut for automation cloud migration.
- Migrate big database by block level differential technology for minimizing database service downtime

ZConverter Cloud Migration Processes

ZConverter Cloud Migration provides simple and easiest OpenStack Cloud Migration technology in order to move workloads to cloud. Cloud migration processes (**Imaging – Replication – Migration**) are very simple. By a few clicks, this company can simply complete cloud migration. More detailed processes are described below.

- **Step 1** Create cloud Instances on openstack cloud
- **Step 2** Image OS & applications from on-premise servers
- **Step 3** Replicate images to openstack cloud
- **Step 4** Migrate images to cloud Instances
- **Step 5** Start cloud instances



Conclusion

OpenStack is one of the most active and popular open source cloud platforms which is strongly supported by major global IT companies like HP, IBM, Redhat. In spite OpenStack is open source software, it is one of the fastest growing cloud platforms in the world. Many enterprises are deploying and experiencing openstack based private, public and hybrid cloud.

If large enterprises deployed their own private clouds, next step will be that they migrate from on-premises to private cloud. Until now, most of migrations to openstack were manually processed because there was no automatic migration tool like P2V converter. It was the one of the biggest headaches and obstacles for the smooth start of OpenStack private cloud.

This paper has provided an overview of automatic cloud migration technology. We call it as Physical-to-Cloud (P2C) or Virtual-to-Cloud (V2C) cloud migration. ZConverter Cloud Migration provides P2C and V2C imaging cloud migration technology. Without headaches, enterprises who deployed OpenStack Private Cloud can move their workloads to private cloud by a few clicks.

About Us

ISA Technologies, Inc. is one of the world leaders of cloud migration and system image backup software companies. We have been serving enterprises and channel partners for over 10 years.

Enterprises of various industries are experiencing the benefits of ZConverter Cloud Migration and ZConveter Server Backup software solutions.

We have been serving migration and system backup & recovery software since 2004. We are now providing Physical-to-Cloud (P2C) and Virtual-to-Cloud (V2C) cloud migration for OpenStack and CloudStack. We have a plan to support cloud migration for Microsoft Azure, IBM SoftLayer as well as Amazon AWS as soon as possible.

We are headquartered in Seoul, South Korea.