

## Virtual Machines Provisioning and Migration Services

### \* Virtualization Standardization:

=> This are the Virtualization Standardization.

#### 1 DMTFC (Distributed Management Task Force):

DMTF is a leading industry organization that develops and promotes standards for system management and virtualization.

DMTF has developed standards like OVF and VMAN to promote interoperability and management of virtualized environments.

#### 2 VMAN (Virtualization Management):

VMAN is a set of virtualization standard DMTF to management environment.

VMAN ensures that virtualization

products and management tools can work together seamlessly.

### 3 VMAN OVF (Open Virtualization Format):

OVF is a DMTF standard that provides an open, secure, portable, efficient and extensible format for distributing virtual machines.

OVF includes security features like encryption and certificate-based authentication.

### 4 OGFC (Open Grid Forum):

OGF is a community-driven organization that develops open standards for grid computing and cloud environments.

OGF standards ensure that grid computing resources can be used seamlessly across different platforms.

## 5 OCCIWG (Open Cloud Computing Interface Working Group):

OCCIWG develops specification for cloud computing interface that allow interaction with cloud services in a standardized manner.

OCCIWG standards enable dynamic scalability of cloud services.

## \* Virtual Machine Life Cycle:

⇒ The Life cycle of virtual machine divided into ~~two~~ Four stages and each stage involving specific tasks and process to manage the VM effectively.

→ Four Stage:

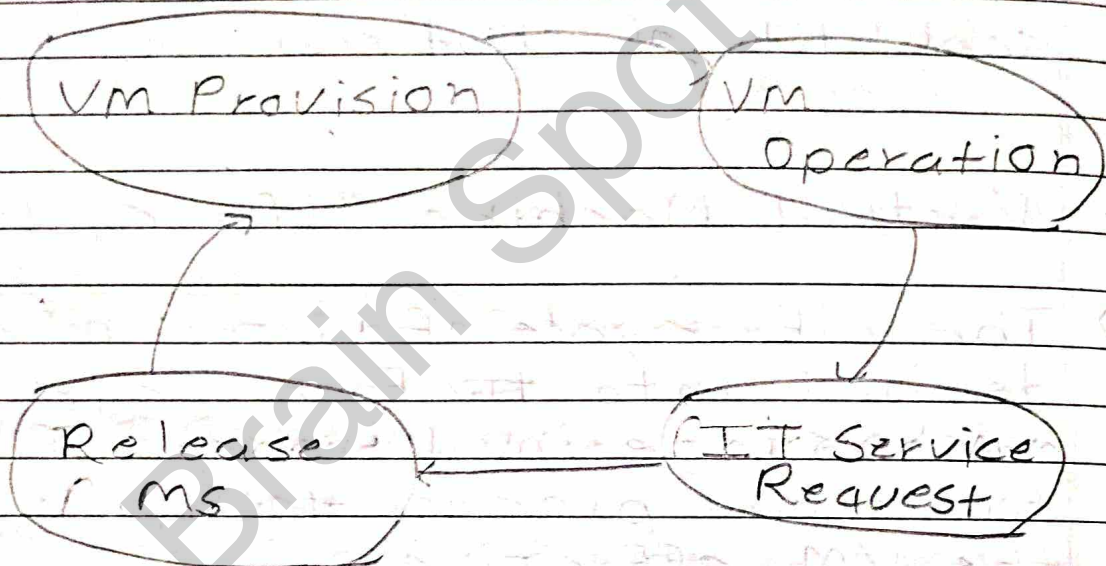
### 1 VM Provision:

Provisioning is the initial stage of the VM life cycle involving creation and setup of a VM.

This involves identify the necessary specification, CPU, memory,

## Storage and Operating System For VM.

Allocate the required resources, such as compute power, storage and network bandwidth to ensures the VM operates effectively.



## 2 VM in Operation :

Once the VM is up and running, it enters the operation phase, during which it is actively used.

Continuously track the VM's performance, focusing on metrics

like CPU usage, Memory consumption activity.

Adjust the VM's resources as needed adding more CPU, memory or storage based on workload.

Implement and manage backup strategies to safeguard the VM's data.

### 3 IT Service Request:

This stage involves requests related to VM Management such as modification, troubleshooting or other service.

Users or administrators submit service request for various need like resizing the VM, installing software etc.

IT staff review the submitted request to assess requirements.

### 4 Release Ms (Management and shutdown):

The Final stage in the VM life

cycle involves decommissioning the VM.

This includes planning and executing the shutdown and release the VM Resources.

Develop a plan for decommissioning the VM, which might include migrating data, performing backup and removing the VM from the network.

### \* VM Provision Process:

⇒ VM Provision is a initial stage of the VM Life cycle, it involve the creation and setup of a virtual machine.

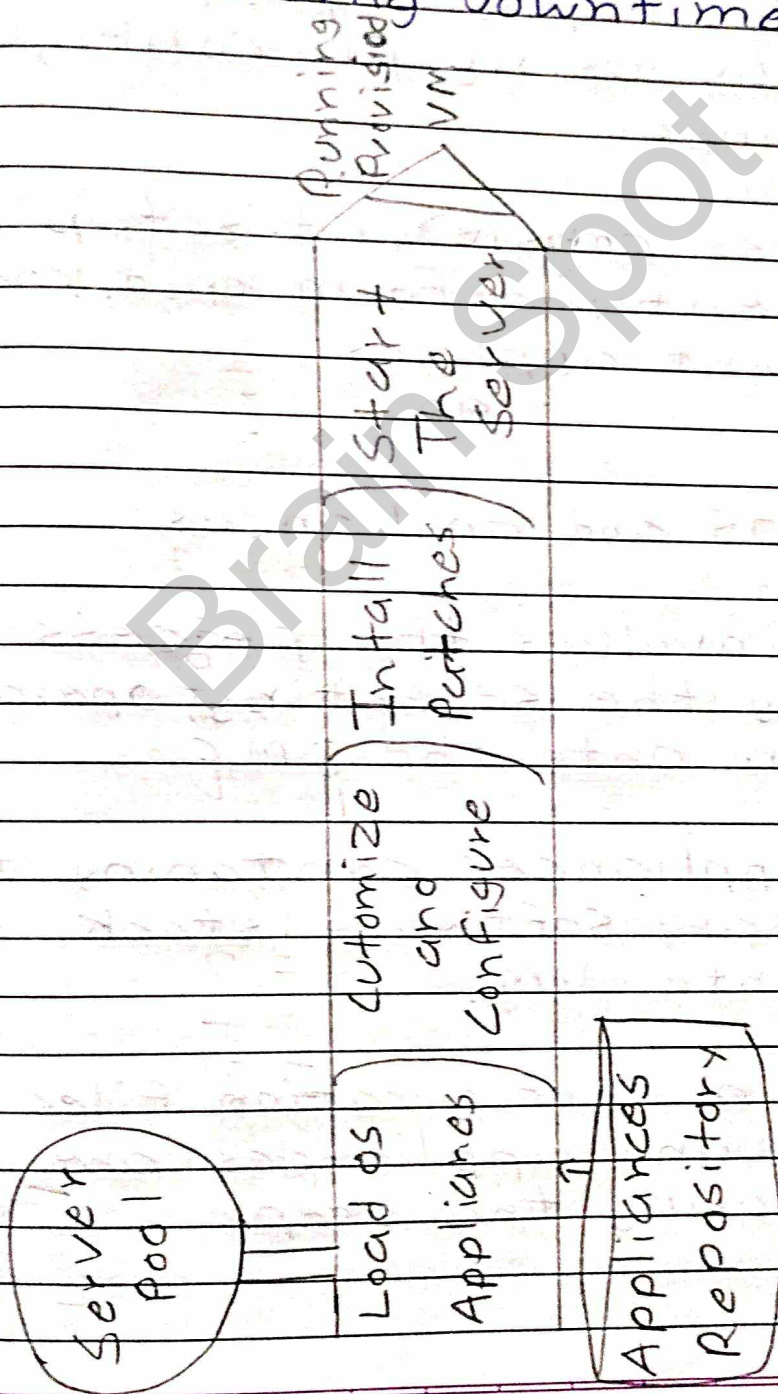
There are Five stage of VM Provision Process.

#### 1 Servers Pool:

A collection of physical servers that are available to host virtual machine.

The servers in the pool are managed centrally to optimize resource collection.

Servers Pool ensures that if one server fails, another can take over and minimizing downtime.



## 2 Appliances Repository:

A Repository where pre-configured virtual machine images are stored.

Enables rapid deployment of VMs by using pre-configured appliances.

Ensures consistent setup across different platform and manages different appliances  
an

## 3 Load OS and Appliances:

This involves the process of loading the selecting operating system onto the VM.

The appliances containing the necessary software stack, is load onto VM.

Essential configuration files of the OS and appliances are load during this step.



#### 4 Customize and Configure:

Customizing the virtual machine to meet specific requirement or preferences.

Also Configure Security setting like firewalls, user permission and encryption.

Customizing the installed software and application according to the use case.

#### 5 Install Patches:

Installing the latest patches and updates for the operating system and application.

Applying the security patches to protect against vulnerabilities to ensure system stability.

- After this five stage, starting up the VM after all configuration and patches are applied.

The VM is now in a fully operational state and ready handle workloads.

## \* Virtual Machine Migration Service:

=> There are 5 Stage to perform Virtual Machine Migration Service.



=> Stages of Migration:

### 0 Pre-Migration:

The Host A's VM is running normally on its original host.

A Targeted host B is selected for migration.

### 1 Reservation:

A container is initialized on the targeted host to Receive the VM.

Resources required by the VM are reserved on Host B.

## 2. Iterative Pre-copy:

Memory pages that have been modified are copied in successive rounds.

The goal is to reduce the VM's downtime by transferring most of memory while the VM is still running.

## 3. Stop and Copy:

The VM is paused on Host A to prepare for the final state transfer.

An Address resolution protocol request is generated to redirect network traffic to Host B.

## 4. Commitment:

The VM's state on Host A is released completing the migration process.

The system ensures that all state data are been transfer to Host B.

### 5 Activation:

The VM is started on Host B, taking over from Host A.

The VM reconnects to its local devices on Host B and VM resumes normal operation on Host B.