"शीलं परं भूषणम्"

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Assignment No.-9

Aim - Creation and Configuration of virtual machine, create 2 local virtual machines on host and ping the virtual machine.

1. What is virtualization? Explain in detail.

a. In computing, network virtualization is the process of combining hardware and software network resources and network functionality into a single software based administrative entity, a virtual network.

b. Network virtualization refers to abstracting the network resources that were traditionally delivered in hardware to software.

c. Network virtualization can combine multiple physical networks to one virtual software based network, or it can divide one physical network into separate, independent virtual networks.

d. Network virtualization software allows network administrators to move the virtual machines across different domains without reconfiguring the network

e. Network virtualization decouples the network services from the underlying hardware and allows virtual provisioning of an entire network.

2. What are the different types of virtualization?
Network virtualization is categorized as either -

1. Operating System virtualization - It is the most common form of virtualization. It involves putting multiple instances of an operating system like Windows on a single machine. This empowers businesses to reduce the amount of physical hardware required to run their software by cutting down the number of actual machines.

2. Application Virtualization - It helps a user to have remote access of an application from the server. The server stores all personal information and other characteristics of the application but can still run on a local workstation through the Internet. Technologies that use application virtualization are hosted applications & packaged applications.

3 Network Virtualization - The ability to run multiple virtual networks with each having a separate control and a data plan. It coexists together on top of one physical network. It can be managed by individual parties that are are potentially confidential to each other.
Network virtualization provides a way to create & provision virtual networks like logical switches, routers, VPNs, firewalls, load balancers, within days or even in weeks.

4. Storage virtualization - It is an array of servers that are managed by a virtual storage system. The servers aren't aware of where exactly their data is stored. It makes managing storage from multiple sources to be managed and utilized as a single repository. It maintains continuous suite of advanced functions despite changes, breakdown and differences in underlying equipment.

5. Server virtualization - It is the kind of virtualization in which masking of server resources takes place. Here the central server is divided into multiple different virtual servers by changing the identity no/ processors. So each system can operate its own operating systems in an isolated manner where each subsevber knows the identities of central server

It is beneficial in virtual migration, reduces energy consumption and infrastructural cost.

6. Data virtualization - This is the kind of virtualization in which data is collected from multiple sources & is managed at a single place without knowing about the technical information like how the data is collected, stored & formatted, then arrange that data logically so that its virtual view can be accessed by its interested people and stakeholders & users through the various cloud services remotely. It is used for performing various kinds of operations like - data integration, business integration, service oriented architecture

data services.

3. Explain benefits of virtualization.

a) Slash your IT expenses - Utilizing a non virtualized environment is inefficient When you virtualize an environment, that single physical server transforms into many virtual machines. The consolidation of the applications onto virtualized environments is a cost effective approach because you'll be able to save money spent on servers.

b) Reduce Downtime & Enhance Resiliency in Disaster Recovery situations -
When a disaster affects a physical server, someone is responsible for replacing or fixing it. This could take hours or even days. With a virtualized environment, its easy to provision & deploy, allowing you to replicate or clone the virtual machine that has been affected. The recovery process would take mere minutes as opposed to hours it would take to provision & setup a physical server - significantly enhancing the resiliency of the environment & improving business continuity.

c) Increases efficiency & productivity - With fewer servers, IT teams are able to spend less time maintaining the physical hardware & IT infrastructure.

d) Control Independence & Dev-ops - Since virtualized environment is segmented into virtual machines, developers can quickly spin a virtual machine without impacting production environment. This is ideal for Dev/Test.

Step3- Scroll down to the bottom of results.
If you see "Yes" → Your PC can run a virtual machine
If you see "No" → Your CPU doesn't support virtual machines and you need to adjust Settings.
If you see "A hypervisor has been detected" → You are already running a Hyper V in Windows.

How to create a virtual machine using Hyper-V Manager?

Step1- Select start, scroll down on the Start menu, then select Windows Administrative Tools to expand it.

Step2- Select Hyper-V Manager.

Step 3 - In the Hyper-V manager window, select Quick Create located under Actions on the right.

Step4 - In the Create Virtual Machine Window, select one of the 4 listed installers & select create Virtual Machine (Windows). If you have a different operating system, continue.

Step 5 - Select local installation source.

Step 6 - Select Change installation source.

Step 7 - Locate & Select an ISO image stored locally on your PC, then select Open.

Step 8 - Finally select Create Virtual Machine.

4. Explain in detail components of virtual machine.
Virtual machines typically have an operating system, VMware tools & virtual resources and hardware.

a) Operating System – You install a guest operating system on a virtual machine just as you install an operating system on a physical computer.

b) VMWare Tools – It is a suite of utilities that enhances the performance

c) Compatibility Setting – The compatibility setting determines which host versions the virtual machine can run on and the hardware features available to the virtual machine.

d) Hardware Devices – Each virtual hardware device performs the same function for the virtual machine as hardware on a physical computer does.
Every virtual machine has CPU, memory and disk resources.

5. Explain how to create virtual machine in Windows operating system.
Microsoft provides a built in tool called Hyperviser to create a virtual machine on Windows.

Step 1 - Right click the Start button and select Windows Power Shell (admin)

Step 2 - Type "Systeminto" in the powershell window and press enter.