

## VIRTUALIZATION

Virtualization is the creation of a virtual (rather than actual) version of something, such as an operating system, a server, a storage device or network resources. Operating system virtualization is the use of software to allow a piece of hardware to run multiple operating system images at the same time. These OS images can be multiple versions of the same OS and version, or different versions of the same OS or even completely different OS's

There are a number of areas in IT where virtualization is been adopted including Server virtualization, Desktop virtualization, network virtualization, storage virtualization and application virtualization:

- **Server virtualization** is the masking of server resources (including the number and identity of individual physical servers, processors, and operating systems) from server users. The intention is to spare the user from having to understand and manage complicated details of server resources while increasing resource sharing and utilization and maintaining the capacity to expand later. This technology is often used to consolidate a larger number of small, underutilised specialised servers onto a small number of powerful server platforms with each server platform hosting a number of the specialised “virtual” servers.
- **Desktop virtualization** is very similar to server virtualization in the sense that a large powerful platform is used to host a number of “virtual” desktops. Using this technology the user can gain access to a large range of centrally hosted and managed applications from a remote site using a simple device acting as the extended screen and keyboard to the central “virtual” desktop.
- **Network virtualization** is a method of combining the available resources in a network by splitting up the available bandwidth into channels, each of which is independent from the others, and each of which can be assigned (or reassigned) to a particular server or device in real time. The idea is that virtualization disguises the true complexity of the network by separating it into manageable parts much like your partitioned hard drive makes it easier to manage your files.
- **Storage virtualization** is the pooling of distributed physical storage from multiple network storage devices into a single storage device managed from a central console. This single storage device has the ability to mimic the characteristics of multiple different and incompatible storage standards to the attached servers/hosts. Storage virtualization is commonly used in storage area networks (SANs) and provide centrally hosted storage to a wide range of server hardware and OS's.
- **Applications virtualization** is based on the separation of the application from the OS and enabling the execution of an application package on a workstation without permanently installing the application on the workstation. The application can only be executed on the workstation whilst it is connected to the hosting server since the execution is shared between the workstation and the hosting server.

## Advantages of Virtualization

- Cost saving, reduces CapEx through consolidation and improve OpEx through automation
- Minimize lost revenue due to downtime, power down servers without effecting applications or users
- Enabling access to the latest applications from older devices, by running applications on a centralized server instead of running them on each end-user device

- Reducing the network complexity, operational costs, and energy consumption often required to run Web applications, with an ideal replacement for aging load balancers and other traffic management devices
- Freeing server resources for more online users and enhancing Web application response times, by offloading the compute-intensive processes of SSL connection setup and bulk encryption from Web servers
- Facilitates improved business continuity through data centralization
- Provides easy access from any device, on and offline, dramatically increasing user productivity and accelerating business agility.

**Virtualization solutions facilitate green computing initiatives by:**

- Enabling organizations to reduce the carbon footprint, by offering employees the ability to work from home instead of driving to work and consuming costly office resources
- Reducing power consumption by corporate desktops by up to 90% when combined with thin client hardware
- Enabling the efficient consolidation of application workloads, first in the data-centre through application virtualization, and then across server hardware within the data-centre through system virtualization and provisioning
- Enabling organizations to be aware of how much energy is being consumed on the user device, by measuring performance and availability from the users' perspective to ensure that all IT resources are operating at peak efficiency
- Save energy by eliminating server underutilization
- Eliminates capital costs of upgrading PCs every two to three years

**Microsoft**

Microsoft virtualization solutions are based on familiar Windows interfaces and work with well-known Windows-based technologies. And because the solutions are Windows-based, they are supported by a broad network of experienced partners who can rapidly respond to your business needs. Microsoft Virtualization products work seamlessly with the tools your IT staff already knows and uses, allowing for complete integration across your enterprise.

Microsoft offers a full range of products such as HyperV (Server), Virtualized Desktop Infrastructure /VDI (Desktop), App-V (applications) and Systems Centre Virtual Machine Manager (virtualization management) to address the need Small, Medium and Enterprise class customers.

**CISCO**

Leveraging its dominant position in the networking market, Cisco has developed a range of virtualization solutions addressing the storage, data centre and network virtualization segments. As servers continue to become virtualized infrastructure becomes more dynamic and places new demands on Storage, Network and Management infrastructure..

Leading with its range of Nexus switches Cisco has taken a strong position in the Data Centre virtualization space. Flexible networking options to support all server form factors and vendors, including options for integrated Ethernet and Fibre Channel switches for Dell, IBM, and HP blade servers, provide a consistent set of services across the data center to reduce operational complexity.

Network-embedded virtualized application networking services allow consolidation of remote IT assets into virtualized data centers. Similarly, offering the MDS series director class SAN switches through a range of leading storage OEM partners such as IBM, HP, EMC and others.

### **CITRIX**

The Citrix family of products and services centralize, virtualise and minimize the complexity of traditional computing – significantly reducing costs, improving information security, mobilizing people, and delivering enterprise agility. Citrix desktop virtualization, application virtualization, server virtualization, application networking, cloud computing and Software as a Service offerings radically simplify computing for millions of users, delivering applications as an on-demand service to any user, in any location on any device.

### **VMWare**

VMware is one of the leaders in virtualization solutions from the desktop to the datacenter. VMware offers solutions designed for today's often inflexible IT environment into a private cloud, helping you reap cost savings and productivity benefits. Stretch your IT budget by getting more out of your existing storage, network and computing resources. Allocate assets when and where they're needed and quickly reallocate as business needs change.