



Virtualisation

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**Quality
Endorsed
Company**

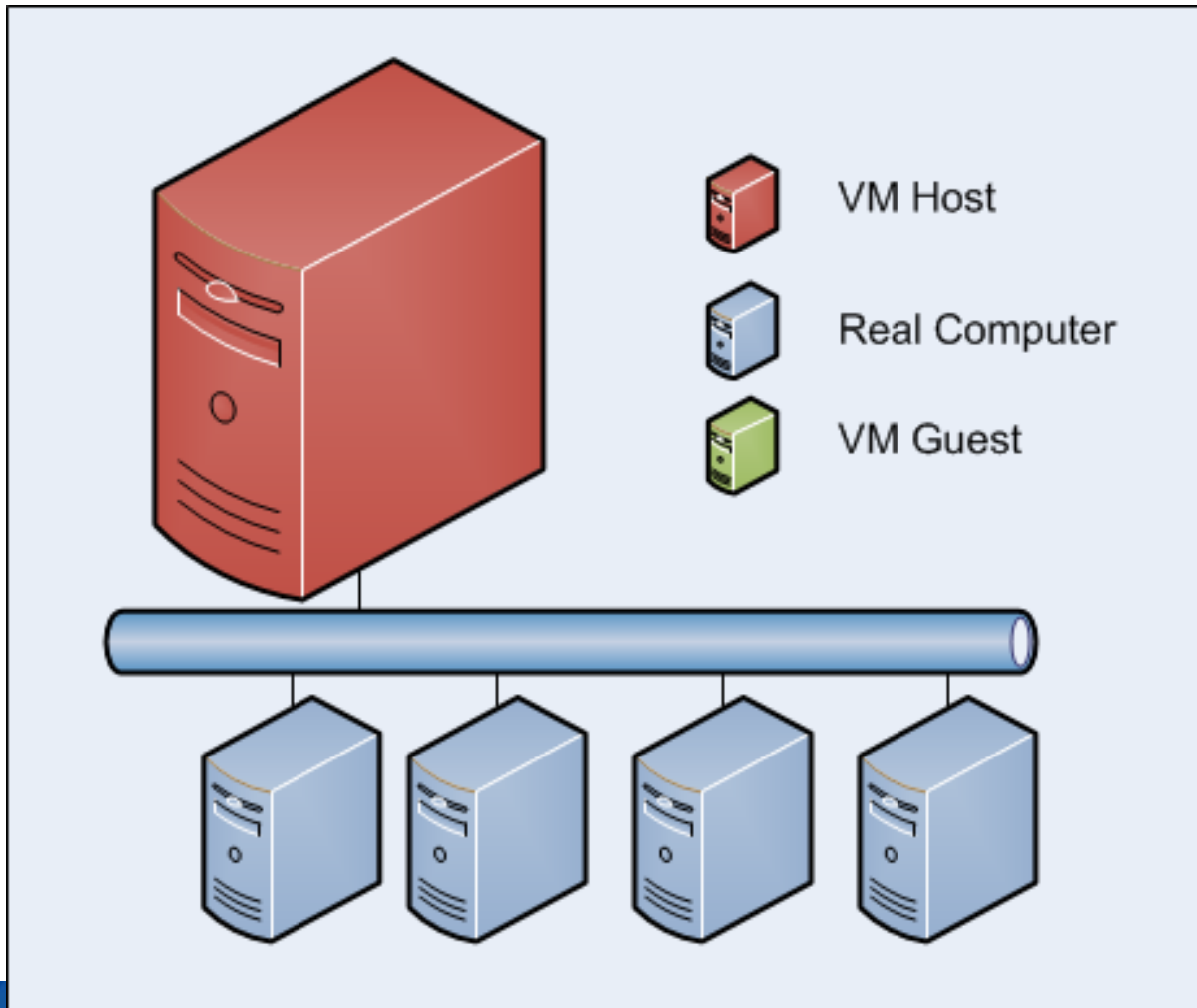
ISO 9001 Lic: QEC22546
SAI Global

What is Virtualisation ?

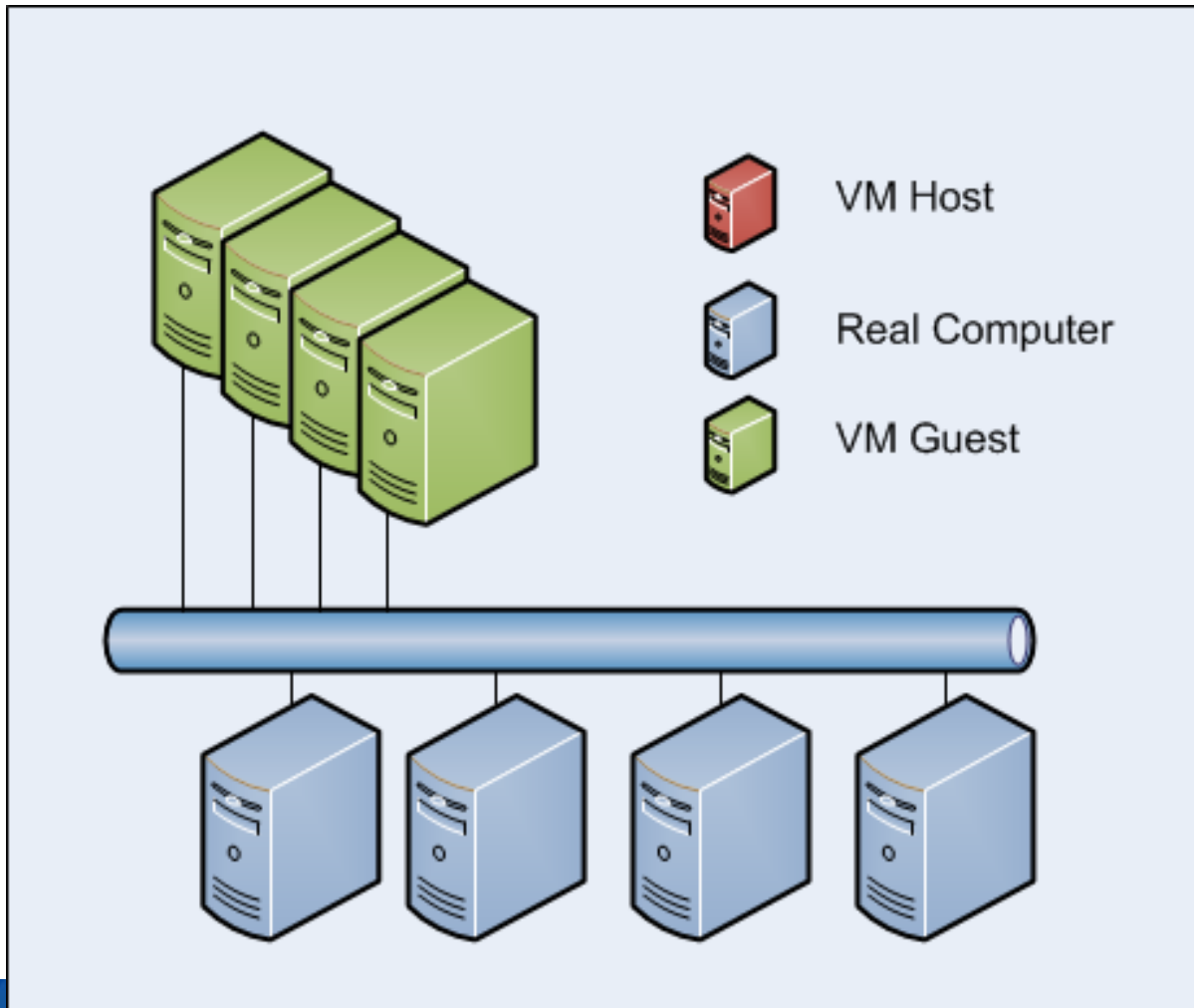


- Allows multiple operating systems to work independently of each other with their own disks, network cards, processor, memory on the same single piece of hardware.
- The hardware where the Virtual Server is installed is called the “host”
- The installed Virtual Machines are called “guests”

Network Layout



Network Layout



Possible scenario 1

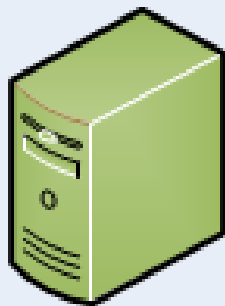
Four Virtualised Servers (guests)
on one physical machine



VM Host

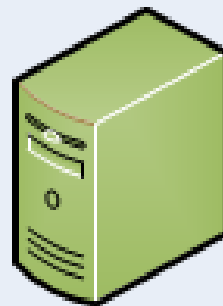


VM Guest



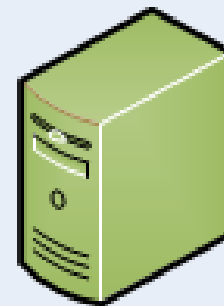
Server 1:
Domain / TS Gateway

SBS Server



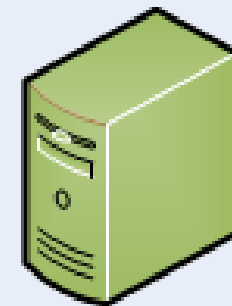
Server 2:
Clinical App Server

Sever 2008 Std



Server 3:
Terminal Server

Sever 2008 Std

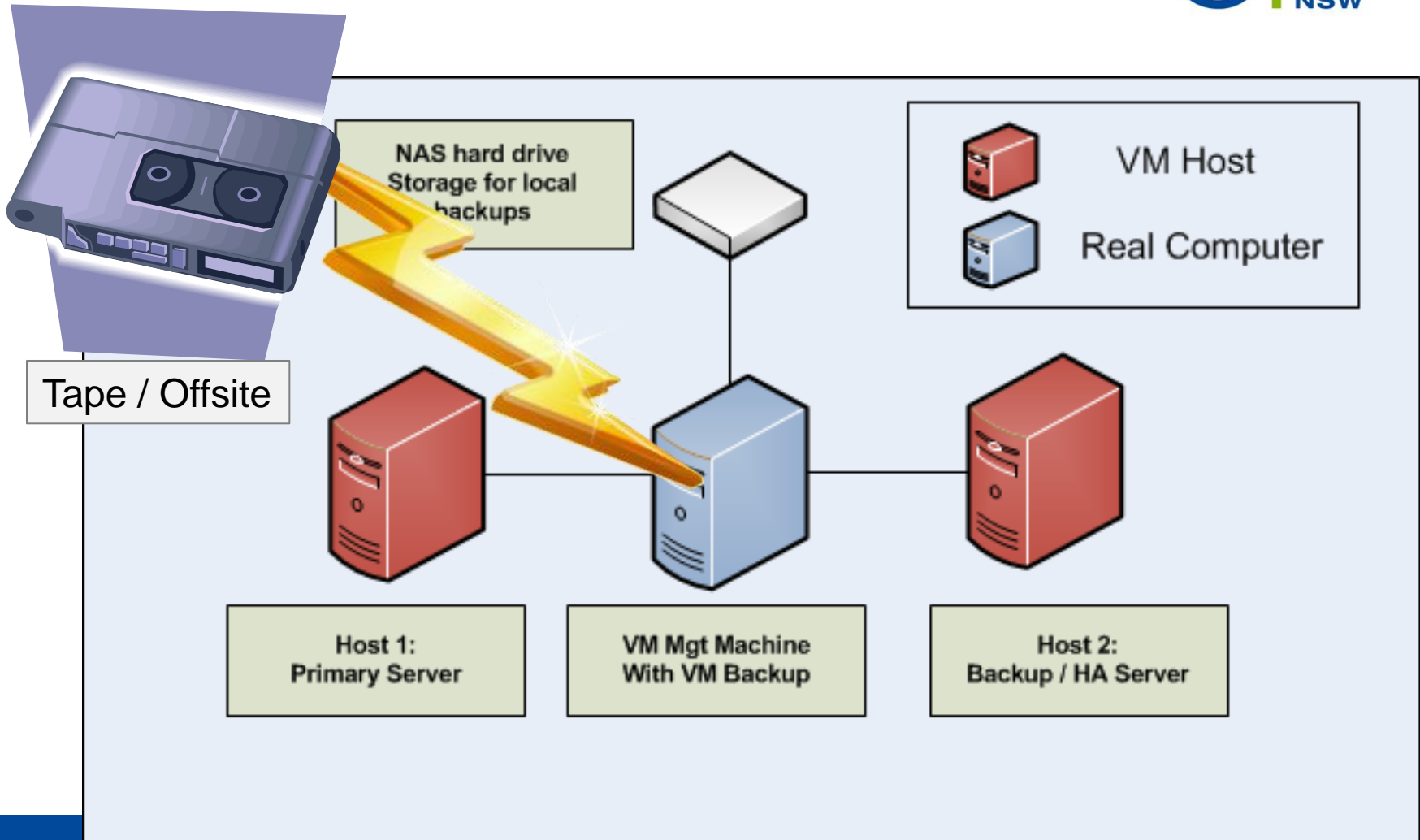


Server 4:
Messaging Machine

Windows XP Pro

Vmware ESX-ESXI / Xen Server / Hyper V

Possible scenario 2



Why Virtualise ?

Traditional Reasons

- Improved resource utilisation
- Consolidation
- Reduced energy cost
- System Administration costs

Why Virtualise ?



The case for general practice

- Improved resource utilisation
 - Better backups
 - Better able to adapt
 - Improved access
- Consolidation
 - In general practice, this translates to space

Desktop Virtualisation



- Similar to Terminal Services, but you are connecting to your own “virtualised” computer
- Connects via application or thin client, android or iPhone
- Available products
 - Citrix XenDesktop
 - VMWare View

Desktop Virtualisation



- Centrally managed (aids backup and maintenance)
- Powers up on connect
- Simplifies rollout of new computers (from a central image)
- Unlike Terminal Services, allows clinicians to install their own applications on their own computer.

Data centre housing



- A single server for general practice could cost \$500 per month
- Problems with:
 - Reliability of ADSL 2 speeds
 - Document scanning
 - Diagnostic equipment like ECG and Spirometers
- Wont be a viable option until the NBN

How much speed ?

- Latency is important
- VMWare quote 100 – 150 kbps per user
- Printing and video require more bandwidth
- For small offices, calculations are normally incorrect.
- <http://www.vmware.com/files/pdf/resources/vmware-view-reference-architecture.pdf>
- <http://support.citrix.com/servlet/KbServlet/download/24560-102-647702/XD%20-%20Planning%20Guide%20-%20User%20Bandwidth%20Requirements.pdf>

NBN



- It's about the reliability of the connection
- Higher Uplink Speeds
- Gold plan from internode (50 / 20 Mbps)

Gold - Line Interface of 50/20 Mbps*

HBNTP Gold 30	30 Gigabytes	\$79.95
HBNTP Gold 200	200 Gigabytes	\$99.95
HBNTP Gold 300	300 Gigabytes	\$119.95
HBNTP Gold 1000	1 Terabyte	\$169.95

Platforms

Hypervisor's

- VMWare VMWare ESX
- VMWare VMWare ESXi (free)
- Citrix XenServer (free)
- Microsoft HyperV (free)

Platforms

Desktop Applications

- VMWare Server (free)
- VMWare Workstation (around \$180)
- VMWare Player (free)
- Microsoft Virtual PC (free)
- Oracle VirtualBox (free)

Which Platform ?

- Support and maintenance costs
- Hypervisor Licensing
- Backup
- High Availability
- Storage (SAN, iSCSI)
- Performance monitoring
- Hardware Compatibility

Gotcha's



- Software Licensing
 - Difficulties in transferring OEM licenses to Virtual Machines
- Storms
 - All machines trying to Anti Virus Scan or Backup at the same time
- Networking, use VLANs effectively
 - Broadcast network traffic can hurt you

Skills you need



- Storage
- Snapshots (a snapshot is not a backup)
- Backups
- Access and mount hard disk images
- Edit VM configuration files
- Back door access (VNC / RDP)
- Virtual Switches

Skills you need



- Understand storms
- Conversions P2V, V2V and V2P
- Re-sizing disks
- Sysprep
- Upgrading / Maintenance mode

How to get started



Start a test

- Download ESXi, XenServer, HyperV
- A \$1,000 in a small test machine is a good start to start experimenting
- Get at least 8 GB RAM (preferably 12 GB)
- Intel's ICH10R storage chipset will work, however you may not be able to use RAID
- Use Windows 2008 Server evaluations

Where to download

ESXi

- www.vmware.com.au

XenServer

- www.xenserver.com

HyperV

- www.microsoft.com/hyper-v-server/

Training



- mylearn.vmware.com
ESXi Self paced learning available
USD\$50 to USD\$300
- **Windows® Server 2008 Hyper-V Unleashed**
Rand, Morimoto, Guillet. Publisher: Sams
- **Virtualisation for Dummies**
Golden. Publisher: John Wiley & Sons
- All the main Hypervisors have good online documentation