



Fundamentos de Arquitetura de Infraestrutura de Aplicações

BLOCO: ARQUITETURA DE INFRAESTRUTURA DE APLICAÇÕES

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[ETAPA 5] AULA 1 – MELHORES PRÁTICAS – DEPLOYING VSPHERE



Na aula anterior...

- Integramos o vCenter em dois hipervisores
- Movimentamos máquinas virtuais entre hipervisores
- Falamos sobre lockdown mode



Agenda

- Melhores práticas até aqui
- Exercício conceitual

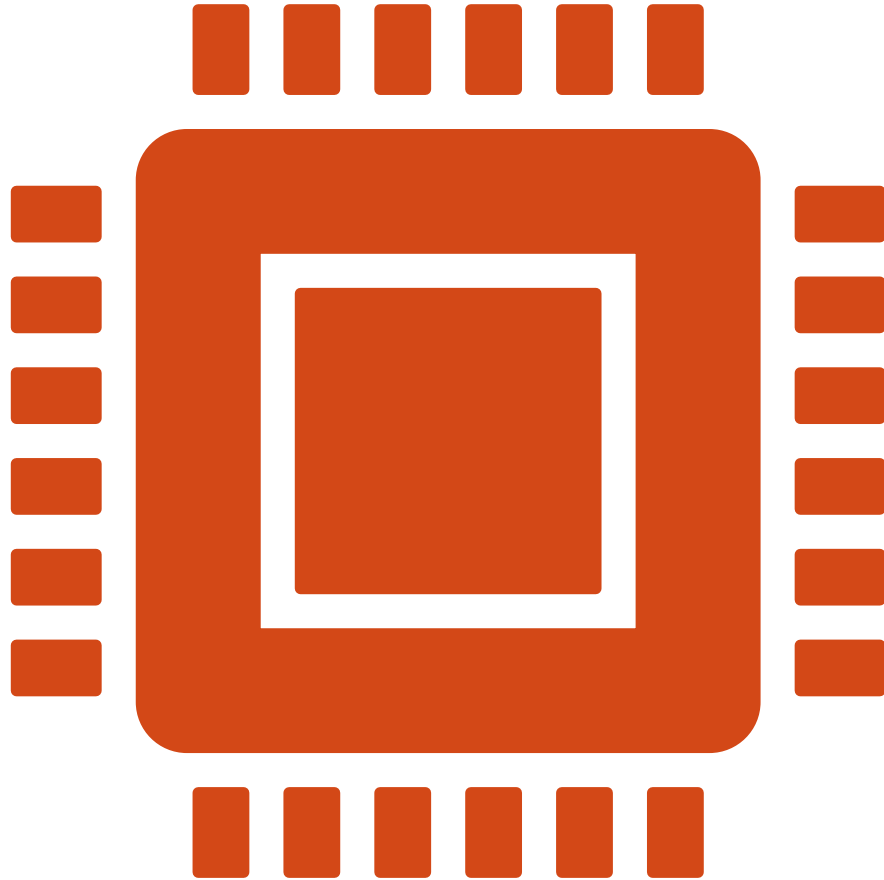
Best Practices For VMware vSphere

A thin vertical line is positioned to the right of the text, extending from the top of the text area to the bottom of the text area.

ESX host deployment-Best Practices

- Compatible hardware

The screenshot shows the VMware Compatibility Guide search interface. The page has a dark sidebar on the left with navigation links: CLOUD SERVICES, PRODUCTS, SOLUTIONS, SUPPORT, DOWNLOADS, PROFESSIONAL SERVICES, PARTNER PROGRAMS, and COMPANY. The main content area is titled 'VMware Compatibility Guide' and includes a search bar with the text 'Search Compatibility Guide: (e.g. compatibility or esx or 3.0)' and a 'Search' button. Below the search bar, there's a section for 'What are you looking for?' with a dropdown menu set to 'Systems / Servers'. The main search area is divided into several sections: 'Product Release Version' (listing ESXi 6.5, ESXi 6.0 U2, ESXi 6.0 U1, ESXi 6.0), 'System Type' (listing Blade, Mother Board, Rack or Tower, Rackmount, Tower), 'Additional Criteria' (listing Min Certified Memory, Max Certified Memory, Sockets, Max Cores per Socket, CPU Series, Fault Tolerant Compatible Sets, and Posted Date Range), and 'Partner Name' (listing various partners like AIO Networks, Aberdeen LLC, etc.). At the bottom, there are links for 'Update and View Results', 'Reset', and additional information links like 'See the Product Interoperability Matrix', 'Partner Verified and Supported Products', and 'Check out the VMware [code]'.

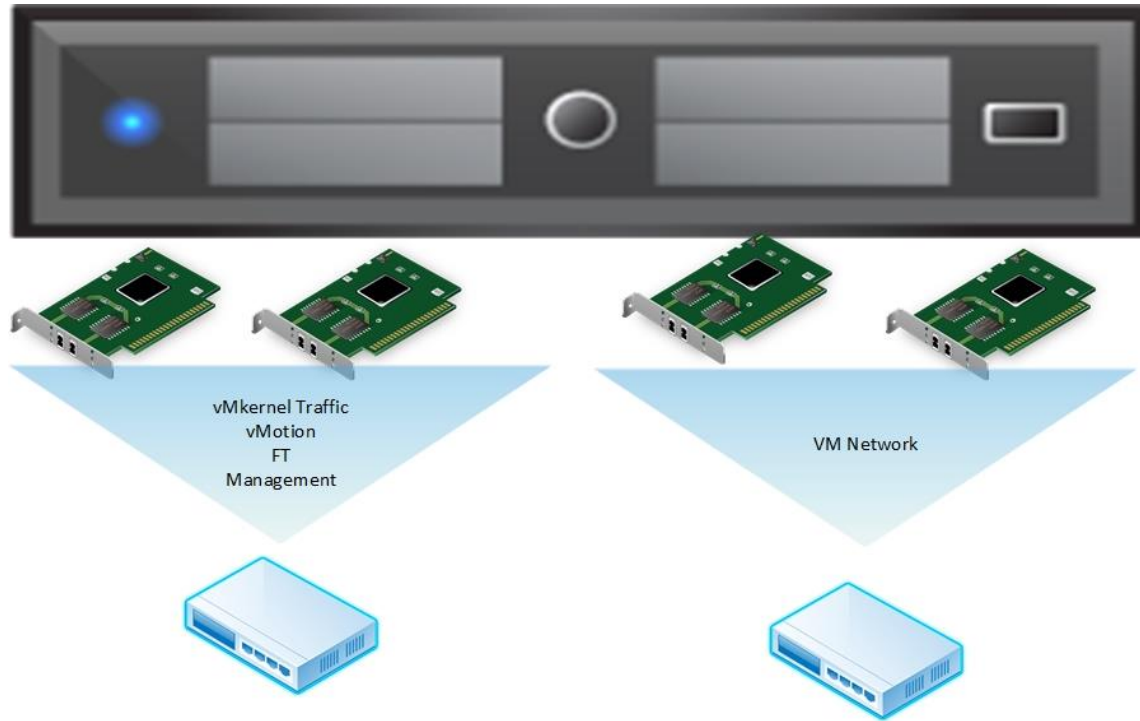


ESX host deployment-Best Practices

-
- Install using custom image(HP, Dell ,Lenovo ,Cisco.etc...).
 - Remove ESX installed HD from datastores.
 - Install the same & stable version.

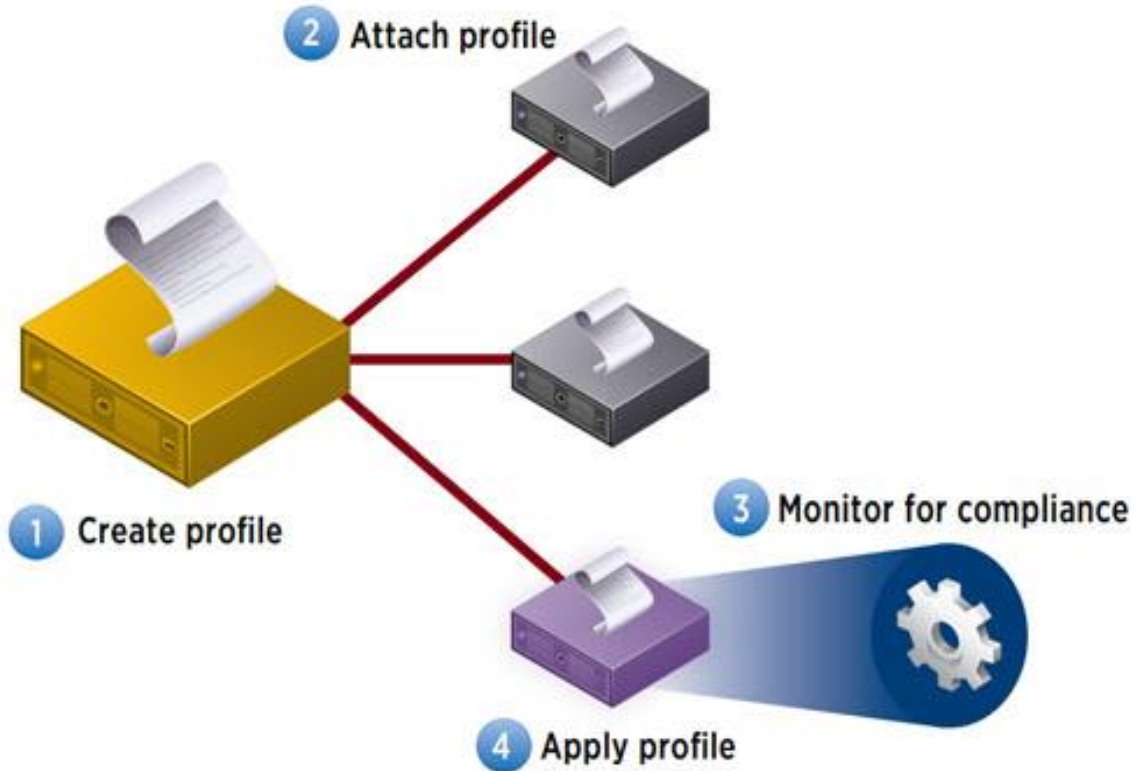
ESX host deployment-Best Practices

Install with minimum 4 nics

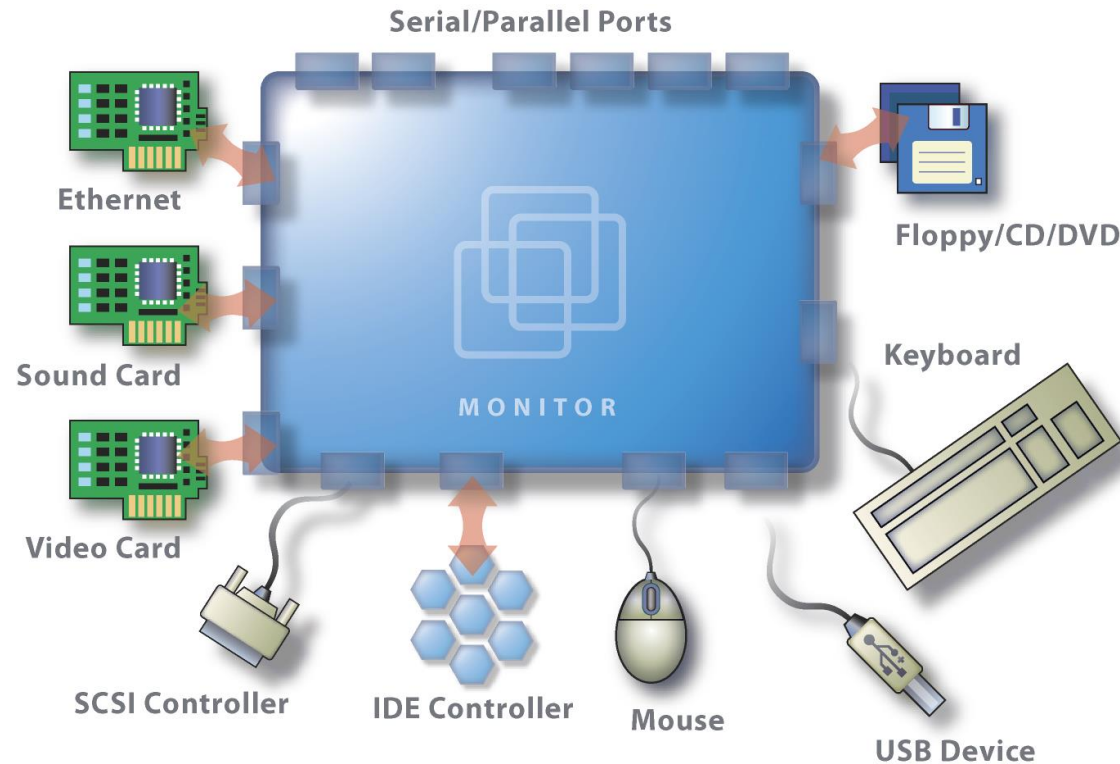


ESX host deployment-Best Practices

- Use VMware host profile



Virtual Machine deployment- Best Practices

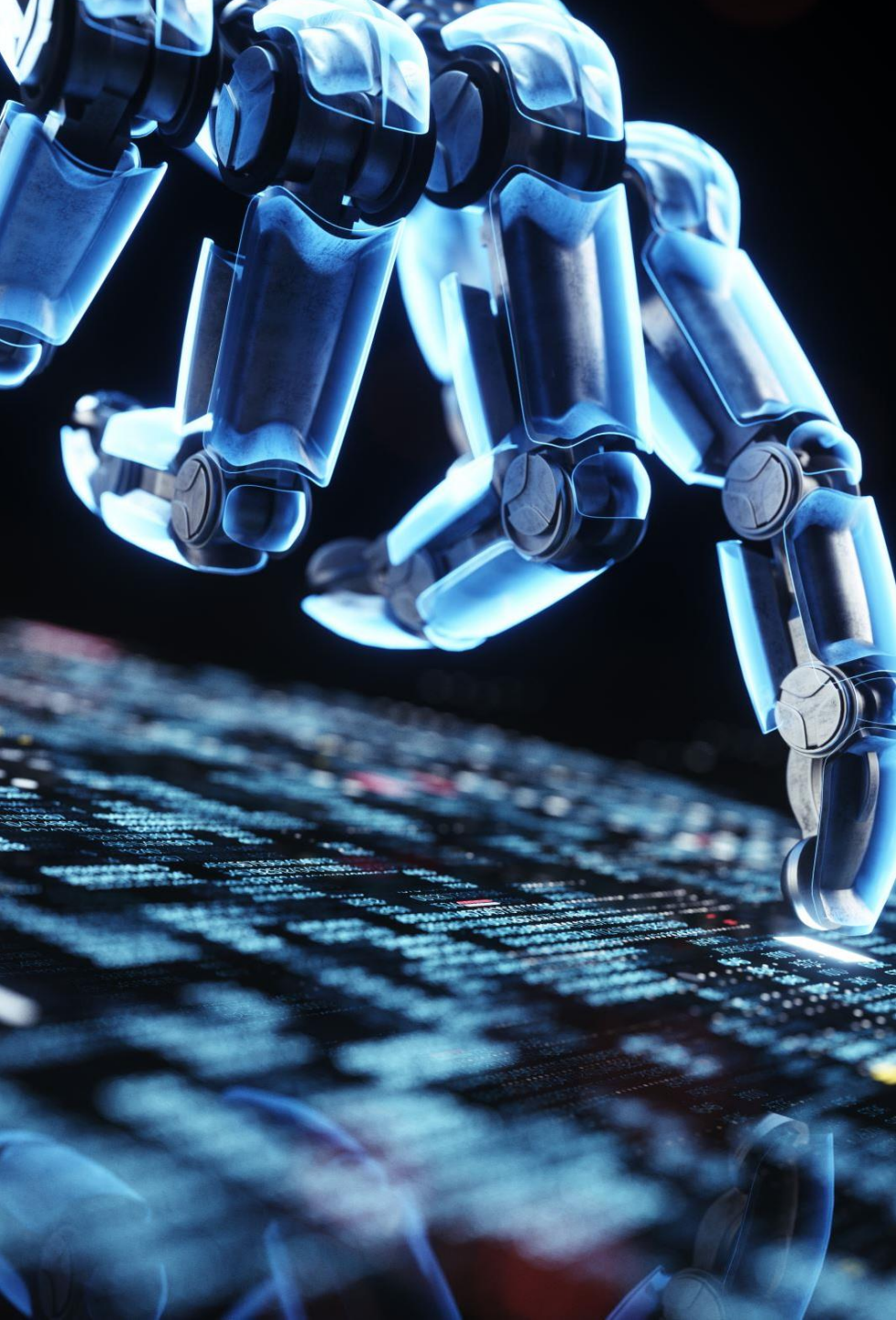


- Use the latest version of virtual hardware

Virtual Machine deployment- Best Practices

Feature	ESXi 6.0 and later	ESXi 5.5 and later	ESXi 5.1 and later	ESXi 5.0 and later	ESX/ESXi 4.x and later	ESX/ESXi 3.5 and later
Hardware version	11	10	9	8	7	4
Maximum memory (GB)	4080	1011	1011	1011	255	64
Maximum number of logical processors	128	64	64	32	8	4
Maximum number of cores (virtual CPUs) per socket	128	64	64	32	8	1
Maximum video memory (MB)	2 GB	512	512	128	128	128
PCI passthrough	16	6	6	6	6	0
Nested HV support	Y	Y	Y	N	N	N
Serial ports	32	4	4	4	4	4

- Use the latest version of virtual hardware



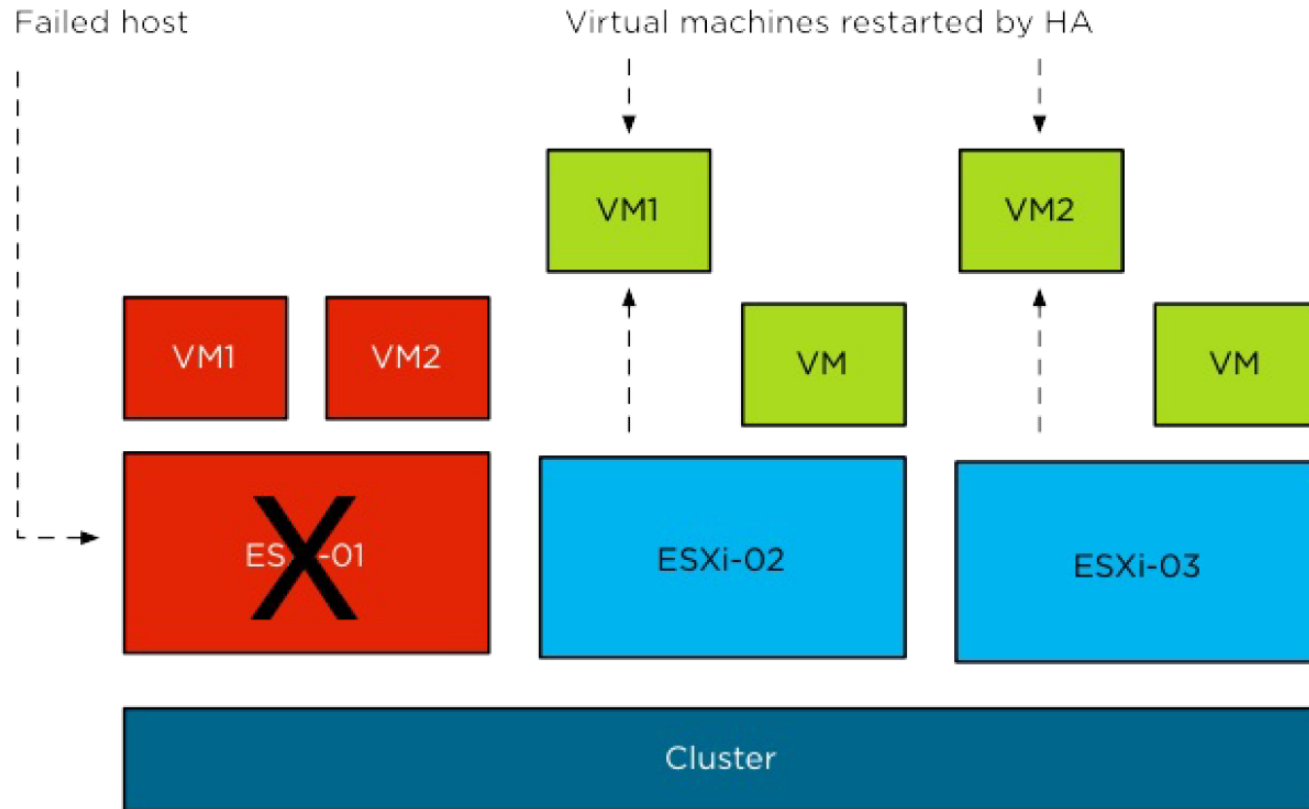
Virtual Machine deployment-Best Practices

- If compatible use paravirtual SCSI adapter.
- Keep VMware tools up to date on guest operating systems.
- Remove any unused virtual hardware device(Floppy disks ,CD/DVC drives ,COM/LPT).
- Only allocate required vCPUs for the VM.
- Select correct guest operating system

Virtual Machine deployment-Best Practices

- Use syspreped vm templates.
- Keep VM/Templates in content library
- Use vApps for multi tier applications
 - MS Exchange, SharePoint
 - App/DB
 - Set the start-up priority
- Use os customization wizard to to apply guest configuration(License key,Time,IP,etc..)

Best Practices- vSphere HA cluster





Best Practices-vSphere HA cluster

- Suspend the host monitoring feature, when making network related changes.
- Use redundancy nics for management network with nic teaming.
- Use multiple host isolation addresses.
- If possible create multiple management network connections
- If possible use VMware Distributed switches or use identical port groups.

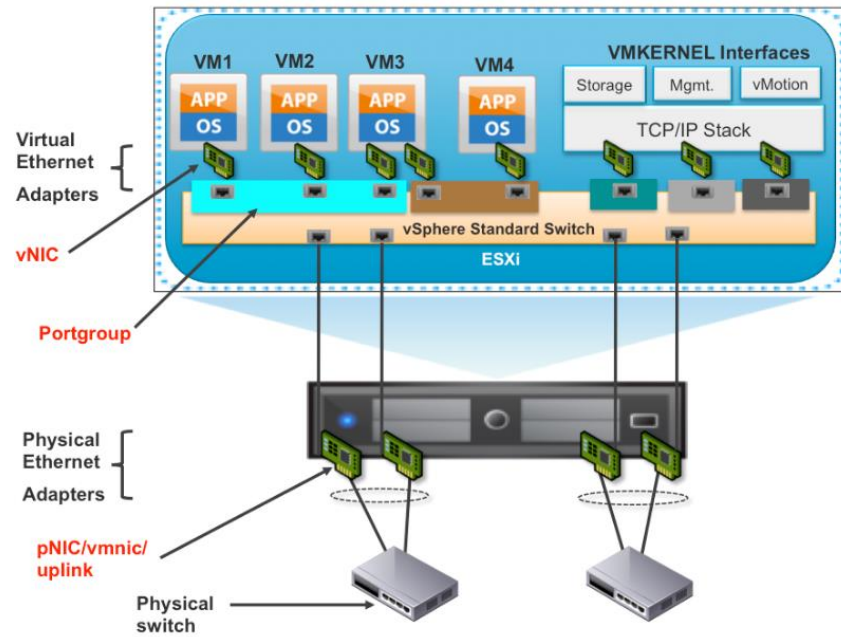
Best Practices-vSphere HA-DRS

Enable EVC if
you're using
different
processor types.

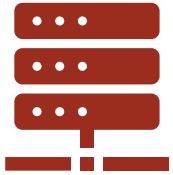
When ever
possible use full
automated DRS
mode.

Affinity & anti-
Affinity rules.

vNetwork- Concept

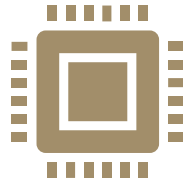


Types of network switches



VMware Standard Switch(vSS).

Created and managed on a per-host basis.
Support basic features.



Vmware Distributed Switch(vDS).

Created and managed at vSphere vCenter.
Supports all vSS features and more.



Cisco Nexus 1000v.

Created and managed by vsm(either Vm or hardware/nexus 1010).
Supports features typically available in Cisco hardware switches.



Best Practices-vSphere Networking

- Separate infrastructure Traffic from VM Traffic
 - VMs should not see infrastructure traffic
 - Infrastructure traffic bursts do not impact VM
- How to do that
 - Separate pNics
 - Create multiple vSS/vDS for each pNics
 - Requires at least 4 pNics
 - Separate VLANs
 - Create one vSS/vDS & connect all pNics
 - Create portgroups with different VLANs

Teaming & failover

- Always connect 2+ pNics to a vSwitch, preferably linked to separate physical switches

Select suitable load balancing policy.

- pNic load-Traffic is distributed based on workload(vDS only).
- Port ID/Mac- Traffic is balanced statistically(assumes many vms).
- IP-Hash-Traffic is distributed per connection(requires ether channel).
- Explicit- no load balance.

Best Practices- vSphere Networking



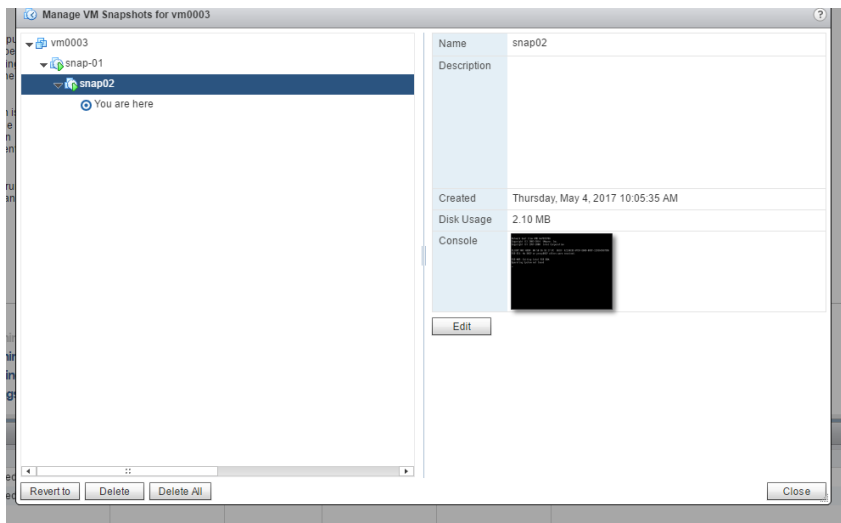
Best Practices-vSphere Networking

- Distribute Switches\Standard Switches
 - Create standard switch with meaning full name using `esxcli(ex mgt)`.
 - If possible try to use VMware Distributed Switches.

Name	Size	Modified	Type
vm0003-a8be56c5.vswp	0.00 KB	5/4/2017 5:31 AM	File
vm0003.vmsd	0.70 KB	5/4/2017 10:05 AM	File
vm0003.vmx	2.85 KB	5/4/2017 10:05 AM	File
vm0003.vmx~	2.85 KB	5/4/2017 10:05 AM	File
vmx-vm0003-2831046341-1.vswp	166,912.00 KB	5/4/2017 5:31 AM	File
vm0003-Snapshot1.vmem	65,536.00 KB	5/4/2017 10:03 AM	File
vm0003-Snapshot2.vmem	65,536.00 KB	5/4/2017 10:05 AM	File
vm0003.vmx.lck	0.00 KB	5/4/2017 5:31 AM	File
vm0003.nvram	8.48 KB	5/4/2017 10:06 AM	Non-volatile Mem
vm0003-000002.vmdk	1,024.00 KB	5/4/2017 10:05 AM	Virtual Disk
vm0003.vmdk	8,388,608.00 KB	5/23/2017 8:21 AM	Virtual Disk
vm0003-000001.vmdk	1,024.00 KB	5/4/2017 10:02 AM	Virtual Disk
vmware.log	130.57 KB	5/4/2017 10:07 AM	VM Log File
vm0003-Snapshot1.vmsn	1,128.06 KB	5/4/2017 10:03 AM	VM Snapshot
vm0003-Snapshot2.vmsn	1,128.07 KB	5/4/2017 10:05 AM	VM Snapshot

Snapshot

- VMware snapshot is a copy of the virtual machine's disk file at a given point in time.
- Snapshot capture the state of all the virtual machine disks, memory and virtual machine settings.



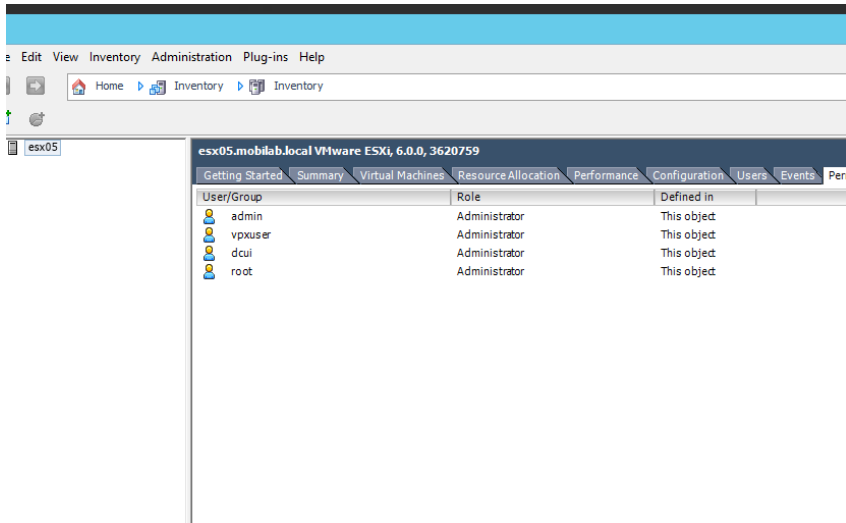


Snapshot-Best Practices

- Snapshot is not a backup.
- Create a meaning full name with snapshot.
- Do not use single snapshot for more than 24-72 hours.
- When using a third-party backup software, ensure that snapshots are deleted after a successful backup.
- Remove any snapshot before doing any changes in a virtual mode rdm
- Configure alerts on snapshot(eg: more than 1GB)

Best Practices-ESX Security

- Disable ssh access for root & create additional admin account.



```
SyslogFacility auth
LogLevel info

PermitRootLogin no

PrintMotd yes
PrintLastLog no

TCPKeepAlive yes

X11Forwarding no

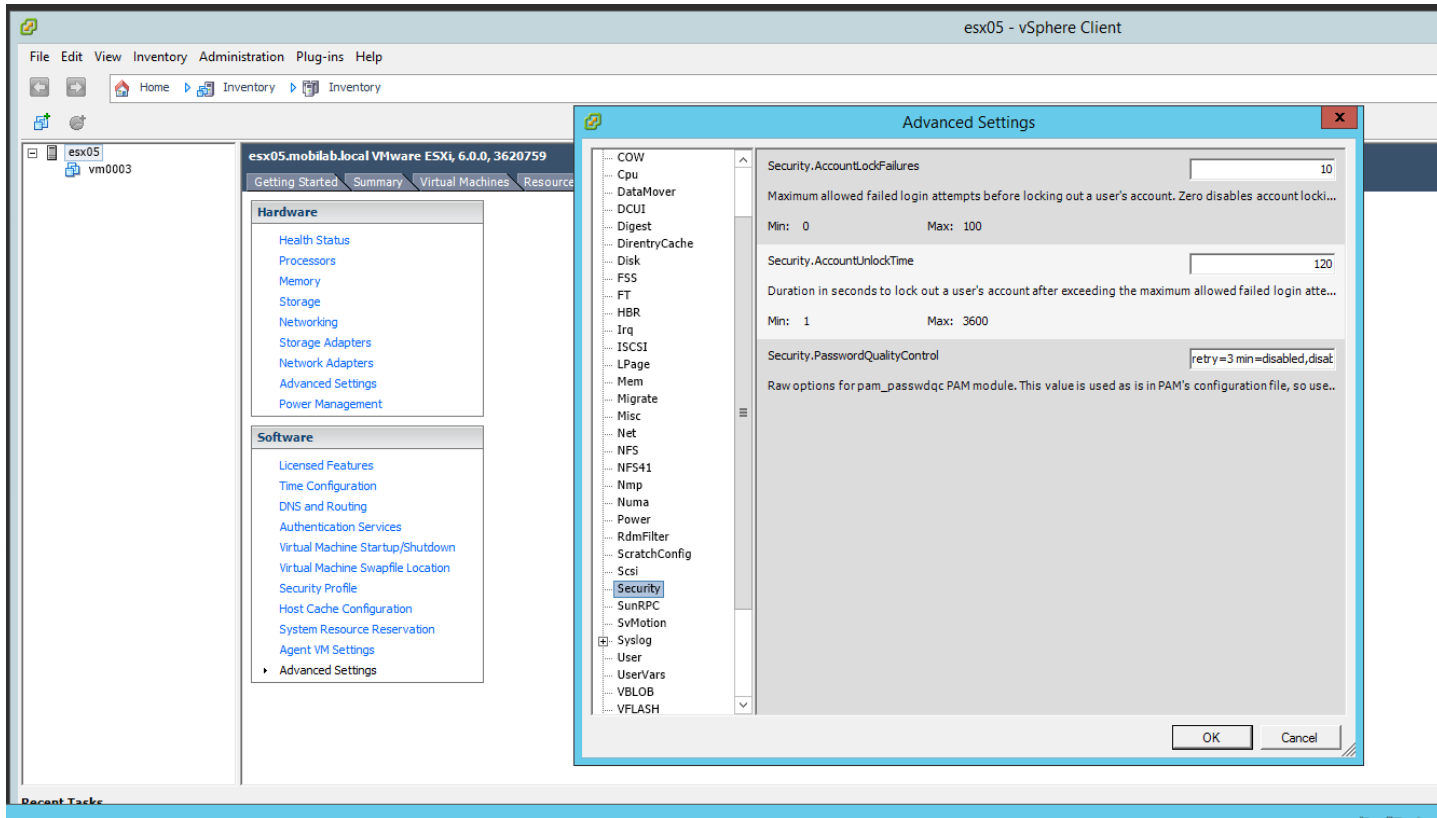
Ciphers aes128-ctr,aes192-ctr,aes256-ctr,3des-cbc

MACs hmac-sha2-256,hmac-sha2-512,hmac-sha1,hmac-sha1-96
I /etc/ssh/sshd_config [Modified] 1/44 2%
# running from inetd
# Port 2200
Protocol 2
HostKey /etc/ssh/ssh_host_rsa_key
HostKey /etc/ssh/ssh_host_dsa_key

UsePrivilegeSeparation no

SyslogFacility auth
LogLevel info
```

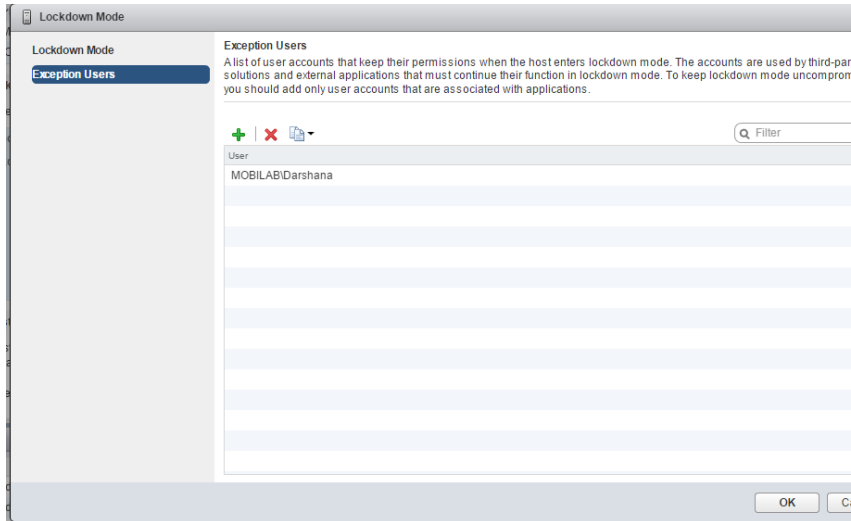
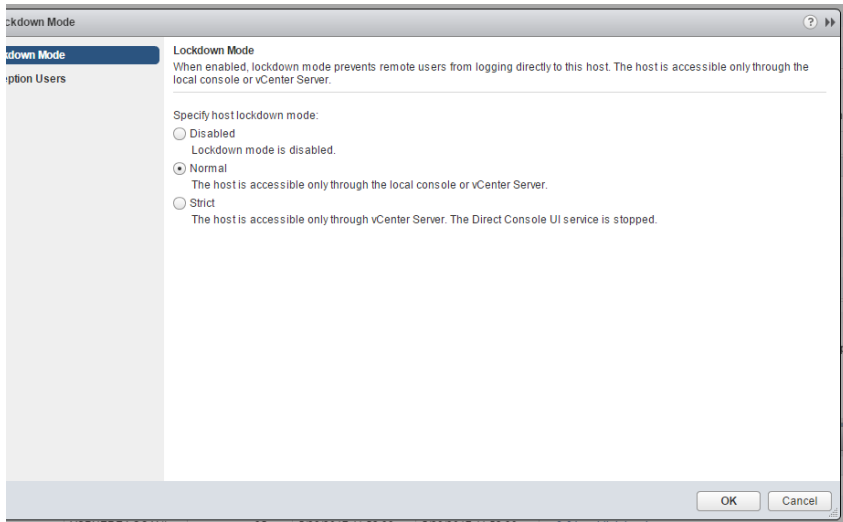

Best Practices- ESX Security



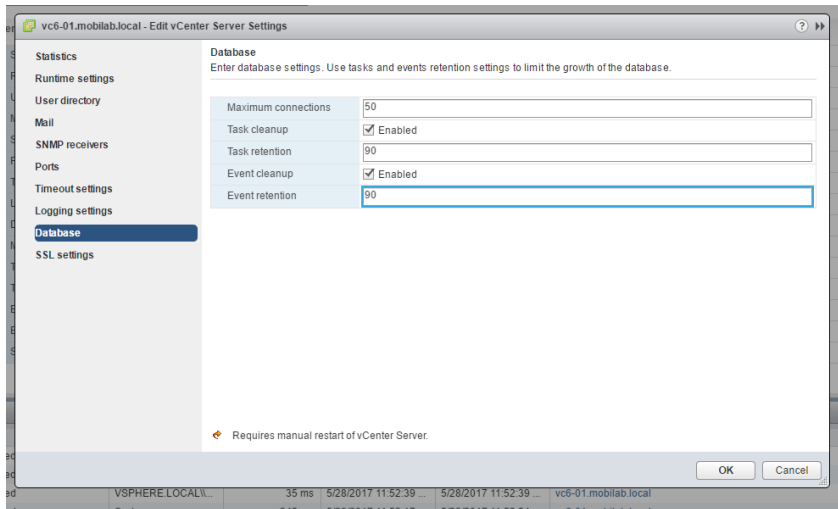
- Configure password policy
- Character classes
 - Upper Case
 - Lower Case
 - Numbers
 - Special (\$%#@#.....)
- Default password policy
retry=3
min=disabled,disabled,disabled,7,7

Best Practices-ESX Security

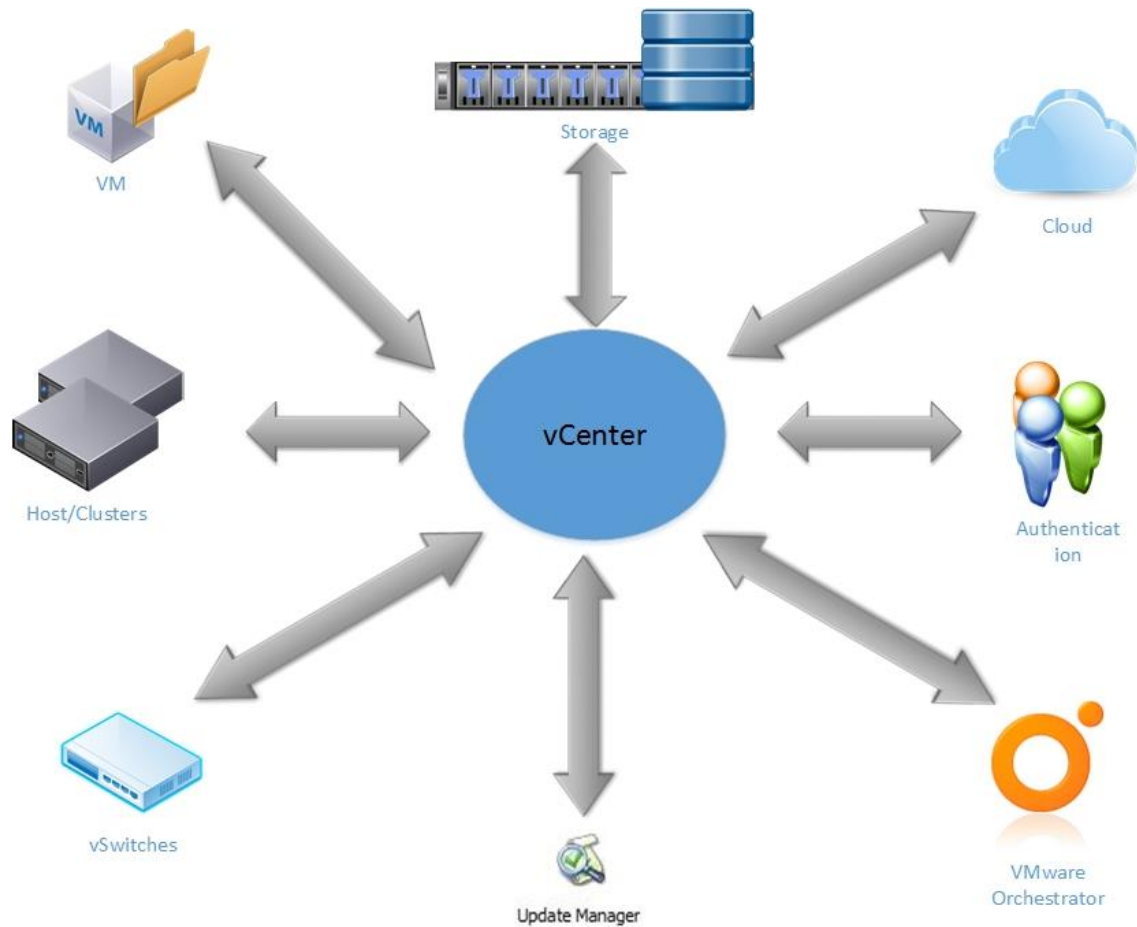
- Configure lockdown mode.



Best Practices-vCenter Security



- Limited RDP access(windows based vCenter).
- Integrate with AD.
- SSO administrator account.
- Use different sso domain other than vSphere.local.
- Granular level permission structure.
- Task & event retention period-90 Days



vCenter Deployment

Size	Hosts	Virtual Machines	vCenter CPU	vCenter RAM	DB CPU	DB RAM
Small	100	1,000	4 vCPUs	16GB	2 vCPUs	8GB
Medium	400	4,000	8 vCPUs	24GB	4 vCPUs	12GB
Large	1,000	10,000	16 vCPUs	32GB	8 vCPUs	16GB

vCenter Deployment

vCenter Deployment



USE EXTERNAL
DATABASE(ORACLE & SQL).



MAINTAIN DATABASE
BACKUPS OF THE VCENERDB.

vCenter Deployment



If possible, use separate management host/cluster.



Should use low latency network connection with external database.



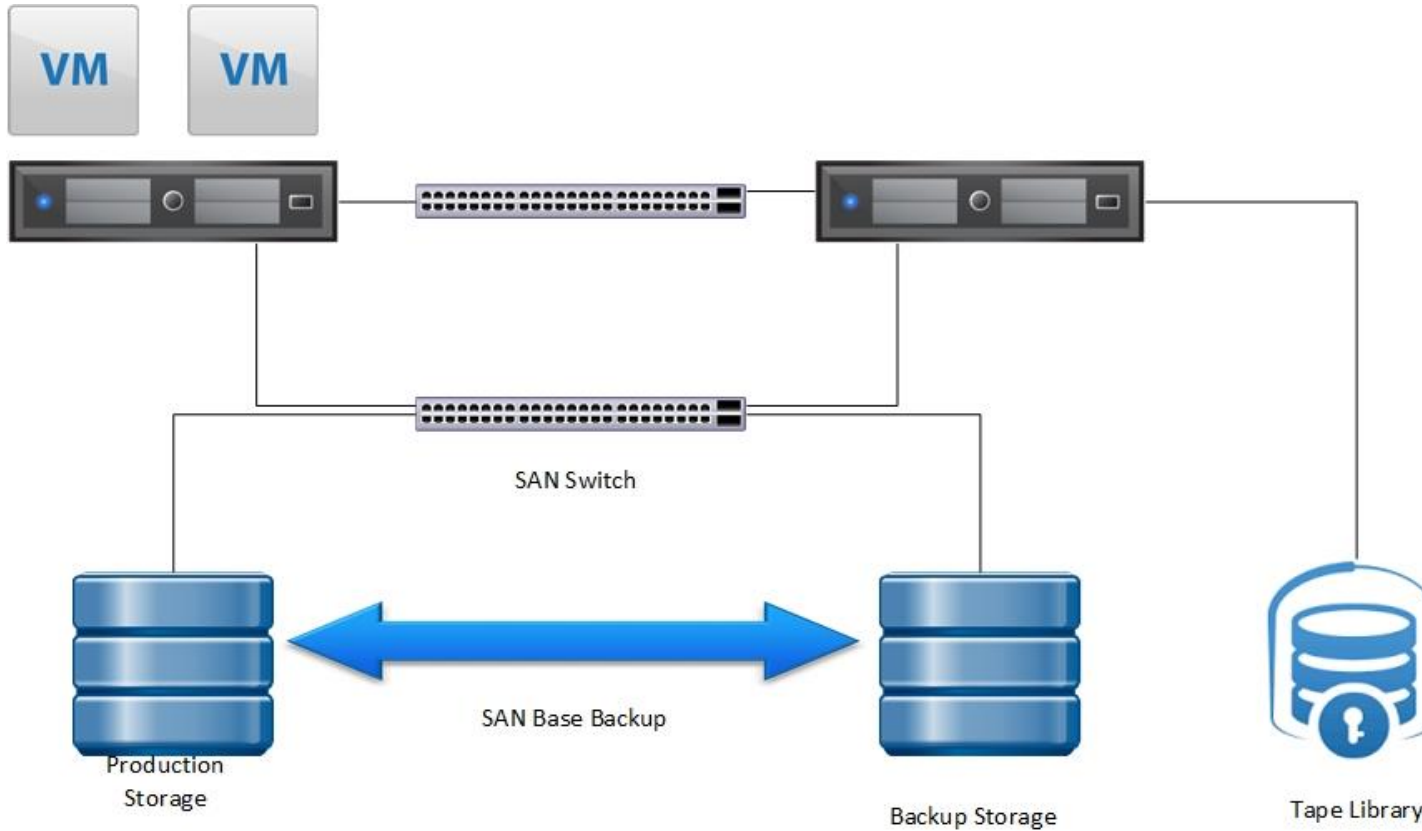
Install vCenter appliance.



Use proper name resolution method.



Use external PSC for large environment.



Best practices- Backup

Integrate with vCenter.

Configure SAN based backup.

D2D2T Backups.

Test your backup regularly.

Full & differential backups.

VMware Technical Support-Best Practices



Keep customer no and required details with safe place.



Upload/Provide diagram/s of the configuration(storage,cluster,host,network,,etc..).



Install & configure VMware support assistant.



Pre configured firewall/access rules for remote access software(webex).



vShpere Housekeeping

- Generate reports & check for warnings/errors (Ops Manager, rvtools).
- If you rename a virtual machine, trigger storage vMotion.
- Storage clean-up.
- Maintain change management.
- Remove & maintain snapshots(powercli).
- Update VM templates-Monthly.
- Maintain VM annotation & tags.

Na próxima aula...

Exploraremos o FreeNAS e suas funções.



* Nesta apresentação, foram utilizadas algumas imagens oriundas do VMUG