VMWARE

Virtual Center Client (doesn’t use certificate, check box and ignore on first setup)

* in the client the inventory is where most things that Ken uses (Host/Clusters, VMs & Templates (where templates are located to build new Virtual servers), DataStores
* Edit settings -> CD / DVD should always be in the client device unless being used

Host device – If you want to use CD / DVD

Network – connected /power on (don’t change subnet while on)

Currently on VMWARE 4.1 (500+ virtual servers)

3 clusters of physical servers (could be adding a 4th one soon)

Cluster 1 (@ data center – has 6 physical servers – Linux Boxes –using ESX Kernel

oaintvcc02 – (c class blade VM server) [ virtual center server]

hyperthreading – performance enhancement only available with Intel.

Types of DISCs

EMC DMX

EMC Clarian

HP ISCSI 🡪 used for testing

Vmotion – move Virtual machine between one server to another within cluster. No downtime required. Always mark high priority when moving something

Datastore Vmotion – Thin provisioned format – (Citrix only), Thick is normal

Virtual machines are just files on linux server with .vmdk ext (disk / c drive)

DRS – Automates moving via vmotion

HA – High Availability – Moves Virtual servers to new spot if server goes down (automated)

VFOGLIGHT – 3rd party monitoring tool Ken is setting currently setting up

Virtual servers are on a reboot schedule. Physical servers on not on a reboot schedule just as needed.

Clusters within a Datacenter are on the same network

Currently only adding to cluster 1 at Alverno, other 2 are too small

Multipath status – based on type of storage (ISCU or fiber channel)

Clusters must use shared storage, physical Servers must have non-shared storage

75%-80% CPU max per machine with one out

Templates for server build always setup as thick

2003 uses sysprep applying settings to windows 2003 server build

Setup new VM hardware–

Put servers in different racks

Only plug in one network cable initially (for Service Console) – makes it easier for setup

Consider failover when setting up NICs

Install OS using install disk

ISCSI setup – doesn’t use Vmotion connections are virtual (only 2 physical connections)

(Instructions for this is on the Wiki)

Service console, 2 Kernels

print full directory tree in windows – from command prompt:

dir /s /-p /o:gn > %temp%\Listing.txt

Citrix VM setup: (Citrix templates start CTX-\*) Use CTX-50X32TEMP as default

Follow instructions below with following exceptions: (Note: default pw …no all lower case)

Step 8: Guest Customization: need to customize for 2003 – different config file for 32 vs 64 bit

Select “Customize using an existing customixation specification”, W2003\_32bit\_Config

Follow these instructions: (for pw: cxp03mcd)

<https://corewiki.ssfhs.org/wiki_windows/index.php/Adding_Server_to_Citrix_Farm_From_Template>

**2008 VM setup:**

1. click on Inventory in address bar, select inventory, VMs and Templates
2. NOTE: (For Citrix see above) Find and right click W2008R2TEMP template and select: Deploy Virtual Machine from this template
3. Name and Location box: Put in Server Name, Select Location for VM
4. Host / Cluster: Select Cluster location
5. Note from A78: Template is based on DataCenter location so you will get Network interface warning. Ignore and move on
6. Resource Pool – just leave at base (Exchange and Operations Manager are specific for those) \* Only in clusters that have them.
7. Datastore : Select which datastore to use for server (Note: The ones named datastore is the local disk, you should avoid using those and rather choose from the VMF\* ones that are the ISCSi disk.
8. Disk Format: leave default of ‘Same format as source’. ‘Thin provisioned format’ – allows server to only use size that it needs with ability to grow. Danger is over-extending if several servers are setup that way. We don’t typically do that.
9. NOTE: (For Citrix see above) otherwise - Guest Customization: change to Customize using an existing Customization specification. Use W2008R2-Setup file.
10. Ready to Complete: leave as is and select Finish. See progress of build at bottom of screen.
11. power on machine – for 2008R2 it will run a sysprep and reboot. Don’t do anything before that.
12. Sometimes Virtual Tools will not install and you’ll need to do manually.
13. Update Network adapter (A78 only): Right-click server, select edit settings, select Network Adapter, Select ‘VM Network’ from network label dropdown.
14. Confirm CD ROM is NOT attached, edit settings, select CD/DVD Drive, set Device Type to ‘Client Device’

\*\*\* cntl+alt to get mouse back when rebooting

**ADD new drive:**

1. Right-click server, edit settings, select add, select hard disk, create new virtual disk(default)
2. Set disk size (10GB good if you are uncertain) can always add more later), leave other settings
3. Advance settings: leave default values, click finish

Add space: (Note – can’t extend drive on 2003 if page file is there)

**Linux VM setup:**

1. Right-click location, create new server, name, datastore, select linux 64-bit
2. Change Network and Adapter to the newest one.
3. Send Ross Subnet for IP address

[\\oaintfile2\Shared\Groups\Infrastructure\VMWare-Docs](file:///\\oaintfile2\Shared\Groups\Infrastructure\VMWare-Docs)

**Home > Inventory > Host and Clusters**

To see which physical server VM is located on: Select server and click on summary tab

To see Network setup: click on physical server, click on configuration tab, click on Networking under hardware.

To find out which ports the VMs are using unplug one at a time until it shows broken connection

Update VM tools and virtual hardware: Version 7 to 8 Upgrade

1. Connect to Server
2. Right click server, select Guest, Install VM tools
3. Select Interactive mode
4. Go to windows explorer on server, mounted to CD drive may need to start startup.exe or startup64.exe (may get pop-up about being in use, chooe ignore, c++ popup hit ok.)
5. reboot
6. shutdown server
7. right-click server select Upgrade Virtual Hardware

VM servers to update:

1. A78NTSLEEP – anytime, not in use
2. A78NTNEUR1 –
3. A78MFSLEEP01 / 02 – Anytime after 6 PM
4. A78NTADDC3 – check with Bobby
5. A78NTRTFAX – check with Monica
6. A78NTWITTEST / A78NTWITTSTIF – check with Ben
7. A78NTIBMTAP
8. A78NTSHORETEL

**Connect an ISO image:**

CD button on VM toolbar (located at top of virtual center when you are in console mode)

Connect to ISO image on local disk (This can be very slow!)

**Build VM without template:**

1. Build in cluster 1 of AIS (oailxvm01) (This is where the images are)
2. Right click, select ‘New Virtual Machine’
3. Configuration – select Typical
4. pick name
5. select storage (doesn’t really matter if you are migrating to A78
6. select OS
7. Network – change adapter to “VMXNET 3’
8. Set size as needed, leave provision as default
9. Finish
10. Edit setting on new server
11. Select CD/DVD drive
12. select Datastore ISO file, select VMFS5\_VNX58\_1. (This is where the ISO images are stored)

2008 32 bit – Image\_081120\_1449.iso

2008 64 bit – Image\_081120\_1414.iso

Add ISO files to datastore – go to datastores and clusters, browse cluster and use upload option.

1. select Connected and Connect at power on under device status
2. hit ok and power on VM
3. Install windows
4. Install VM tools (right-click VM select guest, install VM tools)
5. Get on Server, go to device manager, display adapters

replace Vmware SVGA II – right click, update driver

C:\program files\commmon files\vmare\drivers\wddm\_video

1. Change CD/DVD drive back to default
2. Shutdown server and migrate, change both host and datastore
3. update timezone, update server name, reboot

Sockets and Cores

1. Processor configuration
   1. Our standard will be to never exceed the number of Physical Processors with the number of virtual sockets
   2. Don’t exceed the number of physical cores with the number of cores per socket
   3. Rule of thumb VMWare suggests having the minimum number of virtual sockets and number of cores that supports the workload
   4. Standards can be exceeded based on need
   5. If we have SQL on the box, I would prefer no more than 4 cores per virtual sockets

Delete / Remove a VM

1. Unjoin the domain

2. Shutdown the server

3. Right-click server and delete from disk

**Request new LUN**

1. Send request to AIS storage

Subject: LUN request

I need a 1.85 TB LUN setup for the following ESXi servers at A78:

A78LXVM01

A78LXVM02

A78LXVM03

1. Follow Add new Datastore instructions below.

**Add new Datastore**

1. got to VM host and Clusters
2. select one of the host
3. go to configuration
4. rescan all… (Do this on each host, leave both checked)
5. make identification column big enough to see full storage names
6. add storage… (only need to do on one host and it will show up on all of them
7. select defaults (Just make sure to use S5)

f:\backups on OAINTVCB01

**Adding disk space:**

Don’t use more than 80% of space that you request otherwise you get error warnings in VM.

example: If you need 4TB, you need to request 5TB.

Note: You need to only use 50% if you are going to make snapshots.

**Physical to Virtual migration (P to V)**

Gotchas: Faxboard, special hardware, IP address changes, PCI (Credit Card) or DMZ machine

Change Linus password on old server to default

Check IP to see if it is static

Do conversion on oaintvcb01

machine should be powered on

name: servername.ssfhs.org

user:ssfhs\x15

Destination system info – leave as defaults

options – maybe change IP address if needed otherwise leave defaults

Remove HP programs from new VM, disable any HP services you can’t remove

Delete and add new NIC if using older version

**Deploy vendor supplied VM (OVF)**

1. Copy /extract files to my machine
2. In Virtual Center, select file Deploy from OVF
3. Take defaults

**HP Critical alert for ESXi servers at A78:**

<http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=c03543898&jumpid=em_alerts_us-us_Nov12_xbu_all_all_1971066_133696_bladesystemproliantservers_critical_008_0>

DESCRIPTION

While running VMware ESXi 5.0 on certain HP ProLiant server platforms, a Purple Screen of Death (PSOD) may occur during normal operation at runtime. The PSOD occurs when the PCC (Processor Clocking Control or Collaborative Power Control) communication between the VMware ESXi kernel (vmkernel) and the server BIOS does not function correctly. As a result, one or more PCPUs may become unavailable to the kernel for many seconds. When the vmkernel notices a PCPU is not available for an extended period of time, a purple diagnostic screen occurs.

RESOLUTION

As a workaround, disable the PCC by configuring the advanced option vmkernel.boot.

To disable PCC using a vSphere Client, perform the following steps:

1. Connect to the VMware ESXi host using the vSphere Client.
2. Click the Configuration tab.
3. In the Software menu, click Advanced Settings.
4. Select vmkernel.
5. Deselect the vmkernel.boot.usePCC option.
6. Restart the host for the change to take effect.

**Patch ESXi servers**

For each of the ESXi servers:

1. click update manager tab
2. click attach
3. select proper baselines
4. click attach
5. turn off HA (right click on cluster, edit settings, uncheck)
6. put server in maint mode, select yes to pop up
7. select update manager tab, click stage button
8. take defaults next,next,next, finish
9. click remediate button, all defaults
10. exit maint mode
11. repeat for each esxi box
12. turn on HA

**Firmware Updates**

1. Put ESXi server in maintanence mode, select yes to pop up
2. get password from ESXi folder in NPM
3. put in firmware DVD, or connect ISO via iLo
4. hook up to crash cart
5. reboot server
6. let it auto-load or do it manually
7. it will prompt for a 2nd reboot
8. if auto-load it will pop drive before 2nd reboot
9. if manual you need to pop drive yourself

Disk Latency

Just a quick note on disk latency. I don’t have any formal information telling me what is good latency and bad. But I have been told by a number of VMWare sources that anything over 20ms latency on disk could be an issue. I think the real concern would be if we are tracking that consistently throughout the day. I know there will be spikes particularly during backup times and that should be expected. I really haven’t looked thouroughly at each site. I did take a quick look around at all our sites just to give me a ballpark where everyone is. If someone wants to look around and see if any formal documents can be found discussing this I would be happy to look at them as well for my benefit as well.

Keep in mind Virtual Center is not really meant as a monitoring tool for disk but it can give us some basic info. What I do is click on an ESXi host, click the performance tab, click the advanced button, click on chart option and pick disk. I usually look at the past day and click ok and it will give you some basic info. Once again there is some additional data you can pull but it is fairly limited to what you will get but this at least gives us some basic latency numbers.

Deploy a server from VMDK files – Copy files to local C drive on your workstation if there is room.

In Virtual Center select file, Deploy OVF template.

**Raw Disk Map (RDM) example request**

I need a 2.5 TB raw disk map setup for the following ESXi servers at A78:

A78LXVM01

A78LXVM02

A78LXVM03

Note: (This Raw disk map will need to grow in the future because they need to keep 7 years’ worth of archive data.  I estimate that this will give them enough space for the 1st year of archiving.)

**To add RDM to VM**

1. Verify you can see storage on all servers in cluster
2. Configuration tab, select ‘add storage’, hit next
3. If you see it cancel and check other servers
4. If you don’t see it, cancel and select ‘Rescan all’ and repeat from #2
5. After you can see it from all servers, go to VM, edit settings, add, disk, raw disk map
6. select store with virtual machine
7. select compatibility mode – select Virtual (for under 2TB, physical for over 2TB)
8. Advanced Options – leave defaults

**To Remove RDM from VM**

1. Note last part of NAA to provide to storage team if giving back RDM (edit setting, select RDM, manage paths) – This also helps if you have 2 RDM’s the same size so you know which one to delete.
2. Select Remove
3. Select delete from disk option. This will remove the pointer tied to the storage location of the VM.

**LUN mapping for A78 Disks**

HP01 = LUN06 \*\* old iSCSI

HP02 = LUN07 \*\* old iSCSI

HP03 = LUN03

HP04 = LUN04

HP05 = LUN08 \*\* old iSCSI

**VCOPS**

10.90.11.131 (oailxvcopui) – login with ssfhs\x15

<https://oailxvcopui/vcops-custom/> - login with just x15

vSphere web client - <https://oaintvcs01:9443/>

**Clone a server**

1. Change Linus to default PW
2. Unjoin the domain
3. Shutdown server
4. Clone server
5. Run Sysprep on new server: C:\windows\system32\sysprep\sysprep.exe
6. Uninstall SCCM client – see general doc for instructions
7. Reinstall SCCM client

**Steve’s notes from Ken**

[\\ssfhs\shared\OShared\Groups\Infrastructure\documentation\VMware\Notes and Tasks from Ken.docx](file:///\\ssfhs\shared\OShared\Groups\Infrastructure\documentation\VMware\Notes%20and%20Tasks%20from%20Ken.docx)

**VM Resize info**

CPU resizing report from VCOPS. If Utilization is > 70% add 1 CPU to suggested number.

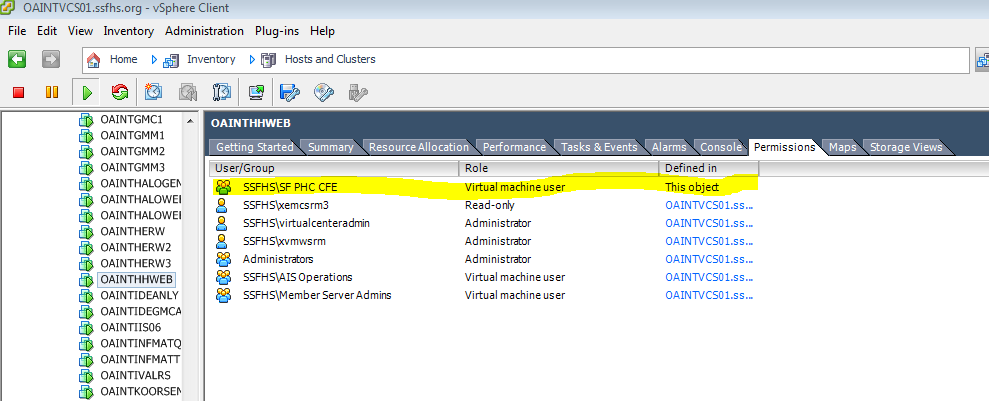
Avoid resizing on CLUSTER 3 & 5

Start resizing on Cluster 2 next

Change focus to cluster 2 & 4.

**Vmware Security**

Can be done at VM level on Permissions tab



provision storage

**S:\Groups\Storage\EMC\EMC Software Downloads\VNX5600\_8925/VNX5600\_8925.xml**

**S:\Groups\Storage\EMC\EMC Software Downloads\VNX5800\_2297/VNX5800\_2297.xml**

**S:\Groups\Storage\EMC\EMC Software Downloads\VNX7500/VNX7500\_2138.xml**

SRM – Site recovery manager, manages storage failover

LUNS with DR at end of name are SRM LUNS

EMC – SRM – another product with same acronymn monitoring of EMC storage

**Install Virtual Center Client on workstation**

1. type vc server into browser – oaintvcs01
2. select yes to warning screen
3. select download client and follow install instructions

Troubleshooting

  I followed this article:  <http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1028351>.

  It linked to this article which showed the actual steps to take:  <http://kb.vmware.com/selfservice/search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=1003490>.

  And I found this indicating that in almost all cases there is no effect on VM’s and hosts other than they go into a disconnected state temporarily:  <http://kb.vmware.com/selfservice/search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=1003490>.

  See how I said \_almost\_ all cases?  The last entry leads to this link, where if the hosts or LUN’s are in an All Paths Dead (APD) state, you’ll likely have to reboot:  <http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1030980>

**Oailxvm16 is displaying memory warnings both in vmware and on the server itself for dimm 6**.

I verified that OAILXVM16 does not have a memory problem by connecting to the iLO port and looking at the Integrated Management Log, the iLO Event Log, and the System Information.

After that, in Virtual Center, I navigated to the Hardware Status tab for OAILXVM14, changed the view to System event log, and clicked Reset event log.

After that, I changed the view to Alerts and warnings, and clicked the Reset sensors  link.

EVENTUALLY... the hardware alert status goes away.

**Note – Firmware is always a good step before troubleshooting strange issues.**

The entries in the system event logs were from last year, and in some cases even older, so I felt confident in clearing them out.