De VMware Metashell (vimsh) Nader Bekeken

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Wie?

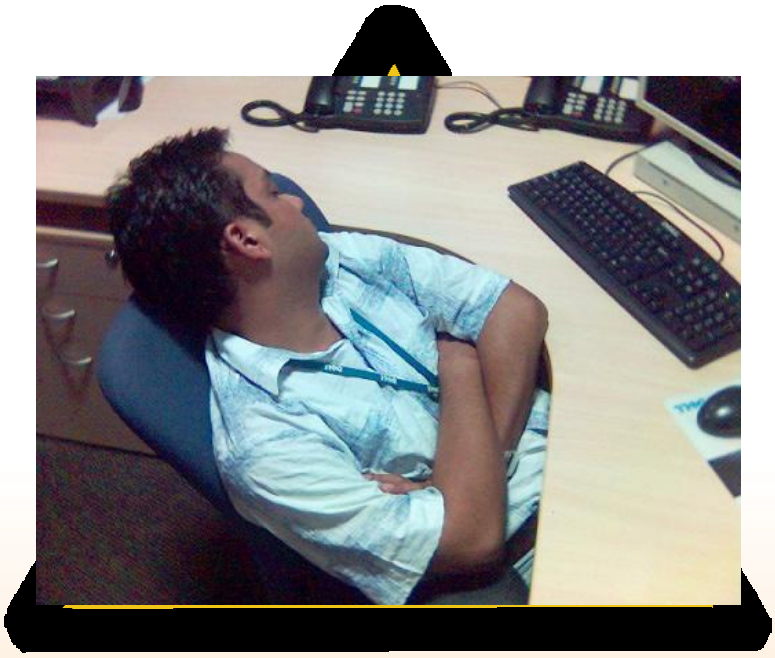
- Viktor van den Berg
  - Product Manager / Technical Trainer XTG
  - VMware Certified Instructor
  - Citrix Certified Instructor XenServer
  - Parallels Certified Instructor

Wie?

- Xpert Training Group
  - AppSense Trainingen
  - Cisco Trainingen
  - Citrix Authorized Learning Center (CALC)
  - Microsoft Trainingen
  - Parallels Authorized Training Partner (PATP)
  - Vizioncore Training Partner
  - VMware Trainingen

Inhoud

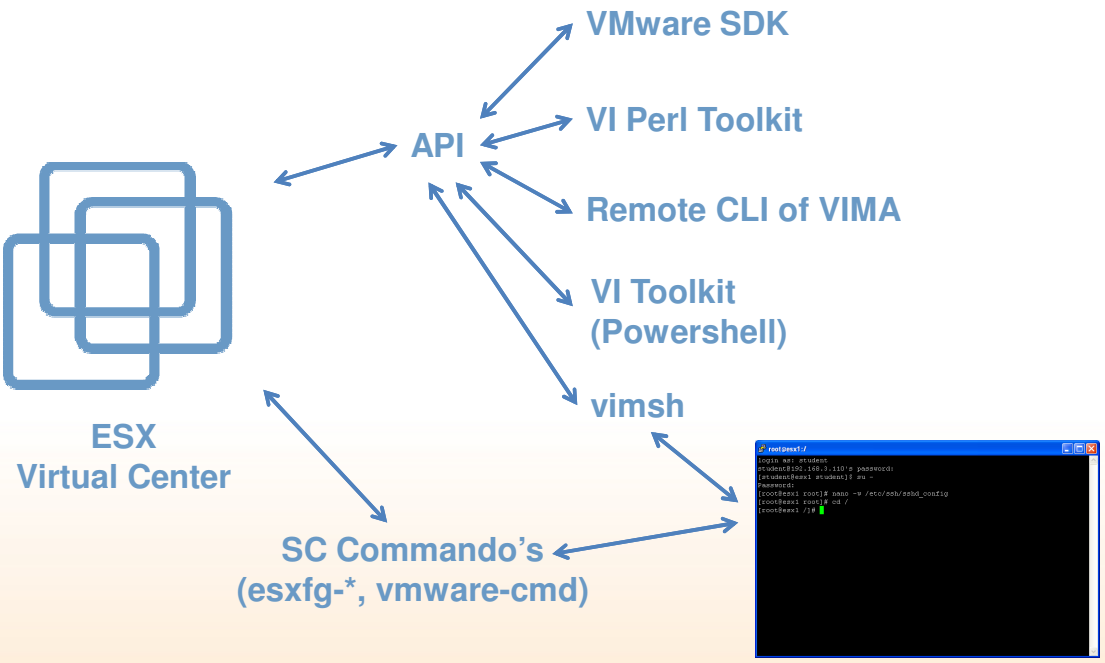
- Programmeer en scripting Mogelijkheden
- Scripting mogelijkheden
- Wat is “vimsh”
- Een eerste voorbeeld: networking
- Een ander voorbeeld: storage
- Real life toepassing
- Vragen…



The VMware Metashell (vimsh) is officially not supported by VMware


Programmeer en scripting mogelijkheden
the official dutch
vmug

Scripting en programming mogelijkheden




Wat is “vimsh”
the official dutch
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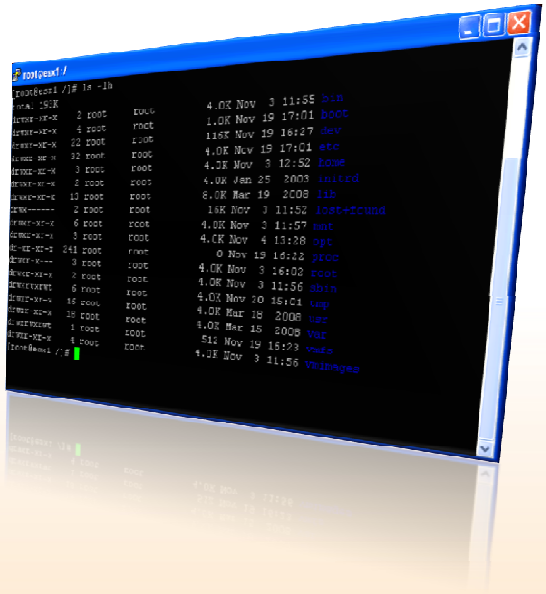
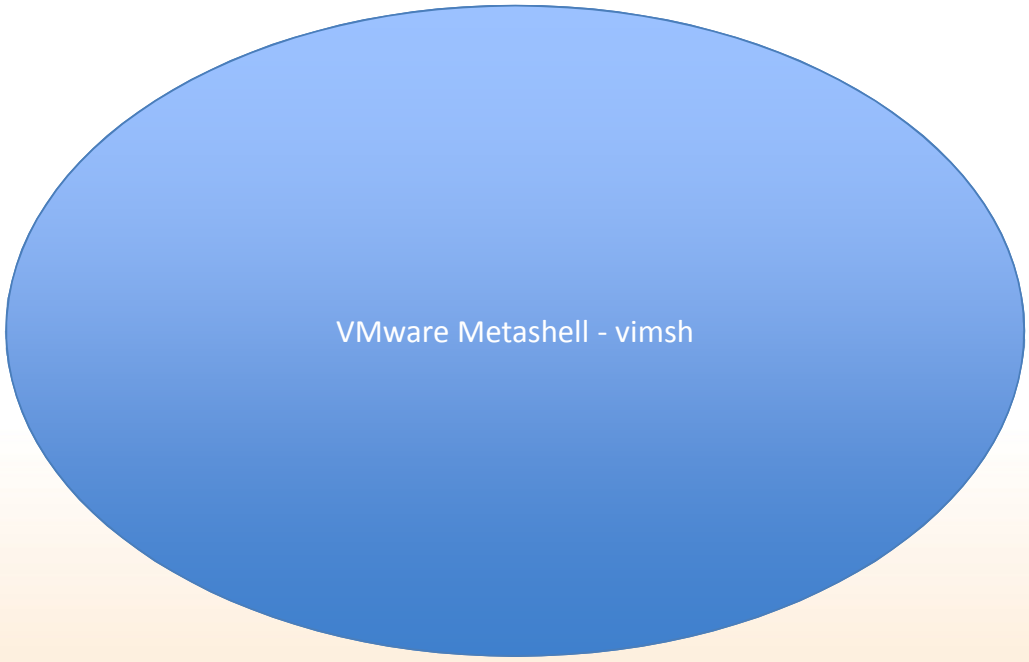
De vimsh…

- …is onderdeel van het Service Console
- …is een interactieve shell
- …praat tegen de API van de ESX host
- …kun je gebruiken voor:
  - Unattended Installatie
  - Troubleshooting
  - CLI voor wat niet mogelijk is met esxcfg / overige SC commando's



Plaats van de VMware Metashell



Inloggen op de VMware Metashell

- Inloggen op het Service Console
- Zorg dat je root gebruiker bent
- Gebruiken van de shell:
  - `[root@esx1] vimsh`
  - `[root@esx1] vmware-vimsh`
  - `[root@esx1] vimsh -n -e`
  - `[root@esx1] vmware-vim-cmd`

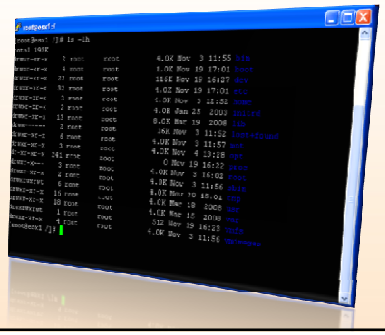
Vimsh Commands

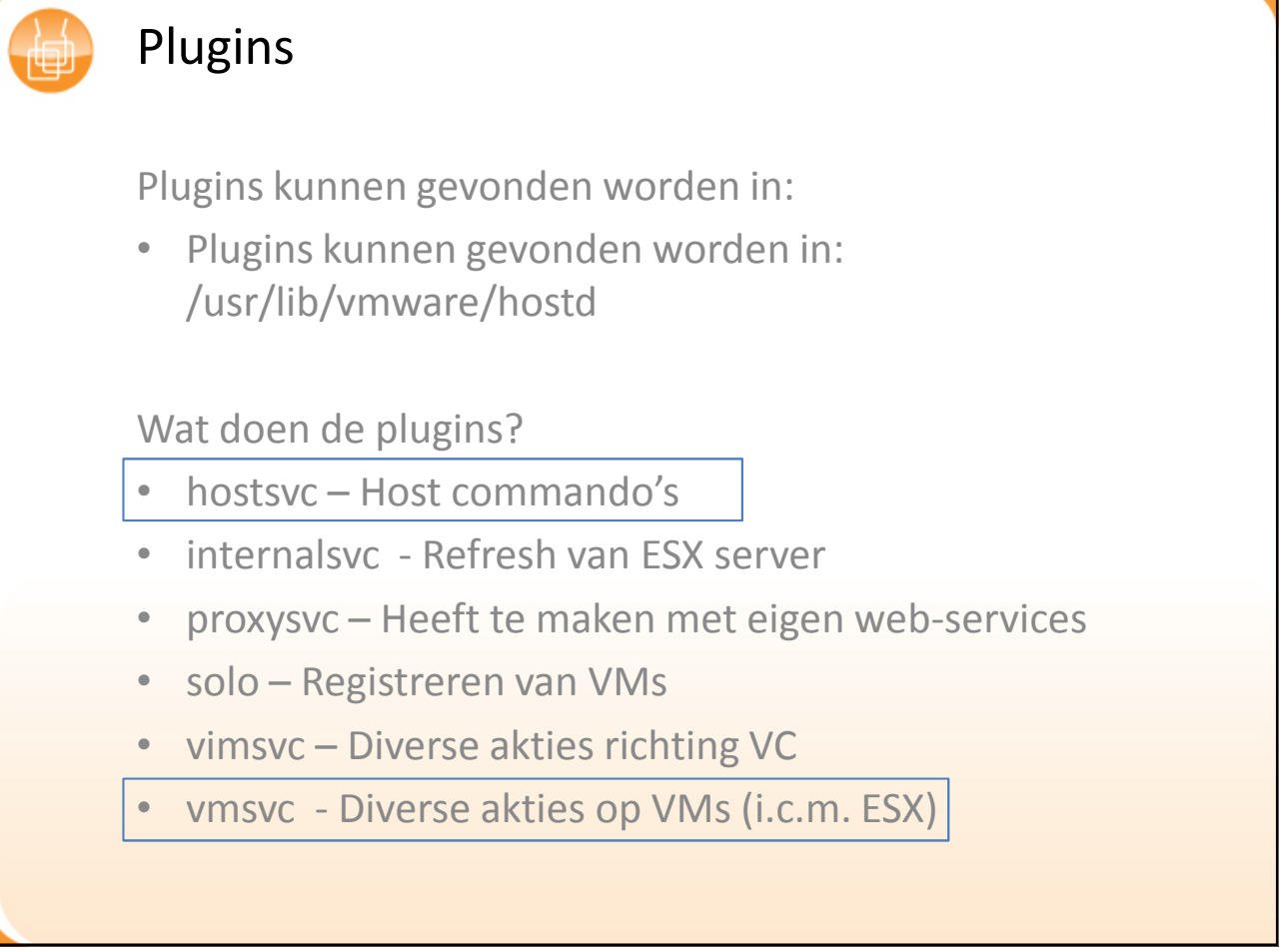
[root@esx1 hostd]# vimsh
[/]$?

hostsvc/	vmsvc/	csinfo	help	puload
internalsvc/	?	csls	pinfo	puse
proxysvc/	argtype	csuimport	pload	quit
solo/	cls	echo	ploadpath	sleep
vimsvc/	csimport	exit	pls	source

Twee typen commands:

- Shell commands
- Plugins





Plugins

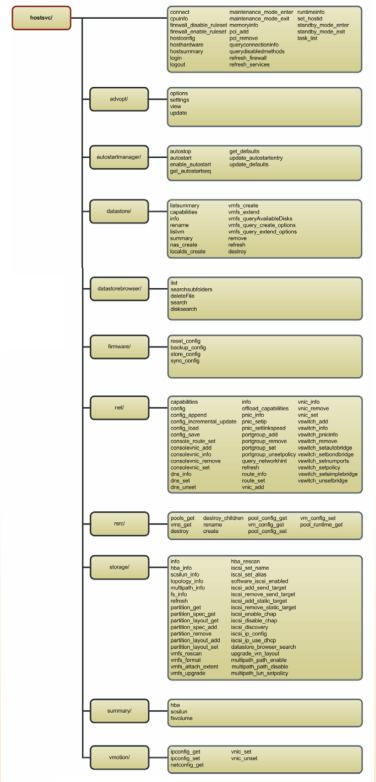
Plugins kunnen gevonden worden in:

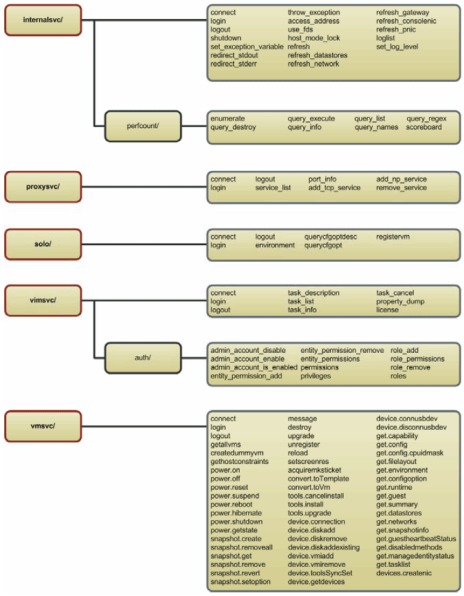
- Plugins kunnen gevonden worden in: /usr/lib/vmware/hostd

Wat doen de plugins?

- hostsvc – Host commando's
- internalsvc - Refresh van ESX server
- proxysvc – Heeft te maken met eigen web-services
- solo – Registreren van VMs
- vimsvc – Diverse akties richting VC
- vmsvc - Diverse akties op VMs (i.c.m. ESX)

Plugins





http://knowledge.xtravirt.com/white-papers/scripting.html


Een eerste voorbeeld: Networking
the official dutch
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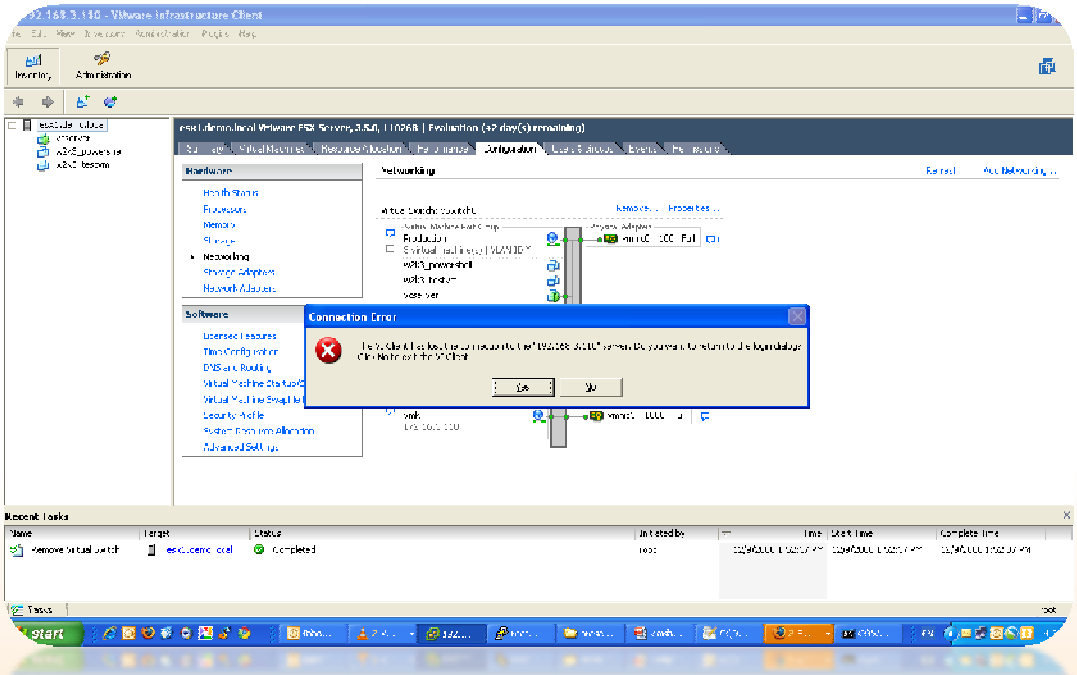
Een eerste voorbeeld

- Aanmaken virtuele switch
- Koppelen van vmnic1
- Aanmaken portgroup “production”

vimsh	esxcfg-
[root@esx1 hostd]# vimsh [/]$ /hostsvc/net/vswitch_add vSwitch1 [/]$ /hostsvc/net/portgroup_add vSwitch1"production" [/]$ /hostsvc/net/vswitch_setbondbridge vSwitch1 --vsbridge-bond-pnics=vmnic1 [/]$ /hostsvc/net/vswitch_setpolicy vSwitch1 --nicorderpolicy-active=vmnic1	[root@esx1 /]# esxcfg-vswitch --add vSwitch1 [root@esx1 /]# esxcfg-vswitch --add-pg=production vSwitch1 [root@esx1 /]# esxcfg-vswitch --link=vmnic1 vSwitch1 [root@esx1 /]# service mgmt-vmware restart

Na “service vmware-mgt-restart”…

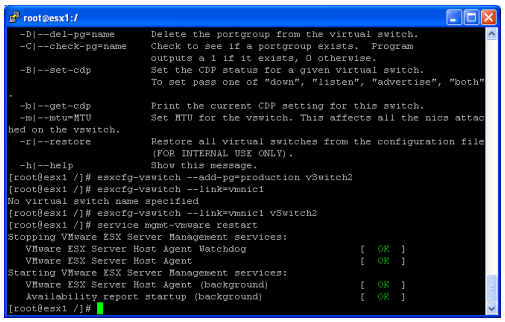


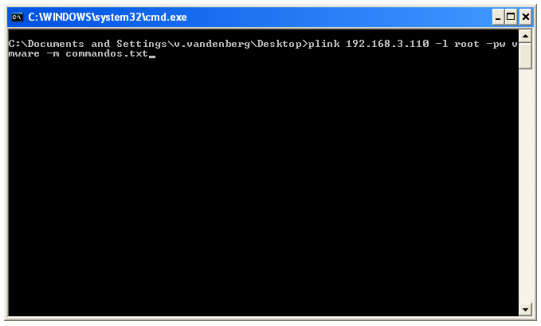
Verschillen

vimsh	esxcfg-
De commando's worden uitgevoerd en zijn daarna direct zichtbaar in de VI Client	De commando's worden direct uitgevoerd maar zijn niet zichbaar in de VI Client service mgmt-vmware restart noodzakelijk
In dit voorbeeld werd een vimsh sessie geopend, waarna de commando's uitgevoerd kunnen worden.	De commando's werden uitgevoerd in het Service Console vanuit de bash shell
Alles wordt gelogd in de hostd.log.	Niet alles wordt gelogd in o.a. hostd.log.

→ Je kunt --help geven per commando!

Uitvoeren van de commando's





Putty

- esxcfg
- vimsh
- vimsh –n –e
- vmware-vim-cmd

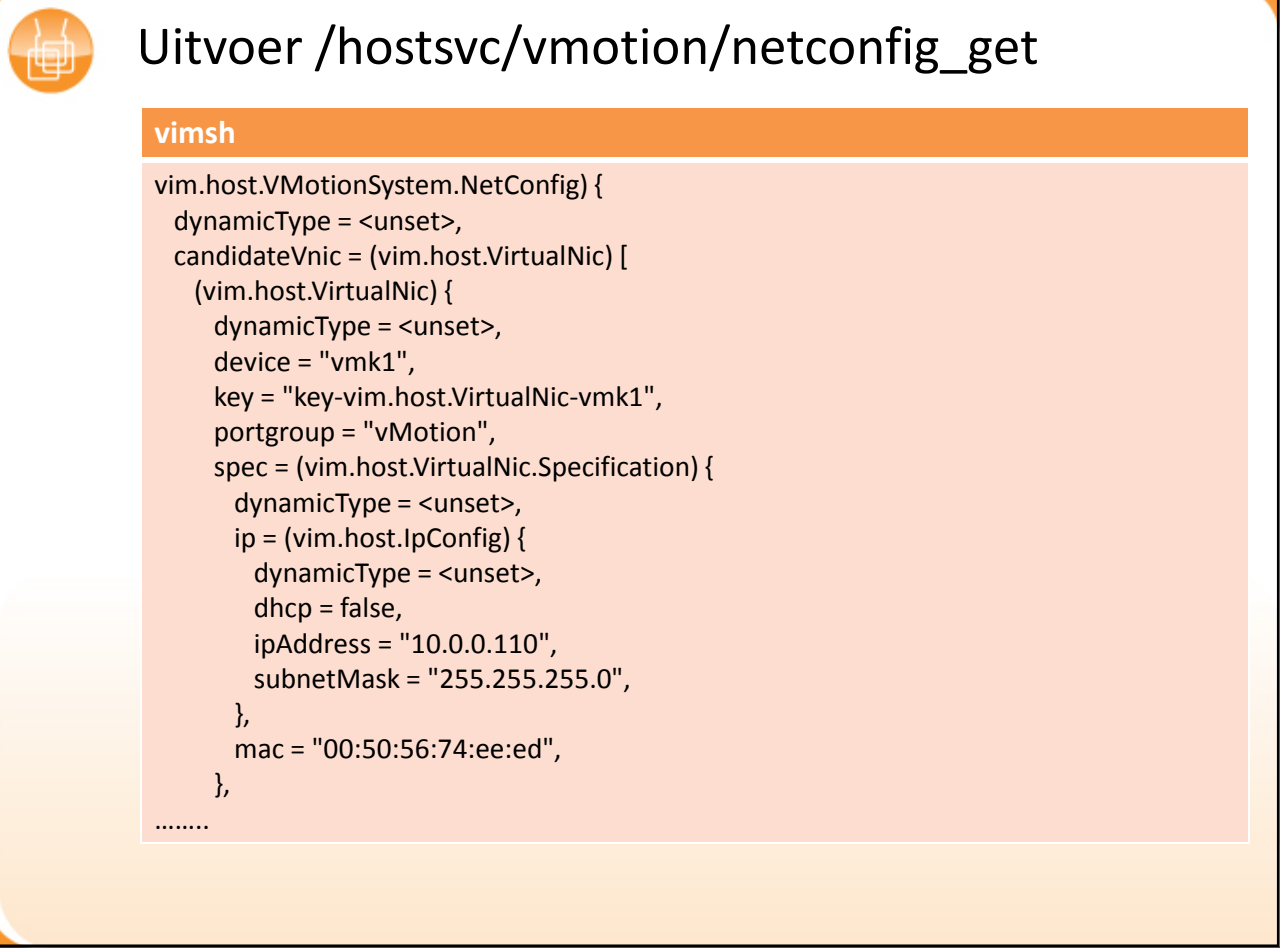
Plink

- plink.exe [hostname] –l root –pw vmware –m filename.txt

Vervolg op ons voorbeeld…

vimsh

```
[root@esx1 hostd]# vimsh
[/]$ /hostsvc/net/vswitch_add vSwitch1
[/]$ /hostsvc/net/portgroup_add vSwitch1 "production"
[/]$ /hostsvc/net/vswitch_setbondbridge vSwitch1 --vsbridge-bond-pnics=vmnic1
[/]$ /hostsvc/net/vswitch_setpolicy vSwitch1 --nicorderpolicy-active=vmnic1
[/]$ /hostsvc/net/portgroup_add vSwitch1 vMotion
[/]$ /hostsvc/net/vnic_add --ip-address=10.0.0.110 --ip-subnet=255.255.255.0  vMotion
[/]$ /hostsvc/vmotion/netconfig_get
```



Uitvoer /hostsvc/vmotion/netconfig_get

vimsh

```
vim.host.VMotionSystem.NetConfig) {
  dynamicType = <unset>,
  candidateVnic = (vim.host.VirtualNic) [
    (vim.host.VirtualNic) {
      dynamicType = <unset>,
      device = "vmk1",
      key = "key-vim.host.VirtualNic-vmk1",
      portgroup = "vMotion",
      spec = (vim.host.VirtualNic.Specification) {
        dynamicType = <unset>,
        ip = (vim.host.IpConfig) {
          dynamicType = <unset>,
          dhcp = false,
          ipAddress = "10.0.0.110",
          subnetMask = "255.255.255.0",
        },
        mac = "00:50:56:74:ee:ed",
      },
……..
```

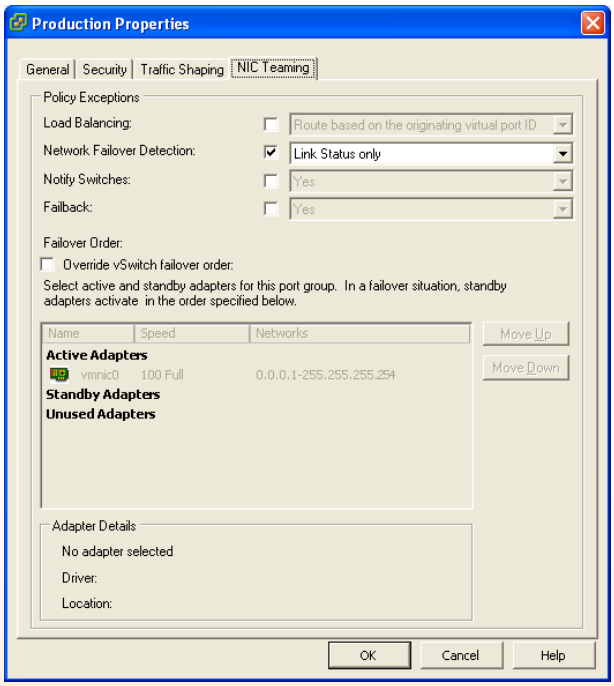
Vervolg op ons voorbeeld…

vimsh

```
[root@esx1 hostd]# vimsh
[/]$ /hostsvc/net/vswitch_add vSwitch1
[/]$ /hostsvc/net/portgroup_add vSwitch1 "production"
[/]$ /hostsvc/net/vswitch_setbondbridge vSwitch1 --vsbridge-bond-pnics=vmnic1
[/]$ /hostsvc/net/vswitch_setpolicy vSwitch1 --nicorderpolicy-active=vmnic1
[/]$ /hostsvc/net/portgroup_add vSwitch1 vMotion
[/]$ /hostsvc/net/vnic_add --ip-address=10.0.0.110 --ip-subnet=255.255.255.0 vMotion
[/]$ /hostsvc/vmotion/netconfig_get
[/]$ /hostsvc/vmotion/vnic_set vmk1
```

Vimsh en networking

-vswitch_setpolicy
--securepolicy-promisc
--securepolicy-macchange
--securepolicy-forgedxmit
--shapingpolicy-enabled
--shapingpolicy-average-bandwidth
--shapingpolicy-peak-bandwidth
--shapingpolicy-burst-size
…



[/]$ /hostsvc/net/vswitch_setpolicy vSwitch2 --nicorderpolicy-active=vmnic1

Aandachtspunten

Soms kan er geen traffic door de fysiek verzonden worden, de workaround voor dit is:

- esxcfg -vswitch - -unlink=vmnic1
- esxcfg-vswitch - - link=vmnic1

Een ander nuttig commando is:

- /hostsvc/net/refresh
- /internalsvc/refresh_network


Een ander voorbeeld: Storage
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Storage en vimsh

Ook op het gebied van storage kan vimsh handig zijn:

[/]$ /hostsvc/summary/hba

```
Device    Type                Driver       PCI Id    Model
vmhba0    BlockHba            mptscsi_2xx      01:00.0   LSI1068E
vmhba1    FibreChannelHba     qla2300_707_vmw   0a:00.0   QLA2432
```

[/]$ /hostsvc/summary/fsvolume

```
Name          Type       SubType   Path                                  Device
Capacity      Mode
esx1:storage1   VmfsVolume   VMFS     /vmfs/volumes/49269f6e-1d4a621d-
2f87-001d096864a6   vmhba0:0:0:3                  65229815808   readWrite

netapp_nfs_iso   NasVolume    NFS      /vmfs/volumes/db27211a-052d657a
172.16.100.201:/vol/netapp_nfs_iso   42949672960   readWrite
```

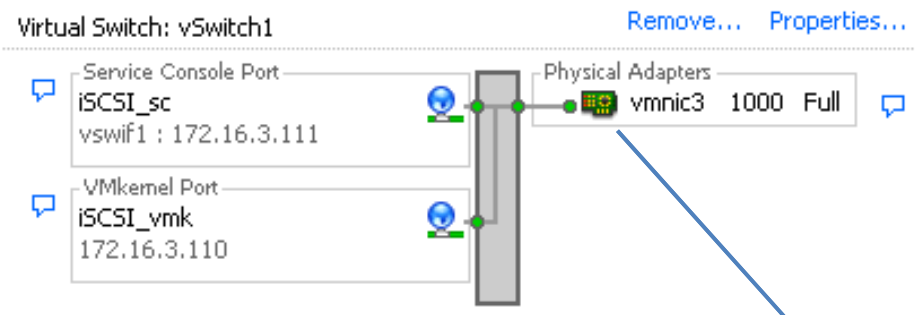
Storage en vimsh

[/]$ /hostsvc/summary/hba

```
[/]$ /hostsvc/summary/hba
Device      Type          Driver       PCI Id    Model
vmhba0   BlockHba       mptscsi_2xx     01:00.0   LSI1068E
vmhba1   FibreChannelHba   qla2300_707_vmw   0a:00.0   QLA2432
[/]$ /hostsvc/storage/hba_rescan vmhba1
[/]$ /hostsvc/storage/vmfs_rescan vmhba1
```

→ Is ook mogelijk met esxcfg-rescan vmhba1 ;)

Software iSCSI

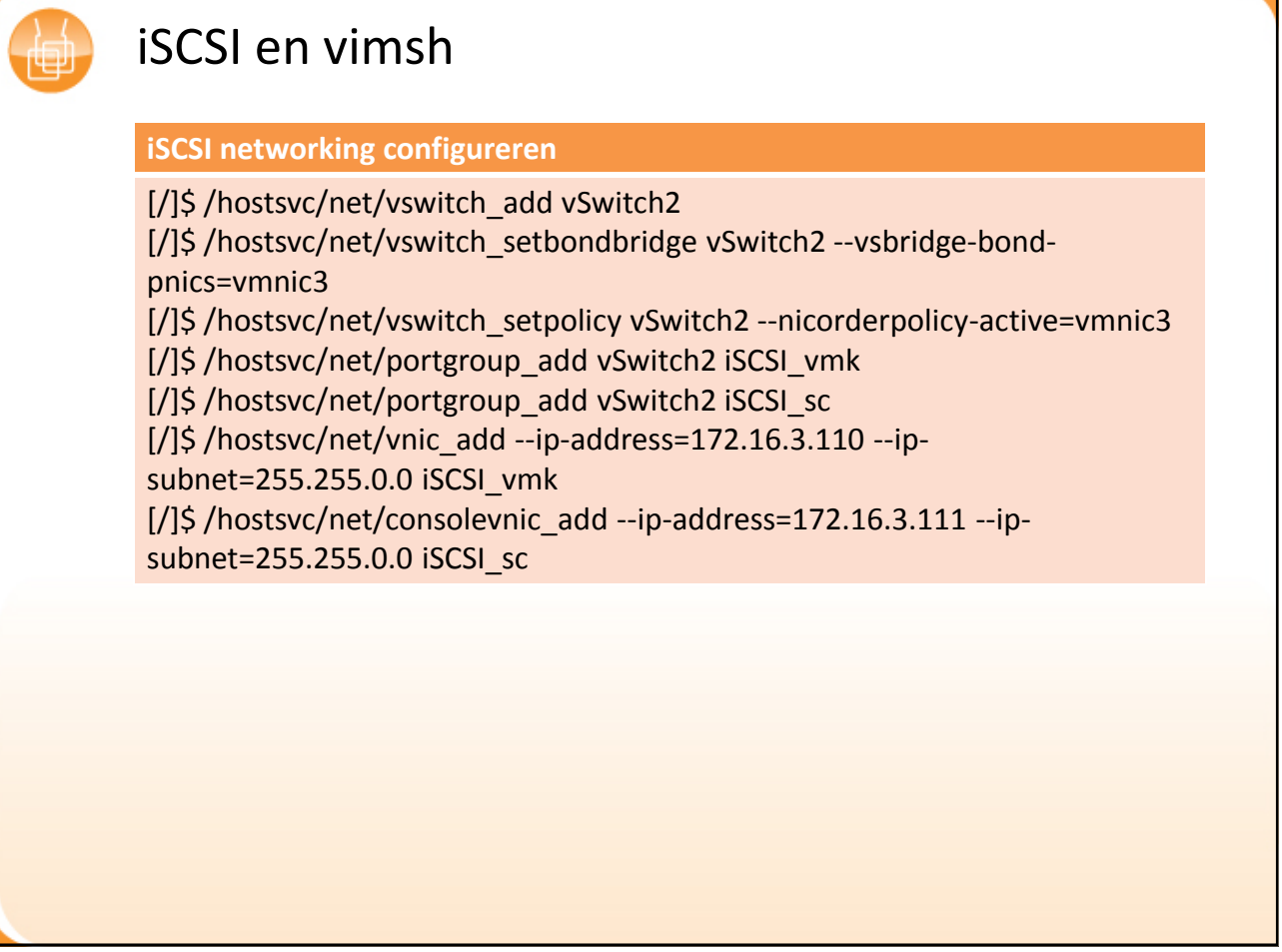


Bij software iSCSI

- Heb je een SC port en VM Kernel port nodig
- Deze poorten moeten het storage array kunnen benaderen
- De software iSCSI initiator adapter moet geconfigureerd worden: vmhba32

NetApp™

iSCSI / NFS



iSCSI en vimsh

iSCSI networking configureren

```
[/]$ /hostsvc/net/vswitch_add vSwitch2
[/]$ /hostsvc/net/vswitch_setbondbridge vSwitch2 --vsbridge-bond-
pnics=vmnic3
[/]$ /hostsvc/net/vswitch_setpolicy vSwitch2 --nicorderpolicy-active=vmnic3
[/]$ /hostsvc/net/portgroup_add vSwitch2 iSCSI_vmk
[/]$ /hostsvc/net/portgroup_add vSwitch2 iSCSI_sc
[/]$ /hostsvc/net/vnic_add --ip-address=172.16.3.110 --ip-
subnet=255.255.0.0 iSCSI_vmk
[/]$ /hostsvc/net/consolevnic_add --ip-address=172.16.3.111 --ip-
subnet=255.255.0.0 iSCSI_sc
```

iSCSI en vimsh

Nu de storage configureren

```
[/]$ /hostsvc/firewall_enable_ruleset  swISCSIClient
[/]$ /hostsvc/storage/software_iscsi_enabled true
[/]$ /hostsvc/storage/iscsi_set_name vmhba32 iqn.2004-01.nl.xtg:demo-
server1
[/]$ /hostsvc/storage/iscsi_add_send_target vmhba32 172.16.100.200
[/]$ /hostsvc/storage/iscsi_add_send_target vmhba32 172.16.100.201
[/]$ /hostsvc/storage/hba_rescan vmhba32
```

Hierna LUNs aanmaken!

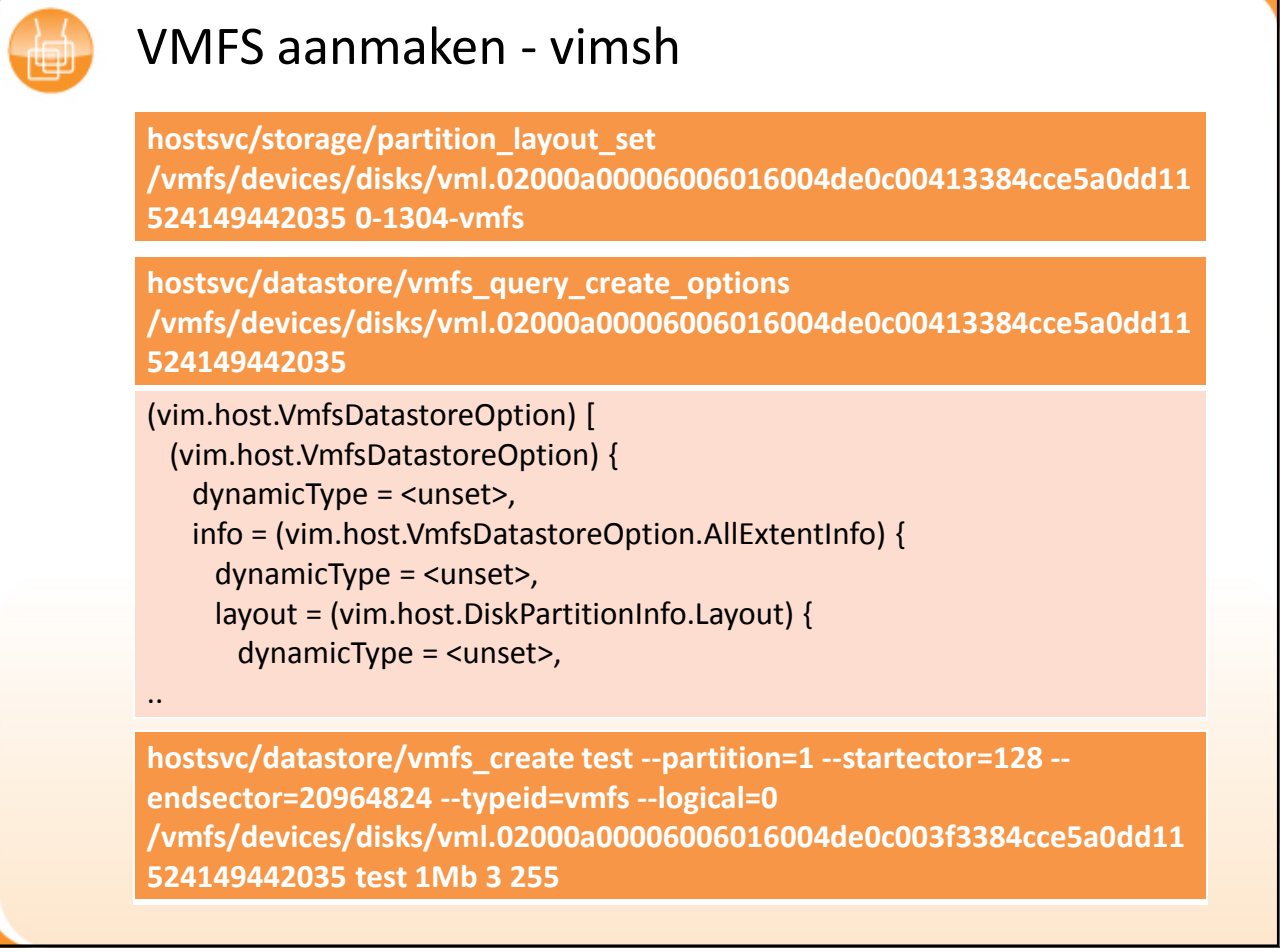
VMFS aanmaken - vimsh

/hostsvc/summary/scsilun1

```
vmhba1:2:10   disk   DGC RAID 5
02000a00006006016004de0c00413384cce5a0dd11524149442035   vmhba1
```

hostsvc/storage/partition_get /vmfs/devices/disks/vml.02000a00006006016004de0c00413384cce5a0dd11524149442035

```
(vim.host.DiskPartitionInfo) {
  dynamicType = <unset>,
  deviceName =
"/vmfs/devices/disks/vml.02000a00006006016004de0c00413384cce5a0dd11
524149442035",
  spec = (vim.host.DiskPartitionInfo.Specification) {
    dynamicType = <unset>,
    chs = (vim.host.DiskDimensions.Chs) {
      dynamicType = <unset>,
-------> cylinder = 1305, <-------
      head = 255,
      sector = 63,
    },
```



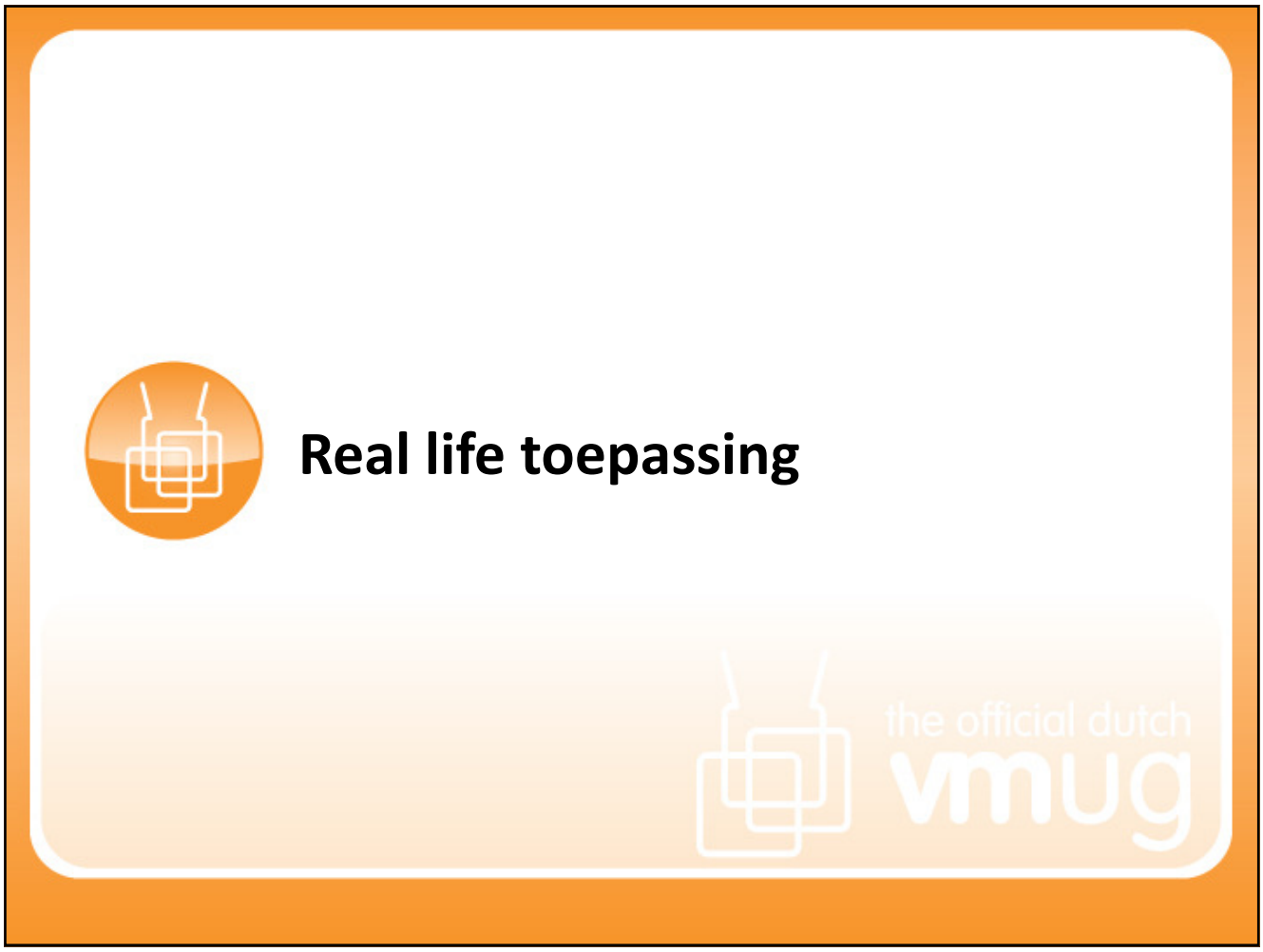
VMFS aanmaken - vimsh

hostsvc/storage/partition_layout_set /vmfs/devices/disks/vml.02000a00006006016004de0c00413384cce5a0dd11524149442035 0-1304-vmfs

hostsvc/datastore/vmfs_query_create_options /vmfs/devices/disks/vml.02000a00006006016004de0c00413384cce5a0dd11524149442035

```
(vim.host.VmfsDatastoreOption) [
  (vim.host.VmfsDatastoreOption) {
    dynamicType = <unset>,
    info = (vim.host.VmfsDatastoreOption.AllExtentInfo) {
      dynamicType = <unset>,
      layout = (vim.host.DiskPartitionInfo.Layout) {
        dynamicType = <unset>,
..
```

hostsvc/datastore/vmfs_create test --partition=1 --startector=128 --endsector=20964824 --typeid=vmfs --logical=0 /vmfs/devices/disks/vml.02000a00006006016004de0c003f3384cce5a0dd11524149442035 test 1Mb 3 255


Real life toepassing
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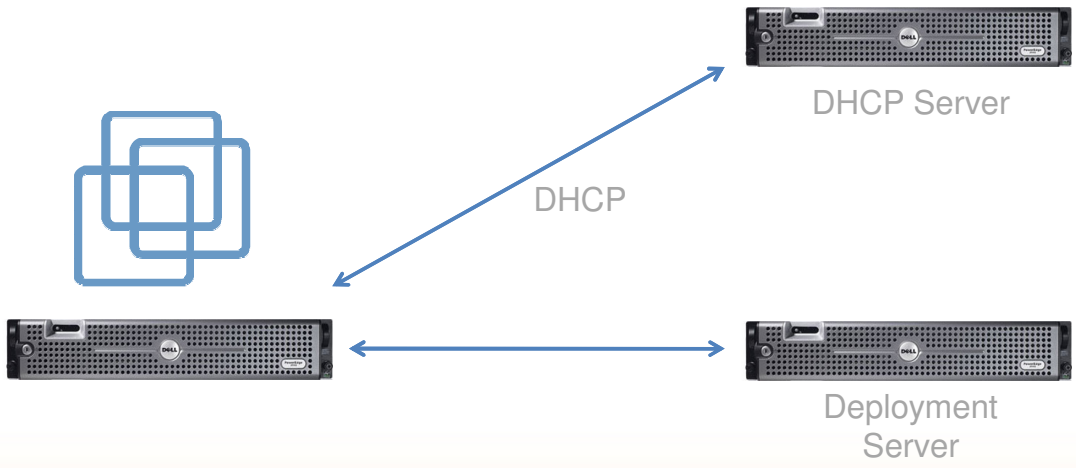
PXE-boot unattended deployment



Opties:

- Meestal wordt een volledig script gebruikt
- Ook is het mogelijk om achteraf te configuratie te pushen met plink.exe!

Voorbeeld script

```
# Regional Settings
keyboard us
lang en_US
langsupport --default en_US
timezone Europe/Amsterdam

# Installation settings
skipx
mouse none
firewall --disabled
rootpw vmware
reboot
install
url --url http://[hostname]/esx/esx35u2/

# Driver disks

# Load drivers

# Bootloader options
bootloader --location=mbr --driveorder=sda
```

Voorbeeld script

```
# Your postinstall script goes here!
touch /etc/default/esxcfg.sh
chmod 777 /etc/default/esxcfg.sh
cat > /etc/default/esxcfg.sh << EOF

#!/bin/sh
sleep 1m

echo "ADD VIRTUAL SWITCHES"

/usr/bin/vimsh -n -e "hostsvc/net/vswitch_add vSwitch1"
/usr/bin/vimsh -n -e "hostsvc/net/vswitch_add vSwitch2"
/usr/bin/vimsh -n -e "hostsvc/net/vswitch_add vSwitch3"

/usr/bin/vimsh -n -e "hostsvc/net/portgroup_add vSwitch1 Production"
/usr/bin/vimsh -n -e "hostsvc/net/portgroup_add vSwitch2 storage_VMK"
/usr/bin/vimsh -n -e "hostsvc/net/portgroup_add vSwitch2 iSCSI_SC"

echo "PHYSICAL NETWORK CONFIGURATION"

/usr/bin/vimsh -n -e "hostsvc/net/vswitch_setbondbridge vSwitch1 --vsbridge-bond-
pnics=vmnic1"
```

Handige links

Vimsh:

- http://knowledge.xtravirt.com/ (Goede vimsh whitepaper)
- http://www.yellow-bricks.com/ (Duncan Epping)
- http://www.l4l.be/docs/virt/vimsh.php (Frederik Vos)

Unattended deployment:

- http://www.ultimatedeployment.org/ (Carl Thijssen)
- http://www.jume.nl (Bouke Groenescheij, removehba script)


Zijn er vragen?
Bedankt voor de aandacht!
the official dutch
vmug