

Stateless ESXi with VMware Auto Deploy



Rod Mach - rod@hiperlogic.com



Deploy 1 or a 1000 Hosts. Same Effort.



LOSE THE LOCAL DISK



IDENTICAL AND CONSISTENT HOSTS



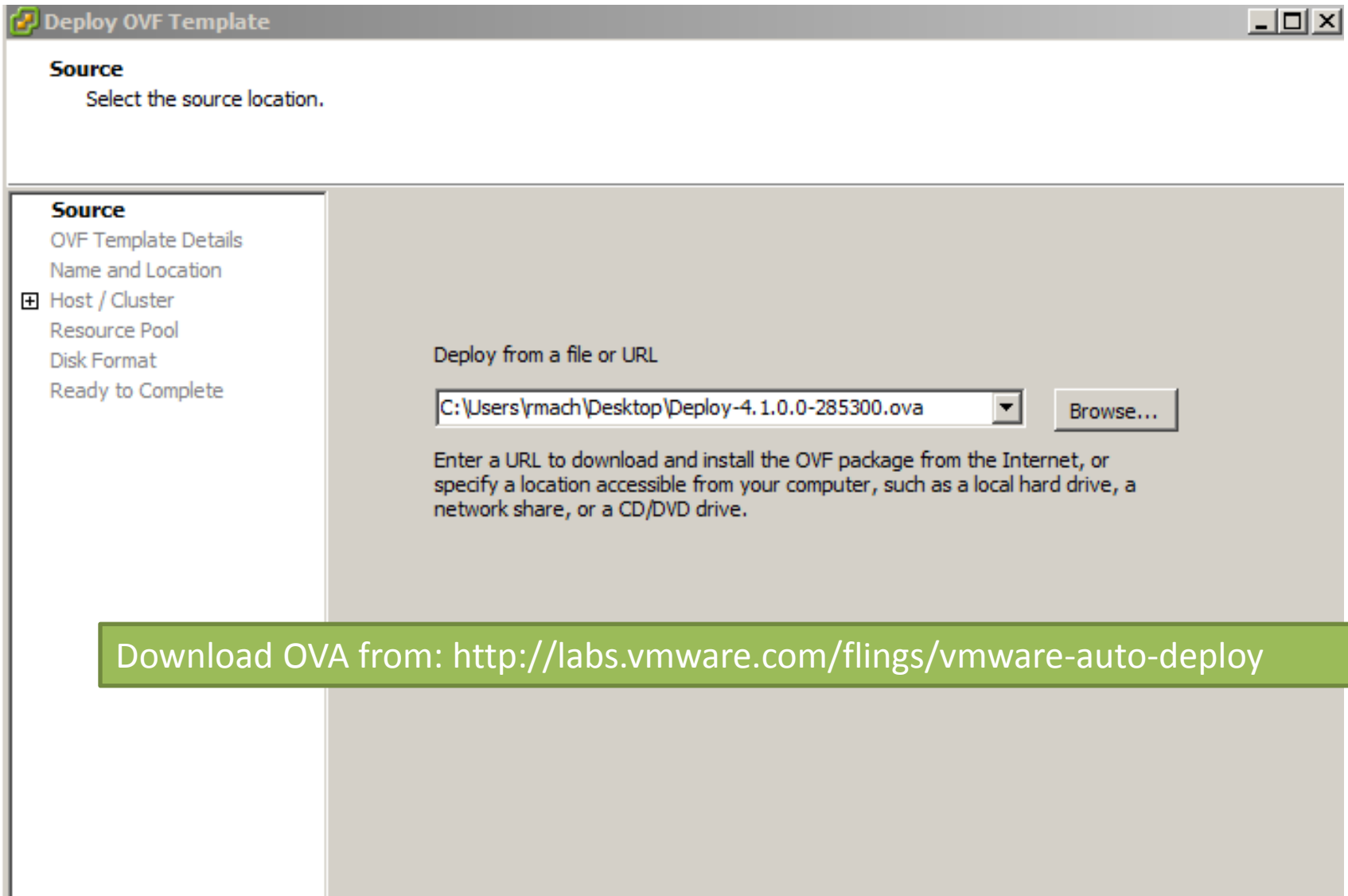
SIMPLE UPGRADES – JUST REBOOT



Basic Workflow

- PXE boot the target server.
- ESXi is installed into memory over the network.
- The ESXi host will then be added into your vCenter and enters maintenance mode.
- The ESXi host will then have a Host Profile applied to it for customizations.
- Auto Deploy registers virtual machines that were on the host.

Step 1. File->Deploy Template



Step 2. Enter Static IP Information

This wizard will configure all network interfaces. If any configuration has an existing value, it will be presented in [square bracket]. Hit Enter to retain the value, or give a new value.

You can configure the interface to get an IP address from DHCP server or you can assign an IP address to the interface statically. If you want to specify a static IP address, please have the IP address, Subnet mask, Gateway and DNS server addresses handy.

Configuring eth0...

Do you want to assign IP address using DHCP (yes/no) [yes]: no

Enter IP Address: 192.168.15.33

Enter Subnet Mask: 255.255.255.0

Enter Gateway Address: 192.168.15.1

Enter Primary DNS Address(Press Ctrl-D to clear existing value) [10.17.0.1]: 192.168.15.69

Enter Secondary DNS Address(Press Ctrl-D to clear existing value) [10.17.0.2]:

You can configure hostname for this machine at this point. Any existing hostname configuration will be overwritten.

Enter Hostname [localhost]: vAutoDeploy.hiperlogic.local_

Step 3: Done! Login as vi-admin

```
Welcome to VMware Auto Deploy version 4.1.0
```

```
Your VMware Auto Deploy is configured properly.
```

```
To get direct shell access, you may press Alt-F2 to switch to  
virtual terminal where you may log in as vi-admin. The user  
vi-admin is the administrative user of VMware Auto Deploy.  
To return to this screen press Alt-F1.
```

```
You can also ssh to vAutoDeploy.hiperlogic.local or 192.168.15.33  
and login as vi-admin.
```

```
For more information see the online documentation at
```

```
http://www.vmware.com/go/deploy
```

Step 4. Enable DHCP

```
sudo deploy-cmd dhcpconfig
```

TIP: Modifying Default DHCP File

- Reads -> `/etc/dhcpd.conf.template`
- Writes -> `/etc/dhcpd.conf`
- By default DHCP range is on same subnet as static IP address assigned to the appliance.
edit `/etc/dhcpd.conf.template` to change this.
- `sudo vi /etc/dhcpd.conf.template`
- Then remake `/etc/dhcpd.conf` with `sudo deploy-cmd dhcpcconfig`

Optional: Pre-Populate Static IPs For ESXi Hosts

```
vi-admin@vAutoDeploy:/etc
option routers 192.168.15.1;
range 192.168.15.100 192.168.15.200;
allow unknown-clients;

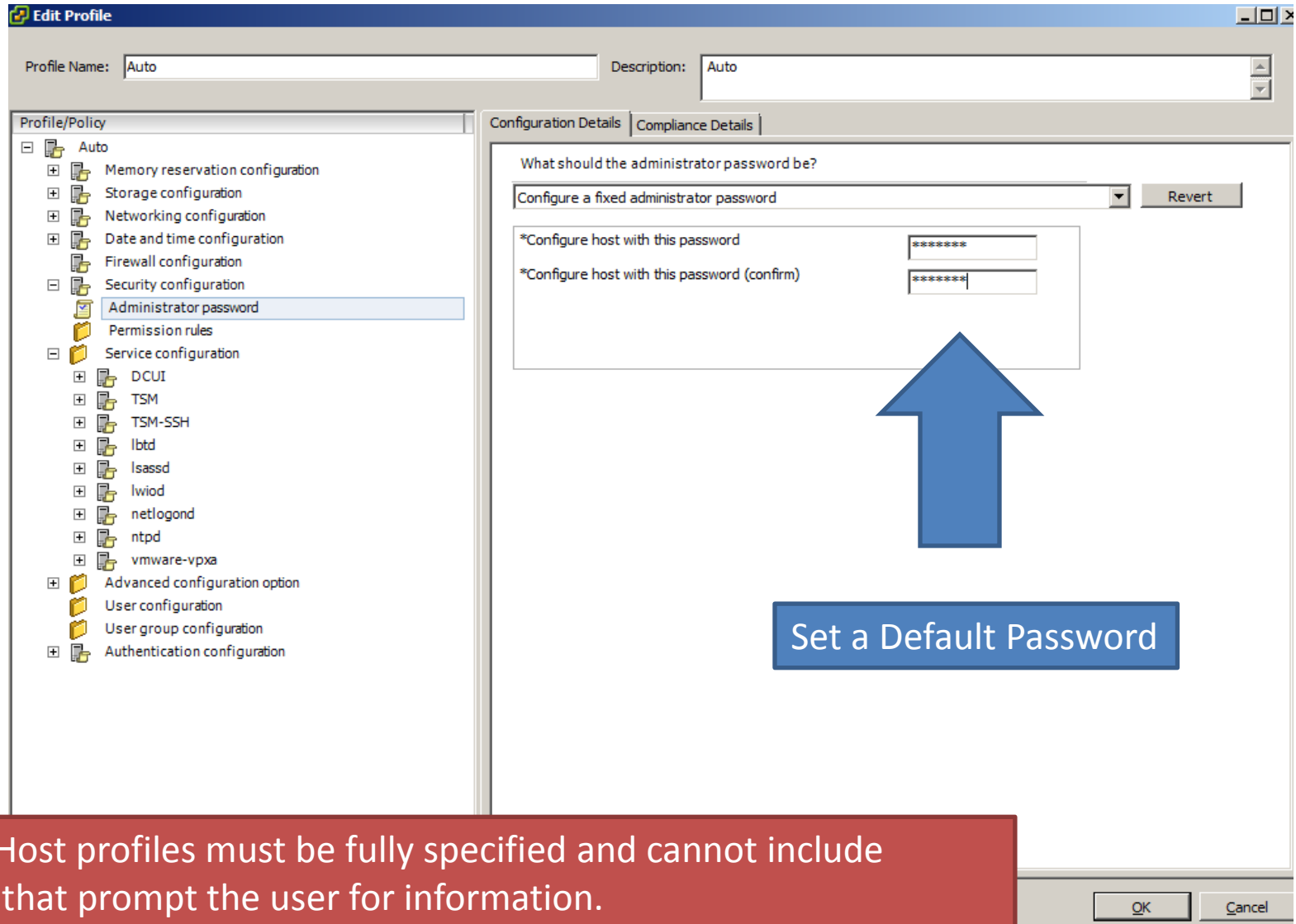
# Tell gPXE to not try and send a second DHCPDISCOVER to get ProxyDHCP
# information, which makes the boots faster.
option gpxe.no-pxedhcp 1;

next-server 192.168.15.33;
# VMware gPxe stateless mode
if not exists gpxe.bus-id {
    filename "undionly.kpxe";
} else {
    filename "http://192.168.15.33/vmw/cgi/tramp";
}

host vesxi-auto1 {
    hardware ethernet 00:50:56:a6:00:09;
    fixed-address 192.168.15.200;
}

vi-admin@vAutoDeploy etc][192.168.15.7]$
```

Step 5: Create Host Profile in vCenter



The screenshot shows the 'Edit Profile' window in vCenter. The 'Profile Name' and 'Description' fields are both set to 'Auto'. The left-hand 'Profile/Policy' tree is expanded to 'Administrator password'. The main configuration area is titled 'What should the administrator password be?' and has a dropdown menu set to 'Configure a fixed administrator password'. Below this, there are two password input fields: '*Configure host with this password' and '*Configure host with this password (confirm)'. A large blue arrow points from a blue box at the bottom labeled 'Set a Default Password' to the password input fields. At the bottom right of the window are 'OK' and 'Cancel' buttons.

NOTE!- Host profiles must be fully specified and cannot include settings that prompt the user for information.

Step 6. Add vCenter for Appliance

```
[vi-admin@vAutoDeploy ~]$ sudo vifp addserver 192.168.15.7
Enter username for 192.168.15.7: HL\Administrator
HL\Administrator@192.168.15.7's password:
This will store username and password in credential store which is a security risk. Do you want to continue?(yes/no): yes
```

```
[vi-admin@vAutoDeploy ~][192.168.15.7]$ vifptarget -s 192.168.15.7
[vi-admin@vAutoDeploy ~][192.168.15.7]$ 
```

Set Default vCenter for ESXi Host

```
[vi-admin@vAutoDeploy ~][192.168.15.7]$ deploy-cmd listprofiles
Name: default
  Repository : (default)
  vCenter    : (none)
  Boot Images : b.z,k.z,s.z,c.z,oem.tgz,m.z
  Boot Options: no-auto-partition
  Plugins     : (none)
[vi-admin@vAutoDeploy ~][192.168.15.7]$ deploy-cmd updateprofile --name=default
--vcenter=192.168.15.7
[vi-admin@vAutoDeploy ~][192.168.15.7]$
```

Set Profile To Use Created in vCenter

```
vi-admin@vAutoDeploy:~  
login as: vi-admin  
vi-admin@192.168.15.33's password:  
Last login: Mon Nov 29 14:32:11 2010  
Welcome to VMware Auto Deploy  
run 'deploy-cmd' or see http://www.vmware.com/go/deploy for more details.  
run 'vma-help' or see http://www.vmware.com/go/vma for more details.  
  
[vi-admin@vAutoDeploy ~]$ deploy-cmd listprofiles  
Name: default  
Repository : (default)  
vCenter : 192.168.15.7  
Boot Images : b.z,k.z,s.z,c.z,oem.tgz,m.z  
Boot Options: no-auto-partition  
Plugins : (none)  
[vi-admin@vAutoDeploy ~]$ deploy-cmd updateprofile --name=default -p Auto-ESXi  
[vi-admin@vAutoDeploy ~]$ deploy-cmd listprofiles  
Name: default  
Repository : (default)  
vCenter : 192.168.15.7 (profile: Auto-ESXi)  
Boot Images : b.z,k.z,s.z,c.z,oem.tgz,m.z  
Boot Options: no-auto-partition  
Plugins : (none)  
[vi-admin@vAutoDeploy ~]$ █
```

Name of Profile

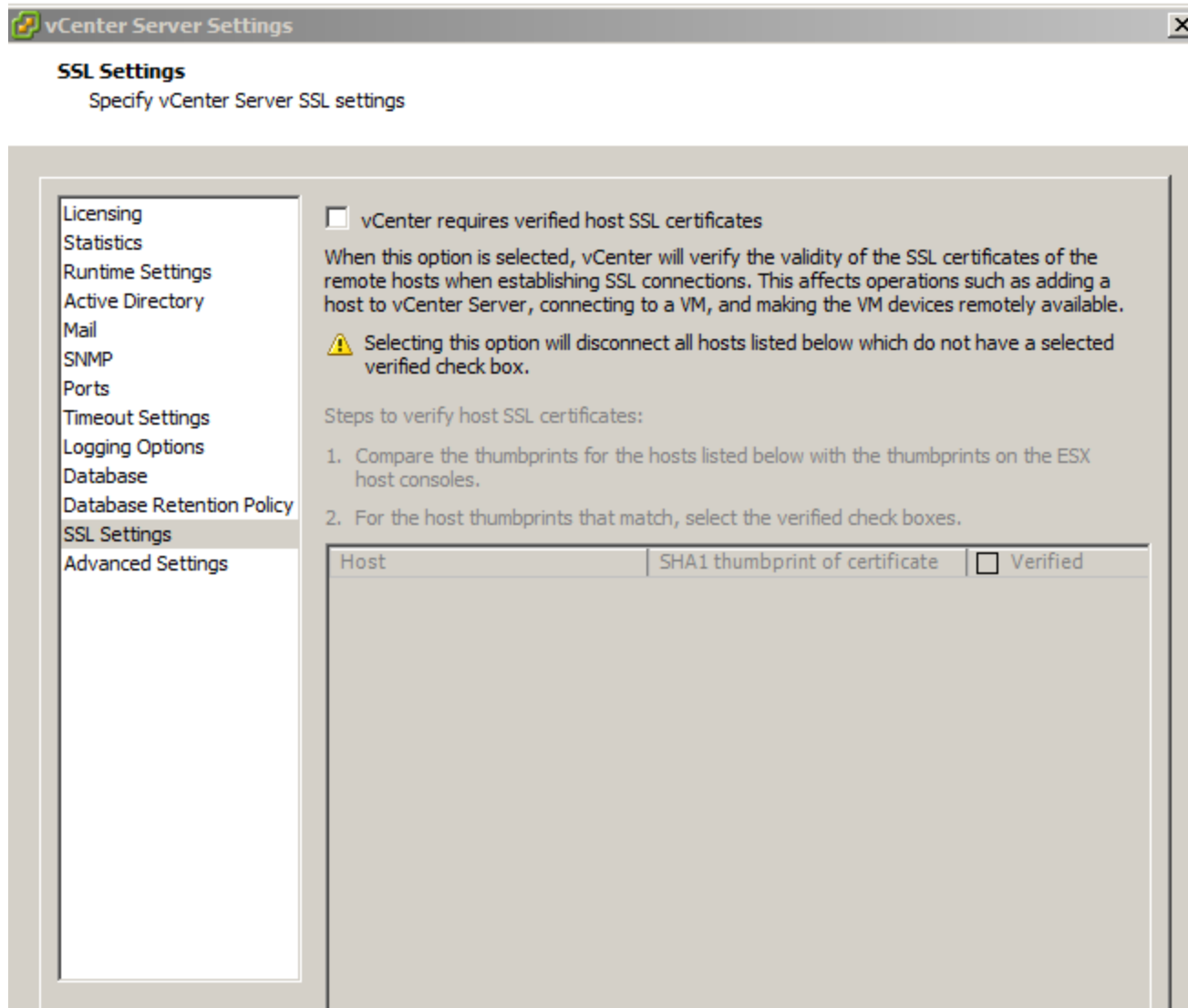


TIP: Add DNS Reverse Lookup!

Add Reverse Lookup or ESXi host
will register in vCenter by IP

See `/var/log/deploy`.


TIP: Change SSL Setting so ESXi Will Join to vCenter on Reboot



The screenshot shows the vCenter Server Settings window. The title bar reads "vCenter Server Settings" with a close button. The main heading is "SSL Settings" with the subtitle "Specify vCenter Server SSL settings". On the left is a navigation pane with the following items: Licensing, Statistics, Runtime Settings, Active Directory, Mail, SNMP, Ports, Timeout Settings, Logging Options, Database, Database Retention Policy, SSL Settings (highlighted), and Advanced Settings.

vCenter requires verified host SSL certificates

When this option is selected, vCenter will verify the validity of the SSL certificates of the remote hosts when establishing SSL connections. This affects operations such as adding a host to vCenter Server, connecting to a VM, and making the VM devices remotely available.

 Selecting this option will disconnect all hosts listed below which do not have a selected verified check box.

Steps to verify host SSL certificates:

1. Compare the thumbprints for the hosts listed below with the thumbprints on the ESX host consoles.
2. For the host thumbprints that match, select the verified check boxes.

Host	SHA1 thumbprint of certificate	<input type="checkbox"/> Verified
------	--------------------------------	-----------------------------------

FINALLY! Turn on Host. Watch PXE

```
gPXE 0.9.7-vmw -- Open Source Boot Firmware -- http://etherboot.org
Features: HTTP DNS TFTP AoE iSCSI bzImage COMBOOT ELF Multiboot PXE PXEXT

net0: 00:50:56:a6:00:09 on UNDI (open)
  [Link:up, TX:0 TXE:0 RX:0 RXE:0]
Waiting for link-up on net0... ok
DHCP (net0 00:50:56:a6:00:09). ok
net0: 192.168.15.200/255.255.255.0 gw 192.168.15.1
Booting from filename "http://192.168.15.33/vmw/cgi/tramp"
http://192.168.15.33/vmw/cgi/tramp. ok
http://192.168.15.33/vmw/cgi/gConf.pxe?mac=00:50:56:a6:00:09&assettag=No%20Asset%20Tag. ok
http://192.168.15.33:80/vmw/vSphere/mboot.c32. ok
COM32 Multiboot loader v0.2. Copyright (C) 2005-2006 Tim Deegan.
Kernel: http://192.168.15.33:80/vmw/vSphere/default/b.z BOOTIF=01-00-50-56-A6-00-09
pxebooting no-auto-partition
Loading http://192.168.15.33:80/vmw/vSphere/default/b.z.....
Module: http://192.168.15.33:80/vmw/vSphere/default/k.z
Loading http://192.168.15.33:80/vmw/vSphere/default/k.z.....
.....
Module: http://192.168.15.33:80/vmw/vSphere/default/s.z
Loading http://192.168.15.33:80/vmw/vSphere/default/s.z.....
....._
```

Examine Host Status

```
[vi-admin@vAutoDeploy ~][192.168.15.7]$ deploy-cmd listhosts
Host ID: 1
  Boot MAC      : 00:50:56:A6:00:09
  IP Address    : 192.168.15.200
  Asset Tag     : No Asset Tag
  Boot Profile  : default
  Status       : BOOTING (last booted: 2010-11-29 18:43:07)
[vi-admin@vAutoDeploy ~][192.168.15.7]$ █
```

DEBUGGING

/var/log/messages – DHCP messages, general system information

/var/log/deploy – Logging from the deploy-cmd commands and CGI scripts

/var/log/httpd (Apache) – Web server logs

☐ vCenter Server logs – Use **Administration > Export System Logs** in the vSphere Client.

/var/core – ESXi

EXTENSIBLE!



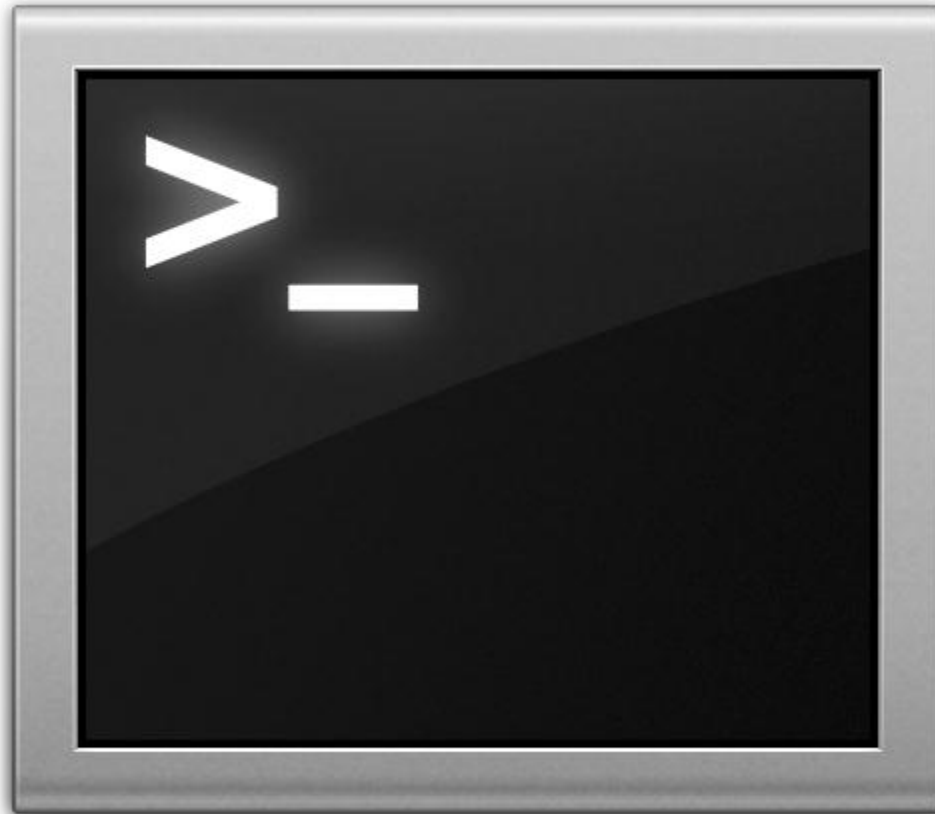
vibddi – Swiss Army Knife

DISADVANTAGE #1

Host Profiles = Enterprise Plus

vCenter Required

DISADVANTAGE #2



COMMAND LINE ONLY

DISADVANTAGE #3

UNSUPPORTED

VMware FLINGS aren't officially supported, but may appear in future ESX releases.

DISADVANTAGE #4

4.1 Host Profiles Cover

99.9%

That Last .1% Missing Can Hurt
(Jumbo Frames etc.)

Getting More Information

See the VMware Auto Deploy
Administrator's Guide

A green highway sign with white text and an arrow. The sign is mounted on a metal structure with several brackets. The background is a clear blue sky.

The Future

NEXT EXIT 

Evaluate Stateless ESXi Today To Prepare

Thanks!

Rod Mach -  vEXPERT

rod@hiperlogic.com

twitter: @chamdor

rodmach.com/blog

hiperlogic.com/blog