



vSphere 5.1 - Insight into Auto Deploy

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Agenda

An Overview

Components

Stateless Caching

Stateful Install

Summary

vSphere Auto Deploy - An Overview

- ❖ Using the **vSphere Auto Deploy** feature, you can **provision** and **re-provision many** ESXi hosts **very efficiently** with vCenter Server.
- ❖ With **Auto Deploy**, vCenter Server loads the **ESXi image directly** into the host memory.
- ❖ **vCenter Server stores** and **manages** ESXi **updates** and **patching** through an **image profile**, and manage the **host configuration** through a **host profile**
 - ❖ You can specify the **image** to **deploy**, the **hosts** to **deploy** to, and the **host profiles** to apply to the hosts, and a location for each host.

vSphere Auto Deploy - An Overview

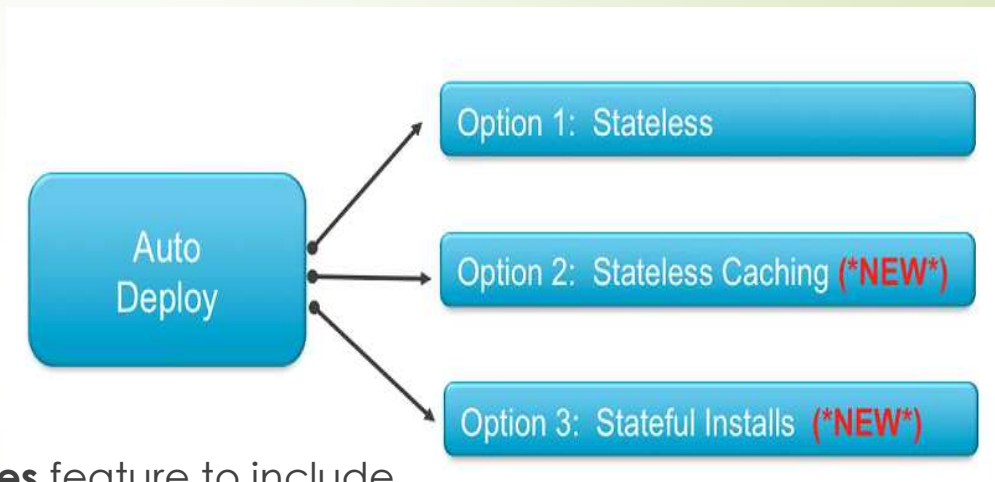
- ❖ Operating modes of Auto Deploy

- ❖ Stateless
- ❖ Stateless Caching
- ❖ Stateful Install

- ❖ **iPXE** is used as the network bootloader

- ❖ vSphere 5.1 has also enhanced the **Host Profiles** feature to include

- ❖ Managing the Stateless Caching and Stateful Installs
- ❖ Configure an alternate datastore for the locker (scratch and default log directory)
- ❖ Support for environments without full DNS (/etc/hosts)



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An Overview

Auto Deploy - Components

Auto Deploy - Stateless Caching

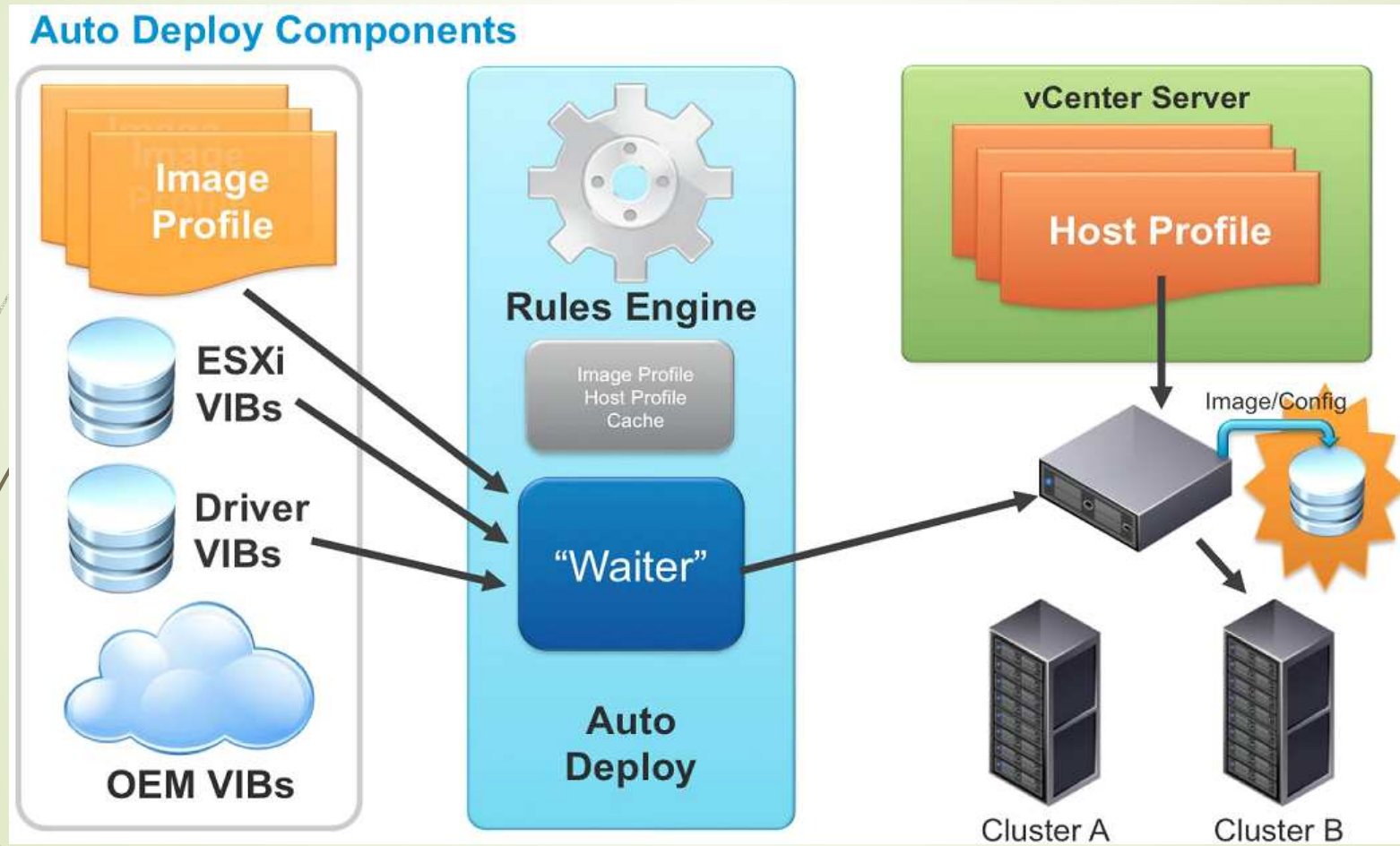
Auto Deploy - Stateful Install

Auto Deploy Troubleshooting

Auto Deploy Components

Component	Sub-Component	Notes
PXE Boot Infrastructure	<ul style="list-style-type: none">• DHCP Server• TFTP Server	<ul style="list-style-type: none">• Customer setup for their environment• SET DHCP Options 66 & 67
Auto Deploy Server (Windows & Linux)	<ul style="list-style-type: none">• Rules Engine• Web Server	<ul style="list-style-type: none">• Assigns image profile, host profile• Deploys ESXi image and configures the Host
PowerCLI	<ul style="list-style-type: none">• Auto Deploy cmdlets• Image Builder cmdlets	<ul style="list-style-type: none">• Create/Customize ESXi Image Profiles• Create Auto Deploy Rules
vCenter Server	<ul style="list-style-type: none">• Folder/Cluster• Host Profiles• Answer Files	<ul style="list-style-type: none">• Host configuration saved in Host Profile• Custom Settings saved in Answer Files
Image Builder	<ul style="list-style-type: none">• ISO images• ZIP Depots	<ul style="list-style-type: none">• Create ISO images and ZIP files

Auto Deploy Components



State Information for ESXi Hosts

Auto Deploy server stores the **information** for the ESXi hosts to be **provisioned** in the following locations.

Information Type	Description	Source of state information
Image State	Executable software to run on an ESXi host.	Image profile , created with Image Builder PowerCLI.
Configuration State	Configurable settings that determine how the host is configured, e.g. virtual switches ,driver settings, boot parameters	Host profile , created using the host profile user interface.
User Input	State that is based on user input, for example, an IP address the user provides when the system starts up, cannot automatically be included in the host profile.	Information is stored in an answer file . When you apply a host profile to a host, the client prompts for the required information. The information is then saved with the host profile in an answer file . Only one answer file exists for each host.

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Auto Deploy - Components

Auto Deploy - Stateless Caching

Auto Deploy - Stateful Install

Auto Deploy - Summary

Auto Deploy - Stateless Caching

- ❖ Auto Deploy caches both image and configuration to local disk
- ❖ Requirements
 - ❖ Dedicated boot device (min 1GB)
- ❖ Benefits
 - ❖ All the benefits of stateless ESXi
 - ❖ Easy/Rapid provisioning and easy update/patching
 - ❖ Host able to boot if Auto Deploy server becomes unavailable

Auto Deploy - Stateless Caching

- ❖ Requirements
 - ❖ Auto Deploy configured
 - ❖ Auto Deploy rules created
 - ❖ Boot Disk with at least 1 GB of free space
 - ❖ Configured Boot Order
 - ❖ 1. Network (first attempt)
 - ❖ 2. Hard Disk
 - ❖ Configured Host profiles



Auto Deploy - Stateless Caching

The screenshot displays the ESX configuration console for a profile named 'ESX01-GOLD'. The left pane shows a tree view of configuration categories, with 'System Image Cache Configuration' selected and highlighted by a red box. Under this category, 'System Cache Profile Settings' is also highlighted. An orange arrow points from this setting to the right pane, which shows the 'Configuration Details' for the selected setting. The details pane lists several policy options, with 'Enable stateless caching on the host' highlighted in blue.

Profile/Policy

- ESX01-GOLD
 - Storage configuration
 - Networking configuration
 - Date and time configuration
 - Firewall configuration
 - Security configuration
 - Service configuration
 - Advanced configuration option
 - User configuration
 - User group configuration
 - Authentication configuration
 - Coredump Partition Settings
 - Kernel Module Configuration
 - System Image Cache Configuration**
 - System Cache Profile Settings**
 - Passwd PAM Configuration

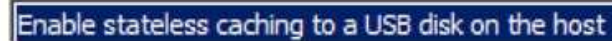
Configuration Details | Compliance Details

- User must explicitly choose the policy option
- User must explicitly choose the policy option
- Enable stateless caching on the host**
- Enable stateful installs on the host
- Enable stateless caching to a USB disk on the host
- Enable stateful installs to a USB disk on the host

Auto Deploy - Stateless Caching

Examples of setting **Stateless Caching** in **Host Profile**

- **Stateless Caching** to a **USB**



Enable stateless caching to a USB disk on the host

- **Stateless Caching** on the **Host**



Enable stateless caching on the host

*Arguments for first disk:

esx,local

*Check to overwrite any VMFS volumes on the selected disk

Use same syntax convention used with scripted installs.

Auto Deploy - Stateless Caching

Review – Stateless Caching:

- Create Host Profile with stateless caching configured
- Boot ESXi host using Auto Deploy
 - Host Profile applied
 - ESXi image cached/written to the disk
- Host runs stateless under normal operations
- If PXE environment / Auto Deploy unavailable, will boot from the ESXi image on disk

```
tftp://192.168.0.10/tramp.https://192.168.0.10:6501/vmw/rbd/tramp. Input/output
error (http://ipxe.org/1d0c6039)
Could not fetch https://192.168.0.10:6501/vmw/rbd/tramp: Input/output error (htt
p://ipxe.org/1d0c6039)
Input/output error (http://ipxe.org/1d0c6039)
Could not chain image: Input/output error (http://ipxe.org/1d0c6039)
Network error encountered while PXE booting.
Scanning the local disk for cached image.
If no image is found, the system will reboot in 20 seconds.....
<3>Found a cached Hypervisor on the disk, exiting to BIOS to continue booting fr
om the disk.
```

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An Overview

Auto Deploy - Components

Auto Deploy - Stateless Caching

Auto Deploy - Stateful Install

Auto Deploy - Summary

Auto Deploy - Stateful Installs

- ❖ Initial boot using Auto Deploy, reboot use cached image
 - ❖ ESXi image and configuration saved locally to disk
- ❖ Requirements
 - ❖ Dedicated boot device (min 1 GB)
- ❖ Benefits
 - ❖ Leverage Auto Deploy to quickly and efficiently provision hosts
 - ❖ Once provisioned no further requirement for PXE/Auto Deploy
- ❖ Key points
 - ❖ Disk Image is identical to an installed Image
 - ❖ Over time configuration may become stale or out of sync
 - ❖ Patch/Update using standard methods for any installed copy of ESXi

Auto Deploy - Stateful Installs

- ❖ After the initial boot, the ESXi host runs off the local boot device



Auto Deploy - Stateful Installs

► Requirements

- ❖ **Auto Deploy** configured
- ❖ Disk with at least **1 GB of free space**
- ❖ Set **Boot order** in **BIOS**
 - ❖ **1. Disk**
 - ❖ **2. Network**
- ❖ Setup **Host Profile** for "**Stateful installs on the Host**"
- ❖ First time the ESXi host boots, the **Hard disk** will be **empty** and it will do a **network** boot.
- ❖ On **next reboot**, ESXi host will **boot** from the local disk.



Auto Deploy - Stateful Installs

- ❖ Review – Stateful Installs
 - ❖ Create **Host Profile**
 - ❖ Specify **disk type** (local, remote, USB)
 - ❖ Specify to **preserve** or **overwrite VMFS**
 - ❖ **One time boot** using **Auto Deploy**
 - ❖ **Image cached** to disk when **Host Profile** applied
 - ❖ Reboot host from **disk image** created during **Auto Deploy**
 - ❖ Once **provisioned**, host is **managed** as a **standard ESXi host**

The screenshot shows a configuration window for enabling stateful installs on a host. At the top, there is a dropdown menu labeled "Enable stateful installs on the host" and a "Revert" button. Below this, there is a section for configuring the first disk. The label "*Arguments for first disk:" is followed by a text input field containing "esx,local". Below that, the label "*Check to overwrite any VMFS volumes on the selected disk" is followed by a checked checkbox.



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An Overview

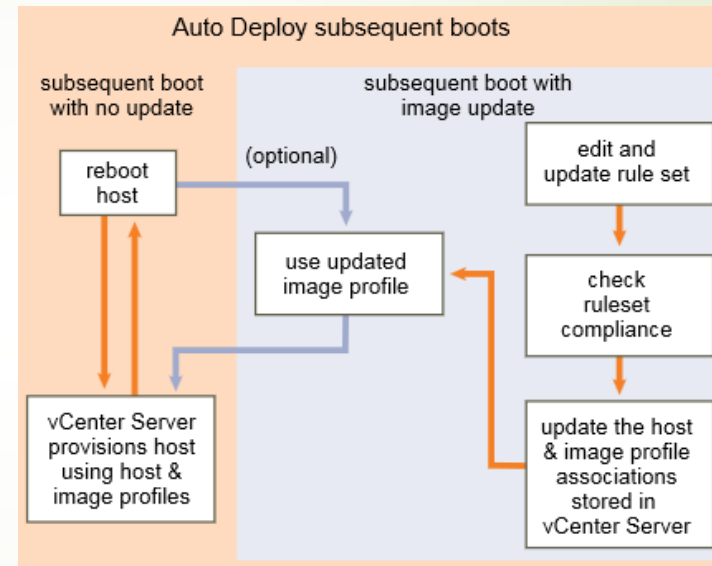
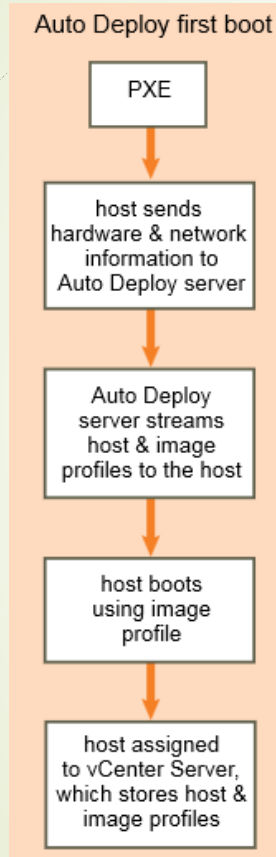
Auto Deploy - Components

Auto Deploy - Stateless Caching

Auto Deploy - Stateful Install

Auto Deploy - Summary

Auto Deploy Summary



Auto Deploy Summary

- ❖ Auto Deploy components
 - ❖ PXE Infrastructure, Auto Deploy Server, PowerCLI, vCenter Server
- ❖ vCenter Server is the source of truth for the Host Profile
- ❖ Auto Deploy is the source of truth for the Images

Auto Deploy Summary

❖ Stateless Caching

- ❖ Host Boot Order : Network before Hard Disk
- ❖ Caches ESXi image to a local boot device
- ❖ If PXE/Auto Deploy unavailable, host boots from cached image on disk
- ❖ For upgrades, bring up PXE & Autodeploy setup with updated image profile (higher build of ESXi host) and reboot host

❖ Stateful Installs

- ❖ Host Boot Order : Hard Disk before Network
- ❖ Use Auto Deploy to provision ESXi to a local boot device
- ❖ Only use PXE/Auto Deploy for initial boot
- ❖ For upgrades, update image profile on auto deploy server, modify boot order (to network boot) & reboot.

Auto Deploy Summary

Stateless Caching	Set up and apply a host profile for stateless caching. You can cache the image on a local disk or a USB drive. Continue provisioning this host with Auto Deploy. If the Auto Deploy server becomes unavailable, the host boots from the cached image.
Stateful Install	Set up and apply a host profile for stateful installs. When you provision a host with Auto Deploy, the image is installed on the local disk or a USB drive. For subsequent boots, you boot from disk. The host no longer uses Auto Deploy.



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