

# VMware ESXi 5.0 Installation and RWC2 Tips and Tricks

This document introduces the details of how to install VMware ESXi 5.0 Operating System onto an Intel<sup>®</sup> RAID controller and how to use Intel<sup>®</sup> RAID Web Console 2 on a client machine to manage the RAID controller remotely.

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## **Revision History**

Date	Revision Number	Modifications
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## 1. Introduction to VMware ESXi

## 1.1 What is VMware ESX?

VMware ESX is an enterprise-level computer virtualization product offered by VMware, Inc. ESX is a component of VMware's larger offering, VMware infrastructure, and adds management and reliability services to the core server product. In the ESX original architecture, the virtualization kernel (VMKernel) is augmented with a Linux Operating System known as Service console (also known as COS or service console) to provide management interface such as executing script or installing third party agents into the host. Various VMware management agents are deployed in the Console OS, along with other infrastructure service agents such as name service, time service. In this architecture, many customers deploy other agents from 3rd parties to provide particular functionality, such as hardware monitoring and system management. Furthermore, individual admin users log into the Console OS to run configuration and diagnostic commands and scripts.

### 1.2 What is VMware ESXi?

In 2007, VMware introduced ESXi to deliver industry-leading performance and scalability while setting a new bar for reliability, security and hypervisor management efficiency. VMware ESXi is a smaller and free footprint verision of ESX, it uses the same kernel to deliver virtualization capabilities but doesn't include ESX's Service Console and all of the VMware agents run directly on the VMKernel. Only modules that have been digitally signed by VMware are allowed on the system, creating a tightly locked-down architecture. Preventing arbitrary code from running on the ESXi host greatly improves the security of the system. ESXi is a "bare-metal" hypervisor, meaning it installs directly on top of the physical server and partition it into multiple virtual mechines that can run simultaneously, sharing the physical resources of the underlying server.

### 1.3 Comparation between ESX and ESXi

For ESX:

- VMware agents run in Console OS.
- Nearly all other management functionality provided by agents running in the Console OS.
- Users must log into Console OS in order to run commands for configuration and diagnostics.

For ESXi:

- VMware agents ported to run directly on VMKernel.
- Authorized 3rd party modules can also run in Vmkernel. These provide specific functionality like hardware monitoring and hardware drivers.
- VMware components and third party components can be updated independently.
- The "dual-image" approach lets you revert to prior image if desired.
- Other capabilities necessary for integration into an enterprise datacenter are provided natively.
- No other arbitrary code is allowed on the system.

### 1.4 Why do we need ESXi?

Thanks to its ultra-thin architecture with less than 100MB of code-base disk footprint, ESXi deliver the insdustry-leading performance and scalability of ESX with several additional benefits

- 1. Improved reliability and security- with fewer line of code and independence from general purpose, ESXi drastically reduces the risk of bugs or security vulnerabilities and makes it easier to recure the hypervisor layer.
- 2. Streamlined Deployment and Configuration-ESXi has far fewer configuration item than ESX, greatly simplifying deployment and configuration and making it easier to maintain consistency.
- 3. Higher Management Efficiency- the API-based, partner integration model of ESXi eliminates the need to install and manage third party management agents. You can automate routine tasks by leveraging remote command line scripting environments such as vCLI or PowerCLI.
- 4. Simplifyed Hypervisor Patching and Updating-Due to its smaller size and fewer components, ESXi requires far fewer patches than ESX, shortening service windows and reducing security vulnerabilities.

For more details about VMware ESX and ESXi, please refer to URL: <a href="http://www.VMware.com/products/vsphere/esxi-and-esx/overview.html">http://www.VMware.com/products/vsphere/esxi-and-esx/overview.html</a>

## 2. ESXi 5.0 Related RAID Operations

This document provides a step by step guide to create a RAID virtual drive, install an VMware ESXi 5.0 onto an Intel<sup>®</sup> Hardware RAID controller, install Windows 2008 R2 on Intel<sup>®</sup> Server Board, use RAID Web Console 2 (RWC2) on a client to control the RAID controller on server.

To use the RWC2 tools on a client to control the RAID controller on a server, two server boards are used in this document.

On the server you need to insert a RAID Controller and install VMware ESXi 5.0 on Intel<sup>®</sup> RAID virtual drive, the minimal memory requirement for VMware ESXi 5.0 system is **2GB**.

On the client install a windows OS and the RWC2 software to take control of the RAID controller on the server.

### 2.1 RAID Configuration on Server Board

- 1. Insert a RAID controller into the Server Board.
- 2. Power on the server board and press **<Ctrl+G>** as is displayed on the screen after POST to enter the RAID Adapter Selection page. Then Click **"Start"** in Figure 1.

Adapter Selection						
Concernent of the second secon						
	D. N.	Design Mar				
Haapter No.	Bus No.	Device no.	туре	Firmware Version		
0. 💿	2	0	Intel (R) RAID Controller	2.120.13-1094		
			RS2BL080			
[Start]						
Haapter No.     Bus No.     Device No.     Type     Firmware Version       0.     2     0     Intel (R) RAID Controller RS2BL080     2:120:13-1094						

Figure 1. Choose RAID Adapter

3. Enter the RAID BIOS Console page; click "**Configuration Wizard**" to begin the RAID configuration.

Intel(r) RAID BIOS Console Physical Configuration						
RAID BIOS Conso	RAID BIOS Console					
Termo Diob Compo						
🍐 Advanced Software Options	P <u>hy</u> sical View					
Controller Selection	Slot: 0, SATA, HDD, 148-080 GB , Unconfigured Good Slot: 1, SATA, HDD, 148-080 GB , Unconfigured Good					
Controller Properties	<ul> <li>Slot: 2, SATA, HDD, 148-080 GB, Unconfigured Good</li> <li>Slot: 3, SATA, HDD, 148-080 GB, Unconfigured Good</li> <li>Slot: 4, SATA, SSD, 26 221 GB, Unconfigured Good</li> </ul>					
Drive Security	Slot: 5, SATA, SSD, 36-321 GB, Unconfigured Good					
🖕 Scan Devices	Les SCA HSBP M9 (26)					
🖕 V <u>irtual Drives</u>						
<u>Drives</u>						
Configuration Wizard						
Logical View						
e Events						
Next						

Figure 2. Homepage of the Web BIOS Console

4. Choose "**New Configuration**" to clear existing RAID configurations and add new RAID configuration, then click "**Next**". Or you can choose "**Add Configuration**" which will add new configuration without clear the existing ones on current physical disks.

Intel(r) RAID BIOS Co	msole Configuration Wizard			
Concerv.				
Configuration Wizard guides you through the steps for configuring the MegaRAID system easily and efficiently. The steps are as follows:				
1. Drive Group definitions	Group drives into Drive Groups.			
2. Virtual Drive definitions	s Define virtual drives using those drive groups.			
3. Configuration Preview	Preview configuration before it is saved.			
Please choose appropriate o	configuration type:			
C Clear Configuration	Allows you to clear existing configuration only.			
New Configuration	Clears the existing configuration. If you have any existing data			
	in the earlier defined drives, the data will be lost.			
c idd Configuration	Pataing the old configuration and then adds new drives to the			
	configuration. This is the safest operation			
	as it does not result in any data loss.			
	V Cancel we Neut			
	X Cancer Mexc			

Figure 3. Choose Appropriate Configuration Type

5. When then screen displays "You have chosen to clear the configuration. This will destroy all virtual drives. All data on all virtual drives will be lost. Are you sure you want to clear the configuration", click "Yes" to continue.



Figure 4. Confirm to Clear Existing Configuration

6. Choose "Virtual Drive Configuration" and then click "Next".

(intel(r) RAID BIOS Console Select Configur	ation			
Select Configuration				
C CacheCade(TM)-SSD Caching Configuration				
	🗙 Cancel	싂 Back	m⇒ <u>N</u> ext	
	X Cancel	<b>∢</b> ⊪ <u>B</u> ack	⊪ <b>)</b> <u>N</u> ext	

Figure 5. Select Configuration

7. Choose one of the configuration methods displayed on the screen and click "Next" to continue, here "Manual Configuration" method is chosen which will allow us to choose RAID level and other appropriate parameters. Or you can choose "Automatic Configuration", and the console will automatically decide the RAID level and other parameters according to the status of the physical disks during the configuration.

( See )	Intel(r) RAID BIOS Conso	le Configuration Wizard			
Unter					
Sele	Select Configuration Method:				
(C)	Manual Configuration				
	Manually create drive gr	oups and virtual drives and set their parameters as desired.			
0	Automatic Configuration				
	Automatically create the	most efficient configuration.			
	<u>R</u> edundancy:	Redundancy when possible			
	Drive Security Method:	No Encryption			
		X Cancel 🗰 Back 🕪 Next			

Figure 6. Select Configuration Method

 Hold down the <Ctrl> key and click each drive you want to include in the array or the Drive Groups. Click "Add To Array". If you make a mistake and need to remove drives, click "Reclaim". And then click "Next".



Figure 7. Add Physical Drives to Drive Group

9. Click "Accept DG" to accept the Drive Group, click "Next" to continue.

Intel(r) RAID BIOS Console Config Wizard - Drive Group Definition				
(inter-				
Drive Group Definition: To add drives to Drive Group, hold Control key while selecting				
	Group, Drive addi	tion can be undone by selecting the Reclaim		
	button.			
	Drives	Drive <u>G</u> roups		
K Slot	<ul> <li>:0, SATA, HDD, 148.080 GB,</li> <li>:1, SATA, HDD, 148.080 GB,</li> <li>:2, SATA, HDD, 148.080 GB,</li> <li>:3, SATA, HDD, 148.080 GB,</li> <li>:4, SATA, SSD, 36.321 GB, U</li> <li>:5, SATA, SSD, 36.321 GB, U</li> <li>:6, SATA, SSD, 36.321 GB, Un</li> </ul>	Image: Stot: 0, SATA, HDD, 148.080 GB, Onli           Image: Stot: 1, SATA, HDD, 148.080 GB, Onli           Image: Stot: 2, SATA, HDD, 148.080 GB, Onli           Image: Stot: 3, SATA, HDD, 148.080 GB, Onli           Image: Stot: 3, SATA, HDD, 148.080 GB, Onli		
<u>E</u> ncryption: Power save <u>M</u> ode:	▲dd To Array       No Encryption       Controller Defined	Accept DG 🛉 Reclaim		
		🗟 🗙 Cancel 🦛 Back 🗰 Next		

Figure 8. Accept Drive Group

10. Choose the "Array with Free Space" from the drop-down list and then Click "Add to SPAN" to add the chosen array into Span.

Intel(r) RAID BIOS Console Config Wizard - Span Definition			
<u>Maer</u>			
Span Definition:	To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.		
Array <u>₩</u> ith Free	Space	Sp	ian
Drive Group:0,Hole:0,R0, F	1, R5, R6,592-32 👻		
	À		
Add to SI	PAN	<u>• R</u> e	eclaim
		X Cancel	🗰 Back 🐘 Mext

Figure 9. Add Array to Span

11. Click "Next" to accept the Span.

I	•		
(intel) Intel(r) RAID BIOS Co	nsole Config Wizard	- Span Definition	
Span Definition:	To add array hole to a Span, select an array hole from the drop–down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.		
Array <u>W</u> ith Free	Space	<u>S</u> pan	
		Drive Group:0,R0, R1, R5, R6,592-32	20 GB
<u>្ន</u> <u>A</u> dd to S	PAN	🛉 <u>R</u> eclaim	
		🗙 Cancel 🛛 🖣 Back	Mext

Figure 10. Accept the Span

On the Virtual Drive Definition window, select the "**RAID Level**" from the first drop-down list. Here RAID 5 is chosen. If needed, change the stripe size, the policies for Access, Read, Write, IO, and Disk Cache and decide whether to use background initialization. And then Click "**Accept**" to accept the changes, or click "**Reclaim**" to delete the changes and return to the previous settings.

RAID Level	RAID 5 💌	<u>V</u> irtual Drives
<u>S</u> trip Size	256 KB 🔻	
Access Policy	RW	
Read <u>P</u> olicy	Ahead 🔻	
<u>₩</u> rite Policy	Write Through	
IQ Policy	Direct 🔻	
Drive Cache	NoChange 🔻	Next LD, Possible KAID Levels R0:592.320 GB R1:296.160 GB R5:444.240 GB R6: 296.160
Disable B <u>G</u> I	No	
Select Size	444-24 GB 🔻	

NOTE: There is a prompt in green that shows the max size of each RAID Level.

Figure 11. Virtual Drive Definition

12. If you choose the Write Through policy in step 11, the screen displays the warning "Write Through mode eliminates risk of losing cached data in case of power failure. But it may result in shower performance. Are you sure you want to select Write Through mode?" then click "Yes" to save the configuration, or click "No" to return to the previous screens and change the configuration.



Figure 12. Confirm the Write Policy

13. Click "**Next**" to continue the RAID configuration.

(intel) Intel(r) R	AID BIOS Console Config Wiz	ard – Virtual Drive Definition
RAID Level	RAID 0	<u>V</u> irtual Drives
<u>S</u> trip Size	256 KB	↓
Acc <u>e</u> ss Policy	RW	
Read <u>P</u> olicy	Ahead 🔻	
<b>⊎rite Policy</b>	Write Through	
I <u>O</u> Policy	Direct 🔻	
Drive Cache	NoChange 🔻	Press Back Button To Add Another Virtual Drive.
Disable B <u>G</u> I	No	
Select Si <u>z</u> e	KB 🔽	
	<u>ت</u>	Reclaim
		🗙 Cancel 🛛 🦛 Back 🗤 Mext

Figure 13. Save the Virtual Drive Definition

14. Click "Accept" to save the RAID configuration.

Intel(r) RAID BIOS Console Config Wizard	– Preview
Configuration Preview: This is the contribution this configuration the continue of the continu	nfiguration defined. Click ACCEPT to save ration.
Drives	<u>V</u> irtual Drives
<pre>Slot: 0, SATA, HDD, 148-080 GB, Onli Slot: 1, SATA, HDD, 148-080 GB, Onli Slot: 2, SATA, HDD, 148-080 GB, Onli Slot: 3, SATA, HDD, 148-080 GB, Onli Slot: 4, SATA, SSD, 36-321 GB, Uncon Slot: 5, SATA, SSD, 36-321 GB, Uncon Slot: 6, SATA, SSD, 36-321 GB, Uncon SCA HSEP M9 (26)</pre>	VD 0
	🗙 Cancel 🛛 🦛 Back 🛛 🖡 Accept

Figure 14. Accept Virtual Drive

15. When the screen displays "Save this Configuration?", click "Yes" to save the RAID configuration. Or you can choose "No" to change the configuration.

Intel(r) RAID BIOS Console Confirm Page
Save this Configuration ? <u>No Yes</u>

Figure 15. Accept and Save the RAID Configuration

16. When the screen displays "All data on the new Virtual Drives will be lost. Want to Initialize?", click "Yes" to initialize the RAID configuration. Or you can choose "No" to give up the initialization.

(intel)	Intel(r) RAID BIOS Console Confirm Page
	All data on the new Virtual Drives will be lost. Want to Initialize?

Figure 16. Accept to Initialize the RAID Configuration

17. If you choose "Yes", it will begin the initialization of virtual drive.

intel(r) RAID BIOS Console Virtual Drive	S
RAID BIOS Console	
ß	Virtual Drives:
	<ul> <li>Fast Initialize</li> <li>Slow Initialize</li> <li>Check Consistency</li> <li>Properties</li> <li>Set Boot Drive (current= NONE)</li> <li>Go Set Reset</li> </ul>
Home	4. Back

Figure 17. Initialize the RAID Configuration

18. Now go back to the homepage of RAID BIOS console, it displays the detailed information of the virtual drive.





### 2.2 Make ESXi 5.0 Installation Disk for 2208 Chip based RAID Controller Driver

#### 2.2.1 Preparations

- 1. Get VMware ESXi 5.0 Installation depot. User has to contact VMware to get a proper level of access right to download the ESXi 5.0 installation depot. In this document, the downloaded ESXi 5.0 installation depot is named "VMware-ESXi-5.0.0-469512-depot.zip".
- Get the VMware ESXi 5.0 Driver for 2208 Chip based RAID Controller. It can be downloaded from <u>http://downloads.vmware.com/d/details/dt\_esxi50\_lsi\_2108\_v534/dHRAYnRqZWRiZHAIJQ</u>. Extract the downloaded zip file to get the "LSI\_5\_34-offline\_bundle-455140.zip" which contains the 2208 chip based RAID controller driver.

			_0
Local Disk (C:)           test	× 😝 🛛	iearch	
elp			
•			(
Name 🔺	▼ Date modified	+ Type	- Size -
LSI_5_34-455140	2/27/2012 7:54 PM	Compressed (zip	. 207 KB
LSI_5_34-offine_bundle-455140	2/16/2012 2:34 AM	Compressed (zip	. 54 KB
Wware-ESXi-5.0.0-469512-depot	2/27/2012 11:19 PM	Compressed (zip	. 295,096 KB

#### Figure 19. Files Needed for the ESXi 5.0 Installation on 2208 Chip based RAID Controller

- 3. A system with Windows Server 2008 x64 Standard Edition already installed.
- In above system, install Microsoft.NET 2.0, you can download the Microsoft .Net 2.0 for Windows Server 2008 x64 system from <u>http://www.microsoft.com/download/en/confirmation.aspx?id=6523</u> and complete the installation.
- In above system, install Microsoft PowerShell 2.0, you can download the Microsoft PowerShell 2.0 for Windows Server 2008 x64 Standard Edition from <u>http://www.microsoft.com/download/en/details.aspx?id=20430</u>.

#### 2.2.2 Install vSphere PowerCLI

- 1. Download the VMware vSphere PowerCLI from http://www.vmware.com/support/developer/PowerCLI/index.html
- 2. Copy above downloaded file to the Windows system that has Microsoft.NET 2.0 and PowerShell 2.0 installed as mentioned in previous section. Double click the VMware vSphere PowerCLI installation icon.



Figure 20. Starting the VMware vSphere PowerCLI Installation

3. Click "Next" to begin the Installation Shield Wizard.



Figure 21. Enter the InstallShield Wizard

4. Click "Next" to continue the installation.

VMware vSphere PowerCLI		×
VMware Patents This product is covered by one or more	of the patents listed below.	P
Copyright © 1998-2012 VMwa product is protected by U.S. an intellectual property laws. VMw more U.S. Patent Numbers	re, Inc. All rights reserved. This d international copyright and ware products are covered by one o	or
D617,808, D617,809, D617,810, D6 6,704,925, 6,711,672, 6,725,289, 6 6,880,022, 6,883,095, 6,940,980, 6 7,017,041, 7,055,032, 7,065,642, 7 7,111,086, 7,111,145, 7,117,481, 7 7,260,815, 7,260,820, 7,269,683, 7 7,281,102, 7,290,253, 7,343,599, 7 7,412,702, 7,424,710, 7,428,636, 7	617,811, 6,075,938, 6,397,242, 6,496,8 6,735,601, 6,785,886, 6,789,156, 6,795, 6,944,699, 6,961,806, 6,961,941, 6,970, 7,069,413, 7,069,435, 7,082,598, 7,089, 7,149,310, 7,149,843, 7,155,558, 7,222, 7,275,136, 7,277,998, 7,277,999, 7,278, 7,356,679, 7,386,720, 7,409,487, 7,412, 7,433,951, 7,434,002, 7,447,854, 7,447,	47, 966, 562, 377, 221, 030, 492, 903,
nstallShield	< Back Next > Ca	incel

Figure 22. Copyright Information

5. Click the checkbox of "I accept the terms in the license agreement" and then click "Next" to continue the installation.

🙀 VMware vSphere PowerCLI			×
License Agreement Please read the following license agree	ement carefully.		
VMware® End	User License .	Agreement	
<ul> <li>VMware, Inc. ("VMware") pro PowerCLI (the "Software") to conditions. If you disagree with not use the Software.</li> <li>1. The Software contains a varied documentation, and sample utility programming interfaces to one or</li> </ul>	ovides the VM you subject to th any of the fo ty of materials, applications and more VMware	lware vSphere the following to llowing terms, to interface definitio sample code reg	erms and then do ns, garding renced in
I accept the terms in the license agree     I do not accept the terms in the license     I do not accept the terms in the license	ement e agreement		Print
n larcina liciti	< <u>B</u> ack	Next >	Cancel

Figure 23. Accept Installation License Agreement

6. Choose the Installation features, and you can change the installation directory if needed by click the "**Change**" buttom and choose the proper directory.

ustom Setup	
Select the program features you want installed.	
lick on an icon in the list below to change how a feat	ure is installed.
	Feature Description
vCloud Director PowerCLI	Provides cmdlets for automating vSphere features.
	This feature requires 22MB on your hard drive.
istall to: UProgram Eilee WMware Nofracts ist incluSphere Day	
talishield	

Figure 24. Installation Configuration

7. Click the "Install" to begin the VMware vSphere PowerCLI installation.

🖟 VMware vSphere PowerCLI
Ready to Install the Program     Image: Constallation installation installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield <u>&lt; B</u> ack <u>Install</u> Cancel

Figure 25. Continue to Install the VMware vSphere PowerCLI

8. The VMware vSphere PowerCLI installation is in process.

🙀 VMware	vSphere PowerCLI	_ 🗆 🗙
Installing The prog	VMware vSphere PowerCLI gram features you selected are being installed.	
ß	Please wait while the InstallShield Wizard installs VMware vSphere PowerCLI. This may take several minutes.	
	Progress:	
	Details Updating component registration	
InstallShield -		
	< Back Next >	Cancel

Figure 26. VMware vSphere PowerCLI Installing

9. When the installation is completed, click "Finish" to end the installation.



Figure 27. VMware vSphere PowerCLI Isntallation Completes

10. After the installation, there will be a VMware vSphere PowerCLI icon on the desktop, you just need to double click for use.



Figure 28. VMware vSphere PowerCLI Icon on Desktop

- 2.2.3 Add RAID Driver to the ESXi 5.0 Depot and Export Installation ISO file
- 1. Open the VMware vSphere PowerCLI by double clicking the icon on desktop.



Figure 29. VMware vSphere PowerCLI

2. Type the command **\$DefaultSoftwareDepots** 

This command is used to show the current default software depots, if the VMware vSphere PowerCLI is newly opened, it will returns nothing.



Figure 30. DefaultSoftwareDepots

Type the command Add-EsxSoftwareDepots –DepotUrl
 C:\test\ESXi\VMware-ESXi-5.0.0-469512-depot.zip (the directory of "C:\test\ESXi\..." needs to be modified to the actual directory that user copies the zip file to)

This command is used to add the ESXi 5.0 installation depot to the current image builder Image Profile , and it will return the information of the image profile.



Figure 31. Add ESXi 5.0 Installation Depot to Image Profile

#### 4. Type the command **\$DefaultSoftwareDepots**

After adding the ESXi 5.0 isntallation depot, the default software depot is the ESXi 5.0 installation index.xml now.



#### Figure 32. New Default Software Depots

#### 5. Type the command Get-EsxImageProfile

This command is used to return the current image profiles. Here it returns two image profiles of the ESXi 5.0 installation depot.

🖉 VMware vSphere PowerCLI 5.0.1					- U ×
eDepot -DepotUrl C:\test\ESXi	\VMware-E	SXi-5.0	.0-469512-depot.z	ip	
Depot Url					
zip:C:\test\ESXi\UMware-ESXi-	5.0.0-469	512-dep	ot.zip?index.xml		
PowerCLI C:\Program Files\VMw reDepots	are\Infra:	structu	re\vSphere PowerC	LI> \$DefaultS	oftwa
Depot Url					
zip:C:\test\ESXi\UMware-ESXi-	5.0.0-469	512-dep	ot.zip?index.xml		
PowerCLI C:\Program Files\VMw ofile	are\Infra:	structu	re\vSphere PowerC	LI> Get-EsxIm	agePr
Name	Vendor		Last Modified	Acceptance L	evel
ESXi-5.0.0-469512-no-tools ESXi-5.0.0-469512-standard	UMware, UMware,	Inc. Inc.	8/19/2011 1: 8/19/2011 1:	PartnerSuppo PartnerSuppo	rted rted
PowerCLI C:\Program Files\VMw	are\Infra:	structu	re\vSphere PowerC	LI>	-

Figure 33. Show Image Profiles

#### 6. Type the command **\$profs=Get-EsxImageProfile**

In above step, you can use the "Get-EsxImageProfile" command to return the image profiles directory, here you can also get the image profiles and save them in "profs", you will get an array with two elements, profs[0] is the ESXi-5.0.0-469512-no-tools image profile and profs[0] is the ESXi-5.0.0-469512-standard image profile. By save the image profiles into the array, you can call them by the "profs[0]" or "profs[1]" instead of the long string of the image profile.

🖉 VMware vSphere PowerCLI 5.0.1			
ofile			
Name	Vendor	Last Modified	Acceptance Level
ESXi-5.0.0-469512-no-tools ESXi-5.0.0-469512-standard	UMware, In UMware, In	nc. 8/19/2011 1: nc. 8/19/2011 1:	PartnerSupported PartnerSupported
PowerCLI C:\Program Files\VMw ImageProfile PowerCLI C:\Program Files\VMw	vare∖Infrastr vare∖Infrastr	ructure∖vSphere PowerCI ructure∖vSphere PowerCI	J> \$profs=Get-Esx J> \$profs[0]
Name	Vendor	Last Modified	Acceptance Level
 ESXi-5.0.0-469512-no-tools	UMware, In	nc. 8/19/2011 1:	PartnerSupported
PowerCLI C:\Program Files\VMw	are∖Infrastr	ructure\vSphere PowerCI	I> \$profs[1]
Name	Vendor	Last Modified	Acceptance Level
 ESXi-5.0.0-469512-standard	VMware, In	nc. 8/19/2011 1:	PartnerSupported
PowerCLI C:\Program Files\VMw	are\Infrastr	ructure\vSphere PowerCI	.I>

Figure 34. Get and Save Image Profile

#### 7. Type the command **\$ip=New-EsxImageProfile -CloneProfile \$profs[1] -Name** "MyProfile"

This command is used to clone the current image profile **ESXi-5.0.0-469512-standard** (profs[1] is the shortname of it) to a new image profile called "MyProfile" and assign a short name IP for the new profile. In following steps, the RAIDController Driver software package will be inserted to this new image profile and the new profile can be exported to an ISO file for ESXi 5.0 installation.

NOTE: Here you can use **New-ImageProfile –CloneProfile \$profs[1] –Name "MyProfile"**, this command has the same efficiency except it doesn't assign a new short name **IP** for the new profile.

ware, Inc. ware, Inc.	8/19/2011 1: 8/19/2011 1:	PartnerSupported
ware, Inc. ware, Inc.	8/19/2011 1: 8/19/2011 1:	PartnerSupported
		Tarenersupporceu
Infrastructu Infrastructu	re∖uSphere PowerC re∖uSphere PowerC	LI> \$profs=Get-Esx LI> \$profs[0]
ndor	Last Modified	Acceptance Level
ware, Inc.	8/19/2011 1:	PartnerSupported
Infrastructu	re∖vSphere PowerC	LI> \$profs[1]
ndor	Last Modified	Acceptance Level
ware, Inc.	8/19/2011 1:	PartnerSupported
	Infrastructu Infrastructu mdor ware, Inc. Infrastructu ndor ware, Inc.	Infrastructure\vSphere PowerC Infrastructure\vSphere PowerC ndor Last Modified ware, Inc. 8/19/2011 1: Infrastructure\vSphere PowerC ndor Last Modified ware, Inc. 8/19/2011 1:

#### Figure 35. Clone Image Profile

8. Type the command Get-EsxSoftwarePackages

This command is used to show the current software packages in the new cloned image profile, you will find a VIB file called "scsi-megaraid-sas", the version is "4.32-1vmw.500.0.0469512".

🖉 VMware vSphere PowerCLI 5.0.1			
PowerCLI C:\Program Fi. ePackage	les\VMware\Infrastructure\vSphere	PowerCLI>	Get-EsxSoftwar
Name	Version	Vendor	Release Date
net-ixgbe	2.0.84.8.2-10vmw.500.0.0.46	UMware	8/19/2011
ata-pata-hpt3x2n	0.3.4-3VMW.500.0.0.469512	Vnware	8/19/2011
enci-enci-nca	1.0-30MW.500.0.0.469512	Vnware	8/17/2011
ata-pata-atlixp	0.4.5-3VMW.500.0.0.467512 2 00 4 0 500 0 0 4407512	Unware	0/17/2011
scsi-sis79vv	2.00.4-70MW.300.0.0.407312 2.1_Eumu E00 0 0 460E12	Unware	0/17/2011
scs1-alc77xx	3.1~5VMW.500.0.0.407514 9 013 00_3 E00 0 0 4(9E13	Unware	0/17/2011
abai-uab-abai	1 0_2 E00 0 0 460E12	UMuana	0/17/2011
	E 01 02 2-20mm E00 0 0 460E12	UMuana	9/19/2011
		Unware	0/17/2011
ecci-meravaid-eac	4 32-1 umu 500 0 0 469512	IIMuawa	8/19/2011
uhei-ush-uhei	1 M-Rumu SUM M M 469512	UMuawe	8/19/2011
nat-hov?	2 0 15 c u 50 11 - 5 u mu 500 0 0	IIMuawa	8/19/2011
ata-nata-sewuewuowks	0 4 3-3umu 500 0 0 469512	IlMuane	8/19/2011
sata-ahci	3 0-6umu 500 0 0 469512	IIMuave	8/19/2011
ecei-fnic	1 5 0 3-1 umu 500 0 0 469512	IlMuave	8/19/2011
scsi-Infc820	8 2 2 1-18umu 500 0 0 469512	UMware	8/19/2011
sesi-hnsa	5 0 0-17umu 500 0 0 469512	UMuare	8/19/2011
net-igh	2.1.11.1-3umu.500.0.0.469512	UMware	8/19/2011
sata-sata-nu	3.5-3umw.500.0.0.469512	UMware	8/19/2011
net-e1000e	1.1.2-3umw.500.0.0.469512	UMware	8/19/2011
net-forcedeth	0.61-2vmw.500.0.0.469512	UMware	8/19/2011
sata-ata-piix	2.12-4vmw.500.0.0.469512	UMware	8/19/2011
scsi-gla2xxx	901.k1.1-14vmw.500.0.0.469512	UMware	8/19/2011
scsi-adp94xx	1.0.8.12-6vmw.500.0.0.469512	UMware	8/19/2011
net-sky2	1.20-2vmw.500.0.0.469512	VMware	8/19/2011
ipmi-ipmi-msghandler	39.1-4vmw.500.0.0.469512	UMware	8/19/2011
nêt-be2net	4.0.88.0-1vmw.500.0.0.469512	<b>VMware</b>	8/19/2011
ipmi-ipmi-devintf	39.1-4vmw.500.0.0.469512	UMware	8/19/2011
ipmi-ipmi-si-drv	39.1-4vmw.500.0.0.469512	VMware	8/19/2011

Figure 36. Show the Software Package in New Image Profile

9. Type the command Add-EsxSoftwareDepots –DepotUrl C:\test\ESXi\LSI\_5\_34-offline\_bundle-455140.zip

This command is used to add the RAID Controller Driver depot to current image builder Image Profile.

net-bnx2x	1.61.15.v50.1-1vmw.500.0.0	UMware	8/19/2011
scsi-mpt2sas	06.00.00.00-5vmw.500.0.0.46	UMware	8/19/2011
sata-sata-nv	3.5-3vmw.500.0.0.469512	UMware	8/19/2011
misc-drivers	5.0.0-0.0.469512	UMware	8/19/2011
net-cnic	1.10.2j.v50.7-2vmw.500.0.0	VMware	8/19/2011
scsi-mptsas	4.23.01.00-5vmw.500.0.0.469512	UMware	8/19/2011
scsi-aacraid	1.1.5.1-9vmw.500.0.0.469512	UMware	8/19/2011
tools-light	5.0.0-0.0.469512	UMware	8/19/2011
ima-qla4xxx	2.01.07-1vmw.500.0.0.469512	UMware	8/19/2011
esx-base	5.0.0-0.0.469512	UMware	8/19/2011
net-tg3	3.110h.v50.4-4vmw.500.0.0.4	UMware	8/19/2011
scsi-bnx2i	1.9.1d.v50.1-3vmw.500.0.0.4	UMware	8/19/2011
net-r8169	6.011.00-2vmw.500.0.0.469512	VMware	8/19/2011
scsi-megaraid-mbox	2.20.5.1-6vmw.500.0.0.469512	VMware	8/19/2011
PowerCLI C:\Program File eDepot -DepotUrl C:\test	s\UMware\Infrastructure\vSphere \ESXi\LSI_5_34-offline_bundle-4!	PowerCLI> 55140.zip	Add-EsxSoftwar
Depot Url			
zip:C:\test\ESXi\LSI_5_3	4-offline_bundle-455140.zip?inde	ex.xml	
PowerCLI C:\Program File	s\VMware\Infrastructure\vSphere	PowerCLI>	•

Figure 37. Add the RAID Controller Driver Depot

## 10. Type the command Add-EsxSoftwarePackage –ImageProfile MyProfile –SoftwarePackage scsi-megaraid-sas

This command is used to add the RAID Controller Driver software package (VIB file) into the ESXi installation image profile ("**MyProfile**"). As is shown on the top of the below Figure, there is a "**scsi-megaraid-sas**, **version 5.34-1vmw.500.0.406165**", this is the RAID Controller Driver software package for 2208 chip based RAID Controller, which is different from the "**scsi-megaraid-sas**, **version 4.32-1vmw.500.0.469512**" in Figure 36, and after this command line, the new scsi-megaraid-sas.vib will cover the previous one, it will run automatically during the ESXi 5.0 installation to load the RAID Controller driver.

NOTE: If you don't remove the previous one, the **add-EsxSoftwarePackage** command will automatically cover the previous one with the new one. But it is strongly recommended that you remove the previous RAID Controller driver software package

"scsi-megaraid-sas\_4.32-1vmw.500.0.0.469512.vib" before adding the new 2208 chip based RAID Controller driver software package

"scsi-megaraid-sas 5.34-1vmw.500.0.0.406165.vib" to the image profile.

You can use the command "Remove-EsxSoftwarePackage – ImageProfile MyProfile –SoftwarePackage scsi-megaraid-sas" to remove the previous scsi-megaraid-sas file.

LDHT TDHT HOMHOHOTOT	39 1-4umu 500 0 0 469512	IIMuawe	8/19/2011
et-he2net	4 0 88 0-1 umu 500 0 0 469512	IlMuane	8/19/2011
nmi-inmi-demintf	39 1-4umu 500 0 0 469512	IlMuare	8/19/2011
nmi-inmi-si-dru	39 1-4umu 500 0 0 469512	IlMuare	8/19/2011
et-ny-nic	4.0.557-3umu.500.0.0.469512	UMware	8/19/2011
ata-sata-promise	2.12-3umw.500.0.0.469512	UMware	8/19/2011
et-hnx2x	1.61.15.u50.1-1umu.500.0.0.	UMuare	8/19/2011
csi-ins	7.12.05-4umu.500.0.0.469512	UMware	8/19/2011
ta-nata-cmd64x	0.2.5-3umu 500.0.0.469512	UMuare	8/19/2011
csi-megaraid-sas	5 34+1 umu 500 0.0 406165	UMware	6/1/2011
ata-sata-sil	2 1-1umu 500 0 0 100100	UMuare	8/19/2011
ata-sata-suu	2 3-3umu 500 0 0 469512	IlMuare	8/19/2011
ta-nata-uia	0 3 3-2 umu 500 0 0 469512	IlMuare	8/19/2011
sy-thoot	5.0.0-0.0.469512	UMware	8/19/2011
csi-mntsni	4 23 01 00-5umu 500 0 0 46951	2 IIMuare	8/19/2011
ta-nata-ndc2027v	1 0-3umu 500 0 0 469512	IlMuane	8/19/2011
isc-cnic-wegister	1 1-1 umu 500 0 0 469512	IlMuare	8/19/2011
et-s2in	2 1 4 13427-3umu 500 0 0 46	IlMuane	8/19/2011
et-e1000	8 0 3 1-2 umu 500 0 0 469512	IlMuare	8/19/2011
et-enic	1 4 2 15a-1umu 500 0 0 46951	IlMuane	8/19/2011
ta-nata-amd	0 3 10-3 umu 500 0 0 469512	IlMuare	8/19/2011
cei-mut2eae	06 00 00 00-5umu 500 0 0 46	IlMuave	8/19/2011
lock-criss	3 6 14-10 umu 500 0 0 469512	IlMuave	8/19/2011
isc-dwinews	5 0 0-0 0 469512	IIMuawe	8/19/2011
et-cnic	1 10 2 i u50 7-2 umu 500 0 0	IlMuane	8/19/2011
cei-muteae	4 23 01 00-5umu 500 0 0 4695	2 IIMuawe	8/19/2011
cci-aacwaid	1 1 5 1-9umu 500 0 0 0 469512	IlMuano	8/19/2011
oole-light	5 0 0-0 0 469512	IlMuane	8/19/2011
$m_{2} = \alpha \left[ \frac{1}{2} 4 \right] \sqrt{2}$	2 01 07-1 unu 500 0 0 469512	IlMuane	8/19/2011
	5 0 0_0 0 A69519	IlMuano	8/19/2011
st Jase	3 110h u50 4-4umu 500 0 0 4	IlMuano	8/19/2011
cc cgu coi-boy?i	1 9 1d	IlMuano	9/19/2011
at = NR169	6 011 00-2 mm 500 0 0 469512	IlMuane	8/19/2011
ec LOTON	2 20 5 1-6umu 500 0 0 469512	IlMuane	8/19/2011

Figure 38. Add the RAID Controller Driver Software Package into Image Profile

## 11. Type the command Export-EsxImageProfile MyProfile –ImageProfile MyProfile –ExportToISO –FilePath C:\test\ESXi\newesxi5.iso

This command is used to export the new image profile with the RAID Controller driver software package to an ISO file. After this step, a new ESXi 5.0 installation ISO file will be created, you can burn it into a DVD disk and then install the ESXi 5.0 system.

🖉 VMware vSphere PowerCLI	5.0.1		_0_
net-enic ata-pata-amd scsi-mpt2sas block-cciss misc-drivers net-cnic scsi-mptsas scsi-aacraid tools-light ima-gla4xxx esx-base net-tg3 scsi-bnx2i net-r8169 scsi-megaraid-mbox PowerCLI C:\Program F:	1.4.2.15a-1umw.500.0 0.3.10-3umw.500.0.0 06.00.00.00-5umw.500 3.6.14-10umw.500.0.0 5.0.0-0.0.469512 1.10.2j.u50.7-2umw.500 1.1.5.1-9umw.500.0.0 5.0.0-0.0.469512 2.01.07-1umw.500.0.0 5.0.0-0.0.469512 3.110h.u50.4-4umw.50 1.9.1d.u50.1-3umw.50 6.011.00-2umw.500.0 2.20.5.1-6umw.500.0 3.100	0.0.469512       UMware         .469512       UMware         0.0.46       UMware         0.469512       UMware         0.469512       UMware         500.0.0       UMware         0.469512       UMware         0.0.0.4       UMware         0.0.0.4       UMware         0.0.0.4       UMware         0.0.0.4       UMware         0.0.0.4       UMware         0.0.0.4       UMware         0.469512       UMware	<pre>8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011 8/19/2011</pre>
Name	llendor	Last Modified	Accentance Level
MyProfile	VMware, Inc.	2/28/2012 5:	PartnerSupported
PowerCLI C:\Program F: eProfile -ImageProfile o PowerCLI C:\Program F:	iles\UMware\Infrastructu MyProfile -ExportToIsc iles\UMware\Infrastructu	ure\vSphere PowerO b -FilePath C:\tes ure\vSphere PowerO	CLI> Export-EsxImag t\ESXi\newesxi5.is CLI>

Figure 39. Export Image Profile to an ISO file

**12.** After this step, a new ESXi 5.0 installation ISO file will be created, you can burn it into a DVD disk and then install the ESXi 5.0 system

Computer	r ▼ Local Disk (C:) ▼ test ▼ ESXi ▼	👻 🛃 Se	earch	
View <u>T</u> ools <u>F</u> ▼ ]∐ Views	delp ▼			0
S	Name  LSI_5_34-455140 LSI_5_34-offline_bundle-455140 Rewesxi5.iso VMware-ESXi-5.0.0-469512-depot	<ul> <li>Date modified</li> <li>2/27/2012 7:54 PM</li> <li>2/16/2012 2:34 AM</li> <li>2/28/2012 5:48 AM</li> <li>2/27/2012 11:19 PM</li> </ul>	▼ Type Compressed (zip Compressed (zip ISO File Compressed (zip	<ul> <li>▼ Size</li> <li>207 KB</li> <li>54 KB</li> <li>297,744 KB</li> <li>295,096 KB</li> </ul>
Changed				1

Figure 40. Succeed in Making New ESXi 5.0 Installation ISO with the RAID Driver

For detailed vSphere PowerCLI commands, refer to http://www.vmware.com/support/developer/PowerCLI/PowerCLI50/html/index.html

### 2.3 VMware ESXi 5.0 Installation and Configuration on Server

#### 2.3.1 VMware ESXi 5.0 installation on Server RAID virtual drive

1. Before installing VMware ESXi 5.0, make sure that the Intel<sup>®</sup> Virtualization Technology is enabled as is shown in Figure 41.

Aptio Setup Utility - Advanced	Copyright (C) 2009 America	n Megatrends, Inc.
Processor Frequency Microcode Revision L1 Cache RAM L2 Cache RAM L3 Cache RAM Processor 1 Version Processor 2 Version	2.936Hz   2.936Hz 11   11 64KB   64KB 256KB   256KB 8192KB   8192KB Intel (R) Xeon (R) CPU X5570 @ 2.936Hz Intel (R) Xeon (R) CPU X5570 @ 2.936Hz	Intel(R) Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions. Note: A change to this option requires the system to be powered off and then back on before the setting will take
Current Intel(R) QPI Link Speed Intel(R) QPI Link Frequency Intel(R) QPI Frequency Select Intel(R) Turbo Boost Technology Enhanced Intel SpeedStep(R) Tech Processor C3 Processor C6 Intel(R) Hyper-Threading Tech Core Multi-Processing Execute Disable Bit Intel(R) Virtualization Technology Intel(R) VI for Directed I/O Hardware Prefetcher Adjacent Cache Line Prefetch Direct Cache Access (DCA)	Fast 6.4 GT/s [Auto Max] [Enabled] [Enabled] [Enabled] [Enabled] [A11] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]	<pre>effect.  ++ Select Screen 14 Select Item +/- Change Value Enter Select Field F1 General Help F9 Optimized Defaults F10 Save and Exit ESC Exit</pre>
Version 1.23.1114. Co	ppyright (C) 2009 American	Megatrends, Inc.

Figure 41. Enable Intel<sup>®</sup> Virtualization Technology

2. Insert the VMware ESXi 5.0 installation DVD and press **<F2>** to enter the BIOS boot manager, and choose to boot from the DVD-ROM.

Aptio Setup Utility - Copyright (C) 2009 American Main Advanced Security Server Management Boot Options Boot	Megatrends, Inc. : Manager
TSSTcorpDVD-ROM TS-L333AU001 Internal EFI Shell IBA GE Slot 0100 v1327 (Bus02 Dev00)Intel(r) RAID Ctlr	Select this option to boot now. Note: This list is not the system boot option order. Use the Boot Options menu to view and configure the system boot option order.
lession 1.23.1114 Commight (C) 2009 American Me	<ul> <li>++ Select Screen</li> <li>14 Select Item</li> <li>+/- Change Value</li> <li>Enter Select Field</li> <li>F1 General Help</li> <li>F9 Optimized Defaults</li> <li>F10 Save and Exit</li> <li>ESC Exit</li> </ul>
Version 1.23.1114. Copyright (C) 2009 American Me	egatrends, Inc.



3. Boot from the ESXi 5.0 standard installer.



Figure 43. VMware ESXi 5.0 Installer Automatically Boots

NOTE: If you are installing the ESXi 5.0 you make by yourself as is described in section 2.2, then it will display "**MyProfile Installer**" instead of the "**ESXi-5.0.0-441354-standard installer**" in above Figure.

#### 4. Load ESXi installer.

Loading ESXi installer
Loading /tboot.b00
Loading /b.b00
Loading /useropts.gz
Loading /k.b00
Loading /a.b00
Loading /ata-pata.v00
Loading /ata-pata.v01
Loading /ata-pata.v02
Loading /ata-pata.v03
Loading /ata-pata.v04
Loading /ata-pata.v05
Loading /ata-pata.v06
Loading /ata-pata.v07
Loading /block-cc.v00
Loading /ehci-ehc.v00
Loading /s.v00



5. Load VMKernel successfully.



#### Figure 45. VMKernel Loaded Successfully

6. Press **<Enter>** key to begin VMware ESXi 5.0 installation.



Figure 46. Enter VMware ESXi 5.0 Installation
7. Press **<F11>** to accept the user license agreement and continue the installation.



Figure 47. Accept User License Agreement

Choose the disk to install the VMware ESXi 5.0, the system automatically choose the RAID virtual disk configured in 2.2, press <Enter> to choose the virtual drive and continue the installation.

* Contains a VMF:	Select a Disk t S partition	o Install or Upg	rade	
Storage Device				Capacity
Local: INTEL RS28L081 Renote: (none)				444.24 GIB
(Esc) Cancel	(F1) Details	(F5) Refresh		Continue

Figure 48. Select the RAID Virtual Drive to Install the VMware ESXi 5.0

9. Select the keyboard layout, the default choice is **US keyboard**, and you can make choice by scroll the arrow key and then press **<Enter>** to save the choice.

Figure 49. Select Keyboard Layout

10. Enter the root password and confirm it, then press **<Enter>** to continue the installation.



Figure 50. Create a Root Password

11. Press <F11> to confirm the VMware ESXi 5.0 installation on RAID virtual drive.



Figure 51. Confirm the VMware ESXi 5.0 installation

12. The VMware ESXi 5.0 installation begins automatically.

Installing ESXi 5.0.0 9 %	
9 %	Installing ESXi 5.0.0
	9 %

Figure 52. Install the ESXi 5.0

13. After the VMware ESXi 5.0 installation, remove the installation disk and reboot the server.





#### 14. Reboot the server.



Figure 54. Reboot the Server

15. VMware ESXi 5.0 initialization.



Figure 55. VMware ESXi 5.0 Initialization

16. Reboot successfully.



Figure 56. Reboot Successfully

## 2.3.2 VMware ESXi 5.0 Network Configuration

1. Press **<F2>** to enter the Customize System/View Logs. Authentication will be required, and enter the root password.

VMware ESXi 5.0.0 (VMKerne)	l Release Build 441354)	
Intel Corporation S5520UR		
2 x Intel(R) Xeon(R) CPU X 4 GiB Memory	5570 @ 2.93GHz	
	Authentication Required	
	Enter an authorized login name and password for localhost	
Download tools to manage t http://0.0.0.0/	Configured Keyboard (US Default) Login Name: [root ] Password: [**********	
	(Enter> DK (Esc> Cance)	
<f2> Custonize System/View Logs</f2>		<pre><f12> Shut Down/Restart</f12></pre>

Figure 57. Enter the Customize System/View Logs

2. Scroll the arrows to "**Configure Management Network**", and the current hostname and IP address will be displayed on the right side of the screen. Press **<Enter>** key to enter the network management configuration.



Figure 58. Network Management Information

3. Scroll the arrows to "**IP Configuration**", current IP configuration information will be displayed on the right side of the screen. Press **<Enter>** key to change the IP address and subnet mask.



Figure 59. IP Configuration Information

4. Scroll the arrow to "Set static IP address and network configuration", then press the <space> key to choose this option, then enter the IP address and Subnet Mask as is shown in following figure, and press <Enter> key to save the configurations.



Figure 60. IP Address and Subnet Mask Configuration

5. Scroll the arrow to "**DNS configuration**", current DNS configuration information will be displayed on the right side of the screen. Press **<Enter>** key to the DNS configuration screen.



Figure 61. DNS Configuration Information

6. Scroll the arrow to **"Hostname"** and then enter the new hostname as is shown in following figure, and press **<Enter>** key to save the configurations.



Figure 62. New Hostname Configuration

7. Press **<Esc>** key to exit the DNS configuration and a restart is required. Press **<Y>** key to save the changes.



Figure 63. Save Changes of Network Configuration

# 2.4 Operating System Installation and Configuration on Client

## 2.4.1 Client operation system installation

Here install Windows 2008 R2 on the client as an example, the detailed installation steps are as follows:

- 1. Insert the Windows 2008 R2 installation disk, and choose to boot from the DVD-ROM in BIOS boot options.
- 2. Click "Next" to confirm language, time, and so on.

🐉 Install Windows			
	1		
	Windows Server 200	8	
Langua <u>ge</u> to insta	all: English		
Time and currency forma	at: English (United States)		
<u>K</u> eyboard or input metho	ud: US		
Enter your languag	ge and other preferences and cli	ck "Next" to continue.	
			<u>N</u> ext

Figure 64. Confirm Language, Time, and Keyboard

3. Click "Install Now" to begin the window server 2008 installation process.



Figure 65. Install Now

4. Select "Windows Server 2008 standard installation (Full Installation)" and click "Next".

Windows Server 2008 Standard (Full Installation)         x64         4/11/2009           Windows Server 2008 Enterprise (Full Installation)         x64         4/11/2009           Windows Server 2008 Datacenter (Full Installation)         x64         4/11/2009           Windows Server 2008 Standard (Server Core Installation)         x64         4/11/2009           Windows Server 2008 Standard (Server Core Installation)         x64         4/11/2009           Windows Server 2008 Enterprise (Server Core Installation)         x64         4/11/2009           Windows Server 2008 Datacenter (Server Core Installation)         x64         4/11/2009           Windows Server 2008 Datacenter (Server Core Installation)         x64         4/11/2009           Windows Server 2008 Datacenter (Server Core Installation)         x64         4/11/2009           Description:         This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.	Operating System	Architecture	Date Modified
Windows Server 2008 Enterprise (Full Installation)       x64       4/11/2009         Windows Server 2008 Datacenter (Full Installation)       x64       4/11/2009         Windows Server 2008 Standard (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Enterprise (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Enterprise (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Datacenter (Server Core Installation)       x64       4/11/2009         Description:       This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.       Server roles.	Windows Server 2008 Standard (Full Installation)	хб4	4/11/2009
Windows Server 2008 Datacenter (Full Installation)       x64       4/11/2009         Windows Server 2008 Standard (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Enterprise (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Datacenter (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Datacenter (Server Core Installation)       x64       4/11/2009         Description:       This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.       Server roles.	Windows Server 2008 Enterprise (Full Installation)	x64	4/11/2009
Windows Server 2008 Standard (Server Core Installation)       xb4       4/11/2009         Windows Server 2008 Enterprise (Server Core Installation)       x64       4/11/2009         Windows Server 2008 Datacenter (Server Core Installation)       x64       4/11/2009         Description:       This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.	Windows Server 2008 Datacenter (Full Installation)	x64	4/11/2009
Windows Server 2006 Enterprise (Server Core Installation)       x04       4/11/2009         Windows Server 2008 Datacenter (Server Core Installation)       x64       4/11/2009         Description:       This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.       Server roles.	Windows Server 2008 Standard (Server Core Installation)	x64	4/11/2009
Description: This option installs the complete installation of Windows Server. This installation includes the entire user interface, and it supports all of the server roles.	Windows Server 2008 Enterprise (Server Core Installation)	x04	4/11/2009
	This option installs the complete installation of Windows S user interface, and it supports all of the server roles.	erver. This installatior	includes the entire

Figure 66. Selecting the Operating System to Install

5. Enable check-box to accept license and click "Next".

ie
-1

Figure 67. Accept the Installation License

6. Select "Custom installation".



Figure 68. Select Type of Installation

7. Click "Next" to start installation.



Figure 69. Starting Installation

8. Installation completes.

## 2.4.2 Client Network Configuration

1. Open the "Network and Sharing Center" of the windows and click the "Local Area Connection 2" option as is shown in below figure.



#### Figure 70. Network and Sharing Center Page

2. Click the "Properties" to view the current network connection status.

🖣 Local Area Connect	tion 2 Statu	s		x
General				
· ·				1
Connection				
IPv4 Connectivity:		No Interr	net access	
IPv6 Connectivity:		No netwo	ork access	
Media State:			Enabled	
Duration:			00:30:09	
Speed:			1.0 Gbps	
Details				
Activity				
,				
	Sent —	<b>N</b>	Received	
Bytes:	10,451,784		940,183	
Properties	Disable	Diagnose	1	
Toperaes	. Chodole		]	
				-
			Close	

Figure 71. Current Network Connection Status

3. Choose the "Internet Protocol Version 4 (TCP/IPv4)" and then click "Properties" to view the current network configuration.

Local Area Connection 2 Properties	×				
Networking Sharing					
Connect using:					
Intel(R) 82576 Gigabit Dual Port Network Connection					
Configure					
This connection uses the following items:					
<ul> <li>File and Printer Sharing for Microsoft Networks</li> <li>Internet Protocol Version 6 (TCP/IPv6)</li> <li>Internet Protocol Version 4 (TCP/IPv4)</li> <li>Link-Layer Topology Discovery Mapper I/O Driver</li> <li>Link-Layer Topology Discovery Responder</li> </ul>					
Install Uninstall Properties					
Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.					
ОК	Cancel				

Figure 72. Internet Protocol Version (TCP/IPv4)

4. Choose **"Use the following static IP address"** and then enter the new IP address and subnet mask. Click **"OK"** to save the network configuration.

Internet Protocol Version 4 (TCP/IPv4) Properties					
General					
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.					
C Obtain an IP address automatically					
Use the following IP address:					
IP address:	192.168.1.100				
Subnet mask:	255.255.255.0				
Default gateway:	· · ·				
O Obtain DNS server address auton	natically				
□ Use the following DNS server add	resses:				
Preferred DNS server:					
Alternate DNS server:	· · ·				
Validate settings upon exit	Advanced				
	OK Cancel				

Figure 73. IP Address and Subnet Mask Configuration

5. Click "**OK**" in Figure 72 to save the network configuration. And click "**Close**" in Figure 71 to save the changes.

# 2.5 Use RWC2 on client to control the RAID controller on Server

## 2.5.1 RWC2 installation

- 1. Get the latest RWC2 installation package from http://www.intel.com
- 2. Double click the "setup.exe" file and begin the RWC2 installation.



Figure 74. Preparing the RWC2 Installation

3. Click "Next" to continue the installation.



Figure 75. Install RWC2

4. Accept the software license agreement and then click "Next" to continue the installation.

🙀 RAID Web Console 2 v11.08.03.0000 - InstallShield Wizard	×			
License Agreement Please read the following license agreement carefully.	Contraction of the			
INTEL SOFTWARE LICENSE AGREEMENT				
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.				
Do not use or load this software and any associated materials (collectively,				
the "Software") until you have carefully read the following terms and				
conditions. By loading or using the Software, you agree to the terms of this	-			
I accept the terms in the license agreement     I do not accept the terms in the license agreement				
InstallShield < <u>B</u> ack <u>N</u> ext > Cancel				

Figure 76. Accept the Software License Agreement

5. Enter the "Customer Information"; this step can be skipped and just click "**Next**" to continue the installation.

🙀 RAID Web Console 2 v11.08.03.000	0 - InstallShiek	l Wizard	×
Customer Information Please enter your information.			
User Name:			
Administrator			
Organization:			
Allow availability of this application for:			
All users			
Only for current user (A	dministrator)		
InstallShield			
	< <u>B</u> ack	<u>N</u> ext >	Cancel

Figure 77. Customer Information

6. Choose the installation directory if needed and then click "Next" to save the changes.



Figure 78. Choose the Installation Directory

7. Select the **"Setup Type"**, the default type is complete. Then click **"Next"** to save the choice and continue the installation.

🔀 RAID Web Console 2 v11.08.03.0000 - InstallShield Wizard						
Setup Type Choose the setup type that best suits your needs.						
Please select a setup type.						
Complete This option will install all program features.						
C Custom Installation This option will allow you to select or omit individual program components.						
InstallShield						

Figure 79. Choose the Installation Type

8. Click "Install" to begin the RWC2 installation process.

🙀 RAID Web Console 2 v11.08.03.0000 - InstallShield Wizard	×
<b>Ready to Install the Program</b> The wizard is ready to begin installation.	
Click Install to begin the installation.	
Click Back to review or change any of your installation settings.	
Click Cancel to exit the utility.	
InstallShield	
< <u>B</u> ack [Instal]	Cancel

Figure 80. Install the RWC2

9. Starting the installation process automatically.

🙀 RAID We	b Console 2 v11.08.03.0000 - InstallShield Wizard					
Installing The prog	Installing RAID Web Console 2 v11.08.03.0000 The program features you selected are being installed.					
Please wait while the InstallShield Wizard installs RAID Web Console 2 v11.08.03.0000. This may take several minutes.						
	Status:					
	Copying new files					
InstallShield						
	< <u>B</u> ack <u>N</u> ext >	ancel				

Figure 81. RWC2 is being installed

10. Installation completed.



Figure 82. Installation Successfully

## 2.5.2 Install LSI Provider on VMware ESXi 5.0

#### 1. The default status of the ESXi Shell is **disabled** as is shown in below figure.

Troubleshooting Mode Options	ESXi Shell
Enable ESXi Shell Enable SSH Modify ESXi Shell timeout Restart Management Agents	<b>ESXi Shell is Disabled</b> Change current state of the ESXi Shell

#### Figure 83. Default ESXi Shell Status---Disabled

#### 2. Press <Enter> key to enable the EXSi Shell.

Troubleshooting Mode Options	ESXi Shell
Disable ESXi Shell Enable SSH Modify ESXi Shell timeout Restart Management Agents	ESXi Shell is Enabled Change current state of the ESXi Shell

#### Figure 84. Set ESXi Shell Status to Enabled

#### 3. The default status of the ESXi SSH is **disabled** as is shown in below figure.

Troubleshooting Mode Options	SSH Support
Disable ESXi Shell Enable SSH Modify ESXi Shell timeout Restart Management Agents	SSH is Disabled Change current state of SSH

#### Figure 85. Default ESXi SSH Status---Disabled

4. Press <Enter> key to enable the ESXi SSH.

Troubleshooting Mode Options	SSH Support
Disable ESXi Shell Disable SSH Modify ESXi Shell timeout Restart Management Agents	<b>SSH is Enabled</b> Change current state of SSH



5. Download the pscp.exe from <a href="http://www.putty.nl/download.html">http://www.putty.nl/download.html</a> and download the SMIS VIB file from <a href="http://www.intel.com">http://www.intel.com</a>. Extract them to the local disk of client. The below figure shows the information of the pscp.exe and SMIS VIB file.



Figure 87. The pscp.exe and LSI Provider Information

6. Transfer the LSI Provider.vib file on client to the server using the command "pscp.exe LSI\_bootbank\_LSIProvider\_500.04.V0.24-261033.vib root@192.168.1.200:/", where root is the login user name of the server and 192.168.1.200 is the ESXi server IP. The password of the server will be required during the transference.



#### Figure 88. Transfer LSI provider.vib to Server through SSH

7. Press **<Ctrl+F1>** to enter the shell mode in ESXi 5.0. The user name and password will be required.



Figure 89. Enter the Shell Mode in ESXi 5.0

8. Use the command "Is" to show the contents of root directory in ESXi 5.0, and the LSI Provider.vib file can be found.

The ESXi Shell can be disabled by an administrative user. See the					
vSphere Security documentation for more information.					
~ # ls					
LSI_bootbank_LSIProvider_500.04.V0.24-261033.vib	proc				
altbootbank	productLocker				
bin	sbin				
bootbank	scratch				
dev	store				
etc	tardisks				
lib	tmp				
1 ib32	USP				
l ib64	Var				
local.tgz	vmfs				
locker	vmimages				
opt	vmupgrade				
~ # _					

Figure 90. LSI Provider Received Successfully on ESXi 5.0

9. Enter the command

"esxcli software vib install -v / LSI\_bootbank\_LSIProvider\_500.04.V0.24-261033.vib --force --maintenance-mode" to install the LSI Provider on ESXi 5.0.

# esxcli software vib install -v /LSI\_bootbank\_LSIProvider\_500.04.V0.24-261033.vib --force --maintenance-mode Installation Result Message: The update completed successfully, but the system needs to be rebooted for the changes to be effective.

Reboot Required: true VIBs Installed: LSI\_bootbank\_LSIProvider\_500.04.V0.24-261033

VIBs Removed: LSI\_bootbank\_LSIProvider\_500.04.V0.24-262041

```
VIBs Skipped:
```

#### Figure 91. Install LSI Provider on ESXi 5.0

10. Reboot the ESXi 5.0 after installing the LSI Provider.

#### 2.5.3 Change the client hosts file

- 1. Open the hosts file on client: **Disk C-->Windows-->System32-->drivers-->etc-->hosts**.
- 2. Edit the host file by adding the server information as is shown in below figure. "192.168.1.200" is the IP Address of the server in local network and "ESXi" is the server hostname, the hostname is case insensitive.

📗 hosts - Notepad					
<u>File Edit Format View Help</u>					
# Copyright (c) 1993-2	2009 Microsoft Corp.		*		
# This is a sample HOS	STS file used by Micro	osoft TCP/IP for Windows.			
# This file contains the mappings of IP addresses to host names. Each # entry should be kept on an individual line. The IP address should # be placed in the first column followed by the corresponding host name # The IP address and the host name should be separated by at least one # space.					
<pre># # Additionally, comments (such as these) may be inserted on individual # lines or following the machine name denoted by a '#' symbol. # # For example:</pre>					
# 102.54.94.97 # 38.25.63.10	rhino.acme.com x.acme.com	<pre># source server # x client host</pre>			
# localhost name resol # 127.0.0.1 # ::1	ution is handled with localhost localhost	nin DNS itself.			
192.168.1.200 E5Xi	>				
•					

Figure 92. Add server IP information in the Hosts File with Uppercase Hostname

Ľ	hosts - Notepad	- D ×				
Ei	e <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp					
#	Copyright (c) 1993-2009 Microsoft Corp.	-				
# #	This is a sample HOSTS file used by Microsoft TCP/IP for Windows.					
######	This file contains the mappings of IP addresses to host names. Eac entry should be kept on an individual line. The IP address should be placed in the first column followed by the corresponding host n The IP address and the host name should be separated by at least o space.	:h name one				
# # #	Additionally, comments (such as these) may be inserted on individu lines or following the machine name denoted by a '#' symbol.	ial				
#	For example:					
# # #	102.54.94.97rhino.acme.com# source server38.25.63.10x.acme.com# x client host					
# # #	localhost name resolution is handled within DNS itself. 127.0.0.1 localhost ::1 localhost					
19	192.168.1.200 esxi					
┛						

Figure 93. Add server IP Information in the Hosts File with Lowercase Hostname

3. Save the hosts file, and it is recommended to restart the system.

## 2.5.4 Use the RWC2 on client to control the RAID controller on server.

1. Double click the RWC2 and open it. Choose the "Display all the systems in the network of local server", uncheck "Stop discovery process of remote servers" and then click "Save Settings" to save the configuration as is shown in below figure.

RAID Web Console 2 11.08.03.00 - Configure Host
Intel® RAID Web Console 2
Display preferences
C Display only the local server
This will display only the local server in the host view screen. This setting will not stop the disocvery process of the remote RWC2 servers.
C. Display the systems from the following favorite list:
This option allows the user to list only the selected RWC2 servers in the bost view screen.
Favorite list:
Enter IP Address:
<u>A</u> dd <u>R</u> emove
Display all the systems in the network of local server.
This option allows RWC2 server to start the discovery process of all the available RWC2 remote servers in the subnet of the mentioned RWC2 server in the host view screen.
Server Discovery Setting
J stop discovery process of remote servers. Use this check boy to mapage the remote server discovery process at the local RWC2 server
ose and a reaction to manage are remote server abdovery process at are rotal remote server
Save Settings Cancel

Figure 94. Configure the Display Preference

2. Enter the **"IP Address"** of the server in Intel<sup>®</sup> RAID Web Console 2 and click **"Discover Host"** to search the host RAID Controller. The IP Address of the server will be returned, double click the IP address of the server to connect the RAID controller.

	RAID Web Console 2 11.08.03.00 - Host View				
Sector Sector	Intel®	RAID Web	Console 2		(intel)
Г	Server Detail	s			
1	This page disp You will be pro	olays all the servers t ompted for entering l	hat were discovered.Choose a s nost credentials while logging in.	erver and click on Login to start	managing that server.
ι	Use Configure	e Host to configure th	e hosts that you want to view.		
	IP Address:	192.168.1.100	Discover Host	Stop Discovery	<u>C</u> onfigure Host
	Remote <u>s</u> erv	/ers:			
		Host	IP Address	Operating System	Health
	ESXi		192.168.1.200	VMWare ESXi	Optimal
l					
l					
l					
l					
l					
	Logia	1			
	Login	l			
1	Conver(a) for	ind Discovery compl	atod		

Figure 95. Find the RAID Controller on Server

3. Enter the "User Name" and "Password" of the Server and click "Login" to enter Intel<sup>®</sup> RAID Web Console 2 on the server.



Figure 96. Login the Intel <sup>®</sup> RAID Web Console 2 on Server

4. Enter Intel<sup>®</sup> RAID Web Console 2 on Server successfully.

RAID Web Console 2	- 11.08.03.00					_ & ×
Manage Go To Log To	ools Help					
Intel <sup>®</sup> R	RAID We	b Cor	nsole 2			ntel
Dashboard Physical Loc	ical )				Welcome: [Full Access]	Log Off
Controller: Intel (R) R	AID Controller RS2BL0	B0 (Bus 2,Dev	0)			
Properties			-Usage		-Background Operations	
🚖 Status:	📀 Optimal				Virtual drive operations in progress: 0	
i Enclosures:	1		84%	Total capacity:		
III Backplanes:	0			701.284 GB		
⊘ Drives:	7		16%	Configured Capacity: 592.320 GB	Drive operations in progress: 0	
Drive groups:	1			Unconfigured Capacity:		
🗊 Virtual Drive(s):	1			100,007,00		
View server profile					More details	
-MegaRAID Advanced Sof	tware Options		Actions		Help	
MegaRAID FastPath		Enabled	Create virtual drive		How to use RWC2?	
MegaRAID Recovery		Enabled	Create CacheCade™ - SSD	Caching	How to create virtual drive?	
MegaRAID CacheCade		Enabled	Load configuration		How to enable MegaP ATD Advanced Software Options?	
Magan ATD CafeCtore		Enabled				Þ
A <b>V</b>						
ID Error Level	Date / Time				Description	
1 [Information	2012-02-14,14:36:05	Succe	ssful log on to the server User:	, Client: 192.168.1.100, Acc	ess Mode: Full, Client Time: 2012-02-14,14:36:05	
, Displaying log from server						



5. The logical view of the Server RAID controller.



Figure 98. Logical View of the Server RAID controller

# 3. Backup

# 3.1 Enable Intel<sup>•</sup> Virtualization Technology

If the Intel<sup>®</sup> Virtualization Technology in **BIOS-->Advanced-->Processor** as is shown in Figure 41 is diabled, there will be a warning while installing the VMware ESXi 5.0. This warning can be ignored and it has no effect to the following steps. So It is strongly recommended to enable the Intel<sup>®</sup> Virtualization Technology



Figure 99. Warning about Disabled Intel<sup>®</sup> Virtualization Technology

# 3.2 About the Hosts file

As is given in 2.5.3, the hosts file needs to be edited before the RAID controller can be found on client RWC2. The hostname must be the same with the server, and it is irrelevant to the case. If the hostname is deleted or wrongly spelled, then the RWC2 in client will find am empty IP Address(0.0.0.0) as is shown in following figure.

RAID Web Console 2 11.08.	03.00 - Host View		X
Intel <sup>®</sup> RAID Web	Console 2		(intel)
Server Details			
This page displays all the servers t You will be prompted for entering h	hat were discovered.Choose a s nost credentials while logging in.	server and click on Login to start i	managing that server.
Use Configure Host to configure th	e hosts that you want to view.		
IP Address: 192.168.1.100	Discover Host	Stop Discovery	<u>C</u> onfigure Host
Remote <u>s</u> ervers:			
Host	IP Address	Operating System	Health
<u>L</u> ogin			

#### Figure 100. Empty IP address is found with Wrong Hostname or No Hostname

If double click the IP Address 0.0.0.0, the login page will jump out, then enter the root user name and password.



Figure 101. Login the Empty IP Address

But cannot really enter the RWC2 of the Server, and the error information will be displayed as is shown in below figure.



Figure 102. Failed to Connect the RAID Controller on the Server

# 3.3 About the Server Memory

The VMware ESXi 5.0 needs at least 1.97GB memory. If there is not enough memory, the installation will be forced to stop as is shown in following figures.



Figure 103. Error Message for Lack of Memory Resource (1GB memory)

Figure 103 above gives the error message while installing the VMware ESXi 5.0.0 with 1GB memory.

Error(s)/Warning(s) Found During System Scan
The system encountered the following error(s).
Error(s)
<pre><memory_size 1.94="" 1.97="" are<br="" error:="" gib="" has="" host="" of="" ram.="" this="">needed&gt;</memory_size></pre>
Use the arrow keys to scroll
(F9) Back (F11) Reboot

Figure 104. Error Message for Memory Resource (2GB memory)

As is shown in Figure 104, 2\* 1GB memory chips are installed, but during the VMware ESXi 5.0 installation, it finds only 1.94 GB and at least 1.97GB memory is needed for the ESXi installation, so the installation is forced to stop. To prevent such kind of errors, it is strongly suggested that you insert at least 3GB memory before installing the ESXi 5.0 system.