Altos R720 Installation Configuration Guide

Abstract

This document provides you a quick OS installation guide on Altos R720, including Windows Server 2008, Windows Server 2008 x64, Windows Server 2003, Windows Server 2003 x64, Windows 2000, Red Hat Enterprise Linux 4.0 (32-bit & 64-bit), Red Hat Enterprise Linux 5.0 (32-bit & 64-bit), SuSE Linux Enterprise Server 9 (32-bit & 64-bit), SuSE Linux Enterprise Server 10 (32-bit & 64-bit), NetWare 6.5 and VMware ESX Server 3.5.

Version: 1.4

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CONTENTS

INTRODUCTION

This article describes the Altos R720 Installation Configuration guide:

- Hardware parts give you a briefly and quick hardware information about Altos R720
- The operating system installation tips.

Where Can I Download the Latest Altos R720 Installation Configuration Guide

1. The Altos R720 Installation Configuration Guide would be updated on a monthly basis. Please download the latest release from the Acer Support Website.

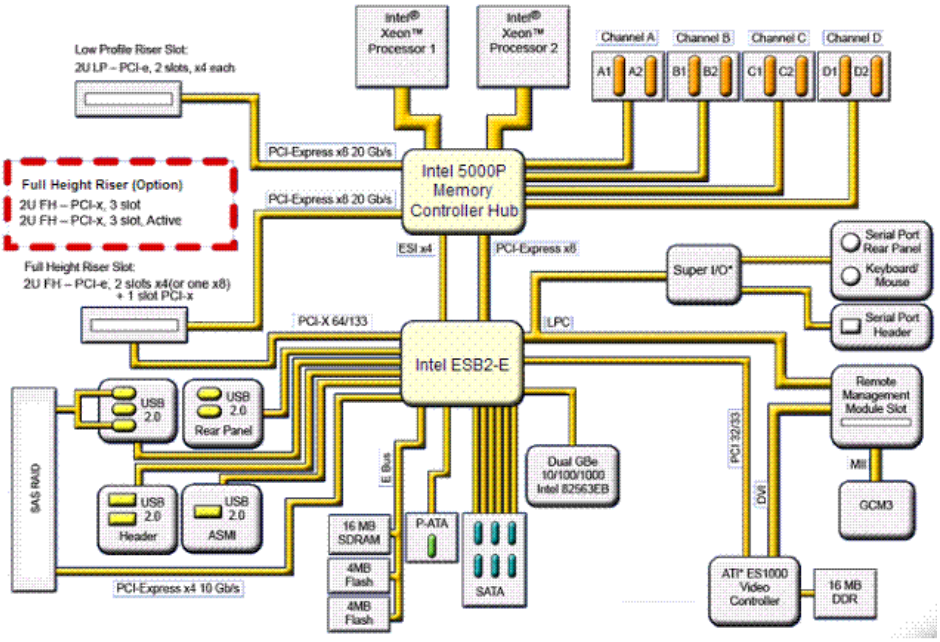
HARDWARE SPECIFICATION

Model	Altos R720
Processor	• Dual-Core Intel Xeon processors 5000/5100/5200 sequence (Dempsey, Woodcrest or Wolfdale-DP) at 1.86Hz or above Frequency • Quad-Core Intel Xeon processors 5300/5400 sequence (Clovertown or Harpertown) at 1.60Hz or above Frequency
Front Side Bus	• 667MHz • 1066MHz • 1333MHz
Cache	• 2 x 2MB L2 cache • 4MB L2 cache
Chipset	Intel chipset • North Bridge: Intel 5000P (Blackford) • South Bridge: Intel 6321ESB
Memory	• Quad FB-DIMM memory channels • 8 x DIMM sockets support 512MB/1GB/2GB FB-DIMM 533 or FB-DIMM 667 • Maximum memory of 32GB (when 4GB DIMM is available) • Up to 17 GB/s maximum b/w for FB-DIMM 533 • Up to 21 GB/s maximum b/w for FB-DIMM 677 • Support memory sparing and memory mirroring (2006 Q3)
Storage Interface	• LSI SAS 1068/1078 3Gb/s SAS controller • One ATA-100 port
Expansion Slots	Total 5 slots (three full height slots, two low profile slots) Low profile riser slot • Two x8 PCI-Express slots (with x4 throughput) Full height riser slot • Option 1: One 64-bits/133MHz/3.3V PCI-X slot + Two x8 PCI-Express slots (with x4 throughput) • Option 2: Three 64-bits/133MHz/3.3V PCI-X slots • Option 3: Three 64-bits 66MHz/100MHz/133MHz PCI-X slots
VGA	Onboard ATI ES1000 video controller w/ 16MB SDRAM
SAS Controller	Integrated SAS hardware RAID

	• RAID 0, 1, 5, 10 and 50 support • 128MB or 256MB of cache (DDR2 400 registered, 244 pin Mini DIMM) • BBU support Integrated SAS hardware RAID 2 • RAID 0, 1, 5, 6, 10, 50 and 60 support • 512MB of cache (DDR2 667 registered, 244 pin Mini DIMM) • BBU support
LAN Controller	• Onboard Intel 82563EB dual-channel gigabit network interface controller • Supporting Intel I/O Acceleration Technology
BMC	BMC (Baseboard Management Controller) • IPMI 2.0 compliant Option • Can be upgraded to Intel Remote Management Module with Virtual Media and remote KVM support
Availability sub-system	
System Power Supply	• 1+1 redundant 750W power supply • Hot Swap
Storage Subsystem	
Drive Bays	• Five 1” front accessible drive bay for 3.5” SAS/SATA HDD • One 3.5” front accessible half-height device bay space that shared with 6th HDD bay or Tape backup device
Hard Disks	• Up to 6 SAS/SATA HDD (without FDD and tape drive, additional 6th Hard Drive Upgrade Kit is required) • Only support 5 SAS/SATA HDD when Slim optical drive and FDD installed simultaneously • Only support 4 SAS/SATA HDD when Slim optical drive, FDD and tape drive installed simultaneously

BOARD LAYOUT

System Block Diagram



DIMM POPULATION GUIDELINE

Memory population

	Branch 0				Branch 1			
#	DIMM A1	DIMM A2	DIMM B1	DIMM B2	DIMM C1	DIMM C2	DIMM D1	DIMM D2
1	512 MB							
2	512 MB		512 MB					
3	512 MB		512 MB		512 MB		512 MB	
4	512 MB	512 MB	512 MB	512 MB	512 MB		512 MB	
5	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB
6	1 GB							
7	1 GB		1 GB					
8	1 GB		1 GB		1 GB		1 GB	
9	1 GB	1 GB	1 GB	1 GB	1 GB		1 GB	
10	1 GB	1 GB	1 GB	1 GB	1 GB	1 GB	1 GB	1 GB
11	2 GB							
12	2 GB		2 GB					
13	2 GB		2 GB		2 GB		2 GB	
14	2 GB	2 GB	2 GB	2 GB	2 GB		2 GB	
15	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB

Memory population with mirroring

	Branch 0				Branch 1				Total Memory	
#	DIMM A1	DIMM A2	DIMM B1	DIMM B2	DIMM C1	DIMM C2	DIMM D1	DIMM D2	Physical Memory	Detected by OS
1	512 MB		512 MB		512 MB (Mirror)		512 MB (Mirror)		2 GB	1 GB
2	512 MB	512 MB	512 MB	512 MB	512 MB (Mirror)	512 MB (Mirror)	512 MB (Mirror)	512 MB (Mirror)	4 GB	2 GB
3	1 GB		1 GB		1 GB (Mirror)		1 GB (Mirror)		4 GB	2 MB
4	1 GB	1 GB	1 GB	1 GB	1 GB (Mirror)	1 GB (Mirror)	1 GB (Mirror)	1 GB (Mirror)	8 GB	4 GB
5	2 GB		2 GB		2 GB (Mirror)		2 GB (Mirror)		8 GB	4 GB
6	2 GB	2 GB	2 GB	2 GB	2 GB (Mirror)	2 GB (Mirror)	2 GB (Mirror)	2 GB (Mirror)	16 GB	8 GB

Memory population with Sparing

	Branch 0				Branch 1				Total Memory	
#	DIMM A1	DIMM A2	DIMM B1	DIMM B2	DIMM C1	DIMM C2	DIMM D1	DIMM D2	Physical Memory	Detected by OS
1	512 MB (Sparing)	512 MB							1 GB	512 MB
2	512 MB (Sparing)	512 MB	512 MB (Sparing)	512 MB					2 GB	1 GB
3	512 MB (Sparing)	512 MB	512 MB (Sparing)	512 MB	512 MB (Sparing)	512 MB	512 MB (Sparing)	512 MB	4 GB	2 GB
4	1 GB (Sparing)	1 GB							2 GB	1 GB
5	1 GB (Sparing)	1 GB	1 GB (Sparing)	1 GB					4 GB	2 GB
6	1 GB (Sparing)	1 GB	1 GB (Sparing)	1 GB	1 GB (Sparing)	1 GB	1 GB (Sparing)	1 GB	8 GB	4 GB
7	2 GB (Sparing)	2 GB							4 GB	2 GB
8	2 GB (Sparing)	2 GB	2 GB (Sparing)	2 GB					8 GB	4 GB
9	2 GB (Sparing)	2 GB	2 GB (Sparing)	2 GB	2 GB (Sparing)	2 GB	2 GB (Sparing)	2 GB	16 GB	8 GB

OS INSTALLATION TIPS

Below is Altos R720 OS certification matrix:

Operating System	Service Pack	Status	Note
Windows Server 2008 Enterprise Edition	n/a	Certified	1, 2, 3
Windows Server 2008 Enterprise x64 Edition	n/a	Certified	1, 2, 3
Windows Server 2003 Enterprise Edition	SP2	Certified	
	SP1		
Windows Server 2003 Enterprise x64 Edition	SP2	Certified	
	SP1		
Windows 2000 Advanced Server	SP4	Installation Tested	
Red Hat Enterprise Linux 4.0	Update 3	Certified	
Red Hat Enterprise Linux 4.0 EM64T	Update 3	Certified	
Red Hat Enterprise Linux 5	n/a	Certified	
Red Hat Enterprise Linux 5 EM64T	n/a	Certified	
SuSE Linux Enterprise Server 9	SP3	Certified	
SuSE Linux Enterprise Server 9 EM64T	SP3	Certified	
SuSE Linux Enterprise Server 10	n/a	Certified	
SuSE Linux Enterprise Server 10 EM64T	n/a	Certified	
NetWare 6.5	SP5	Certified	

NOTE1. Altos R720 BIOS P88 (or later), BMC 63 (or later) and FRUSDR 47 (or later) are required to support Windows Server 2008.

NOTE2. This Windows Server 2008 certification also applies to Standard Edition and Web Server 2008.

NOTE3. EasyBUILD 8.0 build 200 (or later) can support Windows Server 2008.

The drivers required for the OS installation can be found on the EasyBUILD 7.1 build 100 (or later). We suggest that you use the drivers contained in the EasyBUILD 7.1 build 100 (or later), as these drivers are tested and qualified by Acer.

There are two ways you can get the drivers. You can either make diskettes from EasyBUILD 7.1 build 100 (or later), or put it in the optical drive and search the driver directly.

NOTE. In this section, we assume the OS is installed on the HDD connected to the onboard SAS or integrated SAS hardware RAID.

NOTE. The internal USB floppy drive is an option. If you do not have this option and you need to apply the driver during the OS installation, you need an external USB floppy drive.

Windows Server 2008 Enterprise x64 Edition Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Windows Server 2008 Enterprise x64 Edition on Altos R720.

BIOS Required

Altos R720 BIOS P88 (or later), BMC 63 (or later) and FRUSDR 47 (or later) are required to support Windows Server 2008.

Drivers Required

For Windows Server 2008 x64 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	2.20.0.64	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.6.0.1002	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.17.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.240.50.3000	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)
Hot-swap backplane	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID and NIC can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID

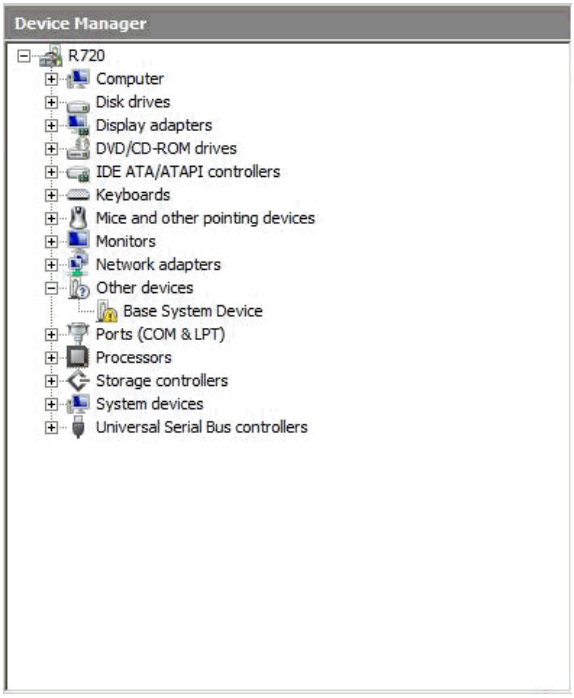
Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. The Windows Server 2008 x64 can recognize integrated SAS hardware RAID. Please replace the driver with the one provided by EasyBUILD. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive or USB Flash drive to load driver during the OS installation.

1. Please make a driver diskette from the EasyBUILD first before the installation.

2. Click on “Load Driver” when “Where do you want to install Windows” message displayed.
3. Select “**Intel(R) RAID Controller SROMBSAS18E (A:\oemsetup.inf)**” as target driver
4. After loading the RAID driver from diskette, you could click “Drive options” to partition the drive.
5. Follow the normal procedure to finish the installation.
6. After the installation completes, you would see the following devices with yellow mark in Device Manager.



Chipset Driver Installation

1. Please insert the EasyBUILD into the optical drive
2. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2008 x64** and click on **Setup**.
3. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There is built-in Ethernet controller driver with Widows Server 2008 x64. Please update the driver with EasyBUILD. Please do the same on both of the Gigabit Ethernet devices.
2. Please insert the EasyBUILD into the optical drive

3. Expand **Drivers -> Altos R720 -> Network adapters -> Intel 82563EB Gigabit Ethernet Controller**, select **Windows Server 2008 x64** and click on **Setup**.

4. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

The Base System Device with yellow mark in Device Manger is the IOAT device. After the Gigabit Ethernet controller driver installation completed at previous step, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD. Please insert the EasyBUILD into the optical drive.

2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2008 x64** and click on **Setup**.

3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.

RAID Utility Installation

1. Please insert the EasyBUILD into the optical drive.

2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID**, select **RAID Web Console 2 (Windows)** and click on **Setup.**

3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

The PROSet utility for the onboard Gigabit Ethernet controller will be installed automatically when you installing the onboard Gigabit Ethernet driver.

Windows Server 2008 Enterprise x64 Edition Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Windows Server 2008 Enterprise x64 Edition on Altos R720.

BIOS Required

Altos R720 BIOS P88 (or later), BMC 63 (or later) and FRUSDR 47 (or later) are required to support Windows Server 2008.

Drivers Required

For Windows Server 2008 x64 Installation, the following device drivers are

required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	2.20.0.64	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.6.0.1002	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.17.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.240.50.3000	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)
Hot-swap backplane	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID 2 and NIC can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

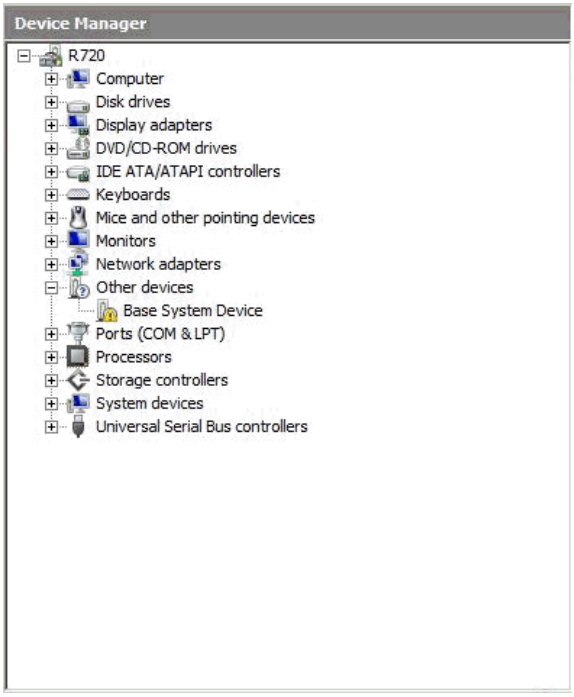
Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. The Windows Server 2008 x64 can recognize integrated SAS hardware RAID 2. Please replace the driver with the one provided by EasyBUILD. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive or USB Flash drive to load driver during the OS installation.

1. Please make a driver diskette from the EasyBUILD first before the installation.
2. Click on "Load Driver" when "Where do you want to install Windows" message displayed.
3. Select "**Intel(R) RAID Controller SROMBSASMP2 (A:\oemsetup.inf)**" as target driver
4. After loading the RAID driver from diskette, you could click "Drive options" to partition the drive.
5. Follow the normal procedure to finish the installation.
6. After the installation completes, you would see the following devices with yellow mark in Device Manager.



Chipset Driver Installation

1. Please insert the EasyBUILD into the optical drive
2. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2008 x64** and click on **Setup**.
3. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There is built-in Ethernet controller driver with Widows Server 2008 x64. Please update the driver with EasyBUILD. Please do the same on both of the Gigabit Ethernet devices.
2. Please insert the EasyBUILD into the optical drive
3. Expand **Drivers -> Altos R720 -> Network adapters -> Intel 82563EB Gigabit Ethernet Controller**, select **Windows Server 2008 x64** and click on **Setup**.
4. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

The Base System Device with yellow mark in Device Manger is the IOAT device. After the Gigabit Ethernet controller driver installation completed at previous step, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD. Please insert the EasyBUILD into the optical drive.
2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2008 x64** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.

RAID Utility Installation

1. Please insert the EasyBUILD into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID 2**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

The PROSet utility for the onboard Gigabit Ethernet controller will be installed automatically when you installing the onboard Gigabit Ethernet driver.

Windows Server 2008 Enterprise Edition Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Windows Server 2008 Enterprise Edition on Altos R720.

BIOS Required

Altos R720 BIOS P88 (or later), BMC 63 (or later) and FRUSDR 47 (or later) are required to support Windows Server 2008.

Drivers Required

For Windows Server 2008 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	2.20.0.32	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.6.0.1002	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.17.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.240.50.3000	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)
Hot-swap backplane	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

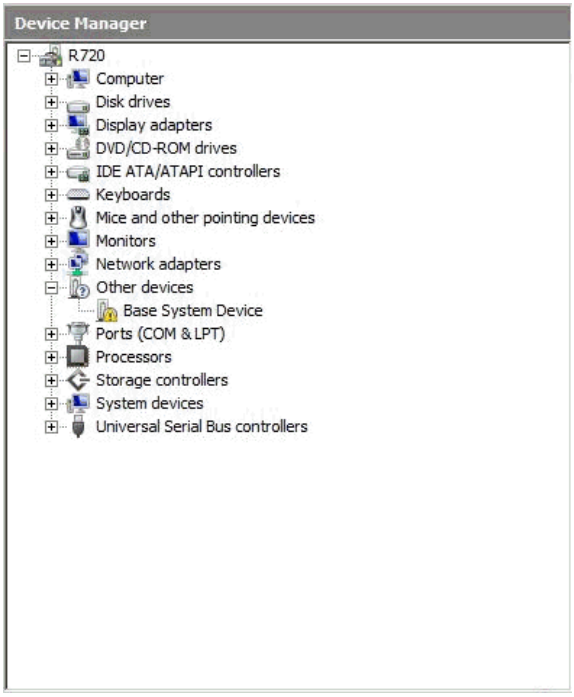
Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. The Windows Server 2008 can recognize integrated SAS hardware RAID. Please replace the driver with the one provided by EasyBUILD. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive or USB Flash drive to load driver during the OS installation.

1. Please make a driver diskette from the EasyBUILD first before the installation.
2. Click on "Load Driver" when "Where do you want to install Windows" message displayed.
3. Select "**Intel(R) RAID Controller SROMBSAS18E (A:\oemsetup.inf)**" as target driver
4. After loading the RAID driver from diskette, you could click "Drive options" to partition the drive.
5. Follow the normal procedure to finish the installation.
6. After the installation completes, you would see the following devices with yellow mark in Device Manager.



Chipset Driver Installation

1. Please insert the EasyBUILD into the optical drive
2. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2008** and click on **Setup**.
3. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There is built-in Ethernet controller driver with Widows Server 2008. Please update the driver with EasyBUILD. Please do the same on both of the Gigabit Ethernet devices.
2. Please insert the EasyBUILD into the optical drive
3. Expand **Drivers -> Altos R720 -> Network adapters -> Intel 82563EB Gigabit Ethernet Controller**, select **Windows Server 2008** and click on **Setup**.
4. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

The Base System Device with yellow mark in Device Manger is the IOAT device. After the Gigabit Ethernet controller driver installation completed at previous step, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD. Please insert the EasyBUILD into the optical drive.
2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2008** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.

RAID Utility Installation

1. Please insert the EasyBUILD into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

The PROSet utility for the onboard Gigabit Ethernet controller will be installed automatically when you installing the onboard Gigabit Ethernet driver.

Windows Server 2008 Enterprise Edition Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Windows Server 2008 Enterprise Edition on Altos R720.

BIOS Required

Altos R720 BIOS P88 (or later), BMC 63 (or later) and FRUSDR 47 (or later) are required to support Windows Server 2008.

Drivers Required

For Windows Server 2008 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	2.20.0.32	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.6.0.1002	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.17.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.240.50.3000	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)
Hot-swap backplane	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

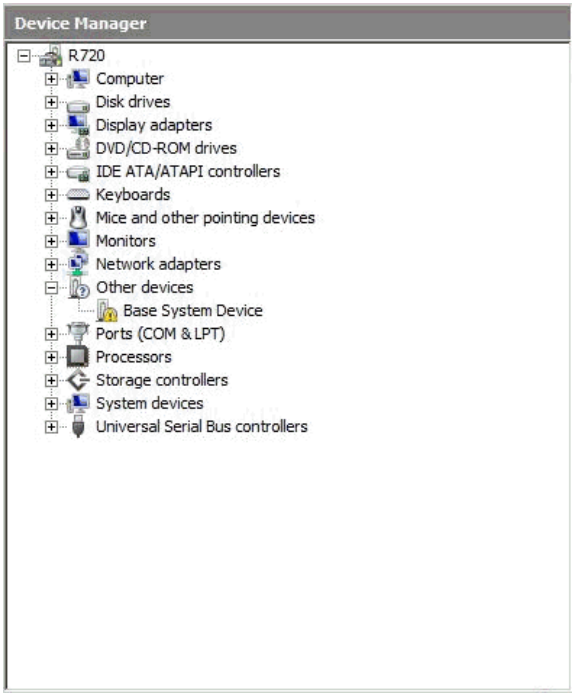
Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. The Windows Server 2008 can recognize integrated SAS hardware RAID 2. Please replace the driver with the one provided by EasyBUILD. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive or USB Flash drive to load driver during the OS installation.

1. Please make a driver diskette from the EasyBUILD first before the installation.
2. Click on "Load Driver" when "Where do you want to install Windows" message displayed.
3. Select "**Intel(R) RAID Controller SROMBSASMP2 (A:\oemsetup.inf)**" as target driver
4. After loading the RAID driver from diskette, you could click "Drive options" to partition the drive.
5. Follow the normal procedure to finish the installation.
6. After the installation completes, you would see the following devices with yellow mark in Device Manager.



Chipset Driver Installation

1. Please insert the EasyBUILD into the optical drive
2. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2008** and click on **Setup**.
3. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There is built-in Ethernet controller driver with Widows Server 2008. Please update the driver with EasyBUILD. Please do the same on both of the Gigabit Ethernet devices.
2. Please insert the EasyBUILD into the optical drive
3. Expand **Drivers -> Altos R720 -> Network adapters -> Intel 82563EB Gigabit Ethernet Controller**, select **Windows Server 2008** and click on **Setup**.
4. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

The Base System Device with yellow mark in Device Manger is the IOAT device. After the Gigabit Ethernet controller driver installation completed at previous step, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD. Please insert the EasyBUILD into the optical drive.
2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2008** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.

RAID Utility Installation

1. Please insert the EasyBUILD into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID 2**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

The PROSet utility for the onboard Gigabit Ethernet controller will be installed automatically when you installing the onboard Gigabit Ethernet driver.

Windows Server 2003 Enterprise x64 Edition Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Windows Server 2003 Enterprise x64 Edition on Altos R720.

Drivers Required

For Windows Server 2003 x64 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	1.17.0.64	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	7.3.0.1011	EasyBUILD 7.1 build 100 (or later)
Onboard Gigabit Ethernet	9.3.39.0	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	8.24.3	EasyBUILD 7.1 build 100 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.52.0	EasyBUILD 7.1 build 100 (or later)
Hot-swap backplane	5.0.6055.2	EasyBUILD 7.1 build 100 (or later)

Software Required

The management utility of integrated SAS hardware RAID and NIC can be

found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
Microsoft Scalable Networking Pack	N/A	http://www.microsoft.com/downloads/details.aspx?FamilyID=778ee6fe-5359-4c2f-b89d-f35f2b1b83cd&DisplayLang=en
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)
Intel PROSet Utility	10.4.4.2	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

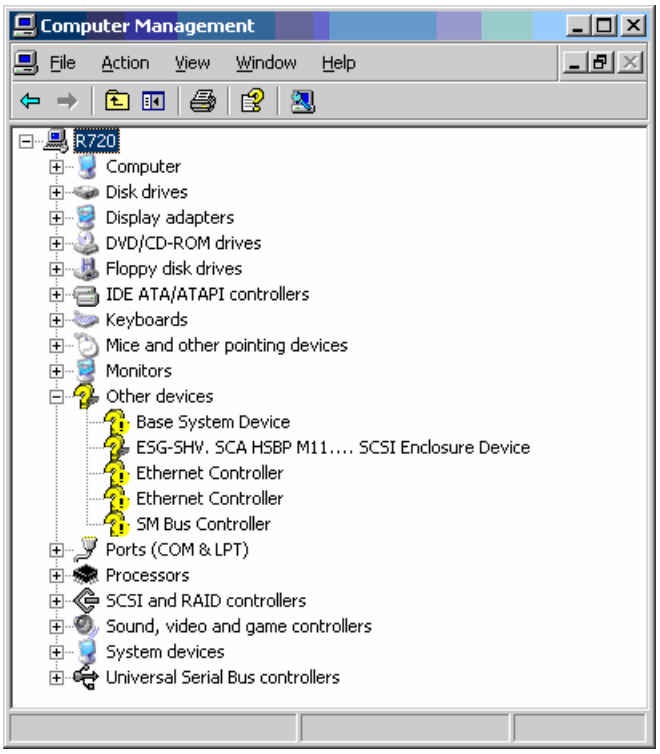
Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID in the Windows Server 2003 x64. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. As Windows Server 2003 x64 can't recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the beginning of installation for providing the driver diskette for the integrated SAS hardware RAID.
3. Select "**Intel(R) SAS RAID Controller Driver (Server 2003 for x64)**" as target driver
4. After loading the RAID driver from diskette, follow the normal procedure to finish the installation.

Chipset Driver Installation

1. After the installation completes, you would see the following devices with yellow mark in Device Manager.



2. Please insert the EasyBUILD 7.1 build 100 into the optical drive
3. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2003 x64** and click on **Setup**.
4. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. It should be the onboard Intel 82563EB Gigabit Ethernet controller. You could find the driver in EasyBUILD 7.1 build 100. Please do the same on both of the devices.
2. Right-click on the **Ethernet Controller** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this location in the search**.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for NIC driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.

8. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

1. For **Base System Device**, it should be the onboard IOAT device. You could find the driver in EasyBUILD 7.1 build 100.
2. Right-click on the **Base System Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this location in the search**.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

Hot-swap Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R720.
2. Right-click on the **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select Install from a list or specific location (Advanced).
5. Select Search the best driver these locations and check Include this location in the search.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for Hot-swap backplane driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel (r) SCA Hotswap Backplane** listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD 7.1 build 100. Please insert the

EasyBUILD 7.1 build 100 into the optical drive.

2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2003 x64** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.
4. After installing the driver, you would see **ATI ES1000** listed in Display adapters.

Microsoft Scalable Networking Pack Installation

You can find the Microsoft Scalable Networking Pack for Windows Server 2003 x64 in the Microsoft website: http://www.microsoft.com/downloads/details.aspx?FamilyID=778ee6fe-5359-4c2f-b89d-f35f2b1b83cd&DisplayLang=en

1. Download the SNP from Microsoft website.
2. Double-click on the downloaded file to run the installation program.
3. Follow the instruction to install the SNP and reboot the server after the SNP is installed.

RAID Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R720 -> Intel 82563EB Gigabit Controller**, select **PROSet Utility (Windows Server 2003 x64)** and click on **Setup**.
3. Follow the instruction and use the default setting to complete the Network Utility Installation.

Windows Server 2003 Enterprise x64 Edition Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Windows Server 2003 Enterprise x64 Edition on Altos R720.

Drivers Required

For Windows Server 2003 x64 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	2.20.0.64	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.3.0.1011	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.18.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.24.3-060405a-038923C-Intel	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)
Hot-swap backplane	5.0.6262.1	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 and NIC can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
Microsoft Scalable Networking Pack	N/A	http://www.microsoft.com/downloads/details.aspx?FamilyID=778ee6fe-5359-4c2f-b89d-f35f2b1b83cd&DisplayLang=en
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

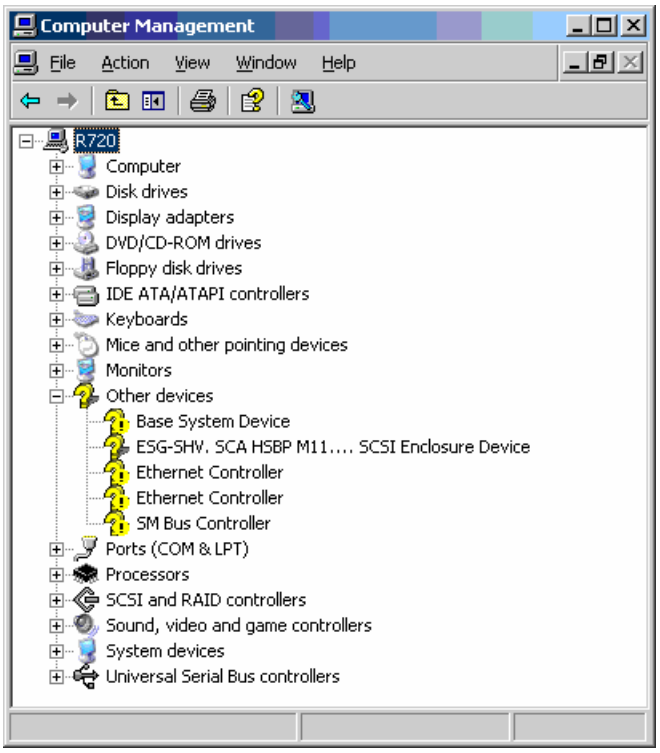
NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the Windows Server 2003 x64. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. As Windows Server 2003 x64 can't recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the beginning of installation for providing the driver diskette for the integrated SAS hardware RAID 2.
3. Select "**Intel(R) SAS RAID Controller Driver (Server 2003 for x64)**" as target driver
4. After loading the RAID driver from diskette, follow the normal procedure

to finish the installation.

Chipset Driver Installation

1. After the installation completes, you would see the following devices with yellow mark in Device Manager.



2. Please insert the EasyBUILD 7.1 build 100 into the optical drive
3. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2003 x64** and click on **Setup**.
4. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. It should be the onboard Intel 82563EB Gigabit Ethernet controller. You could find the driver in EasyBUILD 7.1 build 100. Please do the same on both of the devices.
2. Right-click on the **Ethernet Controller** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this**

location in the search.

6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for NIC driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

1. For **Base System Device**, it should be the onboard IOAT device. You could find the driver in EasyBUILD 7.1 build 100.
2. Right-click on the **Base System Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this location in the search**.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

Hot-swap Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R720.
2. Right-click on the **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select Install from a list or specific location (Advanced).
5. Select Search the best driver these locations and check Include this location in the search.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for Hot-swap backplane driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel (r) SCA Hotswap Backplane**

listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD 7.1 build 100. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2003 x64** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.
4. After installing the driver, you would see **ATI ES1000** listed in Display adapters.

Microsoft Scalable Networking Pack Installation

You can find the Microsoft Scalable Networking Pack for Windows Server 2003 x64 in the Microsoft website:
http://www.microsoft.com/downloads/details.aspx?FamilyID=778ee6fe-5359-4c2f-b89d-f35f2b1b83cd&DisplayLang=en

1. Download the SNP from Microsoft website.
2. Double-click on the downloaded file to run the installation program.
3. Follow the instruction to install the SNP and reboot the server after the SNP is installed.

RAID Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand Utilities -> Altos R720 -> Integrated SAS hardware RAID 2, select RAID Web Console 2 (Windows) and click on Setup.
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R720 -> Intel 82563EB Gigabit Controller**, select **PROSet Utility (Windows Server 2003 x64)** and click on **Setup**.
3. Follow the instruction and use the default setting to complete the Network Utility Installation.

Windows Server 2003 Enterprise Edition Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Windows Server 2003 Enterprise Edition on Altos R720.

Drivers Required

For Windows Server 2003 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	1.17.0.32	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	7.3.0.1011	EasyBUILD 7.1 build 100 (or later)
Onboard Gigabit Ethernet	9.3.39.0	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	8.24.3	EasyBUILD 7.1 build 100 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.52.0	EasyBUILD 7.1 build 100 (or later)
Hot-swap backplane	5.0.6055.2	EasyBUILD 7.1 build 100 (or later)

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
Microsoft Scalable Networking Pack	N/A	http://www.microsoft.com/downloads/details.aspx?FamilyID=c65f4a89-f4da-463e-a496-4b5abd660bf9&DisplayLang=en
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)
Intel PROSet Utility	10.4.4.2	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

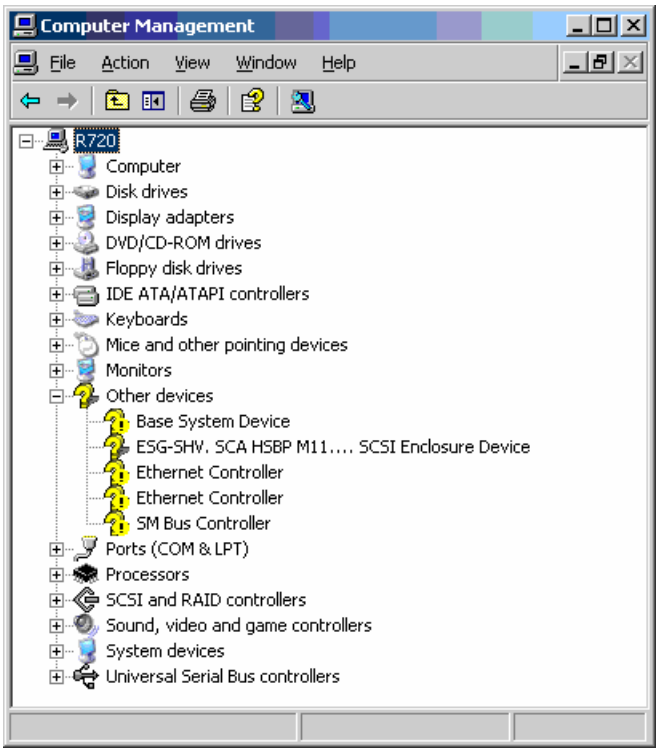
NOTE. There is no built-in driver Integrated SAS hardware RAID in the Windows Server 2003. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. As Windows Server 2003 can't recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the integrated SAS hardware RAID.
3. Select "**Intel(R) SAS RAID Controller Driver (Server 2003 32-bit)**" as target driver
4. After loading the RAID driver from diskette, follow the normal procedure

to finish the installation.

Chipset Driver Installation

1. After the installation completes, you would see the following devices with yellow mark in Device Manager.



2. Please insert the EasyBUILD 7.1 build 100 into the optical drive
3. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2003** and click on **Setup**.
4. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. It should be the onboard Intel 82563EB Gigabit Ethernet controller. You could find the driver in EasyBUILD 7.1 build 100. Please do the same on both of the devices.
2. Right-click on the **Ethernet Controller** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this**

location in the search.

6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for NIC driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

1. For **Base System Device**, it should be the onboard IOAT device. You could find the driver in EasyBUILD 7.1 build 100.
2. Right-click on the **Base System Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this location in the search**.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

Hot-swap Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R720.
2. Right-click on the **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select Install from a list or specific location (Advanced).
5. Select Search the best driver these locations and check Include this location in the search.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for Hot-swap backplane driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel (r) SCA Hotswap Backplane**

listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD 7.1 build 100. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2003** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.
4. After installing the driver, you would see **ATI ES1000** listed in Display adapters.

Microsoft Scalable Networking Pack Installation

You can find the Microsoft Scalable Networking Pack for Windows Server 2003 in the Microsoft website:
http://www.microsoft.com/downloads/details.aspx?FamilyID=c65f4a89-f4da-463e-a496-4b5abd660bf9&DisplayLang=en

1. Download the SNP from Microsoft website.
2. Double-click on the downloaded file to run the installation program.
3. Follow the instruction to install the SNP and reboot the server after the SNP is installed.

RAID Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R720 -> Intel 82563EB Gigabit Controller**, select **PROSet Utility (Windows Server 2003)** and click on **Setup**.
3. Follow the instruction and use the default setting to complete the Network Utility Installation.

Windows Server 2003 Enterprise Edition Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Windows Server 2003 Enterprise Edition on Altos R720.

Drivers Required

For Windows Server 2003 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	2.20.0.32	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.3.0.1011	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.18.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.24.3-060405a-038923C-Intel	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)
Hot-swap backplane	5.0.6262.1	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
Microsoft Scalable Networking Pack	N/A	http://www.microsoft.com/downloads/details.aspx?FamilyID=c65f4a89-f4da-463e-a496-4b5abd660bf9&DisplayLang=en
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the Windows Server 2003. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

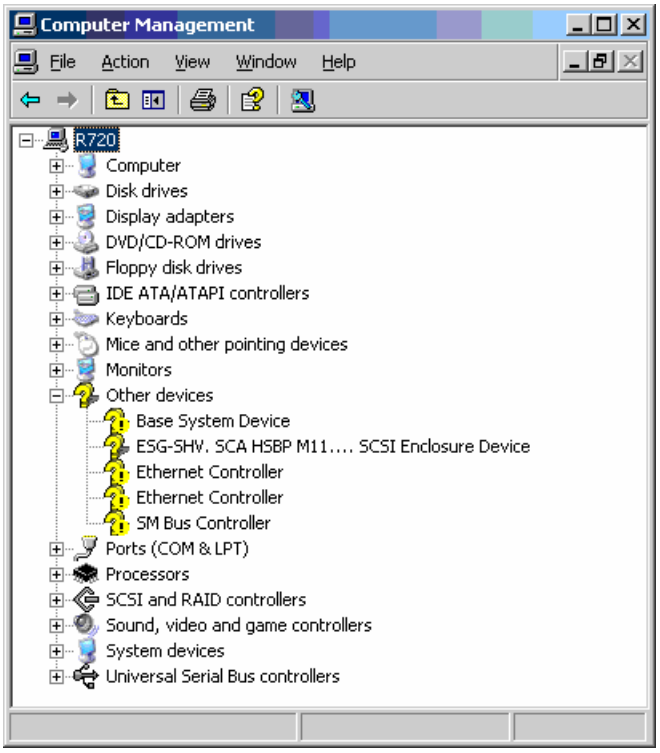
1. As Windows Server 2003 can't recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the integrated SAS hardware RAID 2.
3. Select "**Intel(R) SAS RAID Controller Driver (Server 2003 32-bit)**" as target

driver

4. After loading the RAID driver from diskette, follow the normal procedure to finish the installation.

Chipset Driver Installation

1. After the installation completes, you would see the following devices with yellow mark in Device Manager.



2. Please insert the EasyBUILD 7.1 build 100 into the optical drive

3. Expand **Drivers -> Altos R720 -> Chipset**, select **Windows Server 2003** and click on **Setup**.

4. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. It should be the onboard Intel 82563EB Gigabit Ethernet controller. You could find the driver in EasyBUILD 7.1 build 100. Please do the same on both of the devices.

2. Right-click on the **Ethernet Controller** and select **Update Driver**.

3. Select **No, not this time**. Do not connect to Windows Update to search the driver.

4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this location in the search**.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for NIC driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

1. For **Base System Device**, it should be the onboard IOAT device. You could find the driver in EasyBUILD 7.1 build 100.
2. Right-click on the **Base System Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select **Install from a list or specific location (Advanced)**.
5. Select **Search the best driver these locations** and check **Include this location in the search**.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

Hot-swap Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R720.
2. Right-click on the **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** and select **Update Driver**.
3. Select **No, not this time**. Do not connect to Windows Update to search the driver.
4. Select Install from a list or specific location (Advanced).
5. Select Search the best driver these locations and check Include this location in the search.
6. Click on **Browse** and specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for Hot-swap backplane driver in Driver required section.

7. Click on **Next** and follow the instruction to finish the driver update.
8. After installing the driver, you would see **Intel (r) SCA Hotswap Backplane** listed in System devices.

VGA Driver Installation

1. Windows will treat onboard VGA as Standard VGA device. You can find the ATI ES1000 driver in EasyBUILD 7.1 build 100. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Drivers -> Altos R720 -> Graphics adapters -> ATI ES1000**, select **Windows Server 2003** and click on **Setup**.
3. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.
4. After installing the driver, you would see **ATI ES1000** listed in Display adapters.

Microsoft Scalable Networking Pack Installation

You can find the Microsoft Scalable Networking Pack for Windows Server 2003 in the Microsoft website:
http://www.microsoft.com/downloads/details.aspx?FamilyID=c65f4a89-f4da-463e-a496-4b5abd660bf9&DisplayLang=en

1. Download the SNP from Microsoft website.
2. Double-click on the downloaded file to run the installation program.
3. Follow the instruction to install the SNP and reboot the server after the SNP is installed.

RAID Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID 2**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R720 -> Intel 82563EB Gigabit Controller**, select **PROSet Utility (Windows Server 2003)** and click on **Setup**.
3. Follow the instruction and use the default setting to complete the Network Utility Installation.

Windows 2000 Advanced Server SP4 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Microsoft Windows 2000 Advanced Server SP4 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For Windows 2000 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	1.17.0.32	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	7.3.0.1011	EasyBUILD 7.1 build 100 (or later)
Onboard Gigabit Ethernet	9.3.39	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	8.24.3	EasyBUILD 7.1 build 100 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.52.0	EasyBUILD 7.1 build 100 (or later)
Hot-swap backplane	5.0.6055.2	EasyBUILD 7.1 build 100 (or later)

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)
Intel PROSet Utility	10.4.4.2	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

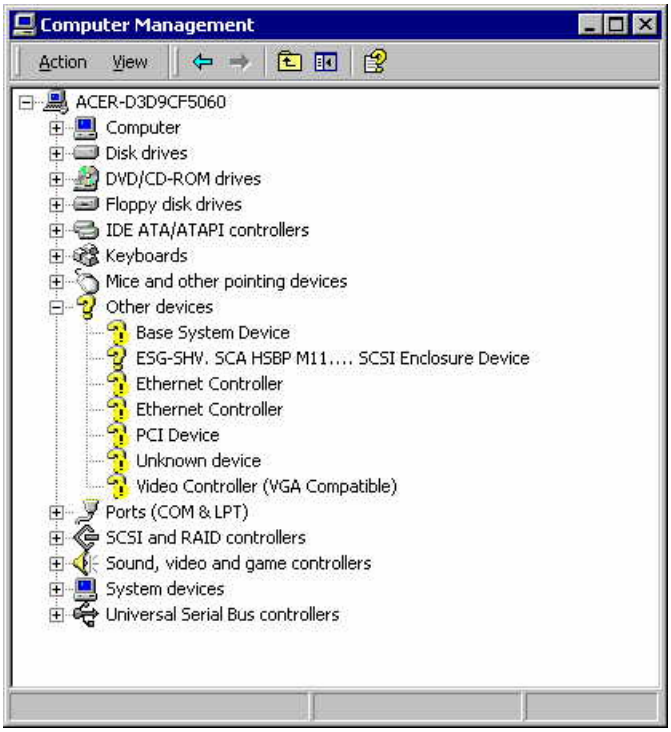
NOTE. There is no built-in driver Integrated SAS hardware RAID in the Windows Server 2003. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. As Windows 2000 can't recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the onboard ROMB.
3. Select "**Intel(R) SAS RAID Controller Driver (Windows 2000)**" as target driver

4. After loading the driver from diskette, follow the normal procedure to finish the installation.

Chipset Driver Installation

1. After the installation completes, you would see the following other devices listed in Device Manager.



2. Please insert the EasyBUILD 7.1 build 100 into the optical drive
3. Expand **Drivers -> Altos R720 -> Chipset** and double-click on **Windows 2000**.
4. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

5. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. It should be the onboard Intel 82563EB Gigabit Ethernet controller. You could find the driver in EasyBUILD 7.1 build 100. Please do the same on the both of the devices.
6. Right-click on the **Ethernet Controller** and select **Properties**.
7. Select **Driver** tab and click on **Update Driver**.
8. Follow the instructions. Select Search for a suitable driver for my device (Recommended) and click on Next.

9. Check on the **Specify a location** and click on **Next** to specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for NIC driver in Driver required section.
10. Follow the instructions to finish the installation.
11. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

1. For **Base System Device**, it should be the onboard IOAT device. You could find the driver in Resource CD.
2. Right-click on the **Base System Device** and select **Properties**.
3. Select **Driver** tab and click on **Update Driver**.
4. Follow the instructions. Select Search for a suitable driver for my device (Recommended) and click on Next.
5. Check on the **Specify a location** and click on **Next** to specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
6. Follow the instruction to finish the driver update.
7. After installing the driver, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

Hot-swap Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R720.
2. Right-click on the **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** and select **Properties**.
3. Select **Driver** tab and click on **Update Driver**.
4. Follow the instructions. Select Search for a suitable driver for my device (Recommended) and click on Next.
5. Check on the **Specify a location** and click on **Next** to specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
6. Follow the instruction to finish the driver update.
7. After installing the driver, you would see **Intel (r) SCA Hotswap Backplane** listed in System devices.

VGA Driver Installation

1. There is a **VGA controller (VGA Compatible)** listed under **Other devices** in

Windows Device Manager. It is the ATI ES1000 for R720.

2. Insert the EasyBUILD 7.1 build 100 into the optical drive.
3. Expand **Drivers** -> **Altos R720 -> Graphics adapters -> ATI ES1000** and double-click on **Windows 2000.**
4. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.
5. After installing the driver, you would see **ATI ES1000** listed in Display adapters.

RAID Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R720 -> Intel 82563EB Gigabit Controller**, select **PROSet Utility (Windows 2000)** and click on **Setup**.
3. Follow the instruction and use the default setting to complete the Network Utility Installation.

Windows 2000 Advanced Server SP4 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Microsoft Windows 2000 Advanced Server SP4 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For Windows 2000 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	2.20.0.32	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	8.3.0.1011	EasyBUILD 8.0 build 200 (or later)
Onboard Gigabit Ethernet	9.12.18.0	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	8.24.3-060405a-038923C-Intel	EasyBUILD 8.0 build 200 (or later)
Onboard USB 2.0	N/A	OS built-in
IOAT	1.2.79.9	EasyBUILD 8.0 build 200 (or later)

Hot-swap backplane	5.0.6262.1	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)
Intel PROSet Utility	13.0.44.0	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

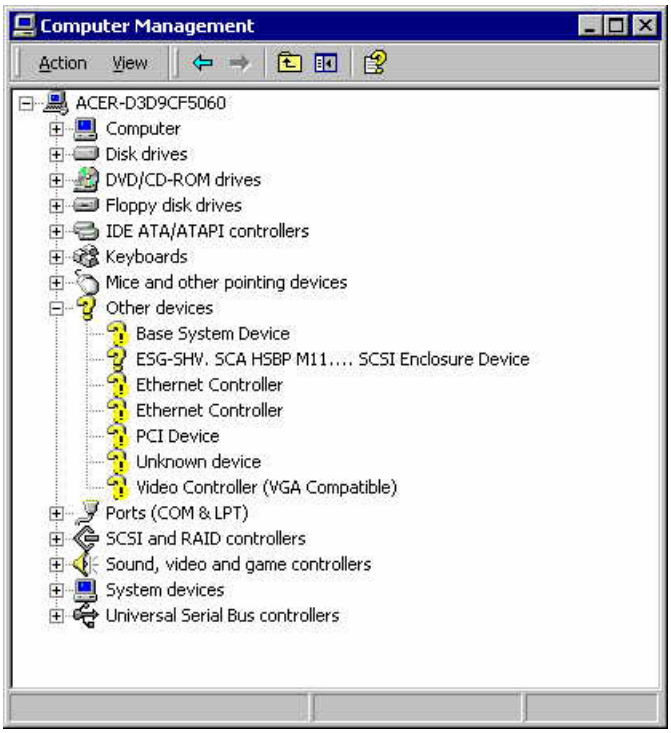
Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the Windows Server 2003. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. As Windows 2000 can't recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the onboard ROMB.
3. Select "**Intel(R) SAS RAID Controller Driver (Windows 2000)**" as target driver
4. After loading the driver from diskette, follow the normal procedure to finish the installation.

Chipset Driver Installation

1. After the installation completes, you would see the following other devices listed in Device Manager.



2. Please insert the EasyBUILD 7.1 build 100 into the optical drive
3. Expand **Drivers -> Altos R720 -> Chipset** and double-click on **Windows 2000**.
4. Follow the instruction to install the driver and reboot the server after the chipset driver is installed.

Gigabit Ethernet Driver Installation

1. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. It should be the onboard Intel 82563EB Gigabit Ethernet controller. You could find the driver in EasyBUILD 7.1 build 100. Please do the same on the both of the devices.
2. Right-click on the **Ethernet Controller** and select **Properties**.
3. Select **Driver** tab and click on **Update Driver**.
4. Follow the instructions. Select Search for a suitable driver for my device (Recommended) and click on Next.
5. Check on the **Specify a location** and click on **Next** to specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for NIC driver in Driver required section.
6. Follow the instructions to finish the installation.
7. After installing the driver, you would see **Intel(R) PRO/1000 EB Network Connection with I/O Acceleration** listed in Network adapters.

IOAT Driver Installation

1. For **Base System Device**, it should be the onboard IOAT device. You could find the driver in Resource CD.
2. Right-click on the **Base System Device** and select **Properties**.
3. Select **Driver** tab and click on **Update Driver**.
4. Follow the instructions. Select Search for a suitable driver for my device (Recommended) and click on Next.
5. Check on the **Specify a location** and click on **Next** to specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
6. Follow the instruction to finish the driver update.
7. After installing the driver, you would see **Intel(R) 5000 Series Chipsets Integrated Device – 1A38** listed in System devices.

Hot-swap Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R720.
2. Right-click on the **ESG-SHV SCA HSBP M11.... SCSI Enclosure Device** and select **Properties**.
3. Select **Driver** tab and click on **Update Driver**.
4. Follow the instructions. Select Search for a suitable driver for my device (Recommended) and click on Next.
5. Check on the **Specify a location** and click on **Next** to specify the path for the driver. Please refer to the EasyBUILD Version 7.1 build 100 for IOAT driver in Driver required section.
6. Follow the instruction to finish the driver update.
7. After installing the driver, you would see **Intel (r) SCA Hotswap Backplane** listed in System devices.

VGA Driver Installation

1. There is a **VGA controller (VGA Compatible)** listed under **Other devices** in Windows Device Manager. It is the ATI ES1000 for R720.
2. Insert the EasyBUILD 7.1 build 100 into the optical drive.
3. Expand **Drivers** -> **Altos R720 -> Graphics adapters -> ATI ES1000** and double-click on **Windows 2000.**
4. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.

5. After installing the driver, you would see **ATI ES1000** listed in Display adapters.

RAID Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R720 -> Integrated SAS hardware RAID 2**, select **RAID Web Console 2 (Windows)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the RAID Utility Installation.

Network Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R720 -> Intel 82563EB Gigabit Controller**, select **PROSet Utility (Windows 2000)** and click on **Setup**.
3. Follow the instruction and use the default setting to complete the Network Utility Installation.

Red Hat Enterprise Linux 5.0 EM64T Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 5.0 EM64T on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 5.0 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.03.09	EasyBUILD 8.0 build 100 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.6.5	EasyBUILD 8.0 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.19-01	EasyBUILD 8.0 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver for Integrated SAS hardware RAID in the Red Hat Enterprise Linux 5.0 EM64T. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 5.0 EM64T cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.
5. At the package selection step, select **Software Development** for the installation package.
6. Please follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

NOTE. Please install the `kernel-devel-<version>` package with the CD #1 of Red Hat Enterprise Linux 5 EM64T prior to install the Gigabit Ethernet driver.

1. You can find the Gigabit Ethernet driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

   ```
   # mount /dev/dvd /mnt
   # cp –R /mnt/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
   ```

2. Remove the OS built-in NIC driver

   ```
   # rmmod e1000.ko
   ```

3. Change the directory to the driver source and install the driver

   ```
   # cd /tmp/src/
   # make install
   # insmod e1000.ko
   ```

4. Run the kudzu utility, it will auto detect the Gigabit Ethernet controller and help you to configure it.

   ```
   # kudzu
   ```

5. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

IOAT driver installation

1. Please remove the old version of IOAT driver from the system manually.

   ```
   # cd  /lib/modules/$(uname -r)/kernel/drivers/dma
   # mv ioatdma.ko ioatdma.ko.bak
   ```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

   ```
   Copy the IOAT driver to /tmp
   # cd /tmp
   # tar zxf ioatdma-<ioat version>.tar.gz
   ```

3. Install the IOAT driver

   ```
   # cd ioatdma-<ioat version>
   # make install
   ```

4. Load the IOAT driver

   ```
   # modprobe dca
   # cd ioatdma
   # insmod ioatdma.ko
   # modprobe ioatdma
   # ll /sys/class/dma/
   ```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

NOTE. Please install the compat-libstdc++-296-2.96-138.i386.rpm and compat-libstdc++-33-3.2.3-61.i386.rpm packages with the CD #3 of Red Hat Enterprise Linux 5 EM64T prior to install the RAID Web Console 2.

1. You can find the RAID Web Console 2 in EasyBUILD. Please copy the utility from the EasyBUILD to HDD first.

   ```
   # mount /media/cdrecorder
   # cp –R
   /media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/.
   /tmp
   ```

2. Install RAID Web Console 2 utility

   ```
   # cd /tmp/
   # unzip ir3_Linux_RWC2_v2_19_01.zip
   ```

```
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2 on, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 5.0 EM64T Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Red Hat Enterprise Linux 5.0 EM64T on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For Red Hat Enterprise Linux 5.0 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver for Integrated SAS hardware RAID 2 in the Red Hat Enterprise Linux 5.0 EM64T. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 5.0 EM64T cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. At the package selection step, select **Software Development** for the installation package.
6. Please follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

NOTE. Please install the `kernel-devel-<version>` package with the CD #1 of Red Hat Enterprise Linux 5 EM64T prior to install the Gigabit Ethernet driver.

1. You can find the Gigabit Ethernet driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
# mount /dev/dvd /mnt
# cp –R /mnt/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Remove the OS built-in NIC driver

```
# rmmod e1000.ko
```

3. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

4. Run the kudzu utility, it will auto detect the Gigabit Ethernet controller and help you to configure it.

```
# kudzu
```

5. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

IOAT driver installation

1. Please remove the old version of IOAT driver from the system manually.

```
# cd  /lib/modules/$(uname -r)/kernel/drivers/dma
# mv ioatdma.ko ioatdma.ko.bak
```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
Copy the IOAT driver to /tmp
# cd /tmp
# tar zxf ioatdma-<ioat version>.tar.gz
```

3. Install the IOAT driver

```
# cd ioatdma-<ioat version>
# make install
```

4. Load the IOAT driver

```
# modprobe dca
# cd ioatdma
# insmod ioatdma.ko
# modprobe ioatdma
# ll /sys/class/dma/
```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

NOTE. Please install the compat-libstdc++-296-2.96-138.i386.rpm and compat-libstdc++-33-3.2.3-61.i386.rpm packages with the CD #3 of Red Hat Enterprise Linux 5 EM64T prior to install the RAID Web Console 2.

1. You can find the RAID Web Console 2 in EasyBUILD. Please copy the utility from the EasyBUILD to HDD first.

```
# mount /media/cdrecorder
# cp –R
/media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/.
/tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v2_19_01.zip
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2 on, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 5.0 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 5.0 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 5.0 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.03.09	EasyBUILD 8.0 build 100 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.6.5	EasyBUILD 8.0 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.19-01	EasyBUILD 8.0 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver for Integrated SAS hardware RAID in the Red Hat Enterprise Linux 5.0. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 5.0 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.

5. At the package selection step, select **Software Development** for the installation package.
6. Please follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

NOTE. Please install the `kernel-devel-<version>` package with the CD #1 of Red Hat Enterprise Linux 5 prior to install the Gigabit Ethernet driver.

1. You can find the Gigabit Ethernet driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
# mount /dev/dvd /mnt
# cp –R /mnt/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Remove the OS built-in NIC driver

```
# rmmod e1000.ko
```

3. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

4. Run the kudzu utility, it will auto detect the Gigabit Ethernet controller and help you to configure it.

```
# kudzu
```

5. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

IOAT driver installation

1. Please remove the old version of IOAT driver from the system manually.

```
# cd  /lib/modules/$(uname -r)/kernel/drivers/dma
# mv ioatdma.ko ioatdma.ko.bak
```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
Copy the IOAT driver to /tmp
# cd /tmp
# tar zxf ioatdma-<ioat version>.tar.gz
```

3. Install the IOAT driver

```
# cd ioatdma-<ioat version>
# make install
```

4. Load the IOAT driver

```
# modprobe dca
# cd ioatdma
# insmod ioatdma.ko
# modprobe ioatdma
# ll /sys/class/dma/
```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

NOTE. Please install the compat-libstdc++-296-2.96-138.i386.rpm and compat-libstdc++-33-3.2.3-61.i386.rpm packages with the CD #2 of Red Hat Enterprise Linux 5 prior to install the RAID Web Console 2.

1. You can find the RAID Web Console 2 in EasyBUILD. Please copy the utility from the EasyBUILD to HDD first.

```
# mount /media/cdrecorder
# cp –R
/media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/.
/tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v2_19_01.zip
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2 on, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 5.0 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Red Hat Enterprise Linux 5.0 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For Red Hat Enterprise Linux 5.0 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD.

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver for Integrated SAS hardware RAID 2 in the Red Hat Enterprise Linux 5.0. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 5.0 cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. At the package selection step, select **Software Development** for the installation package.
6. Please follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

NOTE. Please install the `kernel-devel-<version>` package with the CD #1 of Red Hat Enterprise Linux 5 prior to install the Gigabit Ethernet driver.

1. You can find the Gigabit Ethernet driver in EasyBUILD. Please copy the

driver from the EasyBUILD to HDD first.

```
# mount /dev/dvd /mnt
# cp –R /mnt/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Remove the OS built-in NIC driver

```
# rmmod e1000.ko
```

3. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

4. Run the kudzu utility, it will auto detect the Gigabit Ethernet controller and help you to configure it.

```
# kudzu
```

5. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

IOAT driver installation

1. Please remove the old version of IOAT driver from the system manually.

```
# cd  /lib/modules/$(uname -r)/kernel/drivers/dma
# mv ioatdma.ko ioatdma.ko.bak
```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
Copy the IOAT driver to /tmp
# cd /tmp
# tar zxf ioatdma-<ioat version>.tar.gz
```

3. Install the IOAT driver

```
# cd ioatdma-<ioat version>
# make install
```

4. Load the IOAT driver

```
# modprobe dca
# cd ioatdma
# insmod ioatdma.ko
# modprobe ioatdma
# ll /sys/class/dma/
```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

NOTE. Please install the compat-libstdc++-296-2.96-138.i386.rpm and compat-libstdc++-33-3.2.3-61.i386.rpm packages with the CD #2 of Red Hat Enterprise Linux 5 prior to install the RAID Web Console 2.

1. You can find the RAID Web Console 2 in EasyBUILD. Please copy the utility from the EasyBUILD to HDD first.

```
# mount /media/cdrecorder
# cp –R
/media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/.
/tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v2_19_01.zip
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2 on, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 4.0 EM64T Update 2 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 EM64T Update 2 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 2 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.02.00-4	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.0.38-NAPI	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.0 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID in the Red Hat Enterprise Linux 4.0 EM64T Update2. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 EM64T Update2 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.
5. At the **Package Installation Defaults**, select **Customize software packages to be installed**.
6. At the **Package Group Selection** step, select **Development Tools** under **Development**.
7. Follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder
# cp –R /media/cdrecorder/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the kudzu utility, it will auto detect the Intel 82563EB network controller and help you to configure it.

```
# kudzu
```

4. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder

# cp –R /media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/

# unzip ir3_Linux_RWC2_v1.13-00.zip

# chmod 755 install.sh

# chmod 755 RunRPM.sh

# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2 on, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 4.0 EM64T Update 2 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 EM64T Update 2 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 2 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.0 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the Red Hat Enterprise Linux 4.0 EM64T Update2. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 EM64T Update2 cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. At the **Package Installation Defaults**, select **Customize software packages to be installed**.
6. At the **Package Group Selection** step, select **Development Tools** under **Development**.
7. Follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder
# cp –R /media/cdrecorder/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the kudzu utility, it will auto detect the Intel 82563EB network controller and help you to configure it.

```
# kudzu
```

4. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder

# cp –R /media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/

# unzip ir3_Linux_RWC2_v1.13-00.zip

# chmod 755 install.sh

# chmod 755 RunRPM.sh

# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2 on, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 4.0 Update 2 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 Update 2 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 2 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.02.00-4	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.0.38-NAPI	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID in the Red Hat Enterprise Linux 4.0 Update2. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 Update2 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.
5. At the **Package Installation Defaults**, select **Customize software packages to be installed**.
6. At the **Package Group Selection** step, select **Development Tools** under **Development**.
7. Follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder
# cp –R /media/cdrecorder/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the kudzu utility, it will auto detect the Intel 82563EB network controller and help you to configure it.

```
# kudzu
```

4. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder

# cp –R /media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/

# unzip ir3_Linux_RWC2_v1.13-00.zip

# chmod 755 install.sh

# chmod 755 RunRPM.sh

# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

Red Hat Enterprise Linux 4.0 Update 2 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 Update 2 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 2 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the Red Hat Enterprise Linux 4.0 Update2. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 Update2 cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Type **linux dd** when the prompt **boot:** appears at the start.
3. Please select the **sda** as the **Driver Disk Source**.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. At the **Package Installation Defaults**, select **Customize software packages to be installed**.
6. At the **Package Group Selection** step, select **Development Tools** under **Development**.
7. Follow the normal procedure to finish the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder
# cp –R /media/cdrecorder/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the kudzu utility, it will auto detect the Intel 82563EB network controller and help you to configure it.

```
# kudzu
```

4. Restart the network service to bring up both of the network interfaces.

```
# service network restart
```

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/cdrecorder

# cp –R /media/cdrecorder/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/

# unzip ir3_Linux_RWC2_v1.13-00.zip

# chmod 755 install.sh

# chmod 755 RunRPM.sh

# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, select **applications -> System Tools -> RAID Web Console 2 Startup UI**

SUSE Linux Enterprise Server 10 EM64T Installation (with integrated SAS hardware RAID)

Below information describes how to manually install SUSE Linux Enterprise Server 10 EM64T on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For SUSE Linux Enterprise Server 10 EM64T Installation, the following device drivers are required. The drivers can be found in the EasyBUILD 7.1 build 600 (or later).

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.03.07	EasyBUILD 7.1 build 600 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.3.15-NAPI	EasyBUILD 7.1 build 600 (or later)
Onboard VGA	N/A	OS built-in

Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 600 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.19-00	EasyBUILD 7.1 build 600 (or later)

Configuring integrated SAS hardware RAID

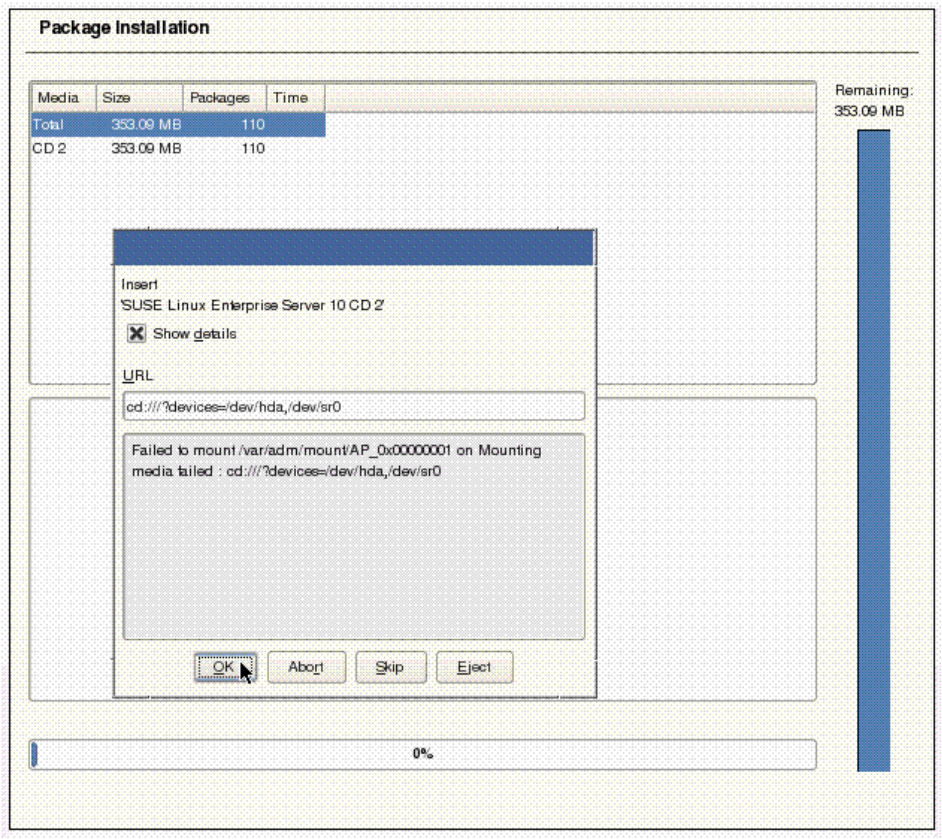
Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. The driver of Integrated SAS hardware RAID is required for the SUSE Linux Enterprise Server 10 EM64T installation. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since SUSE Linux Enterprise Server 10 EM64T cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system with SUSE Linux Enterprise Server 10 EM64T CD #1.
3. When you see the boot menu on the screen, select **Installation.** Then press **F5** and select **YES** for the driver loading in the installation. Press Enter to continue.
4. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.
5. At the Installation Settings, select the Software and click on **Details.** Select "Package Groups" in the Filter drop-down menu, then click Development -> sources to add **kernel** package. Select "Patterns" in the Filter drop-down menu, then add **C/C++ Compiler and Tools** packages.
6. Follow the instruction to complete the installation of CD #1.
7. Remove the driver diskette when system automatically reboot at the end of the installation process with CD #1.

NOTE: If the driver diskette is kept in the FDD, you would see below message even though you've inserted the installation CD #2. In this case, please press "Ctrl+Alt+F2" to switch to another terminal. Issue the "reboot" command to reboot the system. Then, remove the driver diskette and continue the installation.



8. Follow the instruction to complete the installation with remained installation CDs.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1. Please refer to directory of the 82546EB driver in Driver Required section above and copy the driver from the EasyBUILD 7.1 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

IOAT driver installation

NOTE. Please update the onboard Gigabit Ethernet driver to version 7.6.5 (or later) prior to install IOAT driver, you could found the driver from Acer GCSD website (http://csd.acer.com.tw/SI/Download2006.nsf/ServerWeb) or EasyBUILD 8.0 build 100 (or later).

1. Please remove the old version of IOAT driver from the system manually.

```
# cd  /lib/modules/$(uname -r)/kernel/drivers/dma
# mv ioatdma.ko ioatdma.ko.bak
```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
Copy the IOAT driver to /tmp
# cd /tmp
# tar zxf ioatdma-<ioat version>.tar.gz
```

3. Install the IOAT driver

```
# cd ioatdma-<ioat version>
# make install
```

4. Load the IOAT driver

```
# modprobe dca
# cd ioatdma
# insmod ioatdma.ko
# modprobe ioatdma
# ll /sys/class/dma/
```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1. Please refer to the directory of the RAID Web Console 2 in Software Required section above and copy the utility from the EasyBUILD 7.1 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

1. Install RAID Web Console 2 utility

```
# cd /tmp/
# chmod 755 install.sh
# chmod 755 RunRPM.sh
```

2. `# ./install.sh`
3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, click on start button, select **System -> More Programs -> RAID Web Console 2 Startup UI**

SUSE Linux Enterprise Server 10 EM64T Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install SUSE Linux Enterprise Server 10 EM64T on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For SUSE Linux Enterprise Server 10 EM64T Installation, the following device drivers are required. The drivers can be found in the EasyBUILD 7.1 build 600 (or later).

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.1 build 600 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

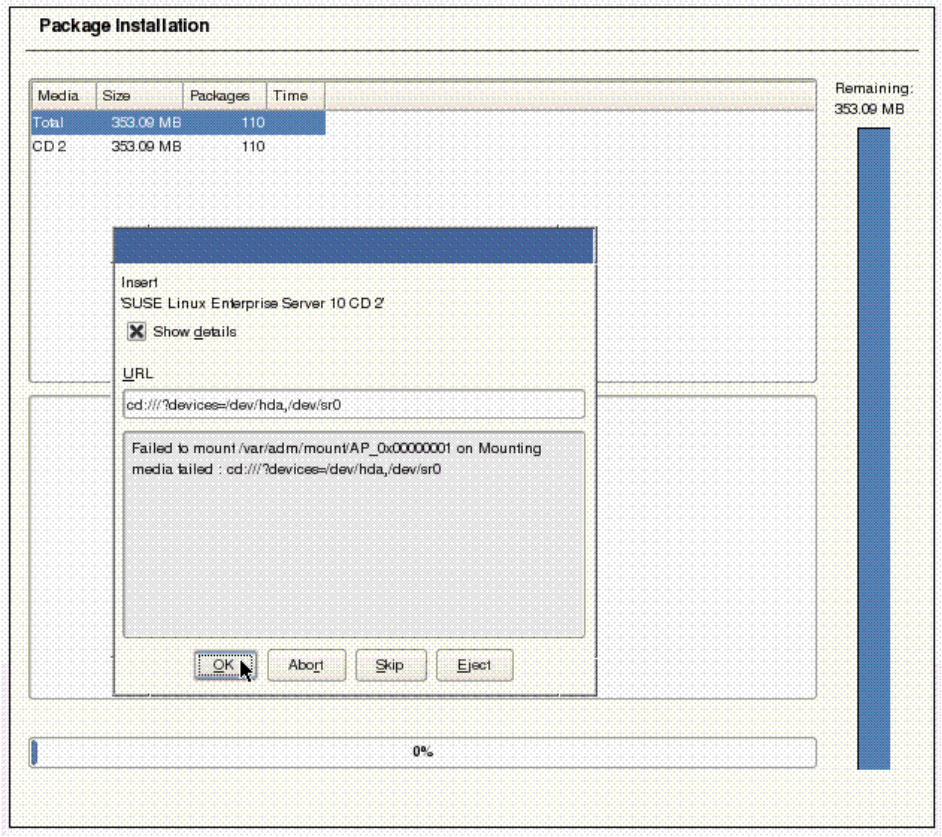
NOTE. The driver of Integrated SAS hardware RAID 2 is required for the SUSE Linux Enterprise Server 10 EM64T installation. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since SUSE Linux Enterprise Server 10 EM64T cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from

the EasyBUILD 7.1 build 600 first before the installation.

2. Boot the system with SUSE Linux Enterprise Server 10 EM64T CD #1.
3. When you see the boot menu on the screen, select **Installation.** Then press **F5** and select **YES** for the driver loading in the installation. Press Enter to continue.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. At the Installation Settings, select the Software and click on **Details.** Select "Package Groups" in the Filter drop-down menu, then click Development -> sources to add **kernel** package. Select "Patterns" in the Filter drop-down menu, then add **C/C++ Compiler and Tools** packages.
6. Follow the instruction to complete the installation of CD #1.
7. Remove the driver diskette when system automatically reboot at the end of the installation process with CD #1.

NOTE: If the driver diskette is kept in the FDD, you would see below message even though you've inserted the installation CD #2. In this case, please press "Ctrl+Alt+F2" to switch to another terminal. Issue the "reboot" command to reboot the system. Then, remove the driver diskette and continue the installation.



8. Follow the instruction to complete the installation with remained installation CDs.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1. Please refer to directory of the 82546EB driver in Driver Required section above and copy the driver from the EasyBUILD 7.1 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

IOAT driver installation

1. Please remove the old version of IOAT driver from the system manually.

   ```
   # cd  /lib/modules/$(uname -r)/kernel/drivers/dma
   # mv ioatdma.ko ioatdma.ko.bak
   ```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

   ```
   Copy the IOAT driver to /tmp
   # cd /tmp
   # tar zxf ioatdma-<ioat version>.tar.gz
   ```

3. Install the IOAT driver

   ```
   # cd ioatdma-<ioat version>
   # make install
   ```

4. Load the IOAT driver

   ```
   # modprobe dca
   # cd ioatdma
   # insmod ioatdma.ko
   # modprobe ioatdma
   # ll /sys/class/dma/
   ```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1. Please refer to the directory of the RAID Web Console 2 in Software Required section above and copy the utility from the EasyBUILD 7.1 to HDD first.

   ```
   # mount /media/dvdram
   # cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
   ```

2. Install RAID Web Console 2 utility

   ```
   # cd /tmp/
   # chmod 755 install.sh
   # chmod 755 RunRPM.sh
   ```

3.
   ```
   # ./install.sh
   ```

4. Type y to accept the license agreen and select 1 for full installation.

5. To start RAID Web Console 2, click on start button, select **System -> More**

Programs -> RAID Web Console 2 Startup UI

SUSE Linux Enterprise Server 10 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install SUSE Linux Enterprise Server 10 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For SUSE Linux Enterprise Server 10 Installation, the following device drivers are required. The drivers can be found in the EasyBUILD 7.1 build 600 (or later).

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.03.07	EasyBUILD 7.1 build 600 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.3.15-NAPI	EasyBUILD 7.1 build 600 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 600 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.19-00	EasyBUILD 7.1 build 600 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. The driver of Integrated SAS hardware RAID is required for the SUSE Linux Enterprise Server 10 installation. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since SUSE Linux Enterprise Server 10 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system with SUSE Linux Enterprise Server 10 CD #1.
3. When you see the boot menu on the screen, select **Installation.** Then press **F5** and select **YES** for the driver loading in the installation. Press Enter to

continue.

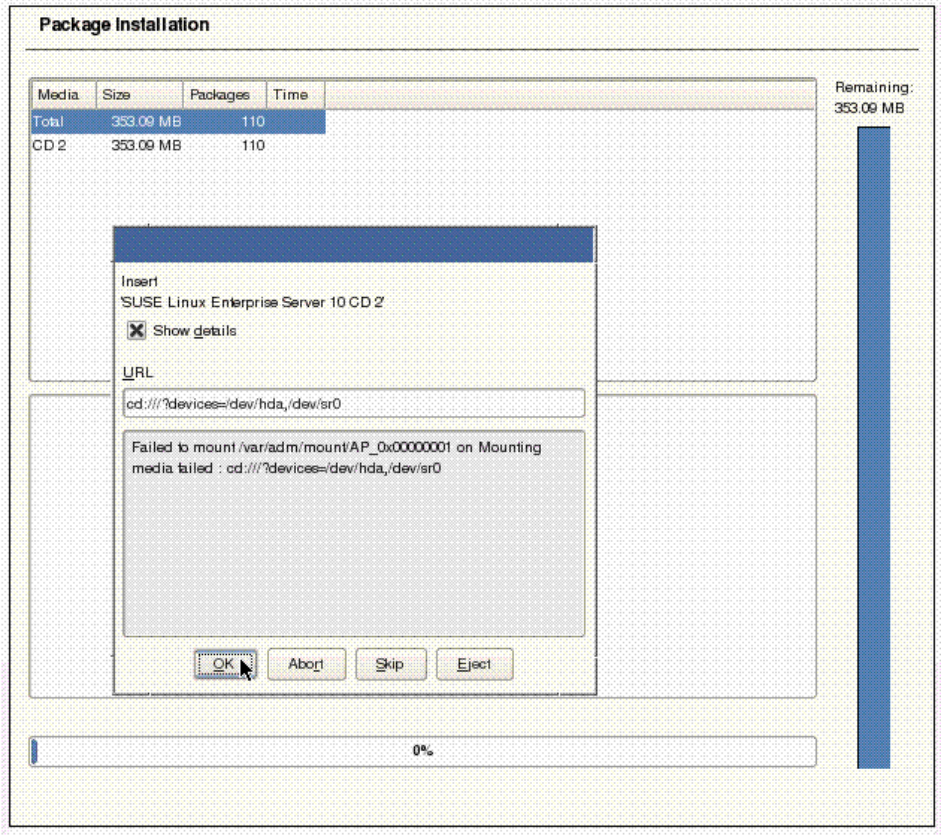
4. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.

5. At the Installation Settings, select the Software and click on **Details.** Select "Package Groups" in the Filter drop-down menu, then click Development -> sources to add **kernel** package. Select "Patterns" in the Filter drop-down menu, then add **C/C++ Compiler and Tools** packages.

6. Follow the instruction to complete the installation of CD #1.

7. Remove the driver diskette when system automatically reboot at the end of the installation process with CD #1.

NOTE: If the driver diskette is kept in the FDD, you would see below message even though you've inserted the installation CD #2. In this case, please press "Ctrl+Alt+F2" to switch to another terminal. Issue the "reboot" command to reboot the system. Then, remove the driver diskette and continue the installation.



8. Follow the instruction to complete the installation with remained installation CDs.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1. Please refer to directory of the 82546EB driver in Driver Required section above and copy the driver from the EasyBUILD 7.1 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

IOAT driver installation

NOTE. Please update the onboard Gigabit Ethernet driver to version 7.6.5 (or later) prior to install IOAT driver, you could found the driver from Acer GCSD website (http://csd.acer.com.tw/SI/Download2006.nsf/ServerWeb) or EasyBUILD 8.0 build 100 (or later).

1. Please remove the old version of IOAT driver from the system manually.

```
# cd  /lib/modules/$(uname -r)/kernel/drivers/dma
# mv ioatdma.ko ioatdma.ko.bak
```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

```
Copy the IOAT driver to /tmp
# cd /tmp
# tar zxf ioatdma-<ioat version>.tar.gz
```

3. Install the IOAT driver

```
# cd ioatdma-<ioat version>
# make install
```

4. Load the IOAT driver

```
# modprobe dca
# cd ioatdma
# insmod ioatdma.ko
```

```
# modprobe ioatdma
# ll /sys/class/dma/
```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1. Please refer to the directory of the RAID Web Console 2 in Software Required section above and copy the utility from the EasyBUILD 7.1 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, click on start button, select **System -> More Programs -> RAID Web Console 2 Startup UI**

SUSE Linux Enterprise Server 10 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install SUSE Linux Enterprise Server 10 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For SUSE Linux Enterprise Server 10 Installation, the following device drivers are required. The drivers can be found in the EasyBUILD 7.1 build 600 (or later).

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in
IOAT	2.15	EasyBUILD 8.0 build 200 (or later)

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.1 build 600 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

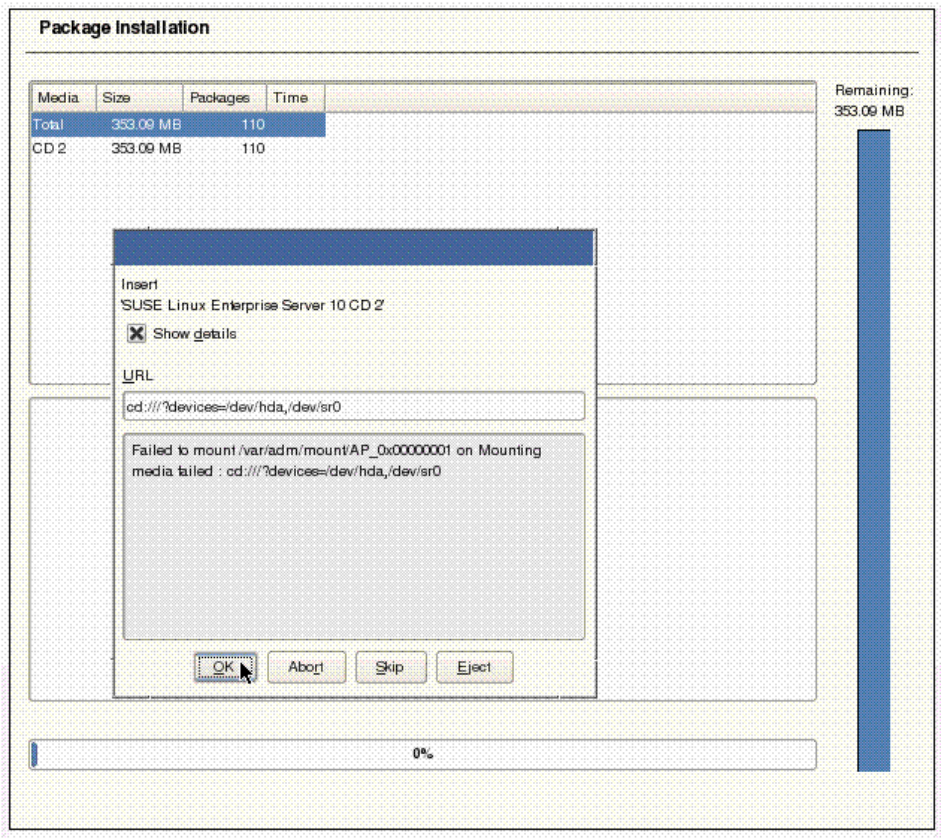
Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. The driver of Integrated SAS hardware RAID 2 is required for the SUSE Linux Enterprise Server 10 installation. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since SUSE Linux Enterprise Server 10 cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system with SUSE Linux Enterprise Server 10 CD #1.
3. When you see the boot menu on the screen, select **Installation.** Then press **F5** and select **YES** for the driver loading in the installation. Press Enter to continue.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. At the Installation Settings, select the Software and click on **Details.** Select "Package Groups" in the Filter drop-down menu, then click Development -> sources to add **kernel** package. Select "Patterns" in the Filter drop-down menu, then add **C/C++ Compiler and Tools** packages.
6. Follow the instruction to complete the installation of CD #1.
7. Remove the driver diskette when system automatically reboot at the end of the installation process with CD #1.

NOTE: If the driver diskette is kept in the FDD, you would see below message even though you've inserted the installation CD #2. In this case, please press "Ctrl+Alt+F2" to switch to another terminal. Issue the "reboot" command to reboot the system. Then, remove the driver diskette and continue the installation.



8. Follow the instruction to complete the installation with remained installation CDs.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1. Please refer to directory of the 82546EB driver in Driver Required section above and copy the driver from the EasyBUILD 7.1 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

IOAT driver installation

1. Please remove the old version of IOAT driver from the system manually.

   ```
   # cd  /lib/modules/$(uname -r)/kernel/drivers/dma
   # mv ioatdma.ko ioatdma.ko.bak
   ```

2. You can find the IOAT driver in EasyBUILD. Please copy the driver from the EasyBUILD to HDD first.

   ```
   Copy the IOAT driver to /tmp
   # cd /tmp
   # tar zxf ioatdma-<ioat version>.tar.gz
   ```

3. Install the IOAT driver

   ```
   # cd ioatdma-<ioat version>
   # make install
   ```

4. Load the IOAT driver

   ```
   # modprobe dca
   # cd ioatdma
   # insmod ioatdma.ko
   # modprobe ioatdma
   # ll /sys/class/dma/
   ```

When IOAT driver installation completed, you could see subdirectories and files for each subdirectory of /sys/class/dma folder.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1. Please refer to the directory of the RAID Web Console 2 in Software Required section above and copy the utility from the EasyBUILD 7.1 to HDD first.

   ```
   # mount /media/dvdram
   # cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
   ```

2. Install RAID Web Console 2 utility

   ```
   # cd /tmp/
   # chmod 755 install.sh
   # chmod 755 RunRPM.sh
   # ./install.sh
   ```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, click on start button, select **System -> More**

Programs -> RAID Web Console 2 Startup UI

SUSE Linux Enterprise Server 9 EM64T Service Pack 3 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install SUSE Linux Enterprise Server 9 EM64T Service Pack 3 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For SUSE Linux Enterprise Server 9 EM64T Service Pack 3 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.02.03-1	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.0.38-NAPI	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID in the SUSE Linux Enterprise Server 9 EM64T Service Pack 3. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

5. Since SUSE Linux Enterprise Server 9 EM64T Service Pack 3 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
6. Boot the system form SUSE Linux Enterprise Server 9 EM64T Service Pack3 bootable CD.
7. When you see the boot menu on the screen, select **Installation**, press F6 then press Enter to continue.

8. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.
9. Follow the instruction to change the CD to SUSE Linux Enterprise Server 9 EM64T CD #1.
10. At the Installation Settings, select the Software and click on **Detailed selection** to add **kernel-source** and **C/C++ Compiler and Tools** to install.
11. To add C/C++ compiler tools, please check **C/C++ Compiler and Tools** in the left window.
12. To add kernel-source, please select **Various Linux Tools** in the left window and check **kernel-source** in the right window.
13. After you add the **kernel-source** and **C/C++ Compiler and Tools**, please click on **Accept** and follow the instruction to complete the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v1.13-00.zip
```

```
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, click on start button, select **System -> More Programs -> RAID Web Console 2 Startup UI**

SUSE Linux Enterprise Server 9 EM64T Service Pack 3 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install SUSE Linux Enterprise Server 9 EM64T Service Pack 3 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For SUSE Linux Enterprise Server 9 EM64T Service Pack 3 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the SUSE Linux Enterprise Server 9 EM64T Service Pack 3. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since SUSE Linux Enterprise Server 9 EM64T Service Pack 3 cannot

recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.

2. Boot the system form SUSE Linux Enterprise Server 9 EM64T Service Pack3 bootable CD.
3. When you see the boot menu on the screen, select **Installation**, press F6 then press Enter to continue.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. Follow the instruction to change the CD to SUSE Linux Enterprise Server 9 EM64T CD #1.
6. At the Installation Settings, select the Software and click on **Detailed selection** to add **kernel-source** and **C/C++ Compiler and Tools** to install.
7. To add C/C++ compiler tools, please check **C/C++ Compiler and Tools** in the left window.
8. To add kernel-source, please select **Various Linux Tools** in the left window and check **kernel-source** in the right window.
9. After you add the **kernel-source** and **C/C++ Compiler and Tools**, please click on **Accept** and follow the instruction to complete the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

RAID Utility Installation

10. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required

section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

1. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v1.13-00.zip
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

2. Type y to accept the license agreen and select 1 for full installation.
3. To start RAID Web Console 2, click on start button, select **System -> More Programs -> RAID Web Console 2 Startup UI**

SUSE Linux Enterprise Server 9 Service Pack 3 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install SUSE Linux Enterprise Server 9 Service Pack 3 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For SUSE Linux Enterprise Server 9 Service Pack 3 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	00.00.02.03-1	EasyBUILD 7.1 build 100 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	7.0.38-NAPI	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	1.13-00	EasyBUILD 7.1 build 100 (or later)

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID

configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID in the SUSE Linux Enterprise Server 9 Service Pack 3. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

4. Since SUSE Linux Enterprise Server 9 Service Pack 3 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
5. Boot the system form SUSE Linux Enterprise Server 9 Service Pack3 bootable CD.
6. When you see the boot menu on the screen, select **Installation**, press F6 then press Enter to continue.
7. Follow the instruction to load the integrated SAS hardware RAID driver from the driver diskette.
8. Follow the instruction to change the CD to SUSE Linux Enterprise Server 9 CD #1.
9. At the Installation Settings, select the Software and click on **Detailed selection** to add **kernel-source** and **C/C++ Compiler and Tools** to install.
10. To add C/C++ compiler tools, please check **C/C++ Compiler and Tools** in the left window.
11. To add kernel-source, please select **Various Linux Tools** in the left window and check **kernel-source** in the right window.
12. After you add the **kernel-source** and **C/C++ Compiler and Tools**, please click on **Accept** and follow the instruction to complete the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v1.13-00.zip
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, click on start button, select **System -> More Programs -> RAID Web Console 2 Startup UI**

SUSE Linux Enterprise Server 9 Service Pack 3 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install SUSE Linux Enterprise Server 9 Service Pack 3 on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For SUSE Linux Enterprise Server 9 Service Pack 3 Installation, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	00.00.03.18	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	0.3.3.3	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Software Required

The management utility of integrated SAS hardware RAID 2 can be found in

the EasyBUILD 7.1 build 100 (or later).

Software	Version	EasyBUILD Version
RAID Web Console 2	2.63	EasyBUILD 8.0 build 200 (or later)

Configuring integrated SAS hardware RAID 2

Please refer to the **APPENDIX B**. for the integrated SAS hardware RAID 2 configuration.

Installation Tips

NOTE. There is no built-in driver Integrated SAS hardware RAID 2 in the SUSE Linux Enterprise Server 9 Service Pack 3. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive for applying driver during the OS installation.

1. Since SUSE Linux Enterprise Server 9 Service Pack 3 cannot recognize the integrated SAS hardware RAID 2, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Boot the system form SUSE Linux Enterprise Server 9 Service Pack3 bootable CD.
3. When you see the boot menu on the screen, select **Installation**, press F6 then press Enter to continue.
4. Follow the instruction to load the integrated SAS hardware RAID 2 driver from the driver diskette.
5. Follow the instruction to change the CD to SUSE Linux Enterprise Server 9 CD #1.
6. At the Installation Settings, select the Software and click on **Detailed selection** to add **kernel-source** and **C/C++ Compiler and Tools** to install.
7. To add C/C++ compiler tools, please check **C/C++ Compiler and Tools** in the left window.
8. To add kernel-source, please select **Various Linux Tools** in the left window and check **kernel-source** in the right window.
9. After you add the **kernel-source** and **C/C++ Compiler and Tools**, please click on **Accept** and follow the instruction to complete the installation.

Gigabit Ethernet Driver Installation

1. You can find the Intel 82546EB driver in EasyBUILD 7.1 build 100. Please refer to directory of the 82546EB driver in Driver Required section and copy the driver from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/Disk/R720/NIC/Intel/pro1000.lx/. /tmp
```

2. Change the directory to the driver source and install the driver

```
# cd /tmp/src/
# make install
# insmod e1000.ko
```

3. Run the YaST2 utility.

```
# YaST2
```

4. Select **Network Devices -> Network Card**, it will auto detect the Intel 82563EB network controller and help you to configure it.

RAID Utility Installation

1. You can find the RAID Web Console 2 in EasyBUILD 7.1 build 100. Please refer to directory of the RAID Web Console 2 in Software Required section and copy the utility from the EasyBUILD 7.1 build 100 to HDD first.

```
# mount /media/dvdram
# cp –R /media/dvdram/app/r720/raid/Integrated_SAS/Linux/. /tmp
```

2. Install RAID Web Console 2 utility

```
# cd /tmp/
# unzip ir3_Linux_RWC2_v1.13-00.zip
# chmod 755 install.sh
# chmod 755 RunRPM.sh
# ./install.sh
```

3. Type y to accept the license agreen and select 1 for full installation.
4. To start RAID Web Console 2, click on start button, select **System -> More Programs -> RAID Web Console 2 Startup UI**

NetWare 6.5 SP5 Installation (with integrated SAS hardware RAID)

Below information describes how to manually install NetWare 6.5 (Support Pack 5 overlay CD) on Altos R720 with integrated SAS hardware RAID.

Drivers Required

For NetWare 6.5 SP5 installation with integrated SAS hardware RAID, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID	1.00.07	EasyBUILD 7.1 build 100 (or later)

Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	9.22	EasyBUILD 7.1 build 100 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Installation Tips

NOTE. You need to apply the integrated SAS hardware RAID and NIC driver during the installation. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive.

1. Make a driver diskette for integrated SAS hardware RAID and onboard Intel 82563EB Gigabit Ethernet from EasyBUILD 7.1 build 100.
2. Boot the system from the NetWare 6.5 SP5 OS CD.
3. At **Welcome to the NetWare 6.5 server installation** page, select **Manual** to install.
4. At **Prepare boot partition** page, create one 500 MB DOS partition.
5. When you see the following message, please select Modify. Then, move the cursor to Storage adapters and press **Enter**.

```
The following device drivers were detected for this
server. Add, change, or delete device drivers as
needed.

Device types             Driver names
-----------------------  --------------
Storage adapters:        IDEATA, IDEATA, MEGA_SAS
```

6. Please press **Delete** to delete MEGA_SAS.HAM modules
7. Then, press **INSERT** key to insert the integrated SAS hardware RAID driver. After the drivers are successfully loaded, please select Return to driver summary.
8. Continue the installation.
9. When you see the following message, please select Modify. Then, move the cursor to Network boards and press **Enter**.

```
The following device drivers were detected for this
server. Add, change, or delete device drivers as
needed.

Device types               Driver names
-------------------------  --------------
Network boards:
```

```
NetWare Loadable Modules:  (optional)
```

10. Please press INSERT key to insert the onboard Intel 82563EB Gigabit Ethernet driver. After the drivers are successfully loaded, please select Return to driver summary.

11. Then, you would see the following message. Please select Continue.

```
The following device drivers were detected for this
server. Add, change, or delete device drivers as
needed.

Device types               Driver names
-------------------------  -------------
Network boards:            E1000E, E1000E
Network Loadable Modules:  (optional)
```

12. Please follow the normal procedures to complete the NetWare 6.5 installation.

NetWare 6.5 SP5 Installation (with integrated SAS hardware RAID 2)

Below information describes how to manually install NetWare 6.5 (Support Pack 5 overlay CD) on Altos R720 with integrated SAS hardware RAID 2.

Drivers Required

For NetWare 6.5 SP5 installation with integrated SAS hardware RAID 2, the following device drivers are required.

Device	Version	EasyBUILD Version
Integrated SAS hardware RAID 2	1.04.04	EasyBUILD 8.0 build 200 (or later)
Onboard Chipset	N/A	OS built-in
Onboard Gigabit Ethernet	10.45	EasyBUILD 8.0 build 200 (or later)
Onboard VGA	N/A	OS built-in
Onboard USB 2.0	N/A	OS built-in

Installation Tips

NOTE. You need to apply the integrated SAS hardware RAID 2 and NIC driver during the installation. If you do not have the optional internal USB floppy drive, you need an external USB floppy drive.

1. Make a driver diskette for integrated SAS hardware RAID 2 and onboard Intel 82563EB Gigabit Ethernet from EasyBUILD 7.1 build 100.

2. Boot the system from the NetWare 6.5 SP5 OS CD.

3. At **Welcome to the NetWare 6.5 server installation** page, select **Manual** to

install.

4. At **Prepare boot partition** page, create one 500 MB DOS partition.
5. When you see the following message, please select Modify. Then, move the cursor to Storage adapters and press **Enter**.

```
The following device drivers were detected for this
server. Add, change, or delete device drivers as
needed.

Device types             Driver names
-----------------------  -------------
Storage adapters:        IDEATA, IDEATA, IDEATA
```

6. Please press **Delete** to delete below module

```
IDEATA.HAM Standard ATA/IDE RAID Adapter
```

7. Then, press **INSERT** key to insert the integrated SAS hardware RAID 2 driver. After the drivers are successfully loaded, please select Return to driver summary.
8. Continue the installation.
9. When you see the following message, please select Modify. Then, move the cursor to Network boards and press **Enter**.

```
The following device drivers were detected for this
server. Add, change, or delete device drivers as
needed.

Device types              Driver names
------------------------  -------------
Network boards:
NetWare Loadable Modules:  (optional)
```

10. Please press INSERT key to insert the onboard Intel 82563EB Gigabit Ethernet driver. After the drivers are successfully loaded, please select Return to driver summary.
11. Then, you would see the following message. Please select Continue.

```
The following device drivers were detected for this
server. Add, change, or delete device drivers as
needed.

Device types              Driver names
------------------------  -------------
Network boards:           E1000E, E1000E
Network Loadable Modules:  (optional)
```

12. Please follow the normal procedures to complete the NetWare 6.5 installation.

VMware ESX Server 3.5 (with integrated SAS hardware RAID)

Below information describes how to manually install VMware ESX Server 3.5 on Altos R720 with integrated SAS hardware RAID.

Drivers Required

Please use VMware ESX Server 3.5 built-in drivers for the installation on Altos R720.

Device	Version	EasyBUILD Version
Onboard VGA	N/A	OS Built-in
Onboard Chipset	N/A	OS Built-in
Integrated SAS hardware RAID	00.00.03.09	OS Built-in
Onboard Gigabit Ethernet	7.3.15	OS Built-in
SAS Hot-swap backplane	N/A	OS Built-in

Configuring integrated SAS hardware RAID

Please refer to the Appendix A. for the integrated SAS hardware RAID configuration.

Installation Tips

1. Please use the built-in driver of VMware ESX Server 3.5 to install the OS.
2. Boot the system with VMware ESX Server 3.5 CD
3. When "`boot:`" prompted, press Enter to continue.
4. Select your Keyboard.
5. Select your mouse.
6. Accept the VMware license agreement.
7. Select a partitioning option.
   - Recommended – Configures default partitions, based on the capacity of the hard drive.
   - Advanced – You specify all partition settings.
8. Select how the ESX Server will boot in Advanced Optioins.

   NOTE: VMware recommends to keep the default setting of "Form a drive (install on the MBR of the drive)" option.
9. Configure the ESX Serer host network IP address.

   NOTE: VMware recommends that you use a static IP address to simplify

client access.

10. Follow the instruction to complete the installation of the VMware ESX Server 3.5.

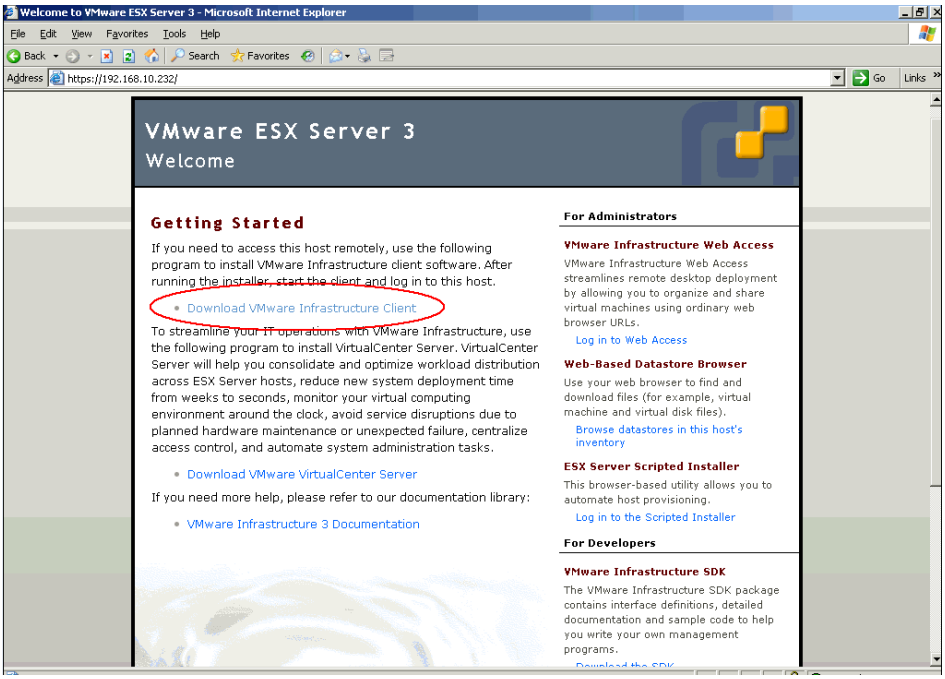
Downloading the VMware Infrastructure Client

1. When the installation is completed, boot the system into VMware ESX Server 3.5. The below message displayed:

   `To manage this ESX Server, use any browser to open the URL http://<IP address of the ESX Server>/`

2. Please remotely connect the ESX Server from a console system by typing in the IP address of the ESX Server with web browser.

3. When you login, please click "`Download VMware Infrastructure Client`" to download the VMware Infrastructure Client utility.

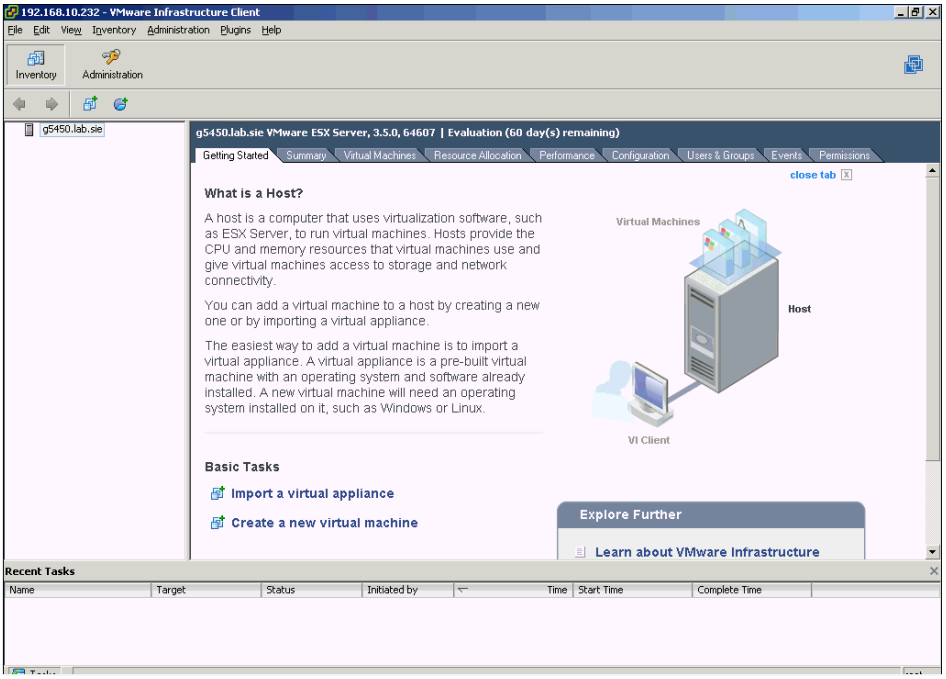


VMware Infrastructure Client Installation on Windows

1. To install the VMware Infrastructure Client utility on your console system.

2. Launch VMware Infrastructure Client utility.

3. Now, you can manage the ESX Server or create virtual machines with the VMware Infrastructure Client utility.



APPENDIX A: INTEGRATED SAS HARDWARE RAID CREATION

Configuring integrated SAS hardware RAID

This section briefly shows how to create RAID with integrated SAS hardware RAID.

Starting Integrated SAS hardware RAID Configuration Utility

Please press **ESC** to show the detail POST information first when you power on the system. When you see the RAID BIOS during POST, please press **CTRL-G** to launch the SAS RAID configuration utility. After POST finished, the Adapter Selection page will show on the screen. Please click on **Start** to launch the configuration menu.

Loading Factory Default Setting

1. In the Configuration menu, select **Adapter Properties**. The current adapter settings appear. Please click on **Next** to change the setting.
2. Change the setting of **Set Factory Defaults** from **No** to **Yes** then click on **submit**.
3. Press **Ctrl+Alt+Del** to reboot the server.

Creating and Initialing a RAID Volume

1. Launch the configuration menu.
2. Select **Configuration Wizard**
3. Select **Add Configuration** (default) and click on **Next**.
4. Select **Custom Configuration** (default) and click on **Next**.
5. Select the drives that you want to add into the array with **Ctrl** key. After you select the drives, click on **Accept DG** then **Next**.
6. Select the **RAID Level** you want to use, create the logical volume by specify the size at **Select Size** and click on **Accept** to create the logical volume.
7. After you create the logical volumes on all of the RAID volume, click on **Accept** and **Yes** to save the configuration.
8. Click on **Yes** to initialize the new logical drives. You will see all the logical drives listed.
9. Click on **Home** to go back to the configuration menu.
10. Now you can reboot the system and install the Operating System. Select **Exit**, click on **Yes** and press **Ctrl+Alt+Del** to reboot the system.

Assigning a Hot Spare Disk

1. Launch the configuration menu.
2. Select a free disk marked as **UNCONF GOOD** and listed under **Physical Drives**.

3. Select **Make Global Dedicated HSP** or **Make Dedicated DSP** and click on **Go**.

4. Click on **Home** to go back to the configuration menu. You will see the disk marked as **Hotsapare** in pink and listed under Physical Drives.

APPENDIX B: INTEGRATED SAS HARDWARE RAID 2 CREATION

Configuring integrated SAS hardware RAID 2

This section briefly shows how to create RAID with integrated SAS hardware RAID 2.

Starting Integrated SAS hardware RAID 2 Configuration Utility

Please press **ESC** to show the detail POST information first when you power on the system. When you see the RAID BIOS during POST, please press **CTRL-G** to launch the SAS RAID configuration utility. After POST finished, the Adapter Selection page will show on the screen. Please click on **Start** to launch the configuration menu.

Loading Factory Default Setting

1. In the Configuration menu, select **Adapter Properties**. The current adapter settings appear. Please click on **Next** to change the setting.
2. Change the setting of **Set Factory Defaults** from **No** to **Yes** then click on **submit**.
3. Press **Ctrl+Alt+Del** to reboot the server.

Creating and Initialing a RAID Volume

1. Launch the configuration menu.
2. Select **Configuration Wizard**
3. Select **Add Configuration** (default) and click on **Next**.
4. Select **Custom Configuration** (default) and click on **Next**.
5. Select the drives that you want to add into the array with **Ctrl** key. After you select the drives, click on **Accept DG** then **Next**.
6. Select the **RAID Level** you want to use, create the logical volume by specify the size at **Select Size** and click on **Accept** to create the logical volume.
7. After you create the logical volumes on all of the RAID volume, click on **Accept** and **Yes** to save the configuration.
8. Click on **Yes** to initialize the new logical drives. You will see all the logical drives listed.
9. Click on **Home** to go back to the configuration menu.
10. Now you can reboot the system and install the Operating System. Select **Exit**, click on **Yes** and press **Ctrl+Alt+Del** to reboot the system.

Assigning a Hot Spare Disk

11. Launch the configuration menu.
12. Select a free disk marked as **UNCONF GOOD** and listed under **Physical Drives**.

13. Select **Make Global Dedicated HSP** or **Make Dedicated DSP** and click on **Go**.
14. Click on **Home** to go back to the configuration menu. You will see the disk marked as **Hotsapare** in pink and listed under Physical Drives.