Altos R910 Installation Configuration Guide

Abstract

This document provides you a quick OS installation guide on Altos R910, including Windows 2000, Windows Server 2003, Windows Server 2003 x64 Edition, Red Hat Enterprise Linux 4.0 (32-bit & 64-bit), SuSE Linux Enterprise Server 9 (32-bit & 64-bit) and SuSE Linux Enterprise Server 10 (32-bit & 64-bit).

Version 1.2

July 2007

CONTENTS

INTRODUCTION

This article describes the Altos R7100 Installation Configuration guide:

- Hardware parts give you a briefly and quick hardware information about Altos R910
- The operating system installation tips.

Where Can I Download the Latest Altos R910 Installation Configuration Guide

The Altos R910 Installation Configuration Guide would be updated on a monthly basis. Please download the latest release from the Support Website

http://support.acer-euro.com

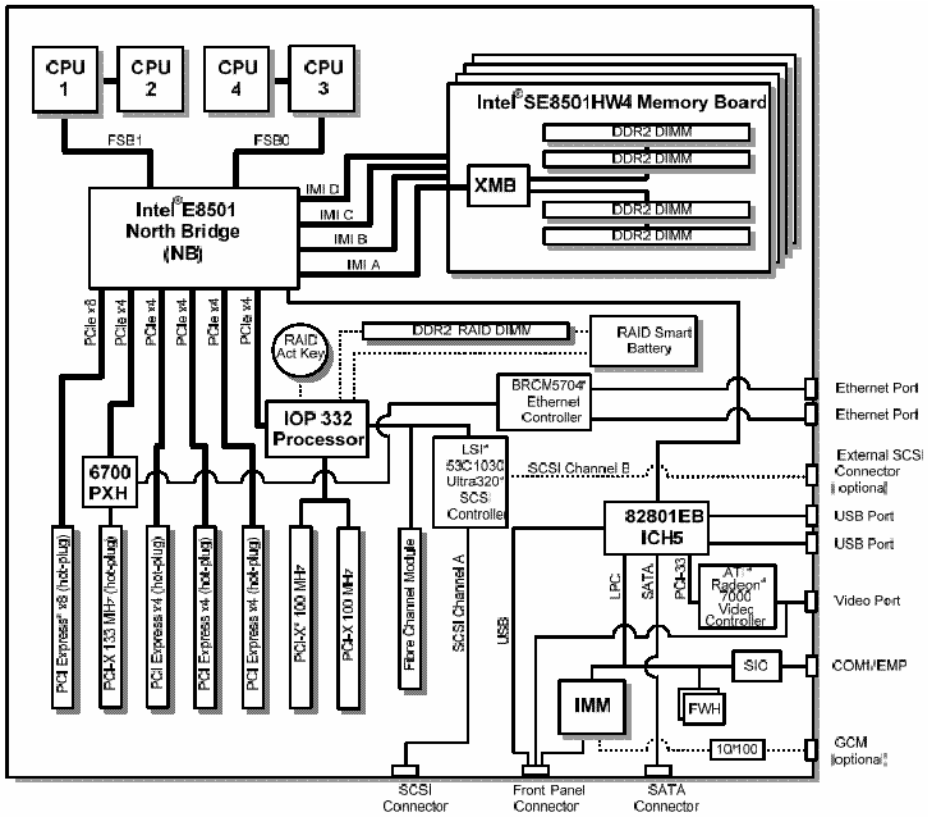
HARDWARE SPECIFICATION

Model	Altos R910
Processor	Up to four Intel Xeon MP processors at 2.66GHz or above
Front Side Bus	800/667 MHz
Cache	2 x 2M L2 cache
Chipset	Intel chipset • Intel E8501 North Bridge • Intel E8500 Chipset eXtended Memory Bridge (XMB) • Intel IOP332 Storage I/O Processor • Intel 82801EB I/O Controller Hub (ICH5) • Intel 6700 PXH 64-bit Hub
Memory	• Four memory boards, four DIMM sockets per board. Support 512MB/1GB/2GB/4GB DDR2-400 registered with ECC • Maximum memory of 64GB • Dual DDR2 channels per board • PCI Express x16 connect to server board
Storage Interface	• Two Ultra 320 SCSI ports • One SATA port • Optional Integrated Hardware RAID support RAID 0, 1, 10, 5, 50 • Integrated SAS support (SAS SKU) • Optional Integrated SAS Hardware RAID support RAID 0, 1, 10, 5, 50 (SAS SKU)
Expansion Slots	• One PCI-X 64-bit/133MHz slot • Two PCI-X 64-bit/100MHz slots • One x8 PCI-Express slot • Three x8 PCI-Express slots (w/ x4 throughput)
VGA	• Onboard ATI Radeon 7000 video controller w/ 16MB SDRAM
SATA Controller	• One SATA port
SCSI Controller	LSI 1030Dual Channel Ultra 320 SCSI
RAID on Motherboard	Integrated SCSI Hardware RAID (optional) • Support RAID 0, 1, 10, 5, 10
SAS Controller	LSI SAS 1068 8-port controller (SAS SKU)
SAS RAID Controller	Integrated SAS hardware RAID (optional) (SAS SKU) • Support RAID 0, 1, 10, 5, 50
LAN Controller	• Onboard Broadcom BCM5704C Dual port Gigabit Ethernet Controller
BMC	Default: Acer BMC module

	• IPMI 2.0 compliant Optional: Advanced ARMC/3 • IPMI 2.0 compliant • Integrated Intel 82551QM Network controller for dedicated LAN connection • KVM over IP • Access via web • SNMP, telnet access
Availability sub-system	
System Power Supply	1470W 1+1 Redundant Power Supply (220 volt only)
Storage Subsystem	
Drive Bays	• One 5.25" front accessible drive bays for TBU • One slime type optical drive bay • One disk cage
Hard Disks	• Up to five U320 SCSI HDD (SCSI SKU) • Up to five SAS or SATA HDD (SAS SKU)

BOARD LAYOUT

System Block Diagram



DIMM POPULATION GUIDELINE

Memory population

Population with one memory board

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	
2x512MB								1GB
2x512MB	2x512MB							2GB
2x1GB								2GB
2x1GB	2x1GB							4GB
2x2GB								4GB
2x2GB	2x2GB							8GB
2x4GB								8GB
2x4GB	2x4GB							16GB

Population with two memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	
2x512MB		2x512MB						2GB
2x512MB	2x512MB	2x512MB	2x512MB					4GB
2x1GB		2x1GB						4GB
2x1GB	2x1GB	2x1GB	2x1GB					8GB
2x2GB		2x2GB						8GB
2x2GB	2x2GB	2x2GB	2x2GB					16GB
2x4GB		2x4GB						16GB
2x4GB	2x4GB	2x4GB	2x4GB					32GB

Population with four memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	
2x512MB		2x512MB		2x512MB		2x512MB		4GB
2x512MB	2x512MB	2x512MB	2x512MB	2x512MB	2x512MB	2x512MB	2x512MB	8GB
2x1GB		2x1GB		2x1GB		2x1GB		8GB
2x1GB	2x1GB	2x1GB	2x1GB	2x1GB	2x1GB	2x1GB	2x1GB	16GB
2x2GB		2x2GB		2x2GB		2x2GB		16GB
2x2GB	2x2GB	2x2GB	2x2GB	2x2GB	2x2GB	2x2GB	2x2GB	32GB
2x4GB		2x4GB		2x4GB		2x4GB		32GB
2x4GB	2x4GB	2x4GB	2x4GB	2x4GB	2x4GB	2x4GB	2x4GB	64GB

Memory population with sparing

Population with one memory board

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x512MB (Spare)	2x512MB							2GB	1GB
2x1GB (Spare)	2x1GB							4GB	2GB
2x2GB (Spare)	2x2GB							8GB	4GB
2x4GB (Spare)[1]								8GB	4GB
2x4GB (Spare)[1]	2x4GB							16GB	12GB

NOTE1. Only 4 GB in DIMM 1A/1B will be set aside as spare, one rank from each dual-rank DIMM

Population with two memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x512MB (Spare)	2x512MB	2x512MB (Spare)	2x512MB					4GB	2GB

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x1 GB (Spare)	2x1 GB	2x1 GB (Spare)	2x1 GB					8 GB	4 GB
2x2 GB (Spare)	2x2 GB	2x2 GB (Spare)	2x2 GB					8 GB	8 GB
2x4 GB (Spare)[1]		2x4 GB (Spare)[1]						16 GB	8 GB
2x4 GB (Spare)[1]	2x4 GB	2x4 GB (Spare)[1]	2x4 GB					32 GB	24 GB

NOTE1. Only 4 GB in DIMM 1A/1B will be set aside as spare, one rank from each dual-rank DIMM.

Population with four memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x512 MB (Spare)	2x512 MB	2x512 MB (Spare)	2x512 MB	2x512 MB (Spare)	2x512 MB	2x512 MB (Spare)	2x512 MB	8 GB	8 GB
2x1 GB (Spare)	2x1 GB	2x1 GB (Spare)	2x1 GB	2x1 GB (Spare)	2x1 GB	2x1 GB (Spare)	2x1 GB	16 GB	8 GB
2x2 GB (Spare)	2x2 GB	2x2 GB (Spare)	2x2 GB	2x2 GB (Spare)	2x2 GB	2x2 GB (Spare)	2x2 GB	16 GB	16 GB
2x4 GB (Spare)[1]		2x4 GB (Spare)[1]		2x4 GB (Spare)[1]		2x4 GB (Spare)[1]		32 GB	16 GB
2x4 GB (Spare)[1]	2x4 GB	2x4 GB (Spare)[1]	2x4 GB	2x4 GB (Spare)[1]	2x4 GB	2x4 GB (Spare)[1]	2x4 GB	64 GB	48 GB

NOTE1. Only 4 GB in DIMM 1A/1B will be set aside as spare, one rank from each dual-rank DIMM.

Memory population with mirroring

Population with two memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x512 MB		2x512 MB (Mirror)						2 GB	1 GB
2x512 MB	2x512 MB	2x512 MB (Mirror)	2x512 MB (Mirror)					4 GB	2 GB
2x1 GB		2x1 GB (Mirror)						4 GB	2 GB
2x1 GB	2x1 GB	2x1 GB (Mirror)	2x1 GB (Mirror)					8 GB	4 GB
2x2 GB		2x2 GB (Mirror)						8 GB	4 GB
2x2 GB	2x2 GB	2x2 GB (Mirror)	2x2 GB (Mirror)					16 GB	8 GB
2x4 GB		2x4 GB (Mirror)						16 GB	8 GB
2x4 GB	2x4 GB	2x4 GB (Mirror)	2x4 GB (Mirror)					32 GB	16 GB

Population with four memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x512 MB		2x512 MB (Mirror)		2x512 MB		2x512 MB (Mirror)		4 GB	2 GB
2x512 MB	2x512 MB	2x512 MB (Mirror)	2x512 MB (Mirror)	2x512 MB	2x512 MB	2x512 MB (Mirror)	2x512 MB (Mirror)	8 GB	4 GB
2x1 GB		2x1 GB (Mirror)		2x1 GB		2x1 GB (Mirror)		8 GB	4 GB
2x1 GB	2x1 GB	2x1 GB (Mirror)	2x1 GB (Mirror)	2x1 GB	2x1 GB	2x1 GB (Mirror)	2x1 GB (Mirror)	16 GB	8 GB

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x2 GB		2x2 GB (Mirror)		2x2 GB		2x2 GB (Mirror)		16 GB	8 GB
2x2 GB	2x2 GB	2x2 GB (Mirror)	2x2 GB (Mirror)	2x2 GB	2x2 GB	2x2 GB (Mirror)	2x2 GB (Mirror)	32 GB	16 GB
2x4 GB		2x4 GB (Mirror)		2x4 GB		2x4 GB (Mirror)		32 GB	16 GB
2x4 GB	2x4 GB	2x4 GB (Mirror)	2x4 GB (Mirror)	2x4 GB	2x4 GB	2x4 GB (Mirror)	2x4 GB (Mirror)	64 GB	32 GB

Memory population with RAID

Population with four memory boards

Memory Board A		Memory Board B		Memory Board C		Memory board D		Total Memory	
1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	1A/1B	2A/2B	Physical memory	Detected by OS
2x512 MB		2x512 MB		2x512 MB		2x512 MB (Parity)		4 GB	3 GB
2x512 MB	2x512 MB	2x512 MB	2x512 MB	2x512 MB	2x512 MB	2x512 MB (Parity)	2x512 MB (Parity)	8 GB	6 GB
2x1 GB		2x1 GB		2x1 GB		2x1 GB (Parity)		8 GB	6 GB
2x1 GB	2x1 GB	2x1 GB	2x1 GB	2x1 GB	2x1 GB	2x1 GB (Parity)	2x1 GB (Parity)	16 GB	12 GB
2x2 GB		2x2 GB		2x2 GB		2x2 GB (Parity)		16 GB	12 GB
2x2 GB	2x2 GB	2x2 GB	2x2 GB	2x2 GB	2x2 GB	2x2 GB (Parity)	2x2 GB (Parity)	32 GB	24 GB
2x4 GB		2x4 GB		2x4 GB		2x4 GB (Parity)		32 GB	24 GB
2x4 GB	2x4 GB	2x4 GB	2x4 GB	2x4 GB	2x4 GB	2x4 GB (Parity)	2x4 GB (Parity)	64 GB	48 GB

OS INSTALLATION TIPS

Below is Altos R910 OS certification matrix:

Operating System	Status	Note
Windows 2000 Advanced Server	Tested	
Windows Server 2003 Enterprise Edition	Certified	
Windows Server 2003 Enterprise x64 Edition	Certified	
Red Hat Enterprise Linux 4.0 Update 3	Certified	
Red Hat Enterprise Linux 4.0 EM64T Update 3	Certified	
SuSE Linux Enterprise Server 9 SP3	Certified	
SuSE Linux Enterprise Server 9 EM64T SP3	Certified	
SuSE Linux Enterprise Server 10	Tested	
SuSE Linux Enterprise Server 10 EM64T	Certified	

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

There are two ways you can get the drivers. You can either make diskettes from Resource CD, or put the Resource CD in the CD-ROM drive and search the driver directly from the Resource CD.

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

NOTE. You need an USB floppy for applying driver during OS installation if there is no built-in driver for disk controller driver in the OS.

Windows Server 2003 Enterprise x64 Edition SP1 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install Windows Server 2003 x64 Edition on Altos R910 with integrated SCSI hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Integrated SCSI hardware RAID	6.45.3.64	\Disk\R910\onboard\romb\x64\romb.net

Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\r910\nic\bcm\WS2003X64\
Onboard USB 2.0	5.2.3790.1380	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SCSI hardware RAID and NIC can be found in the EasyBUILD 7.1 build 100 (or later)

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\R910\romb\IntelRAIDWebConsole\Windows
Broadcom Advanced Control Suite	7.7.7	\app\r910\NIC\BACS\WS3XPx64\

Configuring Integrated SCSI Hardware RAID

Please refer to the Appendix A. for the Integrated SCSI hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver for integrated SCSI hardware RAID in the OS. You need an USB floppy for applying driver during the OS installation.

1. As Windows Server 2003 x64 can't recognize the integrated SCSI 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 diskette.
3. Select "**Intel (R) RAID Controller SROMBU42E**" as target driver
4. After loading the RAID driver from diskette, follow the normal procedure to finish the installation.

VGA Driver Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Drivers** -> **Altos R910 -> Graphics adapters -> ATI Radeon**, 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.

Gigabit Ethernet Driver Installation

Although the Windows Server 2003 x64 Enterprise Edition could detect the onboard Broadcom Gigabit Ethernet automatically, we still replace the driver with the one in the EasyBUILD 7.1 build 300 DVD.

1. Please right-click on the **Broadcom NetXtreme Gigabit Ethernet** under **Network adapters** in **Device Manager** and select **Update Driver** to update onboard Broadcom NIC driver.
2. Select **No, not this time. Do not connect to Windows Update to search the driver.**
3. Select **Install from a list or specific location (Advanced)**.
4. Select **Search the best driver these locations** and check **Include this location in the search**.
5. Click on **Browse** and specify the path for the driver. Please refer to Driver required section for the Directory on EasyBUILD 7.1 build 300 for Broadcom BCM5704 driver.
6. Click on **Next** and follow the instruction to finish the driver update.

Intel RAID Web Console Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R910 -> Integrated SCSI Hardware RAID**, select **Intel RAID Web Console (Windows Server 2003 x64)** and click on **Setup.**
3. Follow the instruction to install the Intel RAID Web Console Utility.
4. At Installation Options, please select Standalone.
5. At Setup, please use the default setting.
6. The Intel RAID Web Console Utility needs the Java Runtime Environment (JRE) version 1.3.1 at least. The setup will detect for the JER automatically. If you do not install the JRE in advance, please click on continue and the setup will install the JRE version 1.4.2 for you.
7. Follow the instruction to complete the installation.
8. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

Broadcom Advanced Control Suite Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities -> Altos R910 -> Broadcom Ethernet Adapter,** select **BACS Utility (Windows Server 2003 x64)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the Broadcom Advanced Control Suite installation.

Windows Server 2003 Enterprise x64 Edition SP1 (with onboard LSI SCSI)

Below information describes how to manually install Windows Server 2003 Enterprise x64 Edition on Altos R910 with onboard LSI SCSI.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Onboard LSI 1030 SCSI controller	5.2.3790.1380	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\r910\nic\bcm\WS2003X64\
Onboard USB 2.0	5.2.3790.1380	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for onboard LSI 1030 SCSI controller and NIC can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Windows	3.05.00	\app\r910\SCSI\CIMBrowser\x64\WS2003 \Windows\VM\
Broadcom Advanced Control Suite	7.7.7	\app\r910\NIC\BACS\WS3XPx64\

Installation Tips

The driver for LSI Logic 22320-R SCSI card is built-in in Windows Server 2003 Enterprise x64 Edition installation CD. Just boot the system form the Windows Server 2003 Enterprise x64 Edition CD and follow the normal installation procedure to complete the installation.

VGA Driver Installation

The VGA driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

CIM Browser Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Select **Utilities**, expand **Utilities -> Altos R910 -> LSI Logic 53C1030 U320 SCSI,** select **CIM Browser (Windows Server 2003 x64)** and click on **Setup.**
3. Follow the instructions to complete the CIM Browser installation.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite Utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Installation section.

Windows Server 2003 Enterprise x64 Edition SP1 (with Integrated SAS Hardware RAID)

Below information describes how to manually install Windows Server 2003 Enterprise x64 Edition on Altos R910 with integrated SAS hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Integrated SAS hardware RAID	1.17.0.64	\Disk\r910\raid\Integrated_SAS\ws2k3x64\
Onboard LSI 1030 SCSI controller	5.2.3790.1380	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\r910\nic\bcm\WS2003X64\
Onboard USB 2.0	5.2.3790.1380	Built-in
SAS Hot-swap backplane	5.0.6055.2	\Disk\r910\onboard\hsbp\sas\

Software Required

The management utility for integrated SAS hardware RAID and NIC can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Windows\
Broadcom	7.7.7	\app\r910\NIC\BACS\WS3XPx64\

Advanced Control Suite		

Configuring Integrated SAS Hardware RAID

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

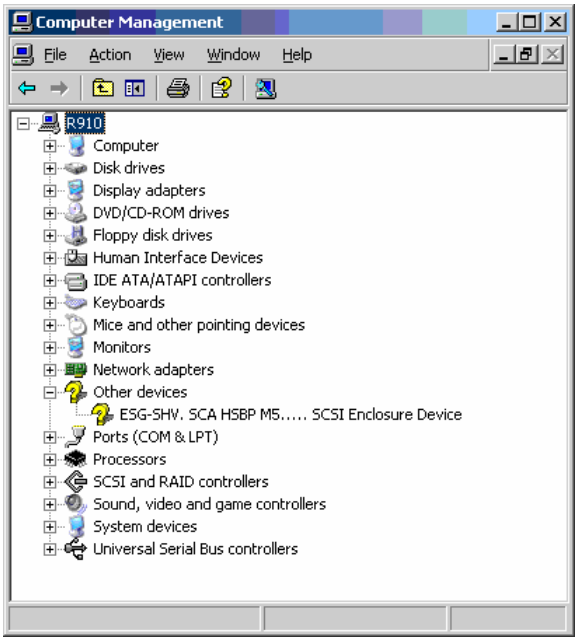
Installation Tips

NOTE. There is no built-in driver for integrated SAS hardware RAID in the OS. You need an USB floppy 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 300 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 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.

SAS Backplane Driver Installation

1. There is an **ESG-SHV, SCA HSBP M5.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R910.



2. Right-click on the **ESG-SHV, SCA HSBP M5.... 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 Directory on EasyBUILD 7.1 build 300 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

The VGA driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

Intel RAID Web Console 2 Installation

1. Please insert the EasyBUILD 7.1 build 300 into the optical drive.
2. Expand **Utilities** -> **Altos R910 -> Integrated SAS Hardware RAID**, select **Intel RAID Web Console 2** and click on **Setup.**
3. Follow the instruction, accept the license agreement and use the default setting to the **Setup Type**.
4. At the **Setup Type**, please select **StandAlone**.
5. Follow the instruction again to complete the installation.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite Utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Installation section.

Windows Server 2003 Enterprise x64 Edition SP1 (with Integrated SAS)

Below information describes how to manually install Windows Server 2003 Enterprise x64 Edition on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Integrated SAS	1.21.15.00	\Disk\r910\onboard\SAS\WS2K3X64\
Onboard LSI 1030 SCSI controller	5.2.3790.1380	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\r910\nic\bcm\WS2003X64\
Onboard USB 2.0	5.2.3790.1380	Built-in
SAS Hot-swap backplane	5.0.6055.2	\Disk\r910\onboard\hsbp\sas\

Software Required

The management utility for the NIC can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Broadcom Advanced Control Suite	7.7.7	\app\r910\NIC\BACS\WS3XPx64\

Installation Tips

NOTE. There is no built-in driver for integrated SAS in the Windows Server 2003 x64. You need an USB floppy for applying driver during the OS installation.

1. As Windows Server 2003 x64 can't recognize the integrated SAS, you need to make a driver diskette from the EasyBUILD 7.1 build 300 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the integrated SAS.
3. Select "**LSI Logic Fusion-MPT SAS Driver (Server 2003 x64)**" as target driver.
4. After loading the SAS driver from diskette, follow the normal procedure to finish the installation.

SAS Backplane Driver Installation

The SAS backplane driver installation is the same as integrated SAS hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SAS Hardware RAID) SAS Backplane Driver Installation section.

VGA Driver Installation

The VGA driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite Utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise x64 Edition (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Installation section.

Windows Server 2003 Enterprise Edition SP1 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install Windows Server 2003 Enterprise Edition on Altos R910 with integrated SCSI hardware RAID enabled.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Integrated SCSI hardware RAID	6.45.3.64	\Disk\R910\onboard\romb\romb.net
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\R910\NIC\BCM\ws2003
Onboard USB 2.0	5.2.3790.1380	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SCSI hardware RAID and NIC can be found in the EasyBUILD 7.1 build 100 (or later)

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\r910\romb\IntelRAIDWebConsole\windows
Broadcom Advanced Control Suite	7.7.6	\app\r910\NIC\BACS\2KXPWS03

Configuring Integrated SCSI Hardware RAID

Please refer to the Appendix A. for the Integrated SCSI hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver for Integrated SCSI hardware RAID in the OS. You need an USB floppy for applying driver during the OS installation.

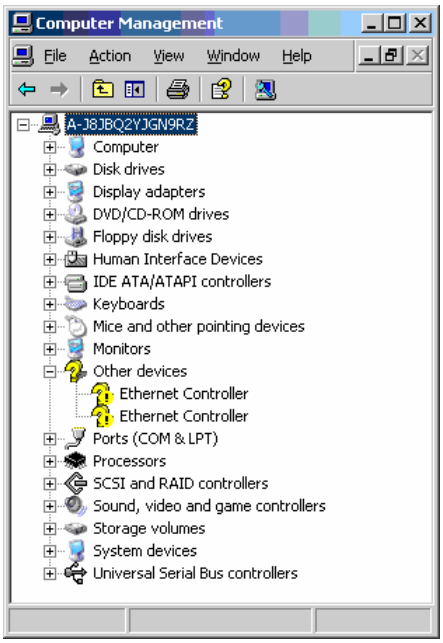
1. As Windows Server 2003 can't recognize the integrated SCSI hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 100 first before the installation.
2. Press F6 at the start of installation to provide the driver diskette.
3. Select "**Intel (R) RAID Controllers For Windows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

VGA Driver Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Drivers** -> **Altos R910 -> Graphics adapters -> ATI Radeon 7000**, 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.

Gigabit Ethernet Driver Installation

1. There are two **Ethernet Controller** listed under **Other device** in Windows Device Manager. 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 Driver required section for the Directory on EasyBUILD 7.1 build 300 for NIC driver.
7. Click on **Next** and follow the instruction to finish the driver update.

Intel RAID Web Console Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the CD-ROM.
2. Expand **Utilities** -> **Altos R910 -> Integrated SCSI Hardware RAID**, select **Intel RAID Web Console (Windows Server 2003)** and click on **Setup.**
3. Follow the instruction to install the Intel RAID Web Console Utility.
4. At Installation Options, please select Standalone.
5. At Setup, please use the default setting.
6. The Intel RAID Web Console Utility needs the Java Runtime Environment (JRE) version 1.3.1 at least. The setup will detect for the JER automatically. If you do not install the JRE in advance, please click on continue and the setup will install the JRE version 1.4.2 for you.

7. Follow the instruction to complete the installation.
8. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

Broadcom Advanced Control Suite Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R910 -> Broadcom Ethernet Adapter**, select **BACS Utility (Windows Server 2003)** and click on **Setup.**
3. Follow the instruction and use the default setting to complete the Broadcom Advanced Control Suite installation.

Windows Server 2003 Enterprise Edition (with onboard LSI SCSI)

Below information describes how to manually install Windows Server 2003 Enterprise Edition on Altos R910 with onboard LSI SCSI.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Onboard LSI 1030 SCSI controller	1.09.11.0	\Disk\R910\onboard\SCSI\LSI\ultra320.net
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\R910\NIC\BCM\ws2003
Onboard USB 2.0	5.2.3790.1380	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for onboard LSI 1030 SCSI controller and NIC can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Windows	3.05.00	\app\r910\SCSI\CIMBrowser\Windows\Windows\VM
Broadcom Advanced Control Suite	7.7.6	\app\r910\NIC\BACS\2KXPWS03

Installation Tips

NOTE. You need an USB floppy for applying driver during the OS installation.

1. Although there is built-in drive for onboard LSI SCSI in the OS, please use

the Acer certified driver for it. You can make the 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 LSI SCSI controller.

3. Select "**LSI Logic PCI SCSI/FC MPI Driver (Server 2003 32-bit)**" as target driver.

4. After you applied the driver for onboard LSI SCSI controller, you would see the following message. Please press '**S**' to use the driver on the floppy disk.

   ```
   The driver you provided seems to be newer than the
   Windows default driver.

   Windows already has a driver that you can use for "LSI
   Logic PCI SCSI/FC MPI Driver (Server 2003 32-bit)".

   Unless the device manufacturer prefers that you use the
   driver on the floppy disk, you should use the driver in
   Windows.'
   ```

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

VGA Driver Installation

The VGA driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet Driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

CIM Browser Installation

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

2. Select **Utilities**, expand **Utilities -> Altos R910 -> LSI Logic 53C1030 U320 SCSI,** select **CIM Browser (Windows Server 2003)** and click on **Setup.**

3. Follow the instructions to finish the CIM Browser installation.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Utility Installation section.

Windows Server 2003 Enterprise Edition (with Integrated SAS Hardware RAID)

Below information describes how to manually install Windows Server 2003 Enterprise Edition on Altos R910 with integrated SAS hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Integrated SAS hardware RAID	1.17.0.32	\Disk\r910\raid\Integrated_SAS\ws2k3
Onboard LSI 1030 SCSI controller	1.09.11.0	\Disk\R910\onboard\SCSI\LSI\ultra320.net
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\R910\NIC\BCM\ws2003
Onboard USB 2.0	5.2.3790.1380	Built-in
SAS Hot-swap backplane	5.0.6055.2	\Disk\r910\onboard\hsbp\sas

Software Required

The management utility for integrated SAS hardware RAID and NIC can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Windows\
Broadcom Advanced Control Suite	7.7.6	\app\r910\NIC\BACS\2KXPWS03

Configuring Integrated SAS Hardware RAID

Please refer to the Appendix B. for the Integrated SAS hardware RAID configuration.

Installation Tips

NOTE. There is no built-in driver for integrated SAS hardware RAID in the OS. You need an USB floppy 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 300 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the

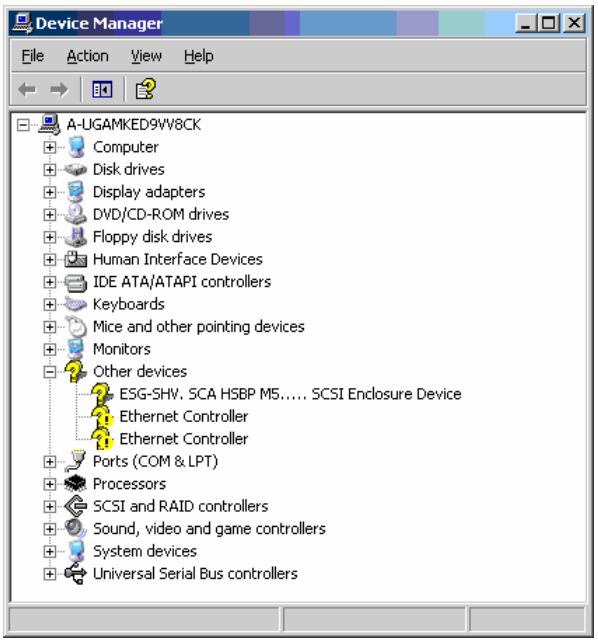
integrated SAS hardware RAID.

3. Select "**Intel 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.

SAS Backplane Driver Installation

1. There is a **ESG-SHV, SCA HSBP M5.... SCSI Enclosure Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SAS backplane for R910.



2. Right-click on the **ESG-SHV, SCA HSBP M5.... 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 Driver required section for the Directory on EasyBUILD 7.1 build 300 for Hot-swap backplane driver.

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.

SCSI Driver Installation

Although the Windows Server 2003 Enterprise Edition could detect the onboard SCSI automatically, we still replace the driver with the one in the EasyBUILD 7.1 build 300 DVD.

1. Please right-click on the **LSI Logic PCI-X Ultra320 SCSI Host Adapter** in Windows Device Manager and select **Update Driver** to update onboard LSI Logic 1030 U320 SCSI driver.
2. Select **No, not this time. Do not connect to Windows Update to search the driver.**
3. Select **Install from a list or specific location (Advanced)**.
4. Select **Search the best driver these locations** and check **Include this location in the search**.
5. Click on **Browse** and specify the path for the driver. Please refer to the Directory on EasyBUILD 7.1 build 300 for Hot-swap backplane driver in Driver required section.
6. Click on **Next** and follow the instruction to finish the driver update.
7. After installing the driver, you would see **LSI Logic 1020/1030 Ultra320 SCSI Adapter** listed in SCSI and RAID controllers.

VGA Driver Installation

The VGA driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet Driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

Intel RAID Web Console 2 Utility Installation

1. Please insert the EasyBUILD 7.1 build 300 into the optical drive.
2. Expand **Utilities** -> **Altos R910 -> Integrated SAS Hardware RAID**, select **Intel RAID Web Console 2** and click on **Setup.**
3. Follow the instruction, accept the license agreement and use the default setting to the **Setup Type**.
4. At the **Setup Type**, please select **StandAlone**.
5. Follow the instruction again to complete the installation.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Utility Installation section.

Windows Server 2003 Enterprise Edition (with Integrated SAS)

Below information describes how to manually install Windows Server 2003 Enterprise Edition on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard VGA	6.14.10.6553	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	5.2.3790.1380	Built-in
Integrated SAS	1.21.15.00	\Disk\r910\onboard\SAS\WS2K3
Onboard LSI 1030 SCSI controller	1.09.11.0	\Disk\R910\onboard\SCSI\LSI\ultra320.net
Onboard Broadcom BCM5704 Gigabit Ethernet	8.48.0.0	\Disk\R910\NIC\BCM\ws2003
Onboard USB 2.0	5.2.3790.1380	Built-in
SAS Hot-swap backplane	5.0.6055.2	\Disk\r910\onboard\hsbp\sas

Software Required

The management utility for the NIC can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Broadcom Advanced Control Suite	7.7.6	\app\r910\NIC\BACS\2KXPWS03

Installation Tips

NOTE. There is no built-in driver for integrated SAS in Windows Server 2003. You need an USB floppy for applying driver during the OS installation.

1. As Windows Server 2003 can't recognize the integrated SAS, you need to make a driver diskette from the EasyBUILD 7.1 build 300 first before the installation.
2. Press F6 at the start of installation to provide the driver disk for the integrated SAS.

3. Select "**LSI Logic Fusioin-MPT SAS Driver (Server 2003 32-bit)**" as target driver.
4. After loading the SAS driver from diskette, follow the normal procedure to finish the installation.

SAS Backplane Driver Installation

The SAS backplane driver installation is the same as integrated SAS hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SAS Hardware RAID) SAS Backplane Driver Installation section.

SCSI Driver Installation

The SCSI driver installation is the same as integrated SAS hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SAS Hardware RAID) SCSI Driver Installation section.

VGA Driver Installation

The VGA driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet Driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows Server 2003 Enterprise Edition (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Utility Installation section.

Windows 2000 Advanced Server SP4 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install Microsoft Windows 2000 Advanced Server on Altos R910 with integrated SCSI hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	8.221.0.0	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	7.2.2.1001	\Disk\R910\onboard\Chipset

Integrated SCSI hardware RAID	5.49.0.0	\Disk\R910\onboard\romb\romb.w2k
Onboard Broadcom BCM5704 Gigabit Ethernet	8.93.1.0	\Disk\R910\NIC\BCM\bcm_5704.w2k
Onboard USB 2.0	7.2.2.1001	The USB 2.0 driver is in the same package with chipset driver.
Hot-swap backplane	5.0.2195.1	\Disk\R910\onboard\HSBP

Software Required

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

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\r910\romb\IntelRAIDWebConsole\windows
Broadcom Advanced Control Suite	7.7.6	\app\r910\NIC\BACS\2KXPWS03
Microsoft DirectX	8.0 or later	http://www.microsoft.com/windows/directx/default.mspx

Configuring Integrated SCSI Hardware RAID

Please refer to the Appendix A. for the Integrated SCSI hardware RAID configuration.

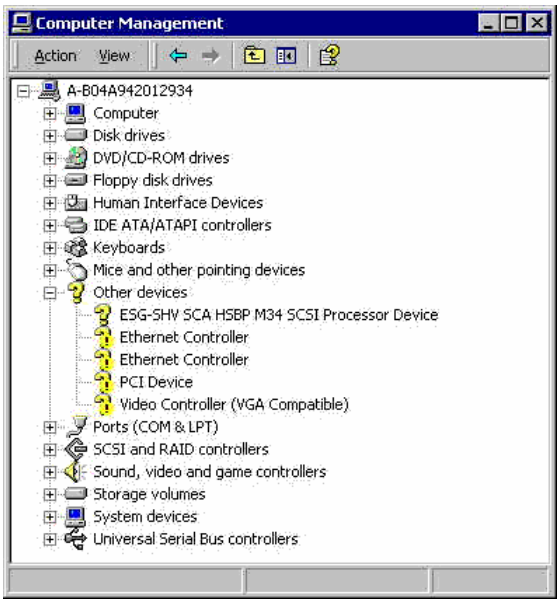
Installation Tips

NOTE. There is no built-in driver for Integrated SCSI hardware RAID in the OS. You need an USB floppy for applying driver during the OS installation.

1. As Windows 2000 can't recognize the integrated SCSI 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 diskette.
3. Select "**Intel (R) RAID Controllers For Windows 2000**" 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 is completed, 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 R910 -> Chipset**, select **Windows 2000 Advance Server** 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. 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 Directory on EasyBUILD 7.1 build 100 for NIC driver in Driver required section.
6. Follow the instructions to finish the installation.

VGA Driver Installation

Note. The Microsoft DirectX 8 or later is required for the R910 onboard ATI Radeon 7000 VGA driver. You can find and download the DirectX form the Microsoft website http://www.microsoft.com/windows/directx/default.mspx.

1. Download the DirectX 8 or later from the Microsoft website.
2. Follow the instructions to install the Microsoft DirectX 8 or later and reboot the server after the DirectX is installed.

3. Insert the EasyBUILD 7.1 build 100 into the optical drive.
4. Expand **Drivers** -> **Altos R910 -> Graphics adapters -> ATI Radeon 7000**, select **Windows 2000 Advanced Server** and click on **Setup.**
5. Follow the instruction to install the VGA driver and reboot the server after the driver is installed.

SCSI Backplane Driver Installation

1. There is a **ESG-SHV SCA HSBP M34 SCSI Processor Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SCSI backplane for R910.
2. Right-click on the **ESG-SHV SCA HSBP M34 SCSI Processor 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 Directory on EasyBUILD 7.1 build 100 for HSBP driver in Driver required section.
6. Follow the instructions to finish the installation.

Intel RAID Web Console Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utilities** -> **Altos R910 -> Integrated SCSI Hardware RAID**, select **Intel RAID WebConsoel (Windows 2000 Advanced Server)** and click on **Setup.**
3. Follow the instruction to install the Intel RAID Web Console Utility.
4. At Installation Options, please select Standalone.
5. At Setup, please use the default setting.
6. The Intel RAID Web Console Utility needs the Java Runtime Environment (JRE) version 1.3.1 at least. The setup will detect for the JER automatically. If you do not install the JRE in advance, please click on continue and the setup will install the JRE version 1.4.2 for you.
7. Follow the instruction to complete the installation.
8. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

Broadcom Advanced Control Suite Utility Installation

1. Please insert the EasyBUILD 7.1 build 100 into the optical drive.
2. Expand **Utility** -> **Altos R910 -> Broadcom Ethernet Adapters**, select **BACS**

Utility (Windows 2000 Advanced Server) and click on **Setup.**

3. Follow the instruction and use the default setting to complete the Broadcom Advanced Control Suite installation.

Windows 2000 Advanced Server SP4 (with onboard LSI SCSI)

Below information describes how to manually install Microsoft Windows 2000 Advanced Server on Altos R910 with onboard LSI SCSI.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	8.221.0.0	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	7.2.2.1001	\Disk\R910\onboard\Chipset
Onboard LSI 1030 SCSI Controller	1.9.11.0	\Disk\R910\onboard\SCSI\LSI\ultra320.w2k
Onboard Broadcom BCM5704 Gigabit Ethernet	8.93.1.0	\Disk\R910\NIC\BCM\bcm_5704.w2k
Onboard USB 2.0	7.2.2.1001	The USB 2.0 driver is in the same package with chipset driver.
Hot-swap backplane	5.0.2195.1	\Disk\R910\onboard\HSBP

Software Required

The management utility for onboard SCSI and NIC can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Windows	3.05.00	\APP\R910\SCSI\CIMBrowser\Windows\Windows\vm
Broadcom Advanced Control Suite	7.7.6	\APP\R910\NIC\BACS\2KXPWS03
Microsoft DirectX	8.0 or later	http://www.microsoft.com/windows/directx/default.mspx

Installation Tips

NOTE. There is no built-in driver for onboard LSI SCSI in the OS. You need an USB floppy for applying driver during the OS installation.

1. As Windows 2000 can't recognize the onboard LSI SCS, 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 diskette.
3. Select "**LSI Logic PCI SCSI/FC MPI Miniport Driver**" as target driver
4. After loading the driver from diskette, follow the normal procedure to finish the installation.

Chipset Driver Installation

The Chipset Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Chipset Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet Driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

VGA Driver Installation

The VGA Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

SCSI Backplane Driver Installation

The SCSI Backplane Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) SCSI Backplane Driver Installation section.

CIM Browser Installation

1. Please insert the EasyBUILD 7.1 build100 to the optical drive.
2. Select **Utilities**, expand **Utilities -> Altos R910 -> LSI Logic 53C1030 U320 SCSI,** select **CIM Browser (Windows 2000 Advanced Server)** and click on **Setup.**
3. Follow the instructions to finish the CIM Browser installation.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite Utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Installation section.

Windows 2000 Advanced Server SP4 (with Integrated SAS hardware RAID)

Below information describes how to manually install Microsoft Windows 2000 Advanced Server on Altos R910 with integrated SAS hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	8.221.0.0	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	7.2.2.1001	\Disk\R910\onboard\Chipset
Integrated SAS hardware RAID	1.17.0.32	\Disk\R910\raid\Integrated_SAS\w2k
Onboard LSI 1030 SCSI Controller	1.9.11.0	\Disk\R910\onboard\SCSI\LSI\ultra320.w2k
Onboard Broadcom BCM5704 Gigabit Ethernet	8.93.1.0	\Disk\R910\NIC\BCM\bcm_5704.w2k
Onboard USB 2.0	7.2.2.1001	The USB 2.0 driver is in the same package with chipset driver.
SAS Hot-swap backplane	5.0.6055.2	\Disk\r910\onboard\hsbp\sas\Windows\

Software Required

The management utility for Integrated SAS hardware RAID and NIC can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Windows\
Broadcom Advanced Control Suite	7.7.6	\APP\R910\NIC\BACS\2KXPWS03
Microsoft DirectX	8.0 or later	http://www.microsoft.com/windows/directx/default.mspx

Configuring integrated SAS hardware RAID

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

Installation Tips

NOTE. There is no built-in driver for integrated SAS hardware RAID in the OS. You need an USB floppy 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 300 first before the installation.
2. Press F6 at the start of installation to provide the driver diskette.
3. Select "**Intel 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

The Chipset Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Chipset Driver Installation section.

Gigabit Ethernet Driver Installation

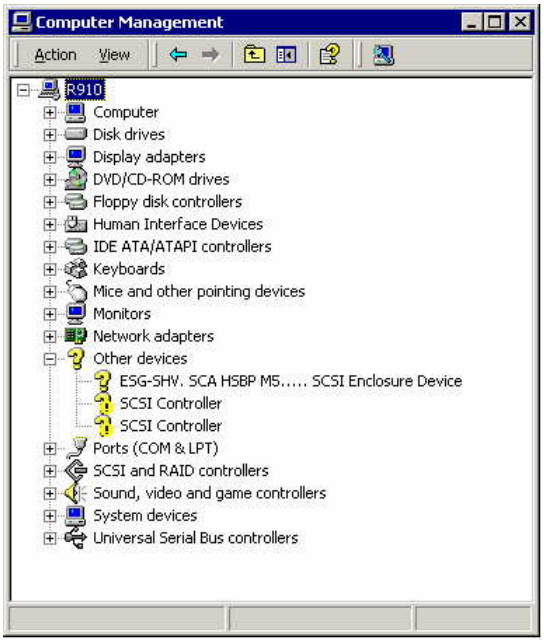
The Gigabit Ethernet Driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

VGA Driver Installation

The VGA Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

SAS Backplane Driver Installation

1. There is an **ESG-SHV SCA HSBP M5 SCSI Processor Device** listed under **Other device** in Windows Device Manager. It is the hot-swap SCSI backplane for R910.



2. Right-click on the **ESG-SHV SCA HSBP M5 SCSI Processor 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 Driver required section for the Directory on EasyBUILD 7.1 build 300 for SAS HSBP.
6. Follow the instructions to finish the installation. You would see **Intel (r) SCA Hotswap Backplane** listed in System devices.

SCSI Driver Installation

1. There are two **SCSI Controller** listed under **Other device** in Windows Device Manager. Please do the same on the both of the devices.
2. Right-click on the **SCSI 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 Driver required section for the Directory on EasyBUILD 7.1 build 300 for SCSI driver.
6. Follow the instructions to finish the installation. You would see **LSI Logic 1020/1030 Ultra320 SCSI Adapter** listed in **SCSI and RAID controllers**.

Intel RAID Web Console 2 Utility Installation

1. Please insert the EasyBUILD 7.1 build 300 into the optical drive.
2. Expand **Utilities** -> **Altos R910 -> Integrated SAS Hardware RAID**, select **Intel RAID Web Console 2** and click on **Setup.**
3. Follow the instruction, accept the license agreement and use the default setting to the **Setup Type**.
4. At the **Setup Type**, please select **StandAlone**.
5. Follow the instruction again to complete the installation.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite Utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Installation section.

Windows 2000 Advanced Server SP4 (with Integrated SAS)

Below information describes how to manually install Microsoft Windows 2000 Advanced Server on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	8.221.0.0	\Disk\R910\onboard\VGA
Onboard Intel E8501 Chipset	7.2.2.1001	\Disk\R910\onboard\Chipset
Integrated SAS	1.21.15.00	\Disk\r910\onboard\SAS\W2K
Onboard LSI 1030 SCSI Controller	1.9.11.0	\Disk\R910\onboard\SCSI\LSI\ultra320.w2k
Onboard Broadcom BCM5704 Gigabit Ethernet	8.93.1.0	\Disk\R910\NIC\BCM\bcm_5704.w2k
Onboard USB 2.0	7.2.2.1001	The USB 2.0 driver is in the same package with chipset driver.
SAS Hot-swap backplane	5.0.6055.2	\Disk\r910\onboard\hsbp\sas\Windows\

Software Required

The management utility for the NIC can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Broadcom Advanced Control Suite	7.7.6	\APP\R910\NIC\BACS\2KXPWS03
Microsoft DirectX	8.0 or later	http://www.microsoft.com/windows/directx/default.mspx

Installation Tips

NOTE. There is no built-in driver for integrated SAS in the Windows 2000. You need an USB floppy for applying driver during the OS installation.

1. As Windows 2000 can't recognize the integrated SAS, you need to make a driver diskette from the EasyBUILD 7.1 build 300 first before the installation.
2. Press F6 at the start of installation to provide the driver diskette.
3. Select "**ISI Logic Fusion-MPT Driver for SAS1068 (Windows 2000)**" as target driver
4. After loading the driver from diskette, follow the normal procedure to finish the installation.

Chipset Driver Installation

The Chipset Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated

SCSI Hardware RAID) Chipset Driver Installation section.

Gigabit Ethernet Driver Installation

The Gigabit Ethernet Driver installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Gigabit Ethernet Driver Installation section.

VGA Driver Installation

The VGA Driver Installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) VGA Driver Installation section.

SAS Backplane Driver Installation

The SAS backplane Driver Installation is the same as integrated SAS hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SAS Hardware RAID) SAS Backplane driver Installation section.

SCSI Driver Installation

The SCSI Driver Installation is the same as integrated SAS hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SAS Hardware RAID) SCSI Driver Installation section.

Broadcom Advanced Control Suite Utility Installation

The Broadcom Advanced Control Suite Utility installation is the same as integrated SCSI hardware RAID enabled. Please refer to the Windows 2000 Advanced Server (with Integrated SCSI Hardware RAID) Broadcom Advanced Control Suite Installation section.

Red Hat Enterprise Linux 4.0 Update 3 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 update 3 on Altos R910 with Integrated SCSI Hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SCSI hardware RAID	2.20.4.6	Built-in
Onboard Broadcom	3.43-rh	Built-in

BCM5704 Gigabit Ethernet		
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SCSI hardware RAID can be found in the EasyBUID 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\r910\romb\IntelRAIDWebConsole \linux\

Configuring Integrated SCSI Hardware RAID

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

Installation Tips

1. Since Red Hat Enterprise Linux 4.0 Update 3 can detect the integrated SCSI hardware RAID automatically, you can just boot the system with Red Hat Enterprise Linux OS installation CD and follow the instruction to do the installation.
2. At **Package Defaults** page, select **Customize the set of packages to be installed**. And select **Graphic Internet** under **Applications** in the **Package Group Selection**.
3. Follow the normal procedure to finish the installation.

Intel RAID Web Console Utility Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/romb/IntelRAIDWebConsole/linux on DVD.
2. Execute the RAID_Web_Console_Linux.bin to launch the graphic installation wizard.
3. At Installation Options, please select **Standalone**.
4. Follow the instruction to finish the installation.
5. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

Red Hat Enterprise Linux 4.0 Update 3 (with onboard LSI SCSI)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 update 3 on Altos R910 with onboard LSI SCSI.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Onboard LSI 1030 SCSI Controller	3.02.62.01rh	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.43-rh	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for onboard LSI SCSI can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Installation Tips

Since Red Hat Enterprise Linux 4.0 Update 3 can detect the onboard LSI SCSI automatically, you can just boot the system with Red Hat Enterprise Linux OS installation CD and follow the instruction to do the installation.

CIM Browser Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm on DVD.
2. Execute install.bin in /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm of EasyBUILD 7.1 build 100 from a terminal. It will launch the graphic installation wizard.

   ```
   # ./install.bin
   ```

3. Follow the instruction and use the default setting to complete the installation.
4. Launch the CIM Browser.

   ```
   # /usr/local/bin/LSICim/CIMLSIBroser
   ```

Red Hat Enterprise Linux 4.0 Update 3 (with Integrated SAS Hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 update 3 on Altos R910 with integrated SAS hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS hardware RAID	00.00.03.01	\Disk\r910\raid\Integrated_SAS\rhel4u3\
Onboard LSI 1030 SCSI Controller	3.02.62.01rh	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.43-rh	Built-in
Onboard USB 2.0	N/A	Built-in
SAS Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SAS hardware RAID and onboard LSI SCSI can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Linux\
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Configuring integrated SAS hardware RAID

Please refer to the Appendix B. 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 4.0 Update3. You need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 Update3 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 300 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. After loading the driver for integrated SAS RAID, please follow the normal procedure to finish the installation.

Intel RAID Web Console 2 Installation

1. You can find the Intel RAID Web Console 2 in EasyBUILD 7.1 build 300. Please refer to Software Required section for the directory of the Intel RAID Web Console 2 on EasyBUILD and copy the utility from the EasyBUILD 7.1 build 300 to HDD first.

```
# mount /media/cdrom
# cp –R /media/cdrom/app/r910/Integrated_SAS/Linux/. /tmp
```

2. Install Intel RAID Web Console 2 utility

```
# cd /tmp/
# ./install.sh
```

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

CIM Browser Installation

The CIM Browser installation is the same as onboard LSI SCSI. Please refer to the Red Hat Enterprise Linux 4 Update 3 (with onboard LSI SCSI) CIM Browser Installation section.

Red Hat Enterprise Linux 4.0 Update 3 (with Integrated SAS)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 update 3 on Altos R910 with integrated SAS.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS	3.02.77	\Disk\r910\onboard\SAS\rhel4u3\

Onboard LSI 1030 SCSI Controller	3.02.77	The driver is bundled in integrated SAS driver
Onboard Broadcom BCM5704 Gigabit Ethernet	3.43-rh	Built-in
Onboard USB 2.0	N/A	Built-in
SAS Hot-swap backplane	N/A	Built-in

Installation Tips

NOTE. There is no built-in driver for Integrated SAS in the Red Hat Enterprise Linux 4.0 Update3. You need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 Update3 cannot recognize the integrated SAS, you need to make a driver diskette from the EasyBUILD 7.1 build 300 first before the installation.
2. Type **linux dd update** 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 driver from the driver diskette.
5. At **Update Disk Source**, please select **sda** and follow the instruction to update it.
6. After loading the driver for integrated SAS , please follow the normal procedure to finish the installation.

Red Hat Enterprise Linux 4.0 EM64T Update 3 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 EM64T Update 3 on Altos R910 with integrated SCSI hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 4.0 EM64T Update 3 Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SCSI hardware RAID	2.20.4.6	Built-in
Onboard Broadcom BCM5704 Gigabit	3.43-rh	Built-in

Ethernet		
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

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

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\r910\romb\IntelRAIDWebConsole \linux\

Configuring Integrated SCSI Hardware RAID

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

Installation Tips

1. Since Red Hat Enterprise Linux 4.0 EM64T Update 3 can detect the integrated SCSI hardware RAID automatically, you can just boot the system with Red Hat Enterprise Linux OS installation CD and follow the instruction to do the installation.
2. At **Package Defaults** page, select **Customize the set of packages to be installed**. And select **Graphic Internet** under **Applications** in the **Package Group Selection**.
3. Follow the normal procedure to finish the installation.

Intel RAID Web Console Utility Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/romb/IntelRAIDWebConsole/linux on DVD.
2. Execute the RAID_Web_Console_Linux.bin to launch the graphic installation wizard.
3. At Installation Options, please select **Standalone**.
4. Follow the instruction to finish the installation.
5. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

Red Hat Enterprise Linux 4.0 EM64T Update 3 (with onboard LSI SCSI)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 Update 3 EM64T on Altos R910 with onboard LSI SCSI.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 EM64T Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Onboard LSI 1030 SCSI Controller	3.02.62.01rh	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.43-rh	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for onboard LSI SCSI can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Installation Tips

Since Red Hat Enterprise Linux 4.0 EM64T Update 3 can detect the onboard LSI SCSI automatically, you can just boot the system with Red Hat Enterprise Linux OS installation CD and follow the instruction to do the installation.

CIM Browser Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm on DVD.
2. Execute install.bin in /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm of EasyBUILD 7.1 build 100 from a terminal. It will launch the graphic installation wizard.

   ```
   # ./install.bin
   ```

3. Follow the instruction and use the default setting to complete the installation.
4. Launch the CIM Browser.

   ```
   # /usr/local/bin/LSICim/CIMLSIBroser
   ```

Red Hat Enterprise Linux 4.0 EM64T Update 3 (with Integrated SAS Hardware RAID)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 Update 3 EM64T on Altos R910 with integrated SAS hardware RAID.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 EM64T Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS hardware RAID	00.00.02.03	\Disk\r910\raid\Integrated_SAS\RHEL4 U3X64\
Onboard LSI 1030 SCSI Controller	3.02.62.01rh	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.43-rh	Built-in
Onboard USB 2.0	N/A	Built-in
SAS Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SAS hardware RAID and onboard LSI SCSI can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Linux\
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Configuring integrated SAS hardware RAID

Please refer to the Appendix B. 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 4.0 EM64T Update3. You need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 EM64T Update3 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette from the EasyBUILD 7.1 build 300 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 RAID driver from the driver diskette.
5. After loading the driver for integrated SAS RAID, please follow the normal procedure to finish the installation.

Intel RAID Web Console 2 Installation

1. You can find the Intel RAID Web Console 2 in EasyBUILD 7.1 build 300. Please refer to Software Required section for the directory of the Intel RAID Web Console 2 on EasyBUILD and copy the utility from the EasyBUILD 7.1 build 300 to HDD first.

```
# mount /media/cdrom
# cp –R /media/cdrom/app/r910/Integrated_SAS/Linux/. /tmp
```

2. Install Intel RAID Web Console 2 utility

```
# cd /tmp/
# ./install.sh
```

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

CIM Browser Installation

The CIM Browser installation is the same as onboard LSI SCSI. Please refer to the Red Hat Enterprise Linux 4 EM64T Update 3 (with onboard LSI SCSI) CIM Browser Installation section.

Red Hat Enterprise Linux 4.0 EM64T Update 3 (with Integrated SAS)

Below information describes how to manually install Red Hat Enterprise Linux 4.0 Update 3 EM64T on Altos R910 with integrated SAS.

Drivers Required

For Red Hat Enterprise Linux 4.0 Update 3 EM64T Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in

Integrated SAS	3.02.77	\Disk\r910\onboard\SAS\RHEL4U3X64\
Onboard LSI 1030 SCSI Controller	3.02.77	The driver is bundled in integrated SAS driver
Onboard Broadcom BCM5704 Gigabit Ethernet	3.43-rh	Built-in
Onboard USB 2.0	N/A	Built-in
SAS Hot-swap backplane	N/A	Built-in

Installation Tips

NOTE. There is no built-in driver for Integrated SAS in the Red Hat Enterprise Linux 4.0 EM64T Update3. You need an external USB floppy drive for applying driver during the OS installation.

1. Since Red Hat Enterprise Linux 4.0 EM64T Update3 cannot recognize the integrated SAS, you need to make a driver diskette from the EasyBUILD 7.1 build 300 first before the installation.
2. Type **linux dd update** 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 driver from the driver diskette.
5. After loading the driver for integrated SAS, please follow the normal procedure to finish the installation.

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 R910 with integrated SAS hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS hardware RAID	00.00.03.07	\Disk\R910\RAID\Integrated_SAS\SLES 10\
Onboard LSI 1030 SCSI controller		Built-in
Onboard Broadcom	3.49	Built-in

BCM5704 Gigabit Ethernet		
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

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

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.19-00	\app\r910\Integrated_SAS\Linux\

Configuring integrated SAS hardware RAID

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

Installation Tips

NOTE. The Integrated SAS hardware RAID driver is required for the SUSE Linux Enterprise Server 10. You need an external USB floppy drive for applying driver during the OS installation.

1. Please make the driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system form SUSE Linux Enterprise Server 10 bootable CD.
3. When you see the boot menu on the screen, press F5 and select **Yes**.
4. Please insert the driver disk into the floppy drive then press Enter to continue the installation.
5. Follow the instruction to complete the installation.

Intel RAID Web Console 2 Installation

1. You can find the Intel RAID Web Console 2 in EasyBUILD 7.1 build 600. Please refer to Software Required section for the directory of the Intel RAID Web Console 2 on EasyBUILD and copy the utility from the EasyBUILD 7.1 build 600 to HDD first.

```
# cp –R /media/EBV71B600/app/r910/Integrated_SAS/Linux/. /tmp
```

2. Install Intel RAID Web Console 2 utility

```
# cd /tmp

# ./install.sh
```

3. Type y to accept the license agreement and select 3 for **StandAlone** installation.

4. To start Intel RAID Web Console 2, click on **Computer**, select **More Applications** and **RAID Web Console 2 Startup UI**.

SUSE Linux Enterprise Server 10 Installation (with Integrated SAS)

Below information describes how to manually install SUSE Linux Enterprise Server 10 on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS	3.03.17.04	\Disk\r910\onboard\sas\sles10
Onboard LSI 1030 SCSI controller	3.03.17.04	The driver is bundled in integrated SAS driver
Onboard Broadcom BCM5704 Gigabit Ethernet	3.49	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Installation Tips

NOTE. The Integrated SAS driver is required for the SUSE Linux Enterprise Server 10. You need an external USB floppy drive for applying driver during the OS installation.

1. Please make the driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system form SUSE Linux Enterprise Server 10 bootable CD.
3. When you see the boot menu on the screen, press F5 and select **Yes**.
4. Please insert the driver disk into the floppy drive then press Enter to continue the installation.
5. Follow the instruction to complete the installation.

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 R910 with integrated SAS hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS hardware RAID	00.00.03.07	\Disk\r910\raid\Integrated_SAS\SLES10 X64
Onboard LSI 1030 SCSI controller		Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.49	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

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

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.19-00	\app\r910\Integrated_SAS\Linux\

Configuring integrated SAS hardware RAID

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

Installation Tips

NOTE. The Integrated SAS hardware RAID driver is required for the SUSE Linux Enterprise Server 10 EM64T. You need an external USB floppy drive for applying driver during the OS installation.

1. Please make the driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system form SUSE Linux Enterprise Server 10 EM64T bootable CD.
3. When you see the boot menu on the screen, press F5 and select **Yes**.
4. Please insert the driver disk into the floppy drive then press Enter to continue the installation.
5. Follow the instruction to complete the installation.

Intel RAID Web Console 2 Installation

1. You can find the Intel RAID Web Console 2 in EasyBUILD 7.1 build 600. Please refer to Software Required section for the directory of the Intel RAID Web Console 2 on EasyBUILD and copy the utility from the EasyBUILD 7.1 build 600 to HDD first.

```
# cp –R /media/EBV71B600/app/r910/Integrated_SAS/Linux/. /tmp
```

2. Install Intel RAID Web Console 2 utility

```
# cd /tmp
# ./install.sh
```

3. Type y to accept the license agreement and select 3 for **StandAlone** installation.
4. To start Intel RAID Web Console 2, click on **Computer**, select **More Applications** and **RAID Web Console 2 Startup UI**.

SUSE Linux Enterprise Server 10 EM64T Installation (with Integrated SAS)

Below information describes how to manually install SUSE Linux Enterprise Server 10 EM64T on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS	3.03.17.04	\Disk\r910\onboard\sas\SLES10X64
Onboard LSI 1030 SCSI controller	3.03.17.04	The driver is bundled in integrated SAS driver
Onboard Broadcom BCM5704 Gigabit Ethernet	3.49	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Installation Tips

NOTE. The Integrated SAS driver is required for the SUSE Linux Enterprise Server 10 EM64T. You need an external USB floppy drive for applying driver

during the OS installation.

1. Please make the driver diskette from the EasyBUILD 7.1 build 600 first before the installation.
2. Boot the system form SUSE Linux Enterprise Server 10 EM64T bootable CD.
3. When you see the boot menu on the screen, press F5 and select **Yes**.
4. Please insert the driver disk into the floppy drive then press Enter to continue the installation.
5. Follow the instruction to complete the installation.

SUSE Linux Enterprise Server 9 Service Pack 3 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install SUSE Linux Enterprise Server 9 Service Pack 3 on Altos R910 with integrated SCSI hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SCSI hardware RAID	2.20.4.6	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

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

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\r910\romb\IntelRAIDWebConsole \linux\

Configuring Integrated SCSI Hardware RAID

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

Installation Tips

1. Since the SuSE Linux Enterprise Server 9.0 SP3 could detected the integrated SCSI hardware RAID automatically, just boot the system form SuSE Linux Enterprise Server 9 Service Pack3 bootable CD.
2. When you see the boot menu on the screen, select **Installation** to continue.
3. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

Intel RAID Web Console Utility Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/romb/IntelRAIDWebConsole/linux on DVD.
2. Execute the RAID_Web_Console_Linux.bin to launch the graphic installation wizard.
3. At Installation Options, please select **Standalone**.
4. Follow the instruction to finish the installation.
5. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

SUSE Linux Enterprise Server 9 Service Pack 3 Installation (with onboard LSI SCSI)

Below information describes how to manually install SUSE Linux Enterprise Server 9 Service Pack 3 on Altos R910 with onboard LSI SCSI.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Onboard LSI 1030 SCSI controller	3.02.62suse	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for onboard LSI SCSI can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Installation Tips

1. Since the SuSE Linux Enterprise Server 9.0 SP3 could detected the integrated SCSI hardware RAID automatically, just boot the system form SuSE Linux Enterprise Server 9 Service Pack3 bootable CD.
2. When you see the boot menu on the screen, select **Installation** to continue.
3. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

CIM Browser Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm on DVD.
2. Execute install.bin in /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm of EasyBUILD 7.1 build 100. It will launch the graphic installation wizard.
3. Follow the instruction and use the default setting to complete the installation.
4. Launch the CIM Browser.

```
# /usr/local/bin/LSICim/CIMLSIBroser
```

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 R910 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	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS	00.00.03.01	\Disk\r910\raid\Integrated_SAS\sles9sp

hardware RAID		3\
Onboard LSI 1030 SCSI controller	3.02.62suse	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SAS hardware RAID and onboard LSI SCSI can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Linux\
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Configuring integrated SAS hardware RAID

Please refer to the Appendix B. 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. 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, you need to make a driver diskette from the EasyBUILD 7.1 build 300 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 driver from the driver diskette.
5. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

Intel RAID Web Console 2 Installation

1. You can find the Intel RAID Web Console 2 in EasyBUILD 7.1 build 300. Please refer to Software Required section for the directory of the Intel

RAID Web Console 2 on EasyBUILD and copy the utility from the EasyBUILD 7.1 build 300 to HDD first.

```
# mount /media/dvd

# cp –R /media/dvd/app/r910/Integrated_SAS/Linux/. /tmp
```

2. Install Intel RAID Web Console 2 utility

```
# cd /tmp

# ./install.sh
```

3. Type y to accept the license agreement and select 3 for **StandAlone** installation.

4. To start Intel RAID Web Console 2, select **System -> More Programs -> RAID Web Console 2 Startup UI** from start menu.

CIM Browser Installation

The CIM Browser installation is the same as onboard LSI SCSI. Please refer to the SuSE Linux Enterprise Server 9 Service Pack 3 (with onboard LSI SCSI) CIM Browser Installation section.

SUSE Linux Enterprise Server 9 Service Pack 3 Installation (with Integrated SAS)

Below information describes how to manually install SUSE Linux Enterprise Server 9 Service Pack 3 on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS	3.02.77	\Disk\r910\onboard\SAS\sles9sp3\
Onboard LSI 1030 SCSI controller	3.02.77	The driver is bundled in integrated SAS driver
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Installation Tips

NOTE. There is no built-in driver Integrated SAS in the SUSE Linux Enterprise Server 9 Service Pack 3. 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, you need to make a driver diskette from the EasyBUILD 7.1 build 300 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 driver from the driver diskette.
5. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

SUSE Linux Enterprise Server 9 EM64T Service Pack 3 (with Integrated SCSI Hardware RAID)

Below information describes how to manually install SUSE Linux Enterprise Server 9 EM64T Service Pack 3 on Altos R910 with integrated SCSI hardware RAID.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SCSI hardware RAID	2.20.4.6	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SCSI hardware RAID can be found in the

EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console	2.8-00	\app\r910\romb\IntelRAIDWebConsole \linux\

Configuring Integrated SCSI Hardware RAID

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

Installation Tips

1. Since the SuSE Linux Enterprise Server 9.0 SP3 could detected the integrated SCSI hardware RAID automatically, just boot the system form SuSE Linux Enterprise Server 9 Service Pack3 bootable CD.
2. When you see the boot menu on the screen, select **Installation** to continue.
3. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

Intel RAID Web Console Utility Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/romb/IntelRAIDWebConsole/linux on DVD.
2. Execute the RAID_Web_Console_Linux.bin to launch the graphic installation wizard.
3. At Installation Options, please select **Standalone**.
4. Follow the instruction to finish the installation.
5. For using the Intel RAID Web Console Utility, please launch the web browser and link to http://localhost:3570.

SUSE Linux Enterprise Server 9 EM64T Service Pack 3 Installation (with onboard LSI SCSI)

Below information describes how to manually install SUSE Linux Enterprise Server 9 EM64T Service Pack 3 on Altos R910 with onboard LSI SCSI.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in

Onboard LSI 1030 SCSI controller	3.02.62suse	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for onboard LSI SCSI can be found in the EasyBUILD 7.1 build 100 (or later).

Software	Version	Directory on EasyBUILD
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Installation Tips

1. Since the SuSE Linux Enterprise Server 9.0 SP3 could detected the integrated SCSI hardware RAID automatically, just boot the system form SuSE Linux Enterprise Server 9 Service Pack3 bootable CD.
2. When you see the boot menu on the screen, select **Installation** to continue.
3. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

CIM Browser Installation

1. Insert the EasyBUILD 7.1 b100 and open the folder /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm on DVD.
2. Execute install.bin in /app/r910/scsi/CIMBowser/Linux/InstData/Linux/vm of EasyBUILD 7.1 build 100. It will launch the graphic installation wizard.
3. Follow the instruction and use the default setting to complete the installation.
4. Launch the CIM Browser.

```
# /usr/local/bin/LSICim/CIMLSIBroser
```

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 R910 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	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS hardware RAID	00.00.03.01	\Disk\r910\raid\Integrated_SAS\SLES9SP3X64\
Onboard LSI 1030 SCSI controller	3.02.62suse	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Software Required

The management utility for integrated SAS hardware RAID and onboard LSI SCSI can be found in the EasyBUILD 7.1 build 300 (or later).

Software	Version	Directory on EasyBUILD
Intel RAID Web Console 2	1.13-07	\app\r910\Integrated_SAS\Linux\
CIM Browser for Linux	3.06.01	\app\r910\scsi\CIMBrowser\Linux\

Configuring integrated SAS hardware RAID

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

Installation Tips

NOTE. There is no built-in driver for integrated SAS hardware RAID in the SUSE Linux Enterprise Server 9 EM64T Service Pack 3. 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, you need to make a driver diskette from the EasyBUILD 7.1 build 300 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 driver from the driver diskette.
5. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

Intel RAID Web Console 2 Installation

1. You can find the Intel RAID Web Console 2 in EasyBUILD 7.1 build 300. Please refer to Software Required section for the directory of the Intel RAID Web Console 2 on the EasyBUILD and copy the utility from the EasyBUILD 7.1 build 300 to HDD first.

```
# mount /media/dvd

# cp –R /media/dvd/app/r910/Integrated_SAS/Linux/. /tmp
```

2. Install Intel RAID Web Console 2 utility

```
# cd /tmp

# ./install.sh
```

3. Type y to accept the license agreement and select 3 for **StandAlone** installation.
4. To start Intel RAID Web Console 2, select **System -> More Programs -> RAID Web Console 2 Startup UI** from start menu.

CIM Browser Installation

The CIM Browser installation is the same as onboard LSI SCSI. Please refer to the SuSE Linux Enterprise Server 9 EM64T Service Pack 3 (with onboard LSI SCSI) CIM Browser Installation section.

SUSE Linux Enterprise Server 9 EM64T Service Pack 3 Installation (with Integrated SAS)

Below information describes how to manually install SUSE Linux Enterprise Server 9 EM64T Service Pack 3 on Altos R910 with integrated SAS.

Drivers Required

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

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS	3.02.77	\Disk\r910\onboard\SAS\SLES9SP3X64\
Onboard LSI 1030	3.02.77	The driver is bundled in integrated

SCSI controller		SAS driver
Onboard Broadcom BCM5704 Gigabit Ethernet	3.37	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Installation Tips

NOTE. There is no built-in driver for integrated SAS in the SuSE Linux Enterprise Server 9 EM64T Service Pack 3. 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, you need to make a driver diskette from the EasyBUILD 7.1 build 300 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 driver from the driver diskette.
5. Follow the instructions to change the installation and service pack CDs during the installation. And follow the normal installation procedure to complete the installation.

SCO OpenServer 6.0.0 Installation (with Integrated SAS hardware RAID)

Below information describes how to manually install SCO OpenServer 6.0.0 on Altos R910 with integrated SAS hardware RAID.

Drivers Required

For SCO OpenServer 6.0.0 Installation, the following device drivers are required.

Device	Version	Directory on EasyBUILD
Onboard ATI Radeon 7000 VGA	N/A	Built-in
Onboard Intel E8501 Chipset	N/A	Built-in
Integrated SAS hardware RAID	1.0	You can find the driver at SCO website. http://www.sco.com/support/update/download/release.php?rid=219

		Or you can contact GCSD for the driver.
Onboard LSI 1030 SCSI controller	8.0.2	Built-in
Onboard Broadcom BCM5704 Gigabit Ethernet	8.0.2b-7.5.22	Built-in
Onboard USB 2.0	N/A	Built-in
Hot-swap backplane	N/A	Built-in

Patch Required

For OpenServer 6.0.0 installation, the following patches are needed.

Patch	Where to download
OpenServer 6.0.0 March 2006 CD1 Recut	http://www.sco.com/support/update/download/release.php?rid=161
Maintenance Pack 2	http://www.sco.com/support/update/download/release.php?rid=133

Configuring integrated SAS hardware RAID

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

Installation Tips

NOTE1. There is no built-in driver for integrated SAS hardware RAID in the OpenServer 6.0.0. You need an external USB floppy drive for applying driver during the OS installation.

NOTE2. You MUST use the OpenServer 6.0.0 March 2006 CD1 Recut to boot the system and do the installation.

1. Since OpenServer 6 cannot recognize the integrated SAS hardware RAID, you need to make a driver diskette before the installation.
2. Boot the system from OpenServer 6.0.0 March 2006 CD1 Recut.
3. Follow the instructions to do the installation. When you see the message for loading HBA drivers as follows, please select “yes” and insert the driver disk into floppy to apply the driver.

   ```
   Load more HBA drivers? yes
   ```

4. After you applied the driver for integrated SAS hardware RAID, continue to follow the instruction to do the installation.
5. At **Configuring optional software** page, select **Deferred** for **Network card** option to skip the network installation. Install the network adapter after OS installation finished.

Maintenance Pack 2 Installation

1. Please download the Maintenance Pack 2 form SCO website and burn the image to a CD.
2. Please launch the Software Manager.
3. Select **Software** -> **Install New** -> **From scosysv** (your system name) -> **CD-ROM Drive 0**.
4. Select **SCO OpenServer Release 6.0.0 Maintenance Pack 2 (ver 1.0.0Dy)** to install.
5. When the installation completed, please reboot the system.

```
# shutdown –g0
```

Gigabit Ethernet Driver Installation

There is built-in driver for onboard BCM5704 Gigabit Ethernet controller in OpenSrever 6.0.0. Please just Launch **netcfg** utility and select **Hardware** -> **Add new LAN adapter** to add the adapters and set the network settings.

```
# netcfg
```

APPENDIX A: INTEGRATED SCSI HARDWARE RAID CREATION

Configuring Integrated SCSI Hardware RAID

This section briefly shows how to create RAID with integrated SCSI Hardware RAID.

Starting Integrated SCSI Hardware RAID Configuration Utility

To start Integrated SCSI Hardware RAID Configuration Utility, press **CTRL-G** when you see the RAID BIOS during POST. 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.
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 Array** 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 **Ready** and listed under **Physical Drives**.
3. Select **Make Hotspare** 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 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

To start Integrated SAS Hardware RAID Configuration Utility, press **CTRL-G** when you see the RAID BIOS during POST. 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.
2. Click on **Next**, change the setting of **Set Factory Defaults** from **No** to **Yes** then click on **Submit**.

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 HSP** or **Make Dedicated HSP** and click on **Go**.

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