Intel® Server System SR9000MK4U

Tested Hardware and Operating System List

Revision 1.3

March 2007

Enterprise Platforms and Services Division

Revision History

Date	Revision #	Modifications
November 2006	1.0	Initial Release
December 2006	1.1	Added two single port NIC's to adapter NIC section.
December 2006	1.2	Updated driver versioning for Intel® Pro100/1000 NICs.
March 2007	1.3	Corrected DVD model typo; added DV-28E optical drive.

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Table of Contents

1. Introduction

This document is intended to provide users of the Intel® Server System SR9000MK4U with a guide to the different operating systems (OSes), adapter cards, and peripherals tested by Intel on this platform.

This document will continue to be updated as new add-in cards, peripherals, and operating systems are tested or until this server is no longer in production. Each new release of the document will present updated information as well as continue to provide the information from previous releases.

Intel will only provide support to those add-in cards and peripherals under the specified system configuration (system firmware) and operating systems and versions to which they were tested.

1.1 Test Overview

Testing and support of hardware and software is executed at two levels, Level 1 and Level 2 as defined in **section 3** of this document. Each OS, adapter and peripheral scheduled to be tested is assigned a level. The table below is a summary of the testing that is performed for OSes, adapters and peripherals based on the level assigned. Details of the levels, testing and support follow later in the document.

	System Stress	Compatibility Validation			Certification Testing
		Functional Validation	OS Install & Boot	PCI Hot Plug	
Level 1 OS	T	T	T	T	T
Level 2 OS			T		
Level 1 Adapter	T	T	T	T	
Level 2 Adapter		T			
Peripherals		T			

T = Tested

1.1.1 Test Definitions

1.1.1.1 System Stress

System stress is a set of test cases used to verify the ability of the platform to function with the level 1 components (OSes, adapters and peripherals) under a significant workload for a defined time. Every level 1 OS is installed in pre-defined system configurations and demonstrated to run, without failure, for a minimum of 48 hours. During this test, special test software is used to maximize the stress of the CPU, memory, and IO buses of the platform. For example, a system may be fully loaded with storage and network adapters that are individually operating under high IO stress.

1.1.1.2 Compatibility Validation

Compatibility validation is a set of tests focused on installation, configuration and simple use of a single component. The three test areas within compatibility validation are verification of basic functionality, OS installation and boot, and PCI Hot Plug*.

1.1.1.2.1 Functional Validation

The intent of functional validation testing is to validate that the component does not have any immediately apparent flaws or defects, as opposed to being a test of robustness. This testing includes basic data send/receive functionality, as well as some extended capabilities (depending on the device type and level).

1.1.1.2.2 OS Install and Boot

This testing validates that the specified OS successfully installs and boots to the product. Depending on the support level of the OS, this may include installation from optical or network media, and installation to drives connected to onboard or add-in devices.

1.1.1.2.3 PCI Hot Plug

This testing validates that OSes, drivers, and adapters properly support the three primary Hot Plug activities: Hot Add, Hot Remove, and Hot Replace.

1.1.1.3 Certification Testing

Certification testing is the set of tests that a third party Operating System Vendor (OSV) provides as part of a certification process (e.g., the WHQL HCTs for Microsoft Windows). All level 1 OSes will be supported to run on the product when it is launched.

1.2 Component Test and Support Levels

1.2.1 Level 1 Testing and Support

Intel® will validate the compatibility of the platform with level 1 OSes and adapters and will validate that the platform is reliable under extended stress load conditions.

1.2.1.1 Level 1 OS Testing

Each level 1 OS will be validated in the following test areas:

- OS installation and boot
- PCI Hot Plug* adapter compatibility
- Functional validation
- System stress
- Certification testing

1.2.1.2 Level 1 Adapter Testing

Each level 1 (all on board, and a selection of add-in) adapter will be validated in one or more pre-defined configurations. Additionally, all level 1 adapters will have each level 1 OS installed to it (storage) or through it (network). PCI Hot Plug* functionality will be validated, if hot plug is supported. In summary, each adapter listed as level 1 will be subjected to the following validation test areas:

- OS installation and boot
- PCI Hot Plug* adapter compatibility
- Functional validation
- System stress

1.2.1.3 Level 1 OS Customer Support

Intel® will provide support for customer issues encountered while running level 1 OSes and adapters on the platform. Support is defined as assistance in root cause of issues, and determining a customer acceptable resolution to the issue associated with the OS. The resolution may include, but is not limited to, on-board controller driver changes, engaging the OSV/ISV/IHV for resolution, BIOS changes, firmware changes, or documented process changes. Intel® will ensure certification testing can pass on every level 1 OS. Individual customers must verify with the OSV whether pass through certification is available for their product.

1.2.1.4 Level 1 Adapter Customer Support

Intel® will provide support for customer issues encountered while using level 1 adapters on level 1 OSes and the platform.

1.2.2 Level 2 Testing and Support

Intel® will validate the compatibility of the platform with level 2 OSes and adapters, as well as peripherals.

1.2.2.1 Level 2 OS Testing

Each level 2 OS will be validated in the following test areas:

- OS installation and boot
- Functional validation

1.2.2.2 Level 2 Adapter Testing

Each level 2 adapter will be stressed as a data device for at least 30 minutes with each level 1 OS. This is accomplished in the following test area:

- Functional validation

1.2.2.3 Level 2 Peripheral Testing

All peripherals will be tested for basic functionality during test runs.

1.2.2.4 Level 2 Support

Intel® commits to provide the following level of customer support for operating systems, adapters and peripherals that are level 2:

- Intel will attempt to work with the vendor to resolve any compatibility issues between the platform and the OS, adapter and/or peripheral. However, the vendor may not commit to resolve the issue.

2. SR9000MK4U Base System Configurations

The following table lists the base configurations tested. Base configurations will change as new revisions of the Intel® Server System SR9000MK4U are released and/or new system BIOS, BMC firmware are flashed onto the board in the factory. Each base configuration is assigned an identifier number that is referenced in the tables throughout this document. New base configurations are added with each new release of this document.

Base Configuration ID #	Type	BIOS/FW	Processors	Notes
1	Intel® Server System SR9000MK4U	Fw_03-12_03-14.rom	Dual-Core Intel® Itanium® 2 Processor 9000 Series	4U Chassis

The most current system firmware is available at http://support.intel.com/support/motherboards/server/sr9000mk4u/.

3. Supported Operating Systems

The following table provides a list of supported operating systems for the Intel® Server System SR9000MK4U. Each of the listed operating systems was tested for compatibility with a base system configuration. Operating system compatibility testing verifies that the operating system will install and function with all on-board devices listed below. All level one operating systems, those receiving both compatibility and stress, were tested under fully loaded configurations (adapters and hard drives populating all slots) with significant stress.

Any variations to the standard operating system installation process are documented in the installation guidelines section of this document. If there is not an installation guideline noted in the following table, then the operating system installed as expected using the manufacturer's installation instructions or Intel's best-known methods.

Operating System	Type of Testing	Update Level	Submission ID	Notes
Microsoft* Windows* Server 2003 with SP1, Enterprise Edition for Itanium®-based Systems	Compatibility & Stress	Service Pack 1	ID:1209127	RN: 8.1
Red Hat* Enterprise Linux 4 AS	Compatibility & Stress	Update 4	TBD (July'07) Update 5	RN: 8.4; Cert will be for update 5
SuSE* Linux Enterprise Server 10	Compatibility & Stress	NA	TBD	RN: 8.5

4. Adapter compatibility

Add-in adapter card compatibility and stress testing was performed with the latest available version of an operating system and card software (driver, BIOS, firmware, etc.) at the time the validation testing occurred. Please contact the card vendor for current available software. Note that not all adapter cards may have been tested under all operating systems.

Any variations to the standard adapter installation process or to expected adapter functionality are documented in the Installation Guidelines section at the end of this document. If there are installation guidelines affecting a particular adapter and operating system combination, these are referenced in the following table. If there is not an installation guideline noted in the following table, then the adapter installed and functioned as expected using manufacturer's installation instructions or Intel's best-known methods.

Testing of adapters cards normally is performed with unused add-in adapters and onboard controller expansion ROMs disabled in BIOS Setup. Intel recommends that customers disable the option ROM for add-in controllers and/or the on-board controllers when not booting from the controller or needing to use its built in utilities.

The support level for each adapter in sections 4 & 5 indicate the level of testing it received. If the driver is included natively in the base OS, then it will be indicated as the table below illustrates.

L1	The adapter received full stress testing in a fully loaded configuration.
L2	The adapter received compatibility testing ensuring it worked with other adapters in a fully loaded configuration but received no stress testing.
x.yy.zz^{NAT}	The driver for this adapter is available natively (In box) in the base OS as indicated by ^{NAT}.
Not Supported	Adapter does not have driver support in the indicated OS.
Supported	The supported L2 adapter was tested by a 3rd party and driver versioning is unknown, possible native driver.

The adapters are divided into categories below based on their functionality.

Support Level	Manufacturer	Model	Interface	Microsoft* Windows* Server 2003 with SP1, Enterprise Edition for Itanium®-based Systems	Red Hat* 4 Enterprise Linux AS Update 4	SuSE* Linux Enterprise Server 10	Reference Notes
4.1 NIC Adapters							
L1	Intel®	Pro 1000PT - DP EXPI9402PT	PCI-Express* x4	9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	
L1	Intel®	Pro 1000PT - SP EXPI9400PT	PCI-Express* x4	9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	
L1	Intel®	Pro 1000PF - SP EXPI9400PF	PCI-Express* x4	9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	
L1	Intel®	Pro 1000GT - QP PWLA8494GT	PCI-X* 133	9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	RN: 8.8
L1	Intel®	Pro 1000MT - DP PWLA8492MT	PCI-X* 133	9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	
L2	Intel®	Pro 1000MF PWLA8492MF	PCI-X* 133	9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	
L2	Intel®	Pro 100S - DP PILA8472C3	PCI-X* 133	8.0.43.0	7.2.7	7.0.33-NAPI[NAT]	
4.2 SAS Adapters							
L1	LSI Logic*	LSI Logic 3442X	PCI-X* 133	1.21.26	3.02.62.01rh[NAT]	3.03.10[NAT]	
4.3 SAS RAID Adapter							
L1	Adaptec*	RAID 4805SAS	PCI-Express* x8	5.2.0.10233	1.1-5[NAT]	1.1-4[NAT]	Support with BIOS/FW at fw03-12_03-14 or better. RN: 8.6, 8.7
4.4 SCSI Adapters							
L1	LSI Logic*	LSI22320-R	PCI-X* 133	1.09.11	3.02.62.10rh[NAT]	3.03.10[NAT]	

Support Level	Manufacturer	Model	Interface	Microsoft* Windows* Server 2003 with SP1, Enterprise Edition for Itanium®-based Systems	Red Hat* 4 Enterprise Linux AS Update 4	SuSE* Linux Enterprise Server 10	Reference Notes
L2	Adaptec*	ASC-39320A-R	PCI-X* 64/133	3.0.00	2.0.15	Aic79xx 3.0[NAT]	SCSI Only; See RN: 8.3
L2	Adaptec*	ASC-29160	PCI-X* 64/66	Supported	Supported	Supported	
L2	LSI Logic*	LSI20320	PCI-X *133	Supported	Supported	Supported	
L2	Adaptec*	ASC-29320A-R	PCI-X* 64/133	Supported	Supported	Supported	SCSI Only; See RN:8.3
L2	Adaptec*	ASC-39160	PCI-X* 64/66	Supported	Supported	Supported	
4.5	**SCSI RAID Adapters**						
L2	LSI Logic*	MegaRAID SCSI 320-4X	PCI-X* 66	6.41.2.64	2.20.4.6-rh2[NAT] 2.20.2.6[NAT]	2.20.4.7[NAT] 2.20.2.6[NAT]	
L2	LSI Logic*	MegaRAID 320-2X	PCI-X* 66	Supported	Supported	Supported	
4.6	**Infiniband Adapter**						
L2	Silverstorm*	Infiniserv 9000	PCI-Express* x8	Not Supported	1.1-rc4	1.1-rc4	Not Supported for Windows; Linux OK
4.7	**Fibre Channel Adapters**						
L1	Qlogic*	QLE2462	PCI-Express* x4	9.1.2.16	8.01.04-d7[NAT]	8.01.04-k[NAT]	RN: 8.2
L1	Emulex*	LPE 11002	PCI-Express* x4	1-20a7	8.0.16.27[NAT]	8.1.6-k[NAT]	
L2	Qlogic*	QLE2362	PCI-Express* x4	Supported	Supported	Supported	
L2	Qlogic*	QLE2340	PCI-X* 133	Supported	Supported	Supported	
L2	Qlogic*	QLE2342	PCI-X* 133	Supported	Supported	Supported	

5. On-Board Components

Manufacturer	Model	System BIOS/Firmware	Microsoft* Windows* Server 2003 with SP1, Enterprise Edition for Itanium®-based Systems	Red Hat Enterprise Linux 4 (32-bit & Intel EM64T versions)	SuSE* Linux Enterprise Server 9 (32-bit and Intel EM64T versions)	Reference Notes
5.1 SAS Controller						
LSI Logic*	3442X (1068)		1.21.26	3.02.62.01rh[NAT]	3.03.10[NAT]	
5.2 Gigabit Ethernet Controller						
Intel®	Pro1000EB (82563EB)		9.4.17.2	7.2.7	7.0.33-NAPI[NAT]	
Intel®	Pro100 (82551QM)		8.0.43.0	3.5.10-k2-NAPI[NAT]	3.5.10-k2-NAPI[NAT]	
5.3 Video Controller						
ATI*	ES1000		8.13.08	radeon_drv v4.0.1[NAT] compiled for xorg 6.8.2	radeon_drv 4.0.3[NAT] compiled for xorg 6.9.0	

6. Peripheral compatibility

Peripheral compatibility testing was performed with the latest available version of an operating system and any necessary software (driver, BIOS, firmware, etc.) at the time the validation testing occurred. Testing consisted of normal use of the devices (except for tape drives which receive specific backup and recovery testing) throughout the system validation process.

Manufacturer	Model	Interface	Reference Notes
6.1 USB Keyboard & Mouse			
Microsoft*	Wheel Mouse Optical (D66-0029)	USB	
	IntelliMouse* Optical (D58-00026)		
	Natural* Elite Keyboard (A11-00337)		
Logitech*	Cordless Optical Mouse (RC0-30BK)		
	Optical Mouse (931144-0403)		
	Media Keyboard Elite (MK-110)		
	Internet Pro (967559-0403)		
6.2 Slim Optical Drives			
Teac*	DW-224E-R76	IDE	
	DV-W28E-A593		RN: 8.9
	DV-28E		
6.3 USB Key Fob Memory Devices & External Drives			
Buffalo*	RUF2-R1G-S keyfob	USB	
Hagiwara*	HUD-1GPMJ keyfob		
Iomega*	Mini USB 2.0 Drive (1GB)		
SanDisk*	Cruzer* Mini USB 2.0 (512MB & 1GB)		
Sony*	USM1GE USB keyfob		
Teac*	FD05PUW261 Floppy drive		
Iodata*	USB-FDX1 Floppy drive		
	USB DVD-ROM DVRP-UN8AS		

7. Hard Disk Drives

The hard drives listed in the following table have been tested on the Intel® Server Board Set SE8501HW4, in on-site validation labs, and/or by individual drive vendors. The drives were tested under each level 1 OS.

Manufacturer	Product Family	Model Number	RPM	Drive size[1]	Reference Notes
Fujitsu*	MAX – SAS	MAX3036RC	15K	36GB	-
		MAX3073RC	15K	73GB	-
		MAX3147RC	15K	147GB	-
Hitachi*	Ultrastar* 15K 147-147-SAS	HUS151414VLS300	15K	147GB	-
Seagate*	Cheetah* X15.4K – SAS	ST373454SS	15K	73GB	-
		ST3146854SS	15K	147GB	EOL 2007

[1]Note: All hard drives within the product families listed above are supported regardless of size unless otherwise noted.

8. Reference Notes

8.1 Four Microsoft* patches recommended for stable Windows* operation.

Issue: Windows installation improves stability if the following four Knowledge Base patches are applied.

Guideline: The user is strongly recommended to install the following four patches after the installation of Microsoft* Windows* Server 2003 with SP1, Enterprise Edition for Itanium®:

1. KB899416
2. KB899755
3. KB907646
4. KB919385

Installation order must be as indicated.

Status: Patches can be obtained from Microsoft* and will be included with SP2 in 2007.

8.2 QLogic* QLE2462 Fibre Channel adapter requires a driver update to use for OS install and boot adapter.

Issue: The Qlogic* QLE 2462 Fibre Channel adapter can only be used for data storage but not as an OS boot device unless a driver update is applied.

Guideline: Use a Driver Update Disk (DUD) to upgrade the QLE adapter to 8.01.06.

Status: Fixed.

8.3 Adaptec only supports ASC-29320A-R and ASC-39320A-R cards on IPF architectiure in SCSI mode.

Issue: RAID mode not currently supported in Adaptec IPF drivers for ASC-29320A-R and ASC-39320A-R cards.

Guideline: Adaptec ASC-29320A-R and ASC-39320A-R adapters are supported on SR9000MK4U as SCSI storage adapters only.

Status: Will not be fixed.

8.4 PCI Hot-Plug feature is not supported under Red Hat* Enterprise Linux 4 Update 4 operating system.

Issue: PCI Hot-Plug (PHP) does not work with Red Hat* Enterprise Linux 4 Update 4.

Guideline: Do not use PHP capability when running the SR9000MK4U with RHEL 4 U4.

Status: Under investigation.

8.5 PCI Hot-Plug does not work correctly with SUSE* Enterprise Linux 10.

Issue: PCI Hot-Plug (PHP) does not work correctly with SUSE* Enterprise Linux 10.

Guideline: ACPI exception errors will be seen when hot-adding or hot-removing PCI add in cards. These are false errors that can be safely ignored. This covers both PCI-X* and PCI Express* add in cards.

Status: To be fixed in future Kernel release.

8.6 Adaptec 4805S RAID adapter support model.

Issue: Unable run Adaptec FW update utility in EFI.

Workaround: Adaptec FW update utility requires 32-bit system to update the adapter.

Status: Under investigation with Adaptec.

8.7 Adaptec 4805S RAID Monitoring supported on Linux OS only.

Issue: RAID monitoring currently only supported under Red Hat* Linux.

Guideline: To enable RAID monitoring, follow the procedure described in the release notes for the Adaptec* Linux RAID monitoring utility.

Status: Windows* based utility availability in Q2'07.

8.8 Intel® Pro1000GT quad port adapter cannot be used as boot device in EFI if boot ROM is enabled.

Issue: If boot ROM is enabled, adapter cannot be used as a boot device.

Workaround: Disable the boot ROM of the Intel® Pro1000GT quad port adapter.

Status: Will not be fixed.

8.9 TEAC* DV-W28E DVD-Writer causes Windows* to fail to install.

Issue: Drive is operational in EFI and once Windows* is installed, but causes the install to halt with incompatible ATAPI.SYS driver on the install CD and no IPF driver supported.

Workaround: Use the DW-224E-R76 drive to perform the windows install, then replace with the DV-W28E DVD-Writer drive and the OS will recognize operate with the drive.

Status: Will not be fixed.