



Intel[®] Carrier Grade Server TIGPT1U

Tested Hardware and Operating System List

Revision 1.4

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Modular and Telecom Systems Division

Revision History

Date	Revision Number	Modifications
June 16, 2004	1.00	Initial release
November 4, 2004	1.10	Added Microsoft and Linux certification detail
February, 2005	1.20	Added: Fujitsu MAT HDD, Hitachi Ultrastar 10K300 HDD, Teac DVD
August, 2005	1.30	Quarterly Update
Q106	1.4	RoHS Updates

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1. Introduction

This document is intended to provide users of the Intel® Carrier Grade Server TIGPT1U with a guide to the operating systems, adapter cards, and peripherals that Intel tested on this platform.

This document will be updated as new add-in cards, peripherals, and operating systems are tested or until the Carrier Grade Server TIGPT1U is no longer in production. Each new release of the document will present updated information and continue to provide the information from previous releases.

Intel will support the add-in cards and peripherals only under the system configurations on which they were tested. This includes specific versions of the system BIOS, firmware, operating systems, and operating system versions.

1.1 Test Overview

Testing performed on the Carrier Grade Server TIGPT1U is classified under two categories:

- Compatibility Testing
- Stress Testing

1.1.1 Compatibility Testing

Basic compatibility testing is performed with each supported operating system. Basic compatibility testing validates that the operating system can be installed on a system in which the server board is used, and that the base hardware feature set is functional.

With basic compatibility testing, a small set of peripherals is used for installation purposes only. No add-in cards are tested. Testing may include network connectivity and running proprietary and industry standard test suites.

Extended compatibility testing occurs on only the latest versions of a supported operating system. Extended compatibility testing test for functionality of a variety of add-in adapters and peripherals. Test applications used consist of both proprietary and industry standard test suites.

Note: The latest version of an operating system signifies the latest supported version at the time of the test run. Each new release of this document may have a newly supported release of a given operating system. Previous releases of a supported operating system may not be tested beyond the basic compatibility test process.

1.1.2 Stress Testing

Stress testing is performed on only the most current release of a supported operating system at the time of a given validation run. The stress test process consists of three areas:

- **Base Platform:** Each base platform successfully accept the installation of a given operating system, successfully run a disk stress test, and successfully run a network stress test.
- **Multiple Adapters:** Multiple adapter testing is not applicable to the Carrier Grade Server TIGPT1U, which provides a single PCI slot for adapter installation.
- **Endurance Test:** This test sequence uses configurations that include an add-in adapter for a minimum 72-hour test run without injecting errors. Three servers operating under Windows* 2003 Advanced Server, Red Hat* Linux 9.0, and Red Hat Linux Advanced Server 3.0 are tested in parallel. Each configuration passes an installation test and a Network/Disk Stress test. If a fatal error occurs, the test must be restarted.

1.2 Pass/Fail Test Criteria

For each operating system, adapter, and peripheral configuration, a test passes if specific criteria are met. Specific configurations may have characteristics that are addressed on a case-by-case basis. In general, a configuration passes testing if the following conditions are met:

- The operating system installed without error.
Manufacturer's installation instructions or Intel's best-known methods are used for the operating system installation.
No extraordinary workarounds were required during the operating system installation.
The server system behaved as expected during and after the operating system installation.
Application software installed and executed normally.
- Hardware compatibility tests ran to completion without error.
- Test software suites executed successfully
Test and data files were created in the correct directories without error.
Files copied from client to server and back compare to the original with zero errors reported.
Clients remain connected to the server system.
Industry standard test suites run to completion with zero errors reported.

2. Intel® Carrier Grade Server TIGPT1U Base System Configurations

The following table lists the base configurations tested. Base configurations will change as new revisions of the Intel® Carrier Grade Server TIGPT1U are released and/or new system BIOS and BMC firmware are cut onto the system 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 System Identifier #	System Type	PBA Number	BIOS Revision	BMC Firmware Revision	Notes
1	TIGPT1U	C42682-503	P01	02.31	TIGPT1U Telco system
2	Open with SE7210TP1-E	C42680-503	P01	02.31	SCSI board with four PCI Slots, No PCI riser card installed
3	TIGPT1U	C42680-504	P06	02.31	TIGPT1U Telco system
4	Open with SE7210TP1-E	C42680-504	P06	02.31	SCSI board with four PCI Slots, No PCI riser card installed

3. Supported Operating Systems

The following table provides a list of supported operating systems for the Intel® Carrier Grade Server TIGPT1U. Each of the listed operating systems was tested for compatibility with a base server system configuration. Operating system compatibility testing verifies that the operating system installs and functions with all on-board devices.

Any variations to the standard operating system installation process are documented in the Installation Guidelines section of this document. If there are no installation guidelines noted in the following table, then the operating system installed as expected using manufacturer's installation instructions or Intel's best-known methods.

Operating System	Base Configuration Tested	Notes
Microsoft* Windows* Server 2003		
Red Hat* Enterprise Linux 3.0		
Red Hat* Professional 9.0		

3.1 Server Management Software Support

The following table provides information on the type and version of server management software which has been tested and is supported with each operating system on the Intel® Carrier Grade Server TIGPT1U.

Operating System	Server Management Software Package and Version
Microsoft* Windows* Server 2003	ISM 5.8
Red Hat* Enterprise Linux 3.0	ISM 5.8
Red Hat* Professional 9.0	ISM 5.8

3.2 Operating System Certifications

Listed below are the operating systems that Intel will certify on the Carrier Grade Server TIGPT1U. The customer maintains responsibility for their own certification from the individual operating system vendors. In many cases, the customer may leverage their operating system certifications from Intel's testing. See the "Comments" section next to each operating system in the table below for additional information. Intel's certifications, pre-certification, and operating system testing may help reduce some of the risk in achieving customer certifications with the operating system vendors.

Operating System	Certification Listing	Comments
Microsoft Windows* Server 2003	Intel® Carrier Grade Server TIGPT1U	OEM must request certification by Microsoft for their specific product. http://www.microsoft.com/whdc/hcl/search.msp http://developer.intel.com/design/servers/whql.htm
Red Hat* Enterprise Linux 3.0	Intel® TIGPT1U	Red Hat checks Intel's results, certifies (if appropriate), and posts the certificate on their web site. Customer can leverage the Intel certification, if customer product meets the operating system vendor standard. http://hardware.redhat.com/hcl/list

4. Adapters and Peripherals

Add-in adapter card and peripheral compatibility and stress testing will be performed only with the latest version of an operating system at the time the validation testing occurred. The table on the following page shows the operating system and base configurations used to validate each device. The adapters are divided into categories based on their functionality. All integrated on-board devices are tested by default and are therefore not included in the following tables.

Note: Not all adapter cards were tested under all operating systems. The following guidelines are used in the tested adapters and peripherals table to indicate the level of support that Intel provides for a particular adapter under a particular operating system:

Number (i.e. 1)	This adapter or peripheral has been tested and is supported under the specific configuration identified in Section 2 of this document.
Number in brackets (i.e. [1])	This adapter or peripheral has been tested, but is NOT supported under the specific configuration identified in Section 2 of this document.
NT	This adapter or peripheral has not been tested under this operating system and is not supported under this operating system.
ND	This adapter or peripheral has not been tested under this operating system due to limitations in IHV driver availability, and is not supported under this operating system.
SA (Similar Adapter)	This adapter is supported, but not tested. This adapter model has not been tested with this server board, but Intel will support it based on successful testing of a similar adapter from the same adapter family. Intel has high confidence that this adapter will function correctly with the server board. This adapter uses the same firmware and drivers, and has a nearly identical system interface to another adapter of the same family that has been successfully tested with this server board. In addition, Intel has secured IHV commitment to support the similar adapters equally. Customers should always test adapters as part of the final system configuration prior to deployment. All installation guidelines for the tested adapter also apply to the similar adapter.

Any variations to the standard adapter installation process or to expected adapter functionality are documented in the Section 6, Installation Guidelines. Installation guidelines that affect a particular adapter and operating system combination are noted in the following table. If no installation guidelines are noted in the following table, then the adapter installed and functioned as expected using manufacturer's installation instructions or Intel's best-known methods.

Note: Adapter cards are normally testing 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.

Manufacturer	Model Number	Model Name	Interface	Comments	Microsoft Windows * Server 2003 Enterpris	Red Hat Enterprise Linux* ES 3.0	Red Hat Linux* 9.0 Professional
4.1 PCI SCSI RAID							
Adaptec*	ASR-2110S	2110S	PCI-64/66	Dual channel, U320, low-profile	1,2	2	1
Adaptec*	ASR-2200S	2200S	PCI-64/66	Dual channel, U320	1,2	2	1
Adaptec*	ASR-2230S	2230S	PCI-X 133	Dual channel, U320	1,2	2	1
ICP-Vortex*	GDT8514RZ	GDT8514RZ	PCI-64/66	Single channel, U320, low-profile	1,2	2	1
Intel®	SRCU41L	SRCU41L	PCI-64/66	Single channel, U320	2	2	NT
Intel®	SRCU42L	SRCU42L	PCI-64/66	Single channel, U320, low-profile	2	2	NT
Intel®	SRCU42X	SRCU42X	PCI-X 133	Dual channel, U320	2	2	NT
Intel®	SRCZCR	SRCZCR	PCI-64/66	Single channel, U320, low-profile	2	2	NT
LSI Logic*	MegaRAID 320-2x	MegaRAID 320-2x	PCI-64/66	Dual channel, U320	2	2	NT
4.2 PCI SCSI							
Adaptec	ASC-29160LP	ASC-29160LP	PCI-64/66	Single channel, U160, low-profile	1,2	2	NT
Adaptec	ASC-29160	ASC-29160	PCI-64/66	Single channel, U160	1,2	2	NT
Adaptec	ASC-39320A	ASC-39320A	PCI-X133	Dual channel, U320	SA	SA	NT
Adaptec	ASC-39320ALP	ASC-39320ALP	PCI-X133	Dual channel, U320, low-profile	SA	SA	NT
LSI Logic	LSI20160	LSI20160	PCI-X133	Single channel, U160	2	2	1

Manufacturer	Model Number	Model Name	Interface	Comments	Microsoft Windows * Server 2003 Enterpris	Red Hat Enterprise Linux* ES 3.0	Red Hat Linux* 9.0 Professional
LSI Logic	LSI20160LP	LSI20160LP	PCI-X133	Single channel, U160, low-profile			
LSI Logic	LSI20320-R	LSI20320-R	PCI-X133	Single channel, U320, low-profile	2	2	1
LSI Logic	LSI22320-R	LSI22320-R	PCI-X133	Dual channel, U320	2	2	1
4.3 PCI NIC							
3COM*	3C905CX-TX-M	EtherLink 10/100 PCI	PCI 32/33	10/100 Base-T WOL			
Intel	PWLA8490XF	PRO/1000XF Gigabit Server Adapter	PCI-X133	1000BaseSX, Fiber	2	2	NT
Intel	PWLA8490XT	PRO/1000XT Gigabit Server Adapter	PCI-X133	SA = PWLA8490XF 10/100/1000 BaseT	SA	SA	NT
Intel	PWLA8492MT	PRO/1000MT Dual Port Gigabit Server Adapter	PCI-X133	10/100/1000 BaseT Dual Port, Copper, No bridge	2	NT	1
Intel	PWLA8492MF	PRO/1000MF Dual Port Gigabit Server Adapter	PCI-X133	10/100/1000 BaseLC Dual Port, Fiber, No bridge	2	NT	NT
Intel	PWLA8494MT	PRO/1000MT Quad Port Gigabit Server Adapter	PCI-X133	10/100/1000 BaseT, Quad Port, Copper	2	NT	NT
Intel	PWLA8470C3	PRO100+ S Server	PCI-X133	10/100 Base-T + Security low-profile			
Intel	PWLA8470D3	PRO100+ S Server	PCI-X133	10/100 Base-T + Security low-profile			

Manufacturer	Model Number	Model Name	Interface	Comments	Microsoft Windows * Server 2003 Enterpris	Red Hat Enterprise Linux* ES 3.0	Red Hat Linux* 9.0 Professional
4.4 PCI Fibre Channel							
Emulex*	LP9002L	LightPulse 9002	PCI-64/66	Single Channel	1,2	2	NT
Emulex*	LP9002LP	LightPulse 9002	PCI-64/66	Single Channel			
Emulex	LP9802DC	LightPulse 9802	PCI-X133	Single Channel	1,SA	SA	NT
QLogic	QLA2340	SanBlade2340	PCI-X133	Single Channel	12	2	NT
QLogic	QLA2342	SanBlade2342	PCI-X133	Dual Channel	12	2	NT
4.5 Removable Media							
lomega	32324	Zip 750MB	USB 2.0				
lomega	32548	Mini 128MB USB Drive	USB 2.0	Flash Drive	NT	2	NT
lomega	SKU33105	SKU33105	USB 2.0				
Sony*	PCGA-UFD5	VAIO External USB Floppy	USB	3.5" Floppy	NT	2	NT
Teac*	CDWF540/Kit	CDWF540/Kit	USB	External CDRW dirve			
Teac*	FDO5PUB	FDO5PUB	USB	3.5" Floppy	NT	2	NT
4.6 KVM (Keyboard / Video / Mouse)							
Avocent*	1160ES	1160ES	PS2	16-port keyboard / video / mouse switch	NT	2	NT
Belkin	F1DA108T	Omniview PRO2	PS2	8-port keyboard / video / mouse switch	NT	2	NT
4.7 Input Devices							
Keytronic* keyboard	PRO Pilot	PRO Pilot	PS2		NT	2	NT
Logitech*	930582-0121	Optical Mouse	USB/PS2				

Manufacturer	Model Number	Model Name	Interface	Comments	Microsoft Windows * Server 2003 Enterpris	Red Hat Enterprise Linux* ES 3.0	Red Hat Linux* 9.0 Professional
Logitech*	930582-0403	Optical Mouse	USB/PS2		NT	2	NT
Microsoft*		Intellimouse Optical	USB/PS2		NT	2	NT
4.8 CD-ROM Drives							
Iomega	32497	CD-RW 48x24x48	USB2.0/1.1	External CD-RW	2	NT	2
LG*	GCE-8240B	U2-12X	USB				
Plextor*	PX-W4824TU/SW	PlexWriter 48x24x48U	USB2.0/1/1	External CD-RW	2	NT	NT
Plextor*	PX-W4012TU	PlexWriter 40x12x40U	USB2.0/1/1	External CD-RW			
Samsung*	SN-124q	SN-124q	ATA33				
Teac*	CDWF540/Kit	CDWF540/Kit	USB	External CDRW drive			
4.9 DVD-ROM Drives							
Liteon*	SOSC-2483K	SOSC-2483K	ATA				
Panasonic*	UJDA750	UJDA750	ATA33				
Panasonic*	SR-8177-B	SR-8177-B	ATA33	UDMA, 8X DVD / 24X CD DVD-ROM	2	NT	NT
Plextor*	PlexWriter/Premium-U-52/32/52	PlexWriter/Premium-U-52/32/52	ATA				
Teac*	DV-28E	DV28E	ATA				
Teac*	DW-224E-C98	DV-224E-C98	ATA		1	1	1
Toshiba	SD-R2412	SD-R2412	ATA33				
Toshiba	SD-R2512	SD-R2512	ATA33				
4.10 DVD RW							
Teac*	DV-W28E A-593	DV-W28E A-593	ATA		1	1	1

Note: Blue shading indicates that the adapter or peripheral is either available or will be available in a lead-free version. Tested Hardware and Operating S

Manufacturer	Model Number	Model Name	Interface	Comments	Microsoft Windows * Server 2003 Enterpris	Red Hat Enterprise Linux* ES 3.0	Red Hat Linux* 9.0 Professional
4.11 Tape Drives							
Sony*	SDX-700C/BM	AIT-3 Desktop	SCSI-U160				

Note: Blue shading indicates that the adapter or peripheral is either available or will be available in a lead-free version.

Tested Hardware and Operating System List
Note: Blue shading indicates that the adapter or peripheral is either available or will be available in a lead-fr

5. Hard Disk Drives

The hard drives listed in the table on the following page have been tested with the Intel® Carrier Grade Server TIGPT1U by Intel in its validation labs and/or by individual drive vendors. The following operating system identifiers are used in the table to specify the operating system under which each drive was tested.

Identifier number	Operating System
1	Microsoft Windows* 2003 Enterprise Edition
2	Red Hat* Enterprise Linux 3.0
3	Red Hat* Professional 9.0

Note: Not all hard drives were tested under all operating systems. The following notation is used in the tested hard drives table below to indicate the support level that Intel provides for a particular hard drive with a particular operating system:

Number (i.e. 1)	This hard drive has been tested and is supported under the operating system identified by the operating system identification number.
Number in brackets (i.e. [1])	This hard drive has been tested, but is NOT supported under the operating system identified by the operating system identification number.
SD (Similar Drive)	The hard disk drive is supported, but not tested. This hard drive model/capacity has not been tested with this server board, but Intel will support it based on successful testing of a larger capacity hard drive from the same hard drive family. Intel has high confidence that this hard drive will function correctly with the server board. This drive uses the exact same firmware and drivers as a larger capacity hard drive that has been successfully tested with this server board. The only difference between this drive and the one that was used in testing is the storage capacity. Intel provides the same level of support for all hard drives listed in this document, regardless of whether the drive was tested or not. Customers should always test hard drives as part of the final system configuration prior to deployment. Given the fact that a larger capacity hard drive from the same drive family has successfully completed testing on this server board, this particular hard drive capacity point will not be tested.
IHVT (IHV Tested)	The hard disk drive was tested according to Intel-approved guidelines and test procedures by the Independent Hardware Vendor (IHV) that manufactured the drive. Intel provides the same level of support for all hard drives listed in this document, regardless of whether the drive was tested in an Intel lab or not. IHV test reports remain the property of the IHV (Intel cannot provide copies of these reports).

Manufacturer	Product Family	Model Number	Interface	RPM	Drive Size (GB)	Tested Operating Systems	Notes
5.1 SCSI Hard Drives							
Fujitsu*	AL-9LE	MAT3300NC	SCSI-U320-SCA	10k	300GB	1,3	
Fujitsu	AL-9LE	MAT3147NC	SCSI-U320-SCA	10k	147GB	SD	
Fujitsu	AL-9LE	MAT3735NC	SCSI-U320-SCA	10k	73GB	SD	
Fujitsu	AL-9LX	MAU3036NC	SCSI-U320-SCA	15k	36GB	SD	
Fujitsu	AL-9LX	MAU3073NC	SCSI-U320-SCA	15k	73GB	SD	
Fujitsu		MAU314NC	SCSI-U320-SCA	15k	147GB	1,3	
Fujitsu	AL-9LX	MAU3147NC	SCSI-U320-SCA	15k	147GB	1,3,IHVT	
Fujitsu	Algero-8LE	MAP3147NC	SCSI-U320-SCA	10k	147GB	1,2,3	
Fujitsu	Algero-8LE	MAP3367NC	SCSI-U320-SCA	10k	36GB	SD	
Fujitsu	Algero-8LE	MAP3735NC	SCSI-U320-SCA	10k	73GB	SD	
Fujitsu	Algero-8LX	MAS3184NC	SCSI-U320-SCA	15k	18GB	SD	
Fujitsu	Algero-8LX	MAS3367NC	SCSI-U320-SCA	15k	36GB	SD	
Fujitsu	Algero-8LX	MAS3735NC	SCSI-U320-SCA	15k	73GB	2,3	
Fujitsu	Algero-8LX	MAT3300NC	SCSI-U320-SCA	10k	300GB	1, 2	
Fujitsu	Algero-8LX	MA3300NC	SCSI-U320-SCA	15k	300GB	1, 2	
Hitachi*	Ultrastar 10K300	HUS103036EL3800	SCSI LVD	10k	36GB	1,2,3	
Hitachi	Ultrastar 10K300	HUS103073EL3800	SCSI LVD	10k	73GB	1,2,3	
Hitachi	Ultrastar 10K300	HUS103014EL3800	SCSI LVD	10k	147GB	1,2,3	
Hitachi	Ultrastar 10K300	HUS103030EL3800	SCSI LVD	10k	300GB	1,2,3	
Hitachi	Ultrastar 10K300	HUS103036EL3600	SCSI LVD	10k	36GB	SD	
Hitachi	Ultrastar 10K300	HUS103073EL3600	SCSI LVD	10k	73GB	SD	
Hitachi	Ultrastar 10K300	HUS103014EL3600	SCSI LVD	10k	147GB	SD	

Manufacturer	Product Family	Model Number	Interface	RPM	Drive Size (GB)	Tested Operating Systems	Notes
Hitachi	Ultrastar 10K300	HUS103030EL3600	SCSI LVD	10k	300GB	SD	
Hitachi	Ultrastar 146Z10	IC35L018UCDY10	SCSI-U320-SCA	10k	18GB	SD	
Hitachi	Ultrastar 146Z10	IC35L036UCDY10	SCSI-U320-SCA	10k	36GB	SD	
Hitachi	Ultrastar 146Z10	IC35L073UCDY10	SCSI-U320-SCA	10k	73GB	SD	
Hitachi	Ultrastar 146Z10	IC35L146UCDY10	SCSI-U320-SCA	10k	146GB	1,2,3	
Seagate*	Cheetah 10k.6	ST3146807LC	SCSI-U320-SCA	10k	146GB	1,2,3	
Seagate	Cheetah 10k.6	ST336607LC	SCSI-U320-SCA	10k	36GB	SD	
Seagate	Cheetah 10k.6	ST373307LC	SCSI-U320-SCA	10k	73GB	SD	
Seagate	Cheetah 10K.7	ST373207LC	SCSI/U320	10K	73GB	1,2	
Seagate	Cheetah 15K.3	ST318453LC	SCSI/U320	15k	18GB	SD	
Seagate	Cheetah 15K.3	ST336753LC	SCSI/U320	15k	36GB	2,3	
Seagate	Cheetah 15K.3	ST373453LC	SCSI/U320	15k	73GB	1,2,3	

6. Installation Guidelines

6.1 Steps to install Red Hat* Linux 9.0 SMP kernel on a UP system.

Issue: Intel has determined that installation of RedHat Linux 9.0 SMP kernel on a UP system may not be intuitive. Steps to install are outlined below.

Guideline: Option #1 During installation:

- 1) During installation, select "Customize install".
- 2) At the package selection screen, go to the bottom of the page and check the "select individual package" box and next to continue.
- 3) At the individual package selection page, go to system environment section under Kernel, and check on kernel-smp.
- 4) Continue and complete the installation.

Option #2 Use rpm to install SMP package after installation:

```
rpm -Uvh /mnt/cdrom/RedHat/RPMS/kernel-smp-2.4.18-14.i686.rpm
```

Status: Use the instructions above to install the SMP kernel.

6.2 Red Hat Linux 9.0 kernel does not support Intel® 6300ESC I/O Controller Hub

Issue: The OS reports the Intel® 6300ESC I/O Controller Hub as unknown devices because the OS kernel does not contain support this device.

Red Hat Linux 9.0 kernel 2.4.20-8 does not include native support for Intel® 6300ESC I/O Controller Hub.

Implication: Accessing the disk in PIO mode is considerably slower than DMA mode. Installation of operating system is in PIO mode, DMA mode is not supported. Read and write on PATA and SATA drives uses POI mode only, DMA mode is not supported. Format of a SATA hard drive has taken ~4 times as long as PATA hard drive of similar size.

Workaround: None.

Status: No fix. This newer hardware is not supported by older operation systems, and the OS vender has no plans to provide an update to the OS.