Intel® Server RAID Controller U3-1 (SRCU31)
Memory List Test Report Summary

intel.

Revision History		
Date	Rev	Modifications
May/00	.05	Initial pre-launch release.
July/00	1.0	Production release.
July/00	2.0	Added Micron memory.
Jan/01	3.0	Part number correction on Viking 64MB part. (Shaded Area)
Feb/01	4.0	Correction for Kingston 128MB part. Added EOL parts. (Shaded Area)
May/01	5.0	Removed Kingston 128MB part.
Oct/01	6.0	Updated EOL data and highlighted parts that are still available.
Nov/01	7.0	Adding direct sales and distributor information. Virtium Tech is now EOL. Made correction to the product description.
Dec/01	8.0	Added Virtium Tech 64MB & 128MB PC133 part. Centon 64MB part. (Shaded Area)
Jan/02	9.0	Added Unigen 64MB PC100 & Hyundai 64MB PC133 parts. Added Centon & Virtium 128MB PC133 parts. (Shaded Area) Removed Viking 128MB part.
Jan/02	10.0	Added Micron 64MB PC133 parts (Shaded Area). Updated EOL data and highlighted parts that are still available.
Feb/02	11.0	Added Micron 64MB PC133 part. Added Avant 128MB PC133 parts (Shaded Area).

Please Note: DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa.

Table of Contents

Overview of Memory Testing

The following procedure is used to qualify Dual In-Line Memory Modules (DIMMs) for use with the Intel® Server RAID Controller.   Memory is a vital subsystem in a server. Intel requires strict guidelines to be met before a DIMM vendor is put onto the qualified memory list. To be acknowledged on the list as a fully functional DIMM, the memory must undergo rigorous tests to ensure that the product will perform the intended Server and Workstation product functions.

Memory qualification for Intel®'s Server and Workstation Board products is performed by Intel's Memory Validation Laboratory (MVL), and by an independent external test laboratory, Computer Memory Test Lab (+CMTL[sm]).

Intel®'s Server and Workstation Board products qualified memory lists categorize memory modules as Advanced Tested. The Advanced Testing process involves a paper qualification, a standard voltage and room temperature functional test, and a voltage and temperature margin functional test. A paper qualification is a review of critical timings, electrical characteristics, timing requirements, environmental requirements, and packaging requirements in order to see if the DIMM meets Intel's memory specifications. The standard voltage and room temperature test involves testing the memory module on the particular Intel Board for which it is being qualified with test software operating under Microsoft* Windows NT* v4.0 for no less than 24 hours. The voltage and temperature margin testing involves testing the memory module on the particular Intel product for which it is being qualified with various test software and operating systems for 24 hours under various voltage and temperature margin conditions. DIMMs that have completed Advanced Testing are known to be compatible with the product on which they were tested, and with the test software and operating system that was utilized during the test procedure.

+CMTL[sm] is a leading memory testing organization responsible for testing a broad range of memory products. A memory product, which receives a "PASS" after being tested by CMTL[sm], means it functions correctly and consumers can use the product to perform the intended server functions. In order to pass these stringent standards, memory products must maintain the highest manufacturing procedures and pass an exacting battery of tests. Testing is performed with equipment and a procedure as defined by Intel's various functional testing levels. Testing is performed on a number of Intel® Server RAID Controllers.

John Deters
714-960-1243 (voice)
714-960-4695 (fax)

CMTL[sm]
(Computer Memory Test Lab)
101 Main Street, Suite 2G
Huntington Beach, CA 92648
http://www.cmtlabs.com

Qualified SDRAM DIMM Memory for the Server RAID Controller U3-1(SRCU31)

The Intel® Server RAID Controller U3-1 is an Ultra 3, single channel controller that supports RAID levels 0,1,5, and 10. By off loading RAID interrupts and parity calculations to an onboard dedicated Intel ® i960RN intelligent I/O processor, the controller provides data protection while helping to optimize server CPU performance.
Key features:
- Designed and validated with Intel Server Boards and Platforms
- Support for RAID Levels 0, 1, 5 and 10
- Intel® i960® RN Intelligent I/O processor
- Affordable data protection

Three year limited warranty

The controller utilizes *a PC100 SDRAM, 64Mb,CL2* module for caching and is compatible with memory modules meeting the following specifications:
- 168-pin gold-plated SDRAM DIMMs
- Unbuffered 100MHz SDRAM ECC
- 32MB, 64MB, 128MB capacities
- 3.3v memory only
- Single or double row DIMMs

Memory features are detailed in the *SRCU31 Server RAID Controller Technical Product Specification* available on-line at http://support.intel.com/support/motherboards/server/srcu31/

The following tables list DIMM devices tested to be compatible with the Intel® Server RAID Controller. This document and the DIMM list will be updated as qualified memory is added during the life of the Intel® Server RAID Controller product.

Intel strongly recommends the use of ECC memory in all server products.

Memory modules not listed in the following tables have not been tested for compatibility and their use with the SRCU31 may result in unpredictable operation and data loss.

Caution: Third party memory vendors may use the same module part number with different DRAM vendors and die revisions. To insure proper system operation, verify that each DRAM vendor and die revision has been separately tested and qualified. Please notify CMTL^{SM} if there is a discrepancy. This list is subject to change without notice.

Note: This list is not intended be all-inclusive. It is provided as a convenience to Intel's general customer base, but Intel does not make any representations or warranties whatsoever regarding the quality, reliability, functionality, or compatibility of these memory modules.

SRCU31 Server RAID Controller

Unbuffered, ECC, 100MHz SDRAM DIMM Modules
32MB Sizes (4Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Centon Electronics	CINT32M-P100S1	81F16822D102FLN	Fujitsu	CPCB-00440-G	5/00	B004	
*Dane Elec	DP100-072042B	HYB39564160AT-8	Siemens	CM-15	5/00	B010	EOL
*DataRam	DP100-072042B-TI	KM48S8030CT-GH / C	T.I.	CM-15	5/00	B014	EOL
H.CO Products	HINTALO-32	KM48S2020-GL	Samsung	KO-7523	5/00	B017	EOL
Simple Tech	SINT724118UD1-10DVG	D4564163G5-A80	NEC	657 rev B	5/00	B085	
MSC Vertriebs GmbH	MSC872V463DT4SDG-7DF MS	P2V64S40BTP-7 die B	Mira	872V4003SDTWG0 rev 32	5/00	B086	EOL
PNY	69000840	HYB39S64160BT-8	Infineon	40000353 rev A	5/00	B087	EOL
Silicon Tech	INT72U6D4M4H-A10DV	D4564163G5-A80	NEC	657 rev B	5/00	B088	
Southland Microsystem	SNT 32MB-RAID	KM416S4030CT-GH	Samsung	120589	5/00	B103	
Micron	MT5LSDT472AG-10EB1				7/00		EOL

* This vendor is part of the CMTL Gold or Advance Certification program.
  For further information contact CMTL @ http://cmtlabs.com/

Note: All these modules were built with 64Mb/CL2 DRAMs.

Parts highlighted in blue are still available from the memory manufactures.
Caution: Before purchasing verify that the DRAM part matches the DRAM on this list.

SRCU31 Server RAID Controller

Unbuffered, ECC, 100MHz SDRAM DIMM Modules
64MB Sizes (8Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
All Components	ACLD8X72S8	48LC8M8A2	Micron	B16M72-100	5/00	B001	
Centon Electronics	CINT64MP100S1	54C865804VCT8PC	Mosel-Vitelic	CPCB-00375-H	5/00	B006	
Corsair	CM734S64-BX2	KM48S8030CT-GH	Samsung	50-00087A1	5/00	B007	EOL
*Dane Elec	DP100-072082B	HYB39564160AT-8	Siemens	CM-15	5/00	B011	EOL
*DataRam	DTM60085	MT48LC8M8A2TG	Micron	40451	5/00	B013	EOL
H.CO Products	HINTALO-64	HM5264805TTB60	Hitachi	168-167203	5/00	B015	EOL
Legend	L0872PI2	HY57V65802B	Hyundai	16872A2	5/00	B099	
MSC Vertriebs GmbH	MSC872V863DT4YSG-8DF SI	HYB39S64800CT-8 die C	Infineon	872V16003YDTBG0 rev 32	5/00	B102	EOL
Southland Microsystem	SNT 64MB-RAID	KM48S8030CT-GH	Samsung	120571	5/00	B104	
Viking	~INT6410	48LC8M8A2-8E	Micron	9001601G rev 0	5/00	B107	EOL
Kingston	KVR100X72C2/64-IN	KM48S8030CT-GH	Samsung	2022112-002	5/00	B108	
Silicon Tech	INT72U8D8M4H-A10DV	MT48LC8M8A2TG-8E	Micron	658 rev B	5/00	B113	EOL
Simple Tech	SINT728118UD1-10DVG	MT48LC8M8A2TG-8E	Micron	658 rev B	5/00	B114	EOL
PNY	69000841	HYB39S64800BT-8	Siemens	40000343 rev D	5/00	B115	EOL
Micron	MT9LSDT872AG-10CBA				7/00		EOL
Unigen Corporation	UG58S7446HC-PH	UPD4564163G5-A80	NEC	INTELX16	11/07/01	F488	

* This vendor is part of the CMTL Gold or Advance Certification program.

   For further information contact CMTL @ http://cmtlabs.com/

~ Part number change/correction.

Note: All these modules were built with 64Mb/CL2 DRAMs.

Parts highlighted in blue are still available from the memory manufactures.
Caution: Before purchasing verify that the DRAM part matches the DRAM on this list.

Unbuffered, ECC, 133MHz SDRAM DIMM Modules
64MB Sizes (8Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Virtium Technology Inc	VM374S823-GA	5264805FTT75	Hitachi	168-167203B rev B	11-14-01	F589	
Centon Electronics	CVFKJCTV4VU375	V54C365804VCT-7	Mosel-Vitelic	CPCB-00375-G rev D	11-8-01	F435	
Hyundai	HYM76V8735HGT8-K	HY57V64820HGT-K rev C	Hyundai	HYM76V8735HGT8-K	12/26/01	F789	
Micron	MT5LSDT872AG-133F1	48LC8M16A2-75 rev F	Micron	0134 rev B	1/21/02	H202	
Micron	MT9LSDT872AG-133C7	MT48LC8M8A2TG-75 rev C	Micron		1/29/02	H377	

* This vendor is part of the CMTL Gold or Advance Certification program.

For further information contact CMTL @ http://cmtlabs.com/

~ Part number change/correction.

Note: All these modules were built with 64Mb/CL2 DRAMs.

Parts highlighted in blue are still available from the memory manufactures.
Caution: Before purchasing verify that the DRAM part matches the DRAM on this list.

SRCU31 Server RAID Controller

Unbuffered, ECC, 100MHz SDRAM DIMM Modules
128MB Sizes (16Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
All Components	**ACLD16X72S8**	**48LC8M8A2**	**Micron**	**B16M72-100**	**5/00**	**B003**	
ATP Electronics	AMC16V72E8S4GHS	KM48S8030CT-GH	Samsung	SC168E08V1	5/00	B002	EOL
Centon Electronics	**CINT128MP100S1**	**54C365804VCT8PC**	**Mosel-Vitelic**	**CPCB-00375H**	**5/00**	**B005**	
Corsair	CM734S128-BX2	KM48S8030CT-GH	Samsung	80-0008741	5/00	B081	EOL
*Dane Elec	DP100-072162A-3	HYB39S64800BT-8 die B	Siemens	PC100-1672	5/00	B009	EOL
*Dataram	DTM60086	MT48LC8M8A2TG-8E	Micron	40451	5/00	B012	EOL
H.CO Products	HINTALO-128	HM5264805TTB60	Hitachi	168-167203	5/00	B016	EOL
Hyundai	HYM7V751601BTFG-10P	HY57V658020BTC-10P	Hyundai	9952-1	5/00	B018	EOL
Legend	**L1672PI2**	**HY57V65802B**	**Hyundai**	**16872A2**	**5/00**	**B100**	
PNY	69000842	HYB39S64800BT-8	Siemens	40000343	5/00	B106	EOL
Samsung	KMM374S1623DT-GH	KM48S8030DT-GH	Samsung	AD5074-03	5/00	B080	EOL
Silicon Tech	**INT72U8D16M4H-A10DV**	**D4564841G5 -A80 die A**	**NEC**	**658 rev B**	**5/00**	**B079**	
Simple Tech	**SINT7216118UD2-10DVG**	**D4564841G5 -A80 die A**	**NEC**	**658 rev B**	**5/00**	**B078**	
Southland Microsystem	**SNT 128MB-RAID**	**KM48S8030CT-GH**	**Samsung**	**120571**	**5/00**	**B105**	
Toshiba	THMY7216H1EG-80	TC59SM708FT-80	Toshiba	2022187-001A00	5/00	B082	EOL
Unigen Corporation	UG516S7448HC-PH	TC59S6408CFT-80	Toshiba	INTEL8X8	5/00	B083	EOL
Virtium Technology Inc	VM374S1723-GL	D45128841G5-A10-9JF	NEC	168-167203B	5/00	B084	EOL
Micron	MT18LSDT1672AG-10EC7				7/00		EOL

 * This vendor is part of the CMTL Gold or Advance Certification program.

   For further information contact CMTL @ http://cmtlabs.com/

~ Part number change/correction

Note: All these modules were built with 64Mb/CL2 DRAMs.

 Parts highlighted in blue are still available from the memory manufactures.
Caution: Before purchasing verify that the DRAM part matches the DRAM on this list.

Unbuffered, ECC, 133MHz SDRAM DIMM Modules
128MB Sizes (16Mx72)

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	Date	CMTL Test #	EOL
Virtium Technology Inc	VM374S1623-GA	5264805FTT75	Hitachi	168-167203B rev B	11-13-01	F590	
Centon Electronics	CVGKJCTV4VU375J	V54C365804VCT-7 rev C	Mosel-Vitelic	CPCB-00375-G rev D	11/21/01	F437	
Hyundai	HYM76V16735HGT8-K	HY5764820HGT-K rev C	Hyundai	HYM76V16735HGT8-K	11/30/01	F791	
Avant Technology	AVE7216U36A2133E3-A	MT48LC16M8A2TG-7E rev E	Micron	50-1232-01-A rev A	1/31/02	H146	
Avant Technology	AVE7216U31A2133E3-A	MT48LC8M8A2TG-7E rev C	Micron	50-1232-01-A rev A	1/30/02	H144	

* This vendor is part of the CMTL Gold or Advance Certification program.

   For further information contact CMTL @ http://cmtlabs.com/

~ Part number change/correction

Note: All these modules were built with 64Mb/CL2 DRAMs.

Parts highlighted in blue are still available from the memory manufactures.
Caution: Before purchasing verify that the DRAM part matches the DRAM on this list.

Sales Information

Manufacture Name	Web URL	Manufacture Direct Sales Contact person	Phone Number	Special note	Distributor Information
All Components					
Centon		Rick Webb	800 234-9292	General number transfers to specific region	
Kingston	http://www.kingston.com	Dave Sutherlund	714 435-2631	Direct line - supports all channels	Gates/Arrow, Ingram, Tech Data, Synnex
Legend		Scot Glen	61 (8) 8408-7218	Based in Australia	
Silicon Tech	http://www.silicontech.com/contact/salescontacts.shtml				
Simple Tech	http://www.simpletech.com				
Southland Microsystem		Richard Petit	949 380-1958	Main Head Quarters number	Tech Data, Merisel, Custom Edge, Ingram
Viking Components	http://www.vikingcomponents.com/	Angela Rivera	949 643-7255 x2499	Main Head Quarters number	Tech Data, Ingram

*Note: **Manufactures do not stock these parts; they are build to order only with no minimum quantity requirements. Build time can vary from three days to three weeks depending on the availability of parts. Please contact manufacture for details. Parts can be ordered through a distributor, but note that may add to the deliver time.***

CMTL^{sm} (Computer Memory Test Labs)

CMTL* is a privately owned and operated memory testing organization responsible for testing a broad range of memory products. Memory devices tested by CMTL must undergo a rigorous battery of tests to ensure that the product will perform the intended server functions. Memory capability is a major factor your customers consider. CMTL has the ability to test and certify memory on Intel-based server platforms. The list of memory modules, which have undergone testing through the CMTL facility, should be referenced when considering modules for integration into this Intel server product. Stringent standards with regard to manufacturing procedures and quality must be met to pass the exacting tests required for qualification through the independent testing facility. Testing is performed by CMTL with Intel server products and test procedures defined by Intel's Memory Qualification Lab. Intel routinely audits the CMTL facility to ensure all procedures, process handling, and testing methodologies are met.

Intel® Product Dealers and Product Integrators

The Intel Product Dealer program was designed in North America to support system integrators building and selling a limited number of systems per year. More information on this program is available through the Intel web site at http://channel.intel.com. Similar programs exist in European, Middle Eastern, African, Asia-Pacific and South American regions.

IMPORTANT NOTE

DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation. Intel recommends similar manufacturer and similar speeds in each bank on the memory module. Mixing of dissimilar memory manufacturer devices or dissimilar memory device speeds is not recommended. This document contains information which is the proprietary property of Intel Corporation. Nothing in this document constitutes a guaranty, warranty, or license, express or implied. Intel has tested the following DIMMs for minimum electrical and functional compatibility with the Intel® Server RAID Controller. This listing is not intended to be all inclusive; it only represents the DIMMs Intel or CMTL has tested. Users of this list are reminded to check with the DIMM manufacturer or Distributor to ensure that a particular DIMM model is adequate for the intended purpose on the Intel® Server RAID Controller. Intel provides no indemnities for and expressly disclaims all liabilities for any and all such guaranties, representations, and warranties (oral or written) whether express or implied, related to DIMMs in a Intel® Server RAID Controller product, including without limitation to: fitness for a particular purpose; merchantability; noninfringement of intellectual property or other rights of any third party or of Intel. The reader is advised that third parties may have intellectual property rights which may be relevant to this document and the technologies discussed herein, and is advised to seek the advice of competent legal counsel, without obligation of Intel. Intel retains the right to make changes to this document at any time, without notice. Intel makes no warranty or representation with respect to the use of this document or reliance by the reader upon its contents, and assumes no responsibility for any errors which may appear in the document nor does it make a commitment to update the information contained herein.

Product and corporate names listed in this document may be trademarks of their respective companies.