



# **Intel® Server RAID Controller U2-1 (SRCU21) Memory List Test Report Summary**



*Revision 7.0  
June, 2000*

<b>Revision History</b>		
<b>Date</b>	<b>Rev</b>	<b>Modifications</b>
Feb./00	.05	Initial pre-launch release.
Feb./00	1.0	Release document. Added Silicon Tech & Simple Tech 32MB parts. (Shaded Area)
Mar./00	2.0	Added PNY 32MB, 64MB & 128MB parts. Added Silicon Tech & Simple Tech 128MB parts. (Shaded Area)
Mar./00	3.0	Added ATP 128MB part. Added Silicon Tech, Simple Tech & Southland 64MB parts. Added Southland & H. Co. 32MB part. (Shaded Area)
Mar./00	4.0	Added All Components 128MB part. Changed "H. CO Products" to "H. Co. Computer Products, Inc." (Shaded Area)
April/00	5.0	Added Hyundai, Southland, Toshiba, Dane Elec, Samsung, 'Virtium Technology Inc. & 'Unigen Corporation 128MB parts. Added Legend & All Components 64MB part. Added Dane Elec 32MB & 64MB part. (Shaded Area)
May/00	6.0	Added Legend 128MB part. Part number changes for Simple Tech parts. (Shaded Area)
June/00	7.0	Part number changes for Kingston parts. (Shaded Area)

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***Please 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 and similar speeds in each bank on the memory module is NOT recommended.

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## 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<sup>sm</sup>).

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.

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+CMTL<sup>sm</sup> 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<sup>sm</sup>, 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.

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## Qualified SDRAM DIMM Memory for the Server RAID Controller U2-1(SRCU21)

The Intel® Server RAID Controller U2-1 is an Ultra 2, 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® i960RM 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® RM Intelligent I/O processor
- Affordable data protection

Three year limited warranty

The controller utilizes a PC100 SDRAM 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 *SRCU21 Server RAID Controller Technical Product Specification* available on-line at <http://support.intel.com/support/motherboards/server/SRCU21>.

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 SRCU21 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<sup>SM</sup> 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.

## ***SRCU21 Server RAID Controller***

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

<b>Manufacturer</b>	<b>Part Number</b>	<b>DRAM Part Number</b>	<b>DRAM Vendor</b>	<b>PCB Part Number</b>	<b>Date</b>	<b>CMTL Test #</b>	<b>EOL</b>
Viking	INT3201	HYB39S64160AT-8	Siemens	9001600G rev 0	1/20/00	A643	
Kingston	~KVR100X72C2/32-IS	KM48S21200T-GH	Samsung	2022106-001	1/24/00	A655	
Centon Electronics	CINT32M-P100S1	81F16822D102FLN	Fujitsu	CPCB-00440-G	2/1/00	A672	
*DataRam	DP100-072042B-TI	KM48S8030CT-GH / C	T.I.	CM-15	2/3/00	A673	
MSC Vertriebs GmbH	MSC872V463DT4SDG-7DF MS	P2V64S40BTP-7 die B	Mira	872V4003SDTW G0 rev 32	2/3/00	A662	
Silicon Tech	INT72U6D4M4H-A10DV	D4564163G5-A80	NEC	657 rev B	2/22/00	A800	
Simple Tech	~SINT724118UD1-10DVG	D4564163G5-A80	NEC	657 rev B	2/22/00	A799	
PNY	69000840	HYB39S64160BT-8	Infineon	40000353 rev A	2/25/00	A803	
Southland Microsystem	SNT 32MB-RAID	KM416S4030CT-GH	Samsung	120589	3/4/00	A832	
H.CO Products	HINTALO-32	KM48S2020-GL	Samsung	KO-7523	3/9/00	A843	
*Dane Elec	DP100-072042B	HYB39S64160AT-8	Siemens	CM-15	3/23/00	A939	

~ Part/Name change or correction.

\* For further information contact CMTL at [www.GOLD@cmtlabs.com](mailto:www.GOLD@cmtlabs.com).

## ***SRCU21 Server RAID Controller***

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

<b>Manufacturer</b>	<b>Part Number</b>	<b>DRAM Part Number</b>	<b>DRAM Vendor</b>	<b>PCB Part Number</b>	<b>Date</b>	<b>CMTL Test #</b>	<b>EOL</b>
Viking	INT6401	48LC8M8A2-8E	Micron	9001601G rev 0	1/20/00	A644	
*DataRam	DTM60085	MT48LC8M8A2TG	Micron	40451	1/21/00	A648	
Kingston	~KVR100X72C2/64-IS	KM48S8030CT-GH	Samsung	2022112-002	1/24/00	A656	
Corsair	CM734S64-BX2	KM48S8030CT-GH	Samsung	50-00087A1	1/26/00	A650	
~ H. Co. Computer Products, Inc.	637192475455H93827	HM5264805TTB60	Hitachi	168-167203	1/27/00	A654	
Centon Electronics	CINT64MP100S1	54C865804VCT8PC	Mosel-Vitellic	CPCB-00375-H	1/29/00	A670	
MSC Vertriebs GmbH	MSC872V863DT4Y SG-8DF SI	HYB39S64800CT-8 die C	Infineon	872V16003YDTB G0 rev 32	2/4/00	A661	
PNY	69000841	HYB39S64800BT-8	Siemens	40000343 rev D	2/26/00	A804	
Southland Microsystem	SNT 64MB-RAID	KM48S8030CT-GH	Samsung	120571	3/7/00	A833	
Silicon Tech	INT72U8D8M4H-A10DV	MT48LC8M8A2TG-8E	Micron	658 rev B	2/8/00	A770	
Simple Tech	~SINT728118UD1-10DVG	MT48LC8M8A2TG-8E	Micron	658 rev B	2/8/00	A771	
All Components	ACLD8X72S8	48LC8M8A2	Micron	B16M72-100	3/14/00	A839	
Legend	L0872PI2	HY57V65802B	Hyundai	16872A2	4/20/00	A844	
*Dane Elec	DP100-072082B	HYB39564160AT-8	Siemens	CM-15	3/23/00	A940	

~ Part/Name change or correction.

\* For further information contact CMTL at [www.GOLD@cmtlabs.com](mailto:www.GOLD@cmtlabs.com).



## ***SRCU21 Server RAID Controller***

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

<b>Manufacturer</b>	<b>Part Number</b>	<b>DRAM Part Number</b>	<b>DRAM Vendor</b>	<b>PCB Part Number</b>	<b>Date</b>	<b>CMTL Test #</b>	<b>EOL</b>
*DataRam	DTM60086	MT48LC8M8A2TG-8E	Micron	40451	1/22/00	A652	
~ H. Co. Computer Products, Inc.	43827P128ECC	HM5264805TTB60	Hitachi	168-167203	1/22/00	A653	
Corsair	CM734S128-BX2	KM48S8030CT-GH	Samsung	80-0008741	1/27/00	A651	
Kingston	~KVR100X72C2/128-IS	TC59SM708FT-80	Toshiba	2022112-002	1/27/00	A658	
Centon Electronics	CINT128MP100S1	54C365804VCT8PC	Mosel-Vitellic	CPCB-00375H	1/29/00	A671	
MSC Vertriebs GmbH	MSC872V166D3DT4Y DG-8DF SI	HYB39S64800CT-8 die C	Infineon	872V16003YDT BG0 rev 32	2/4/00	A660	
PNY	69000842	HYB39S64800BT-8	Siemens	40000343	2/29/00	A805	
Silicon Tech	INT72U8D16M4H-A10DV	D4564841G5-A80 die A	NEC	658 rev B	2/23/00	A802	
Simple Tech	~SINT7216118UD2-10DVG	D4564841G5-A80 die A	NEC	658 rev B	2/24/00	A801	
ATP Electronics	AMC16V72E8S4GHS	KM48S8030CT-GH	Samsung	SC168E08V1	3/1/00	A702	
All Components	ACLD16X72S8	48LC8M8A2	Micron	B16M72-100	3/16/00	A840	
Southland Microsystems	SNT 128MB-RAID	KM48S8030CT-GH	Samsung	120571	3/8/00	A834	
Hyundai	HYM7V751601BTFG-10P	HY57V658020BTC-10P	Hyundai	9952-1	3/28/00	A852	
Toshiba	THMY7216H1EG-80	TC59SM708FT-80	Toshiba	2022187-001A00	3/23/00	A877	
*Dane Elec	DP100-072162A-3	HYB39S64800BT-8 die B	Siemens	PC100-1672	3/24/00	A938	
Samsung	KMM374S1623DT-GH	KM48S8030DT-GH	Samsung	AD5074-03	4/20/00	B045	
Virtium Technology Inc	VM374S1723-GL	D45128841G5-A10-9JF	NEC	168-167203B	4/21/00	A982	
Unigen Corporation	UG516S7448HC-PH	TC59S6408CFT-80	Toshiba	INTEL8X8	4/21/00	B047	
Legend	L1672PI2	HY57V65802B	Hyundai	16872A2	4/26/00	A845	

~ Part/Name change or correction.

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### **CMTL<sup>sm</sup> (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.

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#### **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.

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