Intel® Server Board SE7520JR2
Memory Test List

Revision 64.0
October 2008
## Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Rev</th>
<th>Modifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug/04</td>
<td>1.0</td>
<td>Initial Release</td>
</tr>
<tr>
<td>Sept/04</td>
<td>2.0</td>
<td>Added statement “The E7520 Chipset only supports BGA DRAM module Technology for DDR333”. Added Legend* 256MB parts. Added Smart* 1GB part. Added Micron* 256MB and 1GB parts. (In shaded area)</td>
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<tr>
<td>Sept/04</td>
<td>3.0</td>
<td>Added Samsung*, Infineon*, TRS* and Dataram* 512MB parts. Added TRS*, Smart and Kingston* 1GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Oct/04</td>
<td>4.0</td>
<td>Added Legend 256MB parts. Added TRS, Micron* and ATP* 512MB parts. Added Smart 1GB parts. Added Dataram 2GB parts. Correction made for Smart 2GB part from SR to DR. (In shaded area)</td>
</tr>
<tr>
<td>Oct/04</td>
<td>5.0</td>
<td>Added Samsung 256MB and 512MB parts. Added Infineon 256MB and 512MB parts. Added Micron 256MB and 1GB parts. Remove Micron 512MB part. (In shaded area)</td>
</tr>
<tr>
<td>Oct/04</td>
<td>6.0</td>
<td>Added Samsung and Infineon 256MB parts. Added Micron 256MB and 512MB parts. Correction made to Micron 512MB part, was listed as DDR333, now listed as DDR266. Added Smart, Dataram, Centon* and Viking* 1GB parts. Added TRS 512MB and 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Oct/04</td>
<td>7.0</td>
<td>Added ATP 256MB part. Added Smart and Samsung 512MB parts. Added ATP, Smart, TRS, Corsair*, Dataram and Micron* 1GB parts. Added Wintec* 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Nov/04</td>
<td>8.0</td>
<td>Corrected Infineon 512MB part number. Added Wintec, Smart, Legacy*, ATP, Kingston, Infineon and Hynix 512MB parts. Added Ventura*, Swissbit*, TRS, ATP, Wintec, Smart and Infineon 1GB parts. Added Ventura, Legacy and Smart 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Nov/04</td>
<td>9.0</td>
<td>Added ATP 256MB parts. Added Swissbit, Smart and Wintec 1GB parts. Added Kingston 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Dec/04</td>
<td>10.0</td>
<td>Added Corsair and Samsung 512MB parts. Added ATP and Legacy 1GB parts. Added Corsair 2GB part. (In shaded area)</td>
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<tr>
<td>Dec/04</td>
<td>11.0</td>
<td>Added Corsair 512MB and Smart 1GB and Dataram 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Dec/04</td>
<td>12.0</td>
<td>Added Buffalo* 256MB and 512MB parts. Added Wintec, Hynix and Micron 512MB parts. Added Dataram and Samsung 1GB parts. Added Legacy and Micron 2GB parts. (In shaded area)</td>
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<tr>
<td>Dec/04</td>
<td>13.0</td>
<td>Added legacy 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Jan/05</td>
<td>14.0</td>
<td>Added Legacy and Apacer 512MB parts. Added Legacy, Smart and Apacer 1GB parts. Added Viking, Smart and Samsung 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Jan/05</td>
<td>15.0</td>
<td>Added Kingston and Micron 1GB parts. Added Dataram and Smart 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Feb/05</td>
<td>16.0</td>
<td>Added Micron 256MB part. Added Infineon 512MB part. Added Legacy, Swissbit and Infineon 1GB parts. Added ATP 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Feb/05</td>
<td>17.0</td>
<td>Added Samsung 256MB, 512MB, 1GB and 2GB parts. Added Smart and Netlist 1GB parts. Added Dataram 512MB parts. (In shaded area)</td>
</tr>
<tr>
<td>Mar/05</td>
<td>18.0</td>
<td>Added Ventura 512MB parts. Added Smart and Samsung 1GB parts. Added ATP 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Mar/05</td>
<td>19.0</td>
<td>Added note on Lead free modules (these modules are now in bold text). Added Dane-elec and Apacer 512MB parts. Added Swissbit, Viking, ATP, Samsung and Infineon 1GB parts. Added Dataram, Smart, and ATP 2GB parts. (In shaded area)</td>
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<tr>
<td>Mar/05</td>
<td>20.0</td>
<td>Added Netlist Inc* 1GB Lead free part. (In shaded area)</td>
</tr>
<tr>
<td>Apr/05</td>
<td>21.0</td>
<td>Added Canton 512MB parts. Added Legend, Ventura, Centon, Dane-elec*, Hynix, Micron and Viking 1GB parts. Added ATP 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Apr/05</td>
<td>22.0</td>
<td>Added Viking, Ventura, Simple, Samsung and Kingston 512MB parts. Added Simple, Samsung, Infineon and Ventura 1GB parts. Added Kingston and Smart 2GB parts. Added Micron 4GB part. (In shaded area)</td>
</tr>
<tr>
<td>May/05</td>
<td>23.0</td>
<td>Added Kingston and Samsung 512MB parts. Added Avant, Ventura, Netlist, and Apacer 1GB parts. Added Netlist* and Infineon 2GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Date</td>
<td>Rev</td>
<td>Modifications</td>
</tr>
<tr>
<td>---------</td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>Jun/05</td>
<td>25.0</td>
<td>Added TRS and ATP 512MB parts. Added Corsair, Wintec, Apacer and Simple* 1GB parts. Added Dataram and Smart 2GB parts. (In shaded area)</td>
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<tr>
<td>Jun/05</td>
<td>26.0</td>
<td>Added Legacy 512MB and 1GB parts. Added Avant* and Smart 2GB parts. Added Samsung 1GB, 2GB and 4GB parts. (In shaded area)</td>
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<tr>
<td>Jun/05</td>
<td>27.0</td>
<td>Added Apacer and Viking 512MB parts. Added Dataram, Kingston, Apacer and Viking 1GB parts. Added Smart and Apacer 2GB parts. Added ATP 4GB parts. (In shaded area)</td>
</tr>
<tr>
<td>Aug/05</td>
<td>28.0</td>
<td>Added Kingston and Apacer 512MB parts. Added Apacer, Wintec, Avant, Kingston and Samsung 1GB parts. Added TRS, Wintec, and Dataram 2GB parts. Added Infineon 512MB, 1G &amp; 2G parts. (In shaded area)</td>
</tr>
<tr>
<td>Aug/05</td>
<td>29.0</td>
<td>Added Samsung 1GB part. Added Legacy and Samsung 2GB parts. Added Dataram 4GB parts. Added Viking 512MB parts. Added Legacy, Micron and Smart DDR2 1GB parts. Added Micron and Kingston DDR2 2GB parts. (In shaded area)</td>
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<tr>
<td>Sept/05</td>
<td>30.0</td>
<td>Added Micron 512MB part. Added Dataram DDR2 512MB part. Added Kingston DDR2 1GB part. Added Samsung 1GB part. Added Micron 2GB part. Added Samsung DDR2 2GB part. (In shaded area)</td>
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<tr>
<td>Oct/05</td>
<td>31.0</td>
<td>Added Samsung and Micron 512MB parts. Added Micron 1GB part. Added Viking 2GB part. Added Wintec, Samsung and Dataram DDR2 1GB part. Added Smart DDR2 4GB part. (In shaded area)</td>
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<td>Oct/05</td>
<td>32.0</td>
<td>Added Apacer, Nanya*, Legacy and Ventura DDR2 512MB parts. Added Hynix 1GB part. Added Corsair, Kingston and Legacy DDR2 1GB parts. Added ATP and Smart DDR2 2GB parts. (In shaded area)</td>
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<td>Nov/05</td>
<td>33.0</td>
<td>Added Samsung 256MB parts. Added Kingston, Samsung and Hynix 512MB parts. Added Legend, Nanya, Legacy, Smart, Hynix, Samsung and Avant 1GB parts. Added Nanya, Hynix, Samsung and ATP 2GB parts. Added Smart, Infineon and Hynix 4GB parts. (In shaded area)</td>
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<tr>
<td>Nov/05</td>
<td>34.0</td>
<td>Updated two Micron 1GB parts with corrected DRAM part numbers. (In shaded area)</td>
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<td>Dec/05</td>
<td>35.0</td>
<td>Added Kingston 2GB part. Added Kingston DDR2 2GB and 4GB parts. Added Legacy DDR2 2GB part. (In shaded area)</td>
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<td>Jan/06</td>
<td>36.0</td>
<td>Corrected Samsung 2GB part that was listed as single ranked incorrectly. Added Legacy DDR2 1GB part. Added Smart DDR2 256MB part. (In shaded area)</td>
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<td>Jan/06</td>
<td>37.0</td>
<td>Samsung DDR1 256MB, 512MB, 1G &amp; 2G parts. Hynix DDR1 1G part. Added Apacer, Kingston and Smart DDR2 1GB parts. Added Legacy, Legend &amp; Samsung DDR2 2GB parts. Added Smart DDR2 512MB part. Added Hynix DDR2 512MB, 1G &amp; 2G parts. (In shaded area)</td>
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<tr>
<td>Feb/06</td>
<td>38.0</td>
<td>Added SimpleTech and Dataram DDR2 1GB parts. Added Kingston DDR2 2GB part. Added Infineon DDR1 1G &amp; 2G parts. Added Hynix DDR2 1G &amp; 2G parts. (In shaded area)</td>
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<tr>
<td>Mar/06</td>
<td>39.0</td>
<td>Added Legend and Legacy 1GB parts. Added Legend, Buffalo and Dataram DDR2 512MB parts. Added Legacy DDR2 1GB part. Added Smart DDR2 512MB part. (In shaded area)</td>
</tr>
<tr>
<td>Mar/06</td>
<td>40.0</td>
<td>Added Dataram 1GB and 2GB parts. Added Transcend DDR2 512MB and 1GB parts. Added Kingston DDR2 2GB and 4GB parts. Added Legacy DDR2 2GB part. Added Ventura DDR2 512MB part. (In shaded area)</td>
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<tr>
<td>May/06</td>
<td>41.0</td>
<td>Infineon name change to Qinmona effective May 1st, 2006. Added ATP 1G part. Added Dataram 1G, 2G &amp; 4G parts. Added TRS 512MB, 1G &amp; 2G parts. (In shaded area)</td>
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<td>June/06</td>
<td>42.0</td>
<td>Added Buffalo 512MB part. Added Dataram 4G part. Added Kingston 1G and 2G parts. Added MDT, Smart, and Transcend 1G parts. Added TRS 512MB and 1G parts. Added Wintec 1G parts. (In shaded area)</td>
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<td>July/06</td>
<td>43.0</td>
<td>Added Kingston and TRS 512MB parts. Added Kingston, TRS, Netlist Inc., and Smart 1GB parts. Added Kingston 2GB part. (In shaded area)</td>
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<td>Aug/06</td>
<td>44.0</td>
<td>Added Dane-Elec 1GB part. Added Kingston 2GB part. (In shaded area)</td>
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<tr>
<td>Aug/06</td>
<td>45.0</td>
<td>Added TRS and Super Talent Electronics 512MB parts. Added TRS 2GB part. (In shaded area)</td>
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<td>Date</td>
<td>Rev</td>
<td>Modifications</td>
</tr>
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<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Oct/06</td>
<td>46.0</td>
<td>Added Super Talent Electronics, TRS, SimpleTech, and Corsair 512MB parts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Added Super Talent Electronics, TRS, Kingston, and Avant Technology 1GB parts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Added Super Talent Electronics and Smart 2GB parts. Added Smart 4GB parts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(In shaded areas)</td>
</tr>
<tr>
<td>Nov/06</td>
<td>47.0</td>
<td>Added Kingston and Viking 512MB parts. Added Kingston, Viking, and Avant Technology 1GB parts. Added Kingston 2GB part. (In shaded area)</td>
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<td>Jan/07</td>
<td>48.0</td>
<td>Added Kingston 1GB part. Added Ventura, Smart, and Kingston 2GB parts. (In shaded area)</td>
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<td>Jan/07</td>
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<td>Added Micron 512MB and 1GB parts. Added Legacy 2GB part. Added Smart Modular Technologies 4GB part. (In shaded area)</td>
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<td>Feb/07</td>
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<tr>
<td>Feb/07</td>
<td>51.0</td>
<td>Added TRS 1GB part. (In shaded area)</td>
</tr>
<tr>
<td>Feb/07</td>
<td>52.0</td>
<td>Added All Components 1GB part. Added Kingston 4GB part. Updated vendor contact information. (In shaded area)</td>
</tr>
<tr>
<td>Mar/07</td>
<td>53.0</td>
<td>Updated contact information. Added Kingston 512MB part. Added US Technology 1GB part. (In shaded area)</td>
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<tr>
<td>Apr/07</td>
<td>54.0</td>
<td>Added STEC Inc.* 2GB part. Added Dataram 4GB part. (In shaded area)</td>
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<tr>
<td>May/07</td>
<td>55.0</td>
<td>Added Kingston 1GB and 2GB parts. (In shaded area)</td>
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<td>May/07</td>
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<td>Additional memory parts added. (In shaded area)</td>
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<td>Aug/07</td>
<td>57.0</td>
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<td>Jan/08</td>
<td>59.0</td>
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<td>Mar/08</td>
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<td>Additional memory parts added. (In shaded area)</td>
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<td>June/08</td>
<td>61.0</td>
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<td>June/08</td>
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<td>July/08</td>
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</tr>
<tr>
<td>Oct 08</td>
<td>64.0</td>
<td>Additional memory parts added. (In shaded area)</td>
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</table>
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The hardware vendor remains solely responsible for the design, sale and functionality of its product, including any liability arising from product infringement or product warranty. Only approved software drivers and accessories that are recommended for the revision number of the boards and system being operated should be used with Intel products. Please note that, as a result of warranty repairs or replacements, alternate software and firmware versions may be required for proper operation of the equipment.

The Intel® Server Board SE7520JR2 may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

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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 Rank on the memory module. Mixing of dissimilar memory manufacturer and similar speeds in each Rank on the memory module is NOT recommended.
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1. Overview of Memory Testing

The following test processes are used to qualify Dual In-Line Memory Modules (DIMMs) for use with the Intel® Server Board SE7520JR2. Memory is a vital subsystem in a server. Intel requires that strict guidelines be met before a DIMM vendor is added to the Tested memory List. To be included on the list as a fully supported DIMM, the memory must undergo rigorous tests to ensure that the product will perform the intended server product functions. Memory qualification for Intel server, workstation, and RAID Controller products is performed both by Intel’s Memory Validation Lab (MVL) and by an independent external test lab, Computer Memory Test Lab* (CMTL).

The Tested Memory Lists for Intel’s server board, workstation board, and RAID controller products categorize memory modules as advanced tested. The advanced testing process includes a standard paper qualification and then is followed by two levels of functional testing. DIMMs that have completed and passed Advanced Testing are considered to be compatible with the product on which they were tested, and with the test software and operating systems that was used during the test process.

1.1 Paper Qualification

A paper qualification is performed to verify that the specifications of a given DIMM meet Intel’s memory specifications for a given product. Specification criteria reviewed include: critical timings, electrical characteristics, timing requirements, environmental requirements, and packaging requirements.

1.2 Functional Testing

After a given DIMM passes the standard paper qualification, functionality of the DIMM is then tested with the intended Intel product. Two levels of functional testing are performed; standard and advanced.

Standard functional testing requires that the given DIMM and Intel product combination operate with no failures for a period of no less than 24 hours for both minimum and maximum DIMM configurations. Testing is performed using a Microsoft® Windows® operating system and a custom test package. The test systems operate with standard voltage at room temperature.

Advanced functional testing requires that the given DIMM and Intel product combination operate with no failures for a period of no less than 24 hours for both minimum and maximum DIMM configurations. Testing is performed with multiple operating systems and various custom test packages. Each test configuration is tested with various voltage and temperature margin conditions.

1.3 Computer Memory Test Lab*

Computer Memory Test Lab, also known as CMTL*, is a leading memory test organization responsible for testing a broad range of memory products. A memory product, which receives a “PASS” after being tested by CMTL, 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 Intel supplied equipment and procedures defined by Intel’s various functional testing levels.

CMTL Contact Info:

Office: (949) 716-8690
Fax: (949) 716-8691

Computer Memory Test Lab (CMTL)
24 Hammond Suite F
Irvine, CA 92618
http://www.cmtlabs.com/
2. Memory Subsystem

The Intel® Server Board SE7520JR2 is capable of supporting either DDR266/333 or DDR2-400 memory technologies depending on which baseboard SKU is being used.

NOTE: Industry naming conventions for equivalent memory technologies include the following:

- DDR266 = PC2100
- DDR333 = PC2700
- DDR2400 = PC23200

The following maximum memory capacities are supported based on the number of DIMM slots provided and maximum supported memory loads by the chipset:

- 24GB maximum capacity for DDR266
- 16GB maximum capacity for DDR333 and DDR2-400

The minimum memory supported with the system running in single channel memory mode is:

- 256MB for DDR266, DDR333 and DDR2-400.

Supported DIMM capacities are as follows:

- DDR266 Memory DIMM sizes include: 256MB, 512MB, 1GB, 2GB, and 4GB.
- DDR333 Memory DIMM sizes include: 256MB, 512MB, 1GB, 2GB, and 4GB.
- DDR2-400 Memory DIMM sizes include: 256MB, 512MB, 1GB, 2GB, and 4GB.
2.1 Memory Population

The Intel® Server Board SE7520JR2 has six DIMM slots, or three DIMM banks. Both DIMMs in a bank should be identical (same manufacturer, CAS latency, number of rows, columns and devices, timing parameters etc.). Although DIMMs within each bank must be identical, the BIOS supports various DIMM sizes and configurations allowing the banks of memory to be different. Memory sizing and configuration is guaranteed only for qualified DIMMs approved by Intel.

![Identifying Banks of Memory](image)

Mixing of DDR266 and DDR333 DIMMs is supported between banks of memory. However, when mixing DIMM types, DDR333 will run at DDR266 speeds.

The memory controller is capable of supporting up to 4 loads per channel for DDR333 and DDR2-400. Memory technologies are classified as being either single rank or dual rank depending on the number of DRAM devices that are used on any one DIMM. A single rank DIMM is a single load device, i.e.) Single Rank = 1 Load. Dual rank DIMMs are dual load devices, i.e.) Dual Rank = 2 loads.

**DDR266 and DDR333 DIMM population rules are as follows:**
1. DIMM banks must be populated in order starting with the slots furthest from MCH
2. Single rank DIMMs must be populated before dual rank DIMMs
3. A maximum of four DIMMs can be populated when all four DIMMs are dual rank DDR333 DIMMs.

**DDR2-400 DIMM population rules are as follows:**
1. DIMMs banks must be populated in order starting with the slots furthest from MCH
2. Dual rank DIMMs are populated before single rank DIMMs
3. A maximum of four DIMMs can be populated when all four DIMMs are dual rank DDR2-400 DIMMs.
The following tables show the supported memory configurations:

- s/r = single rank
- d/r = dual rank
- E = Empty

### Table 1: Supported DDR266 DIMM Populations

<table>
<thead>
<tr>
<th></th>
<th>Bank 3 – DIMMs 3A, 3B</th>
<th>Bank 2 – DIMMs 2A, 2B</th>
<th>Bank 1 – DIMMs 1A, 1B</th>
</tr>
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<tr>
<td>MCH</td>
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<td>D/R</td>
<td>D/R</td>
<td>D/R</td>
</tr>
<tr>
<td>E</td>
<td>E</td>
<td>D/R</td>
<td>D/R</td>
</tr>
<tr>
<td>D/R</td>
<td>S/R</td>
<td>S/R</td>
<td>S/R</td>
</tr>
<tr>
<td>D/R</td>
<td>D/R</td>
<td>S/R</td>
<td>S/R</td>
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<tr>
<td>E</td>
<td>D/R</td>
<td>D/R</td>
<td>S/R</td>
</tr>
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</table>

### Table 2: Supported DDR333 DIMM Populations

<table>
<thead>
<tr>
<th></th>
<th>Bank 3 – DIMMs 3A, 3B</th>
<th>Bank 2 – DIMMs 2A, 2B</th>
<th>Bank 1 – DIMMs 1A, 1B</th>
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</thead>
<tbody>
<tr>
<td>MCH</td>
<td></td>
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</tr>
<tr>
<td>E</td>
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<td>E</td>
<td>S/R</td>
</tr>
<tr>
<td>E</td>
<td>E</td>
<td>E</td>
<td>S/R</td>
</tr>
<tr>
<td>E</td>
<td>D/R</td>
<td>D/R</td>
<td>D/R</td>
</tr>
<tr>
<td>E</td>
<td>E</td>
<td>D/R</td>
<td>D/R</td>
</tr>
<tr>
<td>D/R</td>
<td>S/R</td>
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</tr>
<tr>
<td>E</td>
<td>D/R</td>
<td>S/R</td>
<td>S/R</td>
</tr>
</tbody>
</table>

### Table 3: Supported DDR2-400 DIMM Populations

<table>
<thead>
<tr>
<th></th>
<th>Bank 3 – DIMMs 3A, 3B</th>
<th>Bank 2 – DIMMs 2A, 2B</th>
<th>Bank 1 – DIMMs 1A, 1B</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>S/R</td>
<td>E</td>
<td>S/R</td>
</tr>
<tr>
<td>E</td>
<td>E</td>
<td>E</td>
<td>S/R</td>
</tr>
<tr>
<td>E</td>
<td>D/R</td>
<td>D/R</td>
<td>D/R</td>
</tr>
<tr>
<td>E</td>
<td>E</td>
<td>D/R</td>
<td>D/R</td>
</tr>
<tr>
<td>E</td>
<td>S/R</td>
<td>S/R</td>
<td>D/R</td>
</tr>
</tbody>
</table>

**Note:** On the Server Board SE7520JR2, when using all dual rank DDR333 or DDR2-400 DIMMs, a total of four DIMMs can be populated. Configuring more than four dual rank DDR333 or DDR2-400 DIMMs will result in the BIOS generating a memory configuration error.
2.2 Identifying “Single Rank” or “Double Ranked” DIMMs

- \( x^{8SR} = x^8 \text{ Single-Ranked modules} \): have 5 DRAMs on the front and 4 DRAMs on the back with empty spots in between the DRAMs.
- \( x^{8DR} = x^8 \text{ Double-Ranked modules} \): have 9 DRAMs on each side for a total of 18 (no empty slots)
- \( x^{4SR} = x^4 \text{ Single-Ranked modules} \): have 9 DRAMs on each side for a total of 18 – and look similar to \( x^8 \text{ Double-Ranked} \)
- \( x^{4DR} = x^4 \text{ Double-Ranked modules} \): have 18 (stacked) DRAMs on each side for a total of 36

The following tables list the current supported memory types:

### DDR266 Registered SDRAM Module Matrix

<table>
<thead>
<tr>
<th>DIMM Capacity</th>
<th>DIMM Organization</th>
<th>SDRAM Density</th>
<th>SDRAM Organization</th>
<th># SDRAM Devices/rows/Ranks</th>
<th># Address bits rows/Ranks/column</th>
<th>Ranked</th>
</tr>
</thead>
<tbody>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>128Mbit</td>
<td>32M x 4</td>
<td>18/1/4</td>
<td>12/2/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>128Mbit</td>
<td>16M x 8</td>
<td>18/2/4</td>
<td>12/2/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>256Mbit</td>
<td>32M x 8</td>
<td>9/1/4</td>
<td>13/2/10</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>256Mbit</td>
<td>64M x 4</td>
<td>18/1/4</td>
<td>13/2/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>256Mbit</td>
<td>32M x 8</td>
<td>18/2/4</td>
<td>13/2/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>512Mbit</td>
<td>64M x 8</td>
<td>9/1/4</td>
<td>13/2/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>256Mbit</td>
<td>64M x 4</td>
<td>36/2/4</td>
<td>13/2/11</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>512Mbit</td>
<td>64M x 8</td>
<td>18/2/4</td>
<td>13/2/11</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>512Mbit</td>
<td>128M x 4</td>
<td>18/1/4</td>
<td>13/2/12</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>2GB</td>
<td>256M x 72</td>
<td>512Mbit</td>
<td>128M x 4</td>
<td>36/2/4</td>
<td>13/2/12</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>4GB</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
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</table>

### DDR333 Registered SDRAM Module Matrix

Note: The E7520 Chipset only supports BGA DRAM module Technology for DDR333

<table>
<thead>
<tr>
<th>DIMM Capacity</th>
<th>DIMM Organization</th>
<th>SDRAM Density</th>
<th>SDRAM Organization</th>
<th># SDRAM Devices/rows/Ranks</th>
<th># Address bits rows/Ranks/column</th>
<th>Ranked</th>
</tr>
</thead>
<tbody>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>128Mbit</td>
<td>32M x 4</td>
<td>18/1/4</td>
<td>12/2/11</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>128Mbit</td>
<td>16M x 8</td>
<td>18/2/4</td>
<td>12/2/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>256Mbit</td>
<td>32M x 8</td>
<td>9/1/4</td>
<td>13/2/10</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>256Mbit</td>
<td>32M x 8</td>
<td>18/2/4</td>
<td>13/2/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>512Mbit</td>
<td>64M x 8</td>
<td>9/1/4</td>
<td>13/2/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>512Mbit</td>
<td>128M x 4</td>
<td>18/1/4</td>
<td>13/2/12</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>512Mbit</td>
<td>64M x 8</td>
<td>18/2/4</td>
<td>13/2/11</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>1Gbit</td>
<td>128M x 4</td>
<td>9/1/4</td>
<td>14/2/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>2GB</td>
<td>256M x 72</td>
<td>1Gbit</td>
<td>128M x 4</td>
<td>18/1/4</td>
<td>14/2/12</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>2GB</td>
<td>256M x 72</td>
<td>1Gbit</td>
<td>128M x 8</td>
<td>18/2/4</td>
<td>14/2/11</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>4GB</td>
<td>TBD</td>
<td>TBD</td>
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<td>TBD</td>
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## DDR2-400 Registered SDRAM Module Matrix

<table>
<thead>
<tr>
<th>DIMM Capacity</th>
<th>DIMM Organization</th>
<th>SDRAM Density</th>
<th>SDRAM Organization</th>
<th># SDRAM Devices/rows/Ranks</th>
<th># Address bits rows/Ranks/column</th>
<th>Ranked</th>
</tr>
</thead>
<tbody>
<tr>
<td>256MB</td>
<td>32M x 72</td>
<td>256Mbit</td>
<td>32M x 8</td>
<td>9/1/4</td>
<td>13/2/10</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>256Mbit</td>
<td>64M x 4</td>
<td>18/1/4</td>
<td>13/2/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>256Mbit</td>
<td>32M x 8</td>
<td>18/2/4</td>
<td>13/2/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>512MB</td>
<td>64M x 72</td>
<td>512Mbit</td>
<td>64M x 8</td>
<td>9/1/4</td>
<td>14/2/10</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>512Mbit</td>
<td>64M x 4</td>
<td>18/2/4</td>
<td>14/2/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>1GB</td>
<td>128M x 72</td>
<td>1Gbit</td>
<td>128M x 8</td>
<td>9/1/8</td>
<td>14/3/10</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>2GB</td>
<td>256M x 72</td>
<td>1Gbit</td>
<td>256M x 4</td>
<td>18/1/8</td>
<td>14/3/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>2GB</td>
<td>256M x 72</td>
<td>1Gbit</td>
<td>128M x 8</td>
<td>18/2/8</td>
<td>14/3/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>2GB</td>
<td>256M x 72</td>
<td>2Gbit</td>
<td>256M x 8</td>
<td>9/1/8</td>
<td>15/3/10</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>4GB</td>
<td>512M x 72</td>
<td>2Gbit</td>
<td>256M x 8</td>
<td>18/2/8</td>
<td>15/3/10</td>
<td>Double Ranked</td>
</tr>
<tr>
<td>4GB</td>
<td>512M x 72</td>
<td>2Gbit</td>
<td>512M x 4</td>
<td>18/1/8</td>
<td>15/3/11</td>
<td>Single Ranked</td>
</tr>
<tr>
<td>4GB</td>
<td>512M x 72</td>
<td>4Gbit</td>
<td>512M x 8</td>
<td>9/1/8</td>
<td>TBD</td>
<td>Single Ranked</td>
</tr>
</tbody>
</table>
3. Tested Memory

The following tables list DIMM devices tested to be compatible with the Intel® Server Board SE7520JR2. The list of tested memory is periodically updated as qualified memory is added during the production life of the Intel 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 Intel® Server Board SE7520JR2 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 if there is a discrepancy. This list is subject to change without notice.

**Note**: This list is not intended to 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.
### Registered ECC, DDR-266 DIMM Modules

**256MB Size (32M x 72)**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>DRAM Part Number</th>
<th>DRAM Vendor</th>
<th>PCB Part Number</th>
<th>Lead Free</th>
<th>DRAM Organization</th>
<th>Rank</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Legend*</td>
<td>L6472YCYC- RU1HDC5B</td>
<td>HY5DU56822BT-J rev B</td>
<td>Hyundai</td>
<td>DRRT1U0818 -A rev 1</td>
<td>(32Mx8)*18</td>
<td>x8DB</td>
<td>8/26/04</td>
<td></td>
</tr>
<tr>
<td>+Legend</td>
<td>L3272YCYC- RU1HDC5B</td>
<td>HY5DU56822BT-J rev B</td>
<td>Hyundai</td>
<td>DRR1U0818 -A rev 1</td>
<td>(32Mx8)*18</td>
<td>x8DB</td>
<td>9/20/04</td>
<td></td>
</tr>
<tr>
<td>Micron*</td>
<td>MT9VDDT3272G- 265G3</td>
<td>MT46V32M8-6T G</td>
<td>Micron</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>1/20/05</td>
<td></td>
</tr>
</tbody>
</table>

### Registered ECC, DDR-333 DIMM Modules

**256MB Size (32M x 72)**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>DRAM Part Number</th>
<th>DRAM Vendor</th>
<th>PCB Part Number</th>
<th>Lead Free</th>
<th>DRAM Organization</th>
<th>Rank</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron</td>
<td>MT9VDDF3272G-335G3</td>
<td>MT46V32M8FG-6</td>
<td>Micron</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>8/31/04</td>
<td></td>
</tr>
<tr>
<td>Samsung*</td>
<td>M312L3223EG0-CB3</td>
<td>K4H560838E-GCB3</td>
<td>Samsung</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>10/4/04</td>
<td></td>
</tr>
<tr>
<td>Qimonda</td>
<td>HYS72D32300GBR-6-C</td>
<td>HYB25D256800CC-6</td>
<td>Qimonda</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>10/4/04</td>
<td></td>
</tr>
<tr>
<td>Micron</td>
<td>MT9VDDF3272G-335C1</td>
<td>MT46V32M8FG-6</td>
<td>Micron</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>10/4/04</td>
<td></td>
</tr>
<tr>
<td>+ATP Electronics*</td>
<td>AB32L72V8FB3S</td>
<td>K4H560838E-GCB3 rev E</td>
<td>Samsung</td>
<td>SB184V08L1</td>
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<td>x8SR</td>
<td>10/13/04</td>
<td></td>
</tr>
<tr>
<td>Samsung</td>
<td>M312L3223EZ0-CB3</td>
<td>K4H560838E-ZCB3</td>
<td>Samsung</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>2/24/05</td>
<td></td>
</tr>
<tr>
<td>Samsung</td>
<td>M312L3223EG3-CB3</td>
<td>K4H560838E-GCB3</td>
<td>Samsung</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>11/15/05</td>
<td></td>
</tr>
</tbody>
</table>

### Registered ECC, DDR2-400 DIMM Modules

**256MB Size (32M x 72)**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>DRAM Part Number</th>
<th>DRAM Vendor</th>
<th>PCB Part Number</th>
<th>Lead Free</th>
<th>DRAM Organization</th>
<th>Rank</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samsung</td>
<td>M393T3253FG0-CCC Date Code: 0521</td>
<td>K4T560839Q-GCC</td>
<td>Samsung</td>
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<td>x8SR</td>
<td>9/22/04</td>
<td></td>
</tr>
<tr>
<td>Micron</td>
<td>MT9HTF3272Y-40E2</td>
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<td>Micron</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>9/22/04</td>
<td></td>
</tr>
<tr>
<td>Qimonda</td>
<td>HYS72T32000HR-5-A</td>
<td>HYB18T256800AF5-A</td>
<td>Qimonda</td>
<td></td>
<td>(32Mx8)*9</td>
<td>x8SR</td>
<td>9/22/04</td>
<td></td>
</tr>
<tr>
<td>+ATP Electronics</td>
<td>AH32K72NBBQC4M</td>
<td>MT47H32M8BP (FP)-37E rev B</td>
<td>Micron</td>
<td>SH240N08K1</td>
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<td>x8SR</td>
<td>11/16/04</td>
<td></td>
</tr>
<tr>
<td>+Buffalo*</td>
<td>D2R400A-ES256MBJ</td>
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<td>Micron</td>
<td>2DBA18F-BA</td>
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<td>x8SR</td>
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</tr>
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</tr>
<tr>
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<tr>
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(+) This vendor is part of the CMTL Certification program. This means this part has/ will be tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

**Caution:** Some modules on this list may contain “stacked” DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support “stacked” parts before purchase.
### Intel® Server Board SE7520JR2

#### Registered, ECC, DDR-266 DIMM Modules

512 MB Sizes (64Mx72)

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#### Registered, ECC, DDR-333 DIMM Modules

512 MB Sizes (64Mx72)

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- Viking
- Samsung
- Hynix
- Dataram
- ATP
- Smart Modular Technologies
## Registered, ECC, DDR-333 DIMM Modules
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### Registered, ECC, DDR-333 DIMM Modules
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## Registered, ECC, DDR2-400 DIMM Modules

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### Registered, ECC, DDR2-400 DIMM Modules

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(+) This vendor is part of the CMTL Certification program. This means this part has/will be tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

**Caution:** Some modules on this list may contain “stacked” DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support “stacked” parts before purchase.

**Verify that the DRAM part number matches the DRAM on this list before purchasing.**
## Intel® Server Board SE7520JR2
### Registered, ECC, DDR-266 DIMM Modules
#### 1GB Size (128M x 72)

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### Registered, ECC, DDR-333 DIMM Modules

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**Registered, ECC, DDR-333 DIMM Modules**

**1GB Size (128M x 72)**
## Registered, ECC, DDR-333 DIMM Modules

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**Registered, ECC, DDR2-400 DIMM Modules**

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(*) This vendor is part of the CMTL Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com/

Caution: Some modules on this list may contain "stacked" DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support "stacked" parts before purchase.

Verify that the DRAM part number matches the DRAM on this list before purchasing.
### Intel® Server Board SE7520JR2

#### Registered, ECC, DDR-266 DIMM Modules

2GB Size (256M x 72)

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### Registered, ECC, DDR-333 DIMM Modules

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(* +) This vendor is part of the CMTL Certification program. This means this part has/will been tested across all compatible Intel Server Boards. For further information contact CMTL @ http://cmtlabs.com.

**Caution:** Some modules on this list may contain “stacked” DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support “stacked” parts before purchase.

**Verify that the DRAM part number matches the DRAM on this list before purchasing.**
### Intel® Server Board SE7520JR2

#### Registered, ECC, DDR-266 DIMM Modules

4GB Size (256M x 72)

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<th>DRAM Part Number</th>
<th>DRAM Vendor</th>
<th>PCB Part Number</th>
<th>Lead Free</th>
<th>DRAM Organization</th>
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</tbody>
</table>

(*) This vendor is part of the CMTL Certification program. This means this part has/will be tested across all compatible Intel Server Boards. For further information contact CMTL @ [http://cmtlabs.com/](http://cmtlabs.com/)

**Caution:** Some modules on this list may contain “stacked” DRAM parts. These parts may have thermal & physical limitations in some chassis configurations. It is advised to verify that your chassis configuration will support “stacked” parts before purchase.

**Verify that the DRAM part number matches the DRAM on this list before purchasing.**
## 4. Sales Information

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<th>Web URL</th>
<th>Vendor Direct Sales Info</th>
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<tr>
<td>ATP Electronics</td>
<td><a href="http://www.atpinc.com/">http://www.atpinc.com/</a></td>
<td>Tel (1) 408-732-5000, ext 5858 <a href="mailto:sales@atpinc.com">sales@atpinc.com</a></td>
</tr>
<tr>
<td>Avant Technology</td>
<td><a href="http://www.avanttechnology.com">http://www.avanttechnology.com</a></td>
<td>Brad Scoggins Fax: (512)491-7411 <a href="mailto:sales@avanttechnology.com">sales@avanttechnology.com</a></td>
</tr>
<tr>
<td>Aved Memory Products</td>
<td><a href="http://www.avedmemory.com/">http://www.avedmemory.com/</a></td>
<td>Fax: (512)491-7412</td>
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<tr>
<td>Buffalo Technology</td>
<td><a href="http://www.buffalotech.com/">http://www.buffalotech.com/</a></td>
<td>(800) 967-0959 <a href="mailto:memory@buffalotech.com">memory@buffalotech.com</a></td>
</tr>
<tr>
<td>Centon Electronics</td>
<td><a href="http://www.centon.com">http://www.centon.com</a></td>
<td>Tel: 949-855-9111 Fax: 949-855-6035</td>
</tr>
<tr>
<td>Dane-Elec</td>
<td><a href="http://www.dane-memory.com/">http://www.dane-memory.com/</a></td>
<td>Michal Hassan @ (949)450-2941 or email <a href="mailto:Michal@Dane-memory.com">Michal@Dane-memory.com</a></td>
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<tr>
<td>Dataram</td>
<td><a href="http://www.dataram.com/">http://www.dataram.com/</a></td>
<td>Paul Henke, 800-328-2726 x2239 in USA 609-799-0071 <a href="mailto:phenke@dataram.com">phenke@dataram.com</a></td>
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<tr>
<td>GoldenRAM</td>
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<td>Jason M. Barrette @ 800-222-861 x7546 <a href="mailto:jasonb@goldenram.com">jasonb@goldenram.com</a> or Michael E. Meyer @800-222-8861 x7512 <a href="mailto:michaelm@goldenram.com">michaelm@goldenram.com</a></td>
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<td><a href="http://www.kingston.com">http://www.kingston.com</a></td>
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<td>MSC Vertriebs GmbH</td>
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<td>William Perrigo 49-7249-910-417 Fax: 49-7249-910-229 <a href="mailto:wpe@msc-e.com">wpe@msc-e.com</a></td>
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<td>Ron Darwish @ (949) 260-8230 or email @ <a href="mailto:Rdarwish@Simpletech.com">Rdarwish@Simpletech.com</a></td>
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<td>SMART Modular Technologies</td>
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<td>Gene Patino</td>
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<td>Tod Skelton @ (949) 460-0020 ext. 146 or email @ <a href="mailto:tod.skelton@virtium.com">tod.skelton@virtium.com</a></td>
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<td>Fax 510-770-9338</td>
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5. CMTL* (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.

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 Rank 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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