Monthly Specification Update

Intel® Server Board S3420GP
Intel® Server System SR1630GP
Intel® Server System SR1630GPRX
Intel® Server System SR1630HGP
Intel® Server System SR1630HGPRX
Intel® Server Chassis SC5650UP
Intel® Server Chassis SC5299UP
Intel® Server Chassis SC5299DP
Intel® Server Chassis SC5299BRP

Revision History

Date	Modifications
Sep. 2009	Initial release.
Oct. 2009	Added memory configuration rules.
Nov. 2009	Added errata 7 and errata 8.
Jan. 2010	Fixed errata 2, 3, 4 and 7; Added errata 9, 10 and 11.
Jun. 2010	▪ Added Intel® Server Board S3420GPRX and Intel® Server System SR1630GPRX, SR1630HGPRX info. ▪ Fixed errata 1, 8, 9 and 10. ▪ Updated errata 11 with workaround. ▪ Added errata 12, 13, 14, 15, 16, 17, 18 and 19. ▪ Added document changes 3 and 4.
Dec. 2010	▪ Fixed errata 11. ▪ Fixed document changes 3 and 4. ▪ Added errata 20. ▪ Added document changes 5.
Mar. 2011	▪ Fixed errata 19. ▪ Added errata 21.

Disclaimers

The Intel Products Specified may contain design defects or errors known as errata that may cause the products to deviate from the published specifications. Current characterized errata are documented in this Specification Update.

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Preface

This document communicates product Errata and Documentation Changes & Corrections for the following Intel Server Products:

- Intel® Server Board S3420GPLX/LC/V/RX
- Intel® Server System SR1630GP/SR1630HGP/SR1630GPRX/SR1630HGPRX
- Intel® Server Chassis SC5650UP
- Intel® Server Chassis SC5299UP, SC5299DP and SC5299BRP

Nomenclature

- **Specification Changes** are modifications to the current published specifications for Intel® server boards. These changes will be incorporated in the next release of the specifications.

- **Specification Clarifications** describe a specification in greater detail or further highlight a specification's impact to a complex design situation. These clarifications will be incorporated in the next release of the specifications.

- **Documentation Changes** include typos, errors, or omissions from the current published specifications. These changes will be incorporated in the next release of the specifications.

- **Errata** are design defects or errors. Errata may cause the server board behavior to deviate from published specifications. Hardware and software designed to be used with any given processor stepping must assume that all errata documented for that processor stepping are present on all devices.

Summary Tables of Changes

The following tables provide an overview of known errata and known document changes that apply to the specified Intel Server Products. The tables use the following notations:

Doc   Intel intends to update the appropriate documentation in a future revision.

Fix   Intel intends to correct this erratum.

Fixed   This erratum has been corrected.

No Fix   There are no plans to correct this erratum.

Shaded   This item is new or has been modified from the previous specification update.

Table 1. Errata Summary

No.	Plans	Description of Errata
1.	Fixed	After plugging a USB FDD during Linux* OS install, the keyboard will work after one minute.
2.	Fixed	It takes one minute to show the network icon in taskbar in Microsoft Windows 2003*.
3.	Fixed	Setting up an IP Address for the 82578DM on-board NIC may take a long time to take effect.
4.	Fixed	Unable to wake up from S1 state through the 82578DM onboard NIC.
5.	Fixed	LSI* MegaSR driver (v13.10.0708.2009) does not work with Red Hat* Enterprise Linux 4.8.
6.	Doc	Adding the Intel® Integrated RAID Module SROMBSASMR (AXXROMBSASMR).
7.	Fixed	Fans ramp up and down or fans boost after operating system is loaded.
8.	Fixed	A beep code of 1-5-4-2 would be experienced upon changing the Virtualization Tech Settings in BIOS.
9.	Fixed	There will be black screen during booting up SuSE* Linux Enterprise Server 11 and the black screen will keep one to 15 minutes.
10.	Fixed	An event log in SEL.
11.	Fixed	Remote screen display is abnormal when installing Red Hat* Enterprise Linux 5 U4 through Intel® RMM3 module.
12.	No Fix	Intel® Server Board S3420GPRX doesn't support iSCSI function on Intel® GbE I/O Expansion Module.
13.	Fixed	On Intel® Server Board S3420GPRX based system, USB Keyboard/Mouse cannot work smoothly in Microsoft Windows Server 2008 R2*.
14.	Fixed	Fail to install Microsoft Windows Server 2008 R2* on Intel® Server Board S3420GPRX based system if Quad port GbE I/O Expansion Module is populated on board.
15.	No Fix	BMC communication may be disconnected if OS power saving mode is enabled.

No.	Plans	Description of Errata
16.	Fix	Intel® Server Board S3420GPRX on-board Intel® LAN 82574L (NIC5) cannot get IP address from DHCP server if server OS is Linux* and SOL or RMM3 Lite KVM console is enabled.
17.	Fix	Intel® Server Board S3420GPRX contains TPM disable jumper J2E1.
18.	Fix	System tries to boot from NIC firstly if Intel® Embedded Server RAID Technology II mode (ESRT2) is set up.
19.	Fixed	Intel® Server Board S3420GPRX may have high CPU utilization when installing or running Microsoft Windows Server 2008 R2* or Microsoft Windows 7* with OS default embedded NIC driver.
20.	Fixed	OEM String is read-only in BIOS.
21.	Fixed	Intel® Matrix Storage Manager of Intel® Rapid Storage Technology (Intel® RST) may show HDD incompatible status under certain conditions.

Table 2. Documentation Changes

No.	Plans	Document Name	Description of Documentation Change
1.	Fixed	Intel® Server Board S3420GP Technical Specification update	Intel® Server Board S3420GP Technical Specification v1.1 or later version for memory configuration rules.
2.	Fixed	Intel® Server Board S3420GP Quick Start User Guide	Intel® Server Board S3420GP Quick Start User Guide updated to -003.
3.	Fixed	Intel® Server Board S3420GP Technical Specification	Intel® Server Board S3420GP Technical Specification v2.2 or later version for on-board video memory clarification.
4.	Fixed	Intel® Server Board S3420GP Technical Product Specification	Add Note: Intel® Xeon® Processor L3406 only supports DDR3 Unbuffered DIMM (UDIMM).
5.	Fixed	Intel® Server Board S3420GP Technical Product Specification	Add RDIMM support information for S3420GPV board.

The following sections provide in-depth descriptions of each erratum/documentation change indicated in the tables above. The errata and documentation change numbers referenced in the following sections correspond to the numbers in the tables above.

Errata

1. After plugging a USB FDD during Linux* OS install, the keyboard will work after one minute

Problem   At Linux* setup prompt screen, after plugging in a USB Floppy with driver disk. Typing "linux dd" and hitting Enter, the USB keyboard cannot be used. After about 1 minute, the USB keyboard can be used and the OS can be installed.

Implication   None

Status   Fixed in BIOS Rev.26.

Workaround   Option 1: User will need to wait for about 1 minute to use the USB FDD when installing the OS driver

               Option 2: USB FDD has to be installed before DC power on.

2. It takes one minute to show the network icon in taskbar in Microsoft Windows 2003*

Problem   When not assigning a static IP address for 82578DM on-board NIC, the system will take 40~50 seconds to show the network icon at the Microsoft Windows* toolbar when entering the OS. After assigning the static IP address for the 82578DM, the network icon will appear at the Microsoft Windows* toolbar normally (within five seconds) after entering the OS. This issue is only seen on Microsoft Windows 2003*. Microsoft Windows 2008* or Linux* operating system is not affected by this issue.

Implication   None.

Status   Fixed by LAN Driver package 14.6 for the on-board network controller 82578DM available from Intel's support site at http://www.intel.com/support/motherboards/server/s3420gp/.

Workaround   Set static IP address for 82578DM on-board NIC.

3.   Setting up an IP Address for the 82578DM on-board NIC may take a long time to take effect

Problem   When setting up an IP address for the 82578DM on-board NIC, it will take about 50 seconds to take effect. The failure only happens on the following scenario: user setting a static IP address for 82578DM -> clear the IP and back to DHCP -> setting another static IP address for 82578DM (issue happens from here)-> clear it and back to DHCP -> …. Other IP setup scenario will not encounter this issue.

Implication   None

Status   Fixed in the 82578DM on-board NIC driver package 14.6. The driver is available at: http://www.intel.com/support/motherboards/server/s3420gp/.

Workaround   One time set IP address.

4.   Unable to wake up from S1 state through the 82578DM onboard NIC

Problem   Unable to wake up from S1 state through the 82578DM NIC. System can wake up from S1 through 82574 NIC which is the management NIC.

Implication   Users wanting to wake up from 82578DM onboard NIC will experience a failure.

Status   Fixed in BIOS Rev.30

Workaround   Use 82574 to wake up the system.

5.   LSI* MegaSR driver (v13.10.0708.2009) does not work with Red Hat* Enterprise Linux 4.8

Problem   The LSI* driver (v13.10.0708.2009) does not recognize the RAID volume with Red Hat* Enterprise Linux 4.8.

Implication   When using driver v13.10.0708.2009.

Status   Fixed in the latest driver (v.13.11.0922.2009 or later) available from Intel's support site. (http://www.intel.com).

Workaround   Please read Readme file and follow the steps.

6.   Adding the Intel® Integrated RAID Module SROMBSASMR (AXXROMBSASMR)

Problem   There is no information for the Intel® Integrated RAID Module SROMBSASMR (AXXROMBSASMR).

Implication   The Technical Product Specification v1.0 incorrectly states RAID support.

Status   Fixed in Technical Product Specification v1.1.

Workaround   The RAID section should read as :

                4 ports full featured SAS/SATA hardware RAID through optional Intel® Integrated RAID Module SROMBSASMR (AXXROMBSASMR), provides RAID 0, 1, 5, 6 and striping capability for spans 10, 50, 60.

7.   Fans ramp up and down or fans boost after operating system is loaded

Problem   Fans ramp up and down or fans boost after operating system is loaded. This issue happens frequently on Microsoft Windows 2008*.

Implication   The acoustic level of the system is incorrectly reported.

Status   Fixed in BMC Rev.01.17.

Workaround   A suggested workaround is available under BIOS to disable C6. Detailed information is available at:
                http://www.intel.com/support/motherboards/server/sb/CS-031036.htm.

8.   A beep code of 1-5-4-2 would be experienced on changing the Hyper-Threading Technology", "Core Multi-Processing" or "Virtualization Technology" settings in BIOS

Problem	If changing Virtualization Tech Settings in BIOS to disable or enable, there will be a beep code of 1-5-4-2.
Implication	The user will hear the beep code when changing Virtualization setting.
Status	Fixed in BIOS Rev.40..
Workaround	No workaround.

9.   There will be black screen during booting up SuSE* Linux Enterprise Server 11 and the black screen will keep one to 15 minutes

Problem	During the system boot up with SuSE* Linux* Enterprise Server 11, , there will be black screen happen and keep 1 to 15 minutes. When the black screen happens, the operating system is still running. After the black screen disappears, the system still can run without issue.
Implication	The customer may feel the system is hanging up. Actually the system is still running with this black screen.
Status	Fixed in BIOS Rev. 40.
Workaround	The customer needs to wait until the system resumes back from the black screen.

10.   An event log in SEL

Problem	Sometimes the system may trigger one log record "Event Log Cleared #0xE2 [severity] event: Event Logging Disabled sensor 226 SMI Handler (Channel #00h)" in SEL.
Implication	This SEL log is only an extra log info and does NOT impact any feature.
Status	Fixed in BMC Rev.01.19.
Workaround	No workaround.

11. Remote screen display may show half screen when display color depth is set to "millions of color" on Red Hat* Enterprise Linux 5 U4 through Intel® RMM3 or RMM3 Lite module

Problem	If using Intel® RMM3 or RMM3 Lite module to displayRed Hat* Enterprise Linux 5 U4 remotely, there may be abnormal display on remote screen. There is some black region in the screen during the installation. After the system booting up, the USB keyboard and mouse can show icon correctly.
Implication	Intel® RMM3 or RMM3 Lite module supports 16bit color depth as "thousands of color". If remote display property is set to "millions of color", this issue will happen.
Status	Fixed in BMC Rev.01.19.
Workaround	Set display color depth to "thousands of color".

12. Intel® Server Board S3420GPRX doesn't support iSCSI function on Intel® GbE I/O Expansion Module

Problem	S3420GPRX supports Intel® GbE I/O Expansion Module, but iSCSI function cannot be supported thru Intel® GbE I/O Expansion Module.
Implication	S3420GPRX only supports iSCSI function thru on-board NIC.
Status	Will not fix.
Workaround	Using on-board NIC for iSCSI function.

13. USB Keyboard/Mouse may not work smoothly in Microsoft Windows Server 2008 R2* on Intel® Server Board S3420GPRX

Problem	If using Microsoft Windows Server 2008 R2* default LAN driver for Intel® LAN 82576, USB Keyboard/Mouse cannot work smoothly on S3420GPRX based system
Implication	It is only happened when using Microsoft Windows Server 2008 R2* default LAN driver.
Status	Fixed in the 82576 on-board NIC driver package 14.7 or later version. The driver is available in Intel® Server Deployment Toolkit 3.5.3 CD or at: http://www.intel.com/support/motherboards/server/s3420gp/.
Workaround	Install 82576 on-board NIC driver pakcage 14.7 or later version.

14. Fail to install Microsoft Windows Server 2008 R2* on Intel® Server Board S3420GPRX based system when Quad port GbE I/O Expansion Module is populated

Problem	Microsoft Windows Server 2008 R2* installation process will have no response if Quad port GbE I/O Expansion Module is populated on S3420GPRX based system.
Implication	The default driver for Intel® LAN 82576 in Microsoft Windows Server 2008 R2* has performance issue, which may cause system no response during Microsoft Windows Server 2008 R2* installation.
Status	Fixed in Intel® LAN 82576 driver version 14.7 or above has no this issue.
Workaround	Do NOT load default LAN driver during Microsoft Windows 2008 R2* installation and install Intel® LAN 82576 driver version 14.7 or above after OS installation completed.

15. BMC communication may be disconnected if OS power saving mode is enabled

Problem	If turning on OS power saving mode, BMC communication may be disconnected.

Implication   On-board Intel® LAN 82574L NIC will be reset if its power state transferred from D3 to D0. It is also shared as BMC management network port. If it is reset by power state transferred from D3 to D0, BMC communication may be disconnected.

Status   Will not fix

Workaround   Turning off OS power saving mode can avoid this issue.

16.   Intel® Server Board S3420GPRX on-board Intel® LAN 82574L (NIC5) cannot get IP address from DHCP server if server OS is Linux* and SOL or RMM3 Lite KVM console is enabled

Problem   If server OS is Linux* and SOL or RMM3 Lite KVM console is enabled, S3420GPRX on-board Intel® LAN 82574L (NIC5) cannot get IP address from DHCP server.

Implication   Intel® Server Board S3420GPRX onboard Intel® LAN 82574L (NIC5) is shared between OS and BMC server management. If BMC SOL and RMM3 Lite KVM console is started on NIC5 and server OS is Linux*, the NIC5 cannot get IP address from DHCP server. Static IP can work in this scenario.

Status   Will fix in future NIC driver web post version.

Workaround   Disabling NIC driver MSI-X interrupt can make NIC5 get IP address from DHCP server. Follow the below steps to disable NIC driver MSI-X interrrupt.

1. Login to Linux* OS.

2. Execute command "lsmod". If NIC5 driver "e1000e" is not in the list that means driver was not installed. Go to step 6 please.

3. Execute command "rmmod e1000e" to uninstall default Intel® 82574L driver.

4. Download Intel® NIC driver version 14.7 or above for Linux* OS from http://www.intel.com/p/en_US/support/highlights/server/s3420gp.

5. Follow NIC driver installation guide to compile Intel® 82574L driver "e1000e.ko".

6. Install NIC driver with command "insmod e1000e.ko IntMode=1" .

7. Verify whether NIC5 can get IP address from DHCP server.

17.   Intel® Server Board S3420GPRX board contains TPM disable jumper J2E1

Problem   Intel® Server Board S3420GPRX board has no TPM functionality, but it has one
                 TPM disable jumper J2E1 on-board.

Implication   S3420GPRX onboard jumper J2E1 can be removed.

Status   Fixed by S3420GPRX board with PBA number E77063-303.

Workaround   The jumper J2E1 has NO negative impact and NO workaround is required.

18.   System tries to boot from NIC firstly if Intel® Embedded Server RAID

Technology II mode (ESRT2) is set up

Problem   Even the default boot sequence is set SATA Optical Disk Drive as 1st boot
                 device, ESRT2 RAID as second boot device and NIC as the third boot device,
                 system tries to boot from NIC firstly after POST.

Implication   It happens if Intel® ESRT2 is set up.

Status   Will fix in future BIOS web post version.

Workaround   Change the boot sequence and set ESRT2 RAID as 1st boot device, or press
                 F6 key to prompt boot menu option to select preferred boot device after system
                 POST.

19.   Intel® Server Board S3420GPRX may have high CPU utilization when

installing or running Microsoft Windows Server 2008 R2* or Microsoft

## Windows 7* with OS default embedded NIC driver

Problem	There has been high CPU load observed when installing or running Microsoft Windows Server 2008 R2* or Microsoft Windows 7* with OS default embedded NIC (Network Interface Card).
Implication	When the ports are not electrically "linked" and the embedded driver is loaded the DPC rate steadily increases until the system slows to the point where it is essentially unusable.
Status	This issue was fixed in BIOS 0047. Before Operation System installation, change the BIOS setting under Advanced → PCI Configuration → PCIe AER support from **Enable** to **Disable**.
Workaround	Make sure the ports are connected to a network, switch or simply back-to-back. This need to be done at least prior to the driver loading because once the port is malfunctioning, it cannot be recovered by connecting the ports. Updating to the latest posted driver can resolve the problem. The latest NIC driver can be obtained at the followingweb page: http://downloadcenter.intel.com/Detail_Desc.aspx?agr=Y&DwnldID=18388.

20. OEM String is read-only in BIOS

Problem	Failure to add OEM Identification string in SMBIOS table.
Implication	An OEM customer may have a need to embed a known character string in a known location in BIOS. Some licensed software requires the presence of such a character string as an identification key to authorize program execution. However, the string is not editable in BIOS 0046 and 0047.
Status	This issue was fixed in BIOS version 0048.
Workaround	Downgrade BIOS to version 0042 and edit OEM string.

21. Intel® Matrix Storage Manager of Intel® Rapid Storage Technology (Intel® RST) may show HDD incompatible status under certain conditions

Problem	Under RAID 1 mode, if the operating system does reboot after one HDD is unplugged, the other HDD will show incompatible status even after the other HDD is plugged in again.
Implication	Please refer to the picture below.
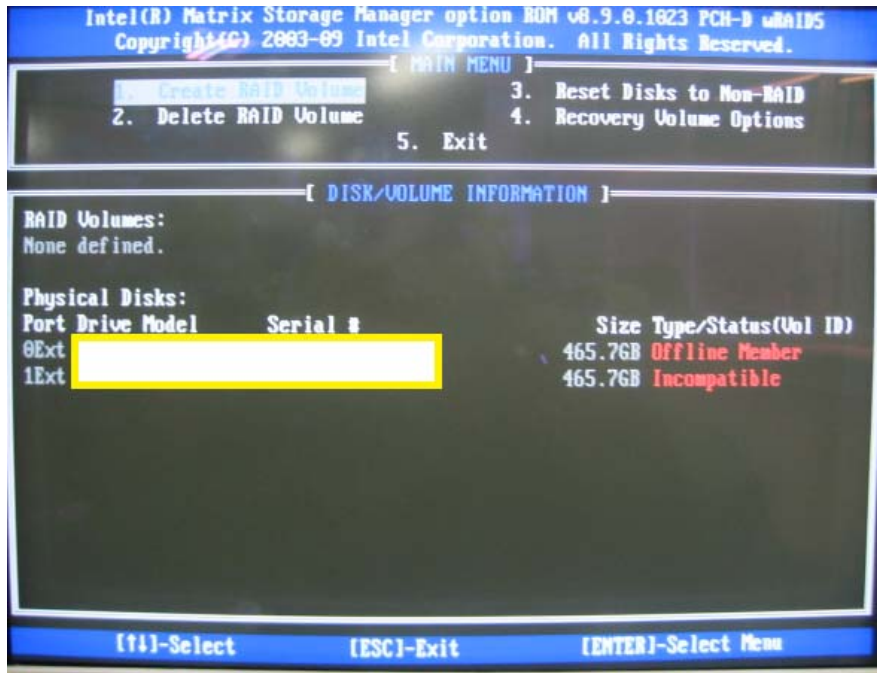
Status   This issue was fixed in BIOS version 0048.

Workaround   Downgrade BIOS to version 0042 when the issue is happening

Documentation Changes

1. Intel® Server Board S3420GP technical specification update for memory configuration rules

Implication   This information will add to the Technical Product Specification v1.1.

UDIMM Configuration rules

Table 3. UDIMM memory configuration rule

DIMM slots per channel	DIMMs populated per channel	Speed	Ranks per channel
2	1	1066, 1333	Single Rank, Dual Rank
2	2	1066, 1333	Single Rank, Dual Rank

To get the maximum memory size on UDIMM, you get the detail information from the following table:

Table 4. UDIMM Maximum configuration

Max Memory Possible	1Gb DRAM Technology	2Gb DRAM Technology
Single Rank UDIMM	4GB (4x 1GB DIMMs)	8GB (4x 2GB DIMMs)
Dual Rank UDIMMs	8GB (4x 2GB DIMMs)	16GB (4x 4GB DIMMs)

Intel® Server Board S3420GPLX and LC have below limitations on UDIMM.

- Not support 800MHz ECC UDIMMs
- No support for LV DIMMs
- 256Mb technology, x4 DRAM on UDIMM and quad rank UDIMM are NOT supported
- x16 DRAM is not supported on combo routing
- All channels in a system will run at the fastest common frequency
- No mixing of registered and unbuffered DIMMs
- Non-ECC UDIMMs not supported
- Mixing ECC and non-ECC UDIMMs anywhere on the platform will prevent the system to boot/function correctly

RDIMM Configuration rules

Table 5. RDIMM memory configuration rule

DIMM slots per channel	DIMMs populated per channel	Speed	Ranks per channel
3	1	1066, 1333	Single Rank, Dual Rank
3	1	1066	Quad Rank
3	2	1066, 1333	Single Rank, Dual Rank
3	2	800*	Quad Rank
3	3	800*	Single Rank, Dual Rank

To get the maximum memory size on RDIMM, you get the detail information from the following table:

Table 6. RDIMM Maximum configuration

Max Memory Possible	1Gb DRAM Technology	2Gb DRAM Technology
Single Rank RDIMM	6GB (6x 1GB DIMMs)	12GB (6x 2GB DIMMs)
Dual Rank RDIMMs	12GB (6x 2GB DIMMs)	24GB (6x 4GB DIMMs)
Quad Rank RDIMMs	16GB (4x 4GB DIMMs)	32GB (4x 8GB DIMMs)

Intel® Server Board S3420GPLX and LC have the following limitations on RDIMM:
- No support for LV DIMMs.
- 256Mb/512Mb technology, x4 and x16 DRAMs on RDIMM are NOT supported.
- All channels in a system will run at the fastest common frequency.
- No mixing of registered and unbuffered DIMMs.

Note: 1066MHz RDIMMs run at 800MHz.

2.   *Intel® Server Board S3420GP Quick Start User Guide* updated to -003.

Implication   The new version with -003 has been uploaded to Intel's support site. The document contains information on the correct number of screws needed.

3. Update information for usable/accessible memory of BMC Video/Graphic display functions for the onboard Server Engine* LLC Pilot II* Video controller

Implication   This information will add to the Technical Product Specification v2.2.

Intel® Server Board S3420GP LX/LC supports Server Engine* LLC Pilot II* Controller with 64 MB DDR2 memory. 8MB is usable/accessible memory for iBMC video/graphic display functions. The graphic controller internally has access to larger memory for the internal operations. The 32MB memory reported by display driver is the attached memory. Attached memory can be 32MB or greater but only 8MB is accessible for display functions. With 8MB, the iBMC/G200e can only support max resolution of 1600x1000@16bit.

4. Added a note for Intel® Xeon® Processor L3406 supported DIMM type

Implication   The note has been added to the *Technical Product Specification* v2.3.

> **Note:** Intel® Xeon® Processor L3406 only supports DDR3 Unbuffered DIMM (UDIMM).

5. *Intel® Server Board S3420GP Technical Product Specification update for RDIMM support on S3420GPV board*

Implication   The information will be added to the *Technical Product Specification* v2.4.

- Intel® Server Board S3420GPV
  - o Up to 2 UDIMMs or 2 RDIMM (Intel® Xeon® Processor 3400 Series only) per channel.
  - o 16 GB max with x8 ECC UDIMM (2 Gb DRAM) and 16 GB max with x8 ECC RDIMM (2 Gb DRAM).

Note: Intel® Server Board S3420GPV has two DIMM slots per channel on board and a total of four DIMM slots which supports maximum RDIMM size 16GB (4x 4GB DIMMs) because of thermal limitation without BMC control.