



Version 1.0
July 2013



Altos T110 F3 FAQ (Frequently Asked Questions)

Revision History

| Ver. | Date | Description |
|------|--------------|---------------|
| 1.0 | Jul 16, 2013 | First release |

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1. Benchmark

1. Which benchmark does ALTOS T110 F3 provide?

ANSWER: Currently, ALTOS T110 F3 provides below benchmark results:

- SPEC CPU2006

2. Where can I find the ALTOS T110 F3 benchmark results based on SPEC CPU2006?

ANSWER: Please go to SPEC web site,

<http://www.spec.org/cpu2006/results/>

3. Where can I find more information about SPEC CPU2006 benchmark?

ANSWER: More information of SPEC CPU2006 can be found at

<http://www.spec.org/cpu2006/>

4. Is there any SPEC CPU2000 result for Altos T110 F3?

ANSWER: No, SPEC CPU2000 benchmark has been retired by SPEC in February, 2007. SPEC CPU2000 results submissions are not being accepted and these suites are no longer being supported by SPEC.

5. Can I compare the SPEC CPU2006 result with SPEC CPU2000?

ANSWER: No.

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2. BIOS

1. What features can Altos T110 F3 BIOS support?

ANSWER: Please refer to the table below.

| Features | BIOS | NOTE |
|--|-------|------|
| SMBIOS | 2.7 | |
| ACPI (Advanced Configuration of Power Interface) | 4.0 | |
| UEFI/EFI | 2.3.1 | |

2. How do I know the latest version of BIOS/firmware of Altos T110 F3?

ANSWER: Please refer to Altos T110 F3 THOL (Tested Hardware & Operating System List).

3. Where can I access the Event Log of Altos T110 F3?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select `Server Management`.
- b. Please select `Event Log Configuration`.
- c. Please select `View Smbios Event Log`.

4. Is there a DOS utility to access the Event Log?

ANSWER: No.

5. Does Altos T110 F3 BIOS supports "Rolling BIOS" feature which there are two copies of BIOS in the Flash ROM?

ANSWER: No

6. How do I enter BIOS Setup?

ANSWER: Please press F2 during POST.

7. Where could I find the version of BIOS?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select `Main`.
- b. You would see below information:

```

BIOS Version:    P01
Build Date:     04/22/2013
  
```

In this example, the BIOS version is `P01`.

8. Can Altos T110 F3 support BIOS Recovery when BIOS is corrupted unexpectedly during BIOS update?

ANSWER: Yes.

9. What's UEFI (Unified Extensible Firmware Interface)?

ANSWER: The first EFI (Extensible Firmware Interface) specification was completed in the late 1990s, and in 2005 the Unified EFI Forum was formed to standardize and promote UEFI implementations.

In contrast to BIOS, UEFI defines a set of boot and runtime services that have standard syntax and semantics for interfaces and data structures. This means that all UEFI implementations behave essentially the same way, making it possible to test and develop standard drivers and applications. This greatly improves interoperability,

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reduces the complexity of supporting new hardware, and helps computer manufacturers to update and maintain firmware more rapidly.

More information can be found at:

<http://www.uefi.org/>

10. What's the difference between EFI & UEFI?

ANSWER: The EFI 1.10 specification is contributed by Intel and Microsoft. Intel holds the copyright of EFI 1.10 specification. The UEFI Forum evolves, extends, and adds new functionality required to produce UEFI 1.0 specification. All licensing for UEFI 1.0 specification will come from UEFI Forum.

11. What's the benefit of UEFI?

ANSWER: UEFI firmware provides several technical advantages:

- OS Boot from GPT (GUID Partition Table)
UEFI supports a more flexible partitioning scheme based on GPT. GPT disks use 64-bit values to describe partitions, which allow a maximum disk size of roughly 16.8 million TB and over 100 primary hard disk partitions.
- Provides a pre-boot execution environment (not an OS)
UEFI drivers and applications are designed to execute in the boot environment with very few constraints. Therefore, UEFI can provide a full network stack with high-resolution graphics and access to all devices, even if no functional operating system is available.
- Removes the Upper Memory Block limit for Option ROM's
All UEFI implementations that conform to the UEFI specification include an EBC (EFI Byte Code) interpreter. EBC images are option ROMs that are compatible across all processor architectures. Additionally, because EBC images are highly compact and universally applicable, option ROMs in a PCI card can be much smaller than on BIOS systems.
- Compatibility with earlier BIOS
The systems with UEFI firmware can boot operating systems that are UEFI-capable and older operating systems that support only BIOS.

12. What's EFI shell?

ANSWER: The EFI shell is a unique feature embedded in EFI firmware. Users can execute EFI commands in the EFI Shell. The EFI shell works as a small OS.

NOTE. You could update BIOS in EFI shell. Please refer to ALTOS T110 F3 BIOS Release Package for more detail.

NOTE. You could configure MegaRAID 9240-4i in EFI shell. Please refer to section of SAS RAID (MegaRAID 9240-4i) for more detail.

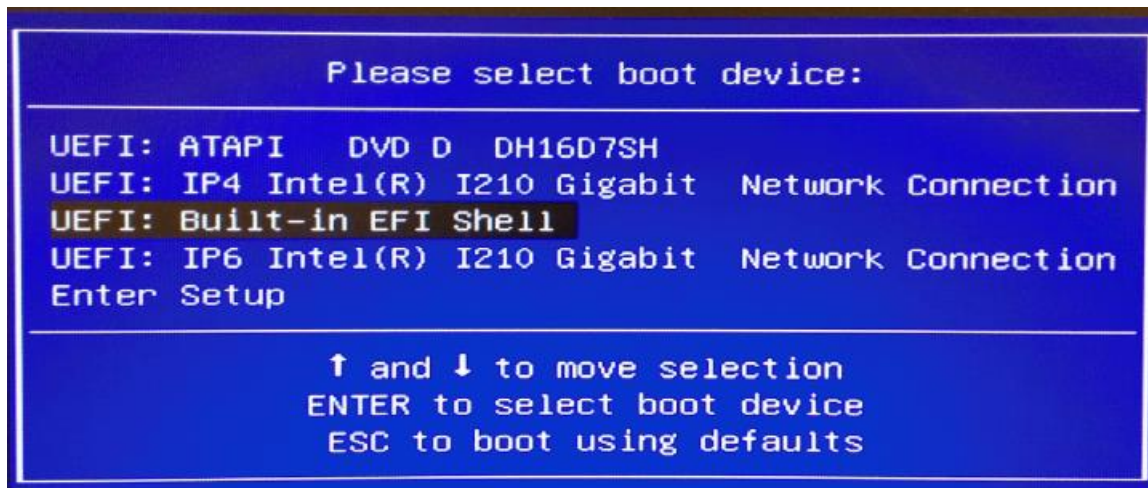
13. How do I enter EFI shell?

ANSWER: Please press **F10** during POST.

You would see below options:

```
UEFI: Built-in EFI Shell
```

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Please select **UEFI: Built-in EFI Shell** and press Enter.

14. What are the requirements to support OS installation in EFI mode?

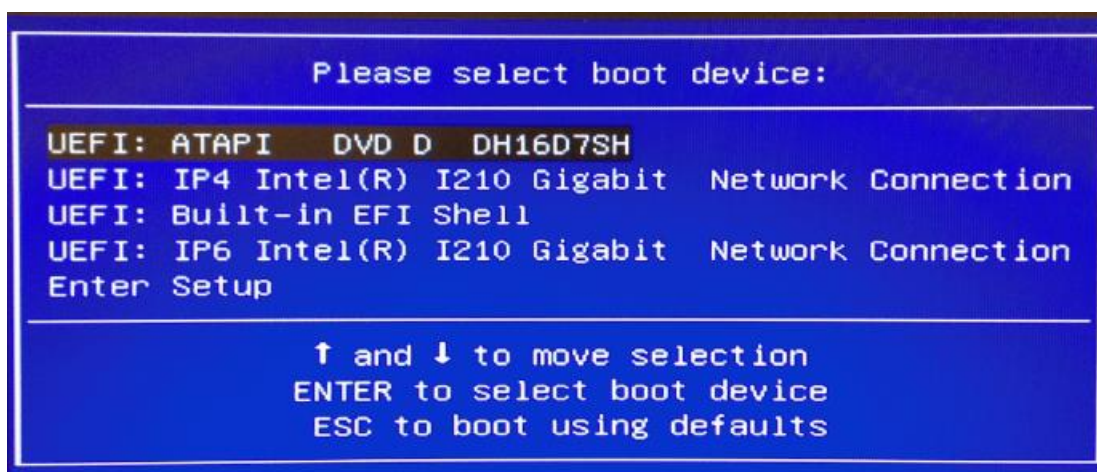
ANSWER: The requirements to support OS installation in EFI mode are as below.

- a. The system BIOS must support UEFI/EFI.
 - b. The OS is EFI-Aware OS and can support EFI boot. & install.
 - c. The OS media (such as ROK) must support EFI boot & install.
 - d. The onboard disk controller or add-on disk controller must support EFI.
15. How do I select OS installation in EFI mode if the OS DVD media supports EFI mode?

ANSWER: Please press **F10** during POST.

You would see below options.

UEFI: ATAPI DVD D DH16D7SH



Please select **UEFI: ATAPI DVD D DH16D7SH** and press Enter.

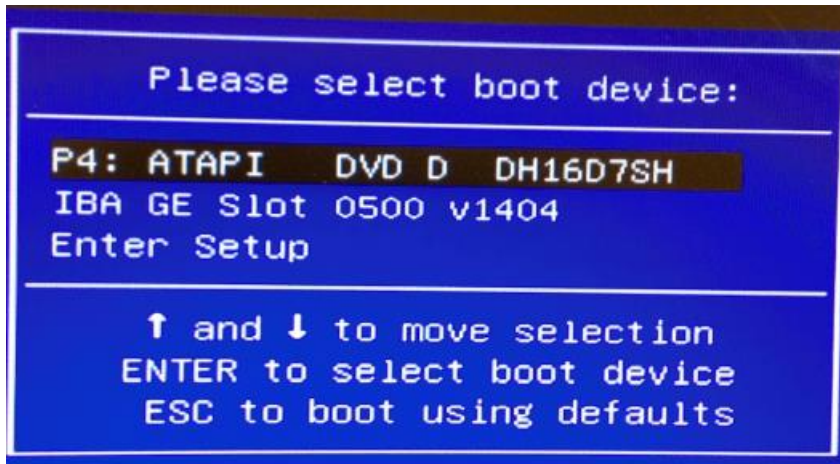
16. How do I select OS installation in Legacy mode if the OS DVD media supports EFI mode?

ANSWER: Please press **F10** during POST.

You would see below options:

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P4: ATAPI DVD D DH16D7SH



Please select **P4: ATAPI DVD D DH16D7SH** and press Enter.

17. How do force EFI mode of the RAID card or onboard SATA RAID if it can support EFI?

ANSWER: Please enter BIOS Setup during POST

- a. Please select Boot Options.
- b. Please select Boot Mode.
- c. You would see below information.

```
Boot Mode    [UEFI]
```

- d. Please make sure the setting of Boot Mode is UEFI.

NOTE. The default setting of Boot Mode is UEFI.

- e. Please select Advanced.
- f. Please select PCI Configuration.
- g. You would see below information.

```
Launch Storage OpROM policy  [UEFI only]
```

- h. Please make sure the setting of Launch Storage OpROM policy is UEFI only.

NOTE. The default setting of Launch Storage OpROM policy is UEFI only.

- i. Save the setting and exit from BIOS Setup.

18. How do I enable the Legacy mode support of the RAID card or onboard SATA RAID?

ANSWER: Please enter BIOS Setup during POST

- a. Please select Boot Options.
- b. Please select Boot Mode.
- c. You would see below information.

```
Boot Mode    [UEFI]
```

- d. Please change the setting of Boot Mode from UEFI to Legacy.

NOTE. The default setting of Boot Mode is UEFI.

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- e. Please select **Advanced**.
- f. Please select **PCI Configuration**.
- g. You would see below information.

Launch Storage OpROM policy [UEFI only]

- h. Please change the setting of **Launch Storage OpROM policy** from **UEFI only** to **Legacy only**.

Launch Storage OpROM policy [Legacy only]

NOTE. The default setting of **Launch Storage OpROM policy** is **UEFI only**.

- i. **Save the setting and exit from BIOS Setup.**

19. When I plan to install OS in EFI mode, should I change **Launch Video OpROM policy** option in BIOS Setup from **Legacy only** to **UEFI only**?

Launch Video OpROM policy [Legacy only]

ANSWER: No. Please still keep **Launch Video OpROM policy** as **Legacy only**. Though some OS support installation in EFI mode, these OS can only support legacy video Option ROM.

3. BMC (Baseboard Management Controller)

1. Does Altos T110 F3 feature BMC?

ANSWER: No.

4. Chassis

1. Does Altos T110 F3 chassis support redundant system fans?

ANSWER: No.

2. Are the systems fans on Altos T110 F3 hot swappable?

ANSWER: No.

3. Does Altos T110 F3 support the fan speed control?

ANSWER: Each fan within the module is capable of supporting multiple speeds. If the internal ambient temperature of the system exceeds the value programmed into the thermal sensor data record (SDR), the BIOS will increase the speed for all the fans within the fan module.

4. Can I install FDD on Altos T110 F3?

ANSWER: No, Altos T110 F3 only supports external USB FDD.

5. Can I install ODD (Optical Disk Drive) on Altos T110 F3?

ANSWER: Yes.

6. Does Altos T110 F3 support chassis intrusion detection?

ANSWER: Yes.

7. How many serial ports does Altos T110 F3 support?

ANSWER: One.

NOTE. Although there is second serial port connector (internal connector COM2) on the T110 F3 main-board, the chassis is not designed for 2nd serial port.

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5. CPU

1. Does Altos T110 F3 feature FSB (front side bus)?

ANSWER: No, Altos T110 F3 does not have any FSB.

2. Since there is no front side bus, how the processors can be connected to each other?

ANSWER: The processors are connected through the Quickpath Interconnect.

3. What's the Quickpath Interconnect?

ANSWER: This is the inter-connect technology designed for the communication between integrated circuits such as processors and chipset..

More information of Quick Path Interconnect can be found at:

<http://www.intel.com/technology/quickpath/>

4. Is Quickpath Interconnect a technology to replace PCI-Express?

ANSWER: No. Quickpath Interconnect can be co-existed with PCI, PCI-X and PCI-Express technology.

5. Does Altos T110 F3 support multi-core?

ANSWER: Yes. Altos T110 F3 can support 4-core.

6. When Altos T110 F3 is installed with 1 four-core processor with Hyper-threading support, there will be totally 8 logical processors. Which OS can support 8 logical processors on Altos T110 F3?

ANSWER: Please refer to below table:

| Operating Systems | Service Pack | 32-bit / 64-bit | Max. Physical Processors Supported by OS | Max. Logical Processors Supported by OS | Processors Detected by OS on Altos T110 F3 | Note |
|---|--------------|-----------------|--|---|--|------|
| Windows Server 2012 Datacenter Edition | N/A | 64-bit | 64 | 640 | 8 | |
| Windows Server 2008 R2 Standard Edition | SP1 | 64-bit | 4 | 256 | 8 | |
| Windows Server 2008 R2 Enterprise Edition | SP1 | 64-bit | 8 | 256 | 8 | |
| Red Hat Enterprise Linux 6 | Update 4 | 64-bit | 128 | 4096 | 8 | |
| | | 32-bit | 32 | 32 | 8 | |

7. Does Altos T110 F3 support EM64T (Extended Memory 64 Technology)?

ANSWER: Yes.

8. Where can I know the CPU Stepping of processor installed on Altos T110 F3?

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ANSWER: Please enter BIOS Setup during POST

- a. Please select `Advanced`.
- b. Please select `Processor Configuration`.
- c. You shall see below information:

```
Processor Information
Intel(R) Xeon(R) CPU E3-1280 v3
EMT64                      Supported
Frequency                   3.60 GHz
Core Count                  4
CPU Stepping                C0
Microcode Revision:        8
```

In this example, the CPU Stepping is `C0`.

9. Does Altos T110 F3 support XD (Execution Disable Bit)?

ANSWER: Yes.

More information can be found at,

<http://support.microsoft.com/kb/875352>

10. How do I enable/disable XD (Execute Disable Bit)?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select `Advanced`.
- b. Please select `Processor Configuration`.
- c. You would see below information:

```
Execution Disable Bit Capability: [Enabled]
```

11. Does Altos T110 F3 support EIST (Enhanced Intel Speed-Step Technology)?

ANSWER: Yes, Altos T110 F3 can support EIST.

12. How do I enable/disable EIST?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select `Advanced`.
- b. Please select `Processor Configuration`.
- c. You would see below information:

```
Intel EIST Technology: [Enabled]
```

13. Does Altos T110 F3 support Intel Virtualization Technology?

ANSWER: Yes, please refer to Virtualization section for more information.

14. How do I enable Intel Virtualization Technology?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select `Advanced`.
- b. Please select `Processor Configuration`
- c. You would see below information:

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Intel(R) Virtualization Technology: [Enabled]

15. Does Altos T110 F3 support Turbo Boost?

ANSWER: Yes.

More information can be found at:

<http://www.intel.com/technology/turboboost/>

16. How do I enable/disable Turbo Boost?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select Advanced.
- b. Please select Processor Configuration
- c. You would see below information:

Intel Turbo Boost Technology [Enabled]

17. Does Altos T110 F3 support Hyper Threading?

ANSWER: Yes.

More information can be found at

http://www.intel.com/technology/platform-technology/hyper-threading/index.htm?iid=tech_product+ht

18. How do I enable/disable the number of cores in the processor?

ANSWER: Please enter BIOS Setup during POST.

- a. Please select Advanced.
- b. You would see below information:

Active Processor Cores: [All]

- c. Please change Active Processor Cores from All to 1, 2, 3.
- d. Save the setting and exit from BIOS Setup.

6. Expansion Slots

- How many PCI slots can Altos T110 F3 support?

ANSWER: 4 PCI slots.

| Expansion Slots # | Technology | Bus Width | Connector Width | Form Factor | Note |
|-------------------|------------|-----------|-----------------|----------------------------|------|
| 1 | PCIe Gen3 | X16 | X16 | Full Height Half Length | |
| 2 | PCIe Gen2 | X4 | X8 | Full Height Half Length | |
| 3 | PCIe Gen2 | X1 | X8 | Full Height Half Length | |
| 4 | PCIe Gen2 | X1 | X4 | Full Height Half Length | |

- Can I install x1 PCI-Express adapter on Altos T110 F3?

ANSWER: Yes.

- Can I install x4 PCI-Express adapter on Altos T110 F3?

ANSWER: Yes.

- Can I install x8 PCI-Express adapter on Altos T110 F3?

ANSWER: Yes.

- Can I install x16 PCI-Express adapter on Altos T110 F3?

ANSWER: Yes.

- Does Altos T110 F3 PCI-Express slot support hot-plug?

ANSWER: No.

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7. iSCSI

1. Can Altos T110 F3 onboard Gigabit support iSCSI?

ANSWER: Yes, Altos T110 F3 onboard Gigabit can support iSCSI.

2. Do I need an iSCSI HBA (Host Bus Adapter) on Altos T110 F3 to support iSCSI?

ANSWER: No, Altos T110 F3 can support iSCSI with onboard Gigabit and iSCSI Software

NOTE. iSCSI Initiator HBA is not planned for Altos T110 F3 at current stage.

3. Where can I get the iSCSI driver of the gigabit network adapter for Linux?

ANSWER: Red Hat Enterprise Linux 6 and SuSE Linux Enterprise Server 11 have the built-in driver for iSCSI.

For other Linux, please download iSCSI Software Initiator of Linux from:

http://sourceforge.net/project/showfiles.php?group_id=26396&release_id=177564

4. Can Altos T110 F3 onboard Gigabit support boot from iSCSI?

ANSWER: Yes.

5. How do I enable iSCSI Boot on Altos T110 F3?

ANSWER: Please enter BIOS Setup during POST.

- a. Select Advanced.
- b. Select PCI Configuration.
- c. You would see below information.

```
Onboard LAN Controller           [Enabled with PXE]
```

- d. Please change Onboard LAN Controller from Enabled with PXE to Enabled with iSCSI

```
Onboard LAN Controller           [Enabled with iSCSI]
```

- e. Save the setting and exit from BIOS Setup .

6. How do I configure iSCSI Boot on Altos T110 F3?

ANSWER: After you enabled iSCSI Boot, please enter BIOS Setup during POST.

- a. Select Advanced.
- b. Select PCI Configuration.
- c. Select iSCSI Configuration.
- d. You would see below information.

```
iSCSI Initiator Name
Add an Attempt
Delete Attempts
Change Attempt Order
```

- e. Please select Add an Attempt.

- f. You would see below information.

```
MAC 94:DE:80:5B:B9:3F
```


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- g. Please select the NIC port based on the MAC address you want to configure the iSCSI feature .
- h. You would see below information.

```

iSCSI Attempt Name          1

iSCSI Mode                  [Disabled]
Internet Protocol           [IP4]
Connection Retry Count     0
Connection Establishing Timeout 1000

OUI-format ISID            14DE805BB93F
Configure ISID              5BB93F

Enable DHCP                 [Disabled]
Initiator IP Address        0.0.0.0
Initiator Subnet Mask       0.0.0.0
Gateway                     0.0.0.0

Target Name
Target IP Address           0.0.0.0
Target Port                 3260
Boot LUN                    0

Authentication Type        [CHAP]
  CHEAP Type                [One way]
  CHEAP Secret

```

```

Save Changes
Back to Previous Pages

```

- i. Please configure the settings for iSCSI boot to meet your iSCSI Target in storage system environment. Below is an example of iSCSI boot configuration.

```

iSCSI Attempt Name          1

iSCSI Mode                  [Enabled]
Internet Protocol           [IP4]
Connection Retry Count     0
Connection Establishing Timeout 1000

OUI-format ISID            14DE805BB93F
Configure ISID              5BB93F

Enable DHCP                 [Disabled]
Initiator IP Address        192.168.99.100
Initiator Subnet Mask       255.255.255.0
Gateway                     192.168.99.254

Target Name
Target IP Address           192.168.99.200
Target Port                 3260

```

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Boot LUN 0

Authentication Type [NONE]

Save Changes

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- j. After you complete the configuration, please select **Save Changes** to save the settings and reboot the system.

During POST, you would see the information below when system detects the iSCSI storage.

```
Intel (R) iSCSI Remote Boot version 2.7.128
Copyright (c) 2003-2012 Intel Corporation. All rights reserved.
Press ESC key to skip iSCSI boot initialization.
Press <Ctrl-D> to run setup...
```

```
Linking up adapter port - MAC address(0015176C7958).
Using STATIC configuration for primary port, please wait.
iSCSI Target Name      : iqn.1994-04.jp.co.hitachi:rsd.d8a.t.11363.0a000
iSCSI Target IP Address : 192.168.10.201
LUN ID: 0              Port: 3260
iSCSI Initiator IP     : 192.168.10.50
iSCSI Gateway IP      : 0.0.0.0
iSCSI Initiator Name   : iqn.2008.com.intel:r920iscsi
```

```
Attempting to connect to target disk using MAC address(0015176C7958)
LUN: 0 DEVICE: HITACHI DF600F 40.0 GB
```

7. After I enabled and configured iSCSI Boot on Altos T110 F3, I cannot see Intel iSCSI Remote Boot information during POST.

ANSWER: Please enter BIOS Setup during POST.

- Select **Advanced**.
- Select **PCI Configuration**.
- You would see below information.

```
Launch PXE OpROM policy [UEFI only]
```

- Please change the setting of **Launch PXE OpROM policy** from **UEFI Only** to **Legacy only**.

```
Launch PXE OpROM policy [Legacy only]
```

- Save the setting and exit from BIOS Setup.

8. Do I need to enable iSCSI boot to support iSCSI function on onboard Gigabit?

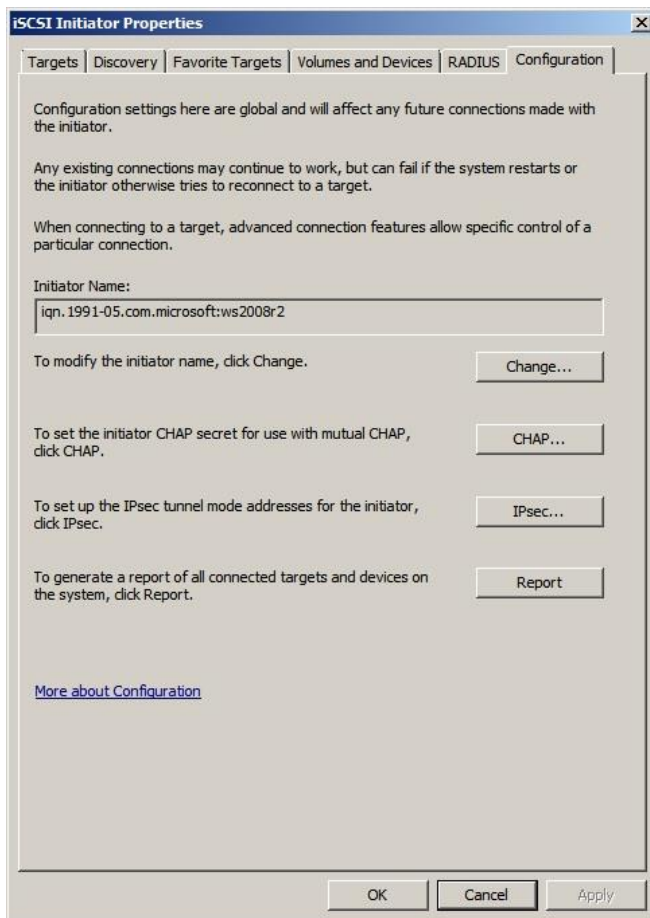
ANSWER: NO, to access iSCSI storage, you don't need to enable iSCSI boot feature of onboard Gigabit.

You only need to enable iSCSI boot feature when you want to install OS on remote iSCSI storage and let OS boot from remote iSCSI storage.

9. How do I specify the IQN (iSCSI Qualified Name) in Windows Server 2008 R2?

ANSWER: Please launch the Microsoft iSCSI Software initiator and select Configuration tab. You can specify the IQN by clicking Change.

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10. How do I specify the IQN (iSCSI Qualified Name) in Linux?

ANSWER: You can specify the IQN by editing the file `/etc/initiatorname.iscsi` as below:

```
InitiatorName=iqn.1994-05.com.redhat:5e7a5b52c81c
```

11. Is network teaming supported on any system which carries iSCSI traffic?

ANSWER: No.

<http://www.intel.com/support/motherboards/server/sb/CS-027892.htm>

Network teaming using Intel's ANS (i.e., PROSet utility) is not supported for those ports transferring iSCSI traffic. This is due to limitations of the third-party iSCSI target/initiator software.

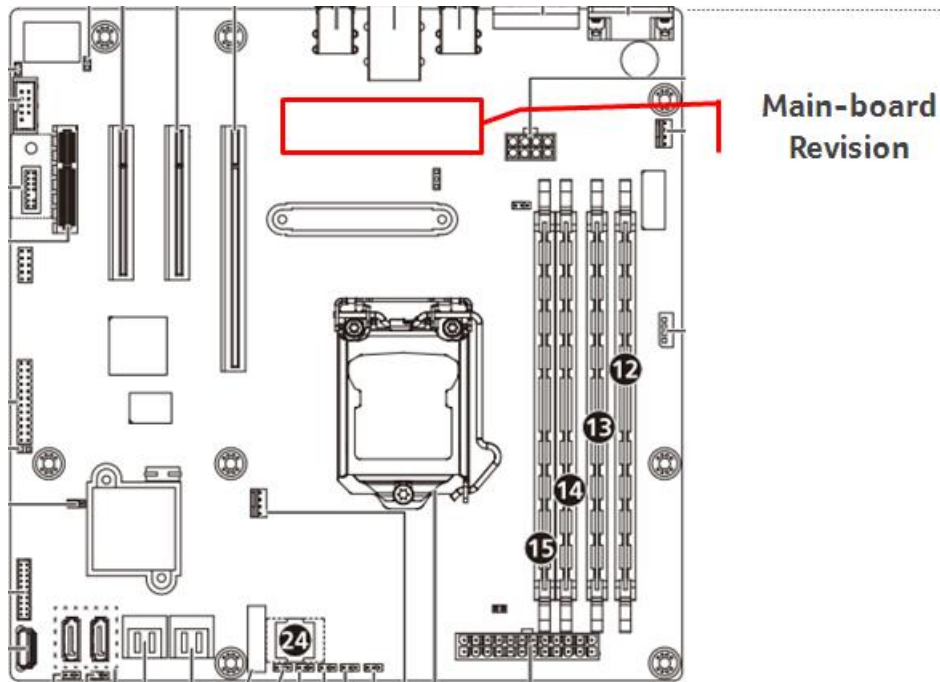
For load balancing and failover support in Microsoft Windows* operating systems, you can use Microsoft's* MPIO (MultiPath I/O). Check the Microsoft Initiator User Guide on how to setup MPIO.

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8. Main-board

2. How do I identify the main-board Revision of Altos T110 F3?

ANSWER: The revision is printed on the main board. Please refer to the following picture to check the revision of the main-board. It will be like this, **REV: 0.2**.



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9. Memory

1. What memory technology does Altos T110 F3 support?

ANSWER: DDR3 1600 un-buffered ECC.

2. Can I mix different capacities of memory on Altos T110 F3?

ANSWER: Please refer to Altos T110 F3 Memory Mix Guideline.

3. How many DIMM slots can Altos T110 F3 support?

ANSWER: 4 DIMM slots.

| | Ranks per DIMM | # of DIMM per Memory Channel | Total # of DIMM | Note |
|-------|----------------|------------------------------|-----------------|------|
| UDIMM | Single Rank | 2 | 4 | |
| | Dual Rank | 2 | 4 | |

4. How much memory can Altos T110 F3 support?

ANSWER: 32 GB with UDIMM.

5. Can Altos T110 F3 support memory interleave?

ANSWER: Yes, Altos T110 F3 features 2 memory channels

6. Can I install one single DIMM on Altos T110 F3?

ANSWER: Yes.

7. Can I install three DIMMs on Altos T110 F3?

ANSWER: No. Altos T110 F3 can support 1, 2, 4 DIMMs memory configurations.

8. Is there any guideline about the memory DIMM population?

ANSWER: Please refer to Altos T110 F3 Product Spec..

9. Does Altos T110 F3 support Chip-Kill technology?

ANSWER: No.

10. What Memory RAS feature does Altos T110 F3 support?

ANSWER: Altos T110 F3 does not support RAS feature.

11. Does Altos T110 F3 support hot-plug memory?

ANSWER: No.

12. Does Altos T110 F3 support RAIM (Redundant Array of Independent Memory)?

ANSWER: No.

13. Can we mix RDIMM and UDIMM in memory Independent mode?

ANSWER: No, Altos T110 F3 only supports UDIMM.

14. What is the benefit of UDIMM?

ANSWER: UDIMM is lower cost than RDIMM.

15. Is there any different in reliability between UDIMM and RDIMM?

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ANSWER: UDIMM and RDIMM have the same reliability.

10. More Information

1. Where can I find more information of Altos T110 F3?

ANSWER: Please refer to below documents:

| | Document Title | Description | Note |
|---|--|---|------|
| 1 | Altos T110 F3 What's New | Overview of new features & technologies of Altos T110 F3. | |
| 2 | Altos T110 F3 User's Guide | Altos T110 F3 User's Guide. | |
| 3 | Altos T110 F3 THOL (Tested Hardware & Operating System List) | This document is intended to provide users of the Altos T110 F3 with a guide to the different hardware and operating systems tested on this platform. | |
| 4 | Altos T110 F3 ICG (Installation Configuration Guide) | This document provides you a quick OS installation guide on Altos T110 F3. | |

2. Where can I find more information about virtualization?

ANSWER: Please get the virtualization information with below links:

<http://www.intel.com/technology/virtualization/technology.htm>

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11. Onboard Gigabit

1. What's the onboard Gigabit of Altos T110 F3?

ANSWER: Intel I210 Gigabit Ethernet controller.

2. What features can Altos T110 F3 onboard Gigabit Support?

ANSWER: Please refer to the table below.

| Features | Onboard Gigabit | NOTE |
|--------------------------------------|-----------------|------|
| # of ports | 1 | |
| Network Teaming | Yes | |
| WOL (Wake On LAN) | Yes | |
| PXE (Pre-boot eXecution Environment) | Yes | |
| IOAT (I/O Acceleration Technology) | n/a | |
| TOE (TCP Offload Engine) | n/a | |
| Jumbo Frame | 9.5 KB | |
| iSCSI | Yes | |
| iSCSI Boot | Yes | |

3. Can Altos T110 F3 support network teaming, such as AFT (Adapter Fault Tolerance) and ALB (Adaptive Load Balance) with onboard Gigabit?

ANSWER: Yes, you can do the network teaming with onboard gigabit by installing PROSet Utility which is included in Smart Setup DVD.

4. Is there any BIOS option to enable/disable Altos T110 F3 onboard gigabit?

ANSWER: Yes. Please enter BIOS Setup during POST.

- a. Please select `Advanced`.
- b. Please select `PCI Configuration`.
- c. You would see below information:

```
Onboard LAN Controller  [Enabled with PXE]
```

It is enabled by default

- d. Please save the setting and exit from BIOS Setup.

5. Does Altos T110 F3 onboard gigabit support VMDq (Virtual Machine Device Queues)?

http://www.intel.com/network/connectivity/vtc_vmdq.htmls

ANSWER: No.

6. Is Altos T110 F3 onboard gigabit PCI-Express 2.0?

ANSWER: Yes, it is PCI-Express 2.0 but only supports 2.5 GT/s (PCI-Express Gen 1 speed).

12. Onboard SATA

1. How many SATA ports does Altos T110 F3 support?

ANSWER: 6 ports.

2. Can Altos T110 F3 onboard SATA support SAS HDD?

ANSWER: No, Altos T110 F3 onboard SATA only support SATA HDD.

3. Does Altos T110 F3 onboard SATA support AHCI (Advanced Host Controller Interface)?

ANSWER: Yes.

More information can be found at:

<http://www.intel.com/technology/serialata/ahci.htm>

4. Does Altos T110 F3 onboard SATA support software RAID?

ANSWER: Yes.

5. Does Altos T110 F3 onboard SATA support SATA ODD (optical drive)?

ANSWER: Yes.

6. Can Altos T110 F3 onboard SATA support SATA tape drive?

ANSWER: No.

Altos T110 F3 FAQ (Frequently Asked Questions)

13. Onboard SATA Software RAID (Intel)

1. What RAID features can Intel Onboard SATA software RAID support?

ANSWER: Please refer to the table below.

| Features | Intel Onboard SATA Software RAID | NOTE |
|------------------------------------|----------------------------------|------|
| SAS BP LED Control (through SGPIO) | No | |
| Hardware RAID | No | |
| Cache Memory of RAID | N/A | |
| BBU (Battery Backup Unit) | N/A | |
| Connector | Internal Serial ATA | |
| Global Hot Spare | Yes | |
| Dedicated Hot Spare | No | |
| Audible Alarm | Yes | |
| RAID Volume Support > 2 TB | Yes | 1 |
| Background Initialization | Yes | 2 |
| Disk Coercion | Yes | 3 |
| NCQ (Native Command Queuing) | Yes | 4 |
| UEFI/EFI Support | Yes | |

NOTE 1. Not every OS can support disk space up to 2 TB.

NOTE 2. When RAID volume is created, it can be initialized on the background. RAID volume can be immediately available without completing the fully initialization.

NOTE 3. Drive coercion refers to the ability of the RAID controller to recognize the size of the physical drives that are connected and then force the larger drives to use only the amount of space available on the smallest drive. Drive coercion as implemented in these RAID controllers also allows an option to map out a reserved space to compensate for slightly smaller drive sizes that may be added later. It is 64 MB by default and cannot be changed.

NOTE 4. More information of NCQ can be found at:

<http://www.serialata.org/technology/ncq.asp>

2. What OS can Intel Onboard SATA software RAID support?

ANSWER: Please refer to below table:

| Operating Systems | Service Pack | 32-bit/64-bit | Driver | RAID Utility | Note |
|----------------------------|--------------|---------------|--------|--------------|------|
| Windows Server 2012 | N/A | 64-bit | Yes | Yes | |
| Windows Server 2008 R2 | SP1 | 64-bit | Yes | Yes | |
| Red Hat Enterprise Linux 6 | Update 4 | 64-bit | No | No | |
| | | 32-bit | No | No | |

3. How do I know the firmware version of Intel Onboard SATA software RAID?

ANSWER: During POST, you would see below information:

Altos T110 F3 FAQ (Frequently Asked Questions)

Intel® Rapid Storage Technology enterprise - SATA Option ROM - [3.6.0.1023](#)
 Copyright© 2003-12 Intel Corporation. ALL Rights Reserved.

RAID Volumes:

| ID | Name | Level | Strip | Size | Status | Bootable |
|----|---------|----------------|-------|---------|--------|----------|
| 0 | Volume0 | RAID1 (Mirror) | N/A | 442.5GB | Normal | Yes |

Physical Devices:

| ID | Drive Model | Serial # | Size | Type/Status (Vol ID) |
|----|------------------|-----------------|---------|----------------------|
| 1 | WDC WD6400AAKS-2 | WD-WCASY6885624 | 596.1GB | Member Disk(0) |
| 2 | WDC WD6400AAKS-2 | WD-WCASY3080417 | 596.1GB | Member Disk(0) |

In this example, the firmware version is [3.6.0.1023](#).

4. Can I update the BIOS and firmware of Intel Onboard SATA software RAID?

ANSWER: No, the BIOS & firmware of Intel Onboard SATA software RAID is embedded in Altos T110 F3 system BIOS and cannot be updated.

5. How do I enable Intel Onboard SATA software RAID?

ANSWER: Please refer to Appendix A of Altos T110 F3 ICG (Installation Configuration Guide)

6. How do I configure Intel Onboard SATA software RAID?

ANSWER: Please refer to Appendix A of Altos T110 F3 ICG (Installation Configuration Guide)

7. Is there any step-by-step procedure to create RAID with Intel Onboard SATA software RAID?

ANSWER: Please refer to Appendix A. of Altos T110 F3 ICG (Installation Configuration Guide).

8. What RAID utility does Intel Onboard SATA software RAID support?

ANSWER: Rapid Storage Technology enterprise Utility.

9. Where can I find the RAID utility of Intel Onboard SATA software RAID?

ANSWER: The RAID utility can be found in Smart Setup DVD.

10. Can I see Intel Onboard SATA software RAID BIOS during POST if there is only one hard drive installed and Intel Onboard SATA software RAID enabled?

ANSWER: No.

11. Can I configure Intel Onboard SATA software RAID with one hard drive?

ANSWER: No. The minimum number of hard drive required is two to configure the Intel Onboard SATA RAID with Altos T110 F3.

12. Do I need to install the RAID Utility to enable the RAID rebuilt of Intel Onboard SATA software RAID?

ANSWER: No. The RAID rebuilt of Intel Onboard SATA software RAID will be functional with or without the installation of RAID Utility.

13. Can onboard SATA still support SATA ODD (optical drive) when Intel Onboard SATA software RAID is enabled?

ANSWER: Yes.

14. Does the Intel Onboard SATA software RAID support HDD location function?

ANSWER: No. Intel Onboard SATA software RAID cannot support HDD locate function due to Altos T110 F3 does not support backplane.

Altos T110 F3 FAQ (Frequently Asked Questions)

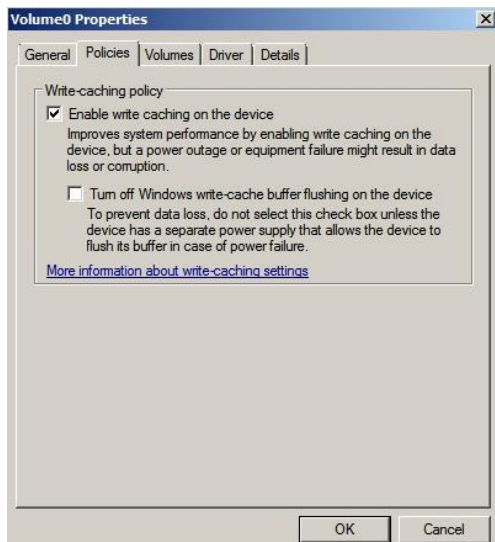
15. What is the default setting of disk write cache of Intel Onboard SATA software RAID?

ANSWER: The disk write cache is enabled by default.

16. How do I enable/disable disk write cache of Intel Onboard SATA software RAID?

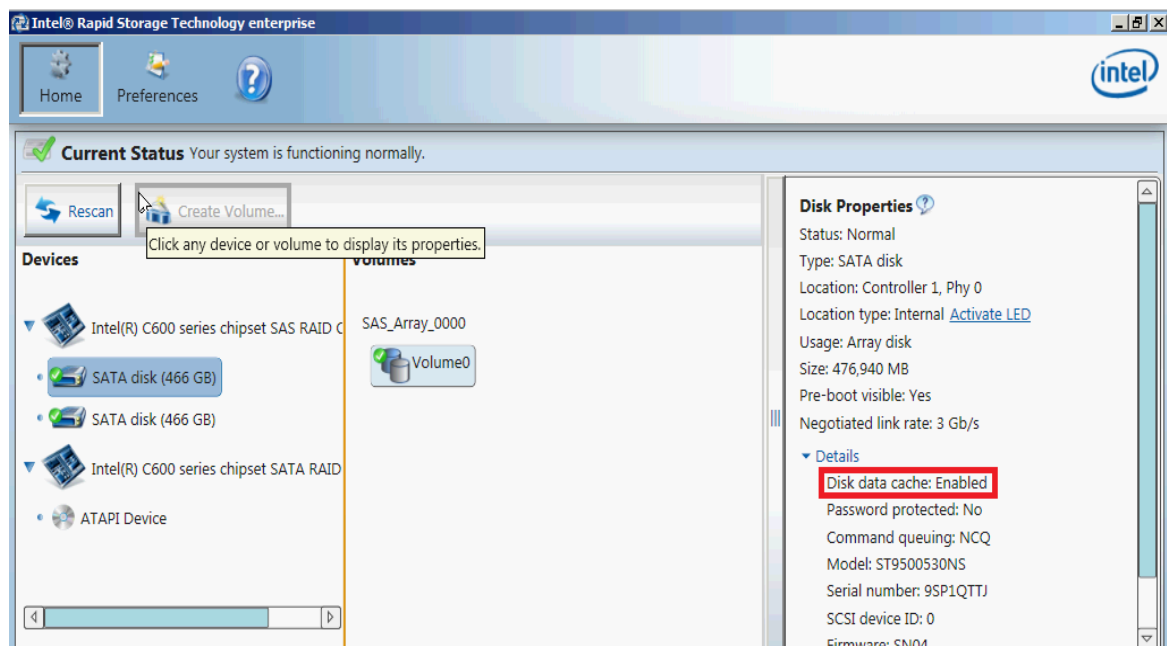
ANSWER: The disk write cache is enabled by default.

You can change it in Device Manager. Please launch Device Manager, and select the properties of volume in Disk drives and select Policies. Please check/uncheck `Enable write caching` on the device and click OK



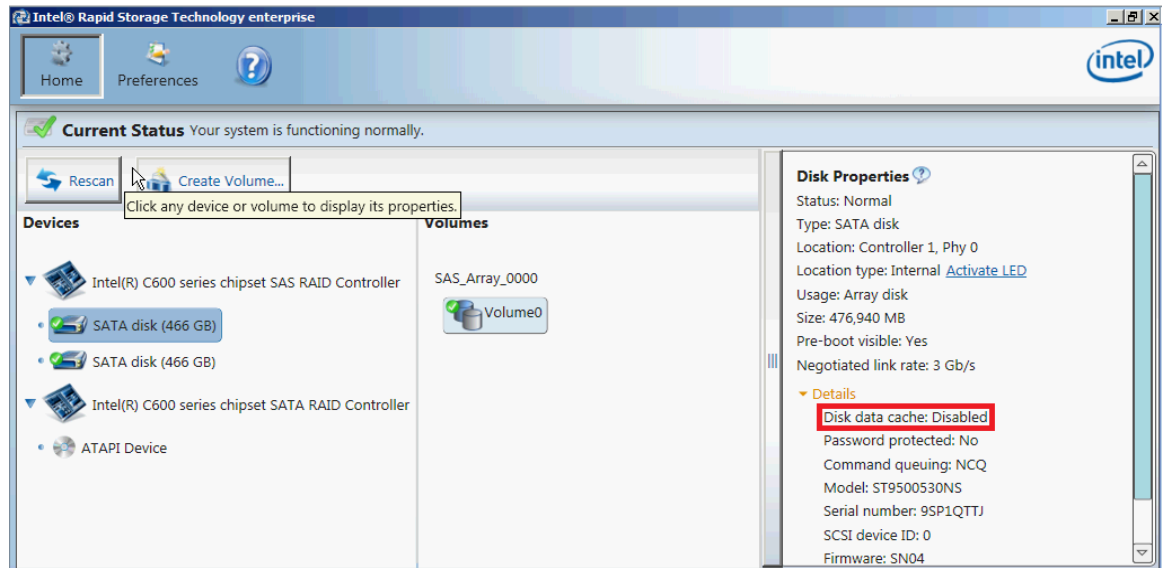
You can also check the disk write cache setting through RAID utility.

- Please launch the RAID utility.
- Click on the HDD that you want to check the disk data cache setting.
- Expand the Details option.
- You can see the setting of the disk data cache.



Altos T110 F3 FAQ (Frequently Asked Questions)

- e. If you disable it through Device Manager, you can see Disk data cache changed to Disabled



17. What is volume write-back cache of Intel Onboard SATA software RAID?

ANSWER: The volume write-back cache is referring to the system memory associated to the RAID volume and managed by the driver.

18. What is the default setting of logical drive write cache of Intel Onboard SATA software RAID?

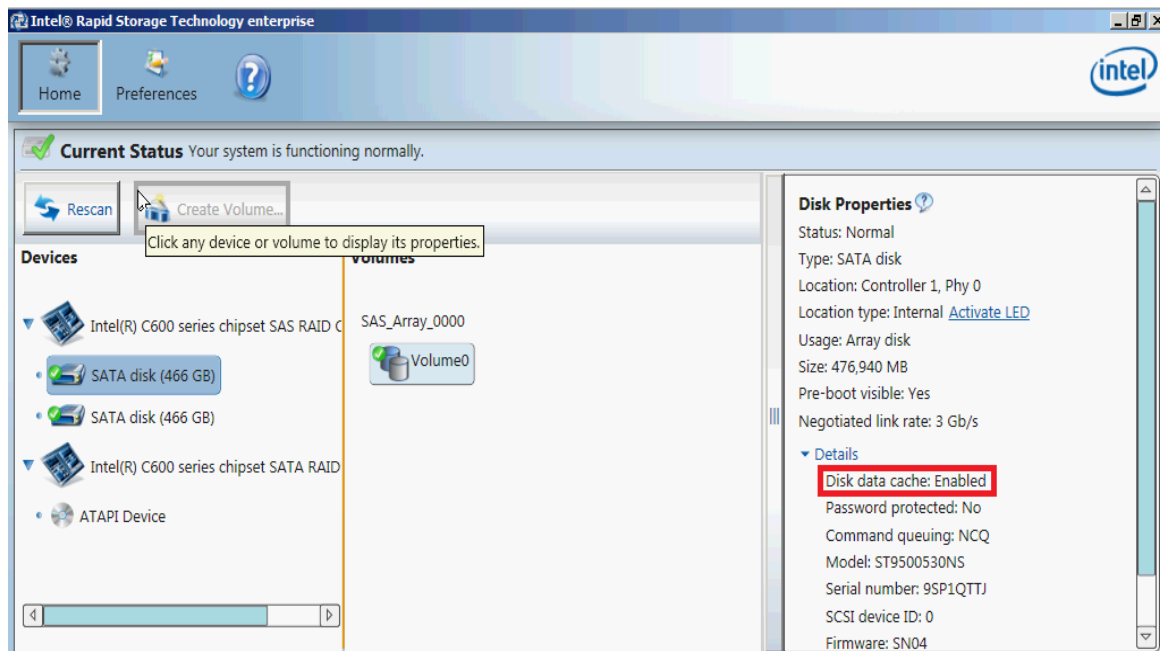
ANSWER: The default setting of logical drive write cache is Write Through.

19. How do I enable/disable the logical drive write cache of Intel Onboard SATA software RAID?

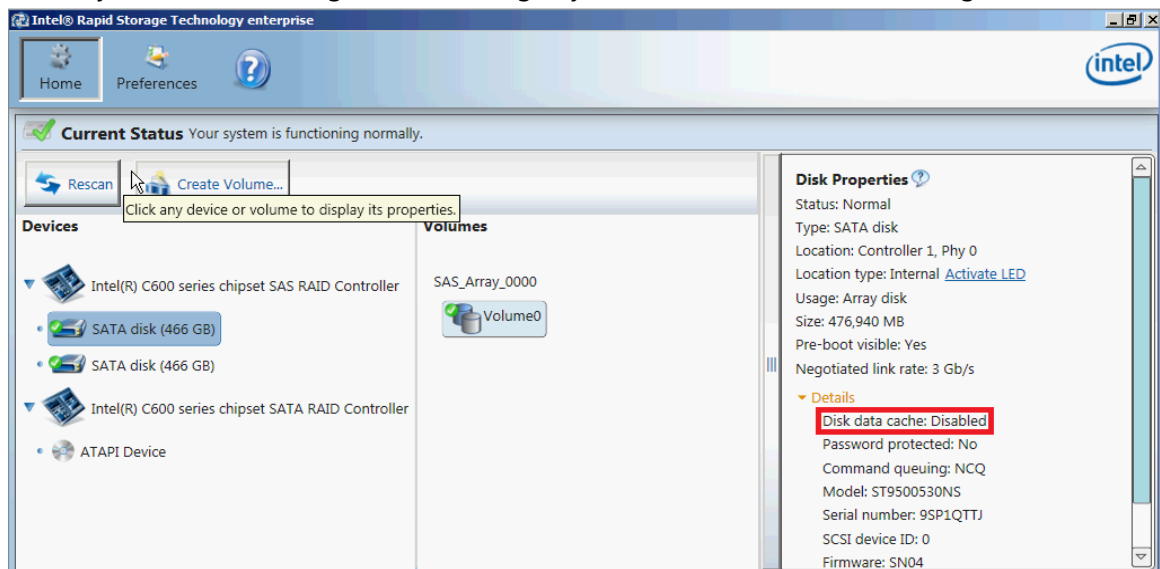
ANSWER: Please follow the procedures below.

- Please launch the RAID utility.
- Click on the RAID volume that you want to change the write cache setting.
- Expand the Details option.
- Click on Enable that in the end of Write-back cache setting.

Altos T110 F3 FAQ (Frequently Asked Questions)



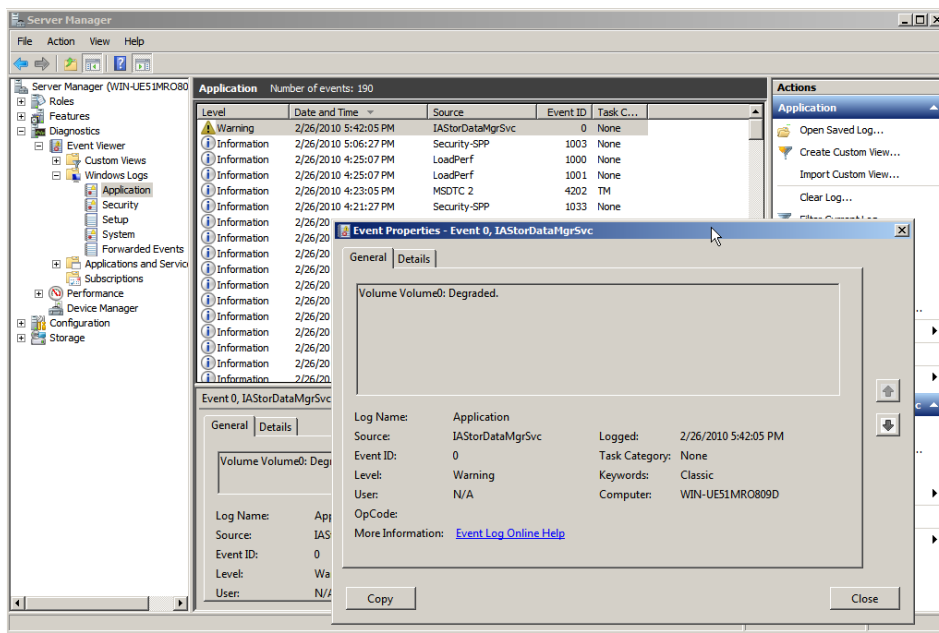
e. If you disable it through Device Manager, you can see Disk data cache changed to Disabled.



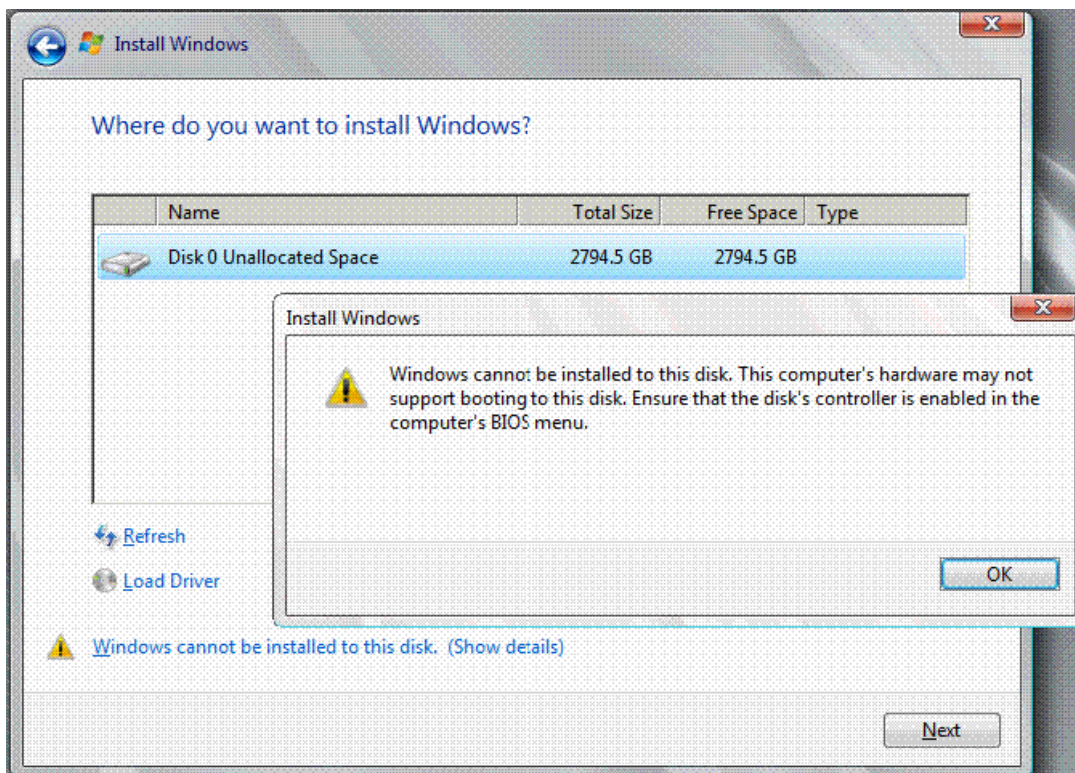
20. How do I check the event log of Intel Onboard SATA software RAID?

ANSWER: The event log of Intel Onboard SATA software RAID can be found in Application of Windows Event Logs.

Altos T110 F3 FAQ (Frequently Asked Questions)



21. When I create 3 x 1 TB HDD as RAID 0, the Windows Server 2008 R2 cannot be installed.



Altos T110 F3 FAQ (Frequently Asked Questions)

```

Intel(R) Rapid Storage Technology enterprise - SCU Option ROM - 3.0.1.1370
Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.

[ MAIN MENU ]
1. Create RAID Volume          3. Reset Disks to Non-RAID
2. Delete RAID Volume         4. Exit

[ DISK/VOLUME INFORMATION ]

RAID Volumes:
ID  Name          Level          Strip    Size Status    Bootable
0   Volume0      RAID0(Stripe) 128KB    5.1TB Normal    Yes

Physical Devices:
ID  Device Model  Serial #      Size Type/Status(Vol ID)
0   WDC WD2003FYYS-0 WD-WMAY02549349 1.8TB Member Disk(0)
1   WDC WD2003FYYS-0 WD-WMAY02582231 1.8TB Member Disk(0)
2   WDC WD2003FYYS-0 WD-WMAY02549561 1.8TB Member Disk(0)

[↑↓]-Select  [ESC]-Exit  [ENTER]-Select Menu
  
```

ANSWER: Please follow the procedure below to split the RAID volume and make it less than 2TB.

- Enter Intel Onboard SAS RAID BIOS Utility
- Select Create RAID Volume
- Type in the name of RAID volume in CREATE VOLUME MENU
- Select RAID level.
- Select desired HDD to create the RAID.
- Type in the capacity of the RAID volume. (Less than 2 TB)

```

Intel(R) Rapid Storage Technology enterprise - SCU Option ROM - 3.0.1.1370
Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.

[ CREATE VOLUME MENU ]

Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 2000 GB

Create Volume

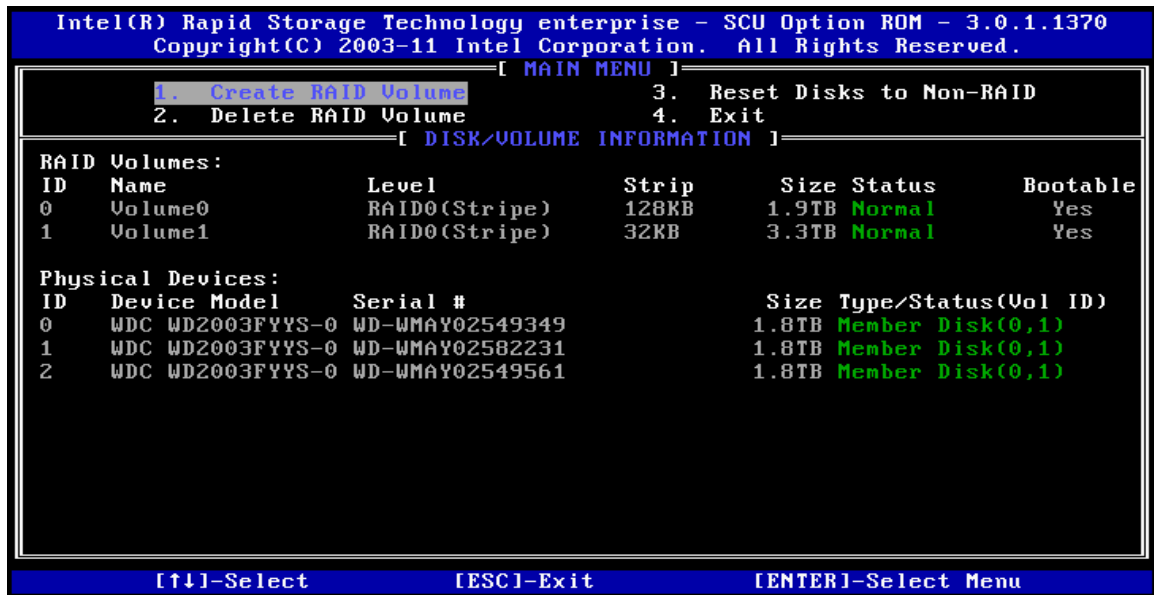
[ HELP ]

The default value indicates the maximum capacity using the selected
disks. Entering a lower capacity allows you to create a second
volume on these disks.

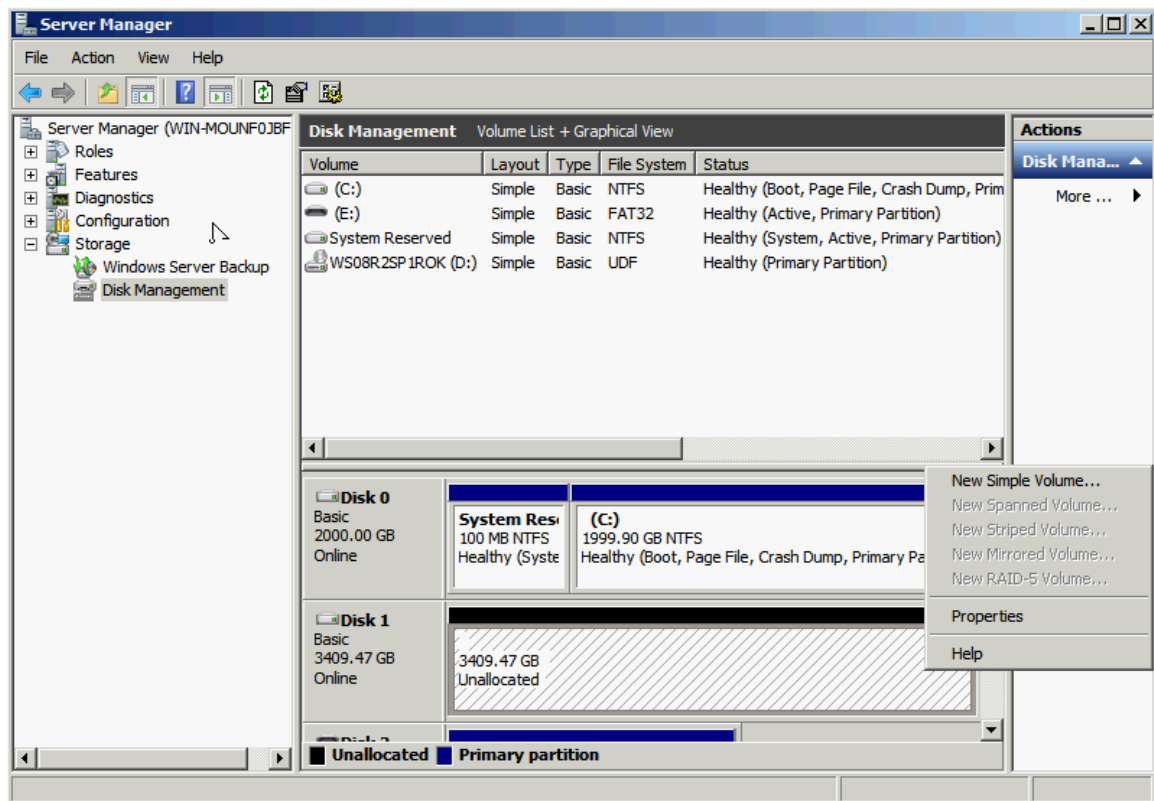
[↑↓]Change  [TAB]-Next  [ESC]-Previous Menu  [ENTER]-Select
  
```


Altos T110 F3 FAQ (Frequently Asked Questions)

- g. Select Create Volume
- h. Press Y when "Are you sure you want to create the volume? (Y/N):" displayed.
- i. Now, the first RAID volume is created. Following the previous steps to create another RAID volume. After two RAID volumes are created, you can press ESC and select Exit to exit.



- j. To install Windows Server 2008 R2 with the smaller RAID volume. (Less than 2 TB)
- k. After installation completed, check the Disk Management in Server Manager. The disk partition over 2 TB can be used.



Altos T110 F3 FAQ (Frequently Asked Questions)

22. When server is installed with Windows Small Business Server 2011 (SBS 2011), the settings of disk write cache or RAID volume write-back cache is always disabled. Though I can temporarily enable it, it would be disabled again after reboot.

There is no such issue if server is installed with Windows Server 2008 R2.

ANSWER: This is the normal behavior of Windows Small Business Server 2011. The same behavior will also be applied on Windows Server 2008 R2 if the systems acted as active directory domain controller.

One role of Windows Small Business Server 2011 is active directory domain controller. The domain controller stores active directory information in the database that is resided in system partition. Active directory information is critical and important for a domain environment.

To prevent data loss or corruption of active directory information, Windows Small Business Server 2011 will automatically disable disk write cache and RAID volume write-back cache.

More information can found at:

[http://technet.microsoft.com/en-us/library/dd941847\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd941847(WS.10).aspx)

<http://support.microsoft.com/kb/888794/en>.

Altos T110 F3 FAQ (Frequently Asked Questions)

14. OS Support

1. Which OS can Altos T110 F3 support?

ANSWER: Please refer to Altos T110 F3 THOL (Tested Hardware and Operating System List).

2. Is there any guideline or notes to install OS on Altos T110 F3?

ANSWER: Please refer to Altos T110 F3 ICG (Installation Configuration Guide).

3. Where can I find the related driver of Altos T110 F3?

ANSWER: The driver of Altos T110 F3 is included in the Smart Setup DVD.

4. Can Altos T110 F3 support Windows Serve 2012?

ANSWER: Yes, Altos T110 F3 is certified with below editions of Windows Server 2012.

- Windows Server 2012 Data Center Edition
- Windows Server 2012 Standard Edition
- Windows Server 2012 Essential Edition
- Windows Server 2012 Foundation Edition

5. Can Altos T110 F3 support Windows Server 2008 R2?

ANSWER: Yes, Altos T110 F3 is certified with below editions of Windows Server 2008 R2.

- Windows Server 2008 R2 Enterprise Edition
- Windows Server 2008 R2 Standard Edition
- Windows Web Server 2008 R2
- Windows Server 2008 R2 Foundation Edition

6. Can Altos T110 F3 support Windows Small Business Server 2011

ANSWER: According to Microsoft, there is no certification program for Windows Small Business Server 2011. All servers certified with Windows Server 2008 R2 can support Windows Small Business Server 2011.

NOTE. The driver of Windows Small Business Server 2011 is the same as Windows Server 2008 R2.

7. Which OS is EFI-Aware and can support EFI boot & install on Altos T110 F3?

ANSWER: Please refer below table.

| Operating Systems | Service Pack | 32-bit/ 64-bit | UEFI Aware | Legacy Video Option ROM | UEFI Video Option ROM | Note |
|----------------------------|--------------|-------------------|---------------|----------------------------------|--------------------------------|------|
| Windows Server 2012 | N/A | 64-bit | Yes | Yes | Yes | |
| Windows Server 2008 R2 | SP1 | 64-bit | Yes | Yes | No | 1 |
| Red Hat Enterprise Linux 6 | Update 4 | 64-bit | Yes | Yes | No | |
| | | 32-bit | No | Yes | No | 2 |

NOTE 1. Windows Server 2008 R2 SP1 ROK can support EFI mode.

NOTE 2. For OS not UEFI-Aware, the OS can be installed in Legacy mode on Altos T110 F3.

Altos T110 F3 FAQ (Frequently Asked Questions)

15. PCI & PCI-Express

1. Does AltosT110 F3 support PCI-Express Gen 3?

ANSWER: Yes.

2. Does Altos T110 F3 support PCI Express Base Spec 3.0?

<http://www.pcisig.com/specifications/pciexpress/>

ANSWER: Yes.

3. Is PCI-Express 3.0 backward compatible with PCI-Express 2.x and 1.x?

ANSWER: Yes.

4. What is the bit rate for PCIe 3.0 and how does it compare to prior generations of PCIe?

ANSWER: The bit rate for PCIe 3.0 is 8GT/s. This bit rate represents the most optimum tradeoff between manufacturability, cost, power and compatibility.

The PCI-SIG analysis covered multiple topologies and configurations, including servers. All of these studies confirmed the feasibility of 8GT/s signaling with low-cost enablers and with minimal increases in power, silicon die size and complexity.

5. How does the PCIe 3.0 8GT/s “double” the PCIe 2.0 5GT/s bit rate?

ANSWER: The PCIe 2.0 bit rate is specified at 5GT/s, but with the 20 percent performance overhead of the 8b/10b encoding scheme, the delivered bandwidth is actually 4Gbps. PCIe 3.0 removes the requirement for 8b/10b encoding and uses a more efficient 128b/130b encoding scheme instead. By removing this overhead, the interconnect bandwidth can be doubled to 8Gbps with the implementation of the PCIe 3.0 specification. This bandwidth is the same as an interconnect running at 10GT/s with the 8b/10b encoding overhead. In this way, the PCIe 3.0 specifications deliver the same effective bandwidth, but without the prohibitive penalties associated with 10GT/s signaling, such as PHY design complexity and increased silicon die size and power. The following table summarizes the bit rate and approximate bandwidths for the various generations of the PCIe architecture:

| PCIe architecture | Raw bit rate | Interconnect bandwidth | Bandwidth per lane per direction | Total bandwidth for x16 lnk |
|-------------------|--------------|------------------------|----------------------------------|-----------------------------|
| PCIe 1.x | 2.5GT/s | 2Gbps | ~250MB/s | ~8GB/s |
| PCIe 2.x | 5.0GT/s | 4Gbps | ~500MB/s | ~16GB/s |
| PCIe 3.0 | 8.0GT/s | 8Gbps | ~1GB/s | ~32GB/s |

6. Where could I find more information about PCI-Express 3.0?

ANSWER: Please go to PCISIG web site.

<http://www.pcisig.com/specifications/pciexpress/>

7. Is PCI-Express compatible with PCI or PCI-X?

ANSWER: No. PCI-Express is a different technology. PCI-Express adapters cannot be installed on PCI or PCI-X slots. PCI or PCI-X adapters cannot be installed on PCI-Express slots.

8. Does Altos T110 F3 support PCI-X?

Altos T110 F3 FAQ (Frequently Asked Questions)

http://www.pcisig.com/specifications/pcix_20/

ANSWER: No.

16. Power Supply

1. What power supply does Altos T110 F3 support?

ANSWER:

| Feature | Redundant Power Supply | Note |
|--------------------------------|------------------------|------|
| Power Wattage | 500W | |
| Redundant | No | |
| Hot Swappable | No | |
| Power Supply Status Monitoring | No | |
| Node Manager | No | |

17. Rack-mount

1. Is Altos T110 F3 rack-mountable?

ANSWER: No, Altos T110 F3 does not support rack-mount kit.

18. SAS Back-plane

1. Does Altos T110 F3 support SAS backplane?

ANSWER: No.

19. SAS RAID (MegaRAID 9240-4i)

1. What RAID features can MegaRAID 9240-4i support?

ANSWER: Please refer to the table below.

| Features | MegaRAID 9240-4i | NOTE |
|------------------------------------|----------------------------------|------|
| SAS BP LED Control (through SGPIO) | N/A | |
| Cache Memory of RAID | N/A | |
| BBU (Battery Backup Unit) | N/A | |
| Connector | Mini SAS 4i connector (SFF-8087) | |
| Global Hot Spare | Yes | |
| Dedicated Hot Spare | Yes | |
| Audible Alarm | No | |
| RAID Volume Support > 2 TB | Yes | 1 |
| Background Initialization | Yes | 2 |
| Disk Coercion | Yes | 3 |
| NCQ (Native Command Queuing) | Yes | 4 |
| UEFI/EFI Support | Yes | |

NOTE 1. Not every OS can support disk space up to 2 TB.

NOTE 2. When RAID volume is created, it can be initialized on the background. RAID volume can be immediately available without completing the fully initialization.

NOTE 3. Drive coercion refers to the ability of the RAID controller to recognize the size of the physical drives that are connected and then force the larger drives to use only the amount of space available on the smallest drive. Drive coercion as implemented in these RAID controllers also allows an option to map out a reserved space to compensate for slightly smaller drive sizes that may be added later. This option allows 128 MB, and 1 GB of drive capacity to remain unused.

The coercion algorithm options are:

| Options | Description | Note |
|-----------|--|---------|
| None | The software does not coerce the drive capacity. | Default |
| 128MB-way | The software rounds the drive capacity down to the next 128MB boundary. Then, the software rounds the drive capacity to the nearest 10MB boundary. If the resulting capacity is larger than the real drive size, the coerced capacity is rounded down to the next 10MB boundary. | |

Altos T110 F3 FAQ (Frequently Asked Questions)

| | | |
|---------|--|--|
| 1GB-way | <p>The software rounds the drive capacity down to the next 1GB boundary. The software rounds the drive capacity down to the next 1MB boundary.</p> <p>The 1GB boundary correlates with the terms most drive manufacturers use.</p> | |
|---------|--|--|

NOTE 4. More information of NCQ can be found at:

<http://www.serialata.org/technology/ncq.asp>

2. How many SAS ports does MegaRAID 9240-4i support?

ANSWER: MegaRAID 9240-4i features one mini SAS 4i connectors (SFF-8087) and can support 4 SAS ports (6Gbps).

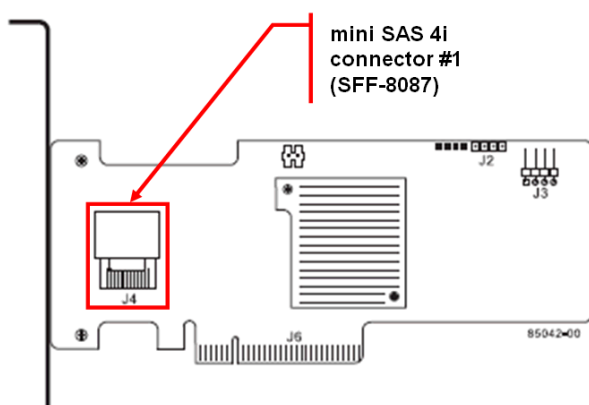
3. What OS can MegaRAID 9240-4i support?

ANSWER: Please refer to the table below.

| Operating Systems | Service Pack | 32-bit/64-bit | Driver | RAID Utility | Note |
|----------------------------|--------------|---------------|--------|--------------|------|
| Windows Server 2012 | N/A | 64-bit | Yes | Yes | |
| Windows Server 2008 R2 | SP1 | 64-bit | Yes | Yes | |
| Red Hat Enterprise Linux 6 | Update 4 | 64-bit | Yes | Yes | |
| | | 32-bit | Yes | Yes | |

4. Where should I connect the SAS or SATA cables to MegaRAID 9240-4i?

ANSWER: Please connect the SAS cable to mini SAS 4i connector (SFF-8087) on the card.



5. How do I know the version of BIOS and firmware of MegaRAID 9240-4i in legacy mode?

ANSWER: When MegaRAID 9240-4i enabled in legacy mode, you would see below MegaRAID 9240-4i related information during POST:

```

LSI MegaRAID SAS-MFI BIOS
Version 4.34.00 (Build June 03, 2010)
Copyright(c) 2010 LSI Corporation
HA -0 (Bus 2 Dev 0) LSI MegaRAID SAS MR9240-4i
  
```

Altos T110 F3 FAQ (Frequently Asked Questions)

FW package: [20.10.1-0126](#)

Battery Status: Not present

| PCU SLOT | ID | LUN | VENDOR | PRODUCT | REVISION | CAPACITY |
|----------|----|-----|--------|----------------------------|----------|----------|
| 1 | | | LSI | LSI MegaRAID SAS MR9240-4i | | 0MB |

0 Virtual Drive(s) Found on the host adapter.

0 Virtual Drive(s) handled by BIOS

Press <Ctrl><H> for WebBIOS or press <Ctrl><Y> for Preboot CLI

In this example, the BIOS version is [4.34.00](#), and the firmware package version is [20.10.1-0126](#).

Please press CTRL-H when you see above information during POST. You can see Adapter Selection. In this example, the firmware version is [2.130.374-2023](#).

6. How do I configure MegaRAID 9240-4i in legacy mode?

ANSWER: Please press **CTRL-H** when you see below information during POST.

```
LSI MegaRAID SAS-MFI BIOS
Version 4.34.00 (Build June 03, 2010)
Copyright(c) 2012 LSI Corporation
HA -0 (Bus 1 Dev 0) LSI MegaRAID SAS MR9240-4i
FW package: 20.10.1-1026
```

Battery Status: Not present

| PCU SLOT | ID | LUN | VENDOR | PRODUCT | REVISION | CAPACITY |
|----------|----|-----|--------|----------------------------|----------|----------|
| 1 | | | LSI | LSI MegaRAID SAS MR9240-4i | | 0MB |

0 Virtual Drive(s) Found on the host adapter.

0 Virtual Drive(s) handled by BIOS

Press <Ctrl><H> for WebBIOS or press <Ctrl><Y> for Preboot CLI

7. How do I know the version of BIOS and firmware of MegaRAID 9240-4i in EFI mode?

ANSWER: Please enter EFI Shell during POST

a. In EFI Shell, please type in `drvcfg -s`.

b. You will see below options.

Press 1 for EFI WebBIOS

2 for EFI CLI

or any other key to return:

c. Please select 1 for EFI WebBIOS

8. Is there any step-by-step procedure to create RAID with MegaRAID 9240-4i?

ANSWER: Please refer to Appendix B of Altos T110 F3 ICG (Installation Configuration Guide).

9. What RAID utility does MegaRAID 9240-4i support?

ANSWER: MegaRAID Storage Manager for Windows & Linux.

10. Where can I find the RAID utility of MegaRAID 9240-4i?

Altos T110 F3 FAQ (Frequently Asked Questions)

ANSWER: The RAID utility can be found in Smart Setup DVD.

11. Can I install both SAS and SATA HDD on Altos T110 F3 with MegaRAID 9240-4i?

ANSWER: Yes, but please create separated RAID volumes with SAS and SATA HDD, respectively.

For example, you may create 2 x SATA HDD as RAID 1, another 2 x SAS HDD as RAID 1.

But, please don't create a RAID volume with mix of SATA and SAS HDD.

12. How do I create RAID 10 with MegaRAID 9240-4i?

ANSWER: For configuring RAID 10, you need 4 HDDs in the system.

Please follow below procedures below.

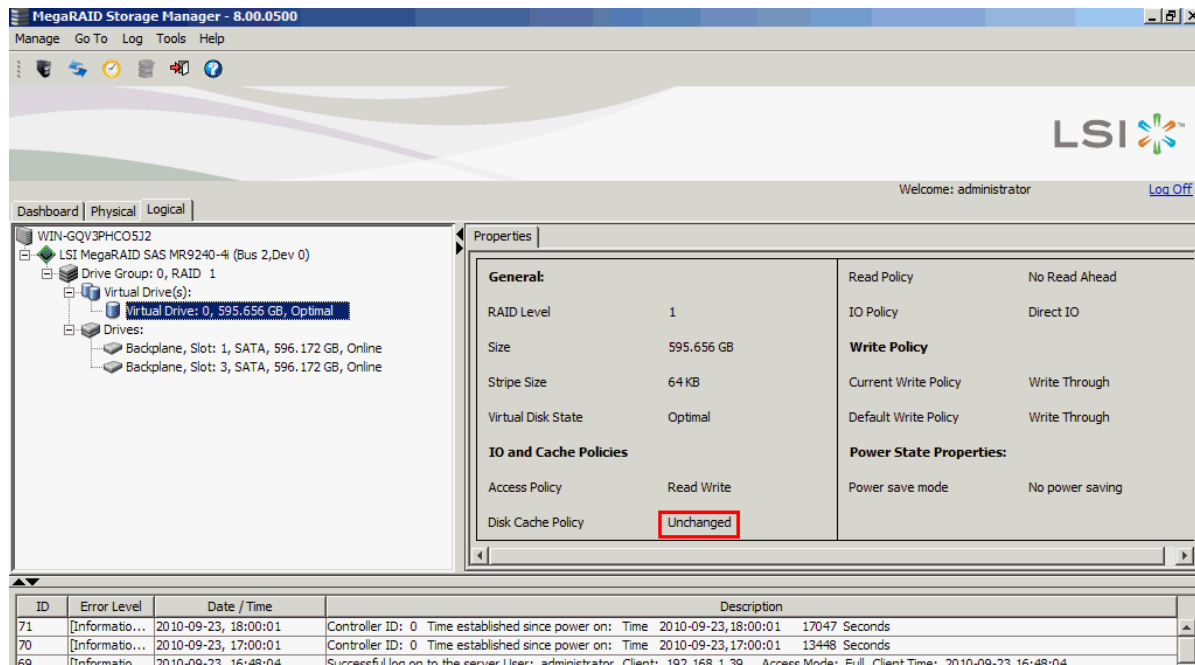
- a. To start the RAID BIOS utility, please press **CTRL-H** during POST
 - b. After POST finished, the Adapter Selection page will display on the screen. Click on **Start** to launch the configuration menu
 - c. Please select Adapter Properties to set Factory Defaults from No to Yes, and then click on submit.
 - d. Reboot the server and then enter the RAID BIOS utility again by pressing **CTRL-H** during POST
 - e. Launch the configuration menu.
 - f. Select **Configuration Wizard**
 - g. Select **Add Configuration** (default) and click on **Next**.
 - h. Select **Manual Configuration** (default) and click on **Next**.
 - i. Select 2 drives with **Ctrl** key held and click on **Add to Array** and **Accept DG** to add these drives into **Drive Group0**.
 - j. Select other 2 drives with **Ctrl** key held and click on **Add to Array** and **Accept DG** to add these drives into **Drive Group1**.
 - k. After you creating Disk Groups, click on **Next**.
 - l. Add both Drive Group0 and Drive Group1 to Span and click on **Next**.
 - m. The RAID 10 will be available in RAID Level. Select the **RAID Level** as **RAID 10** and click on **Next**.
 - n. Click on **Accept** and **Yes** to save the configuration.
 - o. Click on **Yes** to initialize the new logical drives. You will see all the logical drives listed.
 - p. Click on **Home** to go back to the configuration menu.
 - q. In the Logic View field, you can see the **Spanned Drive Group: 0, RAID 10** listed.
 - r. Now you can reboot the system and install the Operating System. Select **Exit**, click on **Yes** and press **Ctrl+Alt+Del** to reboot the system.
13. How do I check the settings of coercion with MegaRAID 9240-4i?
- ANSWER:** Please enter RAID BIOS utility (press **CTRL-H** during POST) and select Controller Properties -> Coercion Mode.
14. Does MegaRAID 9240-4i support HDD location function?
- ANSWER:** Yes. However, Altos T110 F3 does not support SAS/SATA backplane, you cannot identify HDD with HDD location function
15. How do I identify the HDD with the HDD location function?

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ANSWER: Since Altos T110 F3 does not support SAS/SATA backplane, you cannot identify HDD with HDD location function.

16. What is the default setting of disk write cache of MegaRAID 9240-4i?

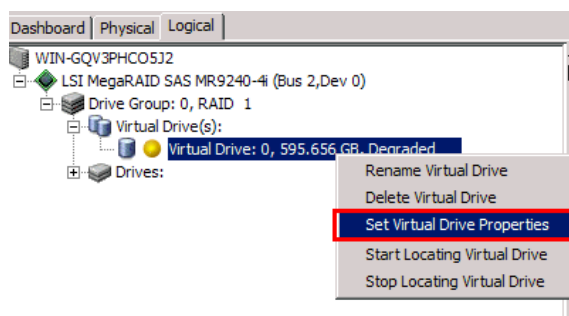
ANSWER: The default setting of disk cache of virtual drive is Unchanged.



17. How do I enable/disable disk write cache of MegaRAID 9240-4i?

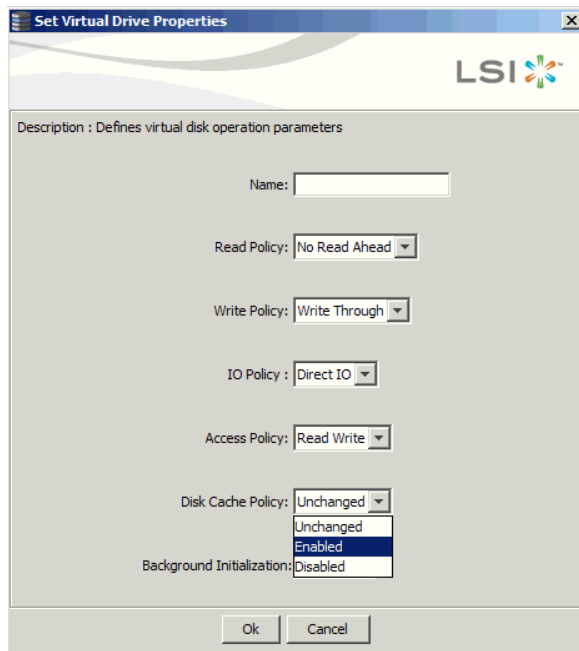
ANSWER: Please follow the procedures below.

- Please launch the RAID utility in Windows/Linux.
- Right click the Virtual Drive in Logical panel
- Click **Set Virtual Drive Properties**



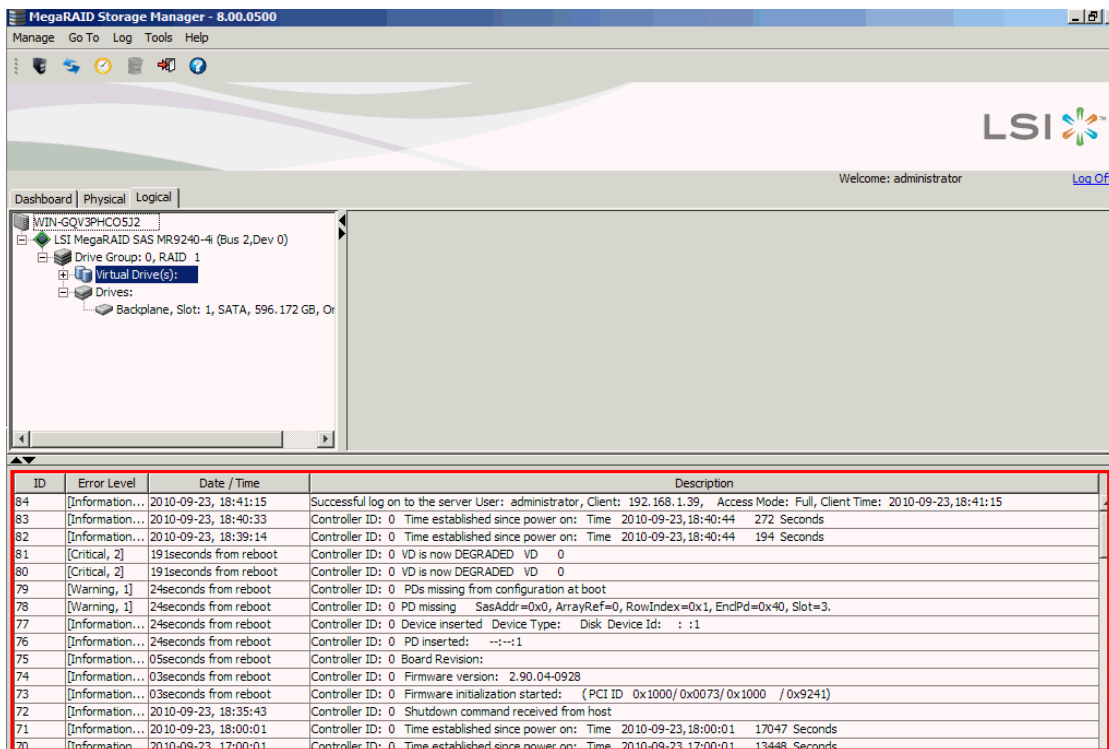
- In the pop-up Set Virtual Drive Properties dialog-box, enable/disable disk cache from **Disk Cache Policy** option

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18. How do I check the event log of MegaRAID 9240-4i?

ANSWER: The event log of MegaRAID 9240-4i can be checked from bottom panel of RAID utility.



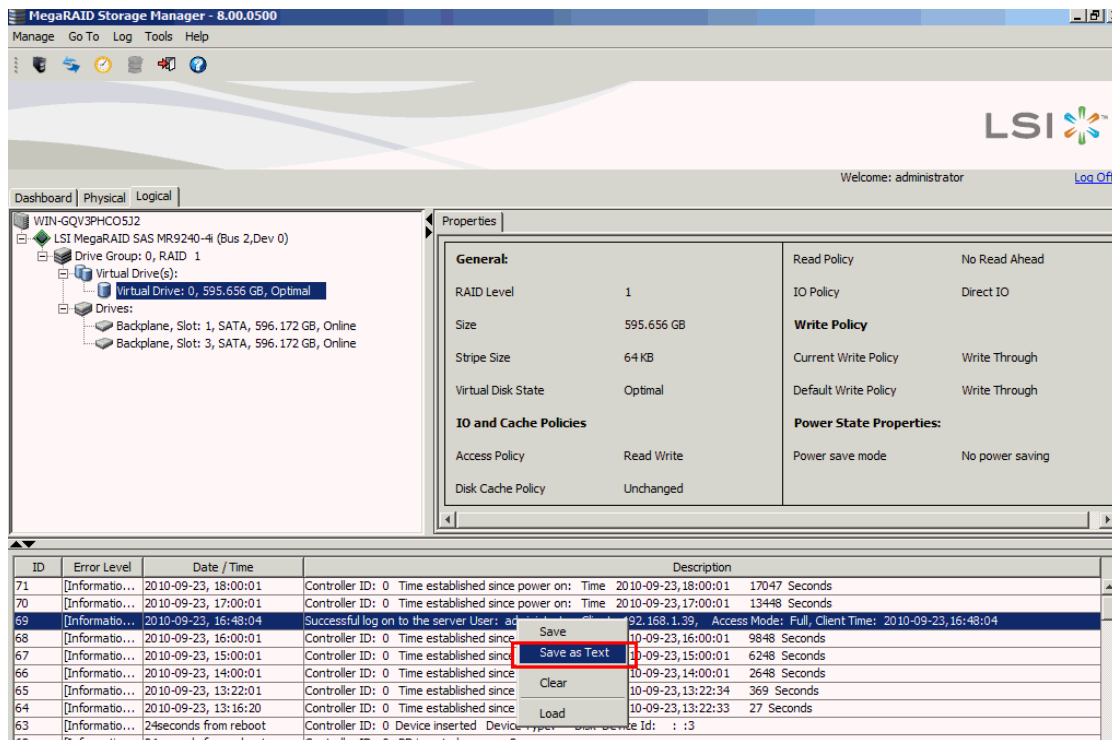
19. How do I save the event log of MegaRAID 9240-4i?

ANSWER: The RAID utility supports the feature to save event log information to a file.

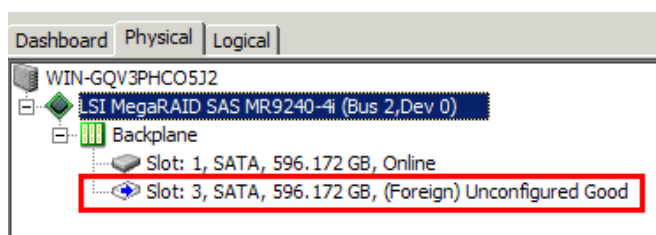
Please follow the procedures below.

- Please launch the RAID utility in Windows/Linux.
- Right click one of the event log in the bottom control panel, and select **Save Log Text**

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- c. Select the directory for saving the event log file, and click **Save** button.
 - d. The event log file will be saved in TXT format.
20. The MegaRAID 9240-4i is configured with 2 x HDD as RAID 1 without hot spare. But, when I removed one HDD and inserted the original HDD back, the RAID cannot be rebuilt automatically. In the RAID Utility, it indicates the HDD as (Foreign) Unconfigured Good.



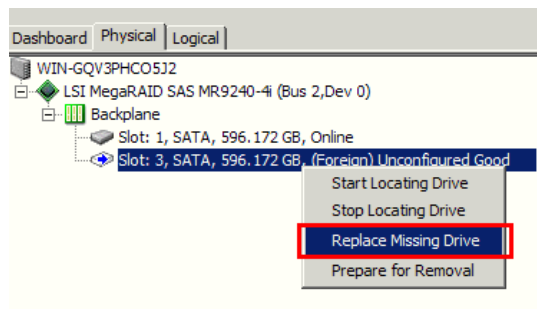
ANSWER: Please insert a new HDD which was not configured as RAID. Or, please install the original HDD into another RAID card and clear/delete its RAID configuration before you insert it into the degraded RAID.

That is, if the HDD is new or has not been configured as RAID, the RAID can be rebuilt automatically.

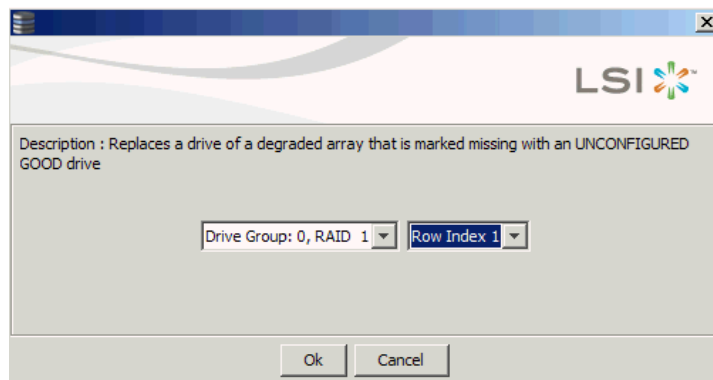
If you re-plug back the original removed HDD, RAID card will detect "Foreign" RAID configuration on that HDD. In that case, RAID card will wait for user to confirm next step. Then, you need to follow below procedure to manually rebuild the RAID.

- a. Please launch the RAID utility.
- b. Right click the HDD marked as "(Foreign) Unconfigured Good" and select **Replace Missing Drive**.

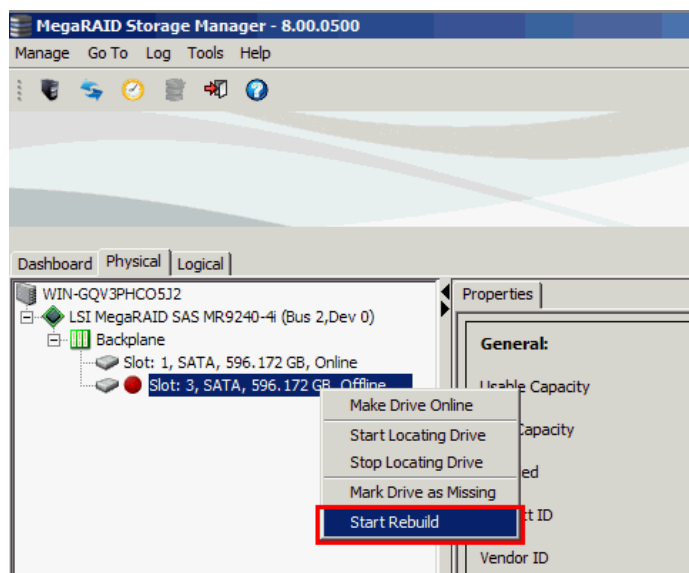
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- c. Click "OK" at pop up Windows, the drive will become "Offline"



- d. Right click the HDD marked as *Offline* and select **Start Rebuild**.



21. There is no POST information of MegaRAID 9240-4i when I change the BIOS Setting of Launch Storage OpROM policy to UEFI Only in BIOS Setup.

ANSWER: There would be no POST information if MegaRAID 9240-4i is in EFI mode.


NOTE. Please enter EFI shell to configure MegaRAID 9240-4i if it is in EFI mode.

22. When I create 2 x 2 TB HDD as RAID 0 with MegaRAID 9240-4i, only 2TB of disk partition can be installed with Windows Server 2008 R2. The remaining free disk space cannot be utilized.


ANSWER: Please follow the procedure below to split the RAID volume and make it less than 2TB.

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- a. Enter RAID BIOS utility
- b. When you create the RAID volume, please specify the **Select Size** less than 2 TB and click **Accept**

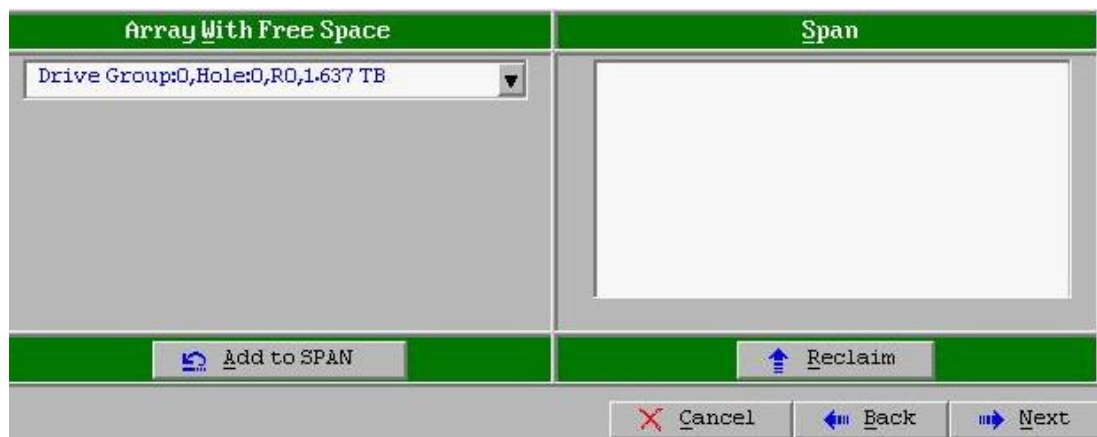
| | | |
|---|---------------|--|
| RAID Level | RAID 0 | Virtual Drives  Next LD, Possible RAID Levels R0:3.637 TB R1:1-818 TB |
| Strip Size | 64 KB | |
| Access Policy | RW | |
| Read Policy | Normal | |
| Write Policy | Write Through | |
| IO Policy | Direct | |
| Drive Cache | NoChange | |
| Disable BGI | No | |
| Select Size | 2 TB | |
| <input type="button" value="Accept"/> <input type="button" value="Reclaim"/> | | |
| <input type="button" value="Cancel"/> <input type="button" value="Back"/> <input type="button" value="Next"/> | | |

- c. Click **Back** to select another drive volume

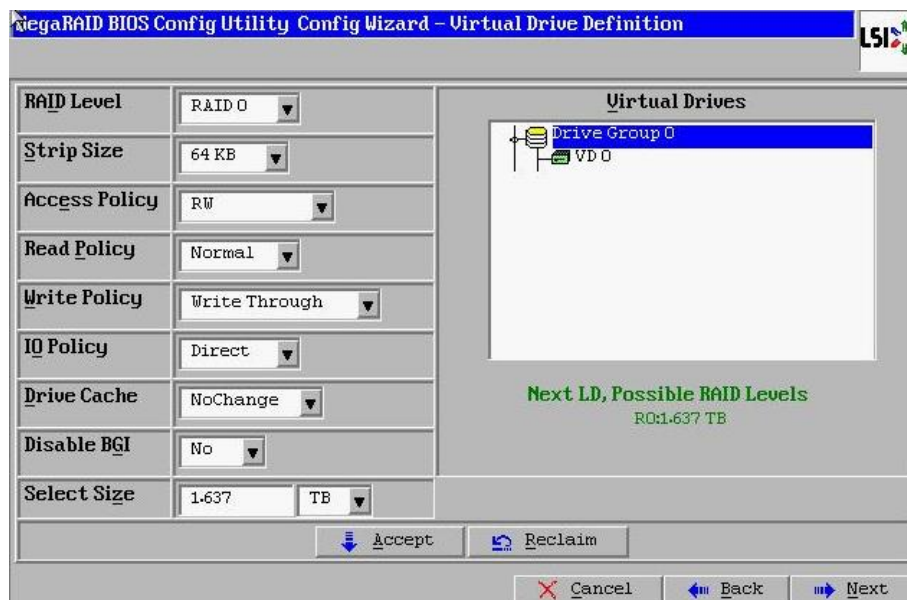
| | | |
|---|---------------|---|
| RAID Level | RAID 0 | Virtual Drives  Press Back Button To Add Another Virtual Drive. |
| Strip Size | 64 KB | |
| Access Policy | RW | |
| Read Policy | Normal | |
| Write Policy | Write Through | |
| IO Policy | Direct | |
| Drive Cache | NoChange | |
| Disable BGI | No | |
| Select Size | 0 KB | |
| <input type="button" value="Reclaim"/> | | |
| <input type="button" value="Cancel"/> <input type="button" value="Back"/> <input type="button" value="Next"/> | | |

- d. Click **Add** to SPAN and click **Next**

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- e. Click **Accept** and click **Next**

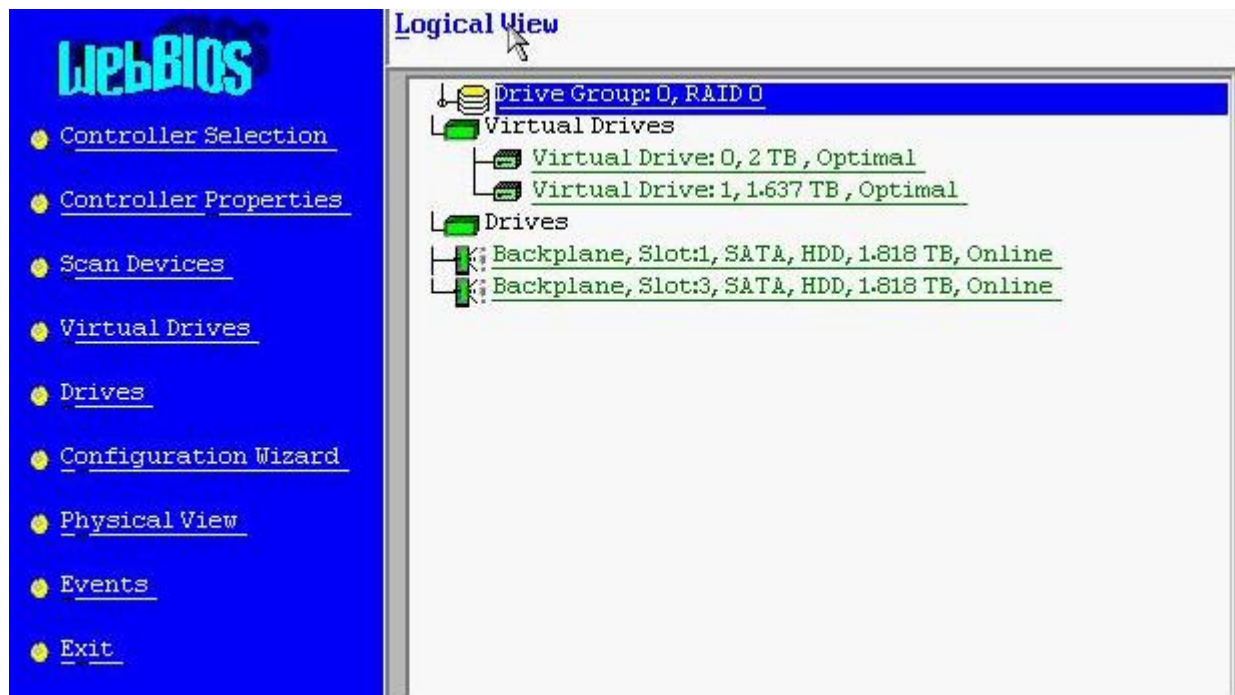


- f. Click **Yes** to save the configuration



- g. Now, two RAID volumes are created, you can select **Exit** to exit.

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20. Smart Console

1. Does Altos T110 F3 support Smart Console?

ANSWER: No.

21. Smart Server Manager

1. Does Altos T110 F3 support Smart Server Manager?

ANSWER: No.

22. System ID (Service ID) LED

1. Does Altos T110 F3 support System ID LED?

ANSWER: No.

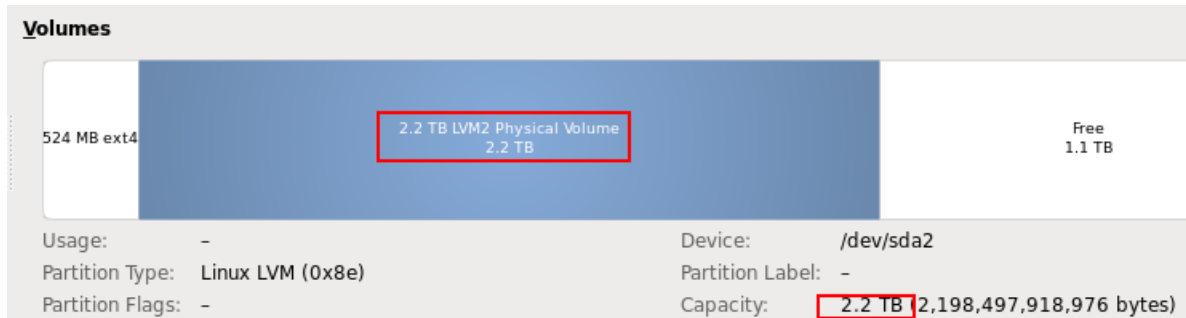
23. System Status LED

1. Does Altos T110 F3 support System Status LED?

ANSWER: No

24. Troubleshooting

1. I installed 32-bit Red Hat Enterprise Linux 6 on a 3 TB RAID volume. When I run the `Disk Utility`, it is only 2.2 TB available. No additional partition can be created in the free space.



ANSWER: This is due to the 1st RAID volume is more than 2TB. Please create the 1st RAID volume less than 2TB. This is the limitation of 32-bit Red Hat Enterprise Linux 6.

NOTE. You can install 64-bit Red Hat Enterprise Linux 6 in EFI mode with 1st RAID volume more than 2TB.

2. I use a retail version of Windows Server 2008 R2 DVD media (which can support OS installation in EFI mode) to install the OS with MegaRAID 9240-4i. When I select OS installation in EFI mode, I saw below error message during OS installation.

"No device was found. Click load drivers to provide a mass storage device for installation"

ANSWER: To install OS in EFI mode, please make sure that MegaRAID 9240-4i is also configured in EFI mode.

If MegaRAID 9240-4i is configured in Legacy mode, you must select OS installation in Legacy mode.

Please refer to section of BIOS for more detail.

3. Altos T110 F3 is configured with MegaRAID 9240-4i in EFI mode. But I saw below error message during OS installation with Windows Server 2008 R2 ROK.

"Setup was unable to create a new system partition or locate an existing partition. See the Setup log files for more information"

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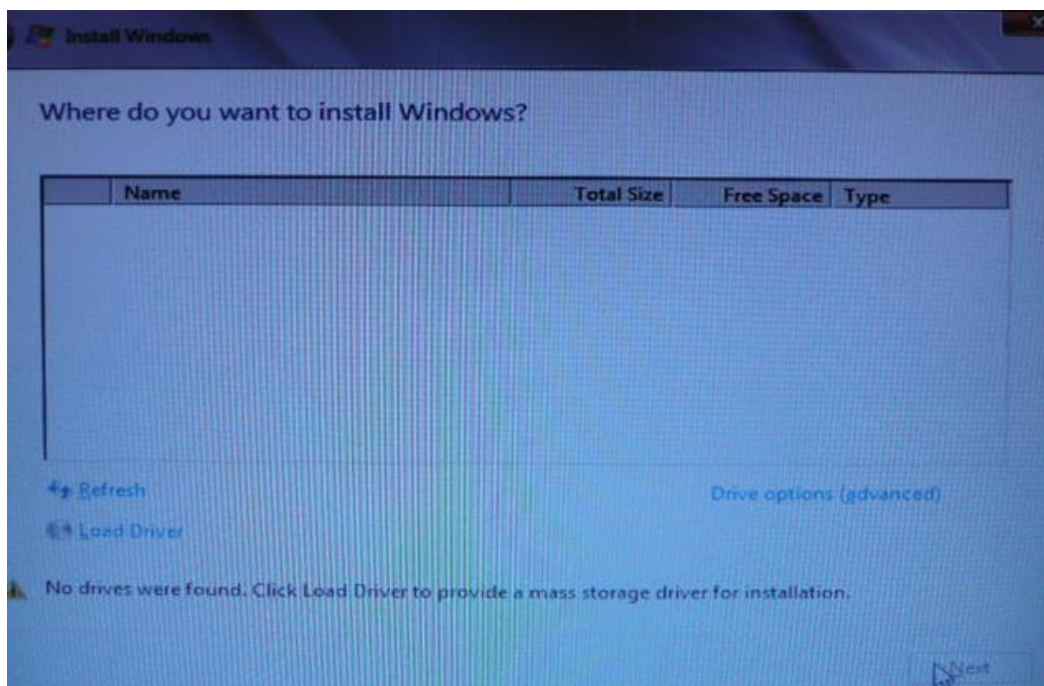
ANSWER: To install OS in Legacy mode, please make sure that MegaRAID 9240-4i is also configured in Legacy mode.

If MegaRAID 9240-4i is configured in EFI mode, you must select OS installation in EFI mode.

Please refer to section of BIOS for more detail.

- Altos 110 F3 is configured with MegaRAID 9240-4i in legacy mode. But I saw below message after loading MegaRAID 9240-4i driver during OS installation with Windows Server 2008 R2 OPK.

"No drives were found. Click Load Drivers to provide a mass storage driver for installation"



ANSWER: To install OS in EFI mode, please make sure that MegaRAID 9240-4i is also configured in EFI mode.

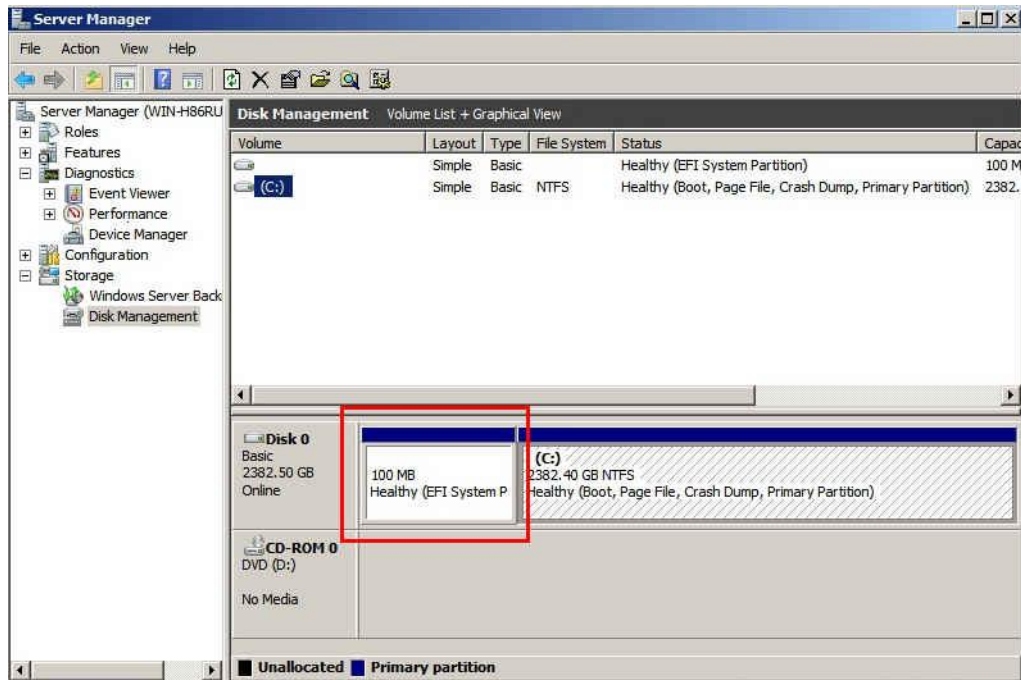
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If MegaRAID 9240-4i is configured in legacy mode, you must select OS installation in legacy mode.

Please refer to section of BIOS for more detail.

5. How do I know the Windows Server 2008 R2 is installed in EFI mode or Legacy mode?

ANSWER: Please check the partition type with Disk Manager. The EFI System Partition indicates the Windows Sever 2008 R2 is installed with EFI mode. You could also check the partition type with diskpart command in Windows command line.



6. How do I know the SuSE Linux Enterprise Server is installed in EFI mode or Legacy mode?

ANSWER: Please check the partition type with "df -a" command. The EFI partition indicates the SuSE Linux Enterprise Server is installed with EFI mode.

```
sles11sp1:~/Desktop # df -a
Filesystem            1K-blocks      Used Available Use% Mounted on
/dev/sda3             2113785016    2899984 2003510992   1% /
proc                  0              0          0     - /proc
sysfs                  0              0          0     - /sys
debugfs                0              0          0     - /sys/kernel/debug
devtmpfs              4014016        96      4013920    1% /dev
tmpfs                  4014016        100     4013916    1% /dev/shm
devpts                 0              0          0     - /dev/pts
/dev/sda1              200580         9772     190808    5% /boot/efi
fusectl                0              0          0     - /sys/fs/fuse/connections
securityfs             0              0          0     - /sys/kernel/security
gvfs-fuse-daemon      0              0          0     - /root/.gvfs
```

7. How do I know the Red Hat Enterprise Linux 6 is installed in EFI mode or Legacy mode?


ANSWER: Please run the Disk Utility by applications → System tools → Disk Utility.


The Partition Type indicates the how the Red Hat Linux is installed.

In below example, RHEL 6 is installed in EFI mode

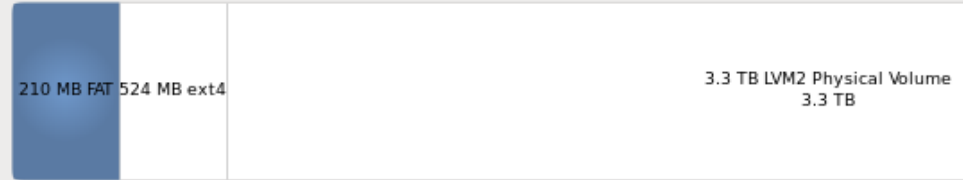
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Partitioning: GUID Partition Table SMART Status: ● Not Supported

 **Format Drive**
Erase or partition the drive

 **Benchmark**
Measure drive performance


Volumes




| | | | |
|------------------|-----------------------------|------------------|--------------------------------------|
| Usage: | Filesystem | Device: | /dev/sda1 |
| Partition Type: | EFI System Partition | Partition Label: | - |
| Partition Flags: | - | Capacity: | 210 MB (209,715,200 bytes) |
| Type: | FAT (16-bit version) | Available: | - |
| Label: | - | Mount Point: | Mounted at /boot/efi |

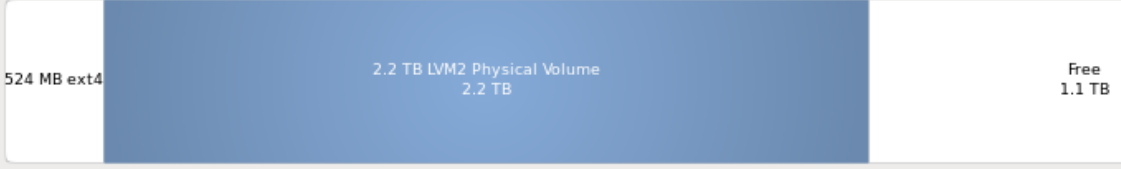
In below example, RHEL 6 is installed in Legacy mode

Partitioning: Master Boot Record SMART Status: ● Not Supported

 **Format Drive**
Erase or partition the drive

 **Benchmark**
Measure drive performance

Volumes

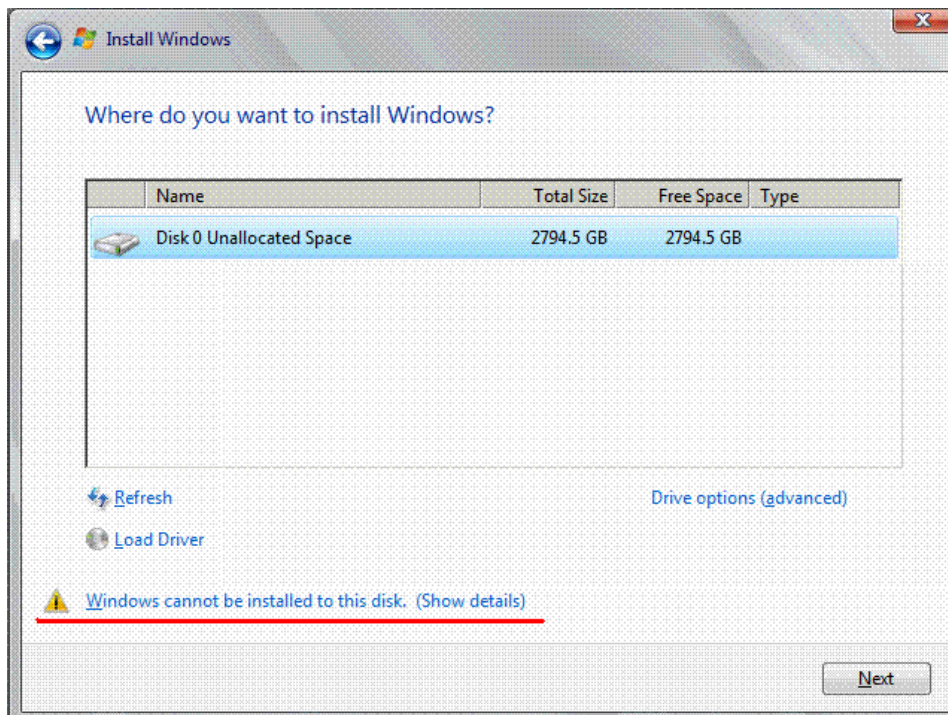


| | | | |
|------------------|-------------------------|------------------|----------------------------------|
| Usage: | - | Device: | /dev/sda2 |
| Partition Type: | Linux LVM (0x8e) | Partition Label: | - |
| Partition Flags: | - | Capacity: | 2.2 TB (2,198,497,918,976 bytes) |

8. Altos T110 F3 is configured with MegaRAID 9240-4i in EFI mode. But I saw below message during the installation of Windows Server 2008 R2 in EFI mode.

Windows cannot be installed to this disk.

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ANSWER: Please ignore the message and click "Drive options" to partition the drive or click on "Next" to use default disk partition setting directly to continue the OS installation.

9. Altos T110 F3 is installed with Windows Server 2008 R2 with MegaRAID 9240-4i in Legacy mode. When I configure the system BIOS setting of `Boot Mode` to `UEFI`, the system cannot boot.

ANSWER: Once the OS is installed in Legacy mode, the OS can only boot in Legacy mode

10. Altos T110 F3 is installed Windows Server 2008 R2 with MegaRAID 9240-4i in EFI mode. When I configure the system BIOS setting of `Boot Mode` to `Legacy`, the system cannot boot.

ANSWER: Once the OS is installed in EFI mode, the OS can only boot in EFI mode.

11. I've configured RAID volume properly with MegaRAID 9240-4i in EFI mode. There is no available boot device when I check Boot Priority in BIOS Setup.

ANSWER: The system BIOS cannot recognize the fresh RAID volume and will not list it in Boot Options of BIOS Setup. The bootable RAID volume will be displayed in Boot Options of BIOS Setup once the OS is installed properly on it.

12. Altos T110 F3 is installed with OS successfully with MegaRAID 9240-4i in EFI mode. But when the RAID is degraded (for example, one HDD failed in RAID 1 configuration), the OS cannot boot.

ANSWER: Please enter EFI Shell during POST to configure MegaRAID 9240-4i. The warning message might display as below:

```
Some configured disks have been removed from your system, or are no longer accessible.
Please check your cables and also ensure all disks are present. Press any key to
continue, or 'C' to load the configuration utility.
```

You could press any key to confirm the change of RAID or press 'C' to check status of RAID. Then, the OS can boot OK in next time.

NOTE. When MegaRAID 9240-4i enabled in legacy mode, the behavior is the same when RAID is degraded. You have to press any key or 'C' for.

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13. When I install Red Hat Enterprise Linux or SuSE Linux Enterprise Server with onboard SATA (without RAID), the OS will take a long time to format the HDD. For example, it takes 2.5 hours to format a 1TB HDD.

ANSWER: Please make sure the SATA Mode setting is AHCI.

Please follow the procedures below.

- a. Please enter BIOS Setup during POST
- b. Please select Advanced.
- c. Please select SATA Configuration.
- d. You would see below information:
SATA Controller [Enabled]
SATA Mode [AHCI]
- e. Please make sure the setting of SATA Mode is AHCI Mode.
- f. Please save the setting before exiting from BIOS Setup.

NOTE. The setting of SATA Mode is AHCI Mode by default.

14. I enter BIOS Setup and see below events in event log.

```
SMBIOS 0x16  
SMBIOS 0x17
```

ANSWER: These events are for information only. SMBIOS 0x16 means the record of flashed BIOS. SMBIOS 0x17 means the record of reboot.

15. I enter BIOS Setup and see below event in event log.

```
EFI03058003
```

ANSWER: This event indicates bootable CD media in ODD is interrupted by user.

25. Video

1. What's the video controller of Altos T110 F3?

ANSWER: ASPEED with 16MB of video memory.

26. Virtualization

1. Do I still need to install the virtualization software since Altos T110 F3 supports Intel VT (Virtualization Technology)?

ANSWER: Yes, you still need to install VMware ESXi or Windows Server 2012 Hyper-V to support virtualization on Altos T110 F3.

2. Does Altos T110 F3 support Intel VT-i?

ANSWER: No.

Altos T110 F3 supports VT-x technology which is identical to VT-i on Intel Itanium processors.

3. Does Altos T110 F3 support Intel VT-d?

ANSWER: Yes.

However, Altos T110 F3 onboard Gigabit Ethernet does not support SR-IOV.

4. Can Altos T110 F3 support Hyper-V?

ANSWER: Yes, Altos T110 F3 is certified with Windows Server 2008 R2 with Hyper-V.

5. Can Altos T110 F3 support Hyper-V Server 2012?

ANSWER: Yes, Altos T110 F3 is certified with Windows Server 2012 with Hyper-V.

According to Microsoft, there is no specific certification program for Hyper-V Server 2012. For servers are certified with Windows Server 2012 with Hyper-V, Hyper-V Server 2012 can be supported.

6. Is Intel VT a necessary requirement for Hyper-V?

ANSWER: Yes, Hyper-V requires

- | | | |
|-----|---|--------------------------|
| 8. | | x64-based processor such |
| | as a 64 or AMD-64. | |
| 9. | | Hardware-assisted |
| | virtualization (like Intel VT, AMD-V) | |
| 10. | | Hardware DEP (data |
| | execution protection), such as Intel XD (eXecute Disable Bit) or AMD EVP (Enhanced Virus Protection). | |

More information can be found at:

<http://www.microsoft.com/servers/hyper-v-server/system-requirements.mspx>

7. Which Guest OS can Altos T110 F3 support?

ANSWER: This depends on the support of hypervisor (virtualization software).

For example, VMware ESXi 5 can support Windows NT 4.0 as guest operating system.

But Altos T110 F3 is not tested with Windows NT 4.0. Altos T110 F3 is not certified with Windows NT 4.0, either.

8. Can I assign different VM (Virtual Machine) to different processors?

ANSWER: This depends on the support of hypervisor (virtualization software).

For example, there is no processor affinity with Microsoft Virtual Server 2005 R2 —meaning that individual CPUs are not assigned to individual virtual machines—the maximum that you can allocate to any given virtual machine is 100 percent of one CPU. If you want to allocate the equivalent of one entire CPU to a virtual

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machine, specify 100 percent as its reserved capacity.

9. How do I create virtual machine and install guest operating system on Altos T110 F3?

ANSWER: This depends on the support of hypervisor (virtualization software).

Please refer to the Administrator Guide or Installation Guide of related virtualization software.