acer

Version 1.0
March 2015

Revision History

Ver.	Date	Description
1.0	March 31, 2015	First release

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1. BIOS

1. What features can Altos R380 F3 BIOS support?

   ANSWER: Please refer to the table below.

Features	BIOS	NOTE
SMBIOS	2.6.1	
ACPI (Advanced Configuration of Power Interface)	4.0a	
UEFI/EFI	2.1	

2. How do I know the latest version of BIOS/firmware of Altos R380 F3?

   ANSWER: Please refer to Altos R380 F3 THOL (Tested Hardware & Operating System List).

3. Where can I access the Event Log of Altos R380 F3?

   ANSWER: Please access the SEL (System Event Log) through Smart Console.

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

   ANSWER: No.

5. Does Altos R380 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 `Setup Menu.`

   b. Please select `Main.`

   c. You would see below information:

   ```
   System BIOS
   BIOS Boot From       Primary
   BIOS Version:        SE5C610.86B.01.01.0008
   Build Date:          02/11/2015
   ```

   In this example, the BIOS version is `01.01.0008`.

8. Where could I find the version of BMC firmware, FRU, SDR?

   ANSWER: Please enter BIOS Setup during POST.

   a. Please select `Setup Menu.`

   b. Please select `Sever Management.`

   c. Please select `System Information.`

   d. You would see below information:

   ```
   BMC Firmware Revision:      1.18.7601
   ME Firmware Revision:       03.00.07.154
   ```

```
SDR Revision:                    SDR Package 1.06
```

In this example, the BMC firmware version is `1.18.7601`, SDR version is `1.06`.

NOTE. The FRU is included in SDR package. There is no additional version information for FRU.

9. Can Altos R380 F3 support BIOS Recovery when BIOS is corrupted unexpectedly during BIOS update?

    ANSWER: Yes.

10. 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, 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/

11. 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.

12. 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.

13. 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 R380 F3 BIOS Release Note for more detail.

14. How do I enter EFI shell?

ANSWER: Please press **F6** during POST.

You would see below options:

```
Launch EFI Shell
```

Please select `Launch EFI Shell` and press Enter.

15. 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.

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

    ANSWER: Please press **F6** during POST.

    You would see options similar to below.

    ```
    UEFI HL-DT-STDVD-ROM GSA-E60L1.00
    HL-DT-STDVD-ROM GSA-E60L1.00
    ```

    Please select `UEFI HL-DT-STDVD-ROM GSA-E60L1.00` and press Enter.

17. I cannot select OS installation in EFI mode when I use Windows Server 2008 R2 ROK.

    ANSWER: Please use Windows Server 2008 R2 SP1 ROK.

    Windows Server 2008 R2 SP1 ROK can support OS installation in both Legacy mode and EFI mode.

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

    ANSWER: Please press **F6** during POST.

    You would see options similar to below:

    ```
    HL-DT-STDVD-ROM GSA-E60L1.00
    ```

    Please select `HL-DT-STDVD-ROM GSA-E60L1.00` and press Enter.

19. How do I force EFI mode of the add-on RAID card if it can support EFI?

    ANSWER: Please enter BIOS Setup during POST

    a.   Please select `Setup Menu`.

    b.   Please select `Boot Maintenance Manager`.

    c.   Please select `Advanced Boot Options`.

    d.   You would see below information.

    ```
    Boot Mode                 [Legacy]
    ```

    e.   Please change the setting of `Boot Mode` from `Legacy` to `EFI`

    ```
    Boot Mode                 [UEFI]
    ```

    f.   Please save the setting and exit from BIOS Setup.

20. How do I enable the Legacy mode support of the add-on RAID card?

ANSWER: Please enter BIOS Setup during POST

a.   Please select `Setup Menu.`

b.   Please select `Boot Maintenance Manager.`

c.   Please select `Advanced Boot Options.`

d.   You would see below information.

```
Boot Mode                 [Legacy]
```

e.   Please make sure the setting of `Boot Mode` is `Legacy`

```
Boot Mode                 [Legacy]
```

a.   Please save the setting and exit from BIOS Setup.

2. BMC (Baseboard Management Controller)

1. What's the BMC of Altos R380 F3?

    ANSWER: Emulex Pilot III.

2. Is BMC embedded on Altos R380 F3?

    ANSWER: Yes, BMC is embedded on Altos R380 F3.

3. Is Altos R380 F3 IPMI 2.0 (Intelligent Platform Management Interface 2.0) compliant?

    ANSWER: Yes, Altos R380 F3 supports IPMI 2.0.

4. What features can Altos R380 F3 BMC support?

    ANSWER: Please refer to the table below.

| Features	BMC	BMC + RMM4 Lite	NOTE
IPMI 2.0	Yes	Yes	
OOB (Out of Band)	Yes	Yes	
IPMB (Intelligent Platform Management Bus)	Yes	Yes	
Dedicated NIC (10/100 Mbps)	Yes	Yes	
Share-NIC	Yes	Yes	
Network Fail-over	Yes	Yes	
SEL (System Event Log)	Yes	Yes	
Server Health Monitoring	Yes	Yes	
Remote Power Control (on/off, reset)	Yes	Yes	
SOL (Serial Over LAN)	Yes	Yes	
WDT (Watchdog Timer)	Yes	Yes	
RMCP (Remote Management Control Protocol)/RMCP+	Yes	Yes	
Power Management (Node Manager)	Yes	Yes	1
KVM over IP	NO	Yes	2

NOTE 1. More information of node manager can be found at:

http://www.intel.com/content/www/us/en/data-center/data-center-management/node-manager-general.html

NOTE 2. RMM4 Lite is required to support KVM over IP and Media Redirection

5. Where can I install the optional RMM4 Lite?

    ANSWER: Please refer to the picture below.

RMM4 Lite Connector
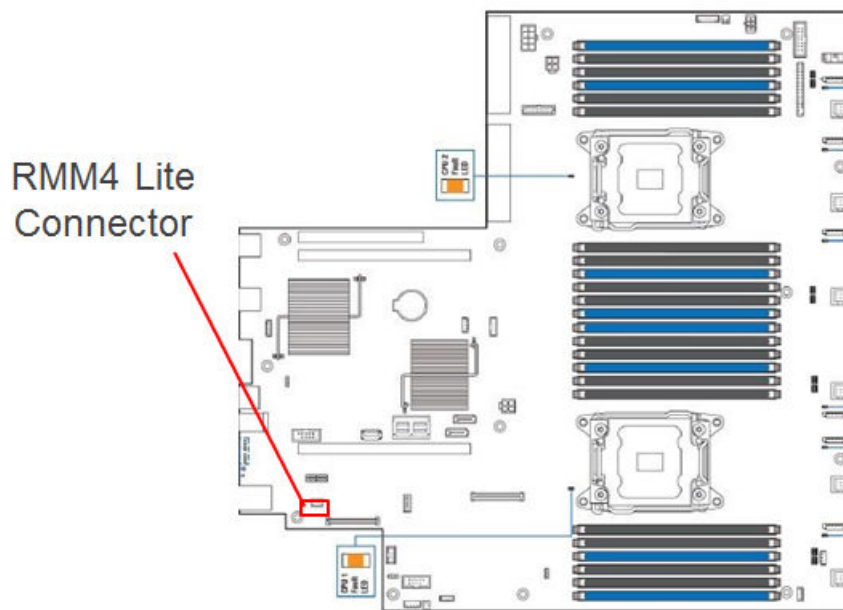
6. Does Altos R380 F3 BMC support share-NIC technology with onboard Gigabit?

   ANSWER: Yes

7. Which network port of Altos R380 F3 is connected to BMC?

   ANSWER: Altos R380 F3 supports two types of network connection interface and two types of network connection mode for BMC connection.

   For connection interface
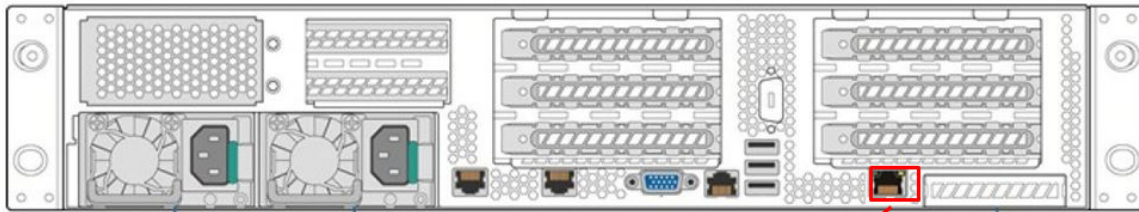   - **Shared (Default):** BMC is connected to onboard Gigabit LAN 1 and LAN 2 port.
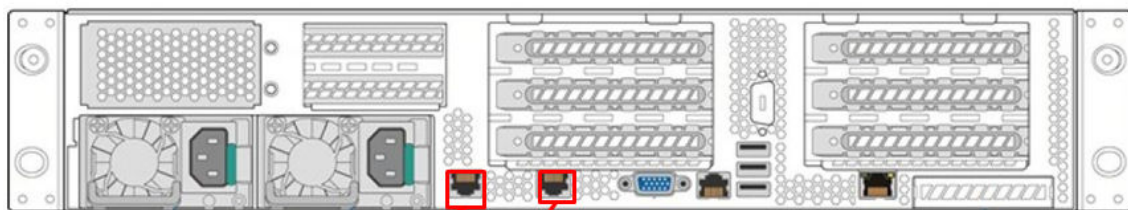
   Onboard LAN port 1

   Onboard LAN port 2

   - **Dedicated (Optional):** BMC is connected to optional dedicated server management port.

Dedicated
Management Port

For connection mode:

- **Concurrent (Default):** All of onboard LAN port 1, onboard LAN port 2 and optional dedicated server management port can be used for management with different IP address. All NIC ports must be on different subnet.
- **Failover:** All of onboard LAN port 1, onboard LAN port 2 and optional dedicated server management port are bonded together. The setting of onboard LAN port 1 will be used for bonding. If a connection fails, Smart Console connection will switch to the others. Failover mode can be enabled in Smart Console.

8. How do I configure the IP address of BMC on Altos R380 F3?

    ANSWER: Please enter BIOS Setup during POST.

    a. Please select `Setup Menu`.

    b. Please select `Server Management`.

    c. Please select `BMC LAN Configuration`.

    d. You would see information below.

        ```
        Baseboard LAN configuration
        IP Source                   <Dynamic>
        IP Address                  010.036.060.100
        IP Subnet Mask              255.255.255.000
        Gateway IP                  010.036.060.001

        Dedicated Management LAN Configuration
        Remote Management Module    <Present>
        IP Source                   <Dynamic>
        IP Address                  010.036.061.100
        IP Subnet Mask              255.255.255.000
        Gateway IP                  010.036.061.001
        ```

    e. Please specify `IP Source` as `<Dynamic>` or `<Static>`. Then, specify `IP address`, `IP Subnet Mask`, and `Default Gateway` under Baseboard LAN configuration for share NIC of onboard LAN port 1.

    f. Please save the settings and exit from BIOS Setup.

9. Can Altos R380 F3 BMC and operating system use the same IP address?

    ANSWER: No. Please do not use the same IP address for BMC and operating system.

10. Should I unplug the power cord of Altos R380 F3 after I update the BMC firmware or SDR?

    ANSWER: You do not need to unplug the power cord of Altos R380 F3 after updating the BMC firmware.

Since the BMC will continue to operate even though the system is powered off. So, please reboot the system so that the BMC is reset to reload the BMC firmware or FRUSDR.

11.   Should I update the BMC, FRU and SDR when I add/remove CPU or memory on Altos R380 F3?

ANSWER: Yes, you need to re-update the SDR when add/remove CPU and PSU.

12.   Should I change any jumper before I update the firmware of BMC or FRUSDR?

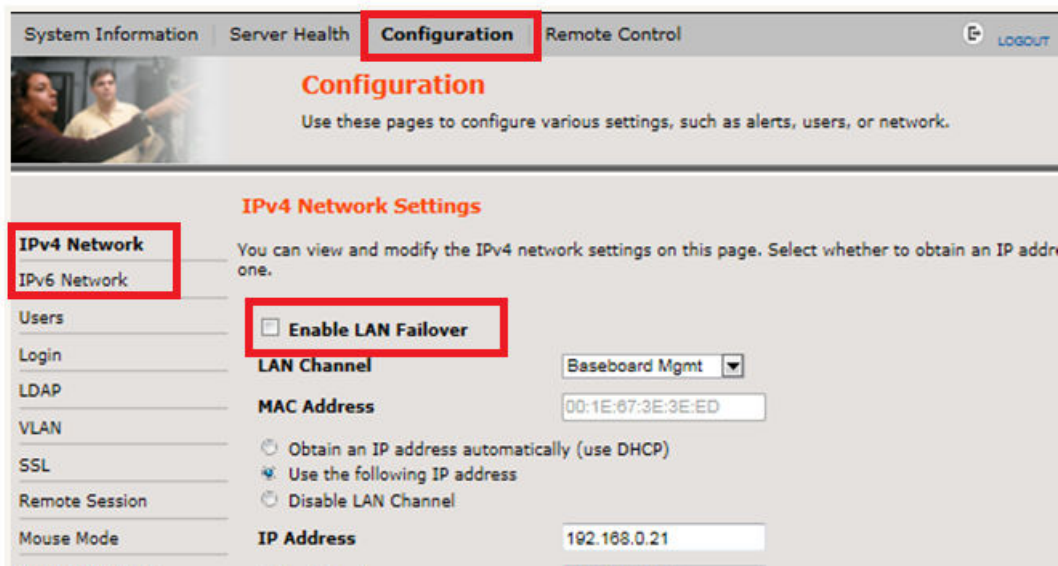**ANSWER:** No.

13.   What's the default username & password of BMC of Altos R380 F3?

ANSWER:

Username: `root`

Password: `superuser`

14.   How do I enable the failover function for BMC connection?

ANSWER: Please enter connect to Smart Console and select **Configuration** -> **IPv4Network** or **IPv6 Network**. You will see the Enable LAN Failover available.

15.   How do I enable/disable SOL (Serial Over LAN) function of BMC?

ANSWER: Please enter BIOS Setup during POST.

a.   **Select** `Setup Menu`

b.   **Select** `Server Management`

c.   **Select** `Console Redirection`.

d.   **You would see below information..**

```
SOL for Baseboard Mgmt          <Disable>
SOL for Baseboard Mgmt 2        <Disabled>
SOL for Dedicated Mgmt NIC      <Disabled>
Console Redirection             <Disabled>
Legacy OS Redirection           <Disabled>
Terminal Resolution             <80x24>
```

16.   What is IPMITOOL?

ANSWER: The ipmitool program provides a simple command-line interface to BMC. It features the ability to read the SDR (sensor data repository) and print sensor values, display the contents of the SEL (System Event Log), print FRU (Field Replaceable Unit) inventory information, and perform remote power control.

More information can be found at:

http://ipmitool.sourceforge.net/

http://ipmitool.sourceforge.net/manpage.html

17. Where can I find the IPMITOOL utility for Linux?

    ANSWER: The ipmitool is available as OS built-in command in both Red Hat Enterprise Linux 5 (or later) and SuSE Linux Enterprise Server 11 (or later).

18. Where can I find the IPMITOOL utility for Windows?

    ANSWER: The ipmitool utility currently is for Linux only.

    For Windows, IPMIUTIL utility for Windows can be downloaded from

    http://ipmiutil.sourceforge.net/

3. Chassis

1. Does Altos R380 F3 chassis support redundant system fans?

    ANSWER: Yes.

2. Are the systems fans on Altos R380 F3 hot swappable?

    ANSWER: Yes.

3. Does Altos R380 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 R380 F3?

    ANSWER: No, Altos R380 F3 only supports external USB FDD.

5. Can I install ODD (Optical Disk Drive) on Altos R380 F3?

    ANSWER: Yes.

6. Does Altos R380 F3 support chassis intrusion detection?

    ANSWER: Yes.

7. How many serial ports does Altos R380 F3 support?

    ANSWER: 1.

4. CPU

1. Does Altos R380 F3 feature FSB (front side bus)?

   ANSWER: No, Altos R380 F3 does not have any FSB.

2. Since there is no front side bus, how can the processors 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 R380 F3 support multi-core?

   ANSWER: Yes. Altos R380 F3 can support up to 16-core.

6. When Altos R380 F3 is installed with 2 16-core processor with Hyper-threading support, there will be totally 64 logical processors. Which OS can support 64 logical processors on Altos R380 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 R380 F3	Note
Windows Server 2012 R2 Datacenter Edition/Standard Edition	N/A	64-bit	64	640	64	
Windows Server 2012 Datacenter Edition/Standard Edition	N/A	64-bit	64	640	64	
Red Hat Enterprise Linux 6	Update 5	64-bit	128	4096	64	
		32-bit	32	32	64	
SuSE Linux Enterprise Server 11	SP3	64-bit	64	4096	64	
		32-bit	32	32	64	

7. Does Altos R380 F3 support EM64T (Extended Memory 64 Technology)?

   ANSWER: Yes.

8. Where can I know the CPU ID of processor installed on Altos R380 F3?

    ANSWER: Please enter BIOS Setup during POST

    a. Please select `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Processor Configuration`.

    d. You shall see below information:.

    ```
    Processor Socket:          CPU1      CPU2
    Processor ID:         30-6F-2*|   30-6F-2
    Processor Frequency:  2.600GHz|  2.600GHz
    Microcode Revision:   0000002D|  0000002D
    ```

    In this example, the CPU ID is `306F2`.

9. Does Altos R380 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 `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Processor Configuration`.

    d. You would see below information:

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

11. Does Altos R380 F3 support EIST (Enhanced Intel Speed-Step Technology)?

    ANSWER: Yes, Altos R380 F3 can support EIST.

12. How do I enable/disable EIST?

    ANSWER: Please enter BIOS Setup during POST.

    a. Please select `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Power & Performance`.

    d. Please select `CPU P State Control`.

    e. You would see below information:

    ```
    Enhanced Intel SpeedStep(R) Tech:      <Enabled>
    ```

13. Does Altos R380 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 `Setup Menu`.

b. Please select `Advanced`.

c. Please select `Processor Configuration`

d. You would see below information:

    `Intel(R) Virtualization Technology:      <Enabled>`

15. Does Altos R380 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 `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Power & Performance`

    d. Please select `CPU P State Control`.

    e. You would see below information:

        `Intel(R) Turbo Boost Technology          [Enabled]`

17. Does Altos R380 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 `Setup Menu`.

    b. Please select `Advanced`.

    c. You would see below information:

        `Active Processor Cores:                [All]`

    d. Please change `Active Processor Cores` from `All` to `1, 2, 3, 4, 5, 6, 7`.

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

5. Expansion Slots

1. How many PCI slots can Altos R380 F3 support?

    ANSWER: 8 PCIe slots and 1 IO module and 1 SAS module.

    - Riser #1

Expansion Slots #	Technology	Bus Width	Connector Width	Form Factor	Note
1 (top)	PCIe Gen3	X8	X16	Full Height Full Length	1
2	PCIe Gen3	X8	X16	Full Height Full Length	1
3	PCIe Gen3	X8	X8	Full Height Half Length	2

NOTE 1. These slots are connected to CPU1.

NOTE 2. These slots are connected to CPU2.

    - Riser #2

Expansion Slots #	Technology	Bus Width	Connector Width	Form Factor	Note
1 (top)	PCIe Gen3	X8	X16	Full Height Full Length	1
2	PCIe Gen3	X8	X16	Full Height Full Length	1
3	PCIe Gen3	X8	X8	Full Height Half Length	1

NOTE 1. These slots are connected to CPU2.

    - Riser #3

Expansion Slots #	Technology	Bus Width	Connector Width	Form Factor	Note
1 (top)	PCIe Gen2	X4	X8	Low Profile	1
2	PCIe Gen3	X8	X8	Low Profile	1

NOTE. 3rd Riser might be optional in some SKU of Altos R380 F3.

2. Can I install x1 PCI-Express adapter on Altos R380 F3?

    ANSWER: Yes.

3. Can I install x4 PCI-Express adapter on Altos R380 F3?

ANSWER: Yes.

4. Can I install x8 PCI-Express adapter on Altos R380 F3?

    ANSWER: Yes.

5. Can I install x16 PCI-Express adapter on Altos R380 F3?

    ANSWER: Yes.

6. Does Altos R380 F3 PCI-Express slot support hot-plug?

    ANSWER: No.

6. IO Module

1. What is IO module?

   ANSWER: IO Module is a proprietary add-on adapter and cannot be installed in standard PCI-E slot.

2. Where should I install the IO module?

   ANSWER: Please refer to the picture below.
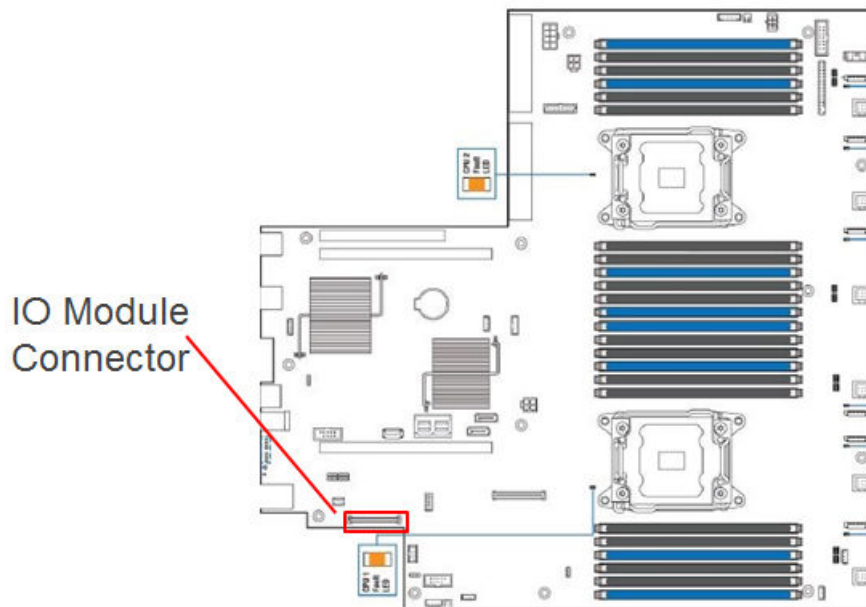
   NOTE. IO Module connector is connected to CPU1.

3. Can I install IO module in standard PCI-E expansion slot?

   ANSWER: No. IO module can ONLY be installed on IO module connector.

7. iSCSI

1. Can Altos R380 F3 onboard Gigabit support iSCSI?

   ANSWER: Yes, Altos R380 F3 onboard Gigabit can support iSCSI.

2. Do I need an iSCSI HBA (Host Bus Adapter) on Altos R380 F3 to support iSCSI?

   ANSWER: No, Altos R380 F3 can support iSCSI with onboard Gigabit and iSCSI Software

   NOTE. iSCSI Initiator HBA is not planned for Altos R380 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 has 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 R380 F3 onboard Gigabit support boot from iSCSI?

   ANSWER: Yes.

5. How do I enable iSCSI Boot on Altos R380 F3?

   ANSWER: Please enter BIOS Setup during POST.

   a. Select `Setup Menu`.

   b. Select `Advanced`.

   c. Select `PCI Configuration`.

   d. Select `NIC Configuration`

   e. You would see below information.

   ```
   PXE 10GbE Option ROM          [Enabled]
   FcoE 10GbE Option ROM         [Disabled]
   iSCSI 1GbE/10GbE Option ROM  [Disabled]
   ```

   f. Please change `PXE 10GbE Option ROM` from `Enabled` to `Disabled` and `iSCSI 1GbE/10GbE Option ROM` from `Disabled` to `Enabled`

   ```
   PXE 10GbE Option ROM          [Disabled]
   FcoE 10GbE Option ROM         [Disabled]
   iSCSI 1GbE/10GbE Option ROM   [Enabled]
   ```

   g. Save the setting and exit from BIOS Setup.

6. How do I configure iSCSI Boot on Altos R380 F3?

   ANSWER: Please follow the procedures below.

   a. Please press **CTRL-D** when you see below information during POST.
   ```
   Intel (R) iSCSI Remote Boot version 3.0.34
   Copyright (c) 2003-2014 Intel Corporation. All rights reserved.
   Press ESC key to skip iSCSI boot initialization.
   Press <Ctrl-D> to run setup...
   ```

b. Select the NIC port you want to configure the iSCSI feature in `iSCSI Port Selection`.

c. Select iSCSI Boot priority for the specific NIC port.

d. 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 Boot Configuration ==========
 [ ] Use dynamic IP configuration (DHCP)
   Initiator Name:   iqn.2008.com.ac
   Initiator IP:     192.168.10.50
   Subnet Mask:      255.255.255.0
   Gateway:          0.0.0.0
   VLAN ID:


 [ ] Use DHCP for iSCSI Target information
   Target Name:      iqn.1994-04.jp.c
   Target IP:        192.168.10.201
   Target Port:      3260
   Boot LUN:         0
      Press spacebar to change
   [OK]                    [Cancel]
```

e. 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 3.0.34
Copyright (c) 2002-2014 Intel Corporation. All rights reserved.
Press ESC key to skip iSCSI boot initialization.


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. 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.

8. How do I specify the IQN (iSCSI Qualified Name) in Windows Server 2012 R2?

ANSWER: Please launch the Microsoft iSCSI Software initiator and select Configuration tab. You can specify the IQN by clicking Change.
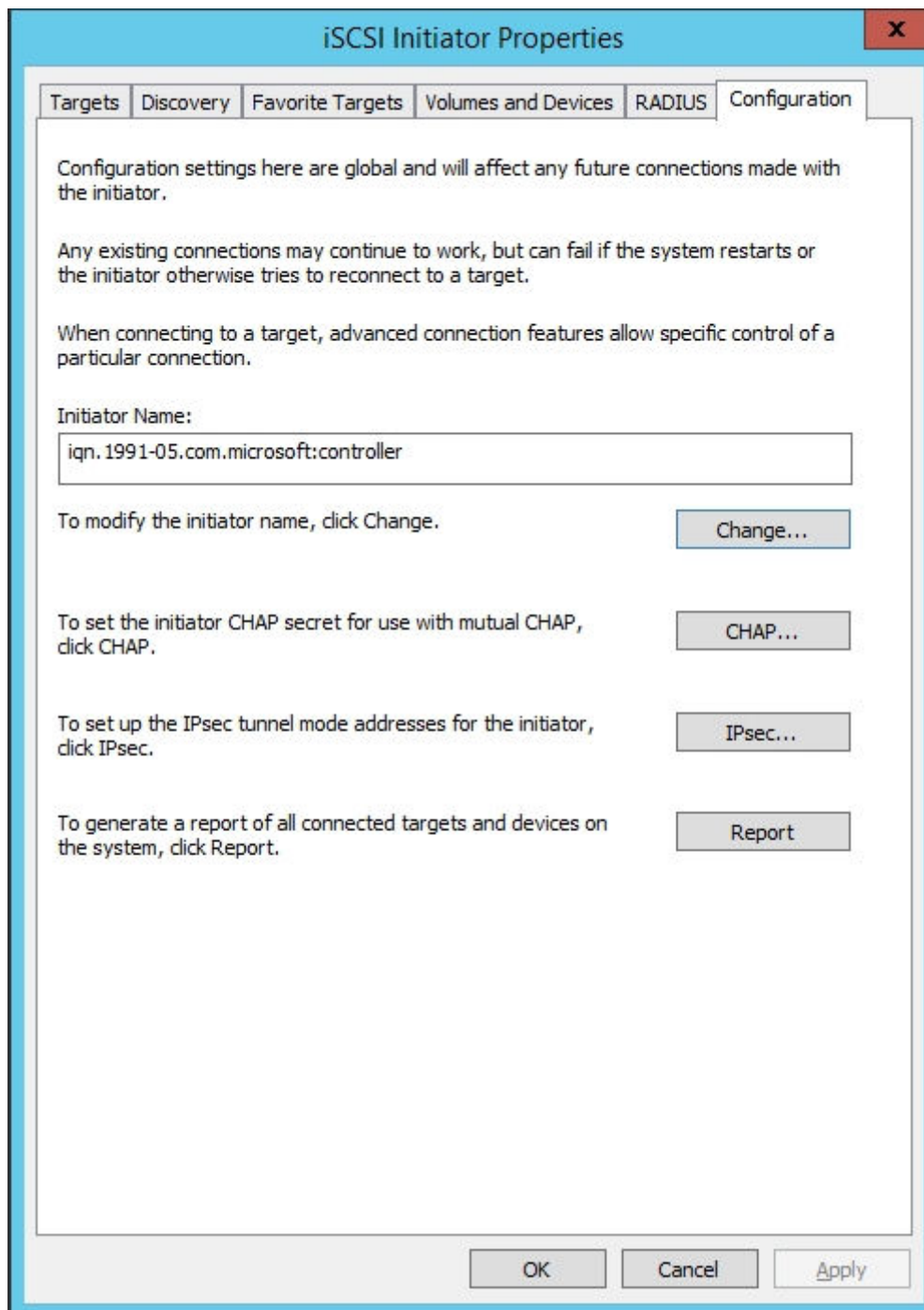
9. How do I specify the IQN (iSCSI Qualified Name) in Linux?

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

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

10. 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.

8. Main-board

1. How do I identify the main-board revision of Altos R380 F3?

   ANSWER: Please refer to the picture below to check the revision of the main-board. It will be like this, `PBA G92187-350`.
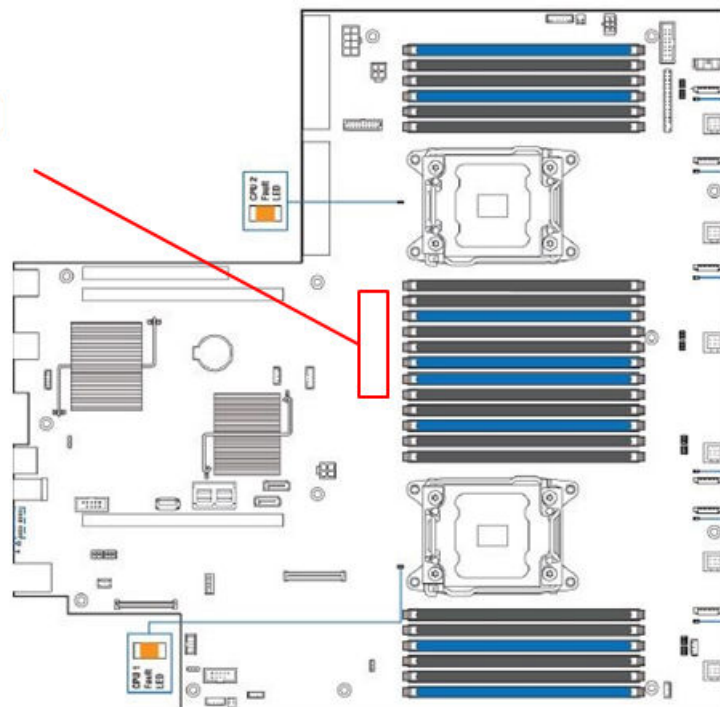
9. Memory

1. What memory technology does Altos R380 F3 support?

    ANSWER: DDR4 2133 registered or load reduced DIMM.

    NOTE. Memory speed will depend on the Intel Xeon E5-2600 v3 processor as the memory controller is integrated in the processor itself. Different processor supports different max memory speed, from DDR4-1600 to DDR4-2133.

    NOTE. Memory speed will be very according to # of DIMMs installed per memory channel, voltage of DIMM and rank # of DIMM. This is the limitation of Intel Xeon E5-2600 v3 processor as the memory controller is integrated in the processor itself.

2. Can I install DDR3 memory on Altos R380 F3?

    ANSWER: No, Altos R380 F3 can only support DDR4 memory.

3. How many DIMM slots can Altos R380 F3 support?

    ANSWER: 12 DIMM slots pre processor

    When there are two processors, Altos R380 F3 can support 24 DIMM.

    When there is only one processor, Altos R380 F3 can support 12 DIMM. (In this case, memory installed at DIMM slots E1, E2, E3, F1, F2, F3, G1, G2, G3, H1, H2 and H3 cannot be detected).

	Ranks per DIMM	# of DIMM per Memory Channel	Total # of DIMM	Note
RDIMM	Single Rank	3	24	
	Dual Rank	3	24	

4. How much memory can Altos R380 F3 support?

    ANSWER: 768 GB when 24 of 32GB RDIMM are installed.

5. Can Altos R380 F3 support memory interleave?

    ANSWER: Yes, Altos R380 F3 features 4 memory channels

6. Can I install one single DIMM on Altos R380 F3?

    ANSWER: Yes.

7. Can I install three DIMMs on Altos R380 F3?

    ANSWER: Yes.

8. Is there any guideline about the memory population?

    ANSWER: Please refer to Altos R380 F3 Product Spec.

9. Does Altos R380 F3 support Chip-Kill technology?

    ANSWER: Altos R380 F3 supports SDDC (Single Device Data Correction) memory technology which provides the same memory RAS feature as Chip-Kill.

10. What Memory RAS feature does Altos R380 F3 support?

    ANSWER: Memory RAS features including memory mirroring, sparing and lockstep are supported on both RDIMM.

11. How do I enable memory mirroring?

    ANSWER: Please enter BIOS Setup during POST.

    a. Please select `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Memory Configuration`.

    d. Please select `Memory RAS and Performance Configuration`

    e. You would see below options:

       `Select Memory RAS Configuration    <Maximum Performance>`

    f. Please change the setting of `Select Memory RAS Configuration`. You will see the following options available.
       - `Maximum Performance`
       - `Mirroring`
       - `Lockstep`
       - `Sparing`

    g. Please select `Mirroring`

       NOTE. The `Sparing` only available with quad rank DIMM

       NOTE. The `Mirroring`, `Sparing` or `Lockstep` option might not be available if the memory population does not follow the guideline.

    h. Please save the setting before exiting from BIOS Setup.

12. How does memory mirroring work?

    ANSWER: The memory mirroring feature is fundamentally a way for hardware to maintain two copies of all data in memory subsystem, such that a hardware failure or multiple-bit error is no longer fatal to the system. When a multiple-bit error is encountered during normal operation, hardware simply retrieves the "mirror" copy of the corrupted data, and no system failure will occur unless both primary and mirror copies of the same data are corrupt simultaneously.

13. Is there any guideline about the memory DIMM population for memory mirroring?

    ANSWER: Please refer to Altos R380 F3 Product Spec.

14. How do I enable memory sparing

    ANSWER: Please enter BIOS Setup during POST.

    a. Please select `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Memory Configuration`.

    d. Please select `Memory RAS and Performance Configuration`

    e. You would see below options:

       `Select Memory RAS Configuration    <Maximum Performance>`

    f. Please change the setting of `Select Memory RAS Configuration`. You will see the following options available.
       - `Maximum Performance`
       - `Mirroring`

- Lockstep
- Sparing

g. Please select Sparing

NOTE. The Sparing only available with quad rank DIMM

NOTE. The Mirroring, Sparing or Lockstep option might not be available if the memory population does not follow the guideline.

h. Please save the setting before exiting from BIOS Setup.

15. How does memory sparing work?

ANSWER: Altos R380 F3 systems implements the tracking register per rank (not per DIMM) to maintain a history of error occurrence (Single-Bit error), and a programmable register to hold the fail-over error threshold level. If the count of errors on any rank exceeds that value, fail-over will commence.

Once fail-over has been initiated the memory controller (integrated in the processor) must execute every write twice; once to the primary rank, and once to the spare rank. (This requires that the spare rank must be least the size of the largest primary rank in use.) The duplicate write function will have copied every data location to the spare rank. At that point, the memory controller (integrated in the processor) can switch the spare into primary use, and take the failing rank off-line.

Note that this entire mechanism requires no software support once it has been programmed and enabled, until the threshold detection has been triggered to request a data copy. Hardware will detect the threshold initiating fail-over, and escalate the occurrence of that event as directed. Whatever software routine responds to the threshold detection will select a victim rank and initiate the memory copy. Hardware will automatically isolate the "failed" rank once the copy has completed. The data copy is accomplished by address aliasing within the memory control interface, thus it does not require reprogramming of the DRAM row boundary (DRB) registers, nor does it require notification to the operating system that anything has occurred in memory.

16. Is there any guideline about the memory DIMM population for memory sparing?

ANSWER: Please refer to Altos R380 F3 Product Spec.

17. Does Altos R380 F3 support memory mirroring for 6 DIMMs?

ANSWER: Yes, Altos R380 F3 can supports memory mirroring for 2, 4, 6, 8 DIMMs.

18. When fail-over of memory mirroring occurred, will there be any log in SEL to indicate the fail-over?

ANSWER: Yes, there will be a log in SEL when fail-over of memory mirroring occurred.

19. Can Smart Server Manager monitor the status of memory sparing/mirroring?

ANSWER: No, Smart Server Manager cannot monitor the status of memory sparing/mirroring on Altos R380 F3. Current hardware implementation of Altos R380 F3 doesn't support the status monitoring of memory sparing/mirroring.

20. Does Altos R380 F3 support hot-plug memory?

ANSWER: No.

21. Does Altos R380 F3 support RAIM (Redundant Array of Independent Memory)?

ANSWER: No.

22. What is "Lockstep mode"?

ANSWER: In Lockstep Channel Mode, each memory access is a 128-bit data access that spans channel A and channel B (channel C and channel D). Lockstep Channel mode is the only RAS mode that supports x8 SDDC.

Lockstep Channel Mode requires that channel A and channel B (channel D and channel E) must be populated identically with regards to size and organization.

Each bit of the ECC code appears in a pair of lockstepped channels. The symbols are arranged so that the data from every x8 DRAM is mapped to two adjacent symbols, so any failure of the DRAM can be corrected. The correction capabilities in lockstep mode are:

- Correction of any x4 or x8 DRAM device failure
- Detection of 99.986% of all single bit failures that occur in addition to a x8 DRAM failure. The Integrated Memory Controller will detect a series of failures on a specific DRAM and use this information in addition to the information provided by the code to achieve 100% detection of these cases.
- Detection of all permutations of 2 x4 DRAM failures.

23. How do I enable memory lockstep?

    ANSWER: Please enter BIOS Setup during POST.

    a. Please select `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `Memory Configuration`.

    d. Please select `Memory RAS and Performance Configuration`

    e. You would see below options:

    `Select Memory RAS Configuration     [Maximum Performance]`

    f. Please change the setting of `Select Memory RAS Configuration`. You will see the following options available.
       - `Maximum Performance`
       - `Mirroring`
       - `Lockstep`
       - `Sparing`

    g. Please select `Lockstep`

       NOTE. The `Sparing` only available with quad rank DIMM

       NOTE. The `Mirroring`, `Sparing` or `Lockstep` option might not be available if the memory population does not follow the guideline.

    h. Please save the setting before exiting from BIOS Setup.

24. Is there any guideline about the memory DIMM population for memory lockstep?

    ANSWER: Please refer to Altos R380 F3 Product Spec.

25. What is "Independent mode"? Does it mean the DIMM A1, B1 C1 and D1 of processor 1 no need to be the same (capacity, model, etc) in Independent mode?

    ANSWER: Independent mode is the general mode without Mirror, lockstep functions enabled. Please populate the same DIMM at DIMM A1, B1 C1 and D1 of Processor 1.

26. There is always no DIMM populated in memory channel F, F, G & H of Processor 2 when processor 2 is not installed. Does it mean CPU2 is required to support processor 2 - memory DIMM E1, F1, G1 and H1 of processor 2?

    ANSWER: Yes. Processor 2 is required to support memory channel E, F, G & H of processor 2.

27. Which DIMM would be primary In "Mirror mode"? For example, is it data copied from A1 to C1 of processor 1 when DIMM A1 and C1 of processor 1 are installed?

ANSWER: DIMM A1 and C1 of processor 1 are accessed at the same time.

28. One DIMM or two DIMMs configuration is suggested with Altos R380 F3?

ANSWER: Altos R380 F3 supports one DIMM or two DIMMs configuration. But please install 4 DIMMs to each processor for best performance.

29. When Altos R380 F3 is equipped with two processors, can I just install 4 DIMMs in DIMM A1, B1, C1 and D1 of processor 1? I mean in this configuration, can CPU2 still access the memory that connected to CPU1 only?

ANSWER: Yes, CPU2 still can access the memory on CPU1 through the QPI (QuickPath Interconnect) between processors.

However, it is recommended to install DIMMs on each processor. So, each processor has its own local memory (belong to the memory controller of this processor) which has better bandwidth and lower latency than remote memory (belonging to the neighboring controller).

10. More Information

1. Where can I find more information of Altos R380 F3?

    ANSWER: Please refer to below documents:

	Document Title	Description	Note
1	Altos R380 F3 What's New	Overview of new features & technologies of Altos R380 F3.	
2	Altos R380 F3 THOL (Tested Hardware & Operating System List)	This document is intended to provide users of the Altos R380 F3 with a guide to the different hardware and operating systems tested on this platform.	
3	Altos R380 F3 ICG (Installation Configuration Guide)	This document provides you a quick OS installation guide on Altos R380 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

11. Onboard Gigabit

1. What's the onboard Ethernet controller of Altos R380 F3?

    ANSWER: There 2 SKUs of Altos R380 F3. One is with dual 10 Gigabit Ethernet (Intel AT540-AT2), another is with dual Gigabit Ethernet (Intel I350).

    More information of Intel I350 Ethernet controller can be found at:

    http://ark.intel.com/products/52966/Intel-Ethernet-Controller-I350-AM4

2. What features can Altos R380 F3 onboard Gigabit Support?

    ANSWER: Please refer to the table below.

Features	Onboard 10 Gigabit	Onboard Gigabit	NOTE
# of ports	2	2	1
Network Teaming	Yes	Yes	
WOL (Wake On LAN)	Yes	Yes	
PXE (Pre-boot eXecution Environment)	Yes	Yes	
TOE (TCP Offload Engine)	n/a	n/a	
Jumbo Frame	9.5 KB	9.5 KB	
iSCSI	Yes	Yes	2
iSCSI Boot	Yes	Yes	2
FCoE	Yes	NO	

    NOTE 1. All ports of onboard Gigabit are connected to CPU1.

    NOTE 2. Please refer to iSCSI section for more detail.

3. Can Altos R380 F3 support network teaming, such as AFT (Adapter Fault Tolerance) and ALB (Adaptive Load Balance) with onboard Gigabit/10 Gigabit?

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

    More information can be found at:
    http://www.intel.com/support/network/sb/cs-009747.htm

4. Is there any BIOS option to enable/disable Altos R380 F3 onboard gigabit?

    ANSWER: Yes. Please enter BIOS Setup during POST.

    a. Please select `Setup Menu`.

    b. Please select `Advanced`.

    c. Please select `PCI Configuration`.

    d. Please select `NIC Configuration`

    e. You would see below information:

    ```
    NIC1 Controller                 [Enabled]
    NIC1 Port1                      [Enabled]
    NIC1 Port2                      [Enabled]
    ```

```
NIC1 Port1 PXE                          [Enabled]
NIC1 Port2 PXE                          [Enabled]
```

5. Does Altos R380 F3 onboard gigabit support VMDq (Virtual Machine Device Queues)?

    http://www.intel.com/content/www/us/en/virtualization/vmdq-technology-paper.html?wapkw=vmdq

    ANSWER: Yes.

6. Is Altos R380 F3 onboard gigabit PCI-Express 2.0?

    ANSWER: Yes, it is PCI-Express 2.0. It supports 5 GT/s .

7. What is the device name of onboard gigabit in Linux?

    ANSWER: It is usually like this. eth$n$, for example, eth0 .

    You can use below command to check the Ethernet status.

    ```
    # ifconfig eth0
    ```

8. How do I know the link speed of onboard gigabit in Linux?

    ANSWER:

    ```
    # ethtool eth0
    ```

12. Onboard SATA Software RAID (ESRT2)

1. What RAID features can Intel Onboard SATA ESRT2 RAID support?

    ANSWER: Please refer to the table below.

Features	Intel Onboard SATA ESRT2 RAID	NOTE
SAS BP LED Control (through SGPIO)	Yes	
Hardware RAID	No	
Cache Memory of RAID	N/A	
BBU (Battery Backup Unit)	N/A	
Connector	N/A	
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	No	

NOTE 1. Not every OS can support disk space more than 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 SAS/SATA ESRTII RAID support?

    ANSWER: Please refer to below table:

Operating Systems	Service Pack	32-bit/ 64-bit	Driver	RAID Utility	Note
Windows Server 2012 R2	N/A	64-bit	Yes	Yes	
Windows Server 2012	N/A	64-bit	Yes	Yes	
Red Hat Enterprise Linux 6	Update 5	64-bit	Yes	Yes	

		32-bit	Yes	Yes	
SuSE Linux Enterprise Server 11	SP3	64-bit	Yes	Yes	
		32-bit	Yes	Yes	
VMware ESXi 5.5	N/A	64-bit	No	No	

3. How do I know the firmware version of Intel Onboard SATA ESRT2 RAID?

    ANSWER: During POST, you would see below information:

    ```
    Intel(R) Embedded Server RAID Technology 2 Version A.14.10171446I
    [PCI 0/11] sSATA Controller
    Device present at port 0    ST91000640NS                    953357MB
    Device present at port 1    ST91000640NS                    953357MB


    01 Virtual drive(s) Configured.
    Array#      Mode        Stripe Size    No.Of Stripes   DriveSize    Status
    00          RAID 1         64KB              02         952720MB    Online


    >>>>>> Press <Ctrl-E> or enter ESRT2 sSATA <<<<<<
    (c)2009 Copyright LSI Corporation. All Rights Reserved.
    ```

    In this example, the firmware version is A.14.10171446I.

4. Can I update the BIOS and firmware of Intel Onboard SATA ESRT2 RAID?

    ANSWER: No, the BIOS & firmware of Intel Onboard SATA ESRT2 RAID is embedded in Altos R380 F3 system BIOS and cannot be updated.

5. How do I enable Intel Onboard SATA ESRT2 RAID?

    ANSWER: Please refer to Appendix B of Altos R380 F3 ICG (Installation Configuration Guide)

6. How do I configure Intel Onboard SATA ESRT2 RAID?

    ANSWER: Please refer to Appendix B of Altos R380 F3 ICG (Installation Configuration Guide).

7. Is there any step-by-step procedure to create RAID with Intel Onboard SATA ESRT2 RAID?

    ANSWER: Please refer to Appendix B. of Altos R380 F3 ICG (Installation Configuration Guide).

8. What RAID utility does Intel Onboard SATA ESRT2 RAID support?

    ANSWER: RAID Web Console 2 for Windows & Linux.

9. Where can I find the RAID utility of Intel Onboard SATA ESRT2 RAID?

    ANSWER: The RAID utility can be found in Resource Kit DVD.

10. Can I see Intel Onboard SATA ESRT2 RAID BIOS during POST if there is only one hard drive installed and Intel Onboard SATA ESRT2 software RAID enabled?

    ANSWER: Yes.

11. Can I configure Intel Onboard SATA ESRT2 RAID with one hard drive?

    ANSWER: Yes.

12. Do I need to install the RAID Utility to enable the RAID rebuilt of Intel Onboard SATA ESRT2 RAID?

    ANSWER: No. The RAID rebuilt of Intel Onboard SATA ESRT2 RAID will be functional with or without the

installation of RAID Utility.

13. Does the Intel Onboard SATA ESRT2 RAID support HDD location function?

   ANSWER: Yes.

14. What is the default setting of disk write cache of Intel Onboard SAS/SATA ESRTII RAID?

   ANSWER: The disk write cache is enabled by default.

15. How do I enable/disable disk write cache of Intel Onboard SATA ESRT2 RAID?

   ANSWER: The disk write cache is enabled by default.

   You can enter the Intel Onboard SATA ESRT2 RAID BIOS Utility.
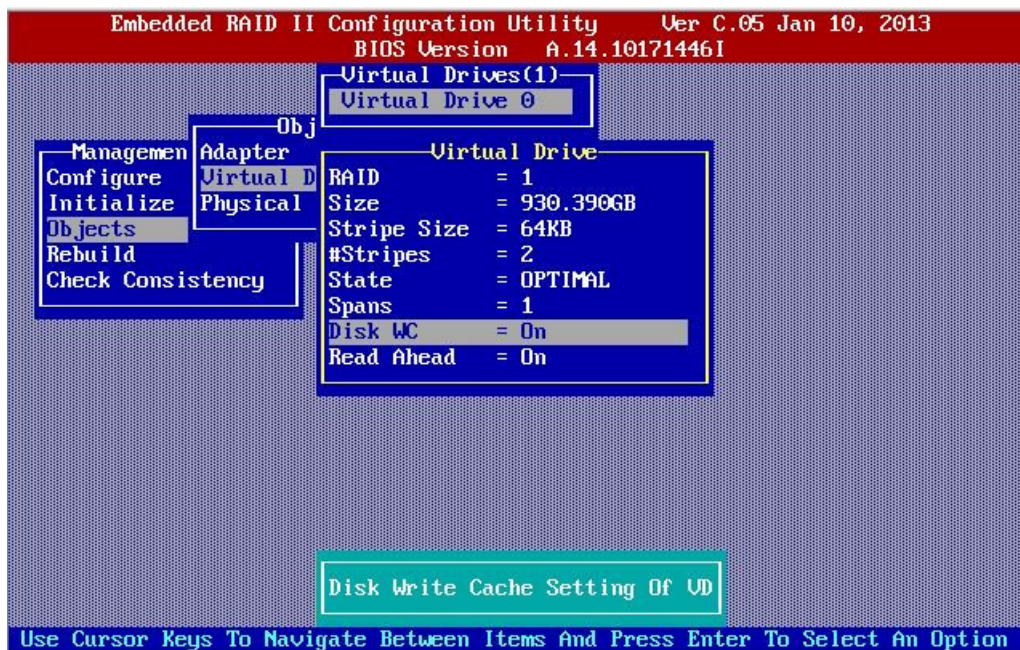
16. How do I enable/disable the logical drive write cache of Intel Onboard SATA ESRT2 RAID?

   ANSWER: Please follow the procedures below.

   a. Please launch the RAID utility in Windows or Linux.

   b. Click on Logical tab.

   c. Right-click on the RAID volume that you want to change the write cache setting.
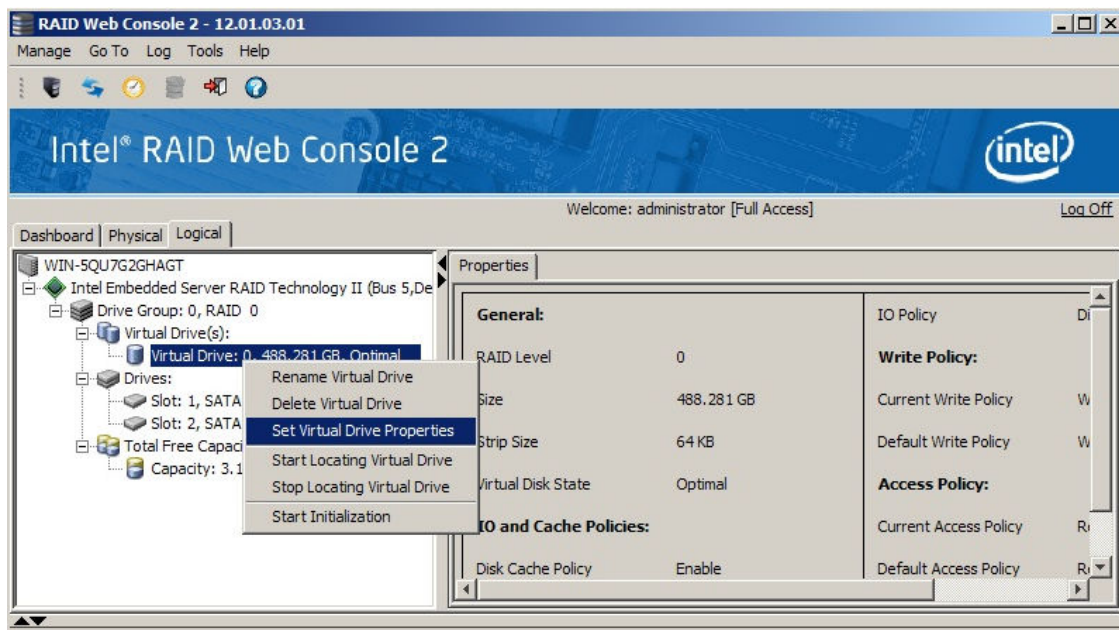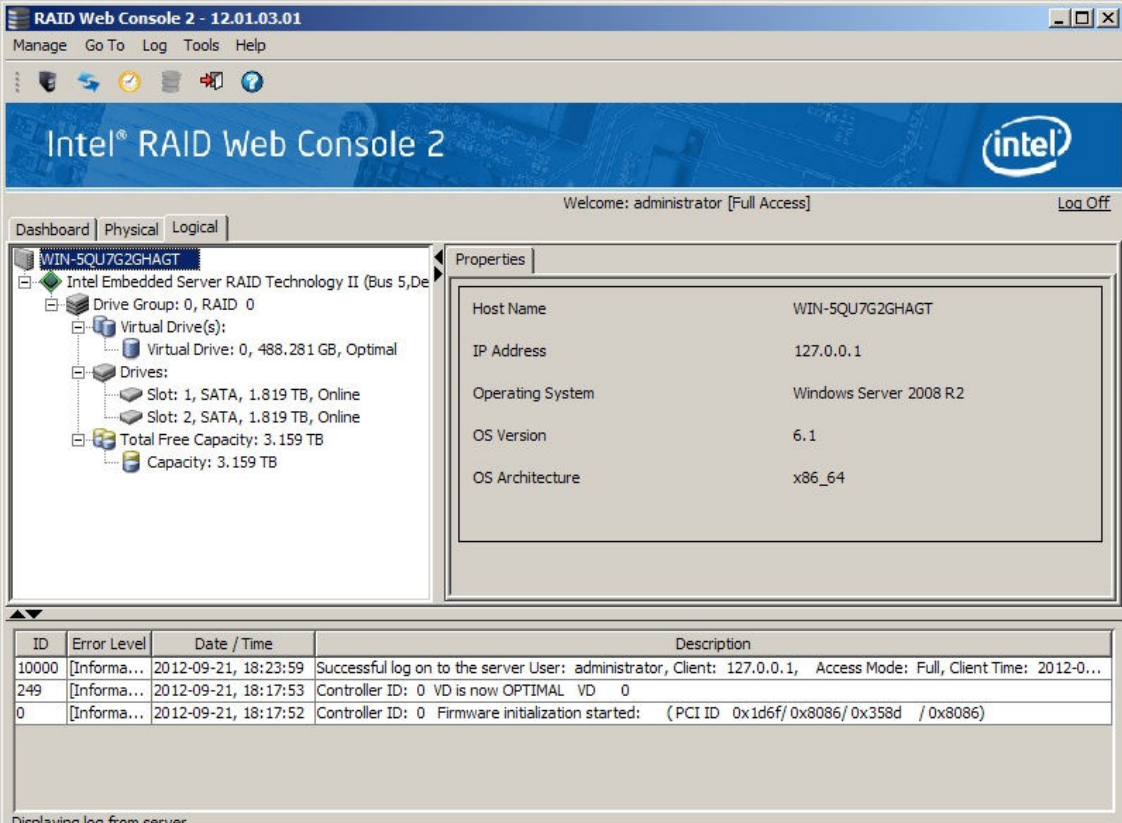
d.   Select Set Virtual Drive Properties

e.   Change the setting of Write Policy option to "Write Through" or "Always Write Back" to disable or enable the write cache.
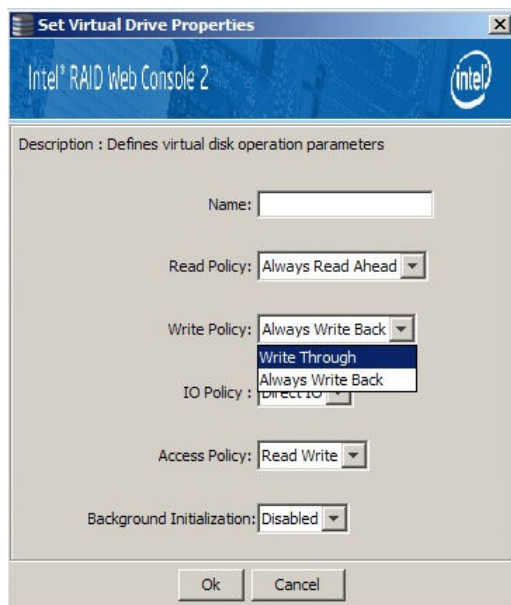
17.   How do I check the event log of Intel Onboard SATA ESRT2 RAID?

      ANSWER: The event log of Intel Onboard SATA ESRT2 RAID can be found at the bottom of RAID utility.

13. Onboard SATA Software RAID (RSTe)

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

   ANSWER: Please refer to the table below.

Features	Intel Onboard SATA RSTe RAID	NOTE
SAS BP LED Control (through SGPIO)	Yes	
Hardware RAID	No	
Cache Memory of RAID	N/A	
BBU (Battery Backup Unit)	N/A	
Connector	N/A	
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 more than 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 RSTe RAID support?

   ANSWER: Please refer to below table:

Operating Systems	Service Pack	32-bit/ 64-bit	Driver	RAID Utility	Note
Windows Server 2012 R2	N/A	64-bit	Yes	Yes	
Windows Server 2012	N/A	64-bit	Yes	Yes	
Red Hat Enterprise Linux 6	Update 5	64-bit	No	No	

		32-bit	No	No	
SuSE Linux Enterprise Server 11	SP3	64-bit	No	No	
		32-bit	No	No	
VMware ESXi 5.5	Update 2	64-bit	No	No	

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

   ANSWER: During POST, you would see below information:

   ```
   Intel(R) Rapid Storage Technology enterprise – sSATA Option ROM – 4.1.0.1020
   Copyright(R) 2003-14 Intel Corporation. All Rights Reserved.


   RAID Volumes:
   ID   Name            Level           Strip   Size    Status    Bootable
   0    Volume0         RAID1(Mirror)   N/A     884.9GB Normal    Yes
   Physical Devices:
   ID  Device Model     Serial #                Size Type/Status(Vol ID)
   0   ST91000640NS     9XG14KC5                931.5GB Member Disk(0)
   1   ST91000640NS     9XG143A6                931.5GB Member Disk(0)
   Press <Ctrl-I> to enter Configuration Utility.....
   ```

   In this example, the firmware version is 4.1.0.1020.

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

   ANSWER: No, the BIOS & firmware of Intel Onboard SATA RSTe RAID is embedded in Altos R380 F3 system BIOS and cannot be updated.

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

   ANSWER: Please refer to Appendix A of Altos R380 F3 ICG (Installation Configuration Guide)

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

   ANSWER: Please refer to Appendix A of Altos R380 F3 ICG (Installation Configuration Guide)

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

   ANSWER: Please refer to Appendix A. of Altos R380 F3 ICG (Installation Configuration Guide).

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

   ANSWER: Rapid Storage Technology enterprise Utility.

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

   ANSWER: The RAID utility can be found in Altos R380 F3 Resource DVD.

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

    ANSWER: No, if the HDD is new or not configured with RAID.

    But, if the HDD has been configured with RAID, you still can see the RAID BIOS during POST.

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

    ANSWER: No. the minimum hard drive required is two to configure the Intel Onboard SATA RSTe RAID with Altos R380 F3.

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

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

13. Does the Intel Onboard SATA RSTe RAID support HDD location function?

ANSWER: Yes.

14. What is the default setting of disk write cache of Intel Onboard SATA RSTe RAID?

ANSWER: The disk write cache is enabled by default.

15. How do I enable/disable disk write cache of Intel Onboard SATA RSTe 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.
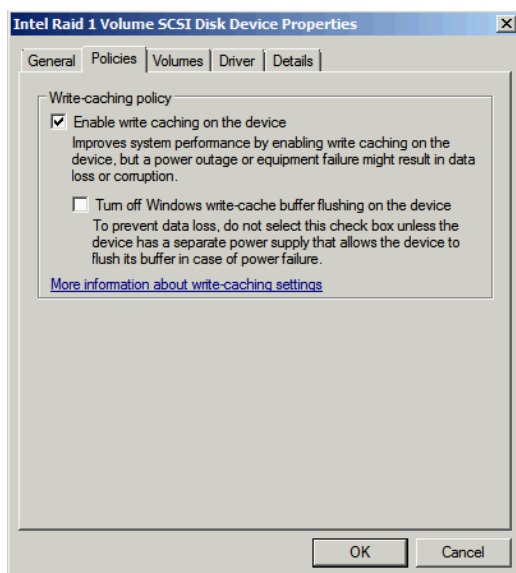
You can also check the disk write cache setting through RAID utility.

a. Please launch the RAID utility.

b. Click on the HDD that you want to check the disk data cache setting.

c. Expand the Details option.

d. You can see the setting of the disk data cache.
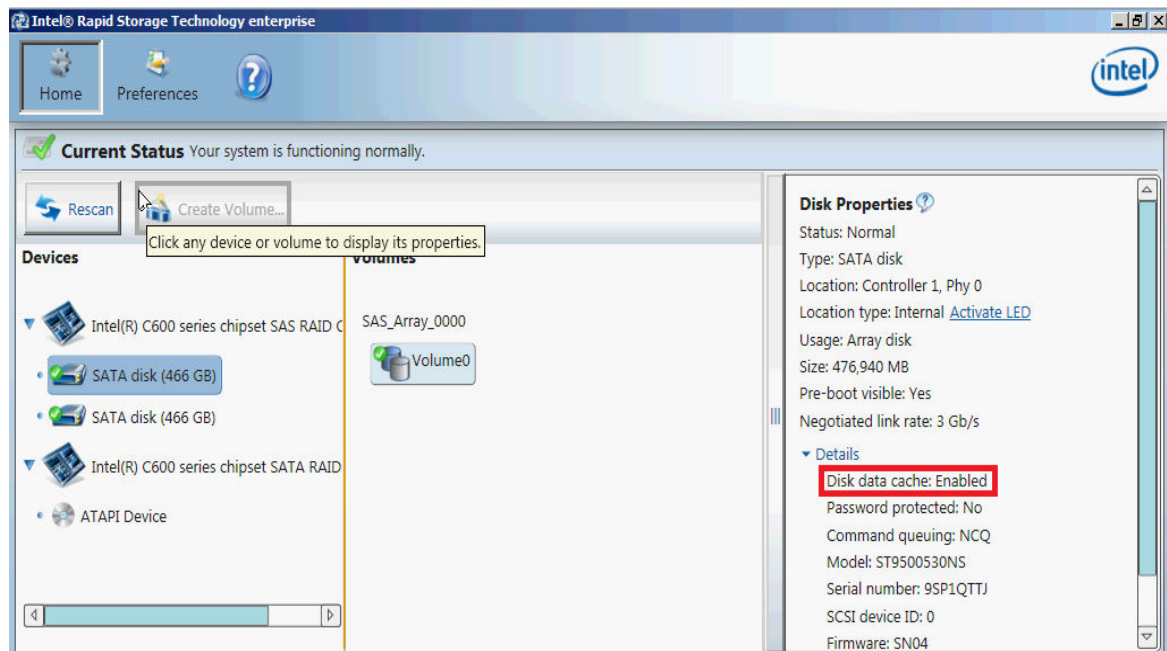
e.   If you disable it through Device Manager, you can see Disk data cache changed to Disabled.
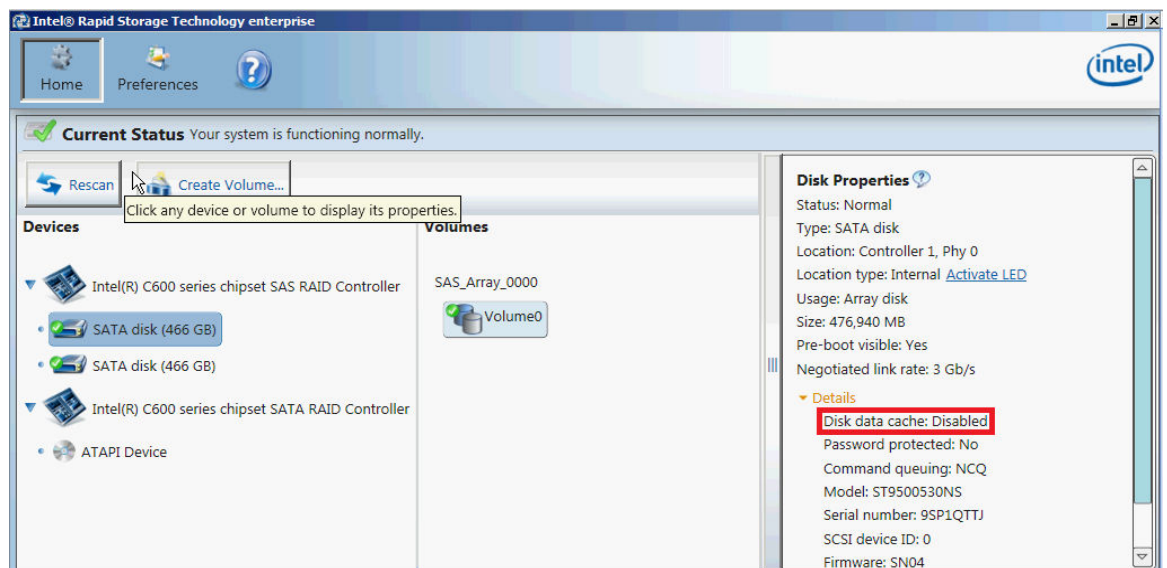
16.   What is volume write-back cache of Intel Onboard SATA RSTe RAID?

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

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

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

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

ANSWER: Please follow the procedures below.

a.   Please launch the RAID utility in Windows.

b.   Click on the RAID volume that you want to change the write cache setting.

c.   Click on Enable that in the Volume Properties for Write-back cache setting.
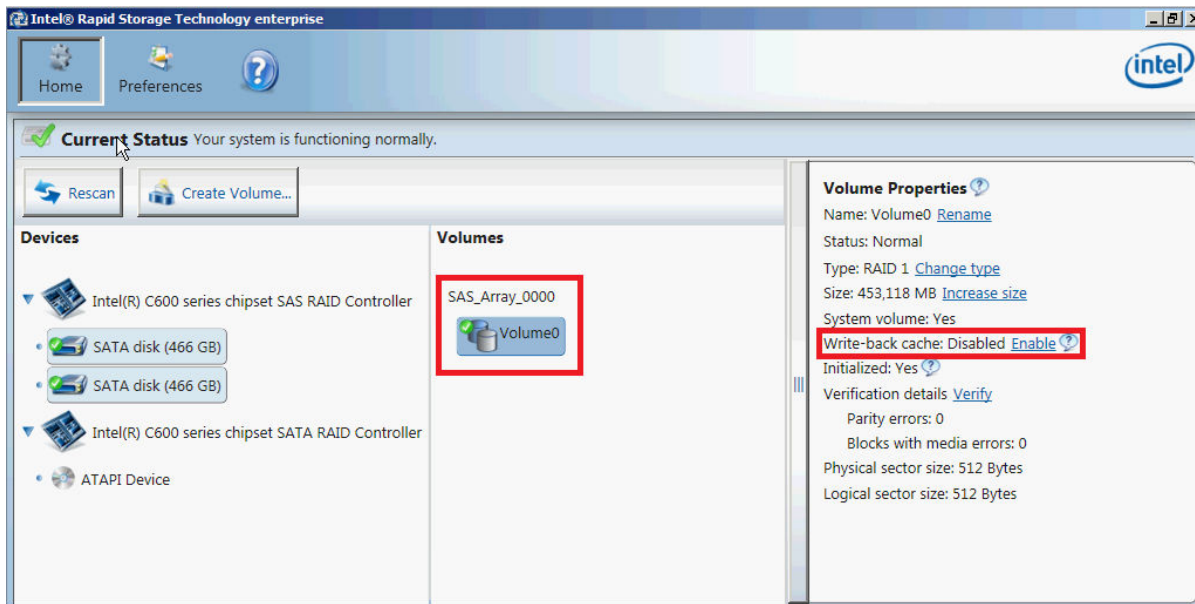
19. How do I check the event log of Intel Onboard SATA RSTe RAID?

    ANSWER: The event log of Intel Onboard SATA RSTe RAID can be found in Application of Windows Event Logs.
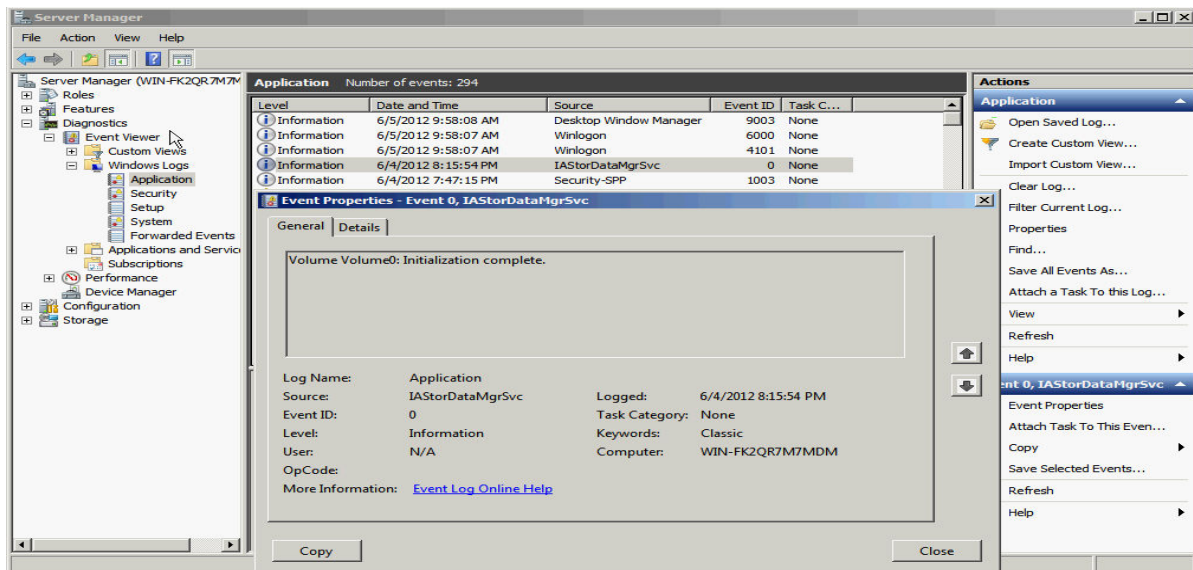
20. When I create 3 x 2 TB HDD as RAID 0, the Windows Server 2008 R2 can be installed. However, only 2 TB RAID Volume can be used.

ANSWER: Please follow the procedure below to split the RAID volume and make it less than 2TB.
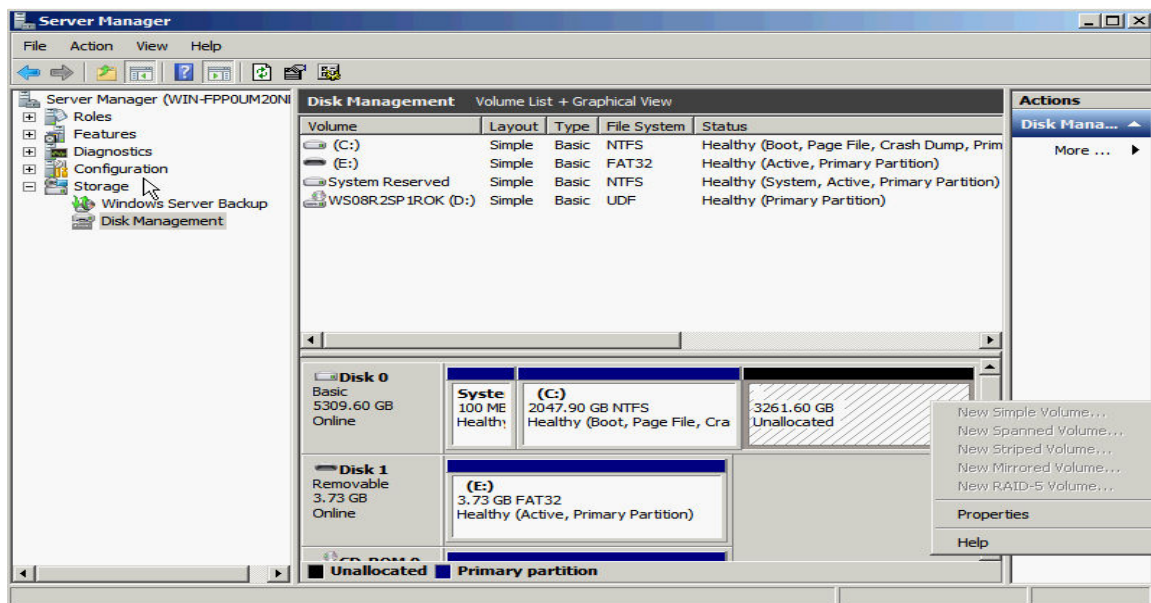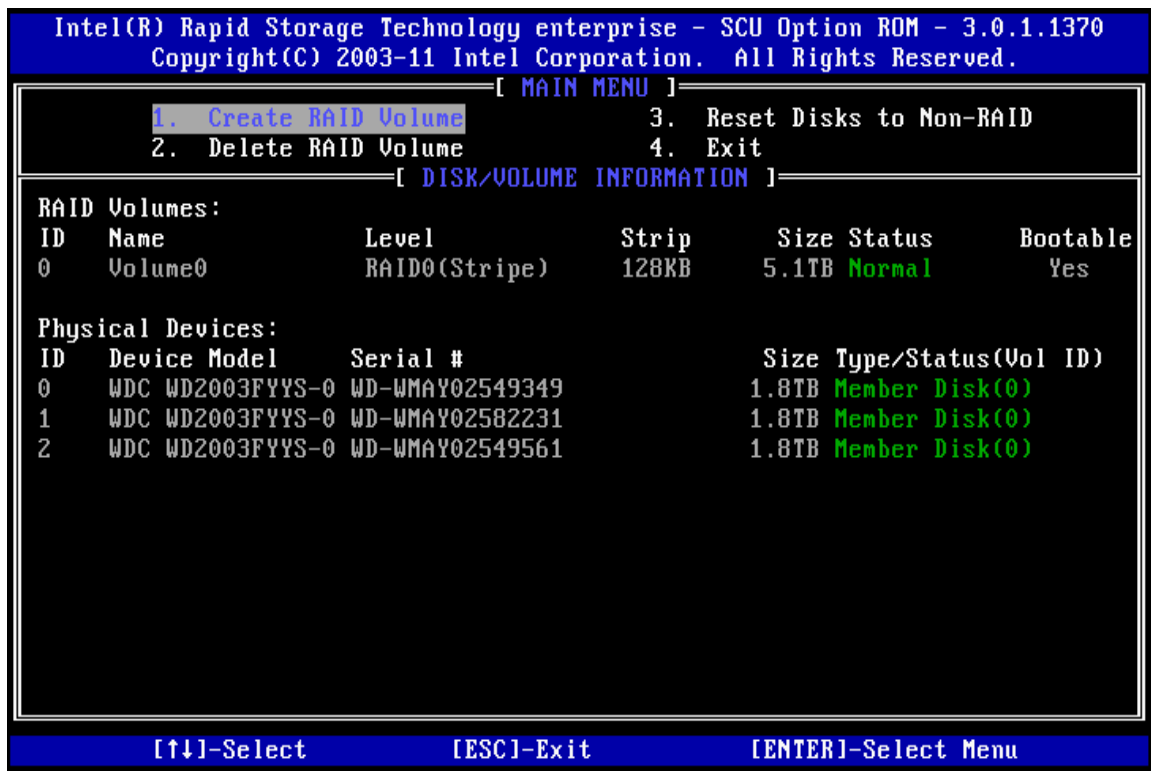
a.   Enter Intel Onboard SAS RAID BIOS Utility

b.   Select `Create RAID Volume`

c.   Type in the name of RAID volume in CREATE VOLUME MENU

d.   Select `RAID level`.

e.   Select desired HDD to create the RAID.

f.   Type in the capacity of the RAID volume. (Less than 2 TB)

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.
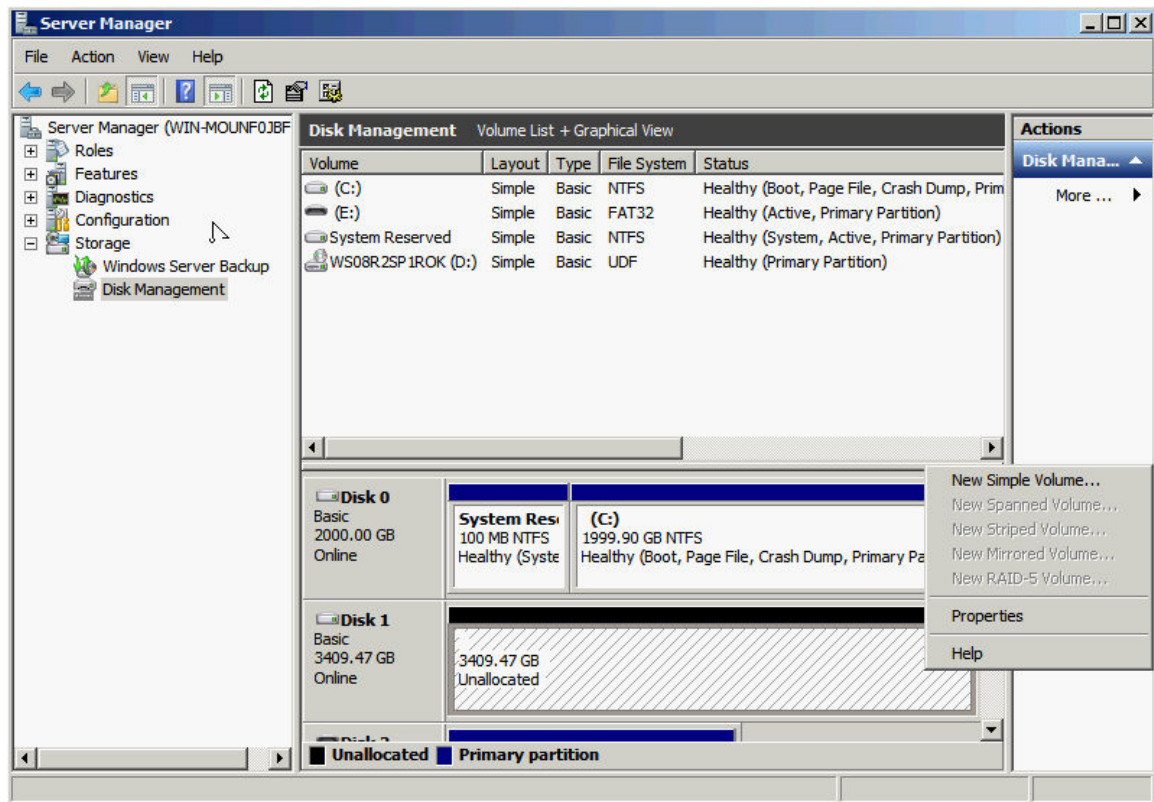
14. OS Support

1. Which OS can Altos R380 F3 support?

    ANSWER: Please refer to Altos R380 F3 THOL (Tested Hardware and Operating System List).

2. Is there any guideline or notes to install OS on Altos R380 F3?

    ANSWER: Please refer to Altos R380 F3 ICG (Installation Configuration Guide).

3. Where can I find the related driver of Altos R380 F3?

    ANSWER: The driver of Altos R380 F3 is included in the Resource Kit DVD.

4. Can Altos R380 F3 support Windows Server 2012 R2?

    ANSWER: Yes, Altos R380 F3 is certified with below editions of Windows Server 2012 R2.
    *   Windows Server 2012 R2 Datacenter Edition
    *   Windows Server 2012 R2 Standard Edition
    *   Windows Server 2012 R2 Essential Edition

5. Can Altos R380 F3 support Windows Server 2012?

    ANSWER: Yes, Altos R380 F3 is certified with below editions of Windows Server 2012.
    *   Windows Server 2012 Datacenter Edition
    *   Windows Server 2012 Standard Edition
    *   Windows Server 2012 Essential Edition

6. Can Altos R380 F3 support VMware ESXi 5?

    ANSWER: Altos R380 F3 is certified with VMware ESXi 5.5 Update 2.

7. Which OS is EFI-Aware and can support EFI boot & install on Altos R380 F3?

    ANSWER: Please refer below table.

Operating Systems	Service Pack	32-bit/ 64-bit	UEFI Aware	Note
Windows Server 2012 R2	N/A	64-bit	Yes	
Windows Server 2012	N/A	64-bit	Yes	
Red Hat Enterprise Linux 6	Update 5	64-bit	Yes	
		32-bit	No	1
SuSE Linux Enterprise Server 11	SP3	64-bit	Yes	
		32-bit	No	1

NOTE 1. For OS not UEFI-Aware, the OS can be installed in Legacy mode on Altos R380 F3.

15. PCI & PCI-Express

1. Does Altos R380 F3 support PCI-Express Gen 3?

    ANSWER: Yes.

2. Does Altos R380 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 R380 F3 support PCI-X?

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

ANSWER: No.

16. Power Supply

1. What power supply does Altos R380 F3 support?

    ANSWER:

Feature	Redundant Power Supply	Note
Power Wattage	1100 W	
Redundant	Yes	
Hot Swappable	Yes	
Power Supply Status Monitoring	Yes	
Node Manager Support	Yes	

    .

17. Rack-mount

1. Is Altos R380 F3 rack-mountable?

    ANSWER: Yes, Altos R380 F3 supports rack-mount kit.

2. Does Altos R380 F3 need rack mount shelf (tray) when it is rack-mounted?

    ANSWER: No, Altos R380 F3 is designed for rack-mount. No rack mount shelf (tray) is required.

3. How much is the height when Altos R380 F3 is rack-mount?

    ANSWER: 2U.

4. Does Altos R380 F3 rack-mount kit support CMA (cable management arm)?

    ANSWER: No, the CMA is not supported.

5. Is there any installation guide of Altos R380 F3 rack-mount kit?

    ANSWER: It can be found in the appendix of Altos R380 F3 Service Guide.

18. SAS Back-plane

1. Does Altos R380 F3 support SAS backplane?

    ANSWER: Yes.

Feature	SAS Backplane	Note
# of HDD (3.5 inch)	8/12	
# of HDD (2.5 inch)	8/16/24	
SATA HDD Support	Yes	
SAS HDD Support	Yes	
SSD (SATA) Support	Yes	
SSD (NVMe) Support	Yes	1
SAS BP LED Control	Yes	
SGPIO	Yes	
Backplane Connector (to the Disk/RAID controller)	Mini SAS HD (SFF-8643)-	
SAS Expander	Optional	
SAS Backplane Monitoring (temperature, voltage, HDD presence)	Yes	

    NOTE 1. Altos R380 F3 NVM Express Backplane Accessory Kit is required to support NVMe SSD (up to 4 devices)

2. Can Altos R380 F3 SAS backplane support the back-plane LED management?

    ANSWER: Yes, Please also refer to below table about the LED behavior of Altos R380 F3 SAS back-plane.

LED Behavior	SAS Backplane	Note
HDD Access	Driven by PIN 11 of SAS or SATA HDD	1
HDD Failure	Driven by SGPIO (from SAS RAID controller)	
RAID Rebuilt	Driven by SGPIO (from SAS RAID controller)	

    NOTE. The PIN 11 (P11) of SATA HDD must support HDD activity indication signal (defined in Serial ATA II revision 1.2: Extensions to Serial ATA 1.0a).

http://www.ihdd.ru/download/documentation/Serial-ATA/Extensions%20to%20Serial%20ATA,%20Revision%201.2.pdf

3. Do I need to install specific model of SAS or SATA HDD on SAS back-plane for supporting hot-swap feature?

    ANSWER: No, all the SAS or SATA HDD supported by Altos R380 F3 can be installed into SAS back-plane.

4. Can I install both SAS and SATA HDD on Altos R380 F3 with onboard SAS/SATA software RAID?

    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, 1 x SAS HDD as RAID 0.

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

5. What's the PIN 11 (P11) of SATA HDD?

    ANSWER: The SATA HDD interface with the host I/O bus via the Serial ATA interface connection illustrated in below figure.
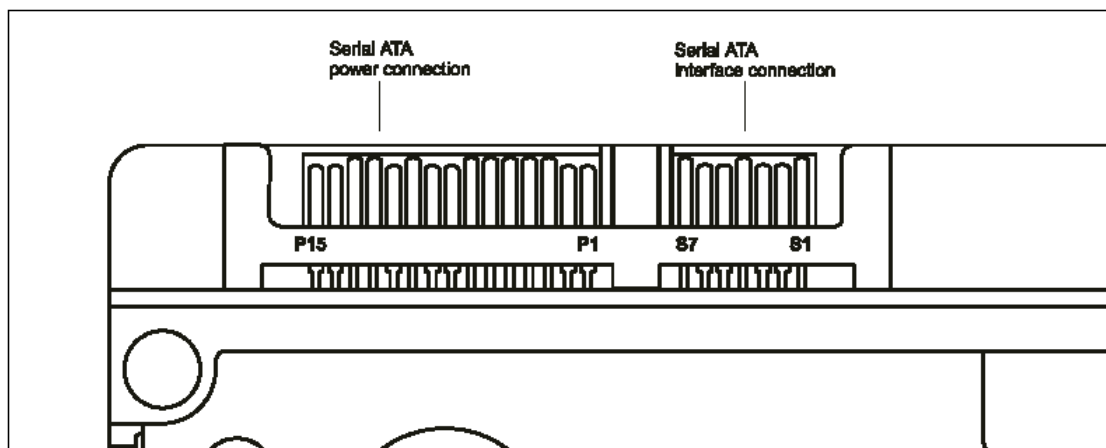
Below table identifies the pin definition of the SATA connectors and the corresponding signal names and signal functions (based on Western Digital SATA HDD).

Signal segment	S1	Gnd	2nd mate
	S2	A+	Differential signal pair A from Phy
	S3	A-	
	S4	Gnd	2nd mate
	S5	B-	Differential signal pair A from Phy
	S6	B+	
	S7	Gnd	2nd mate
Key and spacing separate signal and power segments			
Power segment	P1	V_{33}	3.3 V power
	P2	V_{33}	3.3 V power
	P3	V_{33}	3.3 V power, pre-charge, 2nd mate
	P4	Gnd	1st mate, GROUND
	P5	Gnd	2nd mate, GROUND
	P6	Gnd	2nd mate, GROUND
	P7	V_S	5V power, Precharge, 2nd mate
	P8	V_S	5V power
	P9	V_S	2nd mate, 5V power
	P10	Gnd	2nd mate, GROUND
	P11	ACT-	Activity LED- (O.C.)
	P12	Gnd	1st mate, GROUND
	P13	V_{12}	12 V power, pre-charge, 2nd mate
	P14	V_{12}	12 V power
	P15	V_{12}	12 V power

6. What's the benefit if the HDD Access LED is driven by PIN 11 (P11) of SATA HDD?

    ANSWER: Some SAS/SATA RAID controller does not support SGPIO (Serial General Purpose Input/Ouput) protocol. Hence, HDD Access LED won't function (blink) if the SGPIO based SAS disk cage is connected to the RAID controller without SGPIO support.

    With HDD Access LED driven by PIN 11 (P11) of SAS/SATA HDD, the HDD Access LED would work independent of SAS/SATA RAID controller.

    However, the HDD failure and RAID rebuilt LED are still driven by SGPIO.

7. Is a SAF-TE (I2C) cable required for SAS back-plane LED control?

    ANSWER: No. Altos R380 F3 SAS backplane does not support SAF-TE (SCSI Access Fault Tolerance Enclosure). The LED control of back-plane is through SGPIO.

8. Is there any SGPIO cable that I should connect if the RAID controller supports SGPIO?

    ANSWER: The signal of SGPIO is included in the SAS/SATA cables. There is no additional SGPIO cable required.

19. SAS RAID (Integrated RAID Module RMS3CC080)

1. What RAID features can the integrated RAID Module RMS3CC080 support?

    ANSWER: Please refer to the table below.

Features	RMS3CC080	NOTE
SAS BP LED Control (through SGPIO)	Yes	
Hardware RAID	Yes	
Cache Memory of RAID	1 GB	
BBU (Battery Backup Unit)	Yes	
Connector	Mini SAS HD (SFF-8643)	
Global Hot Spare	Yes	
Dedicated Hot Spare	Yes	
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 more than 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.	

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

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

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

2. How many SAS ports does the integrated RAID Module RMS3CC080 support?

   ANSWER: 8 SAS ports (12 Gbps).

3. What OS can the integrated RAID Module RMS3CC080 support?

   ANSWER: Please refer to the table below.

Operating Systems	Service Pack	32-bit/64-bit	Driver	RAID Utility	Note
Windows Server 2012 R2	N/A	64-bit	Yes	Yes	
Windows Server 2012	N/A	64-bit	Yes	Yes	
Red Hat Enterprise Linux 6	Update 5	64-bit	Yes	Yes	
		32-bit	Yes	Yes	
SuSE Linux Enterprise Server 11	SP3	64-bit	Yes	Yes	
		32-bit	Yes	Yes	
VMware ESXi 5.5	Update 2	64-bit	Yes	No	

4. Where should I connect the SAS cables to the integrated RAID RMS3CC080?

   ANSWER: Please connect the SAS cable to mini SAS HD connector (SFF-8643) on the card.

mini SAS HD connectors (SFF-8643)
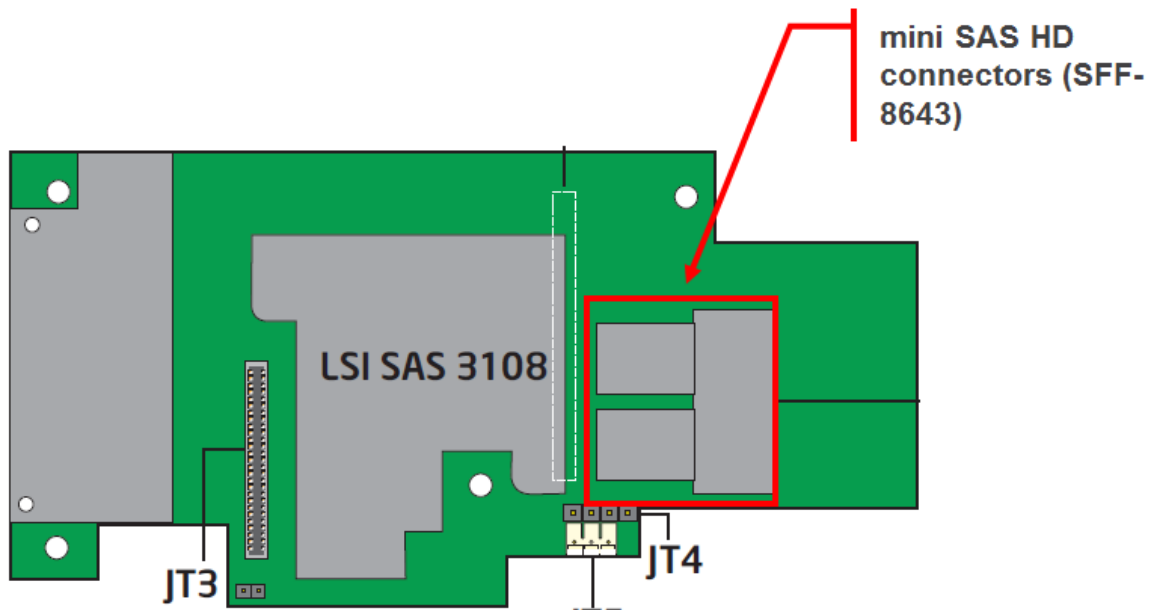
5.   How do I know the version of BIOS and firmware of the integrated RAID Module RMS3CC080?

ANSWER: You would see below integrated RAID Module RMS3CC080 related information during POST:

```
RAID Controller BIOS Version 6.17.04.0 (Build January 22, 2014)
HA -0 (Bus 131 Dev 0) Intel(R) Integrated RAID Module RMS3CCB080
FW package: 24.3.0-0032

Battery Status: Not present
PCI Slot Number: 255


ID  LUN  VENDOR  PRODUCT                 REVSION       CAPACITY
--  ----  ------  ------------------      -------       --------
         INTEL    INTEL(R) RAID Controller R  4.230.30-3728  1024MB
16 0    ATA     ST91000640NS            SN01          953869MB
17 0    ATA     ST91000640NS            SN02          953869MB
   0    INTEL   Virtual Drive          RAID1         952720MB
1 Virtual Drive(s) found on the host adapter.


1 Virtual Drive(s) handled by BIOS



>>>>>> Press <Ctrl><R> to enter the RAID BIOS Console <<<<<<
```

In this example, the BIOS version is 6.17.04.0, and the firmware package version is 24.3.0-0032.

NOTE. This POST information of the integrated RAID Module RMS3CC080 would be available for both UEFI mode and legacy mode on Altos R360 F3.

6.   How do I configure the integrated RAID Module RMS3CC080 in legacy mode?

ANSWER: Please refer to Appendix C of Altos R360 F3 ICG (Installation Configuration Guide).

7.   How do I configure the integrated RAID Module RMS3CC080 in EFI mode?

ANSWER: Please refer to Appendix C of Altos R360 F3 ICG (Installation Configuration Guide).

8.   Is there any step-by-step procedure to create RAID with the integrated RAID Module RMS3CC080?

ANSWER: Please refer to Appendix C of Altos R360 F3 ICG (Installation Configuration Guide).

9.   What RAID utility does the integrated RAID Module RMS3CC080 support?

ANSWER: RAID Web Console 2 for Windows & Linux.

10.   Where can I find the RAID utility of the integrated RAID Module RMS3CC080?

ANSWER: The RAID utility can be found in Altos R360 F3 Resource DVD.

11.   Can I install both SAS and SATA HDD on Altos R360 F2 with the integrated RAID Module RMS3CC080?

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 the integrated RAID Module RMS3CC080?

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

Please follow the procedures below.

a.   To start the RAID BIOS utility, please press `CTRL-R` during POST

b.   In the top menu, please press **Ctrl-N** to switch to Ctrl Mgmt page.

c.   Press **Tab** to move the cursor to **Set Factory Defaults** and then press **Enter**.

d.   Select **OK** to load factory defaults.

e.   Press **Ctrl-S** to save the change.

f.   Press **Esc** and then select **OK** to exit.

g.   Press **Ctrl + Alt + Del** to reboot the server.

h.   Reboot the server and then enter the RAID BIOS utility again by pressing `CTRL-R` during POST

i.   On the VD Mgmt page of top menu, please move cursor to the root of Intel Integrated RAID.

j.   Press **F2** and select **Create Virtual Drive**.

k.   Select the **RAID Level** "RAID-10" by **Enter**.

l.   Select Drives for the virtual drive.

m.   Specify the size.

n.   Select **OK**.

o.   Select **OK** to create the virtual drive.

p.   On the VD Mgmt page, locate the cursor on Virtual Drive 0 you just created and then press **F2**.

q.   Select Initialization > **Fast Init**.

r.   Select **Yes**.

s.   Press **OK** when initialization is complete.

t.   Press **Esc**.

u.   Select **OK** to exit.

v.   Press **Ctrl + Alt + Del** to reboot the system.

w.   Now you can reboot the system and install the Operating System.

13. How do I create RAID 50 with the integrated RAID Module RMS3CC080?

ANSWER: To configuring RAID 50, you need at least 6 HDDs in the system.

Please follow the procedures.

a.   To start the RAID BIOS utility, please press `CTRL-R` during POST

b.   In the top menu, please press **Ctrl-N** to switch to Ctrl Mgmt page.

c.   Press **Tab** to move the cursor to **Set Factory Defaults** and then press **Enter**.

d.   Select **OK** to load factory defaults.

e.   Press **Ctrl-S** to save the change.

f.   Press **Esc** and then select **OK** to exit.

g.   Press **Ctrl + Alt + Del** to reboot the server.

h.   Reboot the server and then enter the RAID BIOS utility again by pressing `CTRL-R` during POST

i.   On the VD Mgmt page of top menu, please move cursor to the root of Intel Integrated RAID.

j.   Press **F2** and select **Create Virtual Drive**.

k.   Select the **RAID Level** "RAID-50" by **Enter**.

l.   Select Drives for the virtual drive.

m.   Specify the size.

n.   Select **OK**.

o.   Select **OK** to create the virtual drive.

p.   On the VD Mgmt page, locate the cursor on Virtual Drive 0 you just created and then press **F2**.

q.   Select Initialization > **Fast Init**.

r.   Select **Yes**.

s.   Press **OK** when initialization is complete.

t.   Press **Esc**.

u.   Select **OK** to exit.

v.   Press **Ctrl + Alt + Del** to reboot the system.

w.   Now you can reboot the system and install the Operating System

14. How do I check the settings of coercion with the integrated RAID Module RMS3CC080?

ANSWER: Please enter RAID BIOS utility (press `CTRL-R` during POST) and select Ctrl Mgmt -> Coercion Mode.

15. Does the integrated RAID Module RMS3CC080 support HDD location function?

ANSWER: Yes. You can identify the physical HDD or the virtual drive through the HDD location function of RAID BIOS utility during POST or RAID utility in Windows/Linux.

When you execute the function, the status of HDD activity indicator will be amber blinking.

NOTE. The LEDs on drives that are global or dedicated hotspares do not blink.

16. How do I identify the HDD with the HDD location function?
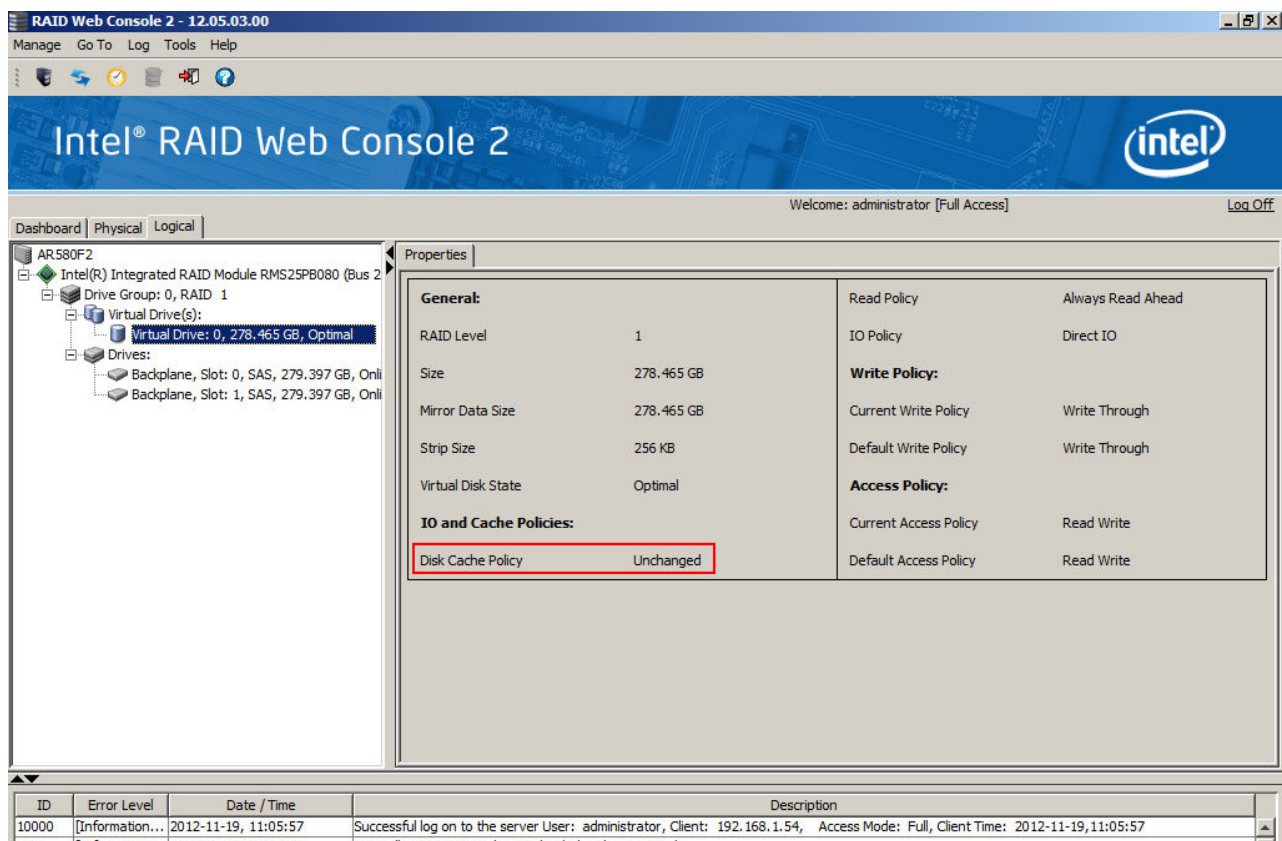
    ANSWER: You can identify the physical HDD or the virtual drive through the RAID BIOS utility during POST or RAID utility in Windows/Linux.
    - RAID BIOS utility:

    a. Please press `CTRL-R` to start the RAID BIOS utility during POST

    b. In the PD Mgmt page, move the cursor to the physical HDD that you want to locate. Then, press F2. Select the "Locate" option and select "Start".
    - RAID utility in Windows/Linux:

    a. Launch the RAID utility

    b. Click the physical HDD desired in Physical tab

    c. Right click the on the HDD. Then, select "Start Locating Drive"

    To stop the LEDs from blinking, select "Stop Locating Drive"

17. What is the default setting of disk write cache of the integrated RAID Module RMS3CC080?

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

18. How do I enable/disable disk write cache of the integrated RAID Module RMS3CC080?

    ANSWER: You can enable/disable disk write cache through RAID BIOS Utility during POST or RAID utility in Windows/Linux.
    - RAID Utility in Windows/Linux.

    a. Please launch the RAID utility in Windows/Linux.

    b. Right click the Virtual Drive in Logical panel

c.   Click **Set Virtual Drive Properties**
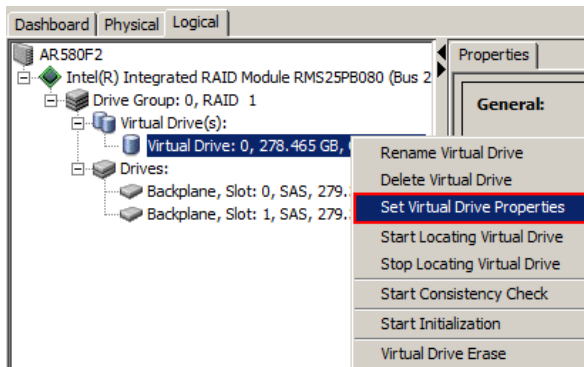
d.   In the pop-up Set Virtual Drive Properties dialog-box, enable/disable disk cache from **Disk Cache Policy** option
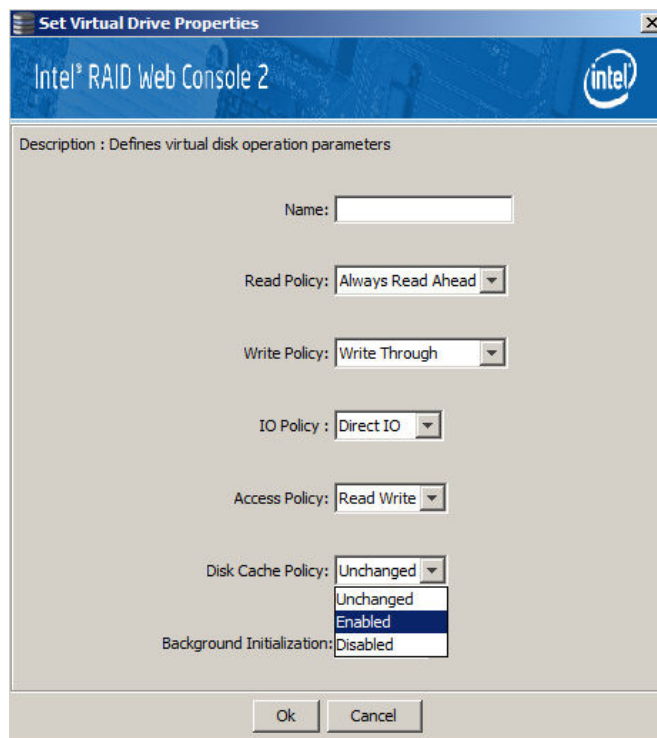
- RAID BIOS Utility

a.   Please press CTRL-R to start the RAID BIOS utility during POST

b.   In the VD Mgmt page, move the cursor to the virtual drive that you want to configure and press **F2**. Select **Properties** and press **Enter**.
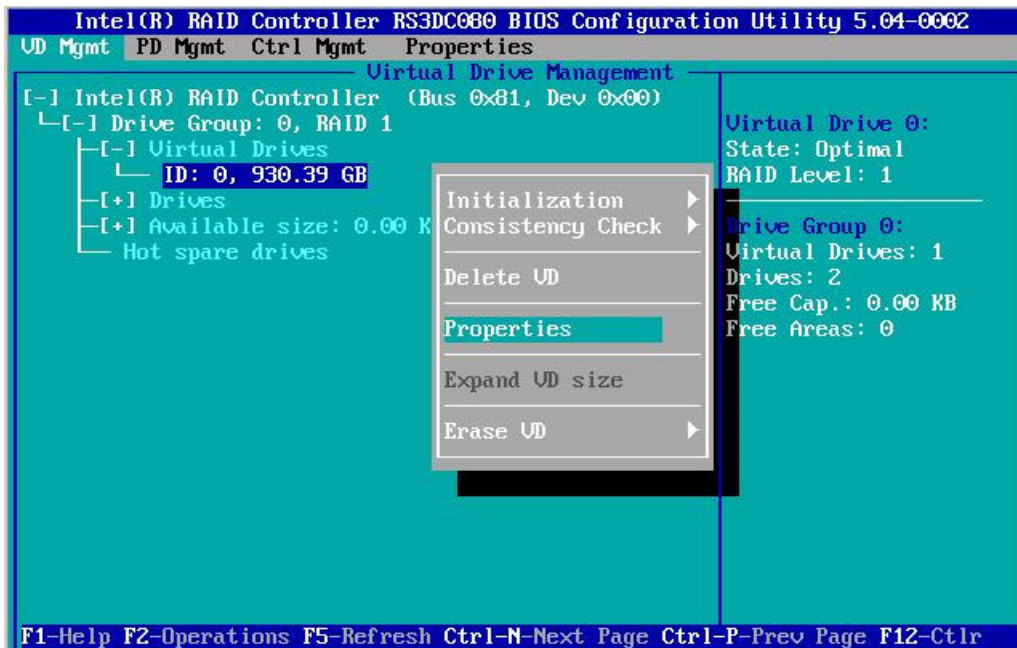
c. Move the cursor to **Advanced** and press **Enter**.
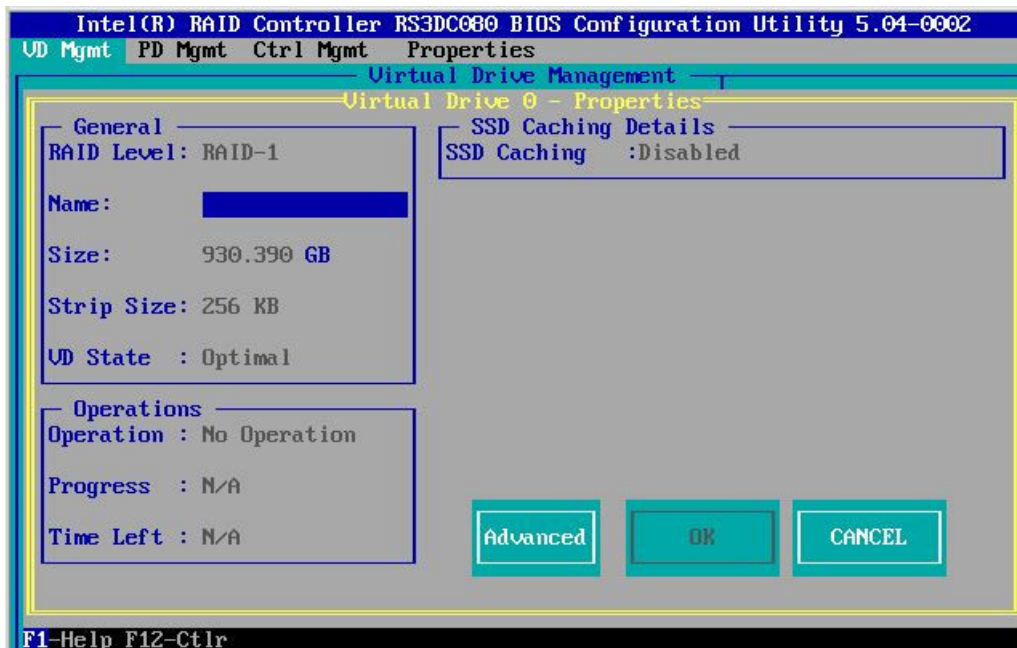
d. Move the cursor to **Disk Cache Policy** and press **Enter.**
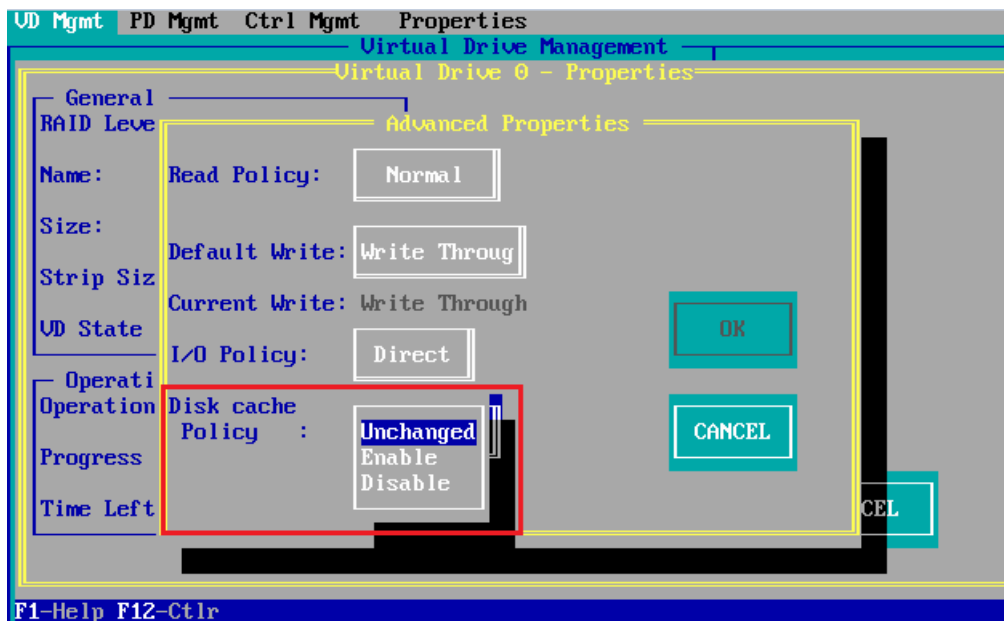
e.   Then, change the setting of Disk Cache Policy option

f.   Select OK after you complete the disk cache configuration and exit the RAID BIOS utility

19. How do I check the event log of the integrated RAID Module RMS3CC080?

ANSWER: The event log of the integrated RAID Module RMS3CC080 can be found at the bottom of RAID utility.

20. How do I save the event log of the integrated RAID Module RMS3CC080?

    ANSWER: Please follow the procedures below.

    a. Please launch the RAID utility in Windows/Linux.

    b. Right click one of the event log at the bottom and select **Save as Text**

    c. Select the directory for saving the event log file, and click **Save** button.

    d. The event log file will be saved in text format

ID	Error Level	Date / Time	Description
249	[Information...	2012-11-19, 11:14:51	Controller ID: 0 VD is now OPTIMAL VD 0
81	[Information...	2012-11-19, 11:14:51	Controller ID: 0 State change on VD: 0 Previous = Degraded Current = Optimal
114	[Information...	2012-11-19, 11:14:51	Controller ID: 0 State change: PD = -:-:0 Previous = Offline Current = Online
232	[Information...	2012-11-19, 11:13:51	Controller ID: 0 Replaced Missing on array: 0 Array 0 Row 0
114	[Information...	2012-11-19, 11:13:51	Controller ID: 0 State cha... Save ...ous = Unconfigured Good Current = Offline
114	[Information...	2012-11-19, 11:12:10	Controller ID: 0 State cha... Save as Text ...ous = Unconfigured Bad Current = Unconfigured Good
247	[Information...	2012-11-19, 11:10:34	Controller ID: 0 Device in... Disk Device Id: -:-:0
91	[Information...	2012-11-19, 11:10:34	Controller ID: 0 PD insert... Clear
114	[Information...	2012-11-19, 11:09:54	Controller ID: 0 State cha... Load ...ous = Failed Current = Unconfigured Bad
251	[Critical, 2]	2012-11-19, 11:09:54	Controller ID: 0 VD is now...
81	[Information...	2012-11-19, 11:09:54	Controller ID: 0 State change on VD: 0 Previous = Optimal Current = Degraded
114	[Information...	2012-11-19, 11:09:54	Controller ID: 0 State change: PD = -:-:0 Previous = Online Current = Failed

21. The integrated RAID Module RMS3CC080 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`.
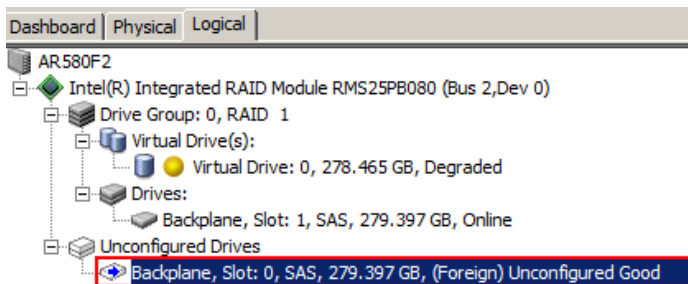
    ANSWER: Please insert a new HDD which was not configured as RAID. Or, please install the original HDD into another RAID card and clear/delete its RAID configuration before you insert it into the degraded RAID.

    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**.
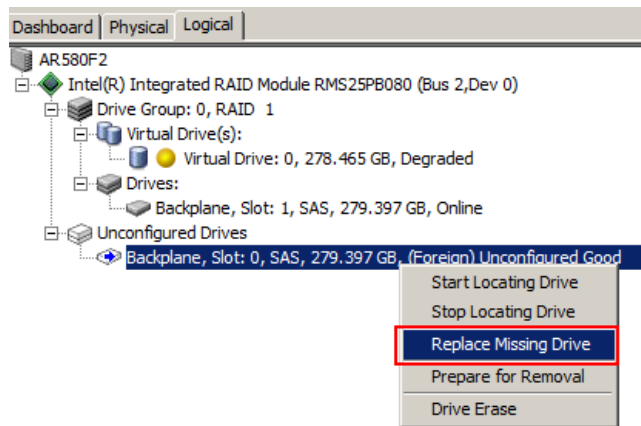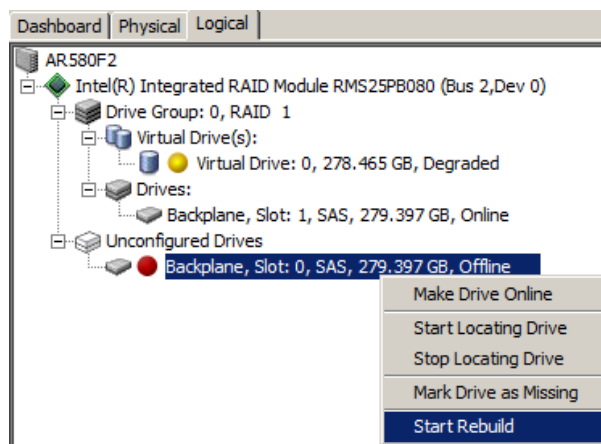
c. Click "OK" at pop up Windows, the drive will become "Offline"
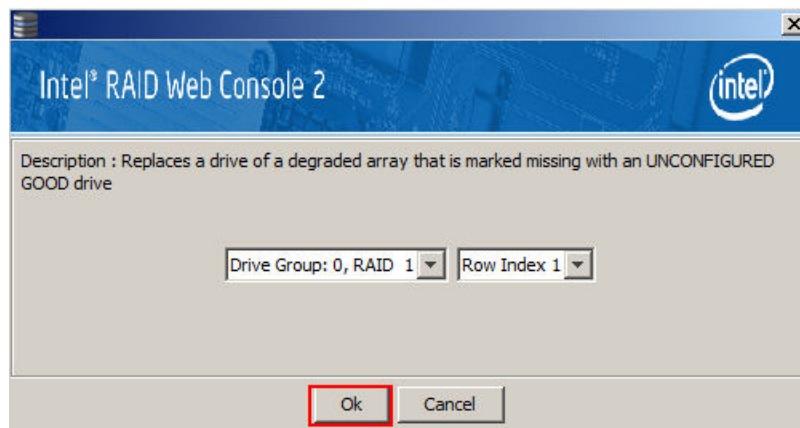
d. Right click the HDD marked as `Offline` and select **Start Rebuild.**

22. When I create 2 x 2 TB HDD as RAID 0, only 2TB of disk partition can be installed with Windows Server 2008 R2. The remaining free disk space cannot be utilized.
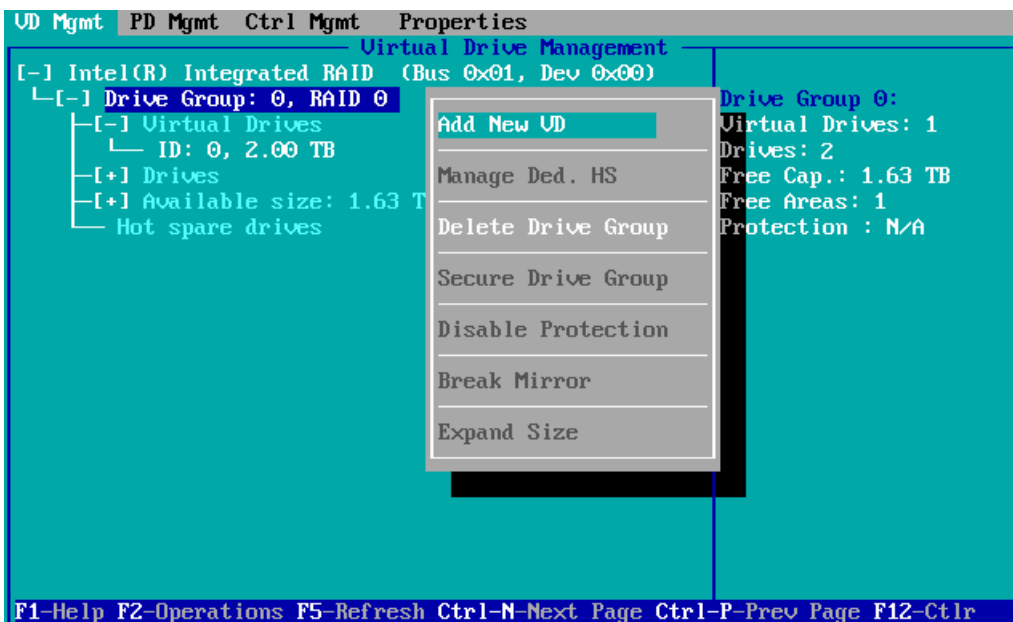
   ANSWER: Please follow the procedure below to split the RAID volume and make it less than 2TB.

   a. Enter RAID BIOS utility

   b. When you create the RAID volume, please specify the **Size** less than 2 TB and click `Accept`
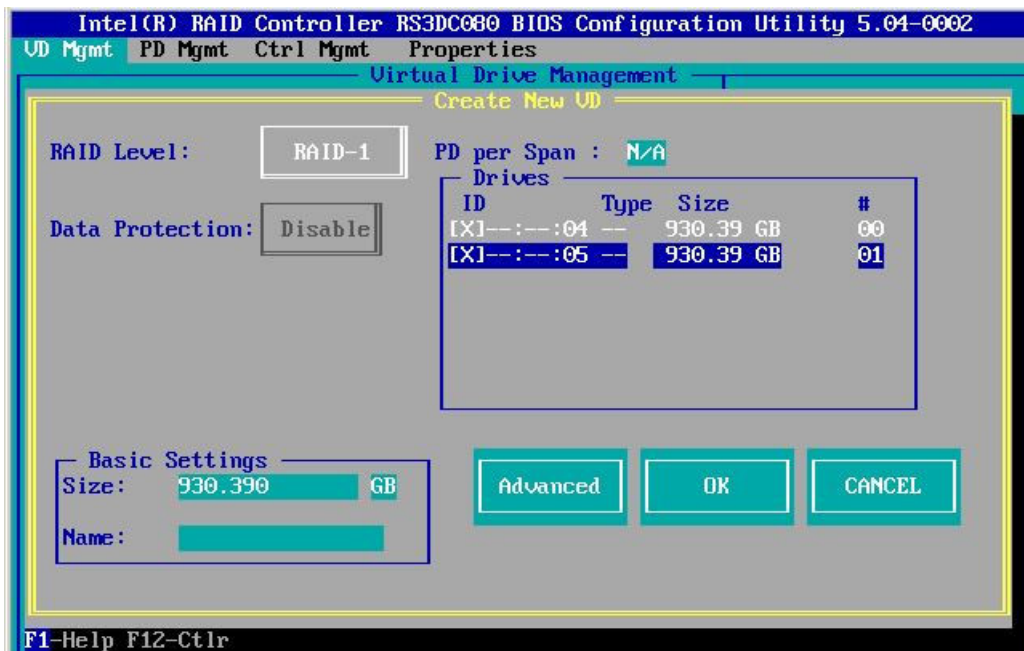
c. After virtual drive 0 is created, please move the cursor to "Drive Group" and press **F2** to add another virtual drive

d. Now, two RAID volumes are created, you can press Esc to exit.

```
VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                       ─ Virtual Drive Management ─
[-] Intel(R) Integrated RAID  (Bus 0x01, Dev 0x00)
 └[-] Drive Group: 0, RAID 0
   ├[-] Virtual Drives                    Virtual Drive 0:
   │  ├ ID: 0, 2.00 TB                     State: Optimal
   │  └ ID: 1, 1.63 TB                     RAID Level: 0
   ├[+] Drives
   ├[+] Available size: 0.00 KB            Drive Group 0:
   └ Hot spare drives                      Virtual Drives: 2
                                           Drives: 2
                                           Free Cap.: 0.00 KB
                                           Free Areas: 0




F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

20. Smart Console

1. What's Smart Console?

    ANSWER: With Smart Console + RMM4 Lite, Altos R380 F3 can support KVM over IP, media redirection (remote FDD, Remote CD-ROM drive) and remote power control.

    The Smart Console is integrated in Altos R380 F3. However, some feature like KVM over IP requires the installation of RMM4 Lite.

2. What features can Smart Console support?

    ANSWER: Please refer to the table below.

Features	Smart Console	Smart Console + RMM4 Lite	NOTE
Web GUI	Yes	Yes	
Dedicated NIC (10/100 Mbps)	Yes	Yes	
Share-NIC	Yes	Yes	
Network Fail-over	Yes	Yes	2
KVM over IP	No	Yes	3
Media redirection (remote FDD, CD-ROM drive)	No	Yes	3
Remote OS installation	Yes	Yes	4
Server Health Monitoring	Yes	Yes	
SEL (System Event Log)	Yes	Yes	
Event Log	Yes	Yes	
Remote Power Control	Yes	Yes	
E-mail Alert	Yes	Yes	
SNMP Trap	Yes	Yes	
System ID LED control	Yes	Yes	
ASR (Automatic Server Restart)	No	No	
CLI (Command Line Interface)	Yes	Yes	
SMASH	Yes	Yes	
SSL (Secure Socket Layer)	Yes	Yes	
SSH (Secure Shell)	Yes	Yes	5
Remote BIOS Update	Yes	Yes	4
Built-in Firewall	No	No	
Active Directory Integration	Yes	Yes	
LDAP Support	Yes	Yes	
WS-MAN	Yes	Yes	
DDNS	Yes	Yes	
UPnP	No	No	
Power Management (Node Manager)	Yes	Yes	

   NOTE 2. Onboard LAN port 1 and LAN port 2 can be configured for failover for Smart Console.

   NOTE 3. RMM4 Lite is required to support KVM over IP and Media Redirection

NOTE 4. The function is through KVM over IP and Media Redirection (e.g. Remote FDD).

NOTE 5. There is not much commands provided by SSH.

3. Where can I install the optional RMM4 Lite?

   ANSWER: Please refer to the picture below.
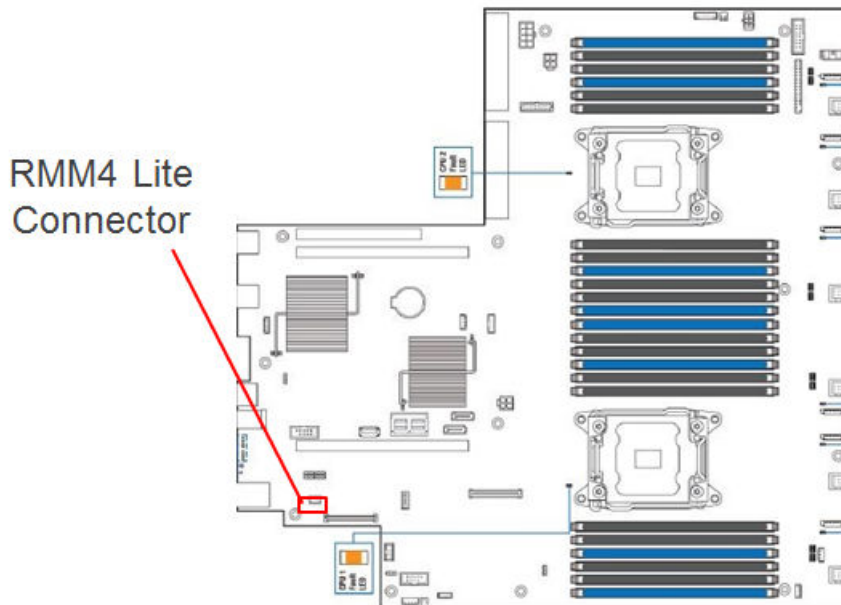
4. Is Smart Console bundled with Altos R380 F3?

   ANSWER: Yes.

5. Do I need to install Smart Server Manager on Altos R380 F3 to support Smart Console?

   ANSWER: No. Smart Console is enabled by default.

6. Do I need special license to enable Smart Console?

   ANSWER: No.

7. Does Altos R380 F3 Smart Console support dedicated NIC?

   ANSWER: Yes. RMM4 Dedicated Server Management Port is required to support dedicated NIC.

   Altos R380 F3 Smart Console can be either dedicated NIC or share-NIC which shares the same network connection with onboard Gigabit.

8. Which network port of Altos R380 F3 is connected to Smart Console?

   ANSWER: Altos R380 F3 support two types of network connection interface and two types of network connection mode for BMC connection.

   For connection interface
   - **Shared (Default):** BMC is connected to onboard Gigabit LAN 1 and LAN 2 port.
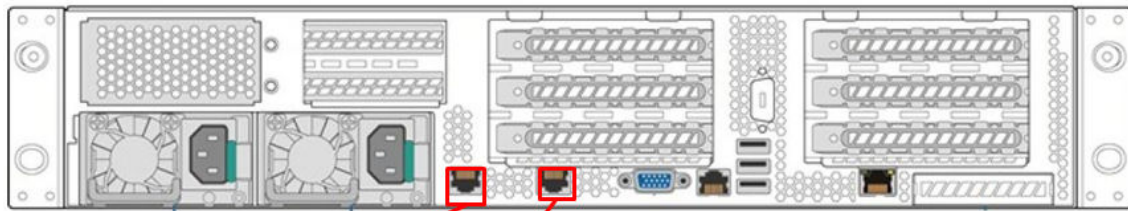
Onboard LAN port 1

Onboard LAN port 2

- **Dedicated (Optional):** BMC is connected to optional dedicated server management port. (RMM4 Dedicated Server Management PORT is required to support Dedicated NIC)
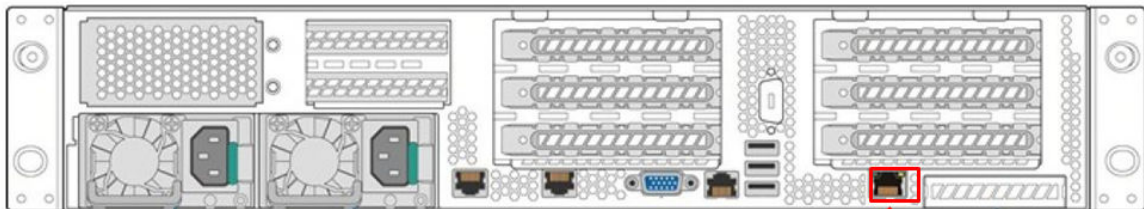
Dedicated
Management Port

For connection mode:
- **Concurrent (Default):** All of onboard LAN port 1, onboard LAN port 2 and optional dedicated server management port can be used for Smart Console with different IP address. All NIC ports must be on different subnet.
- **Failover:** All of onboard LAN port 1, onboard LAN port 2 and optional dedicated server management port are bonded together. The setting of onboard LAN port 1 will be used for bonding. If a connection fails, Smart Console connection will switch to the others. Failover mode can be enabled in Smart Console.

9. Is there any cable that I should connect with Smart Console?

   ANSWER: No, the Smart Console is integrated in main-board.

10. Does Smart Console support BBU (Battery Backup Unit) or external power adapter?

   ANSWER: No, Smart Console still can operate with standby power (when server is power-off but power cord is still plugged).

11. Which web browser is supported with Smart Console?

   ANSWER:
   - Internet Explorer 10.0
   - Internet Explorer 9.0
   - FireFox 25
   - FireFox 24

12. e JRE required to access Smart Console?

     ANSWER: You can access Smart Console just with the web browser.

     But, if you want to perform KVM over IP feature of Smart Console, the JRE is required.

13. What version of JRE is required to access Smart Console KVM over IP?

     ANSWER: The JRE 6.0 (or later) is required or latest.

     Please download the package from

     http://www.javasoft.com

     Please install the JRE on the system where web browser is installed.

14. How do I configure the IP address of Smart Console?

     ANSWER: Smart Console use the same IP address with BMC. You can configure the BMC IP address in BIOS setup.

     Please enter BIOS Setup during POST.

     a.   Please select `Server Management`.

     b.   Please select `BMC LAN Configuration`.

     c.   You would see information below.

```
Baseboard LAN configuration
IP Source                    [Static]
IP Address                   010.036.060.100
IP Subnet Mask               255.255.255.000
Gateway IP                   010.036.060.001

Intel (R) RMM4 LAN Configuration
Intel (R) RMM4               Intel (R) RMM4+DMN
IP Source                    [Static]
IP Address                   010.036.061.100
IP Subnet Mask               255.255.255.000
Gateway IP                   010.036.061.001
```

     d.   Please specify `IP address`, `IP Subnet Mask`, and `Default Gateway` under Baseboard LAN configuration for share NIC of onboard LAN port 1.

     e.   If you have optional RMM4 dedicated server management port, please specify `IP address`, `IP Subnet Mask`, and `Default Gateway` underIntel (R) RMM4 LAN configuration

     f.   Please save the settings and exit from BIOS Setup.

15. What's the default username & password of Smart Console?

     ANSWER:

     Username: `root`

     Password: `superuser`

16. How do I access Smart Console with web browser?

     ANSWER: Please type in the IP address of Smart Console in web browser.

```
http://<IP address of Smart Console>
```

17. What's the maximum resolution of Smart Console with KVM over IP?

    ANSWER: KVM over IP of Smart Console support max resolution of 1920 x 1200 WUXGA.

18. How many sessions can Smart Console support with KVM over IP?

    ANSWER: Two sessions.

19. Does Smart Console support media redirection, such as remote FDD or remote ODD drive?
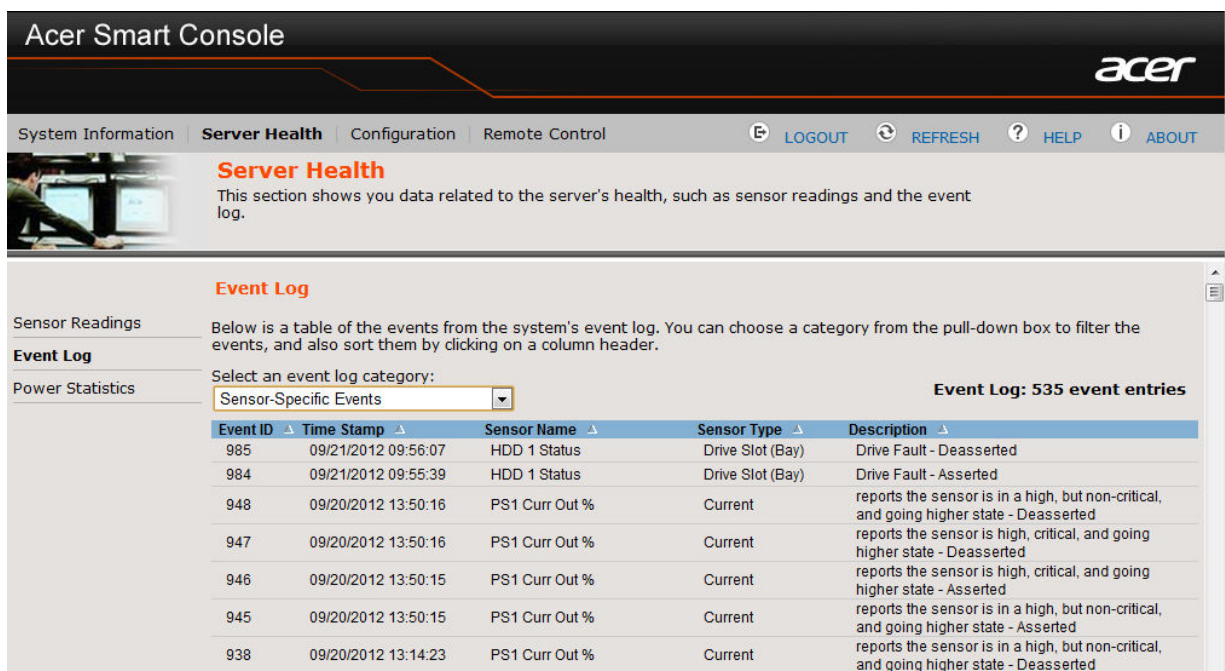
    ANSWER: Yes.

20. Can Smart Console access the SEL (System Event Log) information of BMC?

    ANSWER: Yes, Smart Console can gather the SEL information of BMC. Actually, the Event Log function of Smart Console provides the SEL information of BMC and BIOS generated events.

    Please follow the procedure below.

    a. Please access Smart Console with web browser

    b. Click **Server Health** in the menu bar

    c. Click on **Event Log** button to view SEL information

21. How many logs can be stored in Smart Console Event Log function?

    ANSWER: Smart Console can gather SEL information from BMC and display the SEL information with Event Log function.

    Totally 3868 logs can be stored in BMC.

22. How do I save the SEL (System Event Log) to a file through Smart Console?

    ANSWER: Please follow the procedures below.

    a. Please access Smart Console with web browser

    b. Click **Server Health** in the menu bar

c. Click on **Event Log** button to view SEL information

d. Click on **Save Event Log** at the bottom of the webpage
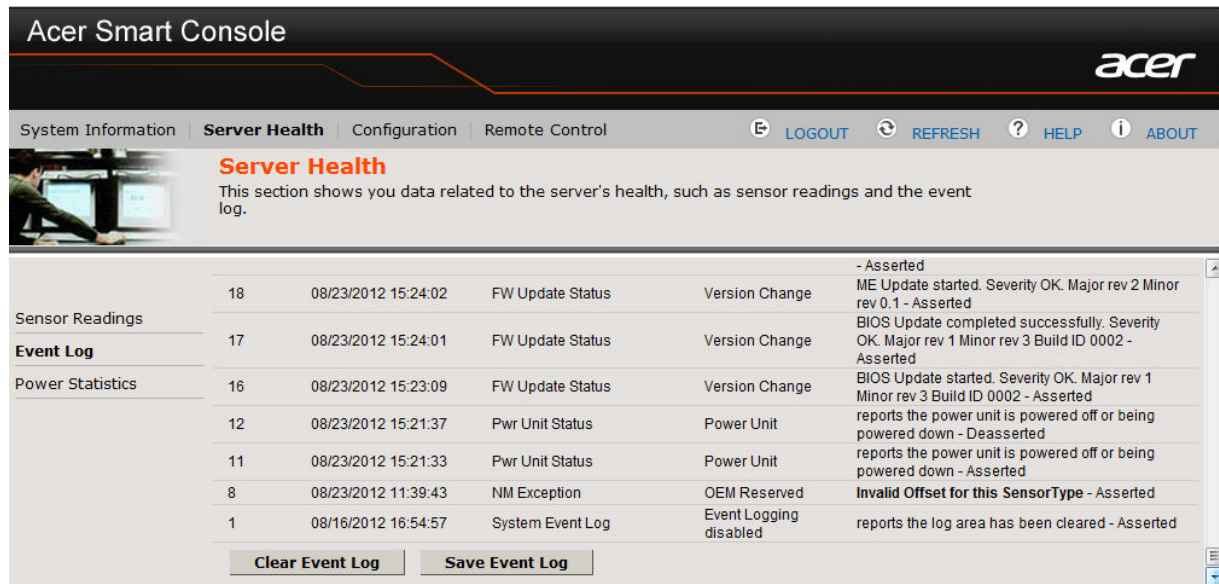
23. Can Smart Console monitor server health status such as fan speed, voltage or temperature?

    ANSWER: Yes.

24. Can Smart Console be integrated with Smart Server Manager?

    ANSWER: Yes

25. On Altos R380 F3, do Smart Console and BMC use the same firmware?

    ANSWER: Yes.

26. Is there FRUSDR for Smart Console on Altos R380 F3?

    ANSWER: Yes, there is SDR.

27. Should I change any jumper before I update the firmware of Smart Console?

    ANSWER: No.

28. Where could I find more information of Smart Console?

    ANSWER: Please refer to Smart Console User Guide.

29. How do I enable the failover function for BMC connection?

    ANSWER: Please enter connect to Smart Console and select **Configuration** -> **IPv4Network** or **IPv6 Network**. You will see the Enable LAN Failover available.

21. Smart Server Manager

1. What's Smart Server Manager?

    ANSWER: The Smart Server Manager is a complete management solution offered for centralized and collaborative management of the servers. It uses IPMI for managing the servers and provides completely remote manageability for any IPMI enabled server. Through this unique, easy-to-use interface, IT management can help expedite response to any outages that may occur, and help eliminate problems before they are noticed.

2. What features can Smart Server Manager support?

    ANSWER: Please refer to the table below.

Features	Smart Server Manager	NOTE
Web GUI	Yes	
SNMP Trap	Yes	1
In-band Management	Yes	
RAID Management	No	
Virtual Machine Management	Yes	
System Center Integration	Yes	2
Power Management (Node Manager)	Yes	3

   NOTE 1. Smart Server Manager can receive SNMP trap only.

   NOTE 2. SIP (System Integration Pack) is required.

   NOTE 3. Optional License is required.

3. Which OS can Smart Server Manager support?

    ANSWER: Please refer to below table for OS support with Smart Server Manager.

Operating System	Service Pack	32-bit/ 64-bit	Smart Server Manager	
			Smart Server Manager	Agents for Smart Server Manager
Windows Server 2012 R2	N/A	64-bit	Yes	No
Windows Server 2012	N/A	64-bit	Yes	No
Red Hat Enterprise Linux 6	Update 5	64-bit	Yes	No
		32-bit	Yes	No
SuSE Linux Enterprise Server 11	SP3	64-bit	Yes	No
		32-bit	Yes	No

4. What web browser is supported with Smart Server Manager?

    ANSWER:

- Internet Explorer 11.0
- Internet Explorer 10.0
- Internet Explorer 9.0
- Firefox 3.5 (or above)
- Google Chrome 19.0.1084.52

5. Does Smart Server Manager support Agents for Windows or Linux?

    ANSWER: Smart Server Manager does not support Agents for Windows or Linux.

    However, Smart Server Manager can support in-band management by directly communicating with OS.

6. Can Smart Server Manager support Windows Server 2012?

    ANSWER: Smart Server Manager can be installed on Windows Server 2012.

    You can also use Smart Server Manager to manage the server installed with Windows Server 2012.

7. Can Smart Server Manager support Windows Server 2008 R2?

    ANSWER: Smart Server Manager can be installed on Windows Server 2008 R2.

    You can also use Smart Server Manager to manage the server installed with Windows Server 2008 R2.

8. Can Smart Server Manager support Windows Server 2008?

    ANSWER: Smart Server Manager can be installed on Windows Server 2008.

    You can also use Smart Server Manager to manage the server installed with Windows Server 2008.

9. Can Smart Server Manager support Linux?

    ANSWER: Smart Server Manager can be installed on Red Hat Enterprise Linux 6 or SuSE Linux Enterprise Server 11.

    You can also use Smart Server Manager to manage the server installed with Linux.

10. Can Smart Server Manager support VMware ESXi 5.0?

    ANSWER: Smart Server Manager cannot be installed on VMware ESXi 5.0.

    But you can use Smart Server Manager to manage the server installed with VMware ESXi 5.0.

11. Can I install Smart Server Manager on Windows Server 2008 with Core Server?

    ANSWER: Smart Server Manager cannot be installed on Windows Server 2008 with Core Server

    But you can use Smart Server Manager to manage the server installed with Windows Server 2008 with Core Server.

12. Where could I find more information of Smart Server Manager?

    ANSWER: Please refer to Smart Server Manager User Guide.

13. Does Smart Server Manager support ASR (Automatic Server Restart)?

    ANSWER: No.

    To support ASR function, two things are required.
    - Server hardware to implement WDT (Watchdog Timer), i.e. BMC
    - Management software agent to send a heartbeat in the form of a reset watchdog timer

    The watchdog timer hardware will count down from a configurable value and restart or shutdown the server if the count reaches zero. Management software agent will periodically send a heartbeat to reset the timer so that if the operating system, drivers, or services stop functioning, the server system will be automatically

restarted or shut down.

The watchdog timer hardware must provide a mechanism to request to either shut down or restart the server upon the countdown reaching zero. Shutdown is equivalent to a power off by holding the power button for > 4 seconds. Restart is equivalent to a system reset (that is pressing the reset button).

Currently, there is no agent support with Smart Server Manger.

22. System ID (Service ID) LED

1. What's the purpose of System ID (Service ID) LED?
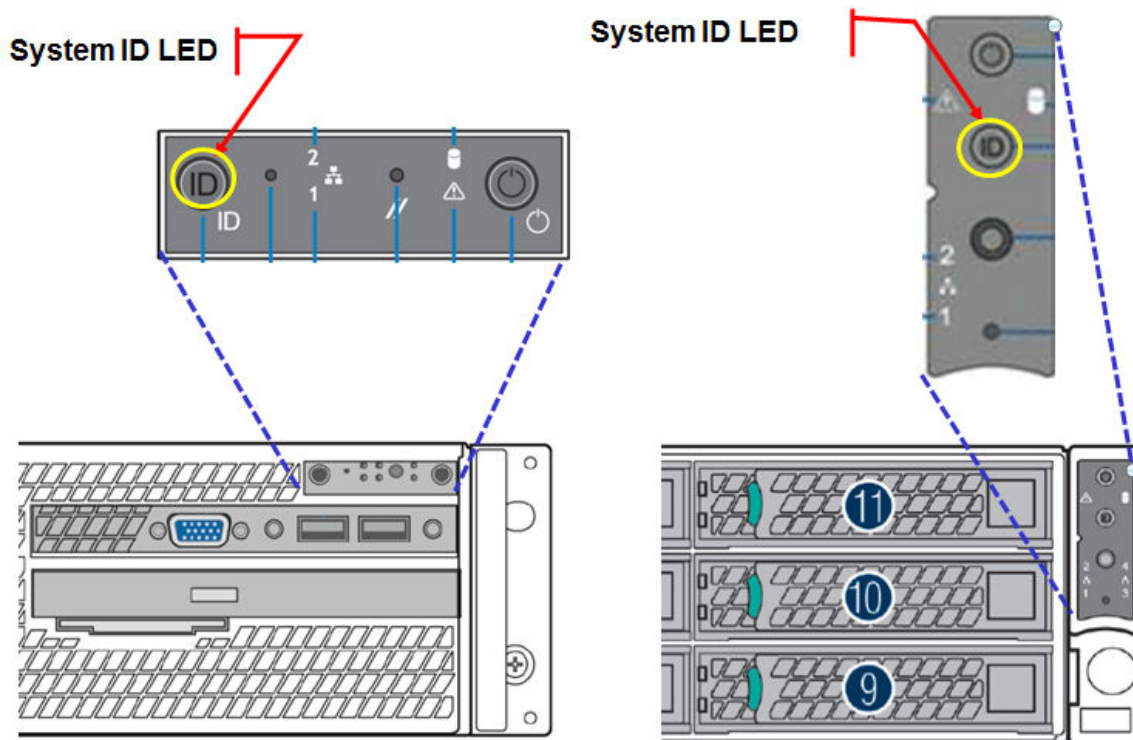
ANSWER: When servicing or performing maintenance tasks on Altos R380 F3, press the System ID button on the front panel to turn on System ID LED on the front and rear panels.

The System ID LED can be used to locate a particular Altos R380 F3 system within a rack.

2. In addition to press the System ID button to turn on the System ID LED, is there any software solution to do the same thing?

ANSWER: Yes. You can turn on the system ID LED with Smart Console or Smart Server Manager.

- Smart Console

a. Please access Smart Console with web browser.

b. Please click `Remote Control`

c. Please select `Virtual Front Panel` then click `Chassis ID`.
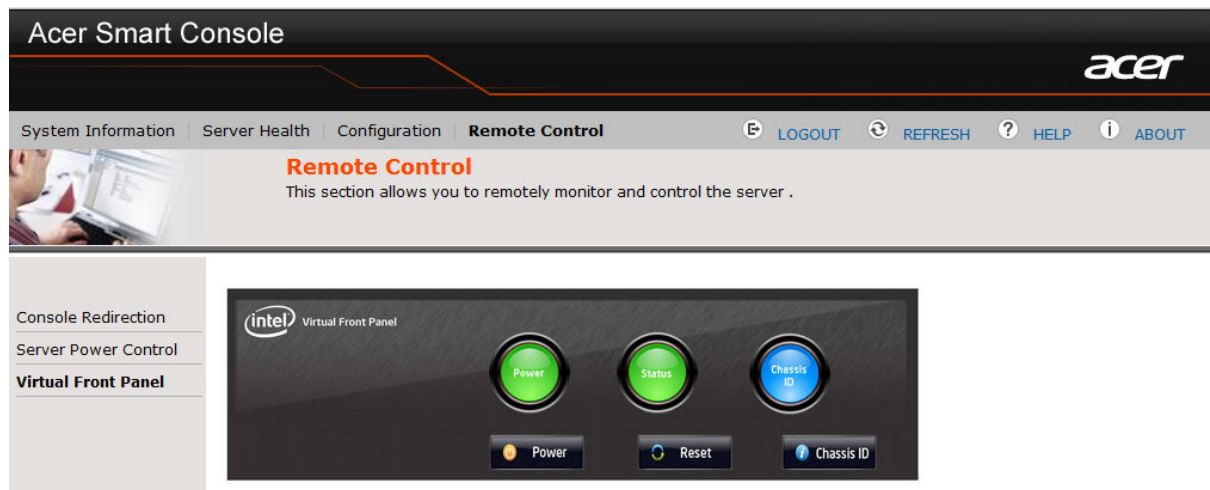
- Smart Server Manager:

a. Please access Smart Server Manager with web browser.

b. Please click `Devices` -> `Servers` -> `<your server>` -> `Tools`.

c. Please select `command` drop-down list and select `On`.

d. Click the button of `Issue Commands`. After that, there is a pop-out message to indicate System ID LED is turned on successfully
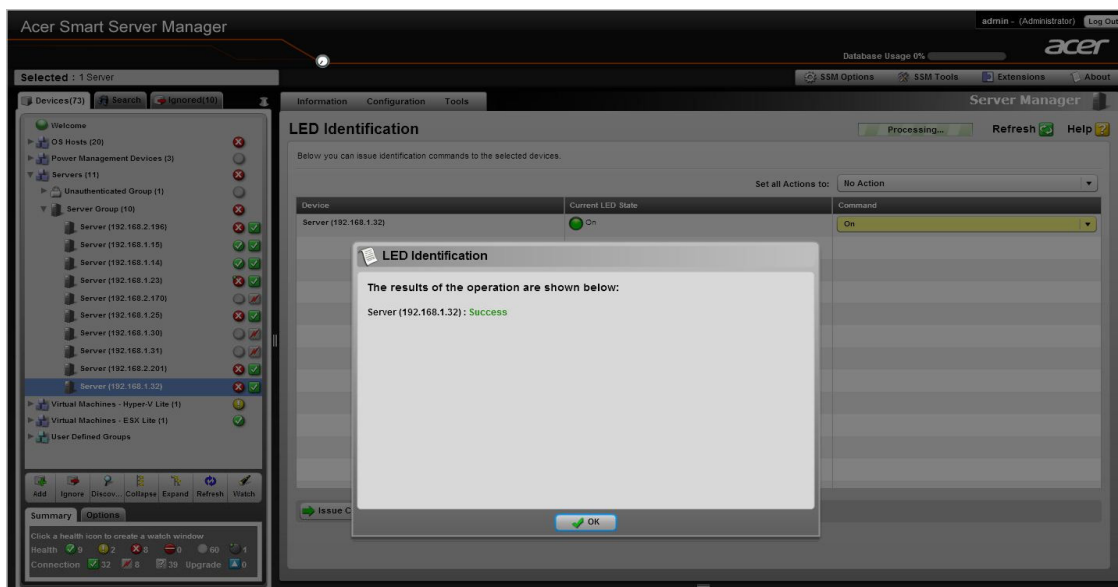
23. System Status LED

1.   How do I interpret the System Status LED?
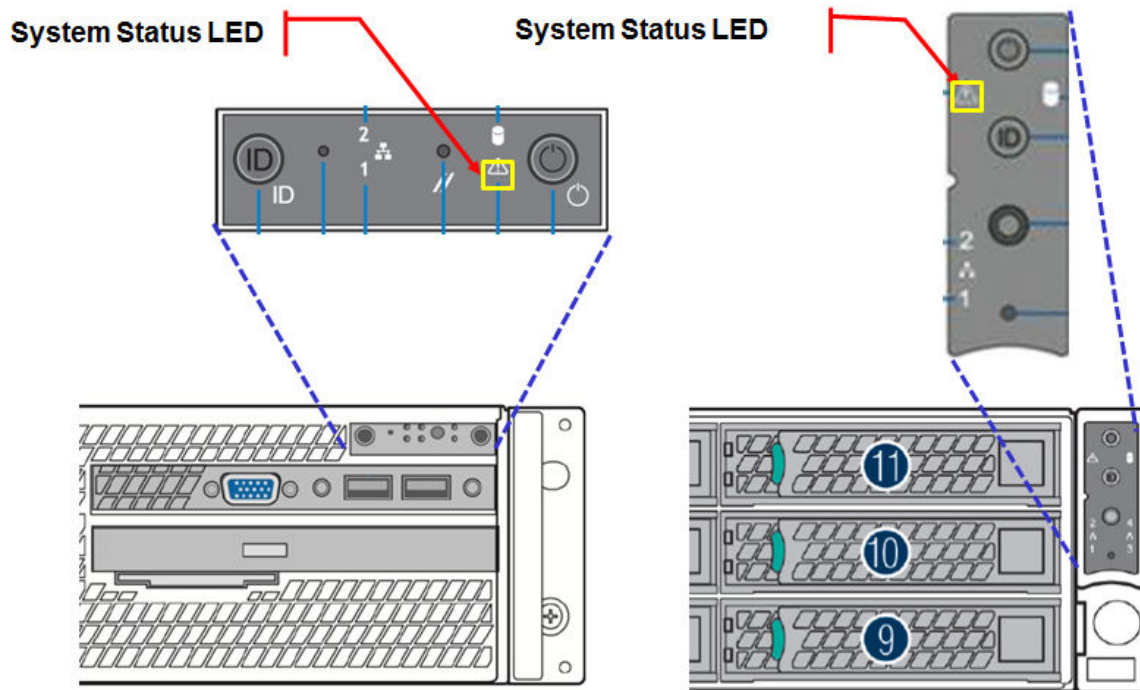
ANSWER: Please refer to below table:

LED Color	LED Status	Description
N/A	Off	Power off: System unplugged Power on: System powered off and in standby, no prior degraded\non-critical/critical state
Green	ON	System Ready/No Alarm
Green	Blink	System Ready but degraded: redundancy lost such as the power supply or fan failure; non-critical temp/voltage threshold, battery failure; or predictive power supply failure
Amber	ON	Critical Alarm: Critical power modules failure, critical fans failure, voltage (power supply), critical temperature and voltage
Amber	Blink	Non-Critical Alarm: Redundant fan failure, redundant power module failure, non-critical temperature and voltage

When System Status LED turns amber or blinks, please check the SEL (System Event Log) with Smart Console.

2. The System Status LED of Altos R380 F3 turns amber or blinks. After I accessed Smart Console and cleared the event log, the System Status LED is still amber or blinking?

    ANSWER: The System Status LED indicates the current status of system in real-time.

    When the System Status LED turns amber or blinks, users have to check the event log in Smart Console and identify which event causes the error. The System Status LED will only turn back to normal (Off) when the error has been fixed.

    NOTE. Clearing the event log in Smart Console will not turn System Status LED back to normal (Off).

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. How do I know the Windows Server 2012 is installed in EFI mode or Legacy mode?

ANSWER: Please check the partition type with Disk Management. The EFI System Partition indicates the Windows Sever 2012 is installed in EFI mode.
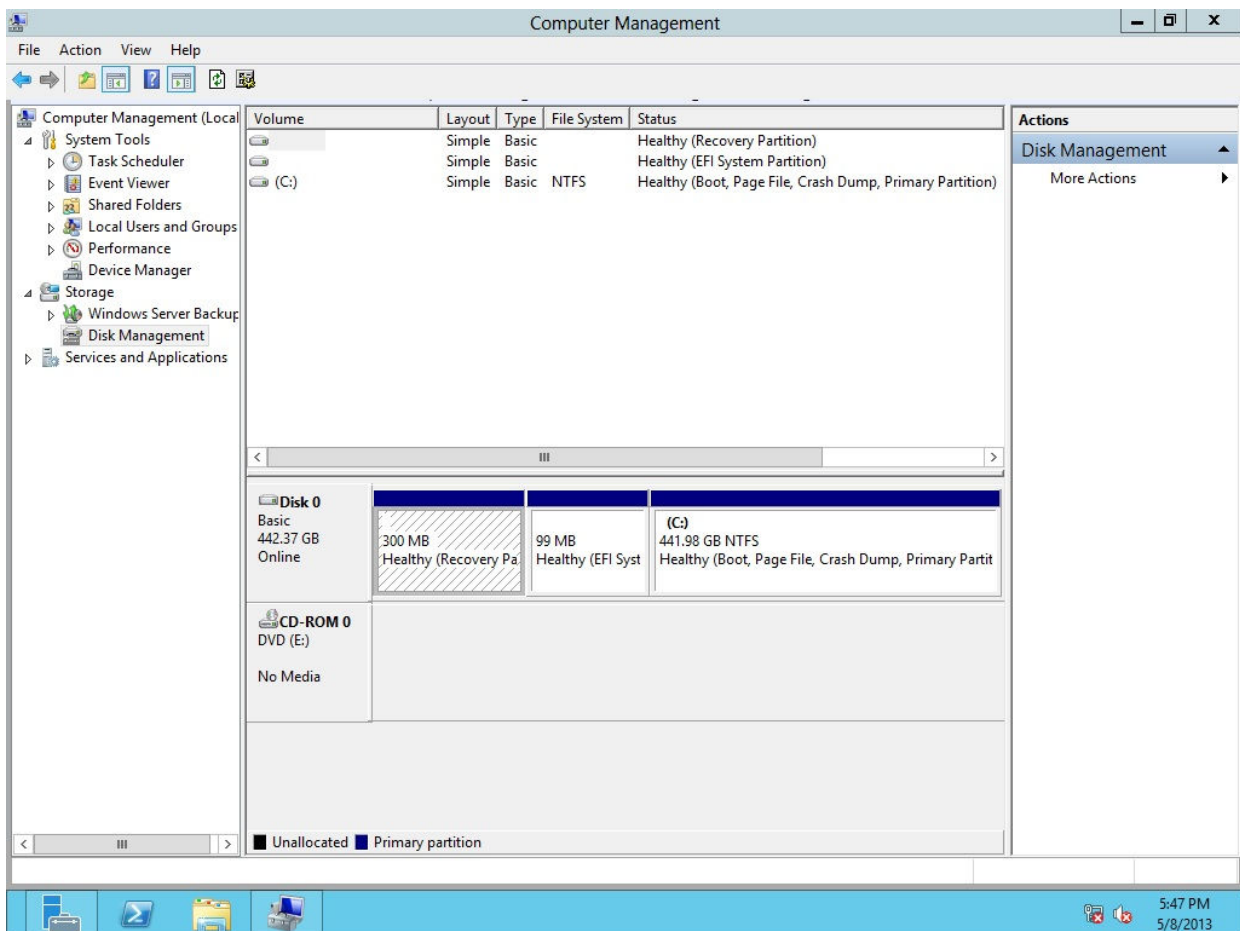
3. How do I know the SuSE Linux Enterprise Server is installed in EFI mode or Legacy mode?

ANSWER: Please check the partition type with "df –a" command. The EFI partition indicates the SuSE Linux Enterprise Server is installed with EFI mode.
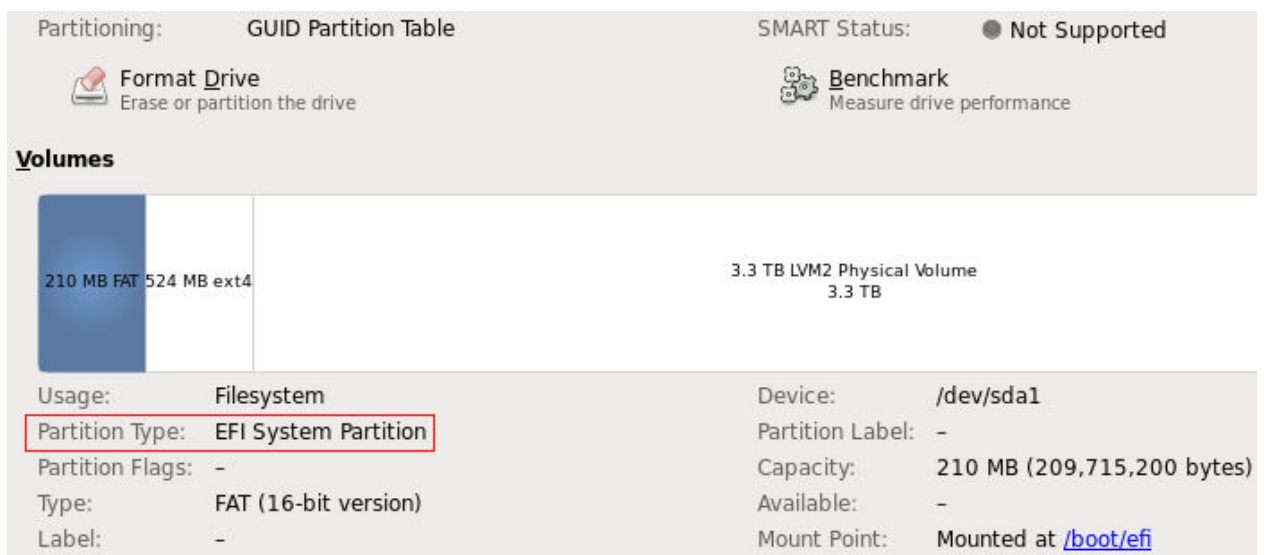
```
sles11sp1:~/Desktop # df -a
Filesystem       1K-blocks     Used Available Use% Mounted on
/dev/sda3       2113785016  2899984 2003510992   1% /
proc                     0        0         0    -  /proc
sysfs                    0        0         0    -  /sys
debugfs                  0        0         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
```

4. 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

In below example, RHEL 6 is installed in Legacy mode

5. How can I set the root password of onboard BMC and Smart Console?

   ANSWER: Please enter BIOS Setup during POST

   a. Please select `Setup Menu`.

   b. Please select `Server Management`.

   c. Please select `Server BMC LAN Configuration`

   d. You would see below information:

   ```
   User Configuration
   User ID                 [anonymous]
   Privilege                [Administrator]
   User Status              [Disabled]
   User Name                anonymous
   User Password
   ```

   e. Please change the User ID to root and select User Password to set the password.

25. Video

1. What's the video controller of Altos R380 F3?

   ANSWER: Matrox G200e with 16 MB of video memory.

26. Virtualization

1. Do I still need to install the virtualization software since Altos R380 F3 supports Intel VT (Virtualization Technology)?

    ANSWER: Yes, you still need to install VMware ESXi or Windows Server2012 R2 Hyper-V to support virtualization on Altos R380 F3.

2. Does Altos R380 F3 support Intel VT-i?

    ANSWER: No.

    Altos R380 F3 supports VT-x technology which is identical to VT-i on Intel Itanium processors.

3. Does Altos R380 F3 support Intel VT-d?

    ANSWER: Yes.

4. Is Intel VT a necessary requirement for virtualization?

    ANSWER: This depends on virtualization software.

    Windows Server 2012 Hyper-V requires VT-x.

5. Can Altos R380 F3 support VMware ESXi 5.5 Update 2?

    ANSWER: Yes, Altos R380 F3 is certified with VMware ESXi 5.5 Update 2

6. Can Altos R380 F3 support VMware Virtual SAN?

    ANSWER: According to VMware, Virtual SAN leverages the existing Server Certification program, no additional certification is needed for your server to work in a Virtual SAN environment.

7. Can Altos R380 F3 support Hyper-V?

    ANSWER: Yes, Altos R380 F3 is certified with Windows Server 2012 R2 with Hyper-V.

8. Can Altos R380 F3 support Hyper-V Server 2012 R2?

    ANSWER: Yes, Altos R380 F3 is certified with Windows Server 2012 R2 with Hyper-V.

    According to Microsoft, there is no specific certification program for Hyper-V Server 2012 R2. For servers are certified with Windows Server 2012 R2 with Hyper-V, Hyper-V Server 2012 R2 can be supported.

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

    ANSWER: Yes, Hyper-V requires
    *   x64-based processor such as a 64 or AMD-64.
    *   Hardware-assisted virtualization (like Intel VT, AMD-V)
    *   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

10. Can Altos R380 F3 support XenServer?

    ANSWER: Yes.

11. Which Guest OS can Altos R380 F3 support?

    ANSWER: This depends on the support of virtualization software.

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

But Altos R380 F3 is not tested with Windows NT 4.0. Altos R380 F3 is not certified with Windows NT 4.0, either.

12. How do I create virtual machine and install guest operating system on Altos R380 F3?

ANSWER: This depends on the support of virtualization software.

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