NA381TB3

4U 24 bay (3.5" / 2.5") Thunderbolt™ 3 Storage and PCIe Expansion

User Manual

Fourth edition, Nov. 2020

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1. Overview

Based on the latest Thunderbolt 3 technology and PCIe architecture, the creative, innovative design of NA381TB3 features RAID level protection and high-performance with PCIe Gen3 expansion ability to Thunderbolt Mac through the blazing-fast Thunderbolt interface. Moreover, the Thunderbolt 3 NA381TB3 enclosure accommodates SAS/SATA 6G/3Gbps hard drives and can be installed with professional PCIe cards for application.

2. Package Checklist

Before installing the unit, verify the package contains the following items.

A Enclosure x 1

B HDD Tray x 24 (installed in chassis)

C Thunderbolt 3 cable (2 meters) x 1

D Internal data cable × 6

E Power cord x 2

F HDD mounting screw

G Key for HDD tray x 2

Notify your sales representative if any of the above items is missing or damaged.

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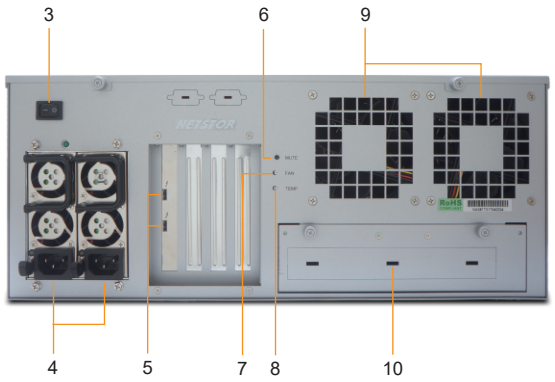
3. Panel Layout

1. HDD Power LED
- White - Power On Indicator

2. HDD Status LED
- Flash Blue - HDD Accessing Indicator, Red - HDD Failure Indicator



3. PSU power button
- “I” for enable, “0” for disable

4. Power cord receptacles

5. Thunderbolt 3 Connectors
- Connecting Thunderbolt 3 cables to host and downstream device

6. Mute Button
- Reset for buzzer beeping

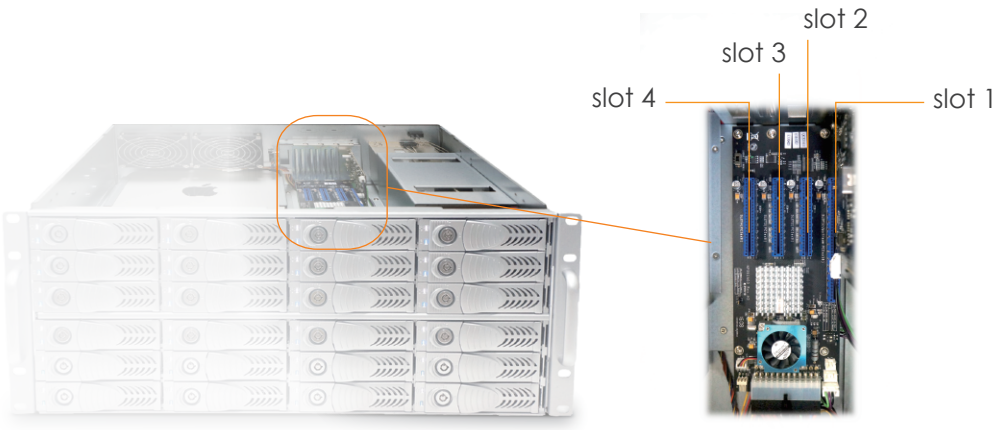
7. Fan Status LED
- Normal – Green
- Failure – Red (too slow RPM or stop)

8. Temperature LED
- Normal – Green
- Over 50°C – Red

9. Cooling fans

10. Swappable integrated plate drawer for Mac mini/Mac mini Server

4. Hardware Configuration



Slot 1 : Thunderbolt 3 target card (already fixed in the chassis)

Slot 2 : PCIe x8 slot (open-type; supports PCIe card x16/x8/x4/x1)
RAID card is recommended to be installed in this slot as it's closest to backplane's connectors.

Slot 3 : PCIe x8 slot (closed-type; supports PCIe card x8/x4/x1)

Slot 4 : PCIe x8 slot (open-type; supports PCIe card x16/x8/x4/x1)

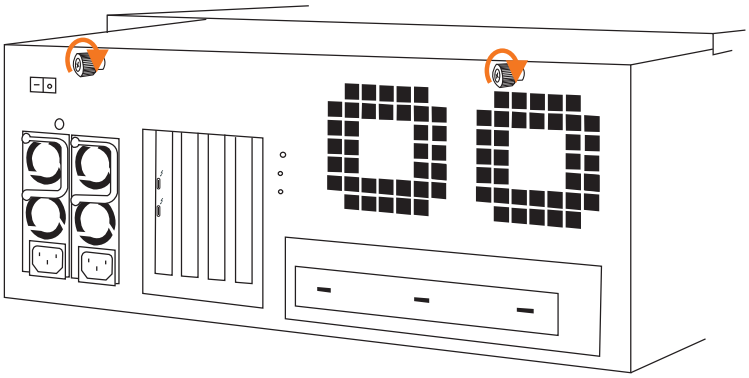
※ PCIe expension slot board LEDs Status

5. Building Up Procedures

5.1 PCIe Card Installation

1. Place NA381TB3 chassis on a level surface of a stable table.

2. Open the chassis by removing the top cover.



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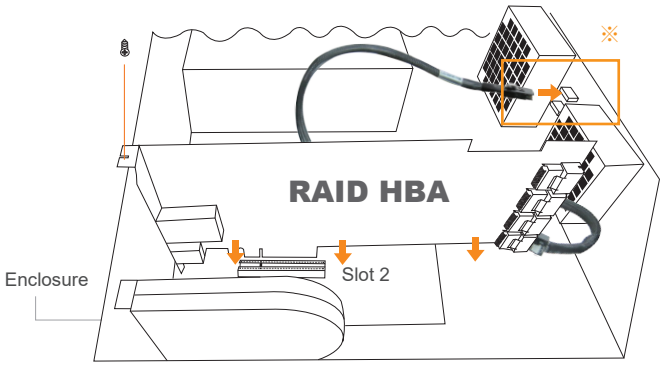
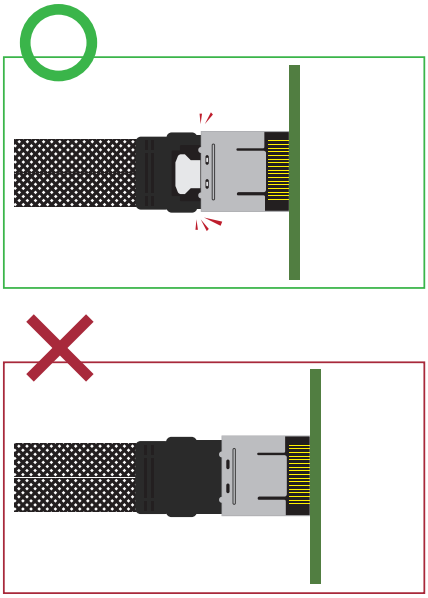
3. Three PCIe slots on rear of NA381TB3 are covered by removable L-shape metal brackets. Unscrew the screw of the removable L-shape metal bracket to let the PCIe slots be ready for PCIe cards installation.

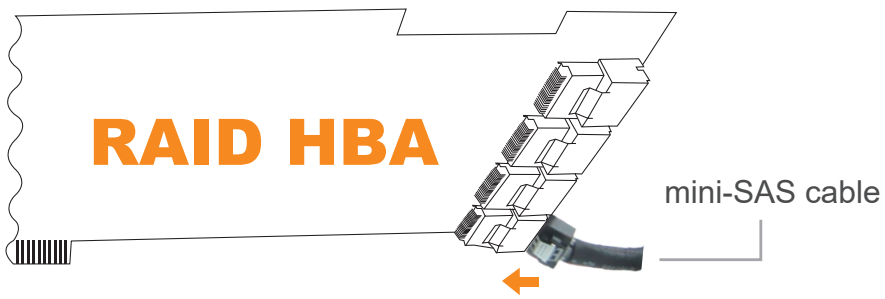
4. Install one SAS/SATA RAID card and other PCIe cards into proper PCIe slots of NA381TB3, and then tighten them with screws on the brackets of the PCIe cards.





※ Note: when inserting the mini-SAS cable to the SFF-8087 port on drive backplane, the metal hook on the SFF-8087 connector on data cable must be facing upward.

5. Connect the cable between the topmost mini-SAS connector on backplane and the mini-SAS connector Channel 1~4 on RAID card, and then connect the rest cables subsequently to the bottommost one on backplane and Channel 21~24 on RAID card.



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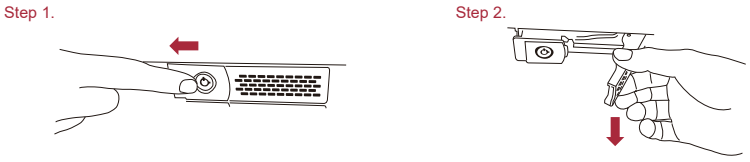
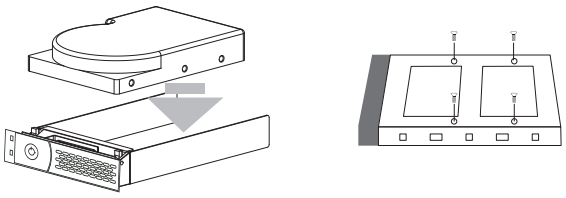
6. Restore the top cover of NA381TB3.

5.2 Hard Drive Installation

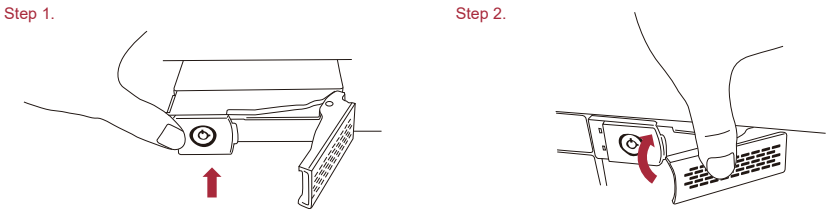
1. Take out the drive trays.



2. Place the HDDs/SSDs in the trays and fix them with drive mounting screws. If 3.5-inch HDD, use the screws in the packet labeled with 3.5”; if 2.5-inch HDD/SSD, use the screws in the packet labeled with 2.5”.



3. Insert the drive trays with HDDs/SSDs back to NA381TB3.



5.3 Connecting to Host Computer

5.3.1 Thunderbolt 3 Mac host

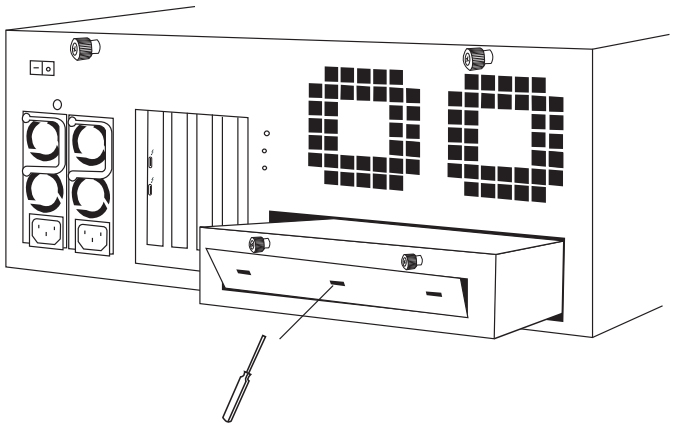
1. Connect NA381TB3 to Thunderbolt 3 Mac directly by Thunderbolt 3 cable.

2. Immobilize the chassis on a server rack or proper place.

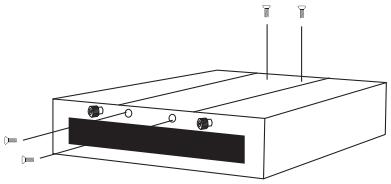
3. Connect NA381TB3 with power source.

5.3.2 Mac mini Installation

1. Loosen the two thumbscrews on swappable integrated plate drawer, and pull it out. Use a tool to bend the metal board on plate drawer to separate the metal board from drawer.



2. Unscrew the four screws on L-type bracket on plate drawer, place the Mac mini Server into drawer, and restore the L-type bracket to fasten Mac mini Server with drawer.



3. Connect NA381TB3 and Mac mini Server with Thunderbolt 3 cable via Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter.

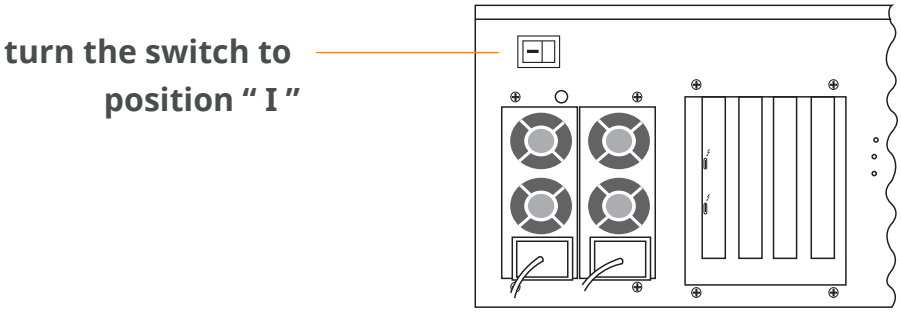
4. Immobilize the chassis on a server rack or proper place.

5. Connect NA381TB3 with power source.

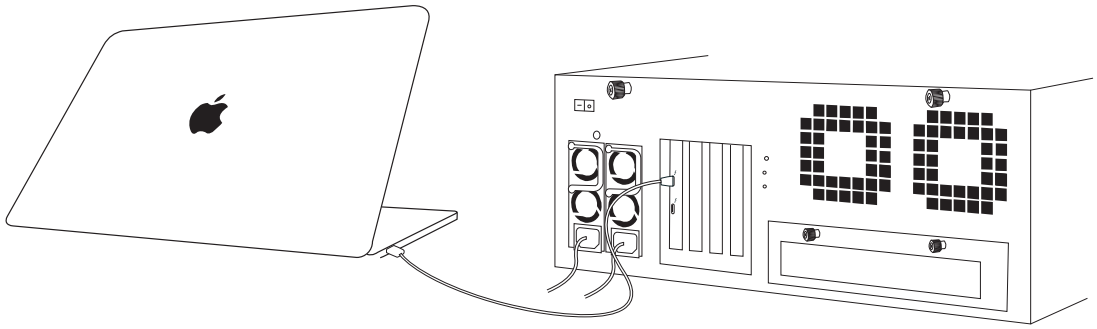
6. Operation and Verification

6.1 Verification steps for Mac

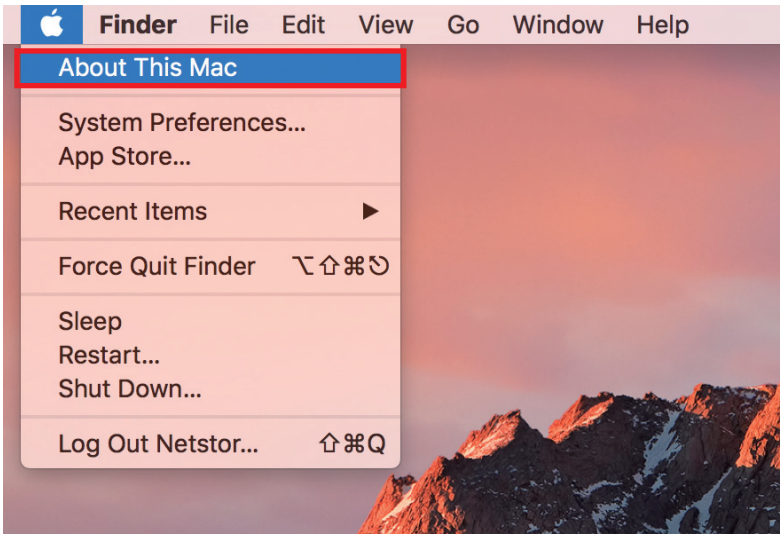
1. When NA381TB3 is connected to the power source, turn on the power switch of storage's PSU. (turn the switch to "I" position to enable the power supply unit)

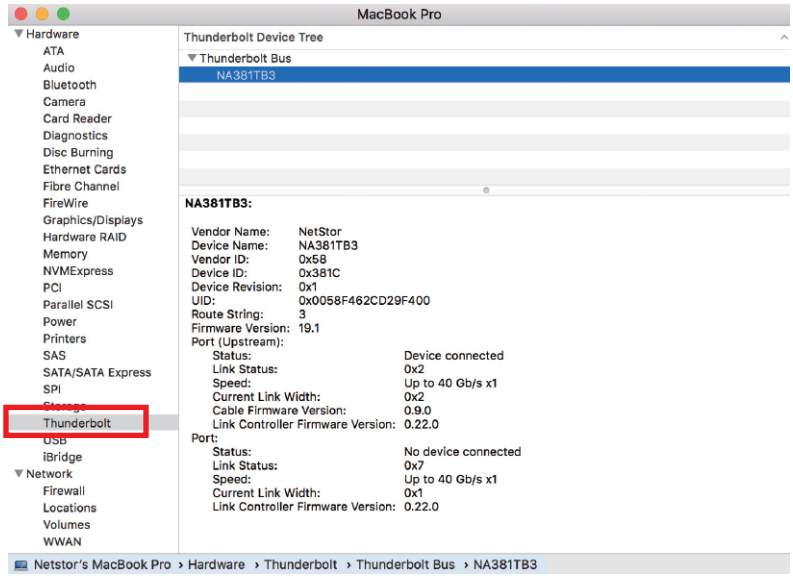


2. The NA381TB3 is designed to be powered on/off simultaneously with Thunderbolt Mac when storage is connected to Mac by Thunderbolt cable. Therefore, power on Mac first, and then NA381TB3 will be powered on automatically. (NA381TB3 also supports hot-plug and hot-unplug for powering on and off)



3. Verify Netstor Thunderbolt 3 target card is recognized by Mac. Click the Apple icon on top left of the screen, select **About This Mac**, and click **System Report**, and then System Information pane will pop up. Select **Thunderbolt** at the left side of the pane; if NA381TB3 can be selected to see its information, the Netstor Thunderbolt 3 target card is recognized correctly by Mac.





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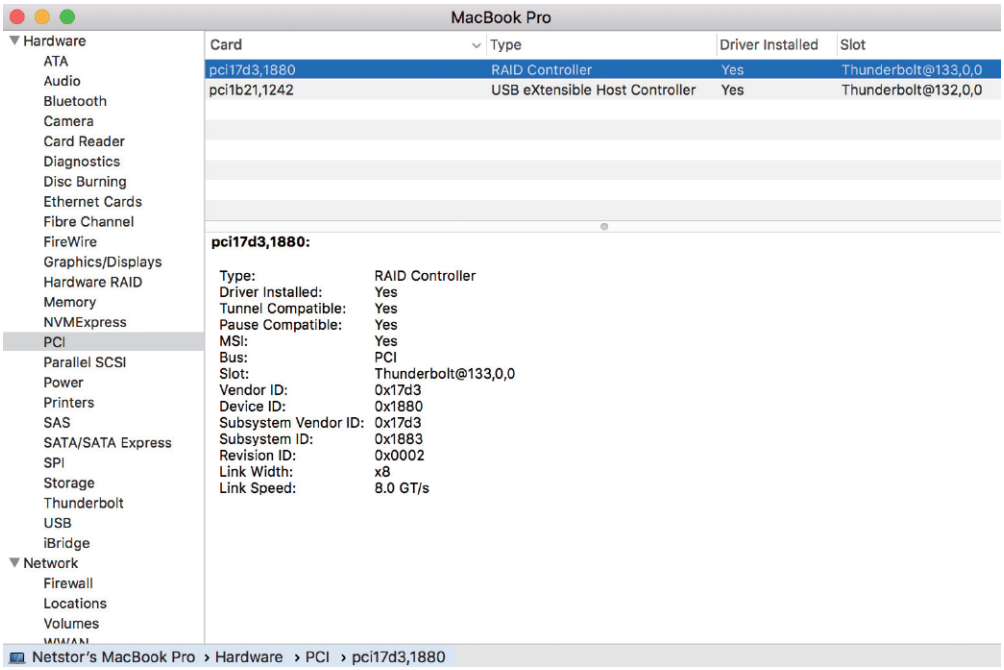
4. Verify the PCIe cards installed in NA381TB3. After the verification of Netstor Thunderbolt 3 target card, click **PCI** at the left side of the pane, and all the PCIe cards installed in NA381TB3 will be shown in the information area within the pane. (For RAID card, since starting up, it will take more time for its info to be shown)

5. Verify the drivers of RAID card and PCIe cards are installed on macOS. When seeing all the PCIe cards are listed at the last step, there will be a section **Driver Installed** indicating the status of PCIe cards' drivers. If it shows "No" for the status, find and install the Thunderbolt-aware driver for the PCIe card, and then the status will become "Yes" to mean the driver of the PCIe card is installed properly.

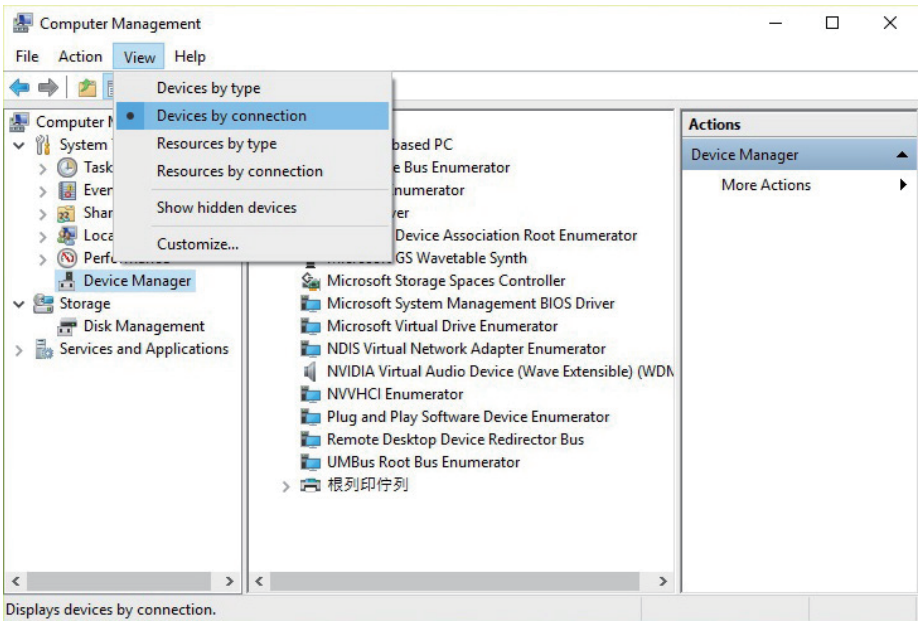


6. After verifying RAID card's driver is installed, follow the operation procedure instructed by RAID card's manufacturer to set up the RAID volume.

7. While NA381TB3 is connected to Mac by Thunderbolt cable, when shutting down Mac, the NA381TB3 will be shut down simultaneously as well.

6.2 Verification steps for Windows

1. Verify NA381TB3 is recognized by host. Right-click Computer, and select **Manage**. When window of Computer Management pops up, select **Device Manager** at the left, and click **View** on top, and then select **Devices by connection**.



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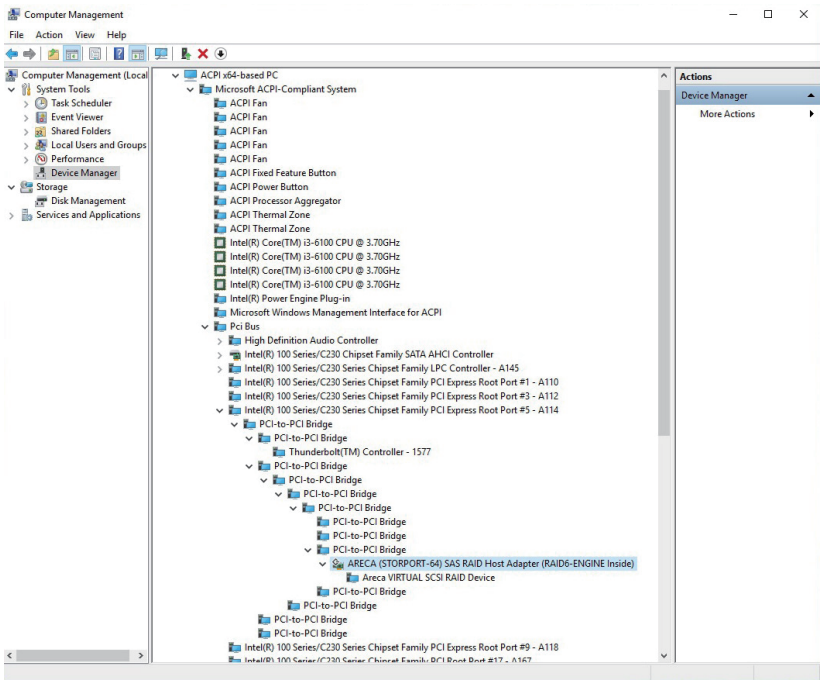
2. Click **ACPI x64-based PC**, select **Microsoft ACPI-Compliant System**, and click **PCI bus/PCI Express Root Complex**. Then items **Intel 7 Series Chipset Family PCI Express Root Port X** will be shown. Find one of the items that shows PCI standard PCI-to-PCI bridge, open the PCI standard PCI-to-PCI bridge to the innermost tier, and the RAID card within NA381TB3 will be shown, meaning the storage is recognized by host.



3. Depending on RAID card's requirement (take Areca's for instance), firstly install NA381TB3 RAID card's Windows Thunderbolt-aware driver and the Windows GUI program.

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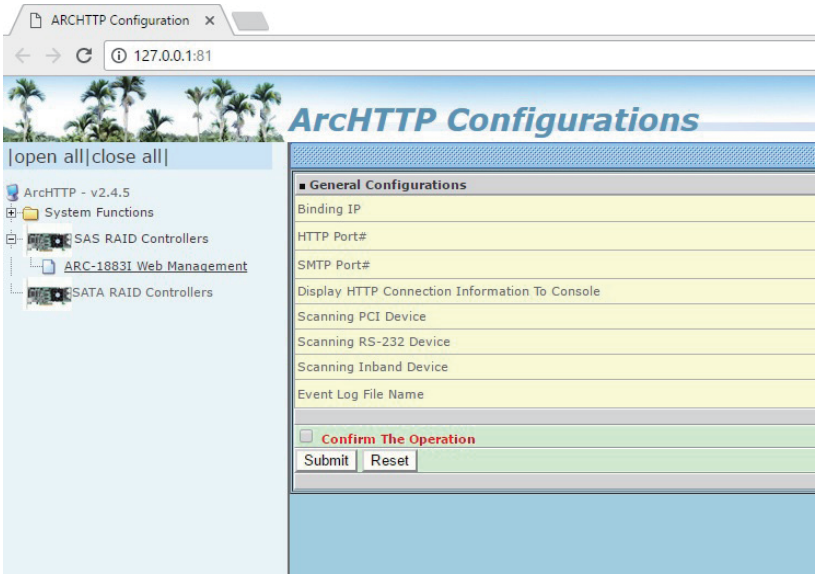
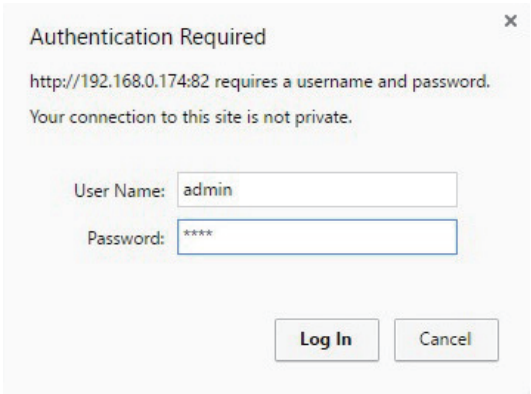
4. After installing the driver and the GUI program, launch the GUI program by selecting **ArcHttpSrvGUI** in All Programs in Windows Start to execute the application.



5. After executing **ArcHttpSrvGUI** application, the web GUI will pop up. Select **SAS RAID Controllers**, and then select **ARC-188X Web Management** to enter the GUI interface.

6. Key in **admin** for name and **0000** for password to enter.



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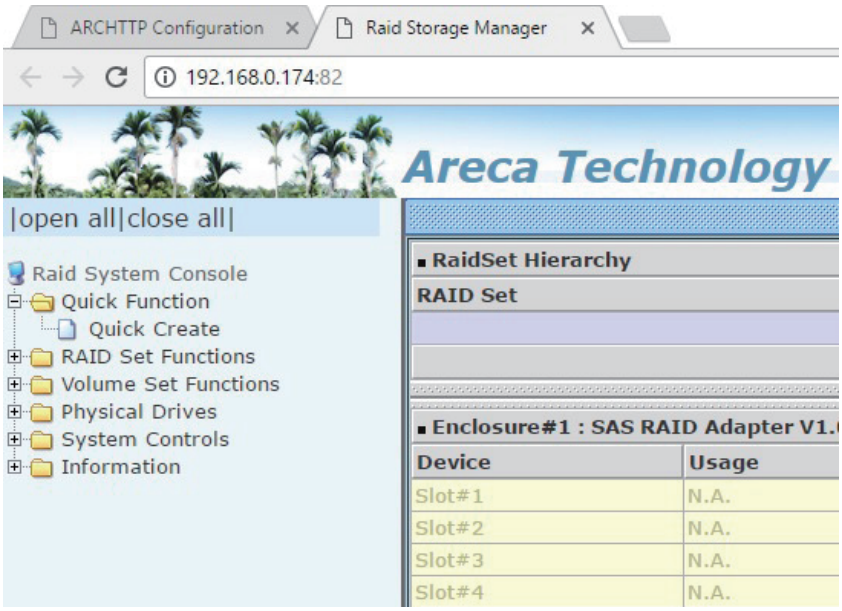
7. After logging in, for quick setup of RAID volume, select **Quick Function** at the left side of GUI, and then select **Quick Create**.



8. After creating RAID volume, right-click Computer, and select **Manage**. When window of Computer Management pops up, select **Disk Management** at the left, and then a window will pop up. Select **GPT (GUID Partition Table)**, and click OK.

9. After selecting GPT (GUID Partition Table), the RAID volume will appear in the center bottom part of the window. Right-click the portion of the RAID volume, and select **New Simple Volume** to format the RAID volume.

10. After formatting, the RAID volume will be shown in Computer, and will be ready for use.UI program.

Note: To eject the RAID volume on Windows, click the Safely Remove Hardware icon on the bottom right of the screen, and select Eject Areca ARC-188X SCSI Disk Device.

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11. While NA381TB3 storage is connected to host by Thunderbolt cable, when shutting down host, NA381TB3 will be shut down simultaneously as well.

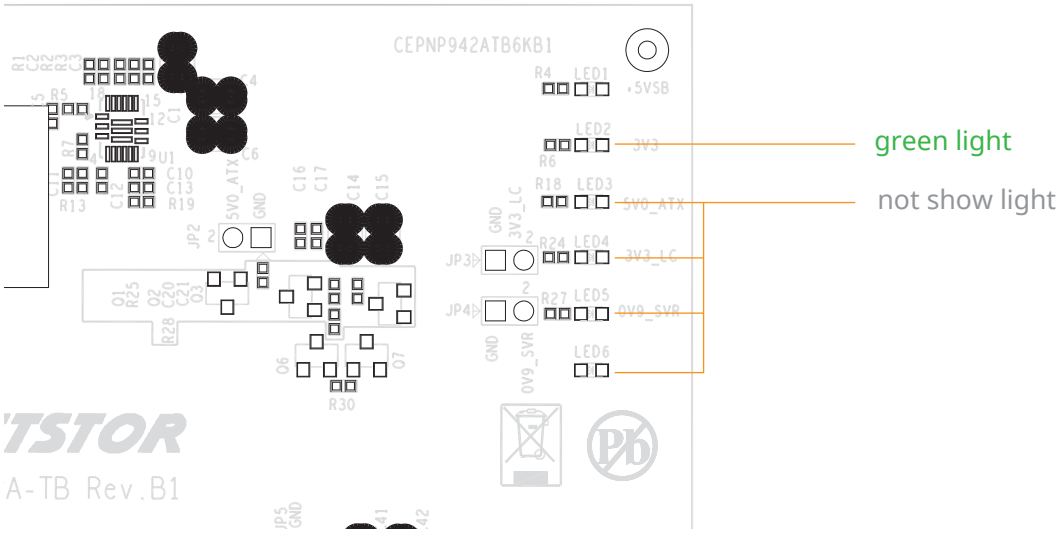
> **Note:** the NA381TB3 chassis supports SGPIO. When any HDD fails, the red LED indicator on the tray will light. The SGPIO function will be effective when the SAS/SATA RAID card supports SGPIO function. (for example, Areca's RAID card)

6.3 Thunderbolt 3 Card LEDs Status

On the Thunderbolt 3 card within the NA381TB3 storage, there are totally five LEDs. From top to bottom, they are: LED 2 (for 3V3), LED 3 (for 5V0_ATX), LED 4 (for 3V3_LC), LED 5 (for 0V9_SVR), and LED 6 (for 0V9_USB). The following information describes what the LEDs lighting status will be before NA381TB3 is powered on and after the Netstor unit is powered on.

Power-off:

Before NA381TB3 is powered on, only LED 2 will show green light, and the rest LED 3 through LED 6 will not show light.



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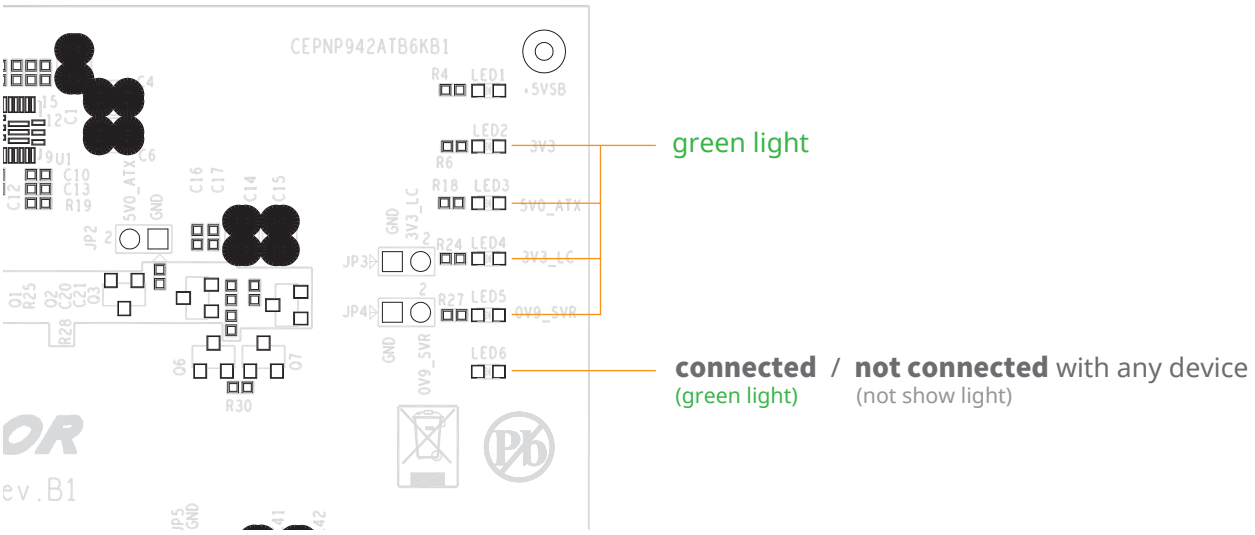
Power-on:

After NA381TB3 is powered on, LED 2 through LED 5 will show green light. At this time, if a USB device or a monitor is daisy chained to the second Thunderbolt 3 port on the Netstor Thunderbolt 3 card, then LED 6 will show green light. On the other hand, provided the second Thunderbolt 3 port is not connected with any device/monitor, LED 6 will not show light.



6.4 PCIe expension slot board LEDs Status

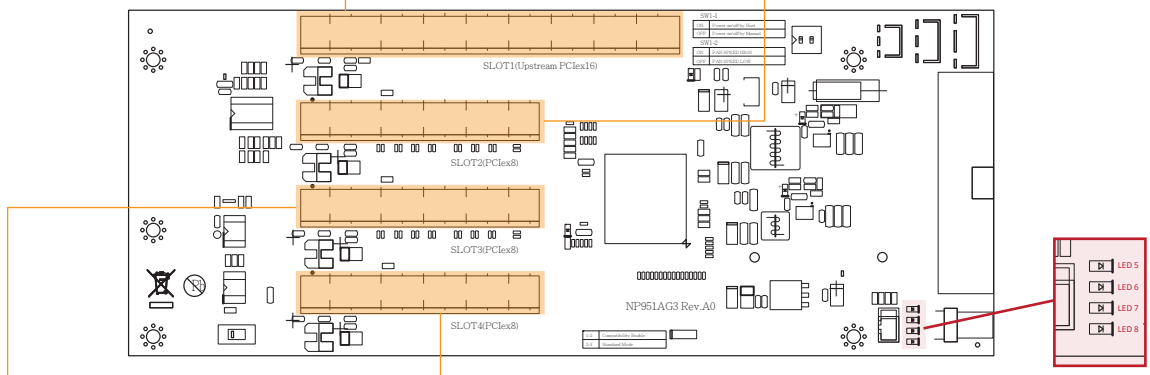
Slot 1: Target card

◦ (already fixed in the chassis)

Slot 2: PCIe ×8 slot

◦ (open-type; supports PCIe card ×16/×8/×4/×1)

◦ RAID card is recommended to be installed in this slot as it's closest to backplane's connectors.



Slot 3: PCIe ×8 slot

◦ (closed-type; supports PCIe card ×8/×4/×1)

Slot 4: PCIe ×8 slot

◦ (open-type; supports PCIe card ×16/×8/×4/×1)

LED5 for SLOT1

As LED5 illuminates solid blue light, it indicates Thunderbolt target card in SLOT#1 is in Gen3 mode. As LED5 blinking blue light, Thunderbolt target card in SLOT#1 is in Gen2 mode.

LED6 for SLOT2

As LED6 illuminates solid blue light, it indicates the PCIe card in SLOT#2 is in Gen3 mode. As LED6 blinking blue light, PCIe card in SLOT#2 is in Gen2 mode.

LED7 for SLOT3

As LED7 illuminates solid blue light, it indicates the PCIe card in SLOT#3 is in Gen3 mode. As LED7 blinking blue light, PCIe card in SLOT#3 is in Gen2 mode.

LED8 for SLOT4

As LED8 illuminates solid blue light, it indicates the PCIe card in SLOT#4 is in Gen3 mode. As LED8 blinking blue light, PCIe card in SLOT#4 is in Gen2 mode.

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If you have any questions, please contact your regional distributor,
or Netstor Technology, Taiwan.

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