Troubleshoot hardware installation (SG6000)

StorageGRID

NetApp
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If you encounter issues during the installation, you might find it helpful to review troubleshooting information related to hardware setup and connectivity issues.

View boot-up codes for SG6000-CN controller

When you apply power to the appliance, the BMC logs a series of boot-up codes for the SG6000-CN controller. You can view these codes in several ways.

What you'll need

- You know how to access the BMC dashboard.
- If you want to use serial-over-LAN (SOL), you have experience using IPMI SOL console applications.

Steps

1. Select one of the following methods for viewing the boot-up codes for the appliance controller, and gather the required equipment.

Method	Required equipment
VGA console	• VGA-capable monitor • VGA cable
KVM	• RJ-45 cable
Serial port	• DB-9 serial cable • Virtual serial terminal
SOL	• Virtual serial terminal

2. If you are using a VGA console, perform these steps:
   a. Connect a VGA-capable monitor to the VGA port on the back of the appliance.
   b. View the codes displayed on the monitor.
3. If you are using BMC KVM, perform these steps:
   a. Connect to the BMC management port and log into the BMC web interface.
   b. Select **Remote Control**.
   c. Launch the KVM.
   d. View the codes on the virtual monitor.
4. If you are using a serial port and terminal, perform these steps:
   a. Connect to the DB-9 serial port on the back of the appliance.
   b. Use settings `115200 8-N-1`.
   c. View the codes printed over the serial terminal.

5. If you are using SOL, perform these steps:

   a. Connect to the IPMI SOL using the BMC IP address and login credentials.

   > If you haven't changed the BMC root account password, the factory-default value might be "calvin".

   ```
   ipmitool -I lanplus -H BMC_Port_IP -U root -P Password sol activate
   ```

   b. View the codes on the virtual serial terminal.

6. Use the table to look up the codes for your appliance.

Code	Indicates
HI	The master boot script has started.
HP	The system is checking to see if the network interface card (NIC) firmware needs to be updated.
RB	The system is rebooting after applying firmware updates.
FP	The hardware subsystem firmware update checks have been completed. Inter-controller communication services are starting.
HE	For an appliance Storage Node only: The system is awaiting connectivity with the storage controllers and synchronizing with the SANtricity operating system. **Note:** If the boot-up procedure does not progress past this stage, perform these steps: a. Confirm that the four interconnect cables between the SG6000-CN controller and the two storage controllers are securely connected. b. As required, replace one or more of the cables, and try again. c. If this does not resolve the issue, contact technical support.
HC	The system is checking for existing StorageGRID installation data.
HO	The StorageGRID Appliance Installer is running.
HA	StorageGRID is running.

View error codes for SG6000-CN controller

If a hardware error occurs when the SG6000-CN controller is booting up, the BMC logs an error code. As required, you can view these error codes using the BMC interface, and then work with technical support to resolve the issue.

What you'll need

- You know how to access the BMC dashboard.

Steps

1. From the BMC dashboard, select **BIOS POST Code**.
2. Review the information displayed for Current Code and the Previous Code.

   If any of the following error codes are shown, work with technical support to resolve the issue.

Code	Indicates
0x0E	Microcode not found
0x0F	Microcode not loaded
0x50	Memory initialization error. Invalid memory type or incompatible memory speed.
0x51	Memory initialization error. SPD reading has failed.
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected.
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self-test failed, or possible CPU cache error
0x59	CPU micro-code is not found, or micro-code update failed
0x5A	Internal CPU error

Code	Indicates
0x5B	Reset PPI is not available
0x5C	PEI phase BMC self-test failure
0xD0	CPU initialization error
0xD1	North bridge initialization error
0xD2	South bridge initialization error
0xD3	Some architectural protocols are not available
0xD4	PCI resource allocation error. Out of resources.
0xD5	No space for legacy option ROM
0xD6	No console output devices are found
0xD7	No console input devices are found
0xD8	Invalid password
0xD9	Error loading boot option (LoadImage returned error)
0xDA	Boot option failed (StartImage returned error)
0xDB	Flash update failed
0xDC	Reset protocol is not available
0xDD	DXE phase BMC self-test failure
0xE8	MRC: ERR_NO_MEMORY
0xE9	MRC: ERR_LT_LOCK
0xEA	MRC: ERR_DDR_INIT
0xEB	MRC: ERR_MEM_TEST
0xEC	MRC: ERR_VENDOR_SPECIFIC

Code	Indicates
0xED	MRC: ERR_DIMM_COMPAT
0xEE	MRC: ERR_MRC_COMPATIBILITY
0xEF	MRC: ERR_MRC_STRUCT
0xF0	MRC: ERR_SET_VDD
0xF1	MRC: ERR_IOT_MEM_BUFFER
0xF2	MRC: ERR_RC_INTERNAL
0xF3	MRC: ERR_INVALID_REG_ACCESS
0xF4	MRC: ERR_SET_MC_FREQ
0xF5	MRC: ERR_READ_MC_FREQ
0x70	MRC: ERR_DIMM_CHANNEL
0x74	MRC: ERR_BIST_CHECK
0xF6	MRC: ERR_SMBUS
0xF7	MRC: ERR_PCU
0xF8	MRC: ERR_NGN
0xF9	MRC: ERR_INTERLEAVE_FAILURE

Hardware setup appears to hang (SG6000)

The StorageGRID Appliance Installer might not be available if hardware faults or cabling errors prevent the storage controllers or the SG6000-CN controller from completing their boot-up processing.

Steps

1. For the storage controllers, watch the codes on the seven-segment displays.

   While the hardware is initializing during power up, the two seven-segment displays show a sequence of codes. When the hardware boots successfully, both seven-segment displays show `99`.

2. Review the LEDs on the SG6000-CN controller and the boot-up and error codes displayed in the BMC.

3. If you need help resolving an issue, contact technical support.

Related information

View boot-up status codes for SG6000 storage controllers

E5700 and E2800 System Monitoring Guide

View status indicators and buttons on SG6000-CN controller

View boot-up codes for SG6000-CN controller

View error codes for SG6000-CN controller

Troubleshoot connection issues (SG6000)

If you encounter connection issues during the StorageGRID appliance installation, you should perform the corrective action steps listed.

Unable to connect to appliance

If you cannot connect to the appliance, there might be a network issue, or the hardware installation might not have been completed successfully.

Steps

1. If you are unable to connect to SANtricity System Manager:
   a. Try to ping the appliance using the IP address for either storage controller on the management network for SANtricity System Manager:
      `ping Storage_Controller_IP`
   b. If you receive no response from the ping, confirm you are using the correct IP address.

      Use the IP address for management port 1 on either storage controller.
   c. If the IP address is correct, check appliance cabling and the network setup.

      If that does not resolve the issue, contact technical support.
   d. If the ping was successful, open a web browser.
   e. Enter the URL for SANtricity System Manager:
      `https://Storage_Controller_IP`

      The log in page for SANtricity System Manager appears.
2. If you are unable to connect to the SG6000-CN controller:
   a. Try to ping the appliance using the IP address for the SG6000-CN controller:
      `ping SG6000-CN_Controller_IP`
   b. If you receive no response from the ping, confirm you are using the correct IP address.

      You can use the IP address of the appliance on the Grid Network, the Admin Network, or the Client Network.

c. If the IP address is correct, check appliance cabling, SFP transceivers, and the network setup.

d. If physical access to the SG6000-CN is available, you can use a direct connection to the permanent link-local IP `169.254.0.1` to check controller networking configuration and update if necessary. For detailed instructions, see step 2 in Accessing StorageGRID Appliance Installer.

   If that does not resolve the issue, contact technical support.

e. If the ping was successful, open a web browser.

f. Enter the URL for the StorageGRID Appliance Installer:
   `https://SG6000-CN_Controller_IP:8443`

   The Home page appears.

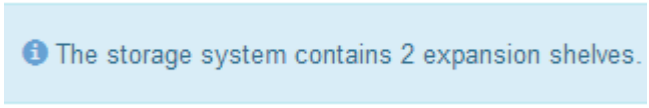
Expansion shelves do not appear in Appliance Installer

If you have installed expansion shelves for the SG6060 and they do not appear in the StorageGRID Appliance Installer, you should verify that the shelves have been completely installed and powered on.

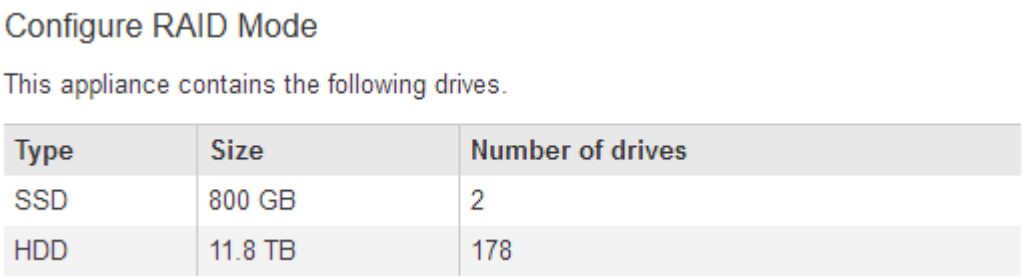
About this task

You can verify that the expansion shelves are connected to the appliance by viewing the following information in the StorageGRID Appliance Installer:

- The **Home** page contains a message about expansion shelves.



- The **Advanced** > **RAID Mode** page indicates by number of drives whether or not the appliance includes expansion shelves. For example, in the following screen shot, two SSDs and 178 HDDs are shown. An SG6060 with two expansion shelves contains 180 total drives.



If the StorageGRID Appliance Installer pages do not indicate that expansion shelves are present, follow this procedure.

Steps

1. Verify that all required cables have been firmly connected.
2. Verify that you have powered on the expansion shelves.
3. If you need help resolving an issue, contact technical support.

Reboot SG6000-CN controller while StorageGRID Appliance Installer is running

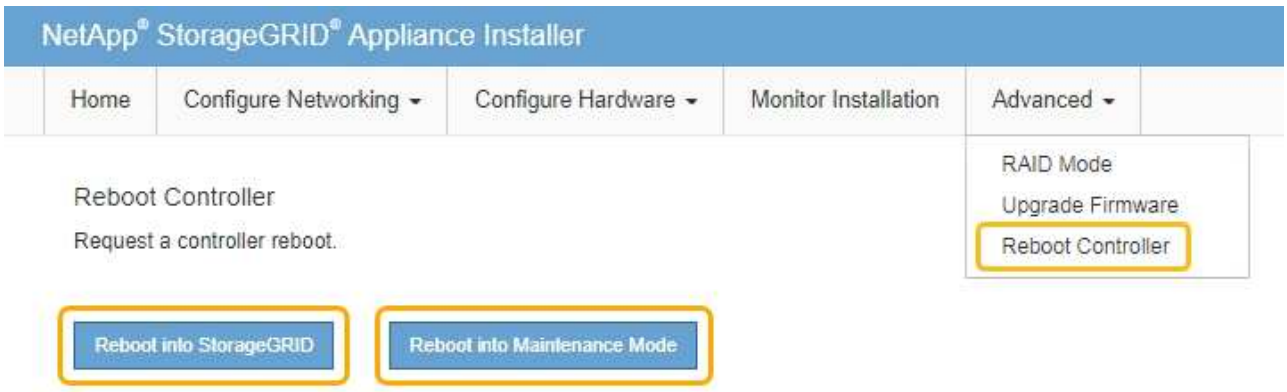
You might need to reboot the SG6000-CN controller while the StorageGRID Appliance Installer is running. For example, you might need to reboot the controller if the installation fails.

About this task

This procedure only applies when the SG6000-CN controller is running the StorageGRID Appliance Installer. Once the installation is completed, this step no longer works because the StorageGRID Appliance Installer is no longer available.

Steps

1. From the StorageGRID Appliance Installer, click **Advanced** > **Reboot Controller**, and then select one of these options:
   - Select **Reboot into StorageGRID** to reboot the controller with the node rejoining the grid. Select this option if you are done working in maintenance mode and are ready to return the node to normal operation.
   - Select **Reboot into Maintenance Mode** to reboot the controller with the node remaining in maintenance mode. (This option is available only when the controller is in maintenance mode.) Select this option if there are additional maintenance operations you need to perform on the node before rejoining the grid.



The SG6000-CN controller is rebooted.