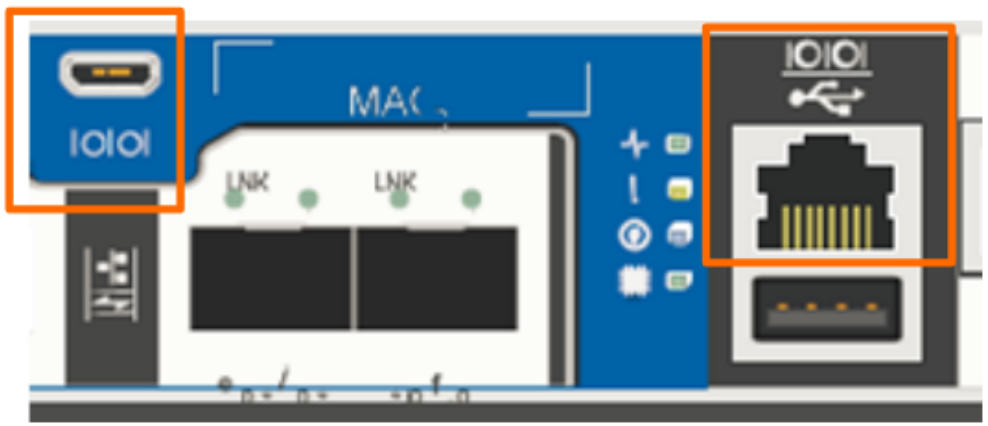
Command-line operation

Console connection and command-line usage

Lenovo

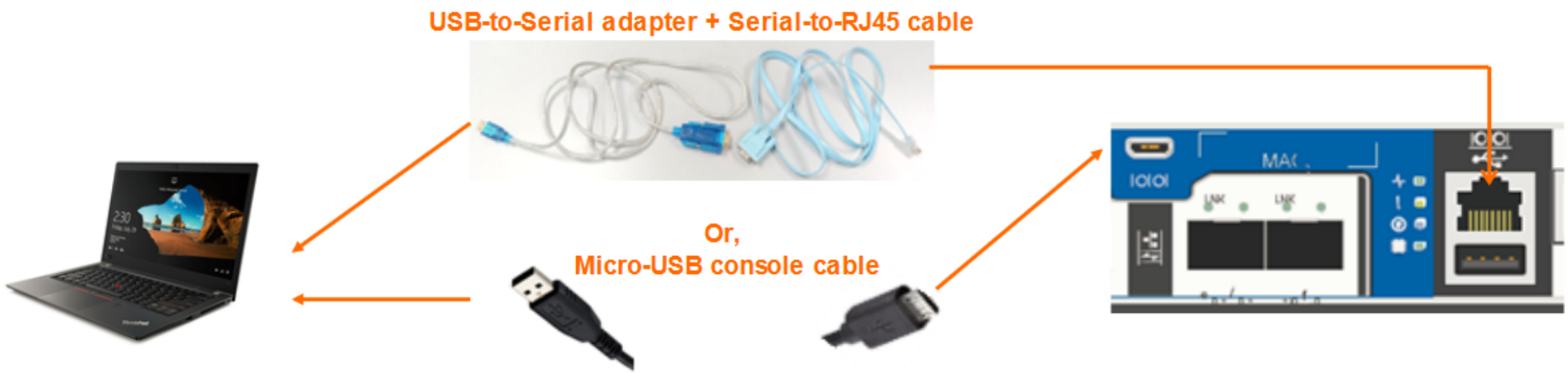
DM Series console port connection

There are two types of console (IOIOI) ports available on current DM Series storage systems. One is an RJ-45 connection, similar to an Ethernet copper connection which is also RJ-45. The other is a Micro-USB serial console port. Both of the console ports show the IOIOI icon either above or below the connector. See below for examples.



Serial console connection requirements

- To connect to the RJ-45 Serial console port, a USB-to-Serial adapter and a Serial-to-RJ-45 cable are required.
- To connect to the Micro-USB Serial console port, a Micro-USB console cable is required.
- A terminal emulator is required to connect to the console port.
  - It is recommend to use a PuTTY emulator which supports serial connections and SSH for Ethernet connections.
- Console port speeds setting:
  - Baud rate: 115200
  - Data bits: 8
  - Parity: None
  - Stop bits: 1



First time console login and configurations

When the system is turned on for the first time, the node management port IP address will need to be set up. Issue the `system node setup` command to run the node setup wizard, which is used to work through the basic node setup prior to the node joining a cluster. When this task is complete, you will be prompted to connect to this node using the cluster setup tool to complete the necessary cluster setup steps for this node. This command is only available before the node joins a cluster.

Click each step in turn to see more information

Step 1 2

First time console login and configurations

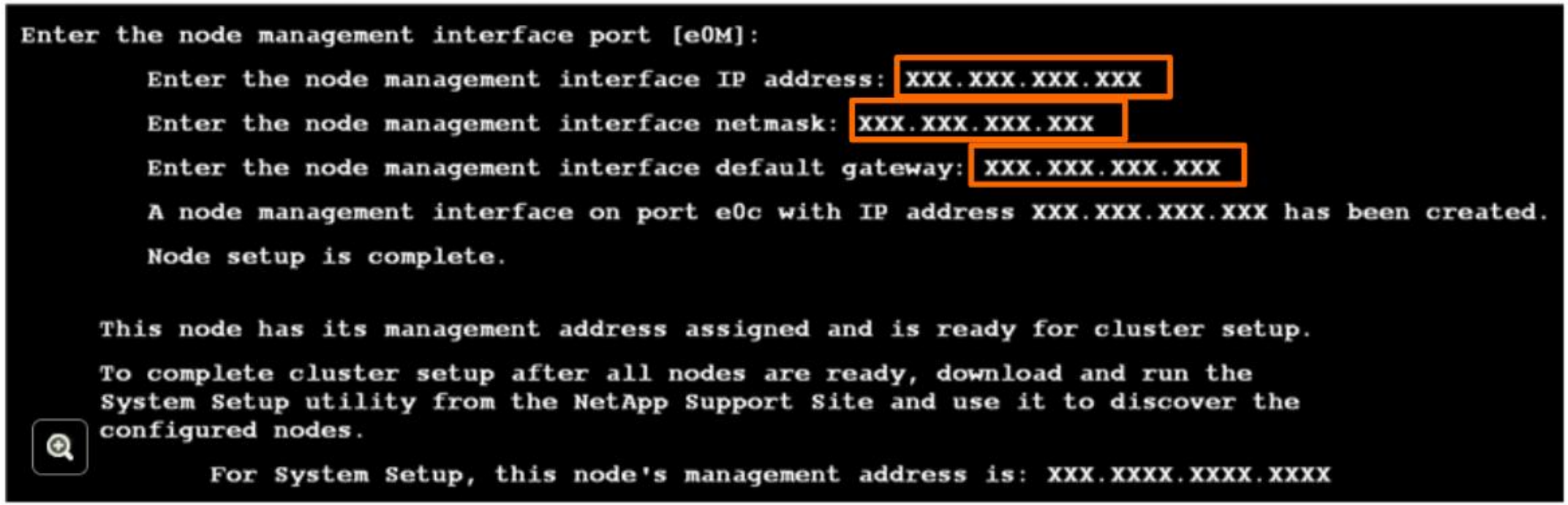
Connect to the console port of the controller, and then open a console session using PuTTY, a terminal server, or the equivalent for your environment.
Issue the `system node setup` command to run the node setup wizard. The following message will be displayed:

```
Welcome to node setup.
You can enter the following commands at any time:
"help" or "?" - if you want to have a question clarified,
"back" - if you want to change previously answered questions, and
"exit" or "quit" - if you want to quit the setup wizard.
Any changes you made before quitting will be saved.
To accept a default or omit a question, do not enter a value.
This system will send event messages and weekly reports to NetApp Technical
Support. To disable this feature, enter "autosupport modify -support disable"
within 24 hours. Enabling AutoSupport can significantly speed problem
determination and resolution should a problem occur on your system. For further information on
AutoSupport, see:
http://support.netapp.com/autosupport/
Type yes to confirm and continue {yes}:
```

Step 1—2

First time console login and configurations

You will be prompted to enter the additional configuration information to complete the setting.

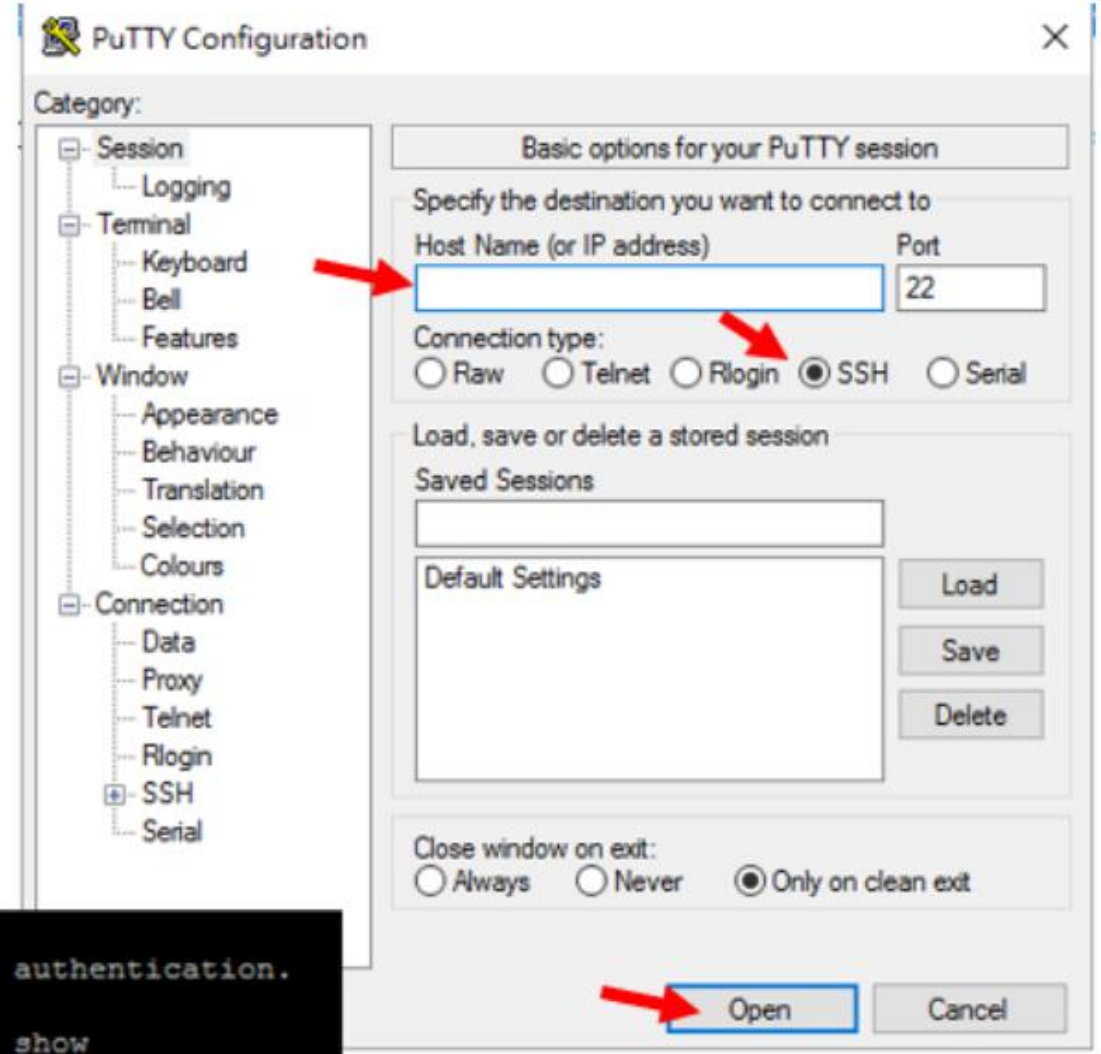


Step 1 2

SSH connections

To access the Data ONTAP CLI from a Windows host, you can use a third-party utility such as PuTTY to make an SSH connection. Work through the following procedure:

1. Open PuTTY.
2. Enter the IP address of the DM storage controller that you want to manage in the **Host Name (or IP address)** field.
3. Select **SSH** in the **Connection** type field.
4. Select **Open**. You have new connected to the ONTAP CLI.



Lenovo

Different shells for CLI commands

The cluster has three different shells for CLI commands: the clustershell, the nodeshell, and the systemshell. Depending on the task you want to perform, you might need to use different shells to run different commands.

- The clustershell is the native shell that is started automatically when you log in to the cluster.
- The nodeshell is a special shell for commands that take effect only at the node level, and it is accessible through the `system node run` command.
  The nodeshell CLI help (triggered by typing `?` or `help` at the nodeshell prompt) displays the available nodeshell commands. The `man command_name` command in the nodeshell displays help information for the specified clustershell command.
- The systemshell is a low-level shell that is used only for diagnostic and troubleshooting purposes. The systemshell is not intended for general administrative purposes, and it can only be accessed with guidance from technical support.

Click the buttons for more information.

Clustershell Nodeshell Systemshell

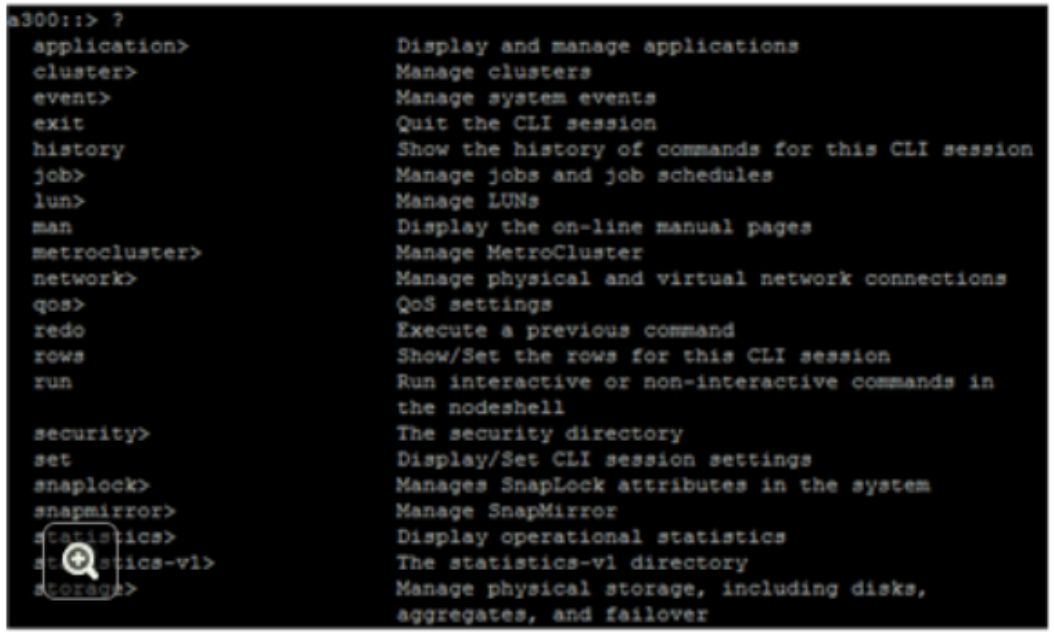
The clustershell

The clustershell is the native shell that starts automatically when you log in to the cluster.
It provides all the commands you need to configure and manage the cluster. The clustershell CLI help (triggered by `?` at the clustershell prompt) displays available clustershell commands. The `man command_name` command in the clustershell displays help information for the specified clustershell command.

- Uses the `cluster name::>` prompt - for example, `a300::>`
- Can manage all nodes and objects in the cluster
- Has admin, advanced, and diagnostic privilege levels
- Can be used to view the event management system, configure the cluster, and debug issues

```
login as: admin
Using keyboard-interactive authentication.
Password:
a300::> system service web show
 External Web Services: true
               Status: online
    HTTP Protocol Port: 80
   HTTPS Protocol Port: 443
          HTTP Enabled: false

a300::>
```



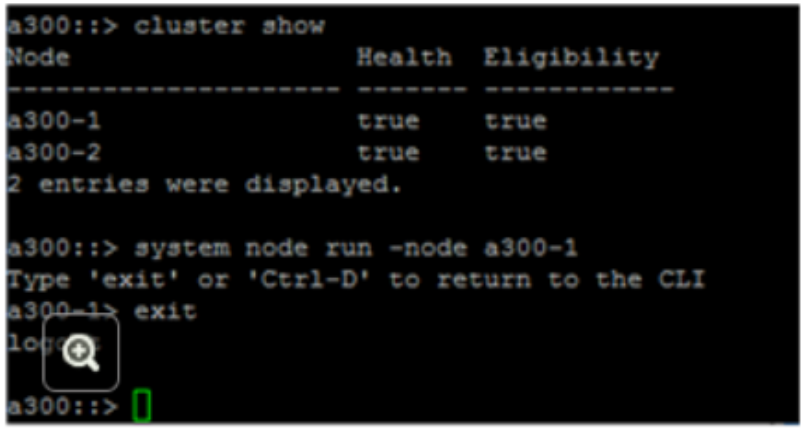
The nodeshell

The nodeshell is a special shell for commands that take effect only at the node level.

- Uses the `nodename>` prompt
- The nodeshell is accessible through the `system node run` command
- The nodeshell CLI help (triggered by `?` or `help` at the nodeshell prompt) displays available nodeshell commands
- The `man command_name` command in the nodeshell displays help information for the specified nodeshell command
- Is node-aware, but not cluster-aware
- Provides functionality that is mostly redundant with clustershell functionality
- Is normally used only for debugging discrepancies in the clustershell

To access the nodeshell:

1. Issue the `cluster show` command to identify the node name
2. Issue the `system node run -node node_name` to access the nodeshell
3. Issue the `exit` command or Ctrl-D to return to the clustershell



The systemshell

The systemshell is a low-level shell that is used only for diagnostic and troubleshooting purposes.
The systemshell is not intended for general administrative purposes, and it can only be accessed with guidance from technical support.

- Uses the `nodename%` prompt
- Is where user space applications and processes are located
- Is available on a per-node basis
- Provides access to the node's raw log files
- Can be accessed from the clustershell in diagnostic mode using the systemshell command with the "`diag`" user account
- The "`diag`" must initially be unlocked and its password value set

```
a300::*> security login unlock -username diag
a300::*> security login password -username diag
Enter a new password:
Enter it again:
a300::*> systemshell local
  (system node systemshell)
diag@127.0.0.1's password:
Warning:  The system shell provides access to low-level
diagnostic tools that can cause irreparable damage to
the system if not used properly.  Use this environment
only when directed to do so by support personnel.
a300-1%
```

Unlock the diag account

Set up the diag account password

Access the systemshell

ONTAP command privilege levels

Data ONTAP commands and parameters are defined at three privilege levels: admin, advanced, and diagnostic. The privilege levels reflect the skill levels required in performing the tasks.

- Admin
  - Most commands and parameters are available at this level. They are used for common or routine tasks.
- Advanced
  - Commands and parameters at this level are used infrequently, require advanced knowledge, and can cause problems if used inappropriately.
  - Use advanced commands or parameters only with the advice from the support personnel.
- Diagnostic
  - Diagnostic commands and parameters are potentially disruptive. They are used only by the support personnel to diagnose and fix problems.

Setting privilege level in the clustershell CLI

You can set the privilege level in the clustershell CLI by using the `set` command with the `-privilege` parameter. Changes to privilege level settings apply only to the session you are in. They are not persistent across sessions.

The following example sets the privilege level to advanced, diagnostic, and then to admin:

```
cluster1::>
cluster1::> set -privilege advanced
Warning: These advanced commands are potentially dangerous; use them only when
directed to do so by Lenovo personnel.
Do you wish to continue? (y or n): y
cluster1::*> set -privilege admin
cluster1::>
cluster1::> set -privilege diagnostic
Warning: These diagnostic commands are for use by Lenovo personnel only.
Do you want to continue? (y|n): y
cluster1::*>
cluster1::*> set -privilege admin
cluster1::>
```

By default, you are in the admin privilege level.

Setting privilege level in the nodeshell CLI

You can set the privilege level in the nodeshell CLI by using the `priv set` command. Changes to privilege level settings apply only to the session you are in. They are not persistent across sessions. The following example sets the privilege level to advanced, diagnostic, and then to admin:

```
a300::> system node run -node a300-1
Type 'exit' or 'Ctrl-D' to return to the CLI
a300-1>
a300-1> priv set advanced
Warning: These advanced commands are potentially dangerous; use
         them only when directed to do so by Lenovo personnel.
a300-1*> priv set admin
a300-1>
a300-1> priv set diag
Warning: These diagnostic commands are for use by Lenovo
         personnel only.
a300-1*> priv set admin
a300-1>
a300-1>
a300-1> priv
admin
a300-1> exit
logout
```

By default, you are in the admin privilege level.

Enter ‘priv’ to see what privilege is set.

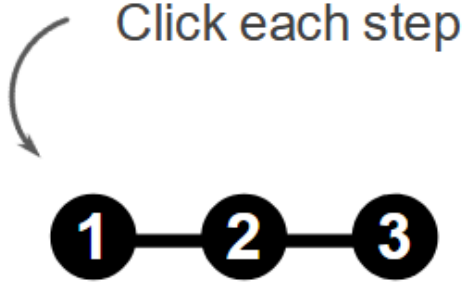
Managing CLI sessions

Users with administrator privilege can create a log for a CLI session and upload it to a specified destination to keep as a record. In addition, you can specify the automatic time out period of a CLI session to have the session automatically disconnected after the number of minutes specified by the yy value has elapsed.
You can use the `system script` commands to manage records of CLI sessions.

If you want to...	Use this command...
Start recording the current CLI session in to a specified file	`system script start`
Stop recording the current CLI session	`system script stop`
Display information about records of CLI sessions	`system script show`
Upload a record of a CLI session to an FTP or HTTP destination	`system script upload`
Delete a record of a CLI session	`system script delete`

Managing the storage system with the boot menu

You can use the boot menu to correct configuration problems, reset the root password, initialize disks, reset the system configuration, and restore system configuration information back to the boot media.

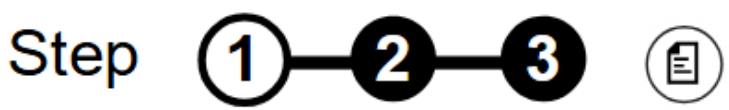


Managing the storage system with the boot menu

Reboot the system to access the boot menu by entering the following command at the system prompt:

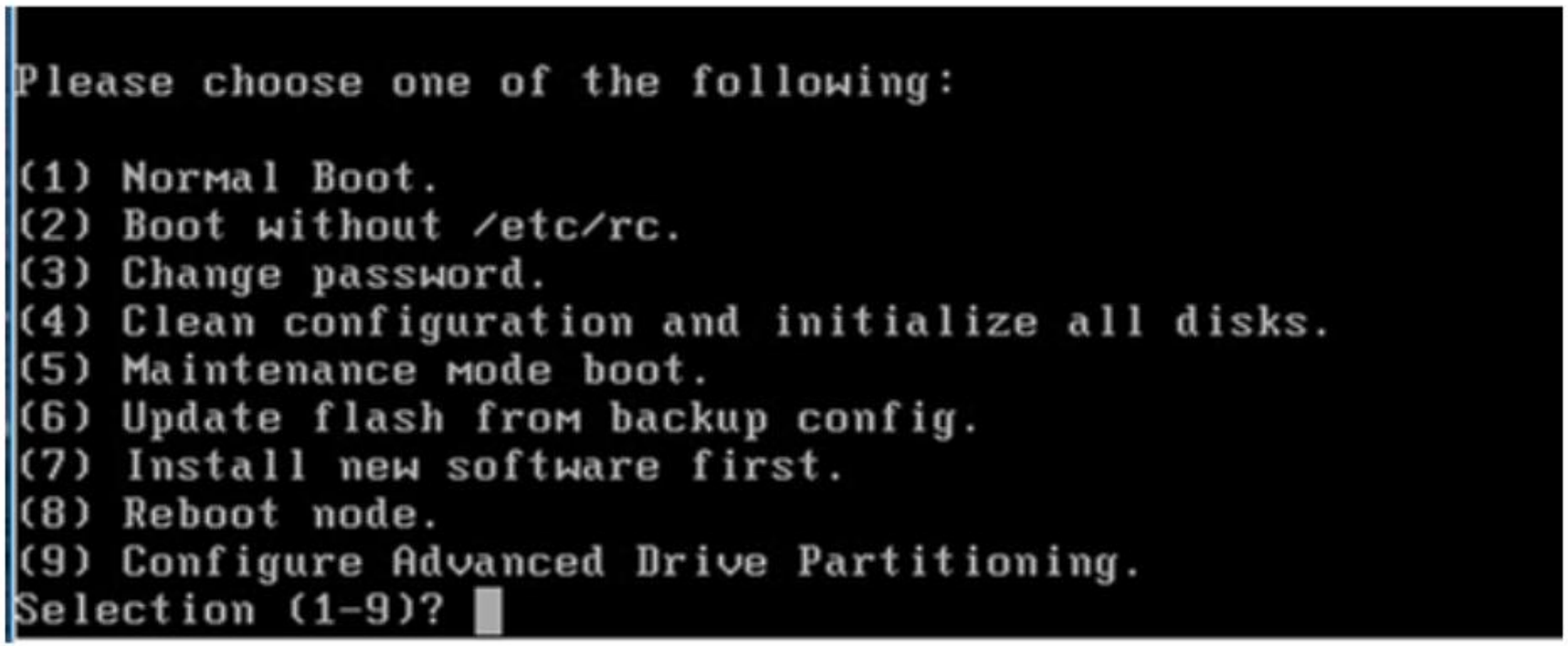
```
Reboot -node <nodename>
```

The storage system reboot process will start.



Managing the storage system with the boot menu

During the reboot process, press **Ctrl-C** to display the boot menu when prompted to do so. The storage system displays the following options for the boot menu:



Step 1 2 3

Managing the storage system with the boot menu

The descriptions of each item are as follows:

- Normal Boot: continue with the normal boot operation
- Boot without /etc/rc: boot with only default options and disable some services
- Change Password: change the storage systems password
- Clean configuration and initialize all disks: clean all disks and reset the filer to factory default settings

Attention: This menu option erases all data on the disks and resets your system configuration to the factory default settings. If you need to preserve existing configuration values that are used for system setup (such as your system IP address, gateway addresses, and DNS server addresses), you should make a note of the values before selecting this menu option. You can find your current setup settings by using the setup command at the system prompt.

- Maintenance mode boot: file system operations are disabled, and there are a limited set of commands
- Update flash from backup config: restore the configuration information if corrupted on the boot media
- Install new software first: use this if the filer does not include support for the storage array
- Reboot node: restart the filer
- Configure Advanced Drive Partitioning: Additional management features for disks that are configured for root-data partitioning