使用UCS C系列伺服器上的Intel X710T2LG介面卡配置iSCSI啟動

目錄

簡介

本文檔介紹如何使用英特爾® X710T2LG 2x10 GbE RJ45 OCP 3.0 NIC介面卡和UCS C225 M6伺服器配置從iSCSI引導。

必要條件

思科建議您瞭解以下主題：

- 已配置Cisco Integrated Management Controller(CIMC®)IP地址。
- 有關Internet小型計算機系統介面(iSCSI)配置的基本知識。
- 從網路介面卡到交換機的物理連線。
- 儲存配置引數：
    - LUN ID
    - 連接埠
    - 啟動器IQN
    - 目標IQ
    - 啟動器IP地址
    - 目標 IP 位址
    - CHAP身份驗證資訊（如果需要）

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- 英特爾® X710T2LG 2x10 GbE RJ45 OCP 3.0 NIC介面卡
- Cisco® UCS C225 M6伺服器
- 已啟用iSCSI服務的Microsoft® Windows® Server 2022。
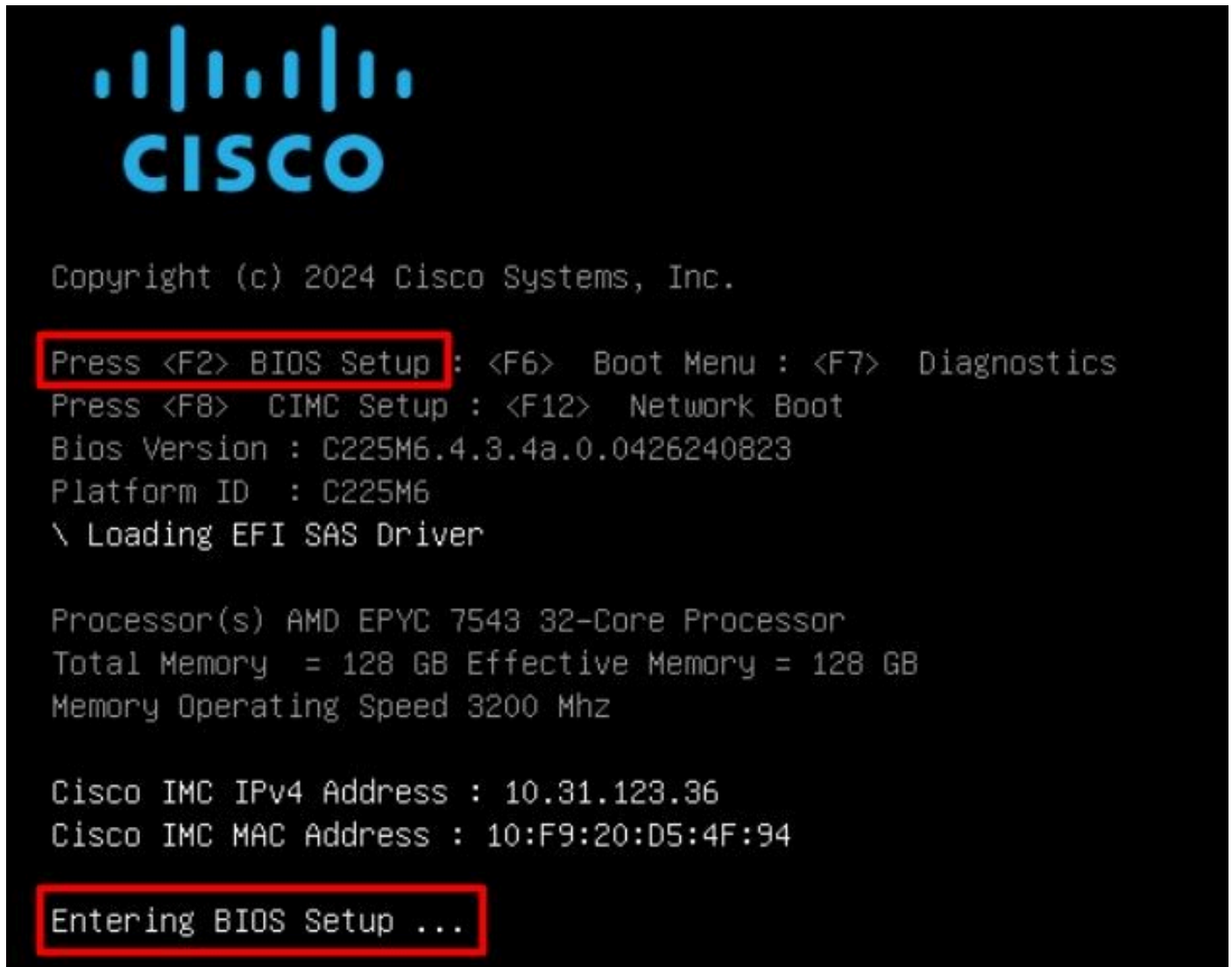- Cisco® Catalyst 3560交換器

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

背景資訊

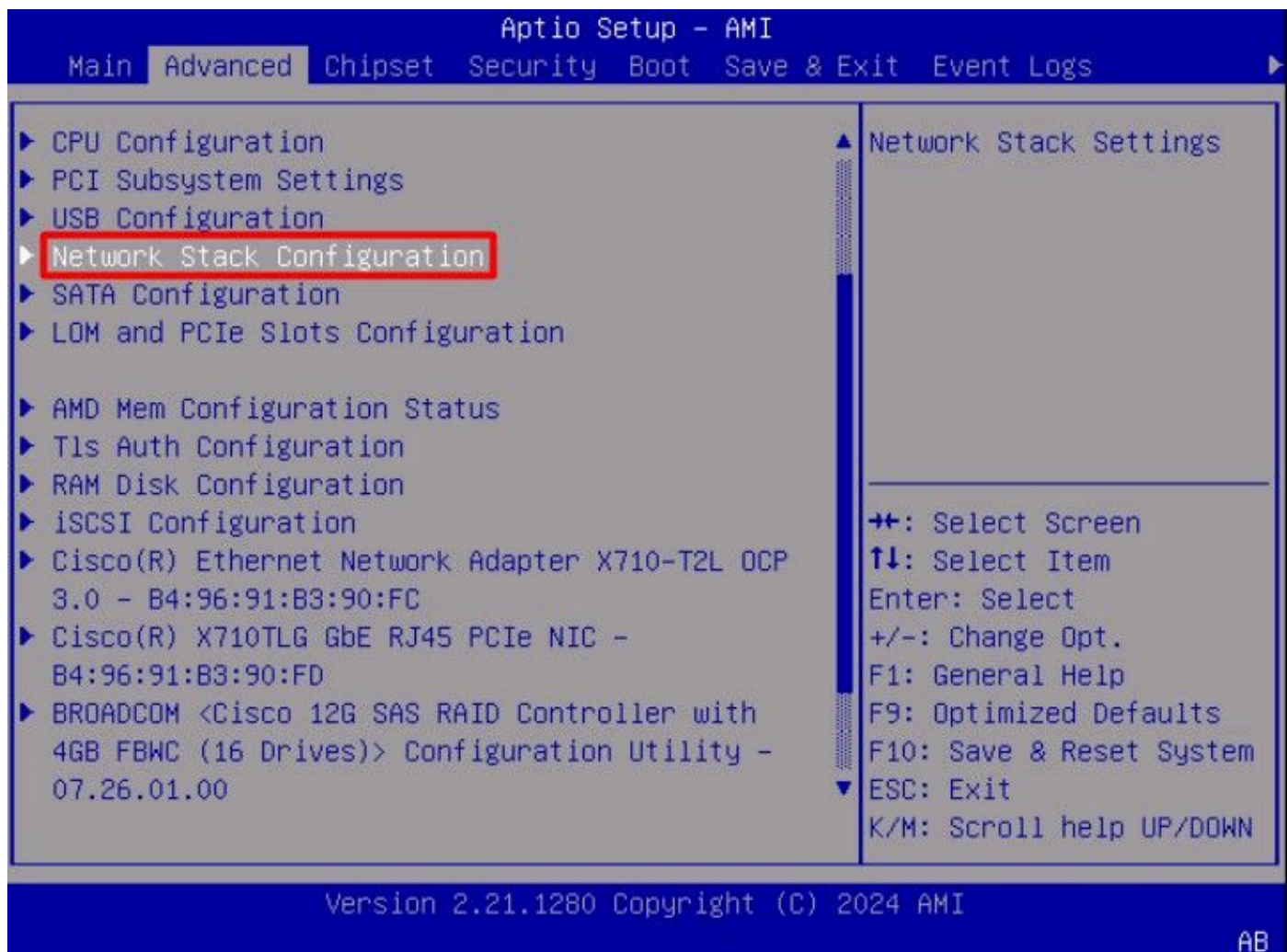以前，需要執行英特爾®以太網iSCSI引導快閃記憶體實用程式來配置iSCSI設定。現在，新的英特爾®介面卡可直接在伺服器BIOS上提供iSCSI配置選項。
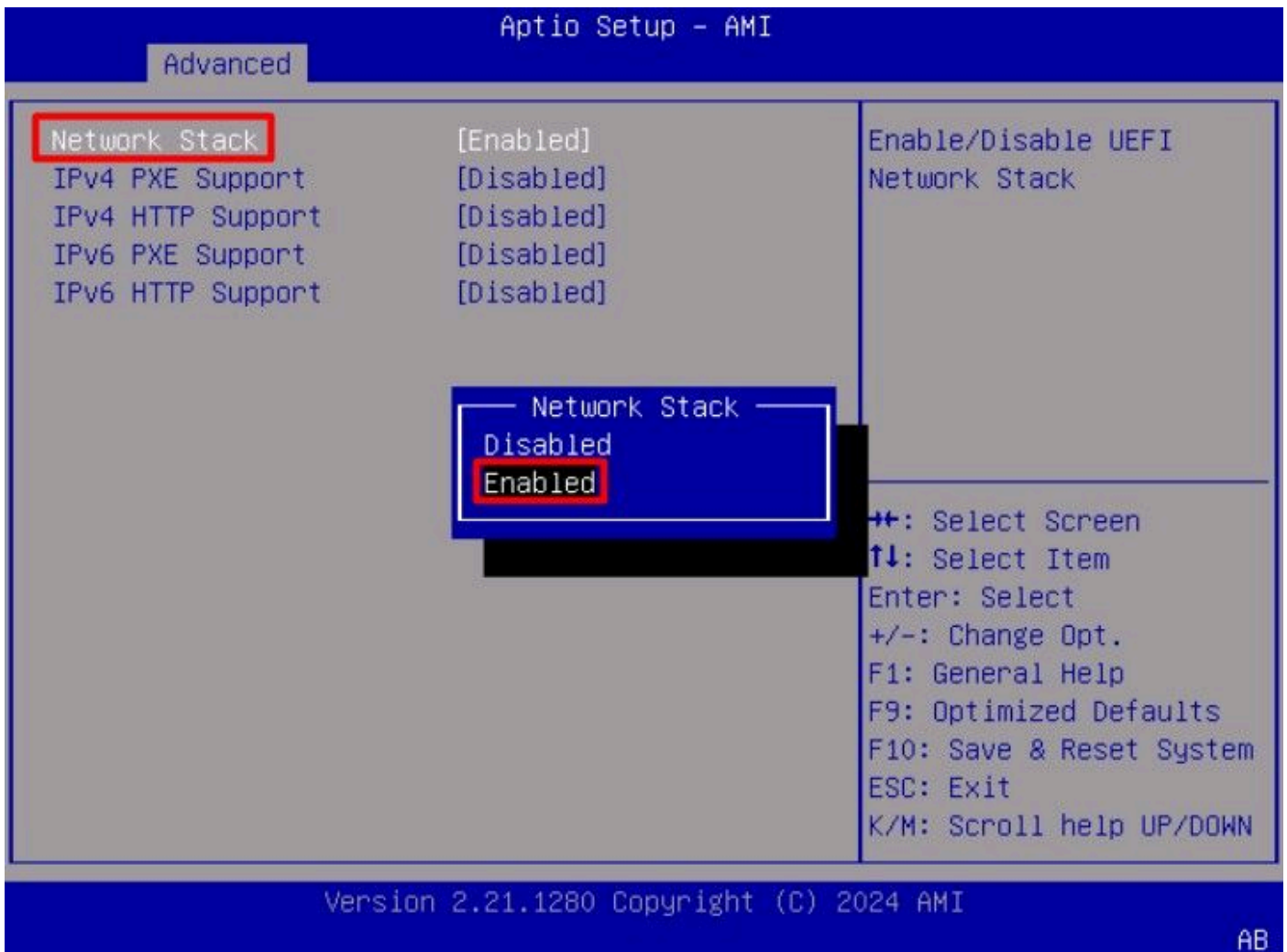
設定步驟

步驟1. 開啟電源或重新啟動伺服器。在啟動過程中，按F2訪問伺服器BIOS。

步驟 2. 在伺服器BIOS中，選擇Network Stack Configuration選項：

步驟3.選擇Enabled:

```
                     Aptio Setup - AMI
    Advanced

 Network Stack             [Enabled]            Enable/Disable UEFI
 IPv4 PXE Support          [Disabled]           Network Stack
 IPv4 HTTP Support         [Disabled]
 IPv6 PXE Support          [Disabled]
 IPv6 HTTP Support         [Disabled]


                       ┌── Network Stack ──┐
                       │ Disabled          │
                       │ Enabled           │
                       └───────────────────┘
                                            ↔: Select Screen
                                            ↑↓: Select Item
                                            Enter: Select
                                            +/-: Change Opt.
                                            F1: General Help
                                            F9: Optimized Defaults
                                            F10: Save & Reset System
                                            ESC: Exit
                                            K/M: Scroll help UP/DOWN

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                                                              AB
```

步驟4.啟用網路堆疊後，選擇要用於iSCSI引導的網路介面卡。

在本示例中，使用Cisco® X710T2LG 2x10 GbE RJ45適配器：

```
                         Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit  Event Logs        ▶

  ▶ CPU Configuration                      ▲ Configure 10 Gigabit
  ▶ PCI Subsystem Settings                   Ethernet device
  ▶ USB Configuration                        parameters.
  ▶ Network Stack Configuration
  ▶ SATA Configuration
  ▶ LOM and PCIe Slots Configuration

  ▶ AMD Mem Configuration Status
  ▶ Tls Auth Configuration
  ▶ RAM Disk Configuration
  ▶ iSCSI Configuration                      ──────────────────────
  ▶ Cisco(R) Ethernet Network Adapter X710-T2L OCP  →←: Select Screen
    3.0 - B4:96:91:B3:90:FC                  ↑↓: Select Item
  ▶ Cisco(R) X710TLG GbE RJ45 PCIe NIC -     Enter: Select
    B4:96:91:B3:90:FD                        +/-: Change Opt.
  ▶ BROADCOM <Cisco 12G SAS RAID Controller with  F1: General Help
    4GB FBWC (16 Drives)> Configuration Utility -  F9: Optimized Defaults
    07.26.01.00                            ▼ F10: Save & Reset System
                                             ESC: Exit
                                             K/M: Scroll help UP/DOWN

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                                                                          AB
```

步驟5.在網路介面卡選項內，驗證鏈路狀態是已連線。

✎ 附註：請注意埠MAC地址，因為此地址對於標識很有用。

步驟6.返回主選單，然後選擇iSCSI配置選項：

```
                        Aptio Setup - AMI
    Main  Advanced  Chipset  Security  Boot  Save & Exit  Event Logs        ▶

 ▶ CPU Configuration                             ▲  Configure the iSCSI
 ▶ PCI Subsystem Settings                           parameters.
 ▶ USB Configuration
 ▶ Network Stack Configuration
 ▶ SATA Configuration
 ▶ LOM and PCIe Slots Configuration

 ▶ AMD Mem Configuration Status
 ▶ Tls Auth Configuration
 ▶ RAM Disk Configuration
 ▶ iSCSI Configuration                              ⁺⁺: Select Screen
 ▶ Cisco(R) Ethernet Network Adapter X710-T2L OCP   ↑↓: Select Item
   3.0 - B4:96:91:B3:90:FC                           Enter: Select
 ▶ Cisco(R) X710TLG GbE RJ45 PCIe NIC -             +/-: Change Opt.
   B4:96:91:B3:90:FD                                F1: General Help
 ▶ BROADCOM <Cisco 12G SAS RAID Controller with     F9: Optimized Defaults
   4GB FBWC (16 Drives)> Configuration Utility -     F10: Save & Reset System
   07.26.01.00                                    ▼  ESC: Exit
                                                    K/M: Scroll help UP/DOWN

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                                                                          AB
```

步驟7.選擇主機iSCSI配置選項：

步驟8.為啟動器新增ISCSI限定名稱(IQN)。

iSCSI限定名稱(IQN)格式採用iqn.yyyy-mm.naming-authority:unique name的形式。

步驟9.選擇Add an Attempt選項：

```
                        Aptio Setup - AMI
         Advanced

   iSCSI Initiator Name      iqn.1987-05.com.intel:      Add an Attempt
                             esx01

 ▶ Add an Attempt

 ▶ Delete Attempts

 ▶ Change Attempt Order

                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F9: Optimized Defaults
                                                       F10: Save & Reset System
                                                       ESC: Exit
                                                       K/M: Scroll help UP/DOWN

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                                                                           AB
```
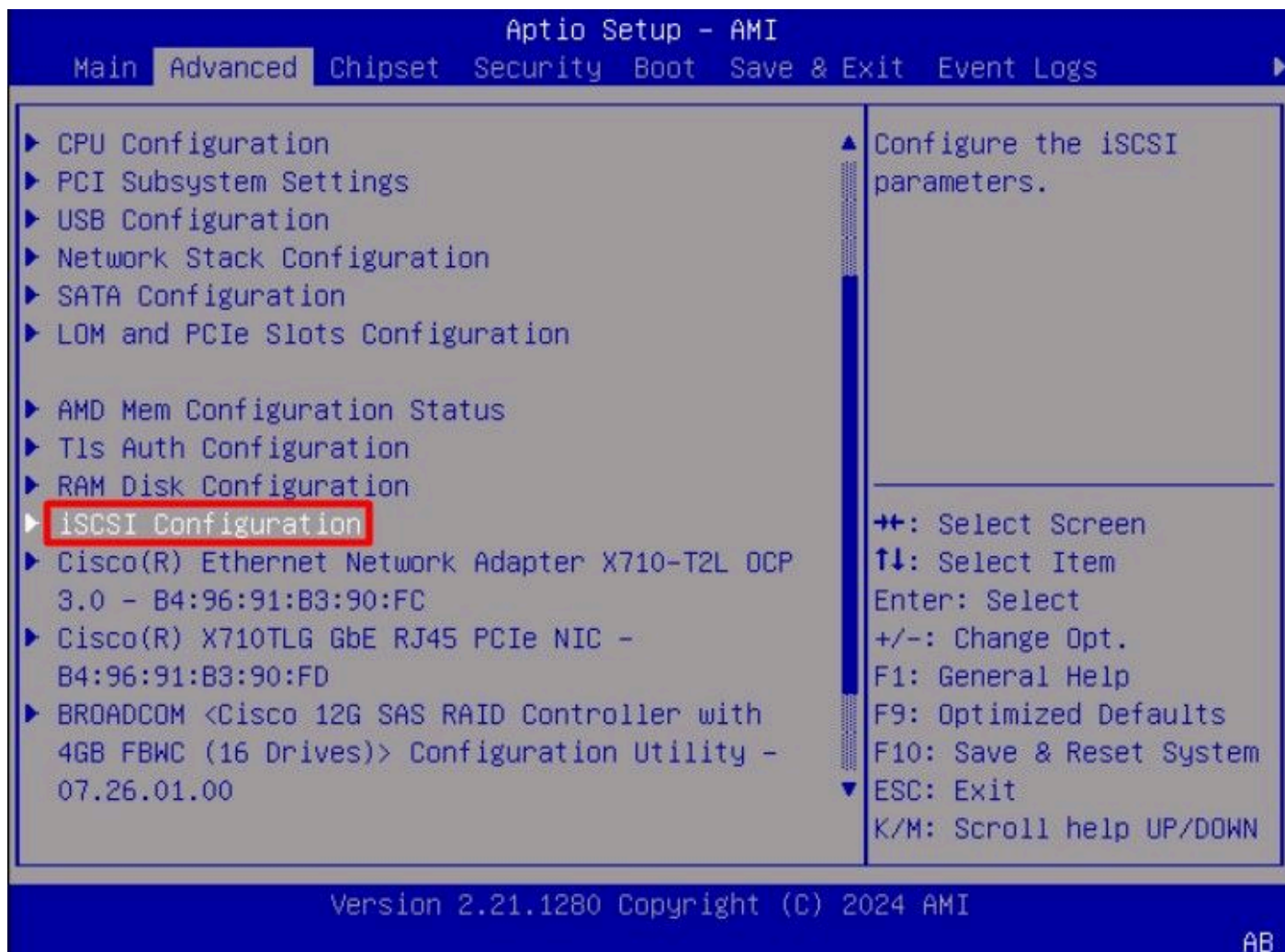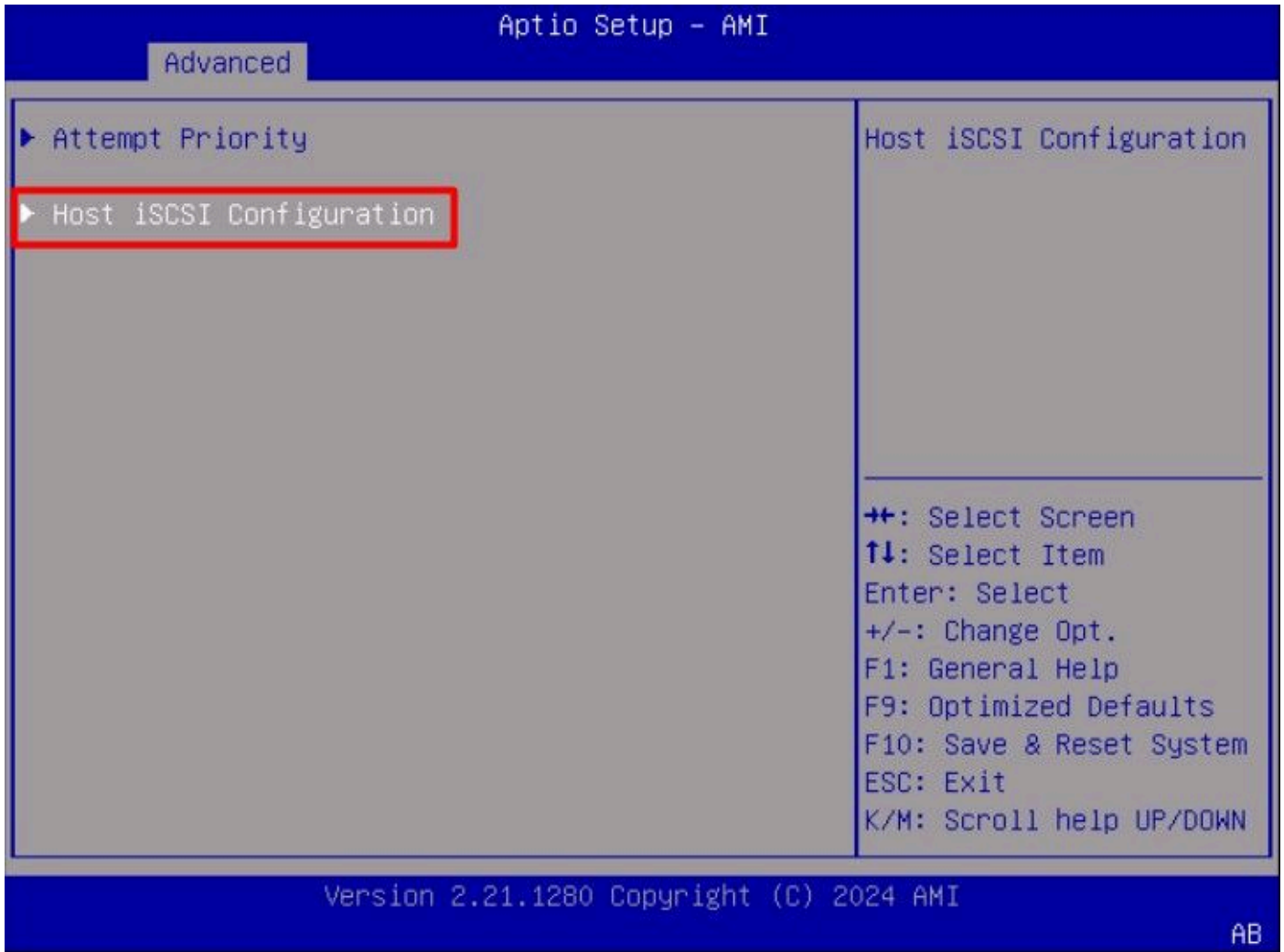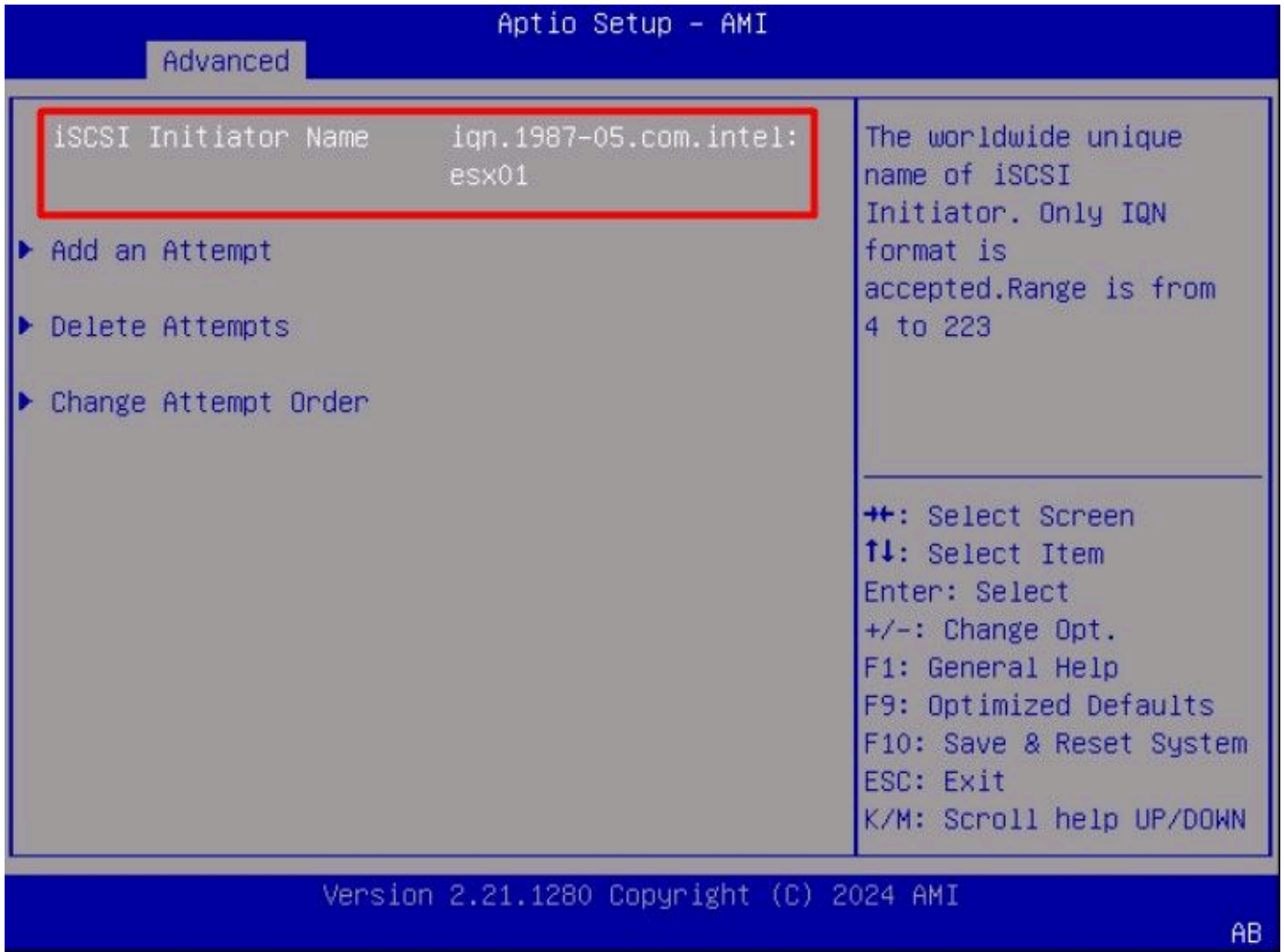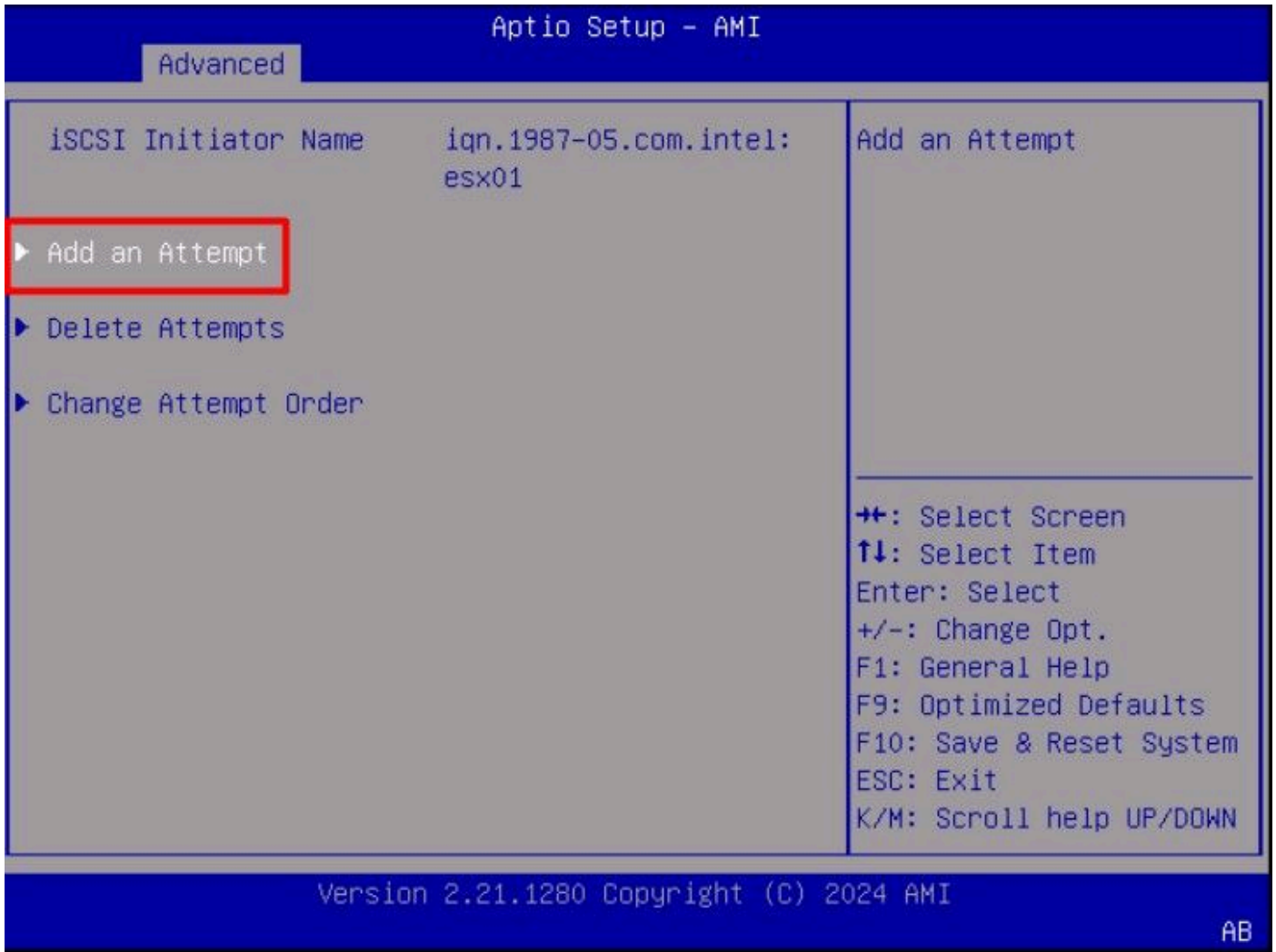
步驟10.選擇正確的介面卡以配置iSCSI設定。您可以使用步驟5中註冊的mac地址驗證適配器:

步驟1.配置iSCSI設定：

```
                          Aptio Setup - AMI
    ┌─────────────┐
    │  Advanced   │
    └─────────────┘

                                              ▲   Enter IP address in
    iSCSI Mode              [Enabled]         │   dotted-decimal notation.

    Internet Protocol       [IPv4]

    Connection Retry Count   0
    Connection               1000
    Establishing Timeout

    OUI-format ISID          349691B390FD
    Configure ISID           349691B390FD         ++: Select Screen
                                                  ↑↓: Select Item
    Enable DHCP             [Disabled]            Enter: Select
      Initiator IP Address  192.168.1.141        +/-: Change Opt.
      Initiator Subnet      255.255.255.0        F1: General Help
    Mask                                         F9: Optimized Defaults
      Gateway               192.168.1.1          F10: Save & Reset System
                                              ▼  ESC: Exit
                                                 K/M: Scroll help UP/DOWN

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                                                                    AB
```
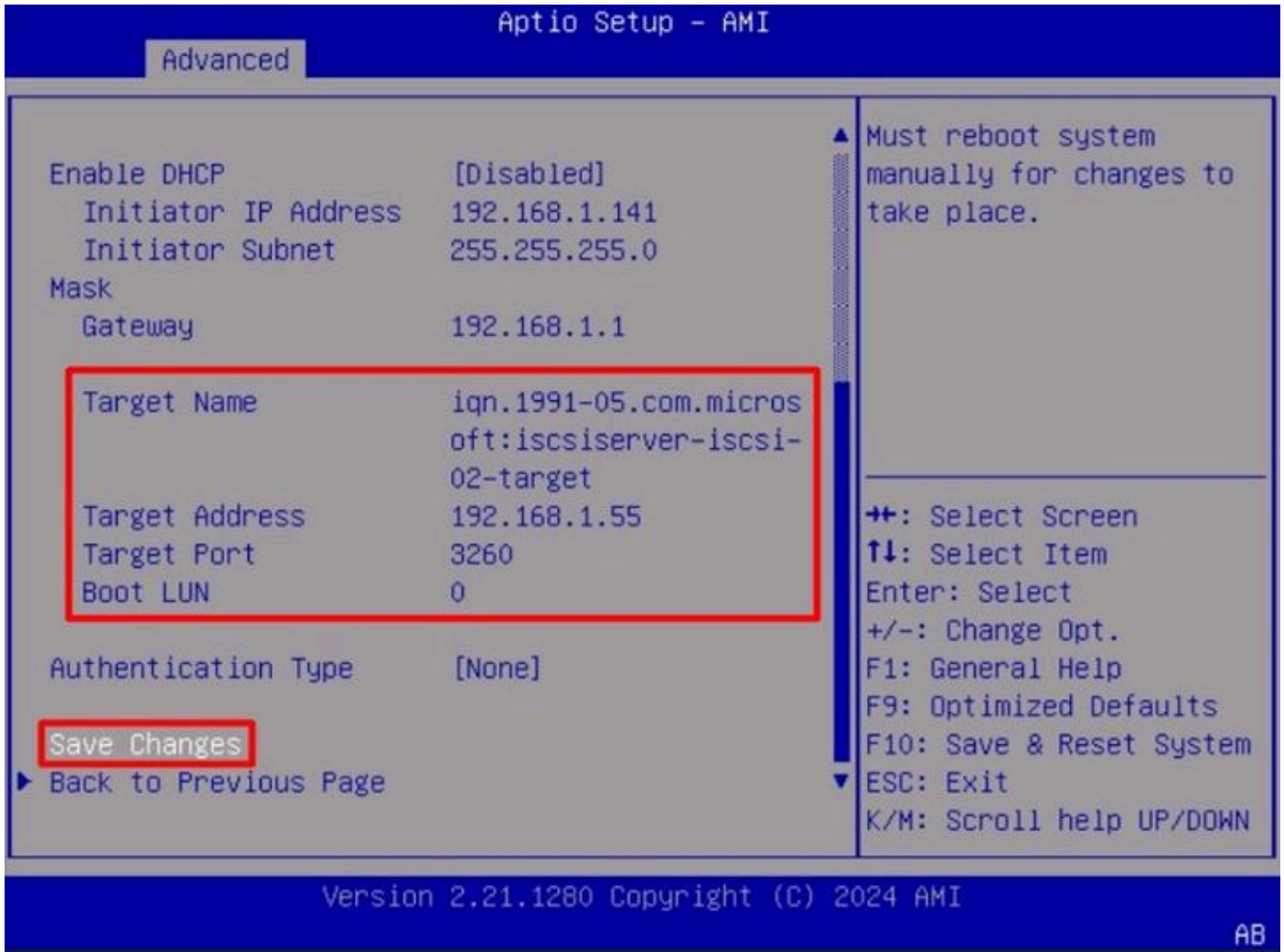
此示例的值包括：

- iSCSI模式：已啟用
- Internet協定：IPv4
- 連線重試計數：0（預設）
- 連線建立超時：1000(毫秒)
- OUI格式ISID:（預設）
- 配置ISID:（預設）
- 啟用DHCP:已停用
- 啟動器IP地址：192.168.1.141
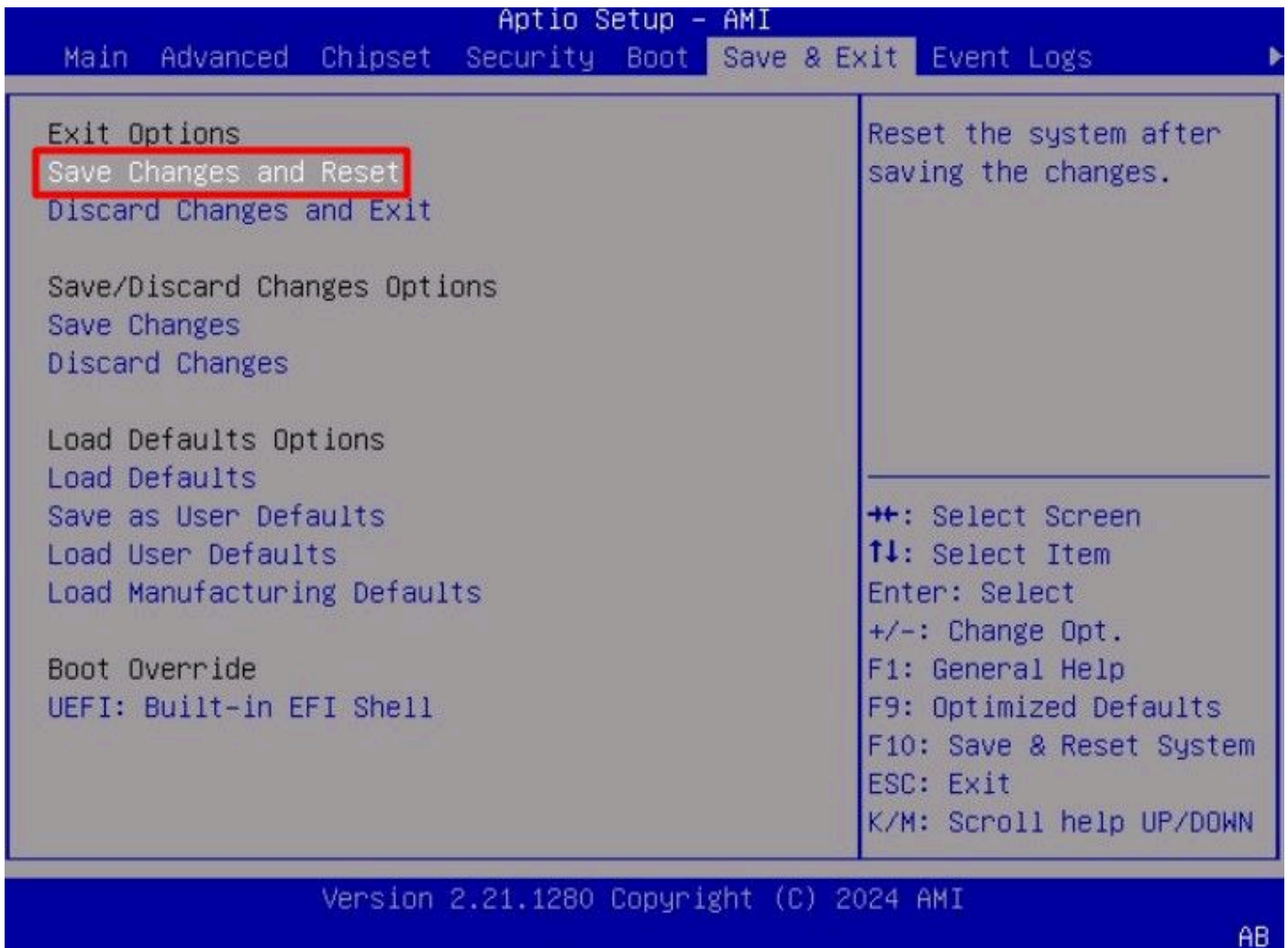- 啟動器子網掩碼：255.255.255.0
- 網關：192.168.1.1

步驟12.配置目標資訊：

此示例的值包括：

- 目標名稱：（儲存的目標IQN）
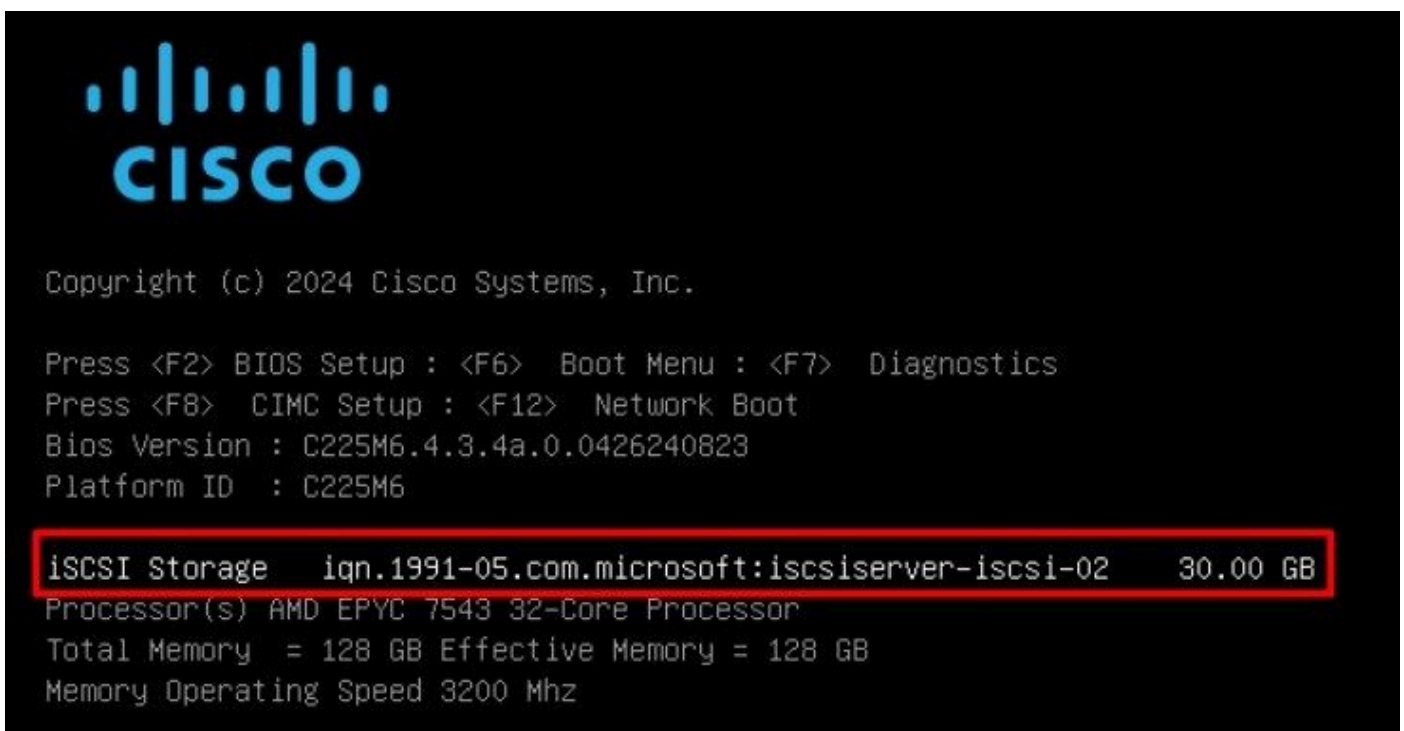- 目標地址：192.168.1.55
- 目標埠：3260(iSCSI預設埠)
- 啟動Lun:0
- 身份驗證型別：無

選擇Save Changes。
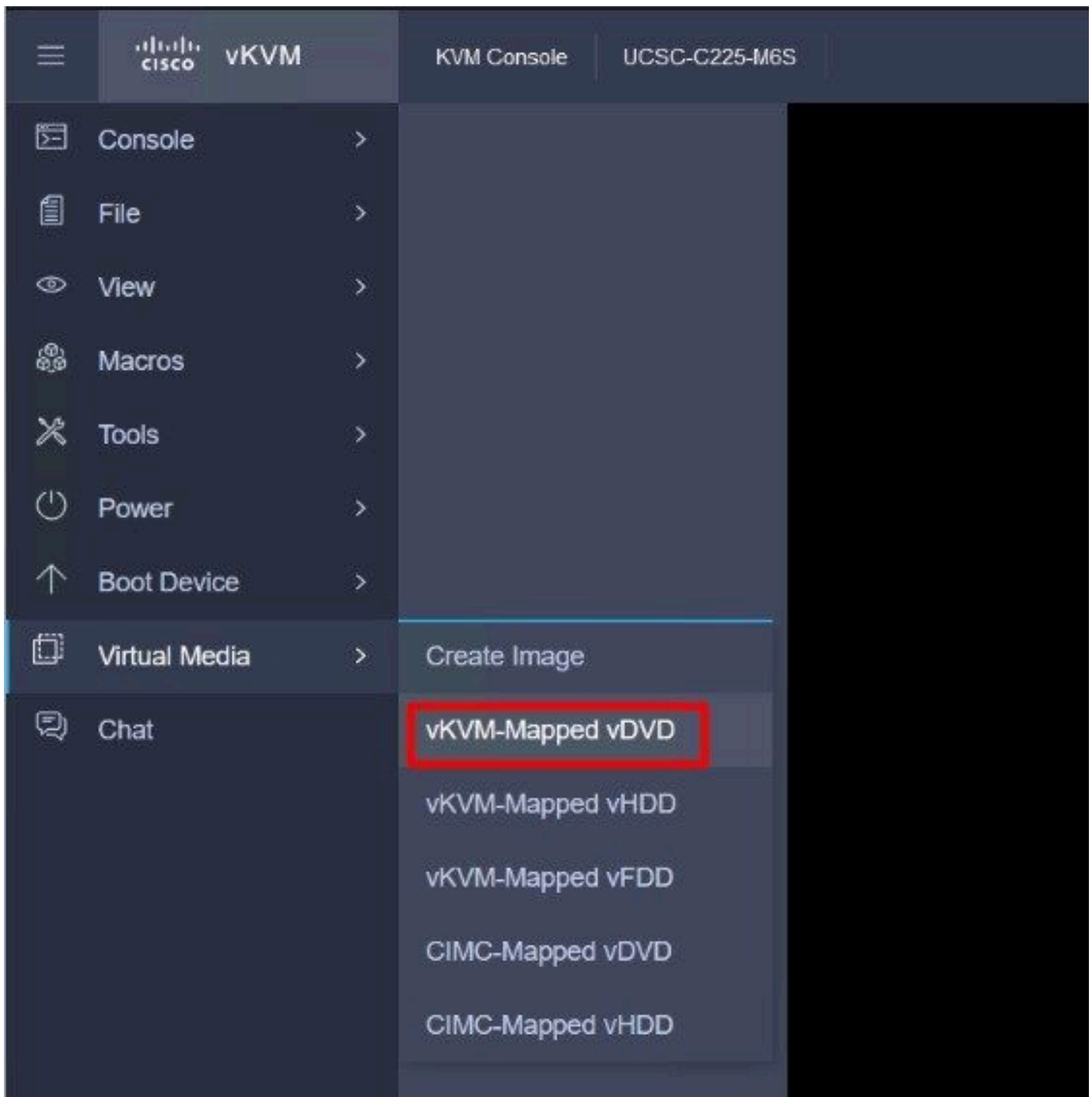
步驟13.選擇Save & Exit Menu，然後選擇Save Changes and Reset：

```
                    Aptio Setup - AMI
  Main  Advanced  Chipset  Security  Boot  Save & Exit  Event Logs              ▶

  Exit Options                                     Reset the system after
  Save Changes and Reset                           saving the changes.
  Discard Changes and Exit

  Save/Discard Changes Options
  Save Changes
  Discard Changes

  Load Defaults Options
  Load Defaults
  Save as User Defaults                            ↦: Select Screen
  Load User Defaults                               ↑↓: Select Item
  Load Manufacturing Defaults                      Enter: Select
                                                   +/-: Change Opt.
  Boot Override                                    F1: General Help
  UEFI: Built-in EFI Shell                         F9: Optimized Defaults
                                                   F10: Save & Reset System
                                                   ESC: Exit
                                                   K/M: Scroll help UP/DOWN

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                                                                            AB
```

步驟 14. 伺服器啟動後，啟動過程中會顯示iSCSI儲存資訊：


```
  ıılıılıı
  CISCO

  Copyright (c) 2024 Cisco Systems, Inc.

  Press <F2> BIOS Setup : <F6>  Boot Menu : <F7>  Diagnostics
  Press <F8>  CIMC Setup : <F12>  Network Boot
  Bios Version : C225M6.4.3.4a.0.0426240823
  Platform ID  : C225M6

  iSCSI Storage    iqn.1991-05.com.microsoft:iscsiserver-iscsi-02    30.00 GB
  Processor(s) AMD EPYC 7543 32-Core Processor
  Total Memory = 128 GB Effective Memory = 128 GB
  Memory Operating Speed 3200 Mhz
```
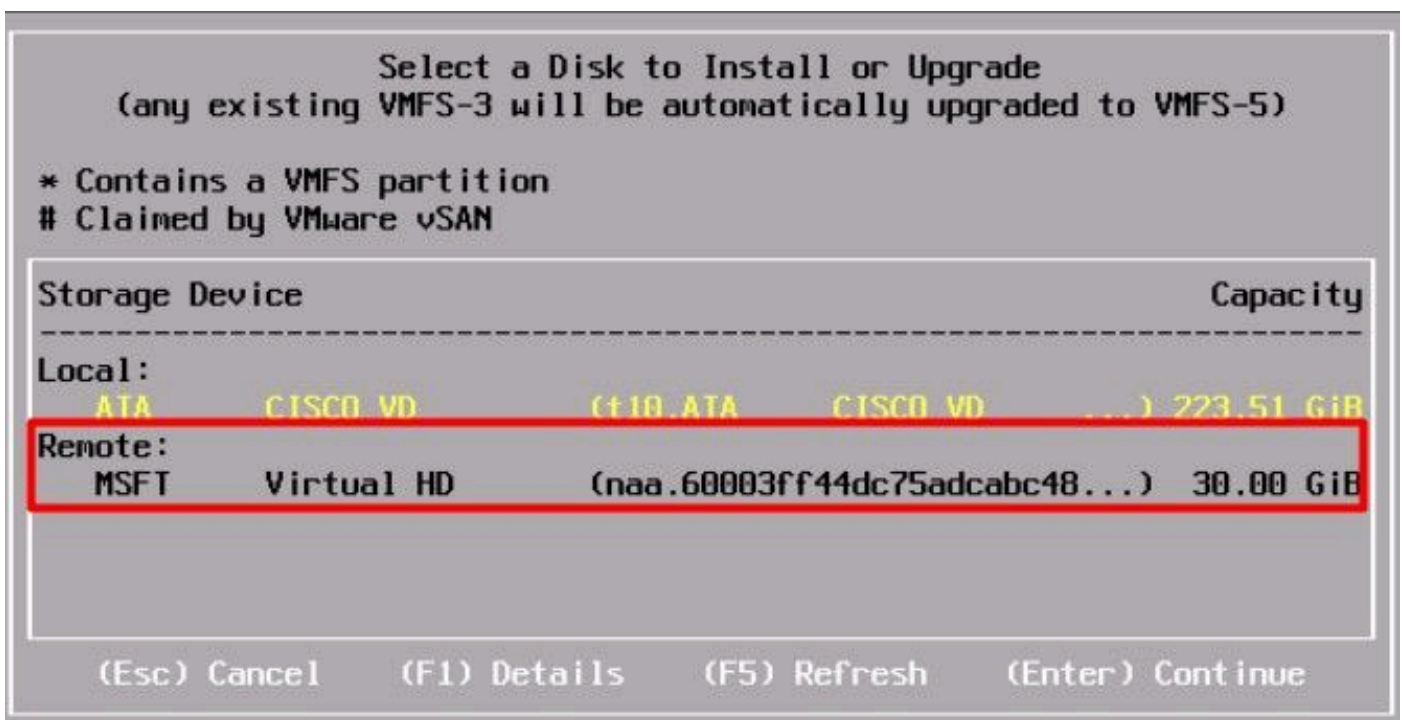
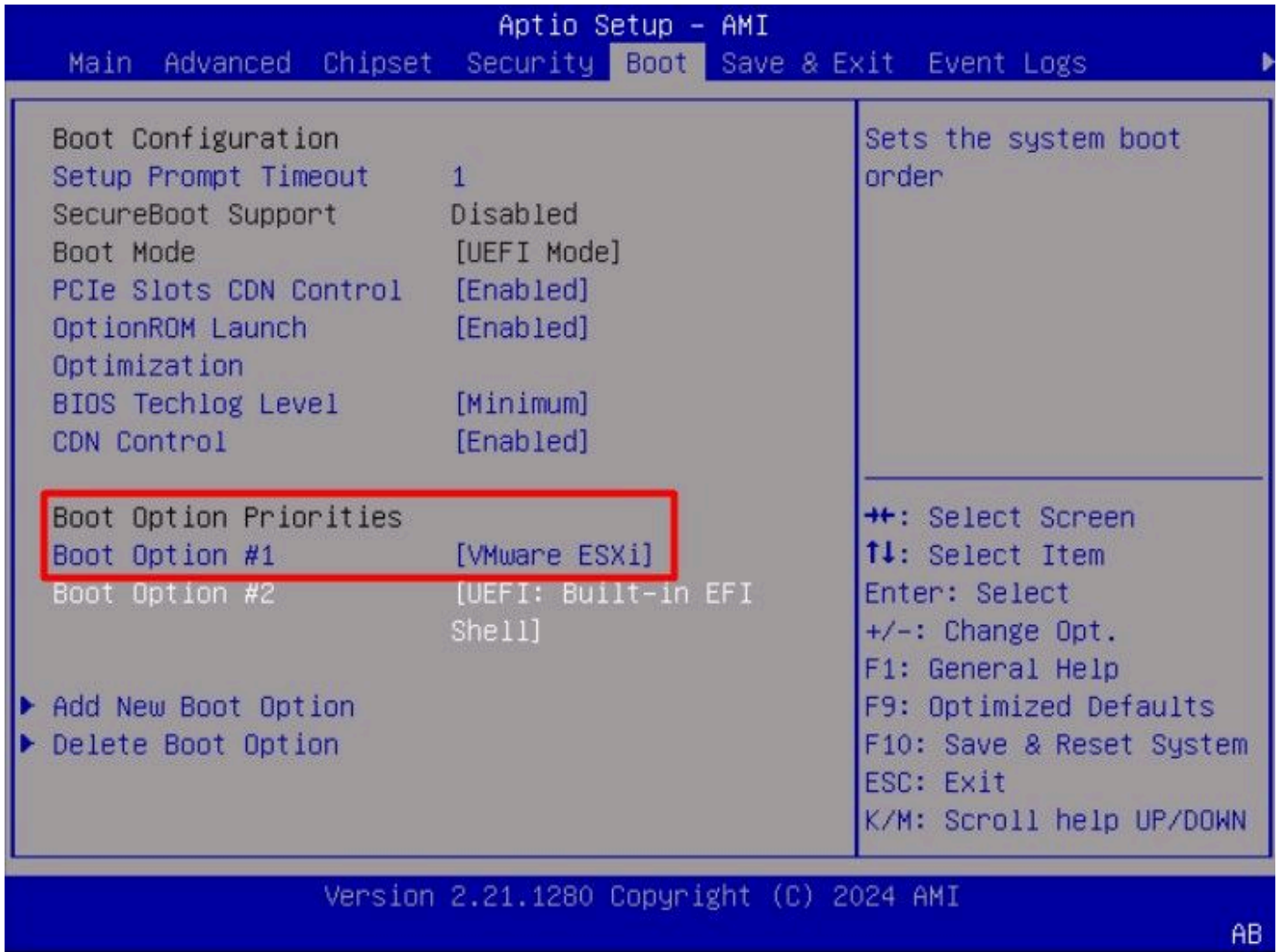**步驟15.使用Virtual Media > vKVM-Mapped DVD選項映射作業系統ISO:**

步驟16.選擇對映驅動器:

步驟17.對映ISO後，使用F6選單從它啟動。等待安裝程式載入。安裝程式顯示要安裝的儲存選項後，即可看到遠端iSCSI儲存：

步驟18.使用遠端儲存繼續執行安裝過程。完成後，重新啟動伺服器，然後按F2輸入伺服器BIOS設定。在BIOS設定中，選擇Boot Menu，並將選項VMware® ESXi移動到Boot Option # 1：

```
                        Aptio Setup - AMI
    Main   Advanced   Chipset   Security   Boot   Save & Exit   Event Logs        ►

  Boot Configuration                                    Sets the system boot
  Setup Prompt Timeout          1                       order
  SecureBoot Support            Disabled
  Boot Mode                     [UEFI Mode]
  PCIe Slots CDN Control        [Enabled]
  OptionROM Launch              [Enabled]
  Optimization
  BIOS Techlog Level            [Minimum]
  CDN Control                   [Enabled]

  Boot Option Priorities                                ►►: Select Screen
  Boot Option #1                [VMware ESXi]           ↑↓: Select Item
  Boot Option #2                [UEFI: Built-in EFI     Enter: Select
                                Shell]                  +/-: Change Opt.
                                                        F1: General Help
  ► Add New Boot Option                                 F9: Optimized Defaults
  ► Delete Boot Option                                  F10: Save & Reset System
                                                        ESC: Exit
                                                        K/M: Scroll help UP/DOWN


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                                                                             AB
```
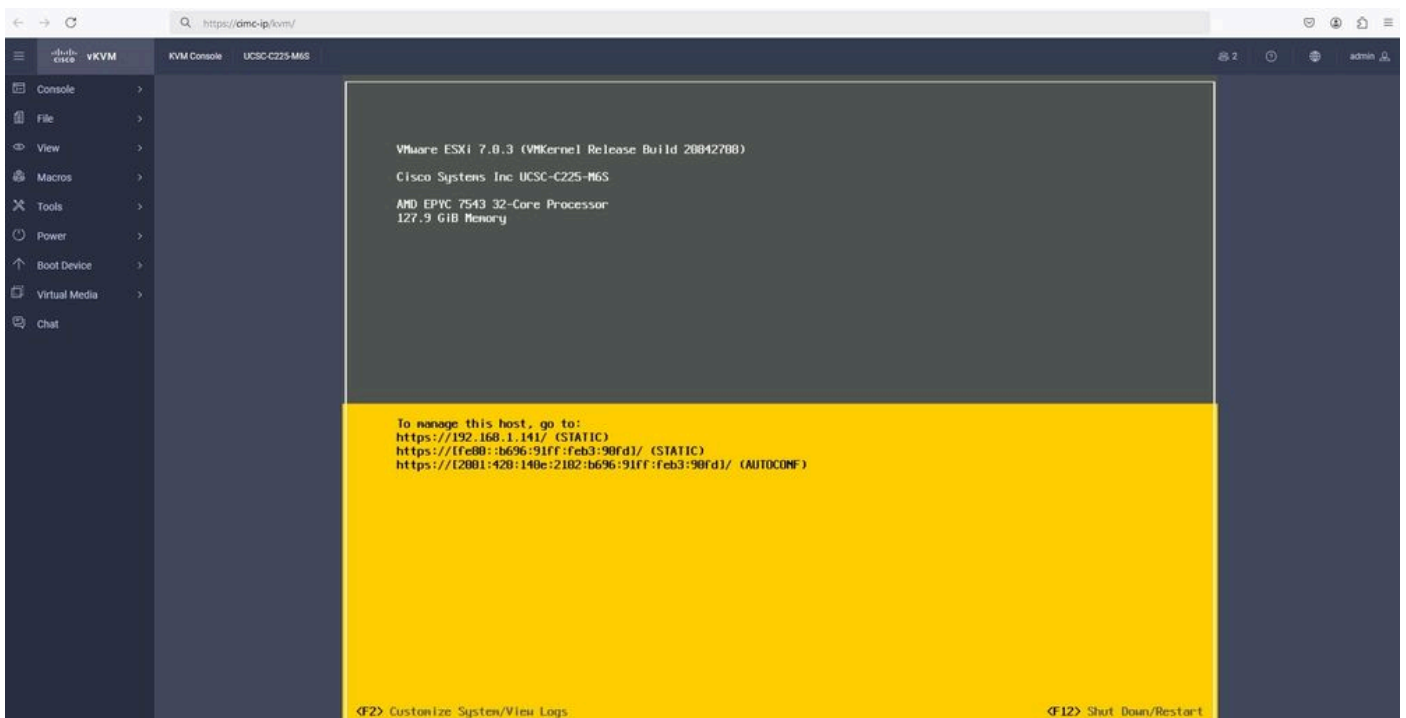
步驟19.導覽至Save & Exit功能表，然後選擇Save Changes and Reset選項：
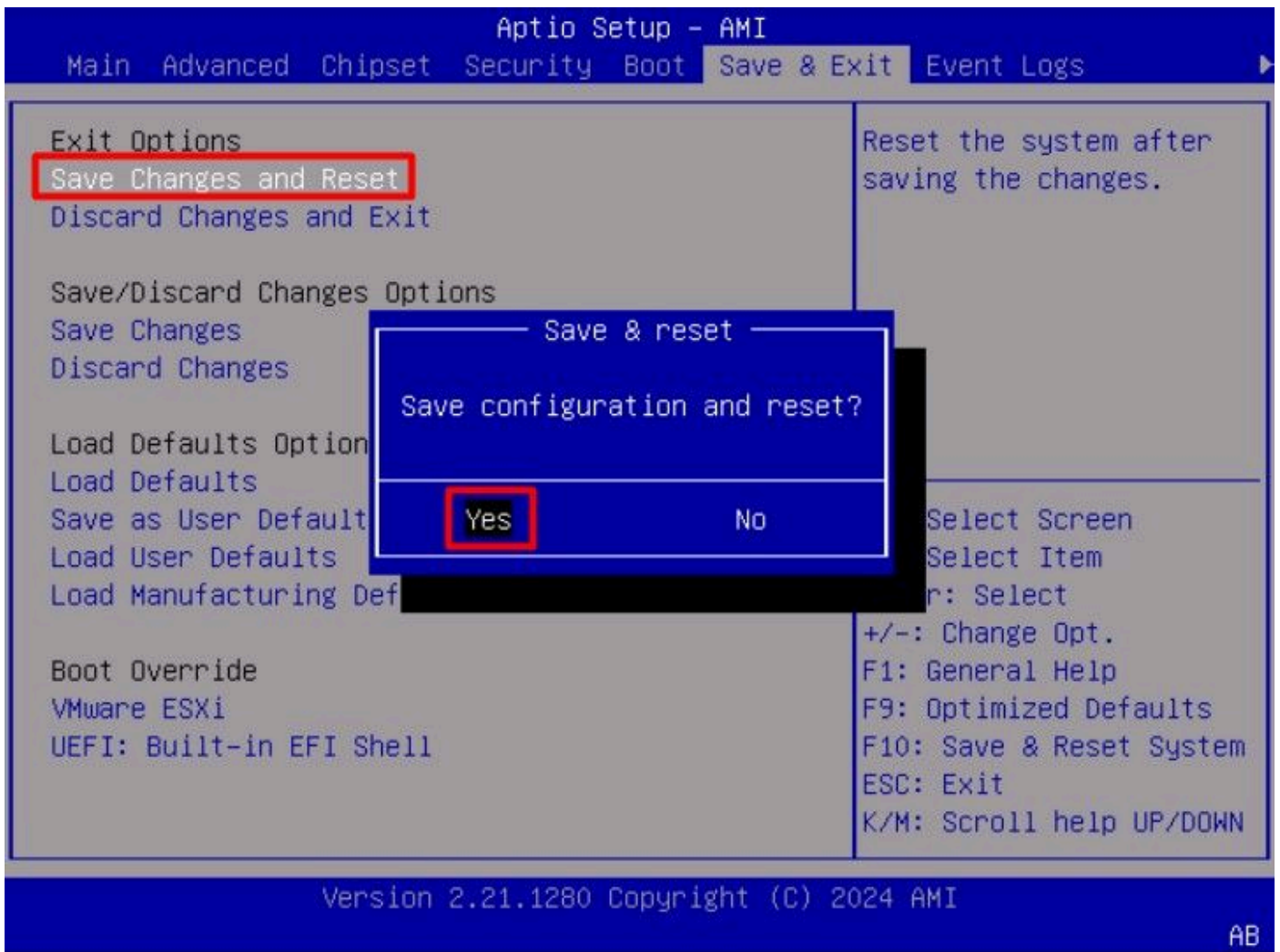
驗證

伺服器成功引導至VMware® ESXi OS:

疑難排解

1. 驗證啟動器和目標的IQN以避免任何配置錯誤。
2. 驗證交換機埠配置，因為NIC介面卡不支援任何VLAN標籤。
3. 驗證是否已在交換機上的正確埠上獲取了介面卡埠mac地址。

<#root>

```
switch#show mac address-table address b496.91b3.90fd
          Mac Address Table
-------------------------------------------
Vlan  Mac Address  Type     Ports
----  -----------  --------  -----
10
```

b496.91b3.90fd

 DYNAMIC

Te1/0/45

```
Total Mac Addresses for this criterion: 1
```

利用Cisco IOS®軟體中的嵌入式資料包捕獲(EPC)功能，通過資料包捕獲驗證iSCSI協商。

範例：

<#root>

```
switch#monitor capture ISCSI buffer size 100 circular interface TenGigabitEthernet1/0/45 both match any
switch#monitor capture ISCSI start
```

--> This command starts the capture

```
switch# monitor capture ISCSI stop
```

--> Stop the capture, once the server has attempted to boot from the Intel® NIC Adapter.

```
switch#show monitor capture ISCSI buffer brief
```

--> This command shows the capture content

```
Starting the packet display ........ Press Ctrl + Shift + 6 to exit
...
21 0.000285 192.168.1.141 -> 192.168.1.55
```

iSCSI

```
 114 NOP Out
22 0.000299 192.168.1.55 -> 192.168.1.141
```

iSCSI

```
 118 NOP In
23 0.000313 192.168.1.55 -> 192.168.1.141
```

iSCSI

```
 118 [TCP Retransmission] NOP In
24 0.000327 192.168.1.141 -> 192.168.1.55 TCP 66 57954 > iscsi-target [ACK] Seq=49 Ack=49 Win=514 Len=0
25 0.000341 192.168.1.141 -> 192.168.1.55 TCP 1514 [TCP segment of a reassembled PDU]
26 0.000357 192.168.1.141 -> 192.168.1.55 TCP 1514 [TCP segment of a reassembled PDU]
27 0.000382 192.168.1.141 -> 192.168.1.55 iSCSI 1514 SCSI:
```

Write(10) LUN: 0x00 (LBA: 0x0105f758, Len: 8)SCSI: Data Out LUN: 0x00 (Write(10) Request Data)

```
28 0.000399 192.168.1.141 -> 192.168.1.55 TCP 102 [TCP segment of a reassembled PDU]
29 0.000413 192.168.1.55 -> 192.168.1.141 TCP 70 iscsi-target > 57954 [ACK] Seq=49 Ack=4429 Win=8195 Len
30 0.000427 192.168.1.141 -> 192.168.1.55 TCP 1514 [TCP segment of a reassembled PDU]
31 0.000448 192.168.1.141 -> 192.168.1.55 TCP 1514 [TCP segment of a reassembled PDU]
32 0.000464 192.168.1.141 -> 192.168.1.55 iSCSI 1078 SCSI:
```

Write(10) LUN: 0x00 (LBA: 0x0105f548, Len: 8)SCSI: Data Out LUN: 0x00 (Write(10) Request Data)

```
33 0.000480 192.168.1.55 -> 192.168.1.141 TCP 70 iscsi-target > 57954 [ACK] Seq=49 Ack=8337 Win=8195 Len
34 0.000494 192.168.1.55 -> 192.168.1.141 iSCSI 118 SCSI:
```

Response LUN: 0x00 (Write(10)) (Good)

```
35 0.000508 192.168.1.55 -> 192.168.1.141 iSCSI 118 SCSI:
```

Response LUN: 0x00 (Write(10)) (Good)

對於RJ45 NIC介面卡,建議至少使用Cat6 UTP電纜,並連線到10 GbE埠。

相關資訊

- [Windows伺服器iSCSI目標伺服器概述](#)
- [Cisco社群 — 如何 — iSCSI啟動,使用UCS伺服器上的Intel i350介面卡](#)
- [iSCSI命名約定](#)
- [設定及擷取軟體的內嵌封包](#)