Telestra Cold Start Guide

Product Name: Telestra

Telestra Cold Start Guide

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Revision history

Date	Revision	Version	Comments
8/8/2016	A	1	Completed internal reorganization and made minor edits for grammar, consistency, and style; moved "(Optional) Media check" after "Basic Input/Output System (BIOS) setup."
9/26/2017	A	2	Changed internal inline styles to character styles; added bookmarks to section titles; made edits to the wording in the Telestra cold-start procedure.
10/3/2017	A	3	Made minor edits to wording and fixed conditions display error.
10/16/2018	B	0	(7.1.0) Added instructions for the Red Hat 7.X cold-start procedure. Updated licensing references. Moved Red Hat 5.X and 6.X to Appendix D, "Legacy cold-start procedures" on page 56.
10/16/2018	C	0	Made minor wording change to Studio and Telestra terminology in "Introduction," removed network configuration instructions from "Cold-start Telestra 7.X and 8.X on a Studio (T4H-XXXXX-XX) development workstation," and added new network configuration instructions for Studio.
1/9/2019	D	0	Added "BIOS: Q17MX or Q17AX" configuration instructions.
1/22/2019	D	1	Added Q17MX/Q17AX to "Basic Input/Output System (BIOS) setup;" added licensing reminder to "Restore" and removed "USB License Keys" for consistency with other cold start guides.
1/30/2019	D	2	Removed incorrect Step 8 from "Introduction."
3/13/2019	D	3	Removed **Second Super IO Configuration** interface element from "BIOS: Q17MX or Q17AX."
4/26/2019	D	4	Made minor edits to BIOS for clarity and added cross reference to "iSCSI cold-start procedure for Telestra 6.X."
11/6/2019	D	5	Fixed minor condition error in "(Optional) Media check."
11/22/2019	E	0	(7.4.1) Clarified media check verification process. Added "Cold start procedure for SLES 11."
1/16/2020	E	1	(7.5.0) Added caution note about custom speech models to "Backup."

Date	Revision	Version	Comments
2/16/2021	E	2	Updated 2U chassis diagram, title page, and header styles.
3/10/2021	E	3	Removed deprecated BIOS identification instructions.
3/30/2021	F	0	(7.10.0) Added support for USB media to the "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) ."
4/1/2021	F	1	Made minor tweak to wording in "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) ."
8/10/2021	F	2	Updated the 2U chassis diagram in "Required equipment." Added link to Fedora Media Writer download instructions.
6/14/2022	F	3	Fixed minor typo in "Cold start procedure for SLES 11."
6/23/2022	F	4	Updated the 2U chassis diagram to include the Power and Hard Drive LEDs.
10/7/2022	F	5	Added the Red Hat Enterprise Linux (RHEL) export statement to front matter. Updated 2U chassis diagram to move Eth card to third slot.
3/27/2023	G	0	Added "Telestra on customer or government equipment" and "Telestra in a virtual machine." Updated the Red Hat Enterprise Linux subscription and export statement in the front matter. Made "Required equipment," "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) ," and "Cold-start Telestra 7.X and 8.X on a Studio (T4H-XXXXX-XX) development workstation" generic to other types of installation media.
3/29/2023	G	1	Added UEFI to "Virtual machine host setup," "Set up and install Telestra on customer or government equipment," "(Optional) Media check," and "Memory Test (Telestra 7.X and 8.X)." Updated the BIOS table in "Basic Input/Output System (BIOS) setup." Added "minimum" to **Memory** and **Disk Space** in "ESXi virtual machine specifications." Added "Memory Test (Telestra 7.X and 8.X)."

Date	Revision	Version	Comments
10/16/2023	H	0	Updated content for Telestra 8.X. In "BIOS: Q17MX or Q17AX," added a note instructing users not to select the UEFI option for DVD or USB. In "Telestra iSCSI cold-start procedure," and added a note instructing users to verify the DVD is set to the first boot device if they can't boot from the DVD. Deleted unnecessary Telestra server column in "Basic Input/Output System (BIOS) setup." Replaced "Target" references with "Telestra server" and "ACE" references with "Telestra." Added "Broadcom iSCSI setup and cold start for T4H-XXX8X-XX and T4H-XXX9X-XX" documentation. Updated **Disk Space** to 80 GB in "Minimum host server specifications" and "ESXi virtual machine specifications."
1/3/2024	H	1	Updated the recommended image flash utility in "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) ." Fixed an error causing duplicate "Backup" sections to display. Removed Step 10 in "Restore" and added "(Optional) Licensing."
3/11/2024	I	0	Added "BIOS setup for HW-1XXXXX-XXX and HW-2XXXXX-XXX." Fixed configuration number typo in "Broadcom iSCSI setup and cold start for T4H-XXX8X-XX and T4H-XXX9X-XX" and added required equipment to "Intel iSCSI boot process for T4H-XXXXX-XX" for consistency.
3/12/2024	I	1	Added BIOS HW-1*XXXXX-XXX* or HW-2*XXXXX-XXX* to the table in "Basic Input/Output System (BIOS) setup." Fixed blurry image of the ASTI-SRV chassis diagram in "Required equipment."
3/13/2024	I	2	Updated the compatible software release for BIOS HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX* in "Basic Input/Output System (BIOS) setup."
4/9/2024	I	3	Expanded "Telestra iSCSI cold-start procedure" to include a statement about external services and booting from remote services.
6/11/2024	I	4	Fixed a minor error causing wrong revision number to display on Revision History for Rev. I, Ver. 3.

Date	Revision	Version	Comments
8/21/2024	I	5	Made a minor clarification to a note about resetting the server after reboot in the cold-start procedure. Specified that the minimum LUN size is 80 GB in "Telestra iSCSI cold-start procedure."
11/22/2024	J	0	Edited note in "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) " and "Cold-start Telestra 7.X and 8.X on a Studio (T4H-XXXXX-XX) development workstation" to make Fedora Media Writer required. Clarified each device's corresponding Ethernet interface from the Telestra VM's perspective in "Virtual machine network configurations." Reorganized BIOS configuration instructions for the HW-1 and HW-2 chassis naming schemas. Documented "iSCSI boot process for HW-1XXXXX-XXX and HW-2XXXXX-XXX." Added sections for "Telestra server cold-start procedures," "Studio cold-start procedures and network setup," "Set up a Studio development workstation," and cold-start instructions for Telestra 7.X/8.X on HW-1XXXXX-XXX and HW-2XXXXX-XXX chassis configurations and Studio development workstation. Updated titles for consistency and expanded installation media instructions. Made "(Optional) Media check" more generic to other types of installation media.
1/14/2025	J	1	Added **Archive Type** choice—ZIP or tape archive (.tar)— to "Backup" and backup ZIP (.backup.zip) file type to "Restore."

Contents

1.0 Introduction

The cold-start procedure described in this document allow you to build Telestra systems from scratch. There are three main reasons for using the cold-start procedure:

- Installing the latest software version

- Rebuilding a damaged hard drive

- Creating a spare hard drive

The following steps outline the cold-start procedure:

1. To back up the Telestra server, go to Section 3.0, "Backup" on page 4.

2. To configure the BIOS, ensuring the cold-start procedure runs properly, go to Section 4.0, "Basic Input/Output System (BIOS) setup" on page 7.

3. *(Optional)* To perform a media check, go to Section 5.0, "(Optional) Media check" on page 18.

4. Complete the Telestra server cold-start procedure, erase the hard drive, and install the Red Hat and Telestra software. For cold-start procedure instructions, go to Section 6.0, "Telestra server cold-start procedures" on page 20 or Section 10.0, "Studio cold-start procedures and network setup" on page 39.

5. Set up the network. First, assign a temporary IP address to the Telestra server, which allows a web browser to remotely access Telestra software. Then use the Telestra web interface on a web browser to complete the network setup. To set up the network, go to Section 9.0, "Telestra server network setup" on page 37.

6. To install Studio on hardware or a VM, complete the Studio cold-start procedure in Section 10.2, "Cold-start Telestra 7.X and 8.X on a Studio (T4H-XXXXX-XX) development workstation" on page 40.

7. To restore the Telestra server, go to Section 11.0, "Restore" on page 43.

2.0 Required equipment

To complete the Telestra cold-start procedure, you will need the following items:

- A Telestra 2U platform with a removable hard drive

- Keyboard

- Monitor

Note: The keyboard and monitor are required for setup and debugging but not for normal operation.

- *(Optional)* Mouse

- Telestra installation media (i.e., DVD, USB drive, ISO)

Figure 1, "Telestra (P/N: TL-AT) 2U chassis" below shows the Telestra (P/N: TL-AT) 2U chassis:
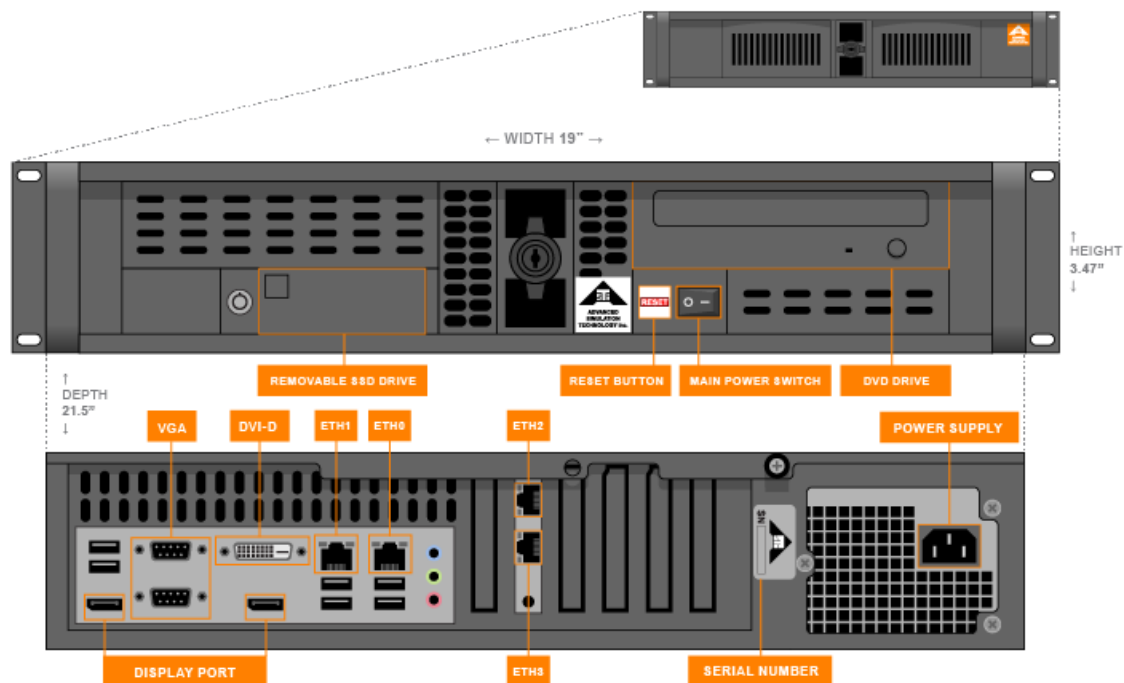
Figure 1: Telestra (P/N: TL-AT) 2U chassis

Figure 2, "Telestra (P/N: ASTI-SRV) 2U chassis" below shows the Telestra (P/N: ASTI-SRV) 2U chassis diagram:
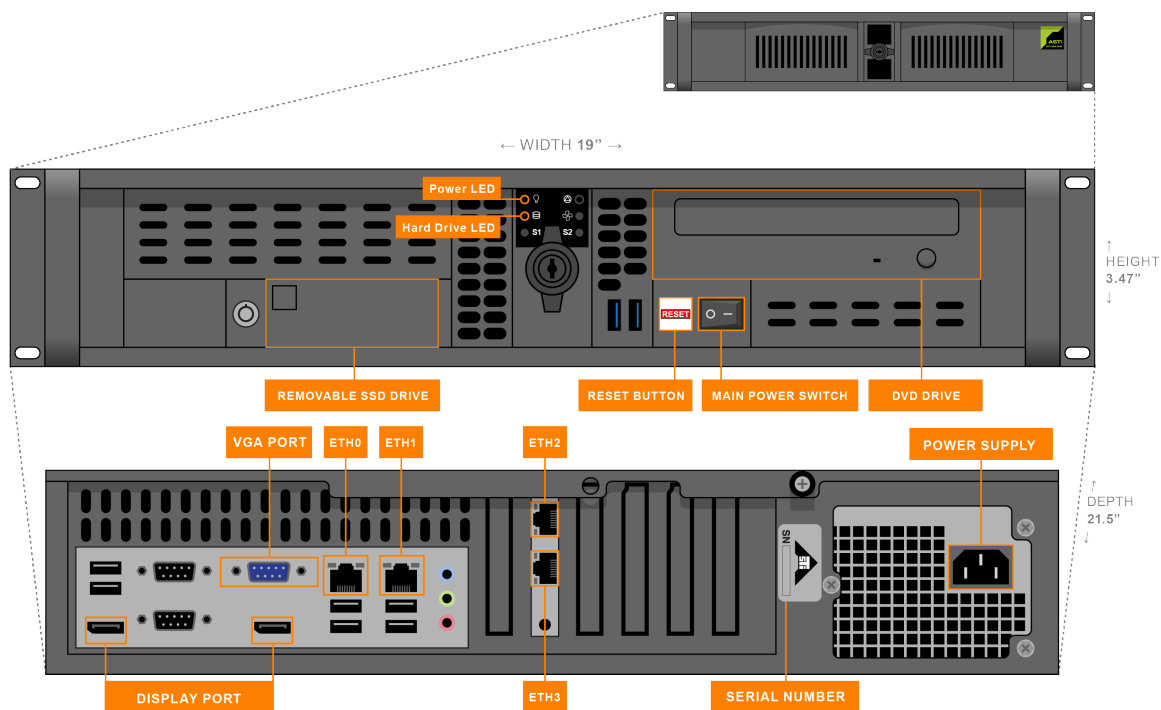
Figure 2: Telestra (P/N: ASTI-SRV) 2U chassis

Note: The chassis and connections shown here are for general representation only; the location(s) of cards, ports, and slots may vary. For specific designations, consult the included engineering drawings and labels on the rear of your chassis.

3.0 Backup

To back up a system configuration, follow these steps:

1. Open a web browser on a computer sharing a network with the Telestra server.

2. In the address bar, enter the Telestra server's IP address.

3. On the left, under ☍ **Setup**, go to **Backup/Restore**.
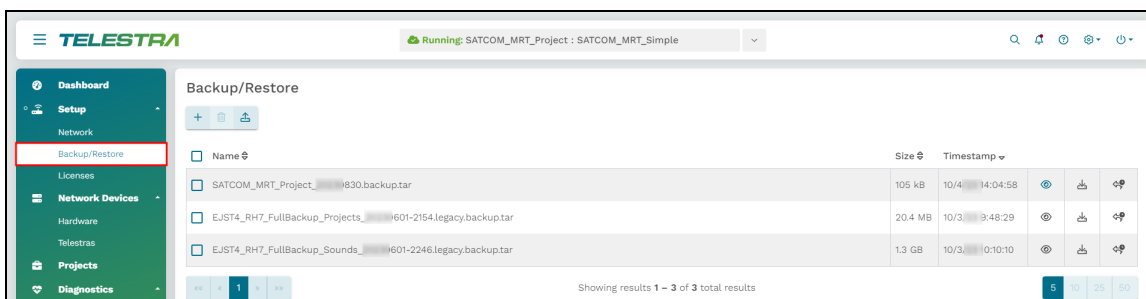
Figure 3: Backup/Restore navigation

4. On the right, hover over the orange tab ( ), and select **Log in to edit**.
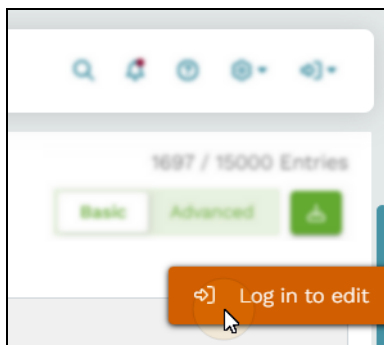
Figure 4: Log in to edit

5. Log in with the following default credentials:

Username	Password
admin	astirules

6. Select **Add a backup** ( ).

7. *(Optional)* In **Select Resources to Back up**, select the arrow ( ) to view the contents of each section. To view all available resources, select Expand All.

8. Choose which resources to back up:

- *Licenses*: saves the license file and/or license server configuration on the Telestra server.

- *Networking*: saves the Telestra server's network configuration, such as the hostname and network settings.

- *Project Archives*: saves all of the Telestra server's projects.

- *RecordReplay*: saves any Telestra Sound Recording (.tsr) files from the **RecordReplay** or **LevelDCapture** components or .wav files from the **StereoWavRecord** component.

- *Sound Library*: saves all wavesets on the Telestra server.

- *System Configuration*: saves **Audit Logs**, internal features, HTTP API server configuration and data, Level D configurations, system **Contact** information, and **User Management** information (i.e., usernames, passwords).

- *Telestra Configurations*: saves the configuration file enabling you to use custom or customer-specific components.

- *Custom SR Models*: saves any speech recognition (SR) models built or installed on the system.

⚠️ **Important**: *Some options may not display depending on your Telestra server's configuration.*

9. *(Optional)* In **Prefix**, enter a unique name for the backup. If this field is blank, Telestra uses the server's hostname followed by a string of unique characters.

10. *(Optional)* Select **Text Only?** to remove project history (i.e., Mercurial) from the backup. This setting is ideal for secure facilities that are unable to transmit binary data.

11. On **Archive Type**, choose **ZIP** or **TAR**.

📝 **Note**: *The default **Archive Type** is **ZIP**, which maximizes performance and OS compatibility. For backwards compatibility with Telestra 8.0.0–8.4.0, select **TAR**.*

12. Select Back up .
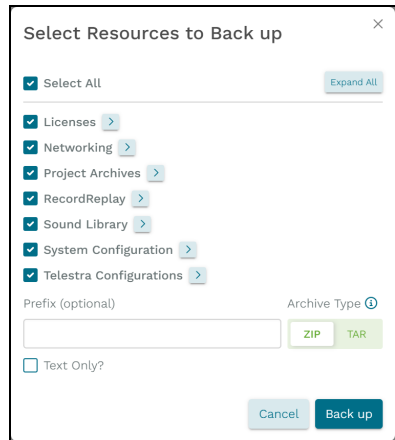
Figure 5: Select Resources to Back up

When the backup is complete, a "Backup was successful" message appears.

13. *(Optional)* Find the new backup in the table, and select **Download** (⤓).

Figure 6: Download a backup

4.0 Basic Input/Output System (BIOS) setup

Before completing the cold-start procedure, you will need to set up your server's BIOS settings. The BIOS settings control the server's foundational behavior, including system boot order, hardware initialization, and essential communication among the server components. Proper BIOS configuration enhances the server hardware's compatibility, stability, and performance, which are critical for successful software installation and operation.

ASTi's BIOS documentation now includes servers using chassis configuration numbers (e.g., HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX*) and servers that use motherboard models (e.g., Q17MX) for identification. It consists of two main sections: one for HW-1 and HW-2 configurations with the ASTI-SRV part number and another primarily for servers with a TL-AT part number and T4H chassis configuration. The second section identifies servers by motherboard model and includes some legacy chassis configurations that predate the T4H naming schema. This structure streamlines BIOS setup while supporting all server types.

4.1 BIOS setup for HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX*

This section provides BIOS setup instructions for ASTi servers using the HW-based naming schema, identified by configuration numbers such as HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX*. To confirm your server's configuration, go to to Table 1, "Telestra BIOS compatibility matrix" below, which maps the configuration number to the applicable Telestra software version:

Chassis Configuration	Telestra Software Version
HW-1*XXXXX-XXX*, HW-2*XXXXX-XXX*	8.3.*X* and later

Table 1: Telestra BIOS compatibility matrix

To set up the BIOS for the HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX* chassis configurations, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Press F9 to open **Load Optimal Defaults?**, and select **Yes**.

3. On **Main**, set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Advanced** > **Power & Performance**, and set **C states** to **Disabled**.

5. To save and reset, press F10. When **Save & reset** appears, select **Yes**. Wait as the server reboots.

4.2 BIOS setup for T4H-*XXXXX-XX* and earlier con-figurations

This chapter covers BIOS setup for ASTi servers identified by their motherboard models; specifically, it refers to servers with a TL-AT part number and a T4H-*XXXXX-XX* chassis configuration, as well as some legacy configurations that differ from these setups.

To determine your server's chassis configuration, part number, and/or motherboard model, first check the label on the rear of the chassis. Next, use Table 2, "Telestra BIOS compatibility matrix" below to identify your server by the motherboard model and ASTi software version, and follow the corresponding BIOS setup instructions:

Motherboard Model	Telestra Software Version
BIOS: Q17MX or Q17AX	6.8.0–6.12.0, 7.1.0–7.15.0, 8.*X.Y*
BIOS Q67AX 2.14.1219 and later	4.37-37635–4.50-38673, 6.*X.Y*, 7.*X.Y*, 8.*X.Y*
BIOS Q67AX 2.02.1205 and earlier	
BIOS: Q35AX American Megatrends	4.15–4.50-38673, 6.*X.Y*, 7.*X.Y*
BIOS: Advantech AIMB-562 American Megatrends	4.*X.Y*, 6.*X.Y*
BIOS: Advantech AIMB-562 Award	
BIOS: BLH6710H	4.37-37635–4.50-38673
BIOS: JGIBX10J	4.37-37635–4.50-38673

Table 2: Telestra BIOS compatibility matrix

4.2.1 BIOS: Q17MX or Q17AX

To set up BIOS version Q17MX or Q17AX, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Press F3 to open **Load Optimal Defaults?**, and select **Yes**.

3. On **Main**, set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Chipset** > **PCH-IO Configuration**, and set the following:

   a. **Onboard LAN1 Controller** to **Enabled**

   b. **Onboard LAN2 Controller** to **Enabled**

   c. **System State After Power Failure** to **Always On**

5. Press Esc. Go to to **Chipset** > **System Agent (SA) Configuration**, and set **VT-d** to **Enabled**.

6. Press Esc. Go to **Advanced** > **CSM Configuration**, and set **Network** to **Legacy**.

7. To save and reset, press F4. When the "Save configuration and reset?" message appears, select **Yes**. Wait as the server reboots.

8. As the system reboots, press Del to return to **BIOS Setup Utility**.

9. Go to **Advanced** > **CPU Configuration**, and set the following:

   a. **Hyper-threading** to **Disabled**

   b. **Intel Virtualization Technology** to **Enabled**

10. Press Esc. Go to **Advanced** > **SATA Configuration**, and set **SATA Mode Selection** to **AHCI**.

11. Press Esc. Go to **Super IO Configuration** > **Serial Port 1 Configuration**, and set **Serial Port** to **Disabled**.

12. Press Esc. Go to **Serial Port 2 Port Configuration**, and set **Serial Port** to **Disabled**.

13. Press Esc. Go to **Serial Port 3 Port Configuration**, and set **Serial Port** to **Disabled**.

14. Press Esc. Go to **Serial Port 4 Port Configuration**, and set **Serial Port** to **Disabled**.

15. Press Esc. Go to **Serial Port 5 Port Configuration**, and set **Serial Port** to **Disabled**.

16. Press Esc. Go to **Serial Port 6 Port Configuration**, and set **Serial Port** to **Disabled**.

17. Press Esc twice, go to **Boot**, and set the **Boot Option Priorities** as follows:

   a. **Boot Option #1** to the *DVD drive* or *USB* option

   b. **Boot Option #2** to the *hard drive* option

   c. **Boot Option #3** to the *network* option

    d. **Boot Option #4** to **Disabled**

> *Note*: *Hardware names and model numbers may vary depending on your hardware type.*

18. To save and reset, press F4. When the "Save configuration and reset?" message appears, select **Yes**. Wait as the server reboots.

4.2.2 BIOS: Q67AX 2.14.1219 and later

To set up BIOS Q67AX 2.14.1219 and later, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Press F3, and set "Load Optimized Defaults?" to **Yes**.

3. On **Main**, set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Chipset** > **PCH-IO Configuration**, and set the following:

    a. **Onboard LAN1 Controller** to **Enabled**

    b. **Onboard LAN2 Device** to **Enabled**

    c. **Restore AC Power Loss** to **Power On**

5. Press Esc. Go to **Chipset** > **System Agent (SA) Configuration**, and set **VT-d** to **Enabled**.

6. Press Esc. Go to **Boot** > **CSM parameters**, and set **Launch PXE OpROM policy** to **Legacy only.**

7. To save and reset, press F4. A confirmation message requests, "Save configuration and reset?" Select **Yes**.

8. As the system reboots, press Del to return to **BIOS Setup Utility**.

9. Press Esc. Go to **Advanced** > **CPU Configuration**, and set the following:

    a. **Hyper-threading** to **Disabled**

    b. **Intel Virtualization Technology** to **Enabled**

10. Press Esc. Go to **SATA Configuration**, and set **SATA Mode Selection** to **AHCI.**

11. Press Esc. Go to **SMART Settings**, and set **SMART Self Test** to **Enabled.**

12. Press Esc. Go to **Super IO Configuration** > **COM1 Port Configuration**, and set **Serial Port** to **Disabled**.

13. Press Esc. Go to **COM2 Port Configuration**, and set **Serial Port** to **Disabled**.

14. Press Esc. Set **CIR Controller** to **Disabled**.

15. Press Esc. Go to **Second Super IO Configuration** > **COM3 Port Configuration**, and set **Serial Port** to **Disabled**.

16. Press Esc. Go to **COM4 Port Configuration**, and set **Serial Port** to **Disabled**.

17. Press Esc. Go to **COM5 Port Configuration**, and set **Serial Port** to **Disabled**.

18. Press Esc. Go to **COM6 Port Configuration**, and set **Serial Port** to **Disabled**.

19. Press Esc twice, and go to **Third Super IO Configuration** > **COM7 Port Configuration**. Set **Serial Port** to **Disabled**.

20. Press Esc. Go to **COM8 Port Configuration**, and set **Serial Port** to **Disabled**.

21. Press Esc. Go to **COM9 Port Configuration**, and set **Serial Port** to **Disabled**.

22. Press Esc. Go to **COM10 Port Configuration**, and set **Serial Port** to **Disabled**.

23. Press Esc twice, go to **Boot**, and set **Boot Option Priorities** as follows:

    a. **Boot Option #1** to the *DVD drive* option

    b. **Boot Option #2** to the *hard drive* option

    c. **Boot Option #3** to the *network* option

    > **Note**: *Hardware names and model numbers may vary depending on your hardware type.*

24. Press Esc. Go to **Network Device BBS Priorities**, and set the following:

    a. **Boot Option #2** to **Disabled**

    b. **Boot Option #3** to **Disabled** (if present)

    c. **Boot Option #4** to **Disabled** (if present)

    d. **Boot Option #5** to **Disabled** (if present)

    e. **Boot Option #6** to **Disabled** (if present)

    > **Note**: *The number of boot options may vary depending on your external Ethernet configuration.*

25. To save and reset, press F4. When the "Save configuration and reset?" message appears, select **Yes**. Wait as the server reboots.

4.2.3 BIOS: Q67AX 2.02.1205 and earlier

To set up BIOS Q67AX 2.02.1205 and earlier, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Press F3, and set "Load Optimized Defaults?" to **Yes**.

3. On **Main**, set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Advanced**, and set the following:

   a. **Launch LAN1 PXE OpROM** to **Enabled**

   b. **Launch LAN2 PXE OpROM** to **Enabled**

5. Go to **Save & Exit** > **Save Changes and Reset**. A message confirms, "Save configuration and reset?" Select **Yes**, and wait as the server reboots.

6. As the system reboots, press F2 to return to **BIOS Setup Utility**.

7. Go to **Advanced** > **SATA Configuration**, and set the following:

   a. **SATA Mode** to **IDE Mode**

   b. **Serial-ATA Controller 0** to **Enhanced**

8. Press Esc. Go to **CPU Configuration**, and set the following:

   a. **Hyper-threading** to **Disabled**

   b. **Intel Virtualization Technology** to **Enabled**

9. Press Esc, and go to **Chipset** > **North Bridge**. Set **VT-d** to **Enabled**.

10. Press Esc. Go to **Boot**, and set **Boot Option Priorities** as follows:

    a. **Boot Option #1** to the *DVD drive* option

    b. **Boot Option #2** to the *hard drive* option

    c. **Boot Option #3** to the *IBA GE* slot

    > 📝 *Note: Hardware names and model numbers may vary depending on your hardware type.*

11. Go to **Save & Exit** > **Save Changes and Reset**. A message confirms, "Save configuration and reset?" Select **Yes**, and wait as the server reboots.

4.2.4 BIOS: Q35AX American Megatrends

To set up BIOS version Q35AX American Megatrends, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Go to **Exit**, and select **Load Optimal Defaults**.

3. Go to **Main**, and set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Advanced** > **CPU Configuration**, and set the following:

    a. **Intel® SpeedStep™ tech** to **Disabled**

5. Go to **Advanced** > **IDE Configuration**, and set the following:

    a. **SATA#1 Configuration** to **Enhanced**

    b. **Configure SATA#1** to **IDE**

6. Go to **Advanced** > **SuperIO Configuration**, and set the following:

    a. **Serial Port 1 Address** to **Disabled**

    b. **Serial Port 2 Address** to **Disabled**

7. Go to **Chipset** > **SouthBridge Configuration**, and set **GbE LAN Boot** to **Enabled**.

8. Go to **Exit**, and select **Exit and Save**.

9. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

10. Go to **Boot** > **Boot Device Priority**, and set the following:

    a. **1st Boot Device** to the *CD/DVD* option

    b. **2nd Boot Device** to the *SATA* option

    c. **3rd Boot Device** to the *network* option (e.g., **IBA GE SLOT DOC8 V1327**)

    > **Note**: *Hardware names and model numbers may vary depending on your hardware type.*

    d. **4th Boot Device** to **Disabled**

11. Go to **Boot** > **Interrupt 19 Capture**, and select **Enabled**.

12. Go to **Exit**, and select **Save Changes and Exit**.

4.2.5 BIOS: Advantech AIMB-562 American Megatrends
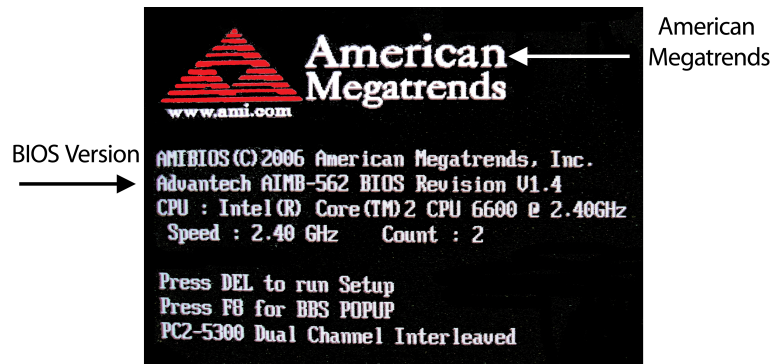
Figure 7: AIMB-562 American Megatrends BIOS version

To set up BIOS version AIMB-562 American Megatrends, follow these steps:

1. Insert the Telestra Server Software Installation DVD.

2. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

3. Go to **Exit**, and select **Load Set Up Defaults**.

4. Go to **Main**, and set the system date and time to Greenwich Mean Time.

5. Go to **Chipset** > **APM Configuration**. Set **Restore on AC Power Loss** to **Power On**.

6. Go to **Advanced** > **CPU Configuration**, and set the following:

    a. **Execute Disable Function** to **Enabled**

    b. **Intel® Speed Step™** to **Disabled**

7. Go to **Advanced** > **Onboard Device Configuration**, and set the **Lan Option ROM** to **Enabled**.

8. Go to **Exit**, and select **Exit & Save**.

9. As the server reboots, press Del to enter the **BIOS Setup Utility**.
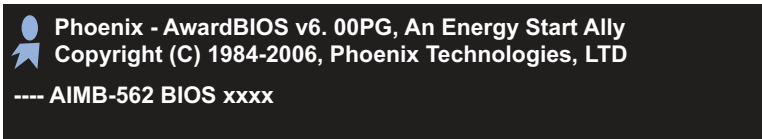
10. Go to **Boot** > **Boot Device Priority**. Set the following:

    a. **1st Boot Device** to the *CD/DVD drive* option

    b. **2nd Boot Device** to the *hard drive* option (e.g., **WDC WR800JD**)

    c. **3rd Boot Device** to the *Ethernet* option (e.g., **IBA GE Slot 0200 v1228**)

    > *Note: Hardware names and model numbers may vary depending on your hardware type.*

    d. **4th Boot Device** to **Disabled**

11. Go to **Exit**, and select **Exit & Save**.

4.2.6 BIOS: Advantech AIMB-562 Award

Phoenix - AwardBIOS v6. 00PG, An Energy Start Ally
**Copyright (C) 1984-2006, Phoenix Technologies, LTD**
---- AIMB-562 BIOS xxxx

Figure 8: AIMB-562 American Megatrends BIOS version

To set up BIOS version AIMB-562 Award, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Select **Load Optimized Defaults**.

3. Select **Standard CMOS Features**, and set the following:

    a. **System Date** and **System Time** using Greenwich Mean Time

    b. **Halt On** to **No Errors**

4. Go to **Advanced BIOS Features**, and set the following:

    a. **First Boot Device** to the *CD-ROM* option

    b. **Second Boot Device** to the *hard drive* option

    c. **Third Boot Device** to the *LAN* option

5. Go to **Integrated Peripherals**.

6. Select **Onboard Device**, and set the following:

    a. **USB Keyboard Support** to **Enabled**

    b. **Onboard Lan Boot ROM** to **Enabled**

7. Select **OnChip IDE Device**, and set the following:

   a. **On-Chip Serial ATA** to **Enhanced Mode**

   b. **SATA PORT Speed Settings** to **Force GEN I**

8. Select **Super IO Device**, and set **PWERON After PWR-Fail** to **On**.

9. Go to **Main**, and select **Save and Exit Setup**.

4.2.7 BIOS: BLH6710H

To set up BIOS version BLH6710H, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. When the **BIOS Setup Utility** opens, press F9 to **Load Defaults**. Select **Y** to load BIOS defaults.

3. Go to **Main**, and set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Configuration** > **SATA Drives**, and press Enter. Set the following:

   a. **Chipset SATA** to **Enable**

   b. **Chipset SATA Mode** to **AHCI**

   c. **S.M.A.R.T.** to **Enable**

   d. **eSATA Ports** to **Disable**

5. To return to **Configuration**, press Esc.

6. Go to **Fan Control & Real-Time Monitoring** > **CPU Fan**, and press Enter. Set the following:

   a. **Control Mode** to **Manual**

   b. **Minimum Duty Cycle** to **100**

7. Go to **Security**, and set the following:

   a. **Execute Disable Bit** to **Enable**

   b. **Intel® Virtualization Technology** to **Enable**

8. Go to **Power**, and set the following:

   a. **Enhanced Intel SpeedStep® Technology** to **Enable**

   b. **After Power Failure** to **Last State**

9. Go to **Boot**, and set the following:

   a. **Boot Device Priority** to the *optical drive*, *hard drive,* or *network*

   b. **Boot to Removable Devices** to **Disable**

   c. **USB Boot** to **Disable**

10. Go to **Exit** > **Exit Saving Changes**, and select **Y**.

4.2.8 BIOS: JGIBX10J

To set up BIOS version JGIBX10J, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. When **BIOS Setup Utility** opens, press F9 to initiate **Load Defaults**. Select **Y** to load BIOS defaults.

3. Go to **Main**, and set **System Date** and **System Time** using Greenwich Mean Time.

4. Go to **Configuration** > **On-board Drive**, and press Enter. Set **Serial Port** to **Disable**.

5. Press Esc. Go to **Configuration** > **SATA Drives**, and press Enter. Set the following:

   a. **Chipset SATA** to **IDE**

   b. **S.M.A.R.T.** to **Enable**

   c. **eSATA Ports** to **Disable**

6. Go to **Security**, and set the following:

   a. **XD Technology** to **Enable**

   b. **Intel® Virtualization Technology** to **Enable**

7. Go to **Power**, and set the following:

   a. **Enhanced Intel SpeedStep® Technology** to **Enable**

   b. **After Power Failure** to **Last State**

8. Go to **Boot**, and set the following:

   a. **Boot Device Priority** to the *optical drive*, *hard drive*, or *network*

   b. **Boot to Removable Devices** to **Disable**

   c. **USB Boot** to **Disable**

9. Go to **Exit** > **Exit Saving Changes**, and select **Y**.

5.0 (Optional) Media check

Follow the instructions below to verify the integrity of the Telestra installation media (e.g., USB, DVD, or .iso file). This procedure is useful if you suspect a problem with your media. The verification will fail if a file on the media is unreadable or corrupted. You only need to verify the media contents once, whether you are cold-starting one or several systems with the same media.

🛑 **Caution**: *If verification succeeds, the cold-start procedure automatically starts, erasing your hard drive. You cannot perform a media check separately from the cold-start procedure.*

To verify your installation media's contents, follow these steps:

1. Connect a monitor, keyboard, and mouse to the Telestra server.

2. Turn on the server.

3. Insert or mount the installation media (i.e., USB, Telestra Server Software Installation DVD, or .iso file).

4. For Basic Input/Output System (BIOS) configurations, do the following:

    a. Reboot the server.

    b. Allow the server to boot from the installation media. If it doesn't, reboot the server again, and press F7 at the POST screen to boot from USB or DVD. Alternatively, press Del to enter the BIOS, and set the installation media as the first boot option.

    ⚠️ **Important**: *Some systems may not support selecting the boot device with F7.*

    c. At the prompt, run **mediacheck**.

    For Unified Extensible Firmware Interface (UEFI) configurations, do the following:

    a. Reboot the server.

    b. At the POST screen, immediately press F7 to boot via DVD or USB.

    c. In **Please select boot device:**, select **UEFI** *device,* where device is the bootable media's device name or identifier (e.g., HL-DT-ST DVDRAM GH24NSC0).

    d. Select **Install Telestra w/ mediacheck**, and press Enter.

5. The screen displays a progress message indicating "Checking *device*" (where *device* is the hardware device's name), along with a percentage that gradually increases until it reaches 100 percent. To abort, press Esc. This process typically takes five to ten minutes to complete.

6. If the media check passes, the cold-start procedure automatically begins. If it fails, the screen displays a "System halted" message. Try creating new installation media, or contact support@asti-usa.com for assistance.

6.0 Telestra server cold-start procedures

This section details cold-start procedures for installing Telestra 7.*X* or 8.*X* software on a Telestra server, specifically for the HW-1*XXXXX-XXX*, HW-2*XXXXX-XXX*, and T4H-*XXXXX-XX* chassis configurations.

This chapter discusses how to:

- Cold-start Telestra 8.2.X and later on a Telestra server (HW-1XXXXX-XXX or HW-2XXXXX-XXX)

- Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX)

6.1 Cold-start Telestra 8.2.*X* and later on a Telestra server (HW-1*XXXXX-XXX* or HW-2*XXXXX-XXX*)

Note: Telestra 7.10.0 and later supports cold-starting with USB media in addition to a DVD. To install Telestra software on a USB, flash the .iso image using Fedora Media Writer at github.com/FedoraQt/MediaWriter before beginning the cold-start procedure. To learn how to install Telestra software on a USB, go to "Prepare a USB Drive for ASTi Software Installation (#139)" at support.asti-usa.com/appnotes/139.html.

To cold-start Telestra 8.2.*X* and later on a Telestra server (HW-1*XXXXX-XXX* or HW-2*XXXXX-XXX*), follow these steps:

1. Connect a monitor, keyboard, and mouse to the Telestra server.

2. Turn on the server.

3. Insert or mount the installation media (i.e., USB, Telestra Server Software Installation DVD, or .iso file).

4. Reboot the server.

5. At the POST screen, immediately press F7 to boot via DVD or USB.

6. In **Please select boot device:**, select **UEFI** *device*, where device is the bootable media's device name or identifier (e.g., HL-DT-ST DVDRAM GH24NSC0).

7. When the Telestra welcome screen appears, press Enter to begin installing the software. Wait 15–20 minutes for installation to complete. Depending on your network configuration, iSCSI installation may take 20–25 minutes to complete.

8. Eject or unmount the installation media (i.e., USB, Telestra Server Software Installation DVD, or .iso file).

9. Reboot the server.

> ⚠️ **Important**: *If the system hangs after installation or during reboot, press the RESET button on the front of the chassis.*

10. *(Optional)* To set the IP address and subnet mask, enter one of the following commands:

   - *Telestra 8.X and later:* **asticli netcfg -a** xxx.xxx.xxx.xxx **-n** yyy.yyy.yyy.yyy,

   - *Telestra 7.X and earlier:* **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*,

   where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

11. *(Optional)* For more network settings, run one of the following:

   - *For Telestra 8.X and later:* **asticli netcfg -h**

   - *For Telestra 7.X and earlier:* **ace-net-config -h**

12. To activate the changes, enter **reboot**, and press Enter.

13. Log into the system using the following credentials:

Username	Password
admin	admin

The cold-start procedure for Telestra 8.2.*X* and later is now complete.

6.2 Cold-start Telestra 7.*X* or 8.*X* on a Telestra server (T4H-*XXXXX-XX*)

> **Note***: Telestra 7.10.0 and later supports cold-starting with USB media in addition to a DVD. To install Telestra software on a USB, flash the .iso image using Fedora Media Writer at github.com/FedoraQt/MediaWriter before beginning the cold-start procedure. To learn how to install Telestra software on a USB, go to "Prepare a USB Drive for ASTi Software Installation (#139)" at support.asti-usa.com/appnotes/139.html.*

To complete the Telestra server (T4H-*XXXXX-XX*) cold-start procedure for Telestra 7.*X* or 8.*X*, follow these steps:

1. Connect a monitor, keyboard, and mouse to the Telestra server.

2. Turn on the server.

3. Insert or mount the installation media (i.e., USB, Telestra Server Software Installation DVD, or .iso file).

4. Reboot the server.

5. Allow the server to boot from the installation media. If it doesn't, reboot the server again, and press F7 at the POST screen to boot from USB or DVD. Alternatively, press Del to enter the BIOS, and set the installation media as the first boot option.

> ⚠️ **Important***: Some systems may not support selecting the boot device with F7.*

6. When the Telestra welcome screen appears, press Enter to begin installing the software. Wait 15–20 minutes for installation to complete. Depending on your network configuration, iSCSI installation may take 20–25 minutes to complete.

7. Eject or unmount the installation media (i.e., USB, Telestra Server Software Installation DVD, or .iso file).

8. Reboot the server.

> ⚠️ **Important***: If the system hangs after installation or during reboot, press the RESET button on the front of the chassis.*

9. *(Optional)* To set the IP address and subnet mask, run one of the following:

   - *Telestra 8.X and later:* **asticli netcfg -a** xxx.xxx.xxx.xxx **-n** yyy.yyy.yyy.yyy,

   - *Telestra 7.X and earlier:* **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*,

   where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

10. *(Optional)* For more network settings, run one of the following:

- *For Telestra 8.X and later:* **asticli netcfg -h**

- *For Telestra 7.X and earlier:* **ace-net-config -h**

11. To activate the changes, enter **reboot**, and press Enter.

12. Log into the system using the following credentials:

Username	Password
admin	admin

The cold-start procedure for Telestra 7.*X* and 8.*X* is now complete.

7.0 Telestra iSCSI cold-start procedure

The iSCSI cold-start procedure involves installing Telestra software on a Telestra server equipped with either a Broadcom Ethernet Adapter or Intel Network Adapter. Telestra's disk-less solution enables system booting from a network iSCSI storage target rather than a local drive, streamlining Telestra's configuration management. This approach enables you to switch between remote logical unit numbers (LUNs), which eliminates the need for physical drive swaps. Telestra requires a minimum LUN size of 80 GB.

> ⚠️ **Important**: *External services like Dynamic Host Configuration Protocol (DHCP), Trivial File Transfer Protocol (TFTP), iSCSI Target, or Domain Name System (DNS) must be available on the network. Telestra does not provide these services.*

The following instructions explain how to configure and initialize the Telestra server's network settings, ensuring seamless connection to remote storage resources. This chapter guides you through the setup process for both network interface card options, enabling your server to efficiently leverage Telestra software with remote storage.

This chapter discusses the following topics:

- iSCSI boot process for HW-1XXXXX-XXX and HW-2XXXXX-XXX
- Intel iSCSI boot process for T4H-XXXXX-XX
- Broadcom iSCSI setup and cold start for T4H-XXX8X-XX and T4H-XXX9X-XX

7.1 iSCSI boot process for HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX*

ASTi has traditionally used two methods for network booting: a Preboot Execution Environment (PXE) or Internet Small Computer System Interface (iSCSI). PXE loads a predefined drive image into random-access memory (RAM), while iSCSI attaches a "drive" over the network at boot. Many network interface cards (NICs) can directly boot from an iSCSI logical unit number (LUN) in Legacy BIOS mode, where the LUN represents a partition or hard drive on the network. However, these NICs often lack support for iSCSI booting in Unified Extensible Firmware Interface (UEFI) mode.

The HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX* chassis configurations only support booting via UEFI. To overcome the limitations of these NICs, the system will first boot off of iPXE—an open-source network boot firmware—before proceeding to boot from an iSCSI LUN. Before booting off the iSCSI LUN, the process first involves installing Telestra software onto the iSCSI LUN, as described in Section 7.1.2, "Load Telestra software onto the iSCSI LUN" on the facing page.

From there, you have two options for booting ASTi software via iSCSI:

- *Manually boot iPXE without a configuration file:* involves booting from a DVD or USB each time, which provides more control to test, troubleshoot, or verify the configuration file. While useful for specific tasks, it's inefficient for frequent reboots or large-scale deployments, as it requires repeated manual steps and can be time-consuming.

- *Configure UEFI to automatically boot iPXE over the network:* allows the Telestra server to boot over a network without manual intervention. This setup streamlines the process, especially in environments with multiple servers, by automating boots and centralizing management.

These instructions are intended for IT network professionals familiar with iSCSI architecture and diskless booting.

7.1.1 HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX* iSCSI requirements

The following equipment and software are required to boot an ASTI-SRV Telestra server via iSCSI:

- Telestra 8.4.0 or later

- ASTI-SRV server (i.e., HW-1*XXXXX-XXX* and HW-2*XXXXX-XXX*)

- Unified Extensible Firmware Interface (UEFI)-capable iPXE firmware, v1.21.1+ (g5a9f4) or later

- A logical unit number (LUN) with a minimum of 80 GB

7.1.2 Load Telestra software onto the iSCSI LUN

This section describes how to install Telestra software onto an iSCSI LUN partition that exists on a SAN. Installing Telestra on a LUN involves booting from the Telestra installation media, configuring network settings for the iSCSI interface, and selecting the appropriate iSCSI storage target. You may also need to reclaim disk space if a previous installation exists. After completing these steps, proceed to Section 7.1.3, "Manually boot iPXE without a configuration file" on page 27 or Section 7.1.4, "Configure UEFI to boot iPXE over the network" on page 29.

To load Telestra software onto an iSCSI LUN, follow these steps:

1. Connect a monitor, keyboard, and mouse to the Telestra server.

2. Turn on the server.

3. At the POST screen, immediately press F7 to boot via DVD or USB.

4. In **Please select boot device:**, select **UEFI** *device*, where device is the bootable media's device name or identifier (e.g., HL-DT-ST DVDRAM GH24NSC0).

5. When the screen displays "Install Telestra," select **Advanced→**, and press Enter.

6. Select **Install Telestra iSCSI without iBFT**, and press Enter. Wait several minutes for the **Telestra INSTALLATION SUMMARY** screen to appear.

7. Next, configure the IP address and netmask for the iSCSI Ethernet interface. If using Dynamic Host Configuration Protocol (DHCP), which automatically assigns the IP, verify that the desired Ethernet interface is enabled, and skip to the next step. For manual configuration, do the following:

   a. Under **SYSTEM**, go to **Network** and **Host Name**.

   b. Choose an Ethernet interface.

    Important: *Do not use Eth1, which ASTi exclusively dedicates to ACENet.*

   c. In the bottom right, select **Configure…**

   d. In **Editing eth***N*, where *N* is the interface number, go to **IPv4 Settings**.

   e. In **Method**, choose **Manual**.

   f. Under **Addresses**, select **Add**.

   g. Enter the iSCSI target initiator's IP address and netmask.

   h. Select **Save**.

   i. In the top right, turn on **Ethernet Eth***N*.

   j. In the top left, select **Done**.

8. On Telestra **INSTALLATION SUMMARY**, go to **Installation Destination**.

9. Under **Specialized & Network Desks**, select **Add a disk…**

10. At the bottom of the screen, select **Add iSCSI Target…**

11. In the pop-up window, enter the following information:

- **Target IP Address**: enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the iSCSI target initiator's IP address.

- **iSCSI Initiator Name**: enter **iqn.***yyyy-mm***.com.***naming-authority***:***unique-name*, where *yyyy-mm.naming-authority:unique-name* is the target initiator's IQN (e.g., **iqn.2024-10.com.example:storage1**).

> *Note: The above example displays a common iSCSI SAN URI format. Your organization's IQN number may vary depending on your configuration's protocol. To learn more about iPXE naming conventions, go to "SAN URIs" at ipxe.org/sanuri.*

12. Select **Start Discovery**.

13. Under **Node Name**, clear the default selection, and choose the iSCSI target name from the listed options (e.g. **iqn.2025-01.com.example.iscsi:storage1**).

14. Select **Log In**. When the iSCSI target selection clears, select **OK**.

15. On **INSTALLATION DESTINATION**, under **Search Results**, select the iSCSI drive. In the top left, select **Done**.

16. Confirm that the drive displays under **Specialized & Network Disks**, and select **Done** in the top left.

17. In **INSTALLATION OPTIONS**, do one of the following:

    a. If no previous installation exists on the drive, select **Done**.

    b. If a previous installation exists, select **Reclaim space**. In the **RECLAIM DISK SPACE** window, select **Delete all**, and select **Reclaim space** again.

18. On Telestra **INSTALLATION SUMMARY**, "Automatic partitioning selected" displays under **Installation Destination**. In the bottom right, select **Begin Installation**, and wait approximately 15–20 minutes for the ASTi software to install.

19. Once installation is complete, select **Reboot System**.

20. Eject or unmount the installation media (i.e., the Telestra Server Software Installation DVD or USB).

7.1.3 Manually boot iPXE without a configuration file

This section provides instructions on how to manually boot iPXE from a PXE server, USB, or CD/DVD for loading Telestra software. Before you begin, go to Ipxe.org to download iPXE v1.21.1+ (g5a9f4) or later, and transfer to the bootable media of your choice.

By following these steps, you can manually configure iPXE on your Telestra server to boot from an iSCSI LUN. The process includes entering the iPXE prompt, configuring network settings based on your environment (DHCP or manual IP), and using the appropriate iSCSI target initiator and LUN settings. This method offers flexibility for users who need to manually manage their server boot process for testing or troubleshooting.

> **Important**: *These instructions do not cover all of iPXE's methods for running and automating. iPXE uses a different naming and ordering convention for network interfaces than Linux or ASTi. As a result, you'll have to identify the correct interface via testing or iPXE commands. For example, run **iflinkwait** to check a network interface's link status.*

To manually boot iPXE from a PXE server, USB, or CD/DVD, follow these steps:

1. Insert the iPXE media into the PXE server.

2. Reboot the server.

3. Press Esc+B to enter the iPXE prompt.

> **Note**: *Disregard the screen's instruction to press Ctrl+B.*

4. Do one of the following, depending on your network's configuration:

   - For DHCP, enter **dhcp net***N* where *N* is the Ethernet interface (e.g., Eth0).

   - For manual network configuration, enter the following:

     ```
     ifopen netN
     set netN/ip xxx.xxx.xxx.xxx
     set netN/netmask yyy.yyy.yyy.yyy
     set netN/gateway zzz.zzz.zzz.zzz
     ```

     where *N* is the Ethernet interface, *xxx.xxx.xxx.xxx* is the iSCSI target initiator's IP address, *yyy.yyy.yyy.yyy* is the netmask, and *zzz.zzz.zzz.zzz* is the gateway (if required).

     Here's an example:

     ```
     ifopen net0
     set net0/ip 192.168.1.50
     set net0/netmask 255.255.255.0
     set net0/gateway 192.168.1.1
     ```

5. Enter **set initiator-iqn.***yyyy-mm.naming-authority*:*unique-name*, where *yyyy-mm.naming-authority*:*unique-name* is the target initiator's iSCSI IQN. For example, you might enter **set initiator-iqn.2025-01.com.example:storage1**.

> **Note***: The above example displays a common iSCSI SAN URI format. Your organization's IQN number may vary depending on your configuration's protocol. To learn more about iPXE naming conventions, go to "SAN URIs" at* [*Ipxe.org/sanuri*](https://Ipxe.org/sanuri)*.*

6. Enter **sanboot iscsi:***xxx.xxx.xxx.xxx***::::iqn.***yyyy-mm***.***naming-authority***:***unique-name*, where *xxx.xxx.xxx.xxx* is the iSCSI LUN uniform resource identifier (URI), and *yyyy-mm.naming-authority*:*unique-name* is the target initiator's IQN. For example, you might enter **sanboot iscsi:192.168.0.2::::iqn.2025-01.com.example.iscsi:storage1**.

7. To stop the server from rebooting, press an arrow key or any key except for Enter.

8. A blue screen appears on your first successful attempt. On an unsuccessful attempt, the prompt may return "<could not open>," depending on the error. Repeat Steps 5–7 to verify that you entered the correct iSCSI information. If you're still unable to boot ASTi software from the LUN, contact ASTi at support@asti-usa.com for assistance.

9. Select **Always continue Boot**, and press Enter.

10. Eject or unmount the iPXE media.

7.1.4 Configure UEFI to boot iPXE over the network

This section explains how to configure the Telestra server's UEFI settings to automatically boot iPXE from a PXE server, allowing the server to boot over a network connection rather than from physical media like a DVD. By placing the iPXE application on a PXE server and setting up the required network parameters in a configuration file, you can eliminate the need for manual booting from the iSCSI LUN. The process involves enabling the network stack, configuring PXE support, and adjusting the boot order to prioritize the Ethernet interface.

To configure the UEFI settings to boot iPXE from a PXE server, follow these steps:

1. Reboot the server.

2. Press Del to enter **Setup**.

3. Go to **Advanced** > **Network Stack**, and configure the following:

   a. Set **Network Stack** to **Enabled**.

   b. Set **IPv4 PXE Support** to **Enabled**.

4. Reboot the server.

5. Press Del to enter **Setup** again.

6. Go to **Boot**, and configure the following:

   a. Set **Boot Option #1** to **[UEFI:** *device* **I219-LM]** to boot from Eth0, where *device* is the bootable media's device name or identifier.

   b. Set **Boot Option #4** to **Disabled**.

   c. Set **Boot Option #3** to **Disabled**.

   d. Set **Boot Option #2** to **Disabled**.

7. Press F10 to save and exit.

7.2 Intel iSCSI boot process for T4H-*XXXXX-XX*

In this section, you'll learn how to install and configure iSCSI boot firmware and cold-start Telestra software on an iSCSI server using an Intel Ethernet adapter. The following instructions are based on version 20.0 of the INTEL Ethernet Connections Bootutil, reboot images, and EFI drivers. Earlier or later versions of the INTEL Bootutil program may require minor modifications to the process. Refer to INTEL documentation as needed. Required equipment includes a T4H-*XXXXX-XX* system and a Telestra Server Software Installation DVD.

> ⚠️ **Important**: *Some INTEL ET cards require a slightly different process than is outlined in Section 7.2.1, "Intel iSCSI boot firmware installation" below and Section 7.2.2, "Intel iSCSI boot firmware setup" on page 31. If these instructions fail to complete for your ET card, please contact ASTi for additional instructions.*

This section discusses the following topics:

- Intel iSCSI boot firmware installation
- Intel iSCSI boot firmware setup

7.2.1 Intel iSCSI boot firmware installation

> ⚠️ **Important:** *To identify the Ethernet port for iSCSI, enter ethtool **-p eth**N, where N is the Ethernet port number. Press Enter. Check the rear panel of the server, and note which Ethernet port is blinking.*

If you previously installed Intel's iSCSI boot firmware, skip to Section 7.2.2, "Intel iSCSI boot firmware setup" on page 31. To install the iSCSI boot firmware, follow these steps:

1. Download the Intel Ethernet Flash Firmware Utility program (i.e., BootUtil) from the Intel download center. For more information, go to www.intel.com.

2. Follow the Intel instructions to start up BootUtil on the Telestra server, or contact ASTi for a prebuilt image.

3. Enter **bootutil -FE -NIC=**X, where X is the iSCSI NIC interface. Press Enter.

4. When the prompt asks you to reboot, instead enter **bootutil -UP=ISCSI -NIC=**X, where X is the NIC interface for iSCSI. Press Enter.

5. When the prompt asks if you would like to create a restore image of NIC X, enter **N**.

6. The prompt confirms, "Continue restore image of NIC X before proceeding?" Enter **Y**.

7. The prompt confirms again, "Would you like to continue?" Enter **Y**.

8. Eject and/or remove the media inserted in Step 2, and reboot the Telestra server.

7.2.2 Intel iSCSI boot firmware setup

To set up Intel's iSCSI boot firmware, follow these steps:

1. To enter the setup, press Ctrl+D at the Boot Firmware prompt.

2. The number of entries shown varies based on the motherboard and NIC interface quantity flashed for iSCSI. From the off-board NIC interface, choose a MAC address.

3. The screen displays two MAC addresses. To set a MAC address to **Primary**, follow the instructions shown on the bottom of the screen.

4. Ensure that the other MAC addresses are set to **Disabled**.

 Important: *Do not use Eth1, which is for ACENet traffic only.*

5. To open the iSCSI Port Selection, press Enter.

6. Set the configuration for the iSCSI initiator and Telestra server settings.

7. Save the changes and exit.

8. To boot the Telestra server, press Esc.

9. The Intel iSCSI cold-start procedure for Telestra 7.*X* and 8.*X* is identical to the standard Telestra server and Studio cold-start procedures. Complete the Telestra server or Studio cold-start procedure in Section 6.2, "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) " on page 22 or Section 10.2, "Cold-start Telestra 7.X and 8.X on a Studio (T4H-XXXXX-XX) development workstation" on page 40.

⚠️ ***Important****: If you're unable to boot from the DVD during an iSCSIcold-start procedure for Telestra 7.X, ensure the DVD is set to the first boot device, as described in Section 4.2.1, "BIOS: Q17MX or Q17AX" on page 8. Some Telestra 8.X configurations (e.g., non-UEFI ASTi systems with Intel NIC cards) may support cold-starting iSCSI with a DVD or USB, and you may set either option as the first boot device.*

⚠️ ***Important*** *Do not connect Keyboard Video Mouse (KVM) switches to the system during the cold-start procedure. If you run into an issue with the procedure while using a KVM, disconnect it, and repeat the cold-start procedure with a dedicated keyboard, monitor, and mouse.*

7.3 Broadcom iSCSI setup and cold start for T4H-*XXX*8*X*-*XX* and T4H-*XXX*9*X*-*XX*

In this section, you will learn how to configure Broadcom Ethernet Adapter Basic Input/Output System (BIOS) and ROM settings and install Telestra software on an iSCSI server using a Broadcom Ethernet adapter. Required equipment includes a T4H-*XXX*8*X*-*XX*, T4H-*XXX*9*X*-*XX* system and a Telestra Server Software Installation DVD. The Broadcom Ethernet Adapter iSCSI cold-start procedure does not support USB media.

This section discusses the following topics:

- BIOS additions for iSCSI with Broadcom

- Telestra ROM configurations for iSCSI with a Broadcom Ethernet Adapter

- Broadcom iSCSI cold-start procedure

7.3.1 BIOS additions for iSCSI with Broadcom

For Telestra to communicate with an iSCSI server via a Broadcom Ethernet Adapter, you'll need to make a few changes to Telestra's Basic Input/Output System (BIOS) settings. This section explains how to configure Telestra's BIOS so that it boots from the Broadcom Ethernet Adapter option.

To modify Telestra's BIOS for iSCSI with a Broadcom Ethernet Adapter, follow these steps:

1. Reboot the server, and immediately press Del as the system boots to enter the **BIOS Setup Utility**.

2. Ensure your BIOS settings are configured according to Section 4.2.1, "BIOS: Q17MX or Q17AX" on page 8.

3. Go to **Boot** > **Network Devices** > **BBS Priorities**, and press Enter. Set the following:

   a. **Boot Option #1** to the *Broadcom Ethernet adapter* option

   b. **Boot Option #2** to **Disabled**

   c. **Boot Option #3** to **Disabled**

4. To return to the **Boot** tab, press Esc.

5. Under **Boot Option Priorities**, set the following:

   a. **Boot Option #1** to the *network* option

   b. **Boot Option #2** to the *DVD drive* option

   > ⚠️ **Important**: *If available, do not select the Unified Extensible Firmware Interface (UEFI) option for DVD or USB.*

   > 📝 **Note**: *Hardware names and model numbers may vary depending on your hardware type.*

6. To save and reset, press F4. When the "Save configuration and reset?" message appears, select **Yes**. Wait as the server reboots.

7.3.2 Telestra ROM configurations for iSCSI with a Broadcom Ethernet Adapter

To configure the Telestra's read-only memory (ROM) settings for iSCSI a Broadcom Ethernet Adapter, follow these steps:

1. Reboot the Telestra server.

2. When the following screen appears, press Ctrl+S to enter the ROM configuration menu:

   ```
   Broadcom NetXtreme Ethernet Boot Agent
   Copyright (C) 2000-2025 Broadcom Limited
   All rights reserved.
   Press Ctrl-S to enter Configuration Menu
   ```

3. Under **Device List**, choose a device from which to boot.

4. Under **Main Menu**, select **MBA Configuration**, and set the following:

   a. **Option ROM** to **Enabled**

   b. **Boot Protocol** to **iSCSI**

5. Go to **iSCSI Boot Configuration** > **General Parameters**, and set the following:

   a. **Boot to iSCSI Target** to **Enabled**

   b. **Target as First HDD** to **Disabled**

6. Press Esc to go back.

7. Go to **Initiator Parameters**, and configure your iSCSI server's network configuration, if applicable.

8. Press Esc to go back.

9. Go to **1st Target Parameters** to set your iSCSI server's network and configuration settings.

10. Press Esc and Enter to save and exit.

7.3.3 Broadcom iSCSI cold-start procedure

To complete the Broadcom Ethernet Adapter iSCSI cold-start procedure, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra Server Software Installation DVD.

> *Note: If the read-only memory (ROM) option does not detect and connect to the iSCSI server during boot, go to Section 7.3.2, "Telestra ROM configurations for iSCSI with a Broadcom Ethernet Adapter" on the previous page to verify your configuration.*

3. When the "Press CTRL + D within 4s to stop booting" message appears, press Ctrl+D.

4. Wait for the Telestra server to boot from the Telestra Server Software Installation DVD, and remove the DVD when it ejects from the drive. If the Telestra server does not boot from the DVD, reboot the Telestra server, and repeat Steps 2–3.

5. Complete the Telestra cold-start procedure in Section 6.2, "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) " on page 22.

8.0 Terrain server software installation

If you purchased Telestra terrain server database software (ACE-TRN), you will have a USB License Key that enables the terrain server software to run on the Telestra server. To install the terrain server software from the Telestra Server Software Installation DVD, follow these steps:

1. Insert the Telestra Server Software Installation DVD into the terrain server.

Note: The Terrain data is very large and may take several minutes to complete.

2. Log into the system using the following default credentials:

Username	Password
root	abcd1234

3. To mount the DVD, run **mount /dev/cdrom /media**.

4. Run **terrain-server-install**.

5. Wait for the installation to complete. Follow the on-screen instructions, and remove the disc from the drive when instructed.

6. Make any necessary changes to the /usr/local/asti/sysconfig/terrain_d.ini terrain server configuration file. The file contains built-in configuration instructions.

7. Reboot the terrain server for the changes to take effect.

*Important: This installation is for ASTi terrain server software only, which includes DTED Level 0 data for the entire Earth. To upload third-party terrain server data, go to the **Terrain** web page in the Telestra web interface.*

9.0 Telestra server network setup

To complete Telestra server network setup, you will need the following hardware:

- Monitor
- Keyboard
- Category 5e cable or better
- Telestra server

To set up the Telestra server and assign an IP address, follow these steps:

1. Connect the monitor and keyboard to the Telestra server.

2. Using a Category 5e cable, connect the Telestra server to the local network using Eth0.

3. Turn on the Telestra server.

4. Log into the system using the following default credentials:

Username	Password
root	abcd1234

5. *(Optional)* To set the IP address and subnet mask, run one of the following:

   - *Telestra 8.X and later:* **asticli netcfg -a** xxx.xxx.xxx.xxx **-n** yyy.yyy.yyy.yyy,

   - *Telestra 7.X and earlier:* **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*,

   where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

6. *(Optional)* For more network settings, run one of the following:

   - *For Telestra 8.X and later:* **asticli netcfg -h**

   - *For Telestra 7.X and earlier:* **ace-net-config -h**

7. Open a web browser on a computer sharing a network with the Telestra server.

8. In the address bar, enter the Telestra server's IP address.

9. Log in with the following default credentials:

Username	Password
admin	astirules

10. On the left, under 🛜 **Setup**, go to **Network** > **Configuration**.
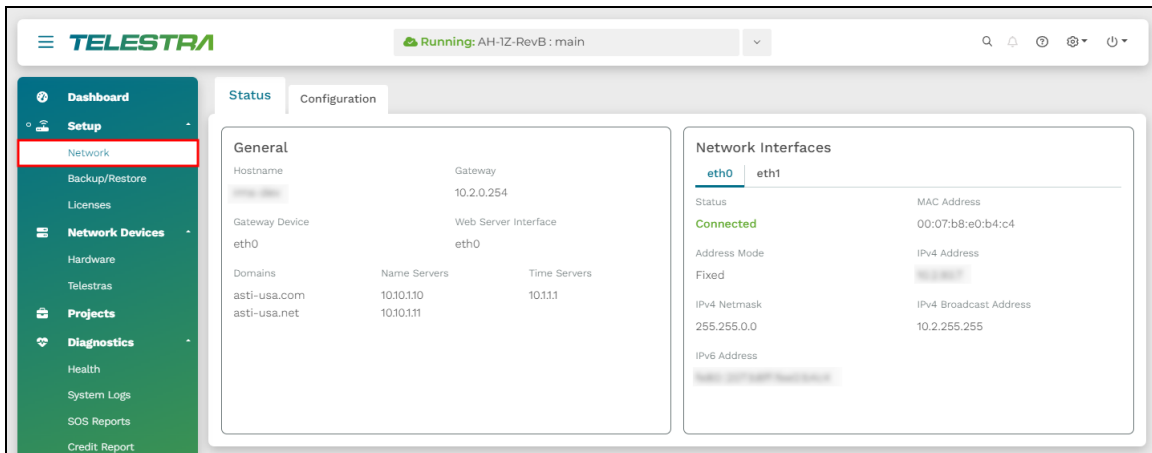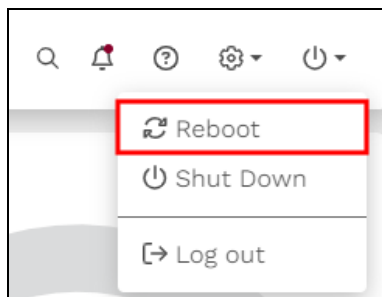

Figure 9: Network > Configuration navigation

11. In **General**, verify the following settings are configured:

   • **Gateway**

   • *(Optional)* **Domains**

   • **Routing Method**

   • **Hostname**

   • *(Optional)* **Name Servers**

12. To reboot the server, go to **System (⏻)** > ⟳ **Reboot**.

Figure 10: Reboot the Telestra server

In the confirmation message, select Confirm to continue.

> **Note**: *In most cases, the browser refreshes automatically. However, you may need to manually refresh if you see a message indicating that the Telestra server is down.*

10.0 Studio cold-start procedures and network setup

This section details cold-start procedures for installing Studio software on a Telestra server, covering installation of Telestra 7.*X* or 8.*X* on the HW-1*XXXXX-XXX*, HW-2*XXXXX-XXX*, and T4H-*XXXXX-XX* chassis configurations. It also includes network setup instructions for a Studio development workstation.

This chapter discusses how to:

- Cold-start Telestra 7.X or 8.X on a Studio (HW-1XXXXX-XXX or HW-2XXXXX-XXX) development workstation

- Cold-start Telestra 7.X and 8.X on a Studio (T4H-XXXXX-XX) development workstation

- Set up a Studio development workstation

10.1 Cold-start Telestra 7.*X* or 8.*X* on a Studio (HW-1*XXXXX-XXX* or HW-2*XXXXX-XXX*) development workstation

> **Note**: *Telestra 7.10.0 and later supports cold-starting with USB media in addition to a DVD. To install Telestra software on a USB, flash the .iso image using Fedora Media Writer at* github.com/FedoraQt/MediaWriter *before beginning the cold-start procedure. To learn how to install Telestra software on a USB, go to "Prepare a USB Drive for ASTi Software Installation (#139)" at* support.asti-usa.com/appnotes/139.html.

To cold-start Telestra 7.*X* or 8.*X* on a Studio (HW-1*XXXXX-XXX* or HW-2*XXXXX-XXX*) development workstation, follow these steps:

1. Connect a monitor, keyboard, and mouse to the Telestra server.

2. Turn on the server.

3. At the POST screen, immediately press F7 to boot via DVD or USB.

4. In **Please select boot device:**, select **UEFI** *device*, where device is the bootable media's device name or identifier (e.g., HL-DT-ST DVDRAM GH24NSC0).

5. When the Studio welcome screen appears, press Enter to begin installing the software. Wait 15–20 minutes for installation to complete. Depending on your network configuration, iSCSI installation may take 20–25 minutes to complete.

6. Eject or unmount the installation media (i.e., USB, Studio Software Installation DVD, or .iso file).

7. Reboot the server.

⚠️ **Important**: *If the system hangs after installation or during reboot, press the RESET button on the front of the chassis.*

8. Select the **aceuser** account.

9. Log into Studio using the following default credentials:

Username	Password
aceuser	aceuser

The Studio cold-start procedure for Telestra 7.*X* and 8.*X* is now complete.

10.2 Cold-start Telestra 7.*X* and 8.*X* on a Studio (T4H-*XXXXX-XX*) development workstation

📝 **Note**: *Telestra 7.10.0 and later supports cold-starting with USB media in addition to a DVD. To install Telestra software on a USB, flash the .iso image using Fedora Media Writer at github.com/FedoraQt/MediaWriter before beginning the cold-start procedure. To learn how to install Telestra software on a USB, go to "Prepare a USB Drive for ASTi Software Installation (#139)" at support.asti-usa.com/appnotes/139.html.*

To cold-start Telestra 7.*X* or 8.*X* on a Studio (T4H-*XXXXX-XX*) development workstation, follow these steps:

1. Connect a monitor, keyboard, and mouse to the Telestra server.

2. Turn on the server.

3. Insert or mount the installation media (i.e., USB, Studio Software Installation DVD, or .iso file).

4. Reboot the server.

5. Allow the server to boot from the installation media. If it doesn't, reboot the server again, and press F7 at the POST screen to boot from USB or DVD. Alternatively, press Del to enter the BIOS, and set the installation media as the first boot option.

⚠️ **Important**: *Some systems may not support selecting the boot device with F7.*

6. When the Studio welcome screen appears, press Enter to begin installing the software. Wait 15–20 minutes for installation to complete. Depending on your network configuration, iSCSI installation may take 20–25 minutes to complete.

7. Eject or unmount the installation media (i.e., USB, Telestra Studio Software Installation DVD, or .iso file).

8. Reboot the server.

⚠️ *Important*: *If the system hangs after installation or during reboot, press the RESET button on the front of the chassis.*

9. Go to the **aceuser** account.

10. Log into Studio using the following default credentials:

Username	Password
aceuser	aceuser

The Studio cold-start procedure for Telestra 7.*X* and 8.*X* is now complete.

10.3 Set up a Studio development workstation

The Studio development workstation or virtual machine (VM) will not have an IP address without a Dynamic Host Configuration Protocol (DHCP) server present on the network. To manually set the IP address and other network settings, follow these steps:

1. From the toolbar, select **Applications** > **System Tools** > **Settings**.
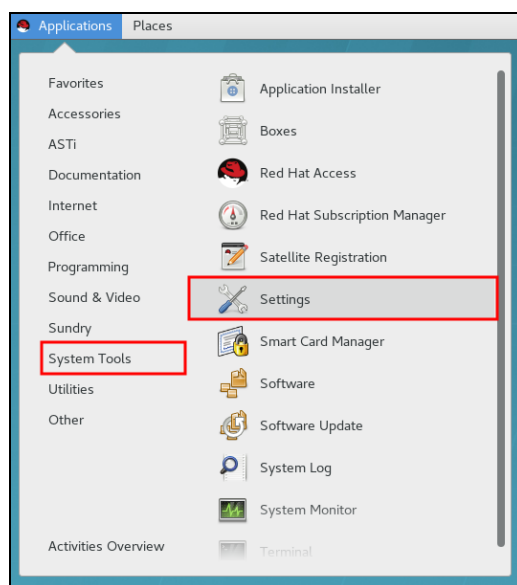
Figure 11: Studio Settings navigation

2. Under **Hardware**, select **Network**.

3. In **Network**, choose an Ethernet port (e.g. Eth0), and select the gear (⚙).
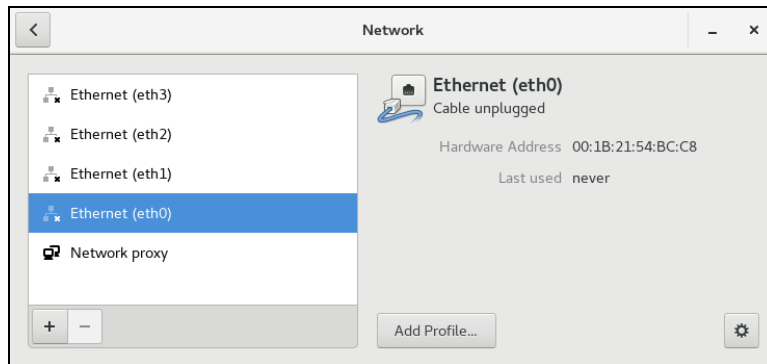
Figure 12: Ethernet selection

4. On the left, select **IPv4**.

5. Select **Addresses**, and then select **Manual**.

6. In **Address**, enter Studio's IP address.

7. In **Netmask**, enter Studio's subnet mask.

8. In **Gateway**, enter the default gateway. If unsure of the gateway, enter the IP address from Step 6.
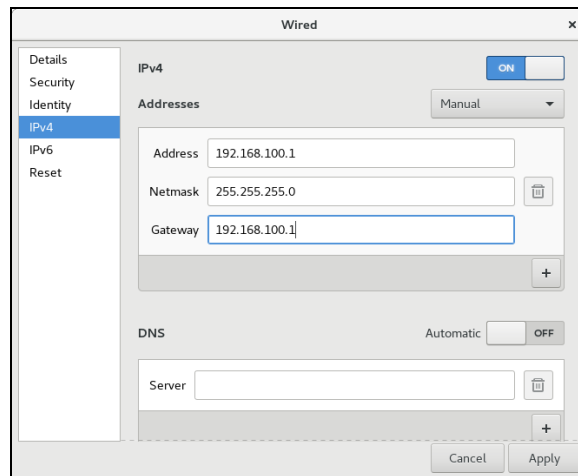
Figure 13: Studio network configuration

9. Select **Apply**.

10. To apply your changes, restart the development workstation or VM.

11.0 Restore

To restore a backup on the Telestra server, follow these steps:

1. Open a web browser on a computer sharing a network with the Telestra server.

2. In the address bar, enter the Telestra server's IP address.

3. On the left, under 🖧 **Setup**, go to **Backup/Restore**.
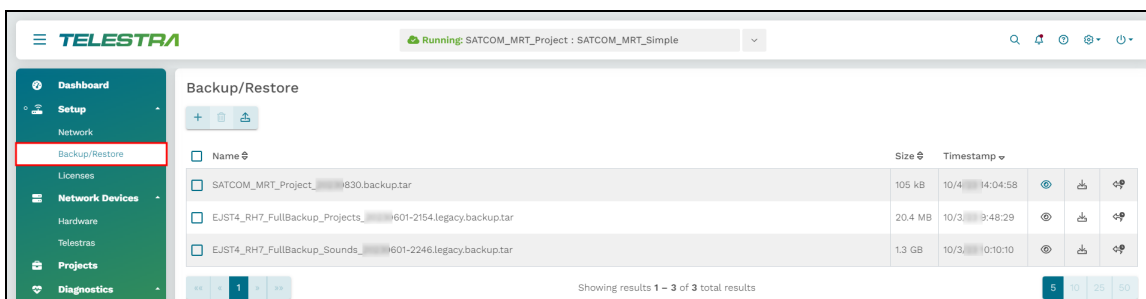
Figure 14: Backup/Restore navigation

4. On the right, hover over the orange tab ( ), and select **Log in to edit**.
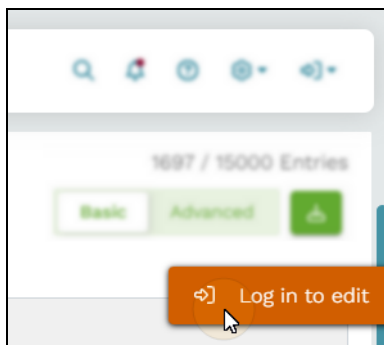
Figure 15: Log in to edit

5. Log in with the following default credentials:

Username	Password
admin	astirules

6. To upload a backup to the Telestra server, select **Upload** ( ).

7. In **Upload Backups**, select [Browse Files], and find the backup file on your local system. Accepted file types include tape archive GNU ZIP, backup tape archive, and backup ZIP formats (.tgz, .backup.tar, .backup.zip).
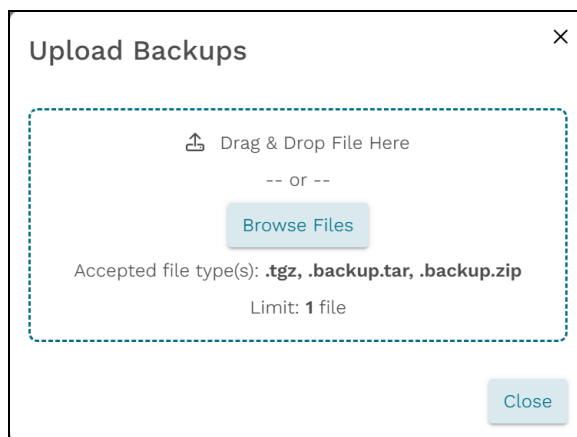
Figure 16: Find a backup file

8. Select [Upload 1 file]. Close the window when the upload is complete.
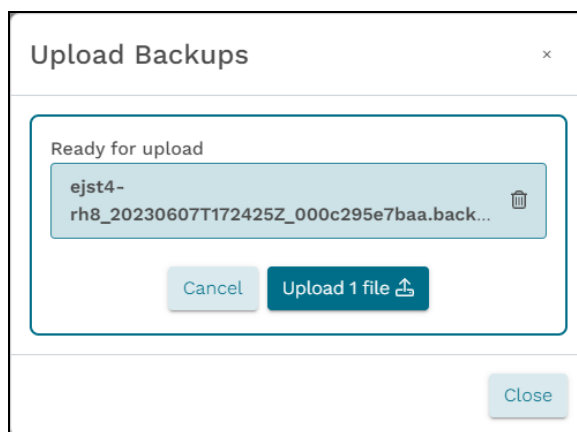
Figure 17: Upload a backup file

9. *(Optional)* To view the contents of a backup, select **View Restore Files** (⊙). Once the system loads, select the eyeball icon again.
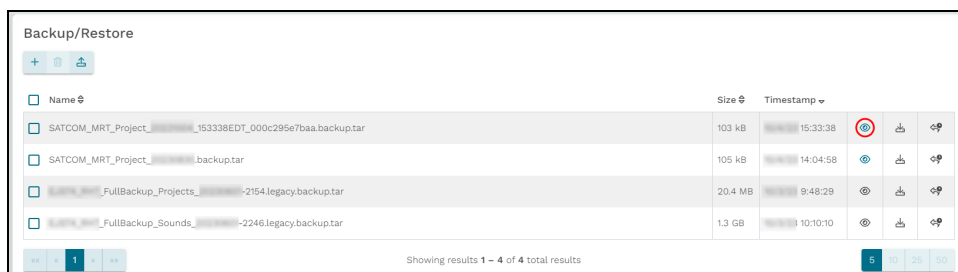
Figure 18: View Restore Files icon

A pop-up window opens, displaying paths to files and sound files in the backup. Scroll down to view the full list of items.
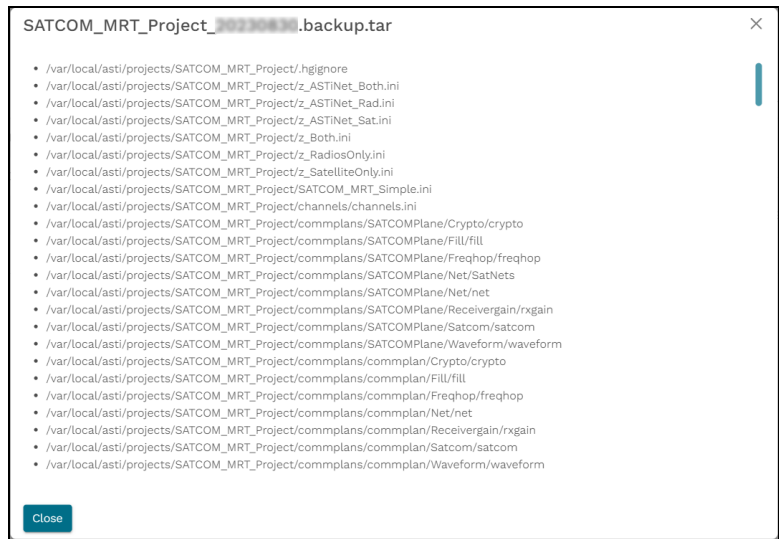
Figure 19: View the contents of a backup

10. To restore the uploaded backup, select **Restore** (⇄).

Figure 20: Restore a backup

11. *(Optional)* In **Select Resources to Restore**, select the down arrow (⌄) to view the contents of each section. To view all available resources, select Expand All .

12. Choose which resources to restore:

- *Licenses*: saves the license file and/or license server configuration on the Telestra server.

- *Networking*: saves the Telestra server's network configuration, such as the hostname and network settings.

- *Project Archives*: saves all of the Telestra server's projects.

- *RecordReplay*: saves any Telestra Sound Recording (.tsr) files from the **RecordReplay** or **LevelDCapture** components or .wav files from the **StereoWavRecord** component.

- *Sound Library*: saves all wavesets on the Telestra server.

- *System Configuration*: saves **Audit Logs**, internal features, HTTP API server configuration and data, Level D configurations, system **Contact** information, and **User Management** information (i.e., usernames, passwords).

- *Telestra Configurations*: saves the configuration file enabling you to use custom or customer-specific components.

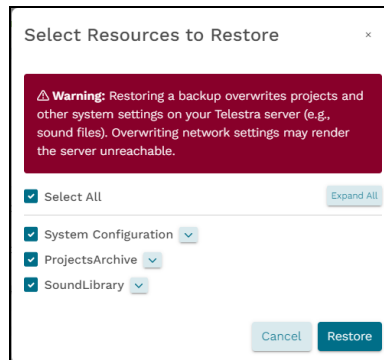- *Custom SR Models*: saves any speech recognition (SR) models built or installed on the system.

Figure 21: Select Resources to Restore

⚠️ *Important: Some options may not display depending on your Telestra server's configuration.*

13. Select Restore. After Telestra restores the configuration, a "Restore was successful" message appears.

12.0 *(Optional)* Licensing

After cold-starting the Telestra server and restoring your system configuration, you may wish to verify your license is still active. The Telestra server requires an active license to function properly. While you don't have to reinstall your license after a cold start, it's a good idea to check its status in the Telestra web interface. This section explains how to ensure your license is active and operational. To learn more about USB License Keys, go to "Licenses" in the *Telestra Web Interface User Guide*.

To verify the Telestra server's license, follow these steps:

1. On the left, go to **Licenses**.
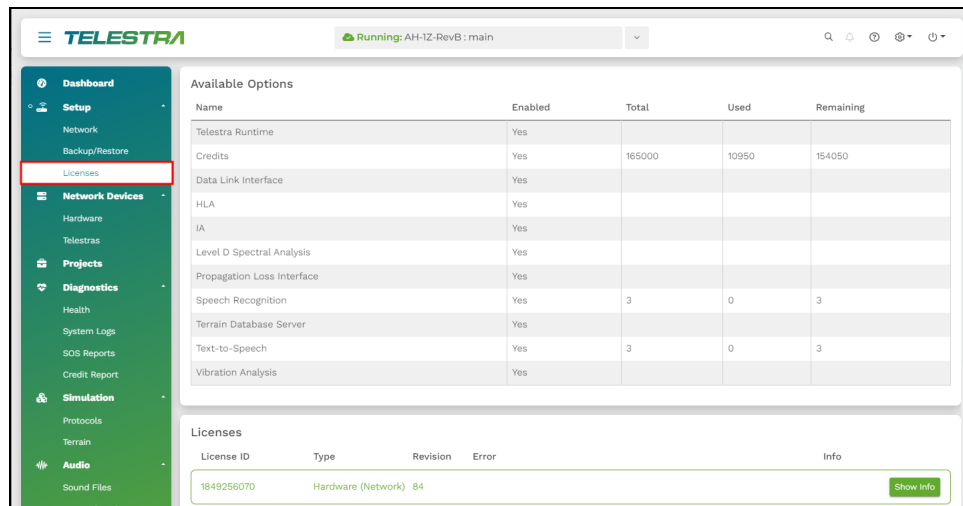
Figure 22: Licenses navigation

2. From the top navigation bar, go to **System** > **LICENSING**.

3. Verify an active license appears under **Licenses**:
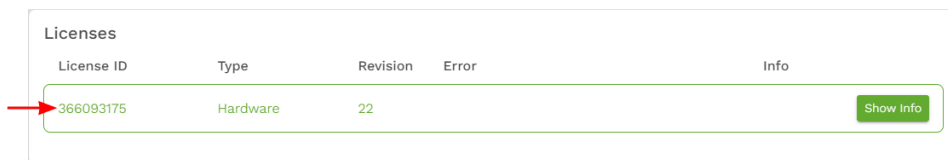
Figure 23: Active license

Appendix A: Memory Test procedures

The Memory Test is a useful troubleshooting tool if you are experiencing problems such as system lockup, freezing, random rebooting, or graphics/screen distortion. To ensure the memory test is fully functional, this test runs several times. You may wish to run the test overnight.

A-1 Memory Test (Telestra 7.X and 8.X)

The Memory Test is a useful troubleshooting tool if you are experiencing problems such as system lockup, freezing, random rebooting, or graphics/screen distortion. ASTi recommends running this test several times to ensure that the memory is fully functional. You may wish to run the test overnight.

To perform a Memory Test, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra Server Software Installation DVD, and reboot the Telestra server.

3. Depending on your configuration, do one of the following:

   a. Basic Input/Output System (BIOS): at the prompt, run **memtest86**.

   b. Unified Extensible Firmware Interface (UEFI): select **Memtest**, and press Enter.

   > **Note**: Telestra 7.10.0 and later supports UEFI boot.

   For best results, let the Memory Test run overnight.

4. The Memory Test will run indefinitely until you manually stop it. To stop the Memory Test, press the Esc key. If the Memory Test failed, contact ASTi for assistance.

5. To restore the Telestra server to service, remove the DVD, restart the server, and wait for it to reboot.

A-2 Memory Test (Telestra 6.X)

This Memory Test procedure applies to the Red Hat 6.X operating system. To complete the Memory Test, follow these steps:

1. Turn on the Telestra server.

2. Insert the Studio Software Installation DVD or Telestra Server Software Installation DVD, and reboot by pressing the Reset button on the front of the chassis.

3. At the boot prompt, enter **memtest86**, and press Enter. For best results, let the Memory Test run overnight.

4. The Memory Test will run indefinitely until manually stopped. To stop the Memory Test, press the Esc key.

A-3 Memory Test (Telestra 4.31 and later)

This Memory Test procedure applies to the Red Hat 5.X operating system. To complete the Memory Test, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra ASTi Software Installation DVD, and reboot the development workstation.

3. At the prompt, select **Memtest**.

A-4 Memory Test (Telestra 4.10–4.30)

The following Memory Test procedure applies to the Red Hat 5.X operating system. To execute the Memory Test, follow these steps:

1. Turn on the development workstation.

2. Insert the Telestra ASTi Software Installation DVD, and reboot.

3. At the prompt, enter **memtest**, and press Enter. Let the Memory Test run for an extended period of time or over night, if possible.

4. The Memory Test will continue running indefinitely until manually stopped. To stop the test, press the Esc key.

Appendix B: Telestra in a virtual machine

User requirements and/or deployment needs may require you to install the Telestra software in a virtual machine (VM) using customer or government-furnished equipment.

Intended for customers using Telestra in a VM, this appendix supplements the *Telestra Cold Start Guide* with virtualization requirements and setup. ASTi currently supports Telestra virtualization using ESXi from VMware. Consult [VMware vSphere Documentation](#) as needed for setup.

A variety of factors can impact a deployed Telestra software:

- Host hardware specification
- Virtualization technology
- VM instance definition for a license
- Other VM instances running on the host
- Network operation and conditions

For best results, purchase an ASTi support contract to help with installation and/or post deployment tasks. The scope of this contract depends on your program's size and requirements. To discuss your virtualized deployment needs, contact ASTi at support@asti-usa.com.

B-1 Required equipment for Telestra virtualization

To install Telestra in a virtual machine (VM), you will need the following items:

- *Host system:*
  - VMware ESXi, versions 6.7, update 3 or later
  - Two or more network interfaces:
    - A general network interface assigned to Telestra's Eth0 port
    - An interface assigned to Telestra's Eth1 port (i.e., ACENet), dedicated for Telestra pass-through
- *Telestra in a VM:*
  - Telestra 7.10 and later
  - Telestra installation media (i.e., DVD, USB drive, or ISO)

B-2 Virtual machine host setup

To configure a virtual machine (VM) host for Telestra, follow these steps:

1. Configure the following Basic Input/Output System (BIOS) or Unified Extensible Firmware Interface (UEFI) settings:

    a. Set the system profile (i.e., the CPU) to use a high-performance power management policy.

    b. Disable C-States.

    c. Disable C1E.

2. In ESXi, designate and configure a physical Ethernet interface for pass-through.

> *Note*: *ASTi recommends using Intel Ethernet cards.*

3. Set ESXi to use a high-performance power management policy.

B-3 ESXi virtual machine specifications

Telestra in an ESXi virtual machine (VM) requires the following specifications:

CPUs	
vCPUs:	Two dedicated
CPU Cores:	Two cores per socket
Resource Allocation Reserve:	Total amount of processing across both CPUs (e.g., if the host has a CPU of 2.2 GHz, reserve 4,400 MHz or 4.4 GHz) **Note:** *This number must represent the maximum reservation. Reservation configuration settings may vary across different ESXi versions.*
CPU Resources:	Unlimited
CPU Share Value:	High
vCPU Performance Counters:	Enabled
Scheduling Affinity:	Disabled
Memory	
Memory:	8 GB minimum
Guest Memory:	Reserve all available
Storage	
Disk Space:	80 GB minimum
Advanced	
Latency Sensitivity:	High

Table 3: ESXi VM specifications for Telestra

B-4 Virtual machine network configurations

To set up the virtual machine's (VM's) network, follow these steps:

1. Create a network adapter (if your configuration does not already include one), and connect it to a virtual network. Set the network adapter type to E1000E (i.e., eth0 from the Telestra VM's perspective).

2. Add a new Peripheral Component Interconnect (PCI) device, specifying the Ethernet card you configured in B-2, "Virtual machine host setup" on the previous page. This device appears as eth1 from the Telestra VM's perspective. Telestra configurations require you to designate eth1 to ACENet.

3. *(Optional)* If your configuration requires multiple Ethernet ports, add one or more network adapters (i.e., eth2, eth3, etc. to the Telestra VM). Additional network adapters require VMXNET3 adapter types.

4. After configuring the VM's network, run the Telestra cold-start procedure in Section 6.2, "Cold-start Telestra 7.X or 8.X on a Telestra server (T4H-XXXXX-XX) " on page 22.

Appendix C: Telestra on customer or government equipment

User requirements and/or deployment needs may require you to install Telestra software on customer-furnished equipment (CFE) or government-furnished equipment (GFE). Intended for customers using Telestra on CFE/GFE, this appendix supplements the *Telestra Cold Start Guide* with CFE/GFE requirements and setup.

The CFE/GFE hardware selection must support Telestra's requirements. A variety of factors can impact a deployed Telestra:

- CFE/GFE hardware specification

- Basic Input/Output Settings (BIOS) settings

- Network operation and conditions

- Simulation software

- Radio communications

ASTi strongly recommends that you purchase an ASTi support contract to help with installation and/or post deployment tasks. The scope of this contract depends on your program's size and requirements. ASTi may use this contract to evaluate provided CFE or GFE. To discuss your deployment needs, contact ASTi Support at support@asti-usa.com.

C-1 Minimum host server specifications

Ensure your host server meets the following minimum requirements for Telestra 7.10 and later:

CPU Speed	Intel 3 GHz i7 or better; nonmobile
CPU Cores	4x or greater
Memory	8 GB RAM
Disk Space	80 GB
Ethernet	2 or more gigabit Ethernet ports, preferably Intel Ethernet ***Important:*** *Port Eth1 is dedicated to ACENet.*

Additionally, ensure the Red Hat Enterprise Linux (RHEL) operating system (OS) compatible with your Telestra software version also supports the host server hardware. To check Telestra software and OS compatibility, go to **Telestra Release Notes** at support.asti-usa.com/telestra/-notes[support.asti-usa.com/logger/notes](support.asti-usa.com/logger/notes).

C-2 Set up and install Telestra on customer or government equipment

To install Telestra on customer-furnished equipment (CFE) or government-furnished equipment (GFE), follow these steps:

1. At a minimum, configure the following Basic Input/Output System (BIOS) or Unified Extensible Firmware Interface (UEFI) settings on the CFE or GFE:

   a. Disable hyperthreading (i.e., logical processors).

   b. Limit the CPU core count to four cores.

   c. If multiple physical CPUs exist, limit the server to one physical CPU in the BIOS or UEFI.

   d. Disable C-States.

   e. Disable C1E.

   f. Disable E-Cores.

   Note: Telestra 7.10 and later supports booting from UEFI.

2. Run the cold-start procedure for the Telestra software version applicable to your configuration.

Appendix D: Legacy cold-start procedures

The following sections provide installation instructions for older Red Hat and Telestra software versions.

D-1 Telestra 6.X cold-start procedure

⚠️ *Important*: *Before installing the software, ensure the Boot Priority settings are in accordance with the proper BIOS configuration instructions. Otherwise, the Telestra server does not boot from the DVD but automatically enters the installation routine.*

To complete the cold-start procedure for Telestra server versions 6.0 and later, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra Target Software Installation DVD into the drive, and ensure the system boots from the DVD.

3. To start the installation, press Enter, and wait for the installation to complete.

4. A warning message displays, "Disc Not Found." Insert the Red Hat 6 Installation DVD, and select **Ok**. Wait ten to fifteen minutes for the installation to complete.

5. When the software is finished installing, eject the Red Hat 6 Installation DVD from the drive, and remove the DVD.

6. Insert the Telestra Target Software Installation DVD, and press Enter. Wait several minutes for the installation to complete, and press Enter again.

7. When the post-installation scripts finish running, press Enter to turn off the server.

8. Remove the Telestra Target Software Installation DVD when it ejects from the drive.

9. Turn on the Telestra server.

10. Log into the system using the following credentials:

Username	Password
admin	admin

11. *(Optional)* To set the IP address and subnet mask, run **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*, where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Remote Management System via a browser to complete the network setup.

D-2 Studio cold-start procedure for Telestra 6.X

The following sections provide cold-start procedure instructions for Studio version 6.0 and later.

⚠️ **Important** *Do not connect Keyboard Video Mouse (KVM) switches to the system during the cold-start procedure. If you run into an issue with the procedure while using a KVM, disconnect it, and repeat the cold-start procedure with a dedicated keyboard, monitor, and mouse.*

Install Studio 6.X and later

To complete the Telestra cold-start procedure for Studio 6.X, follow these steps:

1. Turn on the server.

2. Insert the Studio Software Installation DVD, and reboot the server.

3. At the boot prompt, press Enter.

4. Remove the Studio Software Installation DVD when it ejects from the drive.

5. Insert the Red Hat 6 Installation DVD, and select **OK**. Wait 10–15 minutes for the installation to complete.

6. When the Red Hat 6 Installation DVD ejects from the drive, insert the Studio Software Installation DVD. Press Enter.

7. Wait several minutes for the installation to complete, and press Enter.

8. Remove the Studio Software Installation DVD when it ejects from the drive.

9. Reboot the server.

10. When the Studio login screen appears, select **aceuser**, and enter the following password: **aceuser**. The Studio interface appears.

Set up a Studio 6.X development workstation

To set up your Studio 6.X development workstation, you will need the following hardware:

- Monitor

- Keyboard

- Mouse

- Studio development workstation

- Category 5e cable or better

- Network connection from Studio to the Telestra server

Studio does not have an IP address without a Dynamic Host Configuration Protocol (DHCP) network connection. To set up Studio, and assign an IP address to the system, follow these steps:

1. Connect the monitor, keyboard, and mouse to the Studio.

2. Connect Studio to the same network as the Telestra server.

3. Turn on Studio.

4. Log into Studio using the following default credentials:

Username	Password
aceuser	aceuser

5. From the taskbar, go to **System** > **Preferences** > **Network Connections**.
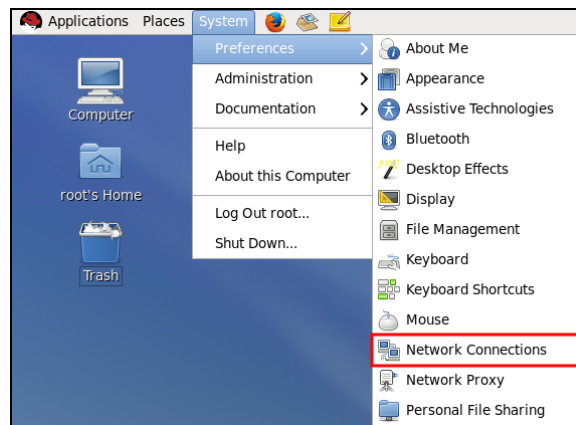
Figure 1: Network Connections

6. **Network Connections** opens. Choose an Ethernet port (e.g., Eth0), and select **Edit**.
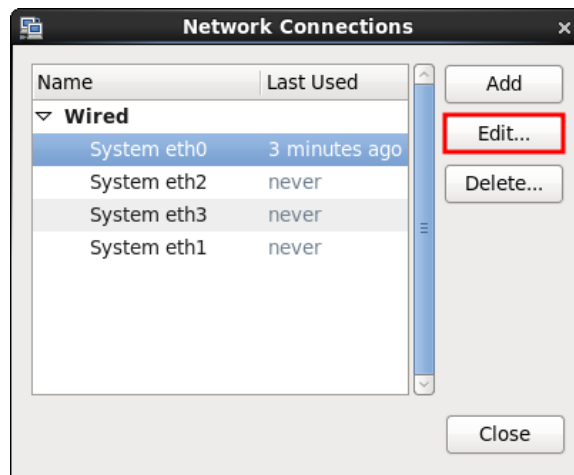
Figure 2: Network Connections

7. **Editing System eth***N* opens, where *N* represents the Ethernet port number. Go to the **IPv4 Settings** tab.

8. Point to **Method**, and select **Manual**.
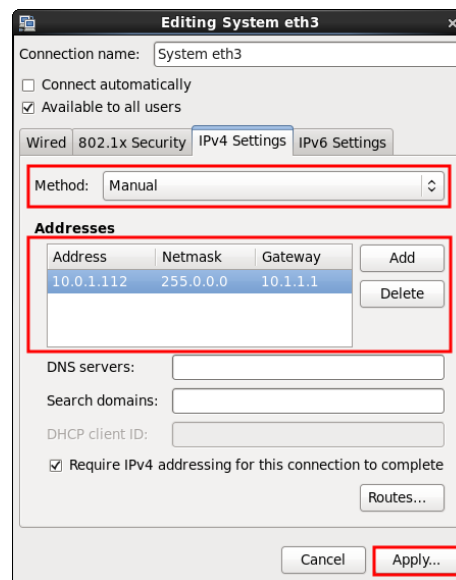
Figure 3: Editing System ethN

9. To manually enter the IP settings, select **Add**, and enter the IP address in **IP Address**. Valid IP addresses turn the box green.

10. In **Netmask**, enter a subnet mask.

11. If applicable, in **Gateway**, enter a default gateway address.

12. When finished, select **Apply**.

13. **Authenticate** opens, asking you to log into the system as a root superuser. In **Password for root**, enter **abcd1234**.

14. To save your changes, select **Authenticate**.

Figure 4: Authenticate

15. Reboot the server.

D-3 iSCSI cold-start procedure for Telestra 6.X

Before proceeding, install and set up the iSCSI boot firmware, as described in Section 7.0, "Telestra iSCSI cold-start procedure" on page 24. To complete the iSCSI cold-start procedure for Telestra 6.X, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra iSCSI Software Installation DVD, and reboot the Telestra server.

3. At the boot prompt, press Enter, and wait for initialization to complete.

4. From the menu options, select the interface that is connected to the network hosting your iSCSI drive.
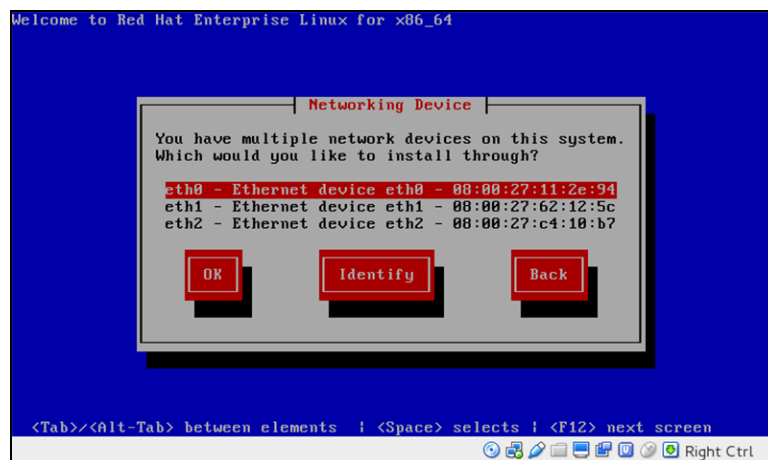
Figure 5: Networking Device

5. Enter the appropriate network information, or select **Use Dynamic IP Configuration** (if applicable). Select **OK**.
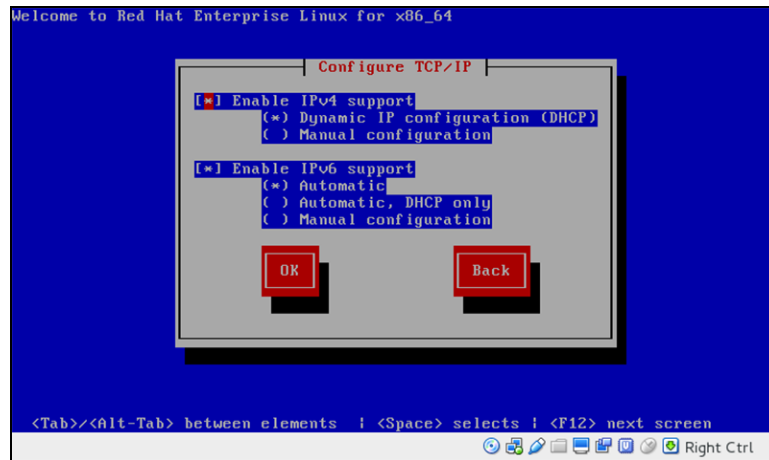
Figure 6: Configure TCP/IP

6. Remove the Telestra iSCSI Software Installation DVD when it ejects from the drive.

7. A "Disc Not Found" message appears. Select **OK** to continue.
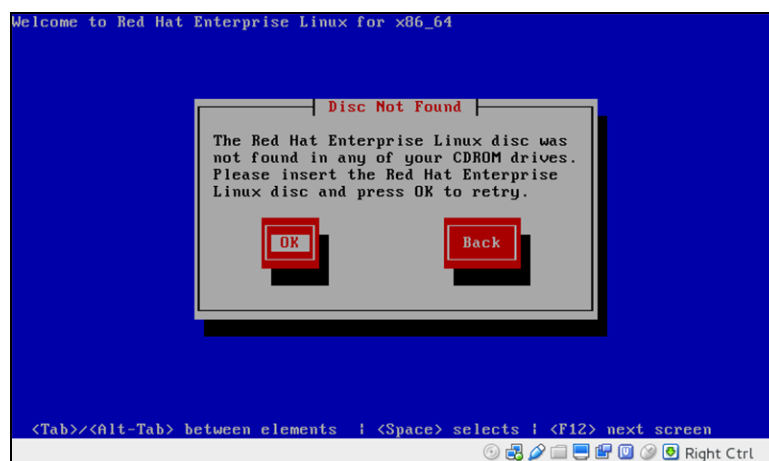
Figure 7: "Disc Not Found"

8. Insert the Red Hat 6 Installation DVD, and select **OK**.
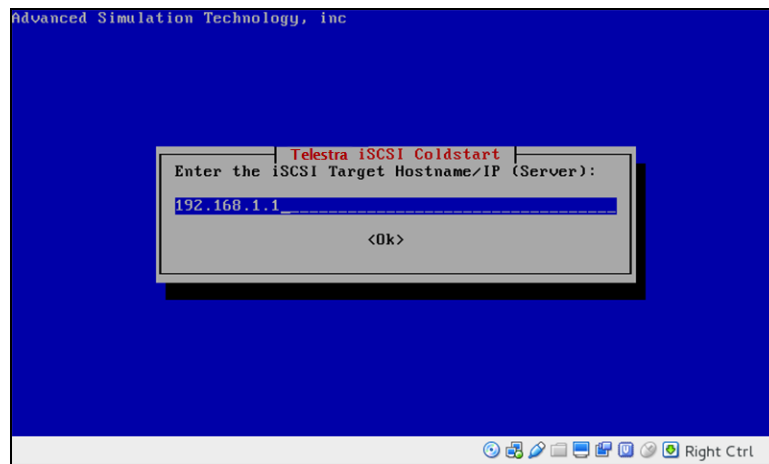
9. The **Telestra iSCSI Coldstart** welcome message appears. Select **<Ok>** to continue.
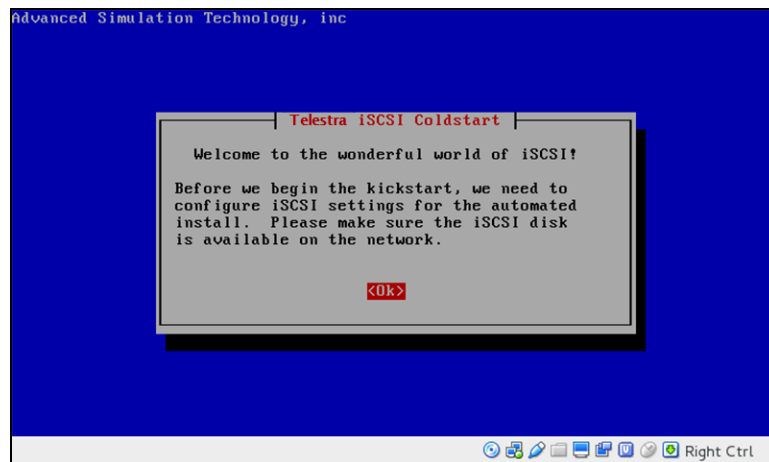
Figure 8: Telestra iSCSI Coldstart welcome message

10. Enter the client initiator name, and select **<Ok>**.
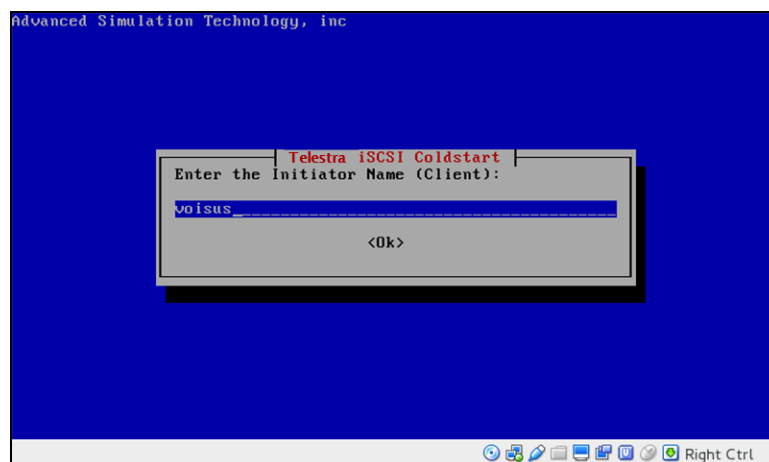
Figure 9: Enter the Initiator Name (Client)

11. Enter the iSCSI Target IP address, and select **<Ok>**.

Figure 10: Enter the iSCSI Target Hostname/IP (Server)

12. Enter the iSCSI port number, and select **<Ok>**.
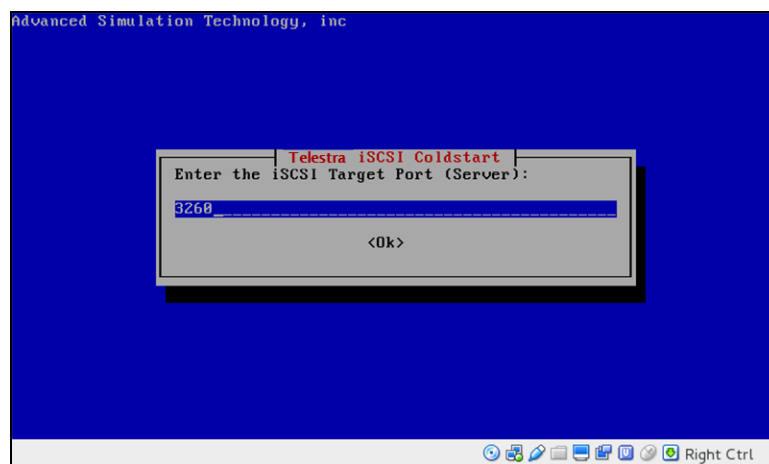
Figure 11: Enter the iSCSI Target Port (Server)

13. Confirm your settings, and select **<Yes>**.
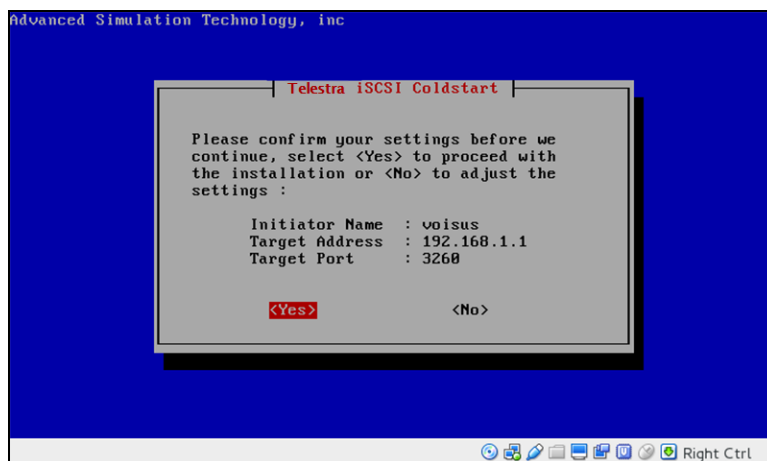
Figure 12: Settings confirmation

14. Wait approximately 10–15 minutes for the installation to complete. When prompted, insert the Telestra iSCSI Software Installation DVD. Press Enter.

15. Wait for confirmation that the software installation is complete, and press Enter.

16. Remove the Telestra iSCSI Software Installation DVD. The server automatically turns off.

17. Turn on the server.

18. Log into the system using the following credentials:

Username	Password
admin	admin

19. *(Optional)* To set the IP address and subnet mask, run **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*, where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

20. *(Optional)* To view help text for the command options, enter **ace-net-config -h**, and press Enter.

21. To activate the changes, enter **reboot**, and press Enter.

D-4 Telestra cold-start procedure for Telestra 5.X

The following sections provide cold-start procedure instructions for Telestra versions 4.13 and later.

> ⚠️ **Important**: *Before installing the software, ensure the Boot Priority settings are in accordance with the proper BIOS configuration instructions. Otherwise, the Telestra server does not boot from the DVD but automatically enters the installation routine.*

Install Red Hat 5.1–5.9

To install Red Hat 5.1–5.9, follow these steps:

1. Turn on the server.

2. Select the **DVD Windows** icon to boot from the DVD.

3. At the prompt, enter one of the following:

   a. *For Studio:* enter **studio**, and press Enter.

   b. *For the Telestra server:* enter **target**, and press Enter.

4. Wait for the installation to complete. When the installation is finished, the DVD automatically ejects. Remove the DVD, and select **Reboot**.

5. After the system reboots, the login prompt opens. Continue with the next section for software installation.

Install Red Hat 5.10 and later

To install Red Hat 5.10 and later, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra ASTi Software Installation DVD, and wait for the system to boot.

3. At the prompt, select **RHEL Telestra[Default]**.

⚠ **Important**: *For Telestra 4.30 and earlier, the prompt screen is different. At the prompt, enter* **target***, and press Enter.*
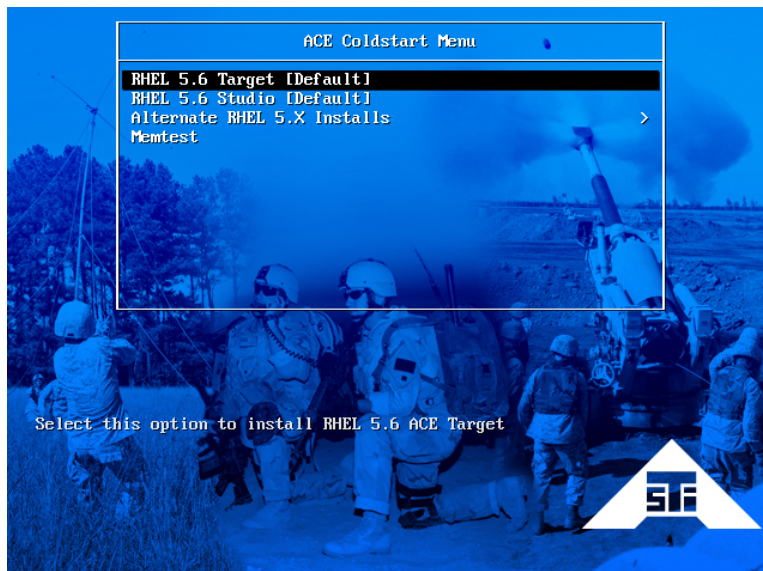

Figure 13: ACE Coldstart Menu

4. When the system ejects the Telestra ASTi Software Installation DVD, remove the DVD.

📝 **Note**: *Alternate Red Hat versions are available. Select the installation that corresponds with your system.*
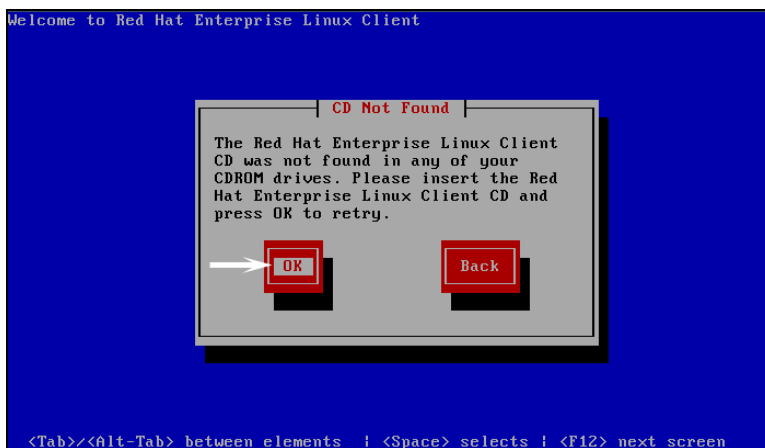

Figure 14: "CD Not Found"

5. Insert the Red Hat 5 Installation DVD, and select **OK**. Wait for the installation to complete.

6. As described in the display, remove the DVD, and press the Tab key to select **Reboot**.

Figure 15: Installation complete

After the system reboots, the login prompt opens.

Figure 16: Login prompt

Install Telestra 4.13 and later

> *Note: The following steps are for software versions 4.13 and later. To install older software versions, go to Appendix D, "Legacy cold-start procedures" on page 56.*

To install Telestra software versions 4.13 and later, follow these steps:

1. Insert the Telestra ASTi Software Installation DVD.

2. Enter **mount /dev/dvd /media**, and press Enter.

Figure 17: Target CD-ROM mount

3. Next, enter **sh /media/install**, and press Enter.

4. The prompt reads, "Select a product to install." Press the Tab key, and then select **Target**.

5. The prompt reads, "Do you wish to install Target?" Select **Yes**.

6. Wait for the installation to complete. To eject the DVD from the drive, enter **eject /media**, and press Enter.

7. Remove the DVD from the drive.

8. *(Optional)* To set the IP address and subnet mask, run **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*, where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

⚠️ **Important**: *Do not use Eth1, which is for ACENet traffic only.*

9. To activate the changes, enter **reboot**, and press Enter.

📝 **Note**: *For instructions on installing ASTi Information Assurance (IA) software, go to the [IA Software Installation Guide](#).*

D-5 Studio cold-start procedure for Telestra 5.X

These sections provide instructions for the following:

- Installing Red Hat 5.X software

- Installing Studio versions 4.4 and later

- Setting up a development workstation for Studio versions 4.4 and later

Install Red Hat 5.10 and later

To install Red Hat 5.10 and later, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra ASTi Software Installation DVD, and wait for the system to boot.

3. At the prompt, select **RHEL Telestra[Default]**.

⚠ **Important**: *For Telestra 4.30 and earlier, the prompt screen is different. At the prompt, enter **studio**, and press Enter.*
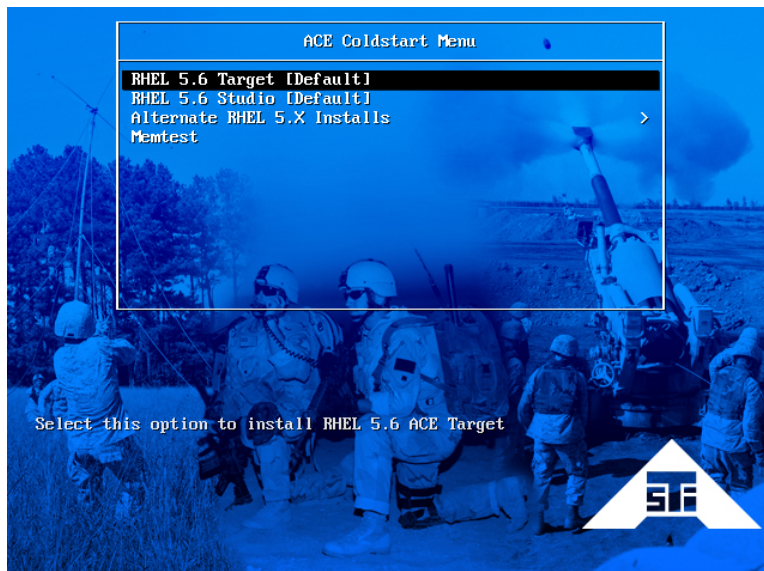

Figure 18: ACE Coldstart Menu

4. When the system ejects the Telestra ASTi Software Installation DVD, remove the DVD.

📝 **Note**: *Alternate Red Hat versions are available. Select the installation that corresponds with your system.*
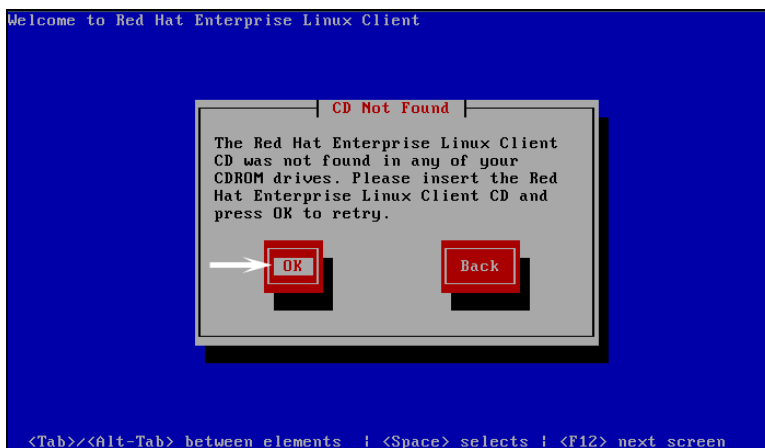

Figure 19: "CD Not Found"

5. Insert the Red Hat 5 Installation DVD, and select **OK**. Wait for the installation to complete.

6. As described in the display, remove the DVD, and press the Tab key to select **Reboot**.

Figure 20: Installation complete

7. Log into the system using the following credentials:

| Username	Password
admin	admin

Install Studio 4.5 and later

Before continuing with this installation, complete "Install Red Hat 5.10 and later." To install Studio versions 4.5 and later, follow these steps:

1. Log into the system using the following default credentials:

Username	Password
root	abcd1234

2. Insert the Telestra ASTi Software Installation DVD.

3. From the desktop, right-click and select **Open Terminal**, or go to **Applications** > **System Tools** > **Terminal**.

4. To instruct the computer to access the DVD, enter **mount /dev/dvd /media**, and press Enter.

5. At the prompt, enter **sh /media/install**, and press Enter.

6. The prompt reads, "Select a product to install." To select **Studio**, press the Up arrow and Down arrow keys. To select **Ok**, press the Tab key or Right arrow key.
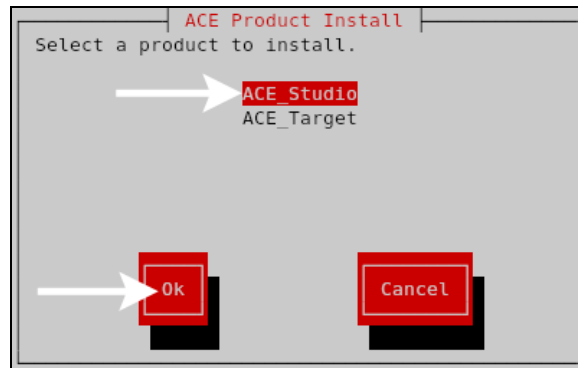
Figure 21: ACE Product Install screen

> **Note**: *To install Studio on a virtual machine, go to the [Studio VM Quick Start Guide](#).*

7. The prompt reads, "Do you wish to install Studio?" Select **Yes**. Wait for the installation to complete.

8. Enter **eject /media**, and press Enter.

9. Remove the DVD from the drive.

10. To activate the changes, enter **reboot**, and press Enter.

11. To set up your IP address, continue to "Studio 4.X setup."

> **Note**: *For instructions on installing ASTi Information Assurance (IA) software, go to the [IA Software Installation Guide](#).*

Studio 4.X setup

To set up your Studio development workstation for Studio 4.X, you will need the following hardware:

- Monitor
- Keyboard
- Mouse
- Studio
- Category 5e cable or better
- Network connection from Studio to the Telestra server

Studio does not have an IP address without a Dynamic Host Configuration Protocol (DHCP) network connection. To set up Studio and assign an IP address to the system, follow the steps below:

1. Connect the monitor, keyboard, and mouse to Studio.

2. Connect Studio to the same network as the Telestra server.

3. Turn on Studio.

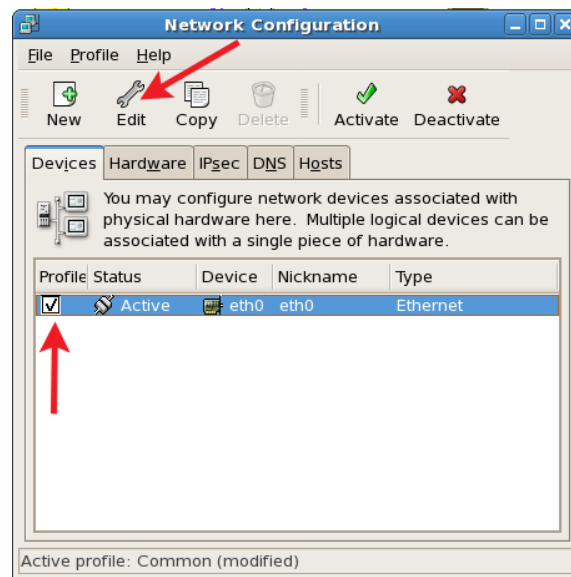4. Log into Studio using the following default credentials:

Username	Password
aceuser	aceuser

5. From the taskbar, go to **System** > **Administration** > **Network**.
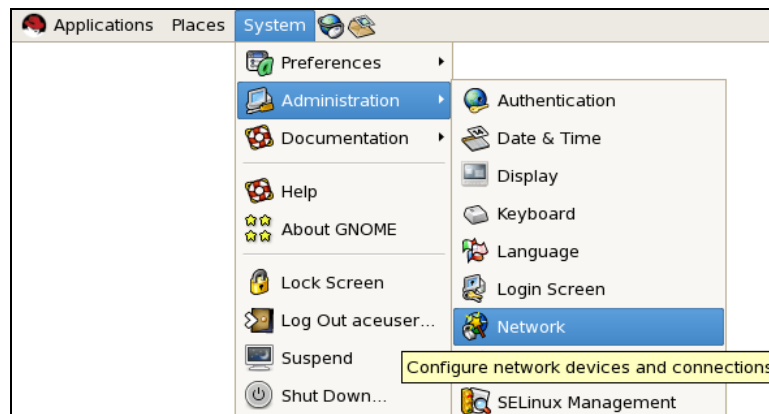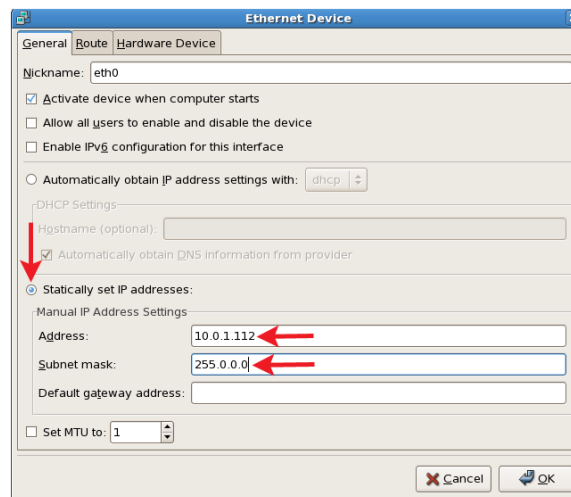

Figure 22: Network navigation

6. Select the **Profile** check box, and then select **Edit**.

Figure 23: Network Configuration

7. Select **Statically Set IP Addresses**.

Figure 24: Ethernet Device

8. In **Address**, enter the IP address.

9. In **Subnet mask**, enter the subnet mask. Ask your network administrator for valid IP addresses and subnet masks for the network(s) with which Studio will connect.

10. If applicable, enter the default gateway. If the network does not have a gateway, enter the IP address from Step 8.

11. Reboot the server.

D-6 iSCSI cold start procedure for Red Hat 5.X

The following instructions apply to Telestra 4.29 and later. These steps are required for the Telestra server. Telestra 4.28 and earlier are not supported.

Install Red Hat 5.X on an iSCSI Telestra server

Before starting the installation procedure, remove the local hard drive, if one exists. Only connect the Ethernet cable for the iSCSI network.

To install Red Hat 5 software for iSCSI, follow these steps:

1. Turn on the Telestra server.

2. Insert the Telestra ASTi Software Installation DVD, and reboot the server.

   As the system is booting up, a splash screen with the following message displays:

   ```
   Intel (R) iSCSI Remote Boot version XYZ
   Copyright (c) .........
   Press ESC key to skip iSCSI boot initialization
   ```

   When this message appears, press the Esc key.

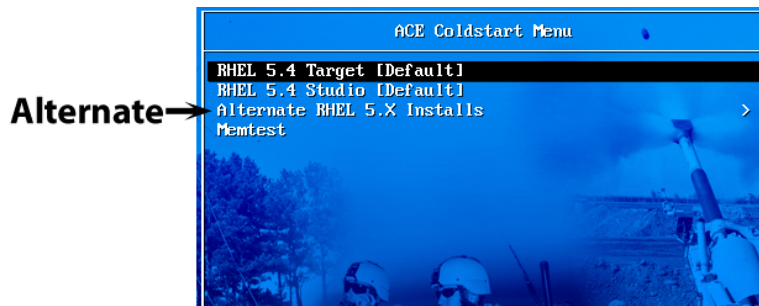3. At the prompt, select **Alternate 5.X Installs**.

Figure 25: Alternate RHEL 5.X Installs

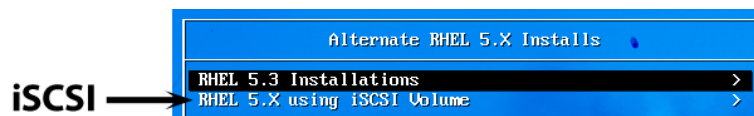4. Select **RHEL 5.X using iSCSI Volume**.

Figure 26: RHEL 5.X using iSCSI Volume

5. Choose your RHEL version.

> **Note**: *For Telestra 4.31 and earlier, the prompt screen is different. At the prompt, enter* **target - iscsi**, *and press Enter.*

6. When the system ejects the Telestra ASTi Software Installation DVD, remove the DVD.

7. Insert the Red Hat 5 Installation DVD, and select **OK**.

8. At the Red Hat screen, select **Next**.

9. Select **Advanced Storage Configuration**.

10. To add the Telestra server, select **Add Drive**.

11. Select Eth*X*, where *X* is the interface recorded in Section 7.2.1, "Intel iSCSI boot firmware installation" on page 30.

12. Set the network settings specific to the system (i.e., the Telestra server network settings).

13. Add the information for the iSCSI initiator and Telestra server (i.e., the Telestra server's network settings).

14. Wait as the Telestra server automatically finds the drive, and select **Next**.

15. A warning message appears. Select **Yes** to continue.

16. At the network devices screen, set Eth*X*, where *X* is the interface recorded in the previous section.

17. To set the network configuration, select **Active on Boot**, and then select **Edit**. The network configuration must match the information set in Section 7.2.2, "Intel iSCSI boot firmware setup" on page 31.

18. Select **Next**, and wait for the installation to begin.

19. When the installation completes, remove the DVD, and select **Reboot**.

Install Telestra 4.X for iSCSI

To install Telestra 4.X on an iSCSI Telestra server, follow these steps:

1. To switch to the root user account, do the following:

    a. Enter **su**, and press Enter.

    b. Enter the root password (i.e., **abcd1234** by default), and press Enter.

2. Insert the Telestra ASTi Software Installation DVD.

3. At the prompt, enter **mount /dev/dvd /media**, and press Enter.

4. Next, enter **sh /media/install**, and press Enter.

5. The prompt reads, "Select a product to install." Select **Target**.

6. The prompt reads, "Do you wish to install Target?" Select **Yes**.

7. After the installation is complete, enter **eject /media**, and press Enter. Remove the DVD from the drive.

8. At the prompt, input the previously recorded interface into the **ifconfig eth**X command line, where X is the interface. Verify the settings.

9. *(Optional)* To set the IP address and subnet mask, run **ace-net-config -a** *xxx.xxx.xxx.xxx* **-n** *yyy.yyy.yyy.yyy*, where *xxx.xxx.xxx.xxx* is the IP address and *yyy.yyy.yyy.yyy* is the netmask. This configuration sets the IP address and netmask for Eth0, which you can use to access the Telestra web interface via a browser to complete the network setup.

10. *(Optional)* To view help text for the command options, enter **ace-net-config -h**, and press Enter.

11. To activate the changes, enter **reboot**, and press Enter.

> ⚠️ ***Important***: *If you do not set up Eth0, the system automatically defaults to the DHCP mode and queries a DHCP server if available for the IP address.*

> ⛔ ***Caution***: *Do not change the Telestra server's EthX network address to an IP address that cannot go to the iSCSI Telestra server. This mistake may require you to reinstall the software.*

D-7 Cold start procedure for SLES 11

To complete the Telestra cold-start procedure for SUSE Linux Enterprise Server (SLES) 11, follow these steps:

1. Turn on the Telestra server.

2. To confirm the system's BIOS configuration, go to Section 4.0, "Basic Input/Output System (BIOS) setup" on page 7.

3. Insert the Telestra Customer-Specific Data DVD into the drive, and reboot the server.

4. On **Boot Options**, select **asti**, and press Enter to begin installing the software.

Figure 27: Boot Options

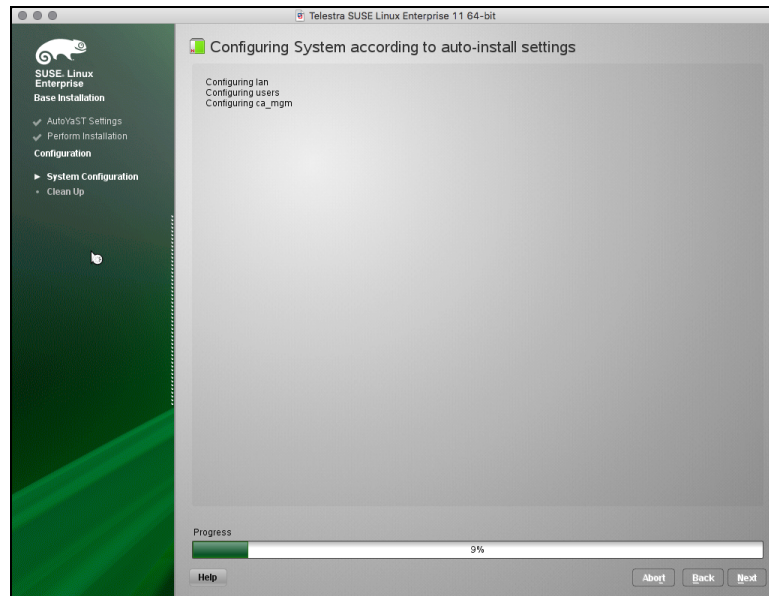Wait 5–10 minutes for installation to complete:
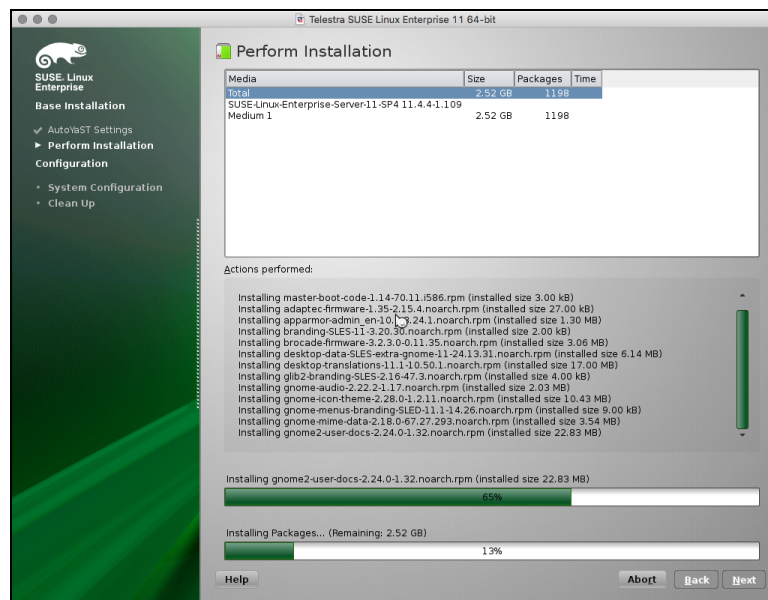
Figure 28: Perform Installation

After installation, the system reboots and returns to the main menu.

5. Eject the Telestra Customer-Specific Data DVD.

6. Select **Boot from Hard Disk**, and press Enter. Wait approximately two minutes for the system to reboot and complete system configuration.

Figure 29: System Configuration

7. At the login prompt, insert the Telestra Server Software Installation DVD into the drive.
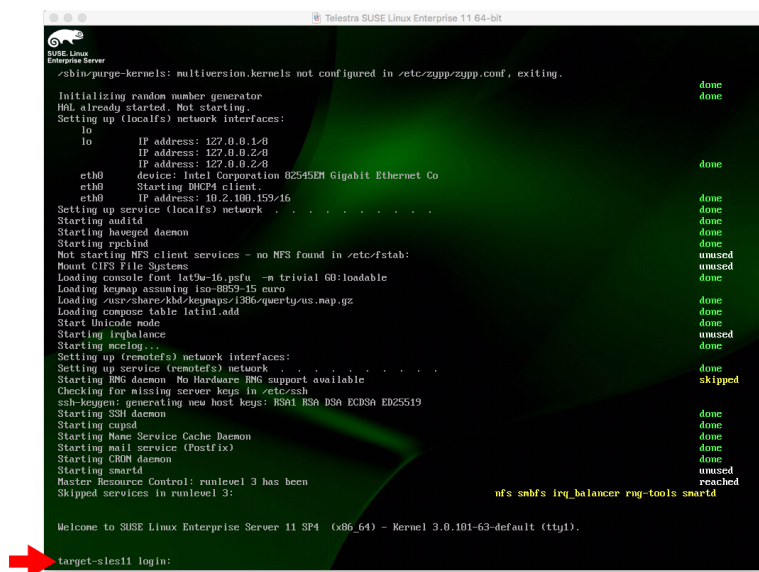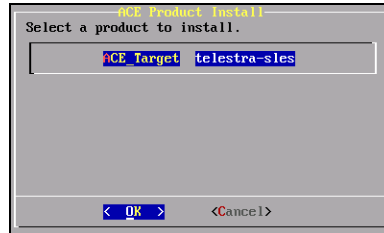

Figure 30: Login prompt

8. Log into the system using the following default credentials:

Username	Password
root	abcd1234

9. To mount the DVD, at the prompt, enter **mount /dev/cdrom /media**, and press Enter.

10. To install ASTi software, enter **sh /media/install**, and press Enter.

11. To install **ACE_Target telestra-sles**, select **OK**.

Figure 31: Select a product to install

12. Select **Yes** to continue, and wait approximately two minutes for installation to complete.
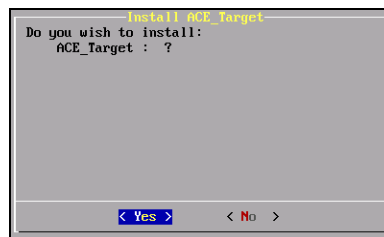
Figure 32: Confirm installation

13. At the prompt, enter **eject /media**, and press Enter. Remove the Telestra Server Software Installation DVD from the drive.

14. Enter **reboot**, and press Enter. After the system reboots, the cold-start procedure is complete.

15. *(Optional)* Use SUSE Yet Another Setup Tool (YaST) to make any network configurations.