

Nyquist E7000 Server Installation and Setup Guide

Version 4.0

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1

Nyquist Server Installation Options

Two options are available for installing and deploying Nyquist E7000:

- 1 Using a Nyquist System Controller (NQ-SYSCTRL), which already has the operating system and E7000 application software installed on it.
- 2 Using your own server platform and installing the Debian OS and E7000 application software. While Option 1 is the quickest and easiest approach, Option 2 may be better suited for situations where high-availability server features like Redundant Array of Independent Disks (RAID) or hot-swappable power supplies are desired.

This manual describes the installation steps for Option 2.

Note: This manual provides the Nyquist E7000 installation process when using your own server. If you are using the Nyquist System Controller (NQ-SYSCTRL), refer to the *Nyquist E7000 System Controller Setup Guide*.

Before installing Nyquist, ensure that:

- Required services are enabled on your network. An example of a required service includes TFTP.
- Required multicast IP addresses and ports are known and available.
- Required IP addresses are known and available.
- Required port numbers are open.

Ensure your server meets system requirements before beginning the Debian OS installation.

If you are updating an existing Nyquist system, read "*Best Practices*" on page 49 and then refer to the update procedure in the *Nyquist E7000 System Administrator Manual*.

1.1 Understanding System Requirements

The E7000 web-based UI requires a secure Hypertext Transfer Protocol Secure (https) type network connection to the E7000 system server. Users can log in to the E7000 system using the Google Chrome web browser from a computer or tablet running either a Windows 8.1 (or later) or a Mac OS X 10.12.x (or later) operating system (OS). The UI can also be accessed via a Chrome browser enabled Android-based tablet or mobile device. To access the server, type your server's IP address (for example, 10.10.20.12).

1.1.1 Whitelisted Web Addresses

E7000 requires access to specific Uniform Resource Locators (URLs), commonly referred to as web addresses. Access to many of these web addresses is required during installation; access to other web addresses, such as the address for the Network Time Server (NTS) are required during runtime. The Information Technology (IT) department for the site must whitelist the web addresses so that they can be easily accessed as needed.

The following table lists the URLs that must be whitelisted.

Table 1-1, Whitelisted Web Sites

URL	Description
http://hostedactivation.com (specifically, http://hostedactivation.com/bogen)	Required for E7000 License support
http://downloads.digium.com	Required for downloads from Digium Phone Module for Asterisk (DPMA)
http://downloads.asterisk.org/ (specifically, http://downloads.asterisk.org/pub/telephony/sounds/releases)	Required for sounds download
http://www.pjsip.org/	Required for PJSIP download
http://ftp.us.debian.org (specifically: http://ftp.us.debian.org/debian/)	Required during Linux package installation
http://security.debian.org (specifically: http://security.debian.org/)	Required during Linux package installation

Table 1-1, Whitelisted Web Sites (Continued)

URL	Description
stun01.sipphone.com	Required for STUN based IP address resolution (This is used by the E7000 Web UI and should be enabled on the computer that runs the web UI.)
https://raw.githubusercontent.com/	Serves unprocessed versions of files stored in the GitHub repositories.
http://2431612419.airable.io	airable URL
https://2431612419.airable.io	
http://api.sound-machine.com	SoundMachine URL
https://api.sound-machine.com	
http://api.bogenedu.com/api/customers	Required for E7000 Warranty Support

URLs that are entered on the E7000 System Parameters page are used during runtime and include the URLs for the NTS, the Session Traversal Utilities for (Network Address Translation (NAT) (STUN) server, and the Traversal Using Relays around NAT (TURN) server.

The default URLs for the STUN and TURN servers are not set. The default URL for NTS is pool.ntp.org.

1.1.2 E7000 System Server Requirements

The following are the minimum requirements for the E7000 system server if you elect to not use the Nyquist System Controller (NQ-SYSCtrl):

Table 1-2, E7000 System Server Minimum Requirements

OS	Debian Linux OS (AMD 64-bit version) release 8.9.0 <i>Note:</i> Refer to the most up to date release notes on the www.bogenedu.com web site for details about which Linux OS versions have been tested for use with the E7000 system.
CPU	Quad-core Intel-based processor running at 3.0 GHz or higher
Hardware	Sound card with microphone port
Memory	8 GB RAM (Error Correcting Code (ECC)) RAM is recommended for increase performance and reliability.)

Table 1-2, E7000 System Server Minimum Requirements (Continued)

Disk Storage	<p>One 250 GB disk drive Some form of hardware-based Redundant Array of Independent Disks (RAID) is recommended for redundancy and high availability.</p> <p>Consider using a larger drive if large amounts of audio (for example, voice mail, announcements, recordings, and music) are being stored on the system. Note that music, tones, and announcements created or stored as .wav files will be larger than if created or stored as MP3 files. Other factors that should be considered are:</p> <ul style="list-style-type: none">• How often will backups be performed?• Will the system be backed up locally or remotely on a detachable drive, Storage Area Network (SAN)/Network Attached Storage (NAS), or Network File System (NFS)?• How many users will have voicemail ability?• How long will voicemail messages be stored?• Will voicemail messages be part of the local system backups?
NIC	10/100/1000 MB Ethernet port (NIC is an acronym for Network Interface Card)
PCI Expansion Slots	One or more Peripheral Component Interconnect (PCI)/PCI Express (PCIe) slot if telephony network connectivity other than, or in addition to, SIP trunking is required; contact your Bogen Dealer for assistance in determining these telephony hardware needs.
Telephony Interfaces	One or more PCI/PCIe type third-party telephony interface cards (for example, Foreign Exchange Office (FXO), Foreign Exchange Subscriber (FXS), etc.) if telephony network connectivity other than, or in addition to, SIP trunking is required; contact your Bogen Dealer for assistance in determining these telephony hardware needs.

1.1.3 Network Application Services

Required application services will be installed automatically on the E7000 system server as part of the E7000 installation. All other network services must be already present or installed manually on the

associated network. The following table lists the services and their locations:

Table 1-3, Network Application Services

Service	Description	Required	Location
Apache	Used as the web server to drive the E7000 web interface.	Mandatory	E7000
DHCP	Supplies dynamic IP addresses to the E7000 system server and associated devices. (DHCP is the acronym for Dynamic Host Configuration Protocol.) It also supplies the Trivial File Transfer Protocol (TFTP) server IP address or host name to devices on the network via option_66.	Optional	Network
DNS	Resolves host names to IP addresses. DNS is an acronym for Domain Name System, a hierarchical naming system for computers, servers, or other resources connected to either the Internet or to a private network.	Optional	Network
ICE	Resolves IP addresses behind Network Address Translation (NAT)/firewall. - Interactive Connectivity Establishment	Optional	E7000 Network
STUN	- Session Traversal Utilities for NAT		
TURN	- Traversal Using Relays around NAT		
NTP	Provides date/time synchronization for the E7000 system server and the associated devices (IP Phones, appliances). (NTP is an acronym for Network Time Protocol.)	Mandatory	Network

Table 1-3, Network Application Services (Continued)

Service	Description	Required	Location
SNMP	Provides the E7000 Linux server statistics via Simple Network Management Protocol (SNMP) v1 through Port 161.	Optional	E7000
TFTP	TFTP is used by IP phone and E7000 device provisioning. A TFTP server runs on the E7000 system server on port 69 (the standard TFTP port #). Device provisioning files are stored on the E7000 system server in directory: /srv/tftp. This is the only directory exposed by the TFTP server.	Mandatory	E7000

2

Installing Debian 8.xx.x AMD 64 AMD 64

Before beginning the install process, make sure that your Nyquist E7000 system server can access the URLs, or web sites (see "Whitelisted Web Addresses" on page 2, from a Chrome browser).

You must install the Debian OS on the Nyquist E7000 system server before you can install the Nyquist E7000 application software. The Debian OS can be installed by either using a graphical user interface (GUI) or a command line interface (CLI).

2.1 Installation Using the CLI

To install Debian 8.xx.x AMD 64 bit using the CLI:

- Step 1 Insert a bootable media into the computer. The bootable media can be a DVD, a CD, or a flash drive.

The initial Debian install screen appears.

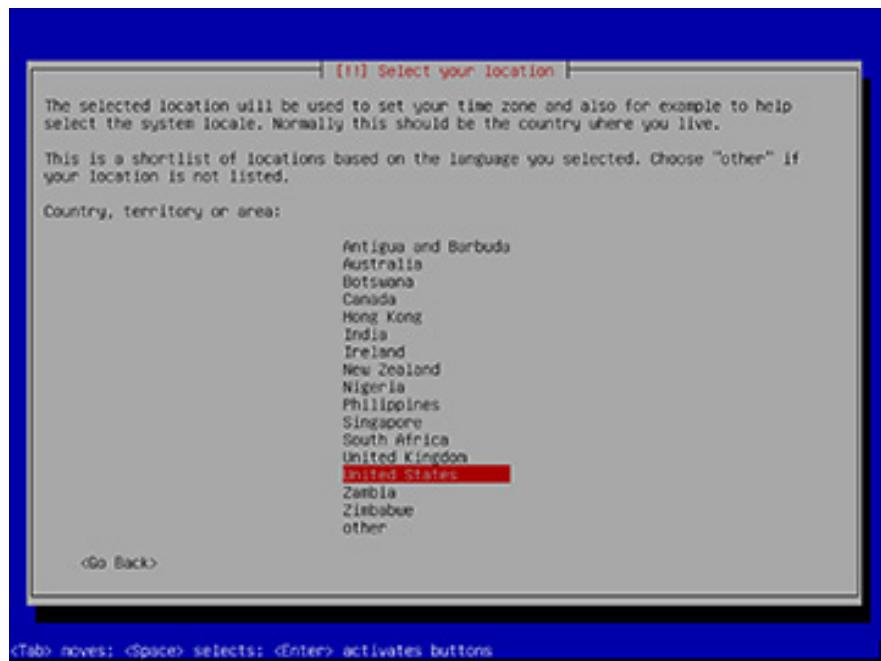


- Step 2 From the Debian GNU/Linux Installer Boot Menu, select **Install** and then press **Enter**.

You will be prompted to select localization options that will be used for both the installation and for the installed system. These localization options include language and location. The default language is **English**.



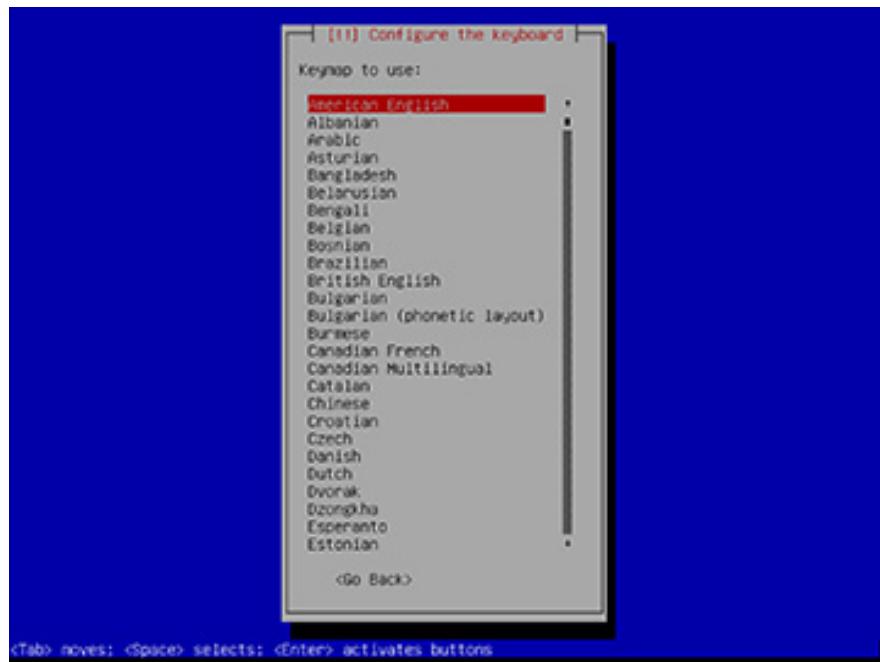
- Step 3 Select a language and then press **Enter**.



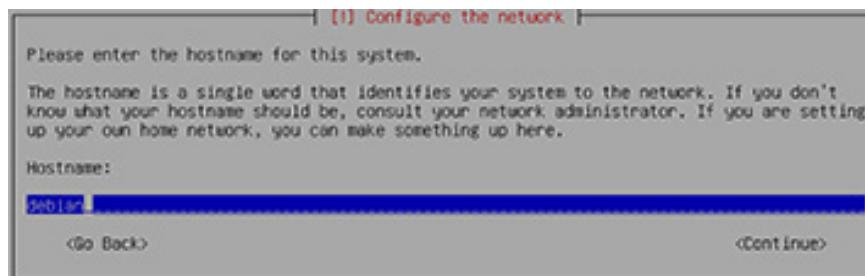
Step 4 Select your location and then press **Enter**.

This selection is used to set your time zone.

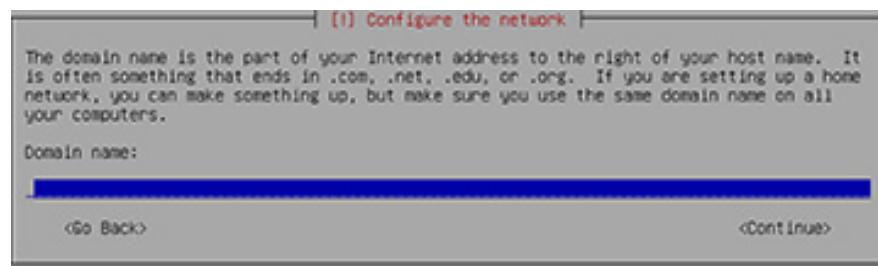
You are next prompted to select a keyboard configuration. Keyboards are often tailored to the characters used in a language.



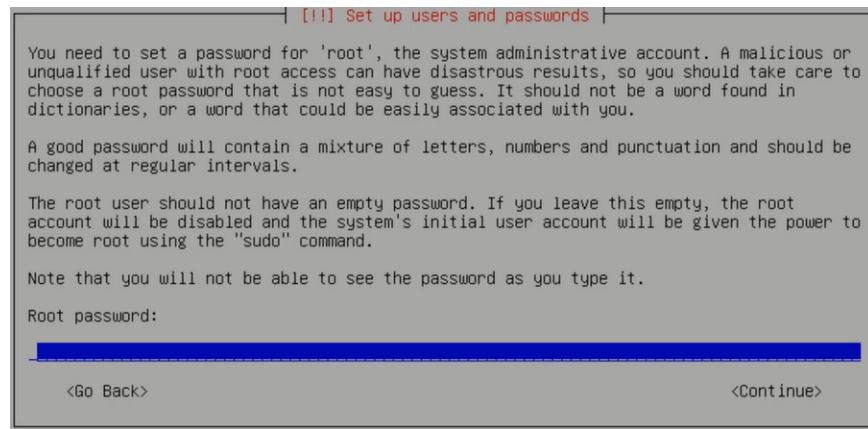
Step 5 Select the keyboard that you want to use and then press **Enter**.



Step 6 When prompted for the hostname, type **debian**, select **Continue**, and press **Enter**.

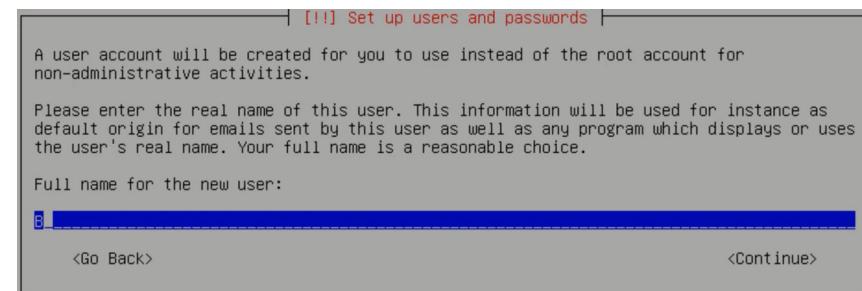


- Step 7 Type the domain name or leave this field blank if you are using an IP address. Then, select **Continue** and press **Enter**.

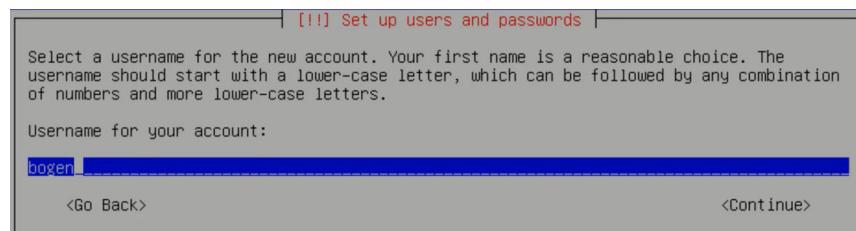


- Step 8 Enter the password for the root, or system administrative account. Note that this password should contain a mixture of letters, numbers, and special characters and that you should record this password as you will need it when installing Nyquist.

- Step 9 When prompted, re-enter the password and press **Continue**.



- Step 10 Type the full name of a user who will perform nonadministrative activities on the server. Then, select **Continue**.



Step 11 Type a user name for the new account and select **Continue**.

Step 12 When prompted, enter a password for this user and select **Continue**.

Step 13 When prompted, re-enter the password and select **Continue**.

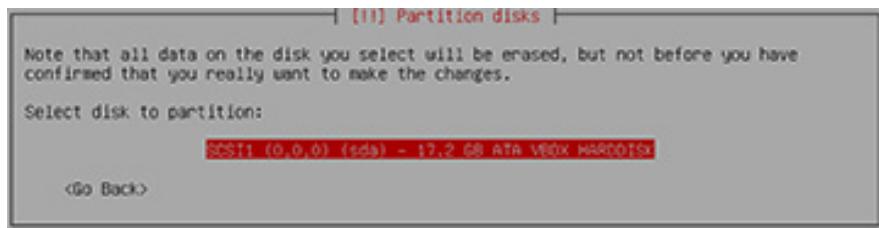


Step 14 Select your time zone and then press **Enter**.



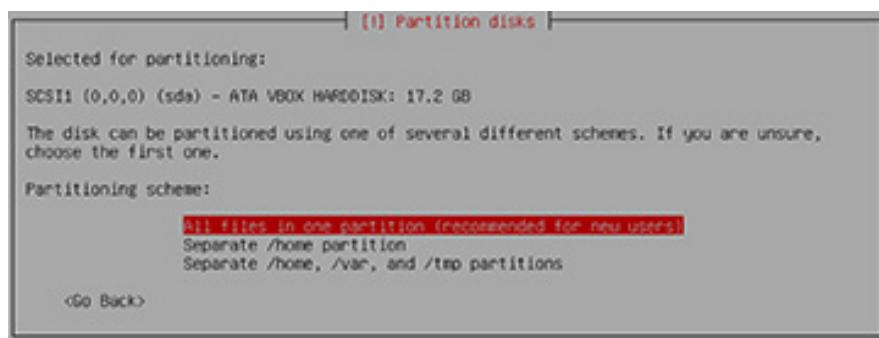
Step 15 Select **Guided - use entire disk** and press **Enter** to begin partitioning the disk.

Note: While you can select a different partitioning scheme or select to manually partition the disk, the next few steps use the **Guide - use entire disk** option. You can later review and customize the results.



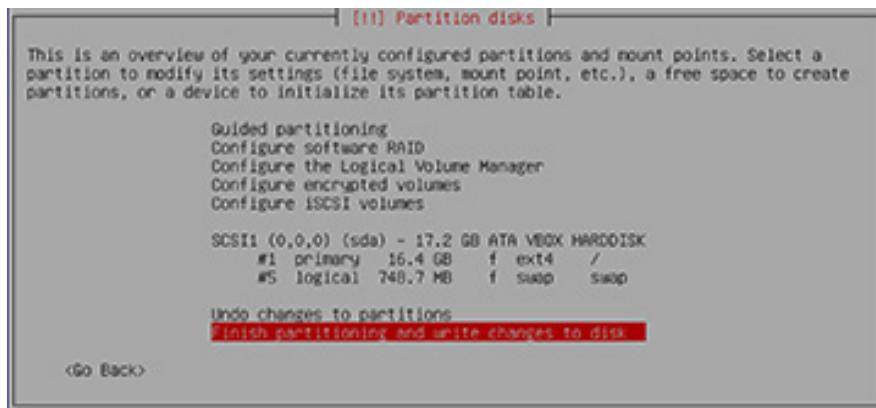
Note: All data on the selected disk will be erased.

- Step 16 Select the disk that you want to partition and press **Enter**.

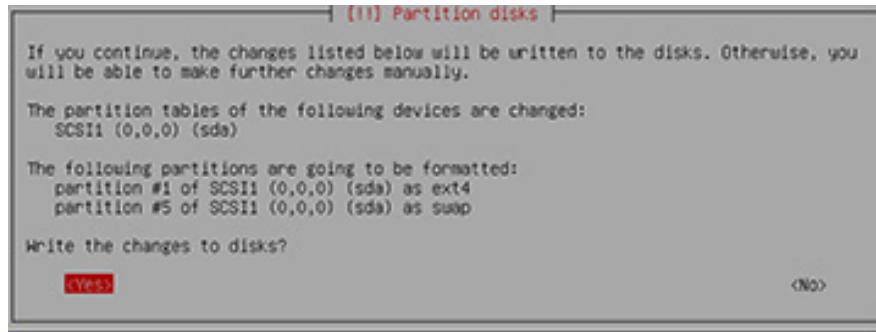


- Step 17 Select the partitioning scheme that you want to use. If you are uncertain as to which scheme would be best, select **All files in one partition (recommended for new users)**.

- Step 18 Press **Enter**.



Step 19 When prompted, select **Finish partition and write changes to disk** and then press **Enter**.



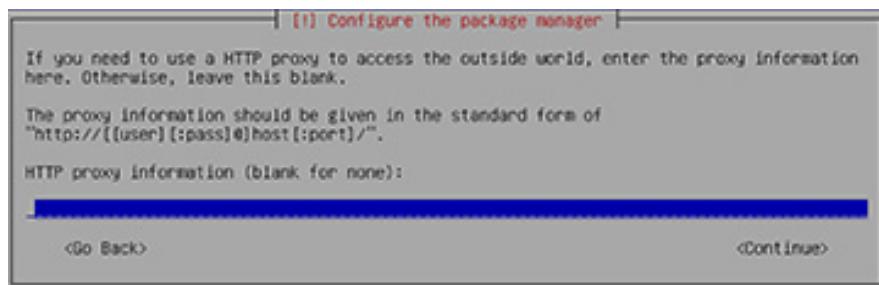
Step 20 Select **Yes** to write changes to the disks and then press **Enter**.



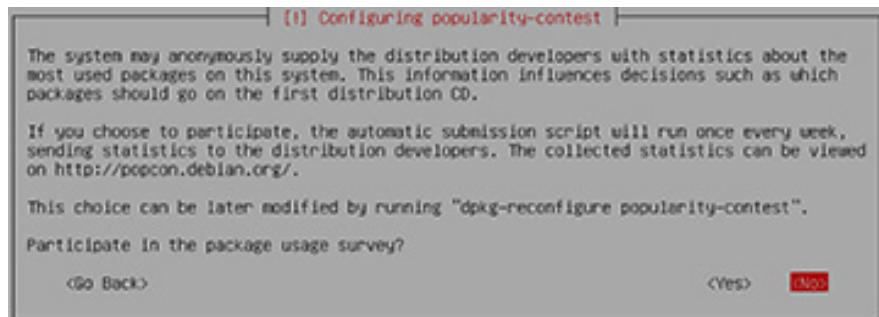
Step 21 When prompted, select an archive mirror country and then press **Enter**.



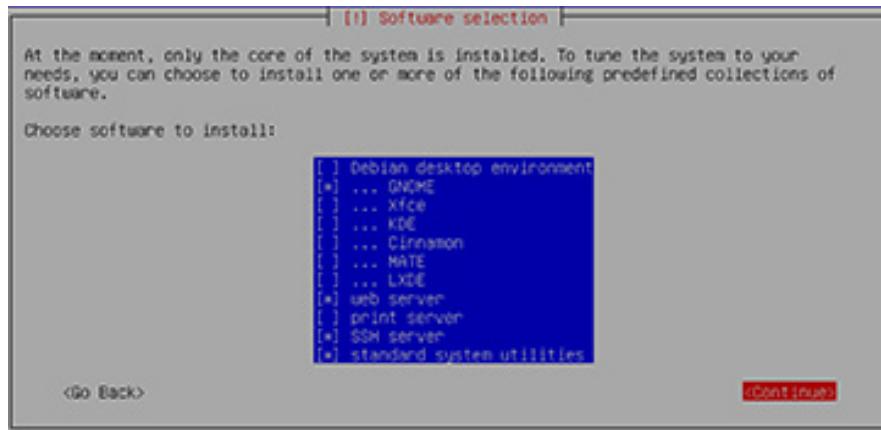
Step 22 Select a Debian archive mirror and then press **Enter**.



Step 23 When prompted to configure the package manager, leave the proxy field blank and press **Enter**.

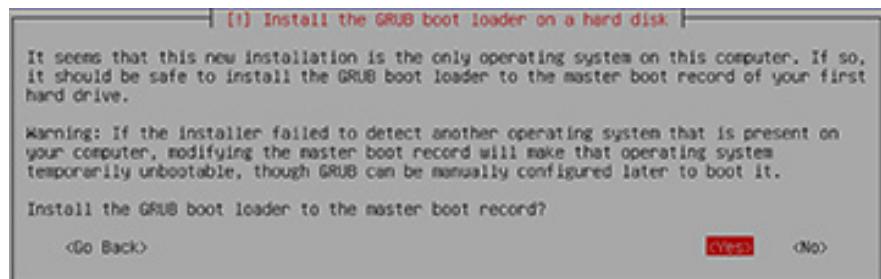


Step 24 When prompted to participate in the survey, select either **Yes** or **No** and press **Enter**.



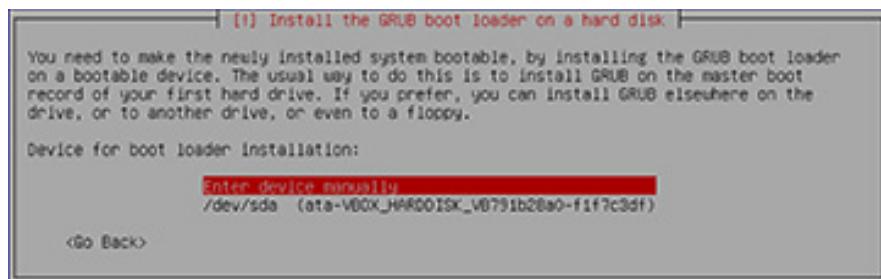
Step 25 Select the software that you want to install. As a minimum, select **GNOME**, **Web Server**, **SSH Server**, and **Standard System Utilities**.

Step 26 Select **Continue** and press **Enter**.

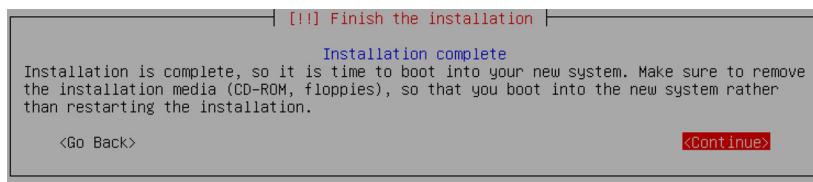


Step 27 When prompted to install the GRUB boot loader on a hard disk, select **Yes** and then press **Enter**.

The boot loader allows your server to launch the Debian OS when powered on.



- Step 28 When prompted to select the hard disk where the bootable software is to reside, **Enter device manually** and then press **Enter**.



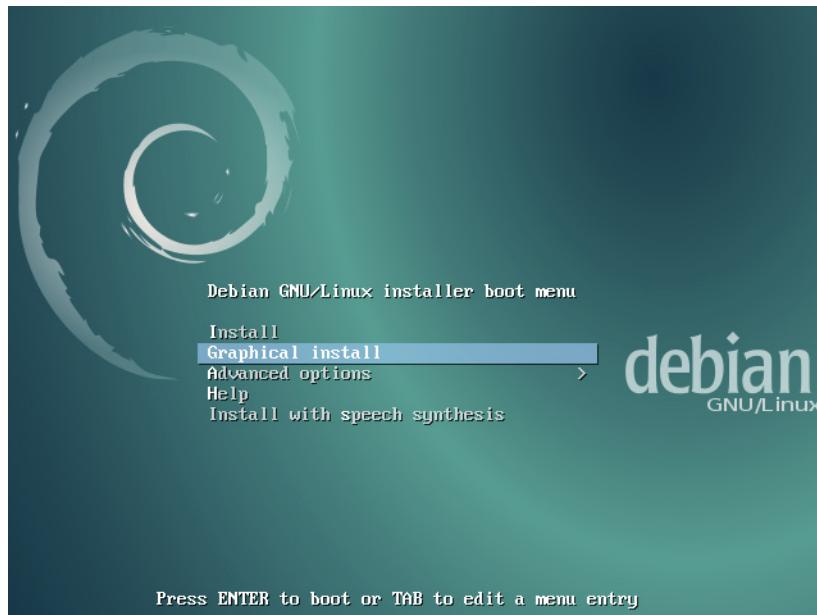
- Step 29 When prompted that the installation is complete, make sure to remove the installation media, select **Continue**, and press **Enter**.

The server boots into the new system and displays the GUI. You can now install the Nyquist software application.

2.2 Installation Using the GUI

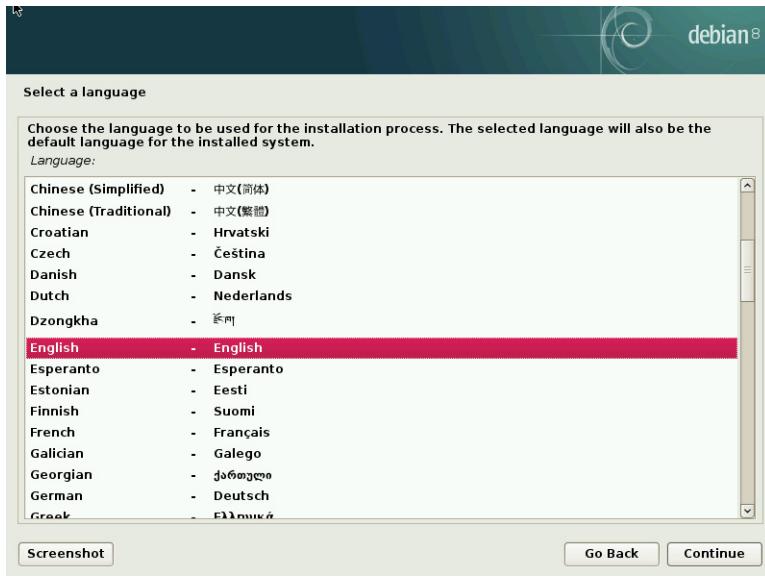
To install Debian 8.xx.x AMD 64 bit using the GUI:

- Step 1 Insert a bootable media into the computer. The bootable media can be a DVD, a CD, or a flash drive. The initial Debian install screen appears.

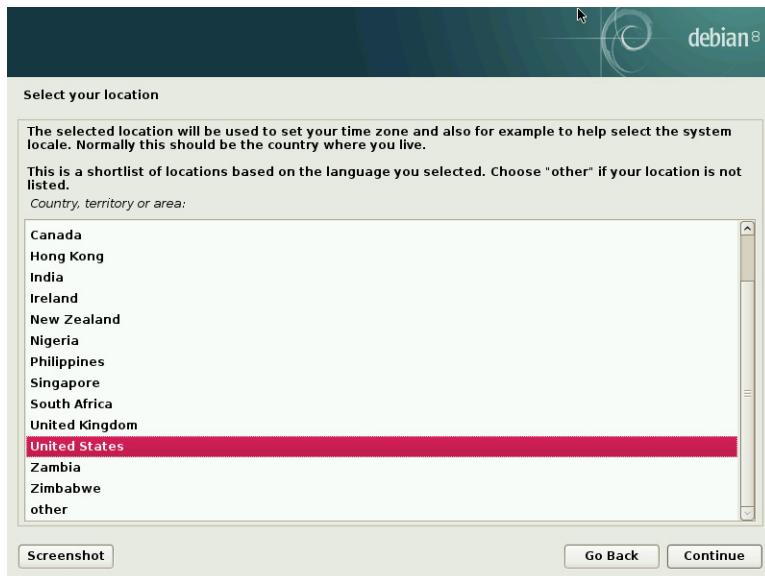


- Step 2 From the Debian GNU/Linux Installer Boot Menu, select **Graphical Install** and then press **Enter**.

You will be prompted to select localization options that will be used for both the installation and for the installed system. These localization options include language and location. The default language is **English**.



Step 3 Select a language and then select **Continue**.

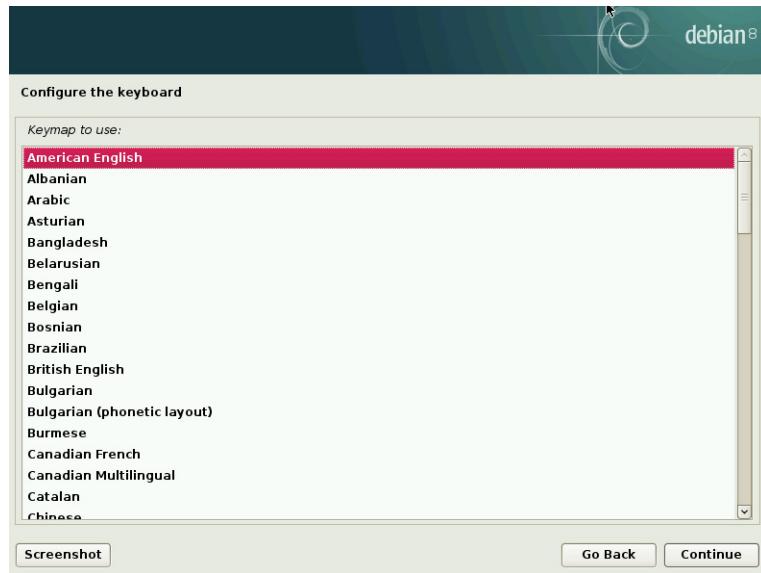


Step 4 Select your location and then select **Continue**.

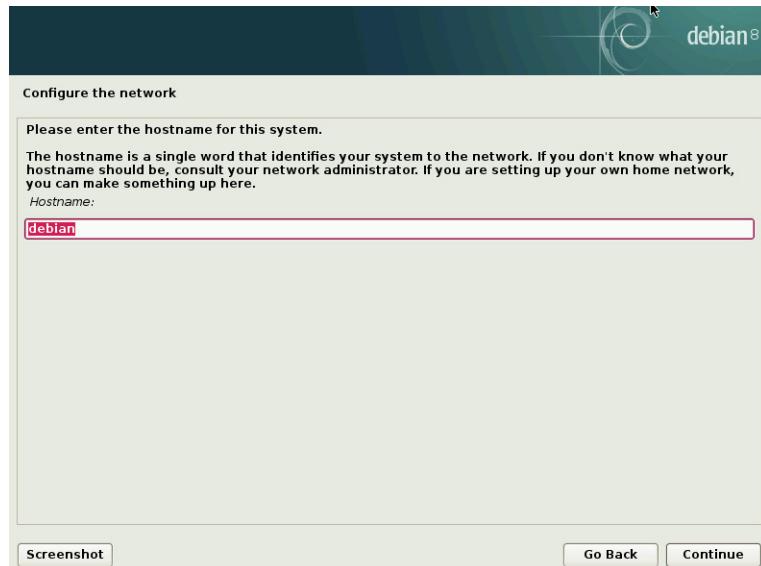
This selection is used to set your time zone.

You are next prompted to select a keyboard configura-

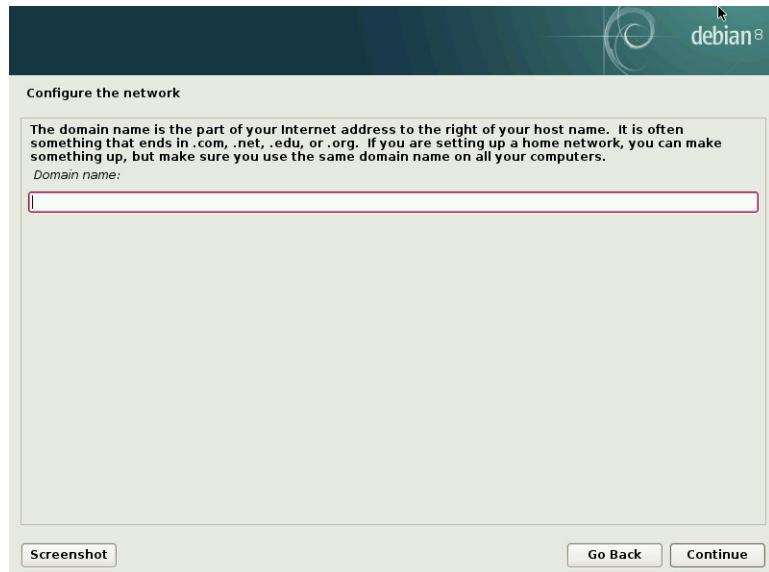
tion. Keyboards are often tailored to the characters used in a language.



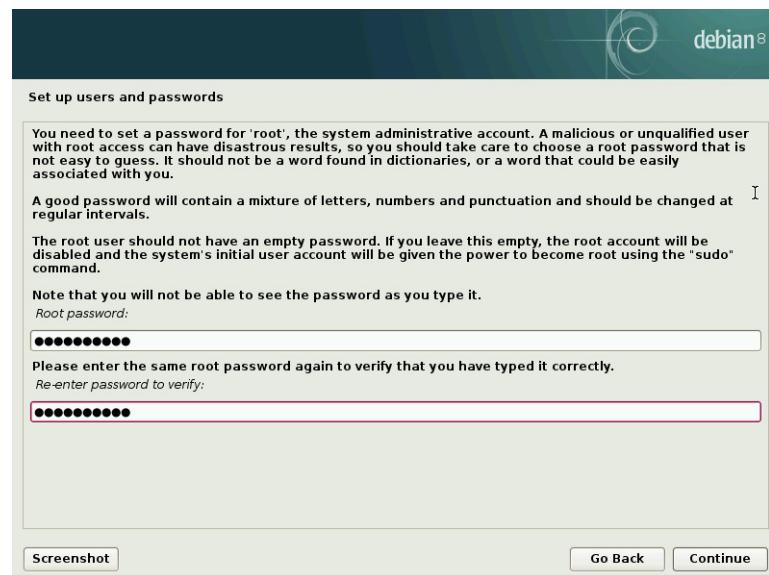
Step 5 Select the keyboard that you want to use and then select **Continue**.



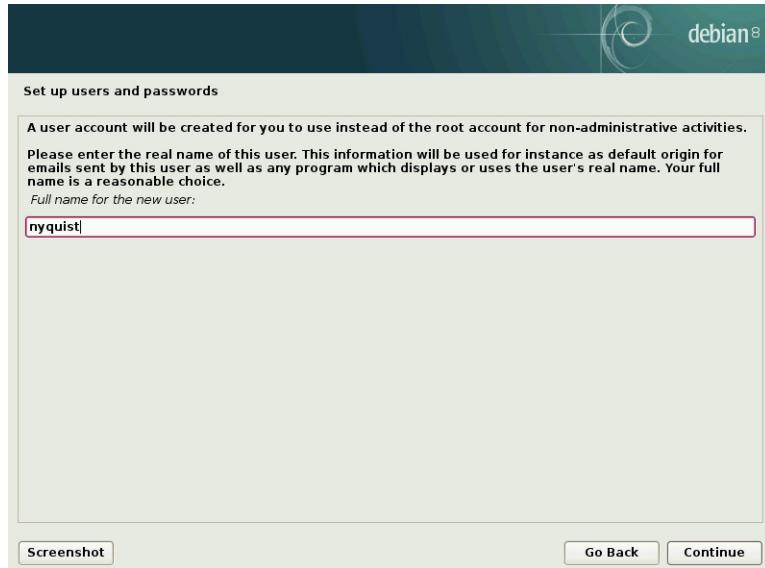
Step 6 When prompted for the hostname, type **debian** and then select **Continue**.



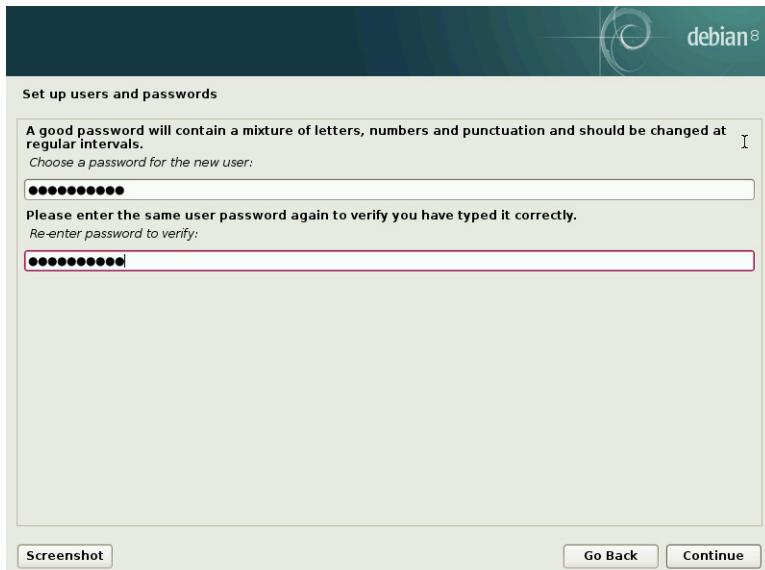
Step 7 Type the domain name or leave this field blank if you are using an IP address. Then, select **Continue**.



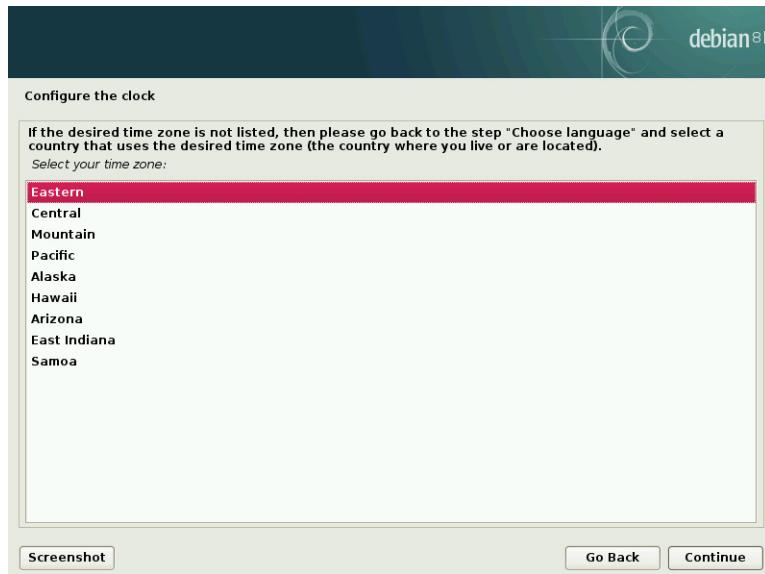
- Step 8 Type the password for the root system administrator account. Then, retype the password to verify that it was typed correctly and select **Continue**.



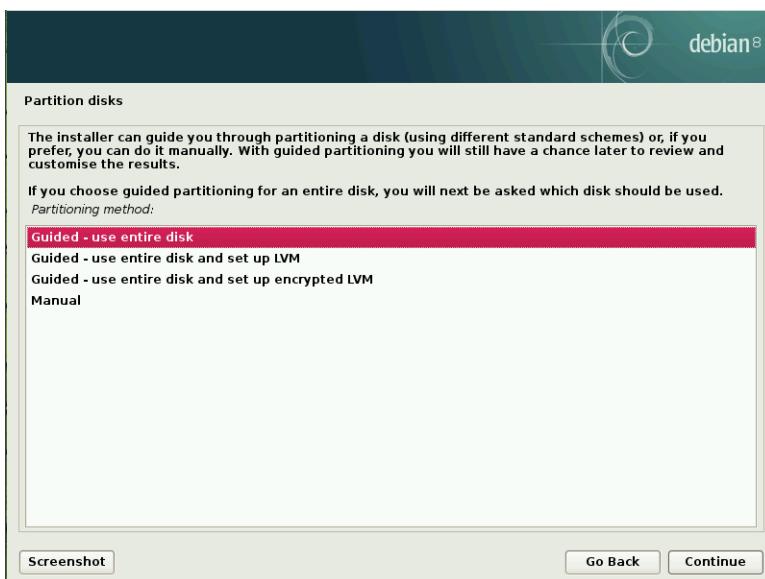
- Step 9 Type the full name of a user who will perform non-administrative activities on the server. Then, select **Continue**.



- Step 10 Type a password for this user. Then, retype the password to verify that it was entered correctly and select **Continue**.

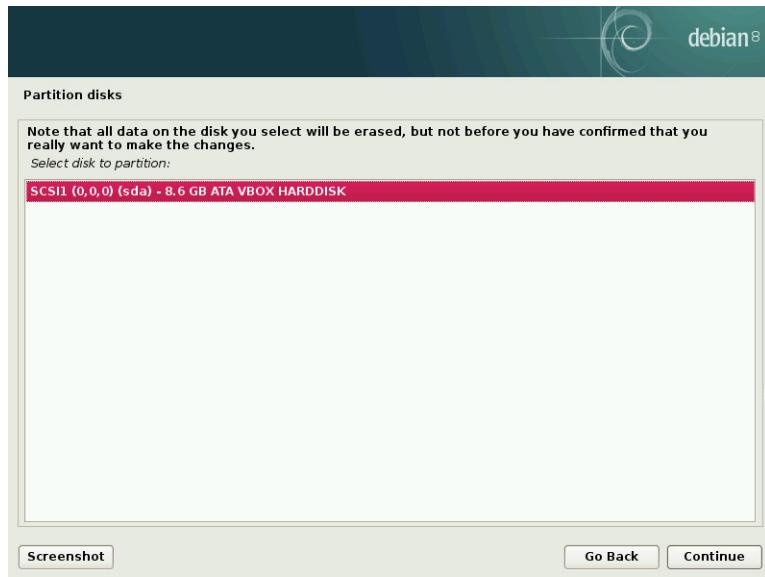


Step 11 Select your time zone and then select **Continue**.

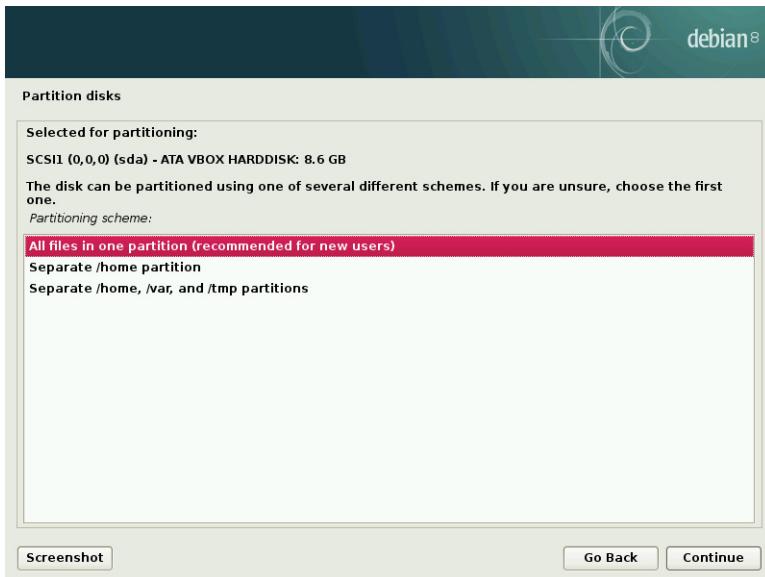


Note: While you can select a different partitioning scheme or select to manually partition the disk, the next few steps use the **Guide - use entire disk** option. You can later review and customize the results.

Step 12 Select **Guided - use entire disk** and select **Continue** to begin partitioning the disk.

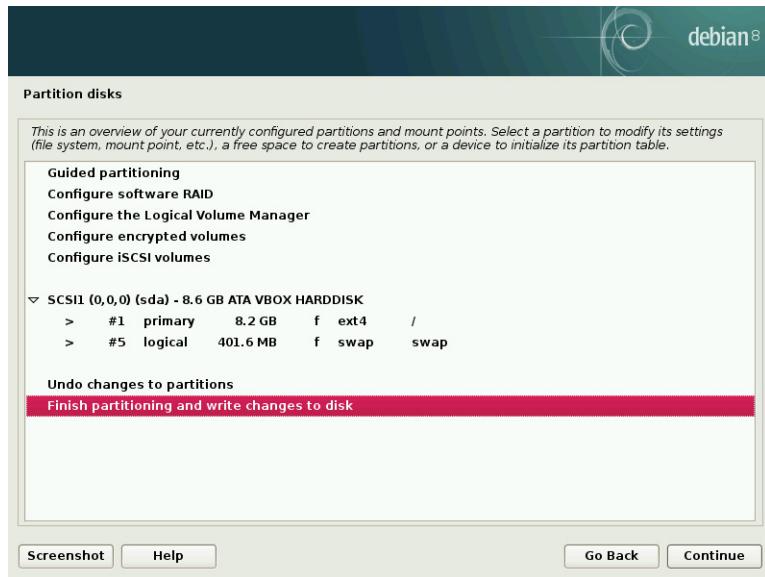


Step 13 Select the disk that you want to partition and select **Continue**.

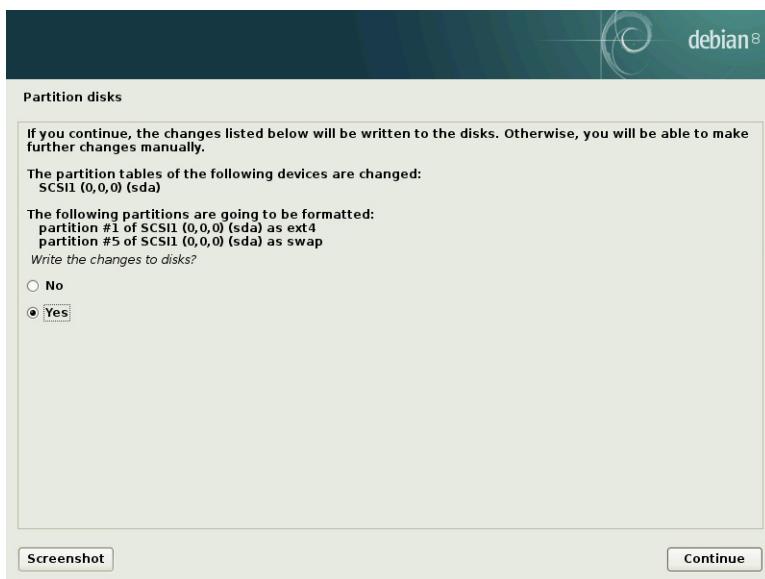


Step 14 Select the partitioning scheme that you want to use. If you are uncertain as to which scheme would be best, select **All files in one partition (recommended for new users)**.

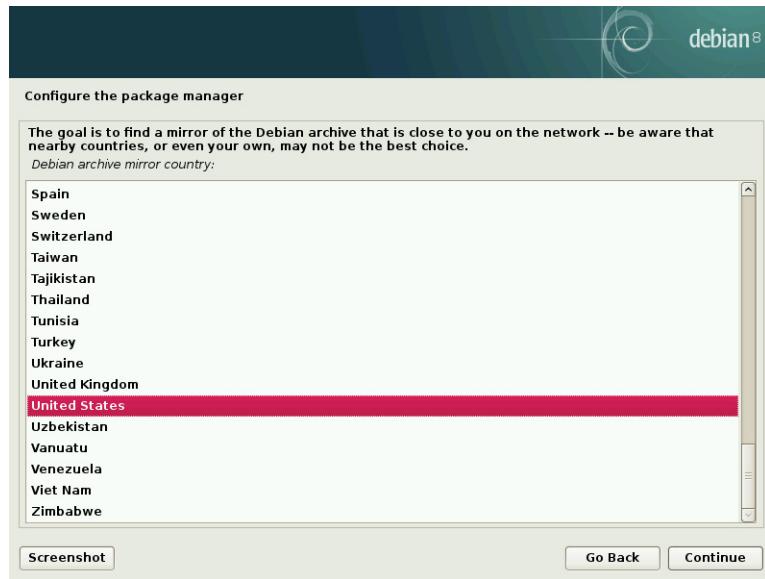
Step 15 Select **Continue**.



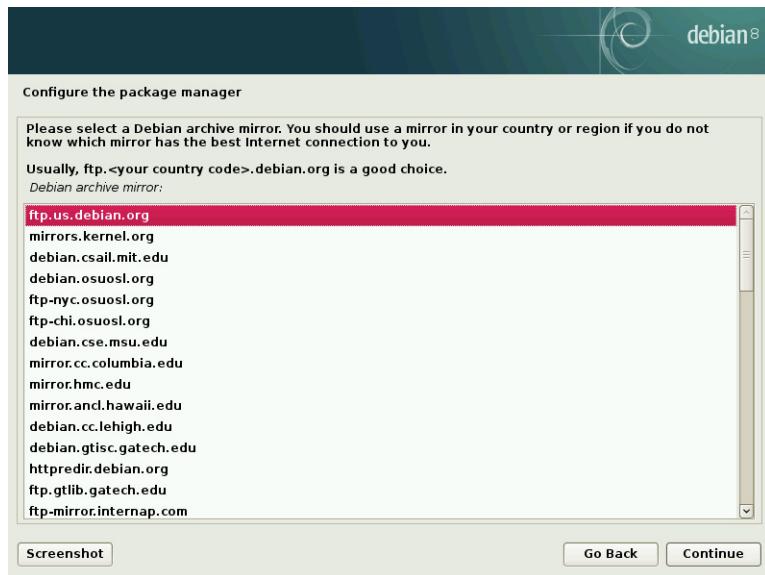
Step 16 When prompted, select **Finish partition and write changes to disk** and then select **Continue**.



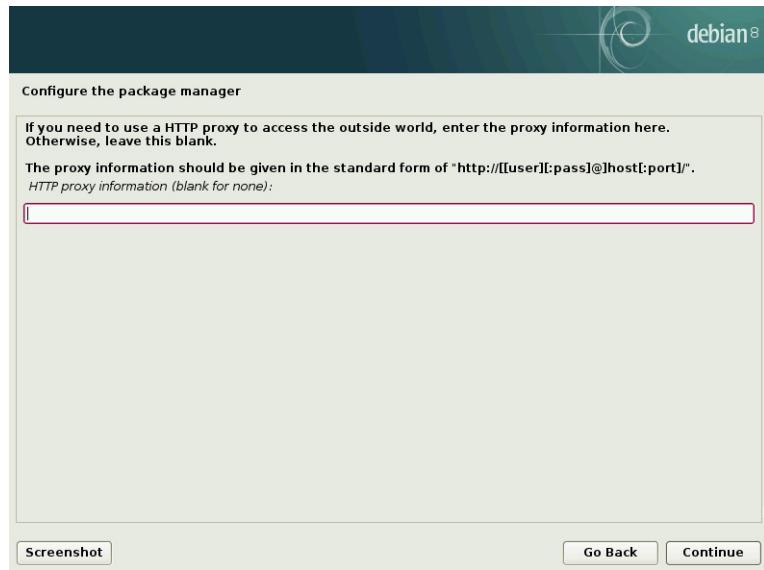
Step 17 Select **Yes** to write changes to the disks and then select **Continue**.



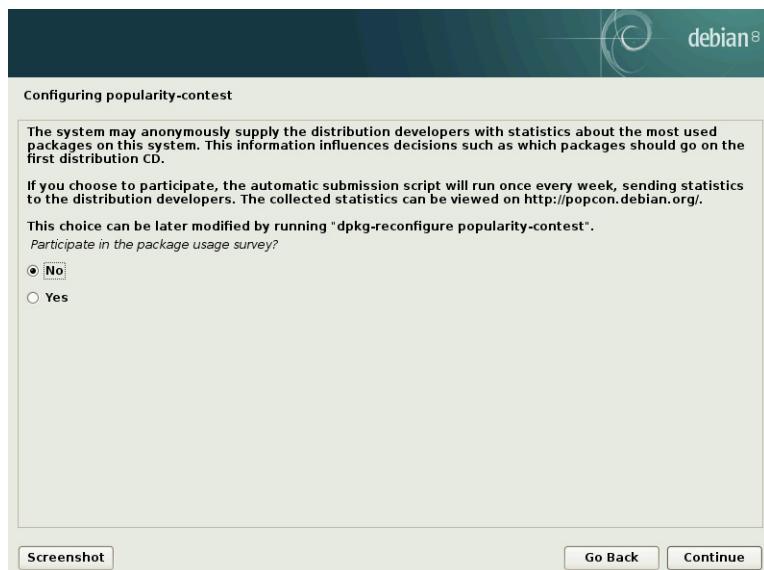
Step 18 When prompted, select an archive mirror country and then select **Continue**.



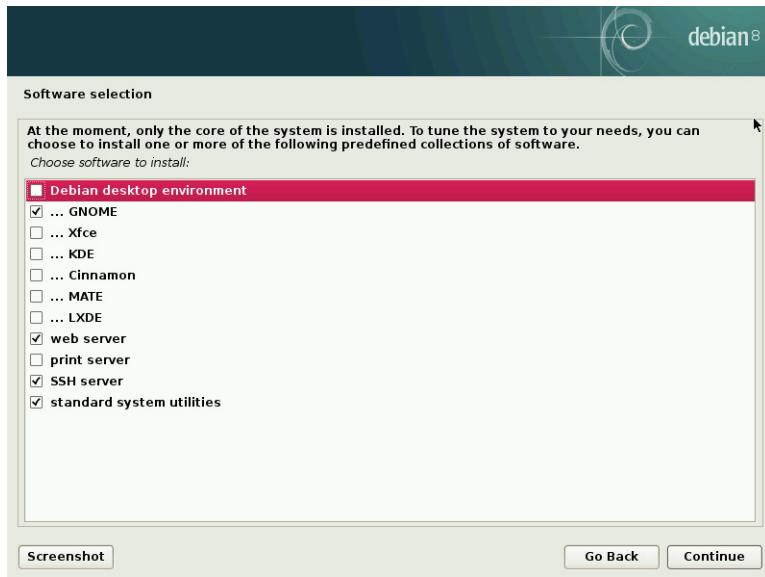
Step 19 Select a Debian archive mirror and then select **Continue**.



Step 20 When prompted to configure the package manager, leave the proxy field blank and select **Continue**.

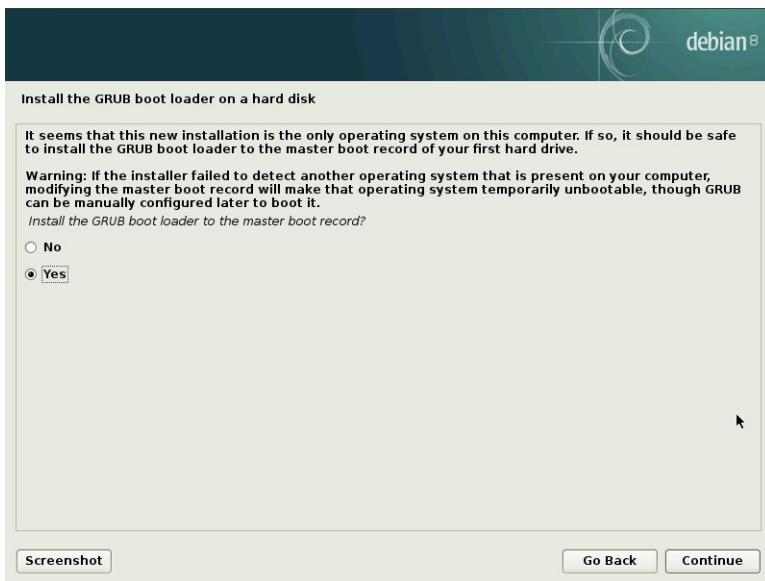


Step 21 When prompted to participate in the survey, select either **Yes** or **No** and select **Continue**.



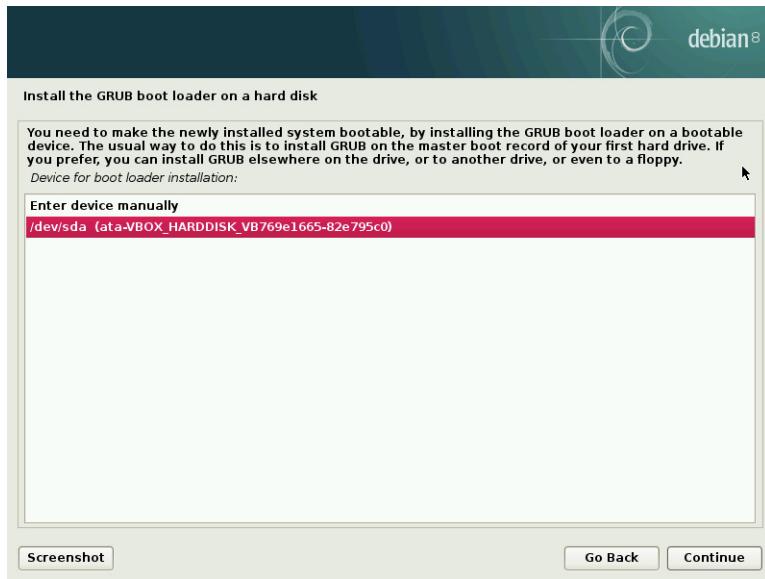
Step 22 Select the software that you want to install. As a minimum, select **GNOME**, **Web Server**, **SSH Server**, and **Standard System Utilities**.

Step 23 Select **Continue**.

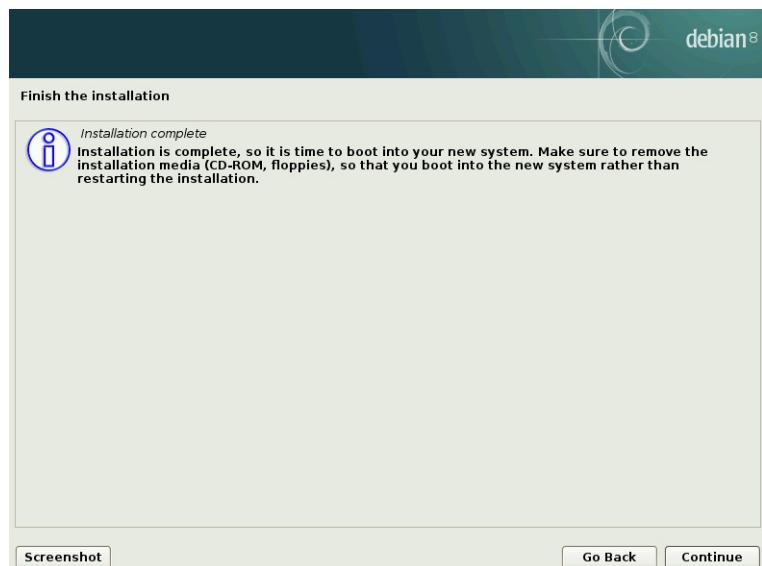


Step 24 When prompted to install the GRUB boot loader on a hard disk, select **Yes** and then select **Continue**.

The boot loader allows your server to launch the Debian OS when powered on.



Step 25 When prompted, select the hard disk where the bootable software is to reside and then select **Continue**.



Step 26 When prompted that the installation is complete, make sure to remove the installation media, select **Continue**, and press **Enter**.

The server boots into the new system and displays the GUI. You can now install the Nyquist software application.

3

Installing the Nyquist E7000 System Server

The Nyquist system server install involves the following tasks:

- Setting up a static IP address for the Nyquist E7000 server
- Copying and extracting the nyquist-e7000-xx.xx.xx.xxxx.tar.gz file
- Installing the Nyquist E7000 application software

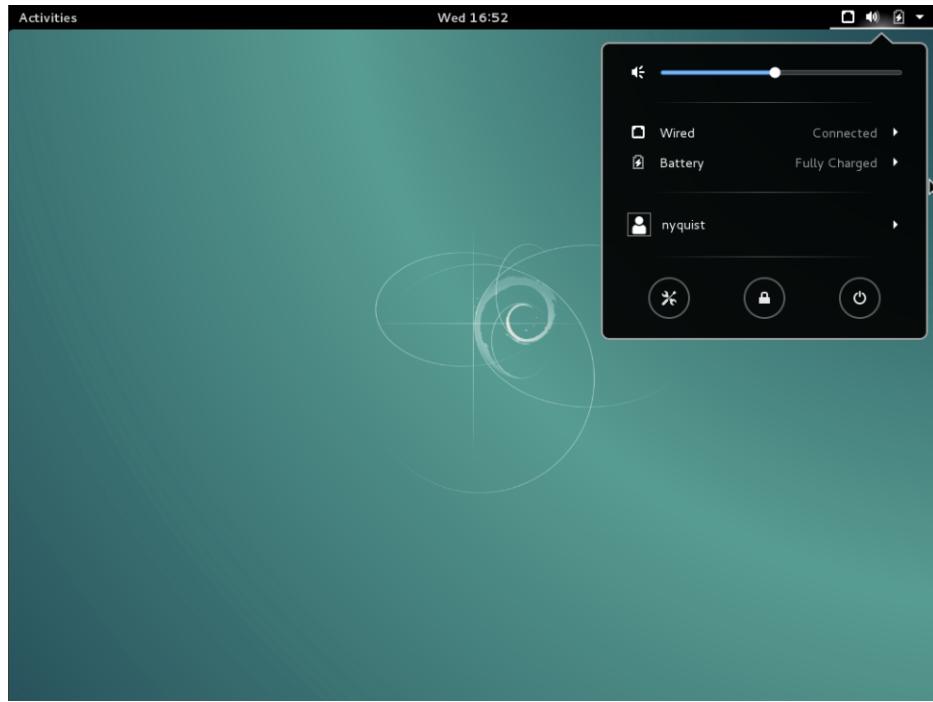
Before installing Nyquist E7000, you must install the Debian OS (see "*Installing Debian 8.xx.x AMD 64*" on page 7).

3.1 Setting Up Static IP Address

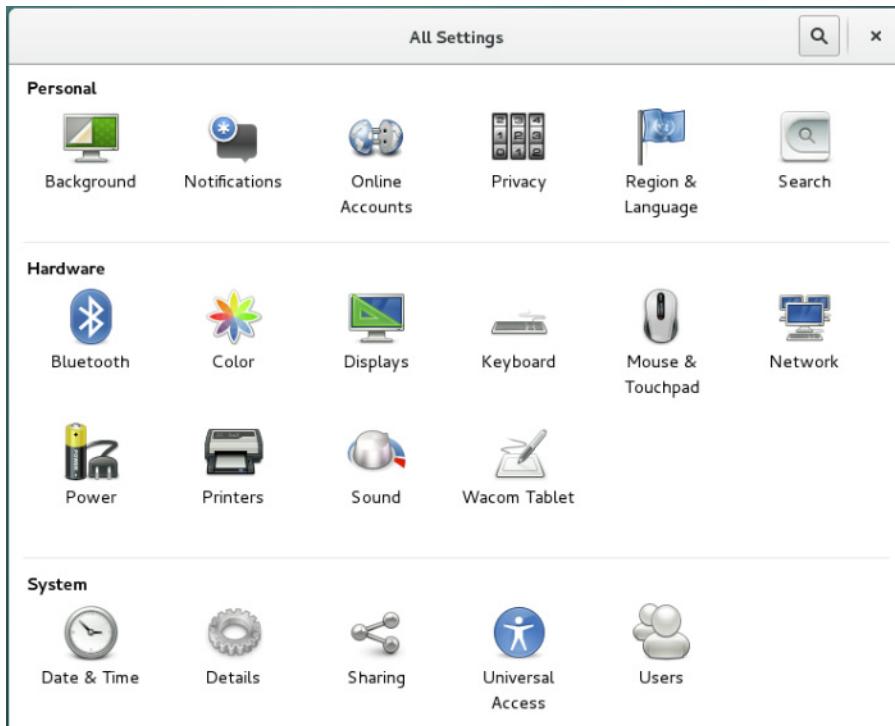
Before setting up a static IP address, determine the vacant IP address that you want to implement in your environment. Then, back up the interface file and edit the original interface file to include this IP address.

To set up a static IP address:

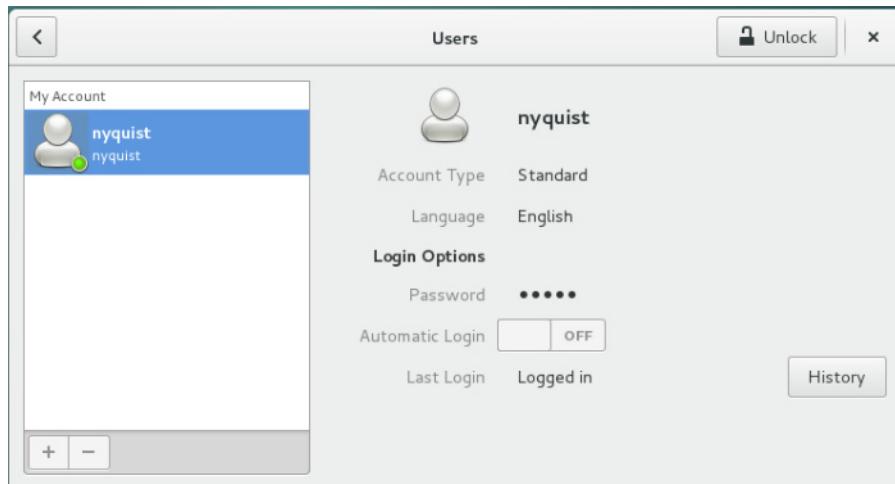
Step 1 Log into the Linux desktop.



Step 2 From the menu on the top right of the screen, select the **Settings/Tool** icon.



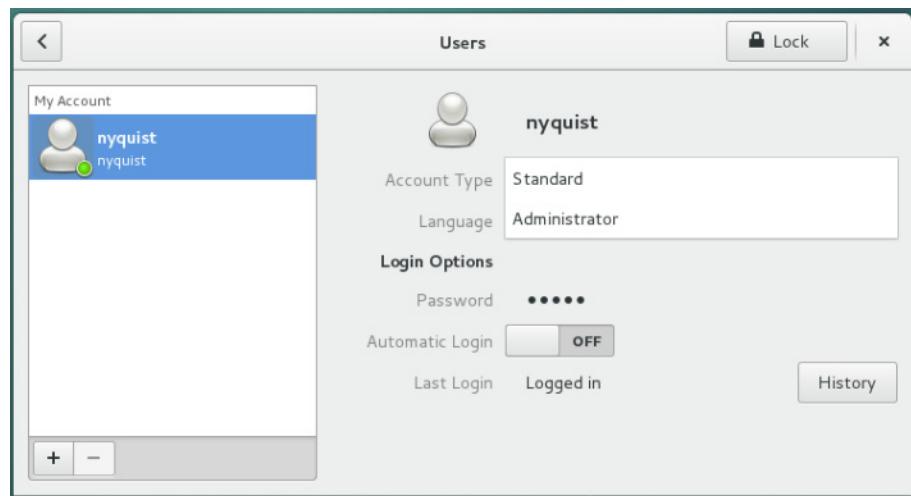
Step 3 Select **Users**.



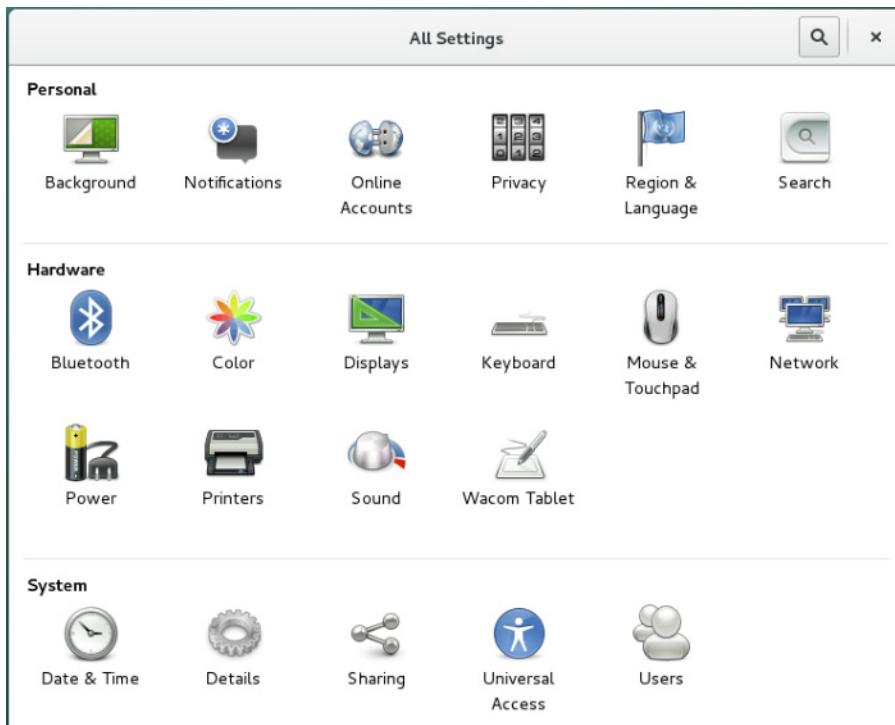
Step 4 Select **Unlock**.



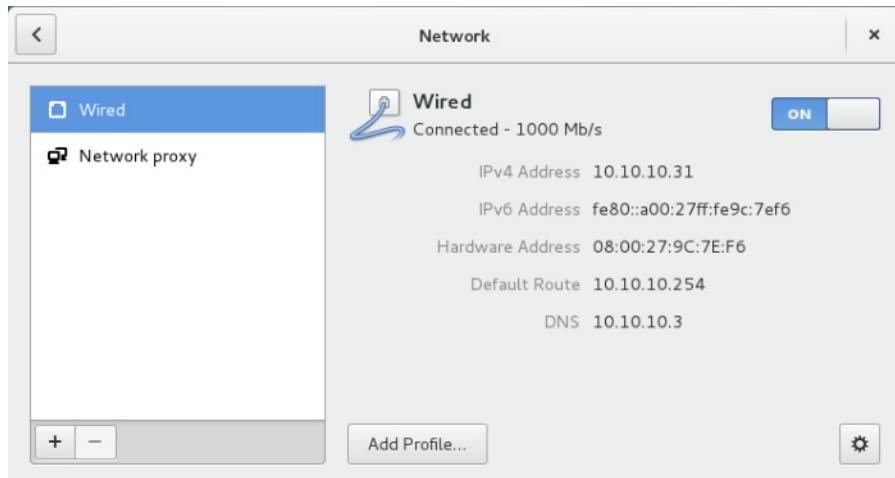
Step 5 Type the root password and then select **Authenticate**.



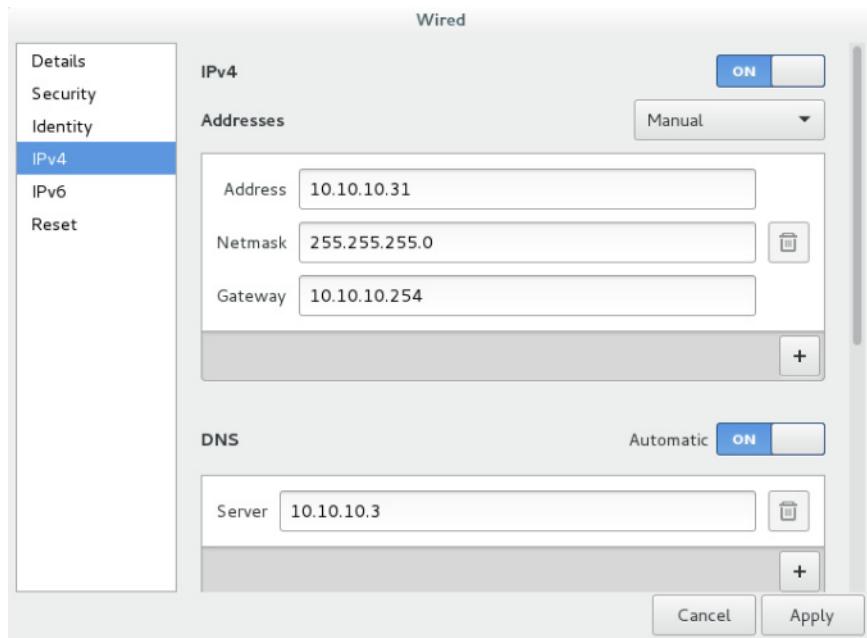
Step 6 Select **Account Type** and select **Administrator**. Then, select **Lock** and select the **Back** icon.



Step 7 From the All Settings screen, select **Network**.



Step 8 Select the **Settings** icon, which is shaped like a gear, on the lower right of the screen.



- Step 9 Enter the IPv4 address settings and then click **Apply**. Next toggle the ON/OFF button to **OFF** and then to **ON** to apply the network settings.
- Step 10 Go to **Activities**, launch the Firefox browser, and verify Internet access.

3.2 Copying and Extracting the .tar File

Note: The Nyquist server must have access to the Internet in order to complete this procedure.

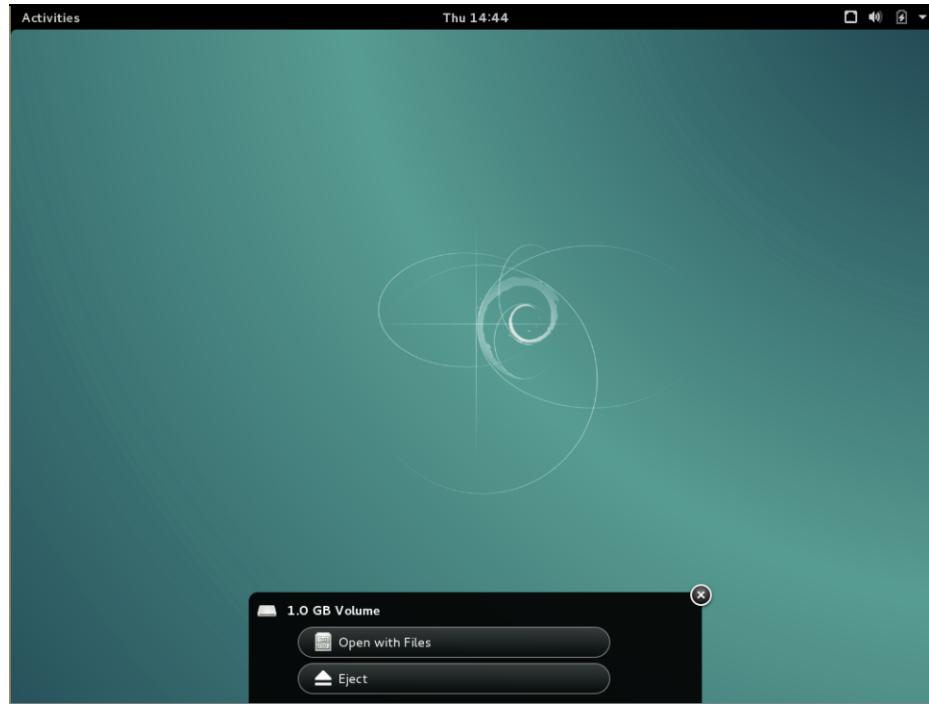
The <nyquist-e7000-xx.xx.xx.xxxx.tar.gz> file is a compressed archive file that must be copied to the server and then extracted. For this file, xx.xx.xx must be replaced by the Nyquist version number. This version number can be obtained by typing the following at the shell prompt:

`ls nyquist-*`

To copy and extract the <nyquist-e7000-xx.xx.xx.xxxx.tar.gz> file:

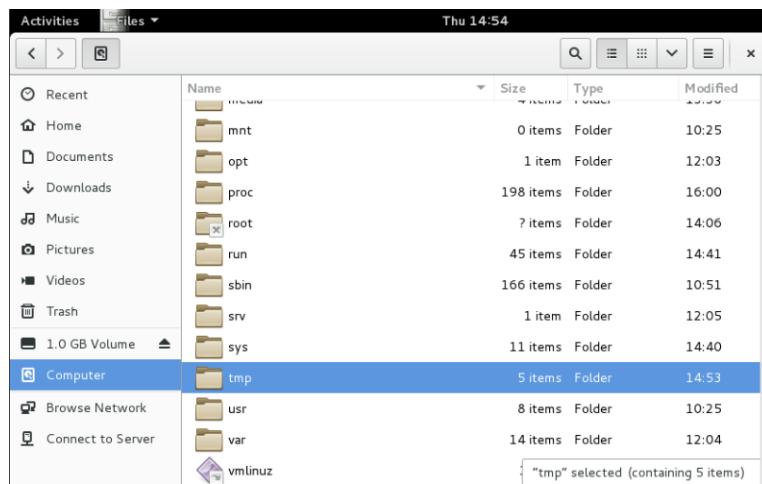
- Step 1 Copy the Nyquist installer tar file to a USB drive and plug the drive into a USB port on the Linux server.

The server displays a dialog box when the USB drive is plugged in.



Step 2 Select **Open with Files..**

Step 3 Right-click **File** and select **Copy To**.



Step 4 Select **Computer** in the left column, click the **tmp** folder, and then click the **Select** button in the upper right hand corner.



- Step 5 Click the **Terminal** icon to start a Command Line Interface, or CLI, session.
- Step 6 Type **su** at the command prompt, press **Enter**, and then type the root password.

```
root@debian:/home/nyquist# cd /tmp
root@debian:/tmp# tar xPvf nyquist-1.0.0.tar.gz
/opt/bogen/version
/opt/bogen/install_nyquist
/opt/bogen/update_nyquist
/opt/bogen/update_database
/opt/bogen/update_tables
/opt/bogen/licinfo
/opt/bogen/nyquist/nyquist-1.0.0-files.tar
/opt/bogen/nyquist/nyquist-asterisk.tar
/opt/bogen/nyquist/scripts/install-packages
/opt/bogen/nyquist/scripts/restore-db-to-conf
/opt/bogen/nyquist/nyquist-ffmpeg.tar
/opt/bogen/nyquist/nyquist-opus.tar
/opt/bogen/nyquist/unixODBC-2.3.4.tar
/opt/bogen/nyquist/nyquist-mysqlcon.tar
root@debian:/tmp# /opt/bogen/install_nyquist
```

- Step 7 To extract the tar file, type **cd /tmp** to change the directory to the tmp file and then type the tar extraction command:

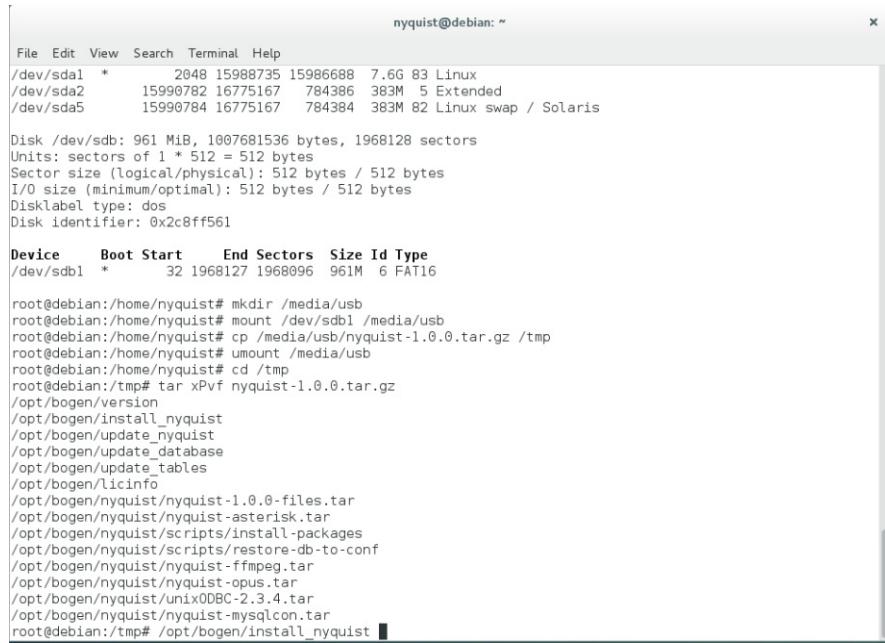
tar xPvf nyquist-<nyquist version>.tar.gz

You can also type part of the file name and then press the **Tab** key. The rest of the file name will fill in. The file will begin extracting.

3.3

Installing the Nyquist Software

After copying and extracting the nyquist-e7000-xx.xx.xx.xxxx.tar.gz file, you can install the Nyquist application software. This installation process takes about 1 hour and 45 minutes.



The screenshot shows a terminal window titled "nyquist@debian: ~". The terminal displays a series of commands being run by a root user. The commands include mounting a USB drive, copying the Nyquist tar file to it, changing directory to /tmp, extracting the tar file, navigating through the extracted directory, and finally running the "install_nyquist" script. The output shows various system paths and file names related to the Nyquist installation.

```
File Edit View Search Terminal Help
nyquist@debian: ~
/dev/sdal   *      2048 15988735 15986688  7.6G 83 Linux
/dev/sda2      15990782 16775167  784386  383M  5 Extended
/dev/sda5      15990784 16775167  784384  383M 82 Linux swap / Solaris

Disk /dev/sdb: 961 MiB, 1007681536 bytes, 1968128 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x2c8ff561

Device     Boot Start    End Sectors  Size Id Type
/dev/sdb1  *       32 1968127 1968096  961M  6 FAT16

root@debian:/home/nyquist# mkdir /media/usb
root@debian:/home/nyquist# mount /dev/sdb1 /media/usb
root@debian:/home/nyquist# cp /media/usb/nyquist-1.0.0.tar.gz /tmp
root@debian:/home/nyquist# umount /media/usb
root@debian:/home/nyquist# cd /tmp
root@debian:/tmp# tar xPvf nyquist-1.0.0.tar.gz
/opt/bogen/version
/opt/bogen/install_nyquist
/opt/bogen/update_nyquist
/opt/bogen/update_database
/opt/bogen/update_tables
/opt/bogen/licinfo
/opt/bogen/nyquist/nyquist-1.0.0-files.tar
/opt/bogen/nyquist/nyquist-asterisk.tar
/opt/bogen/nyquist/scripts/install-packages
/opt/bogen/nyquist/scripts/restore-db-to-conf
/opt/bogen/nyquist/nyquist-ffmpeg.tar
/opt/bogen/nyquist/nyquist-opus.tar
/opt/bogen/nyquist/unixODBC-2.3.4.tar
/opt/bogen/nyquist/nyquist-mysqlcon.tar
root@debian:/tmp# ./opt/bogen/install_nyquist
```

To install Nyquist:

Step 1 Type the following command at the root@debian command prompt:

/# /opt/bogen/install_nyquist

Step 2 Press **Enter**.

```

nyquist@debian: ~
File Edit View Search Terminal Help
/dev/sda2      15990782 16775167  784386  383M 5 Extended
/dev/sda5      15990784 16775167  784384  383M 82 Linux swap / Solaris

Disk /dev/sdb: 961 MiB, 1007681536 bytes, 1968128 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x2c8ff561

Device      Boot Start     End Sectors  Size Id Type
/dev/sdb1   *      32 1968127 1968096  961M 6 FAT16

root@debian:/home/nyquist# mkdir /media/usb
root@debian:/home/nyquist# mount /dev/sdb1 /media/usb
root@debian:/home/nyquist# cp ./media/usb/nyquist-1.0.0.tar.gz /tmp
root@debian:/home/nyquist# umount /media/usb
root@debian:/home/nyquist# cd /tmp
root@debian:/tmp# tar xPvf nyquist-1.0.0.tar.gz
/opt/bogen/version
/opt/bogen/install_nyquist
/opt/bogen/update_nyquist
/opt/bogen/update_database
/opt/bogen/update_tables
/opt/bogen/licinfo
/opt/bogen/nyquist/nyquist-1.0.0-files.tar
/opt/bogen/nyquist/nyquist-asterisk.tar
/opt/bogen/nyquist/scripts/install-packages
/opt/bogen/nyquist/scripts/restore-db-to-conf
/opt/bogen/nyquist/nyquist-ffmpeg.tar
/opt/bogen/nyquist/nyquist-opus.tar
/opt/bogen/nyquist/unixODBC-2.3.4.tar
/opt/bogen/nyquist/nyquist-mysqlcon.tar
root@debian:/tmp# /opt/bogen/install_nyquist
Enter License Activation Key (XXXX-XXXX-XXXX-XXXX) : ■

```

Step 3 Enter your License Activation Key and press **Enter** to start the package installation.

Step 4 When prompted, enter your country code. For the United States, type 01 and press **Enter**.

```

nyquist@debian: ~
File Edit View Search Terminal Help
Preparing to unpack .../mysql-server-core-5.5_5.5.57-0+deb8u1_amd64.deb ...
Unpacking mysql-server-core-5.5 (5.5.57-0+deb8u1) ...
Selecting previously unselected package mysql-server-5.5.
Preparing to unpack .../mysql-server-5.5_5.5.57-0+deb8u1_amd64.deb ...
Unpacking mysql-server-5.5 (5.5.57-0+deb8u1) ...
Selecting previously unselected package libbhtml-template-perl.
Preparing to unpack .../libbhtml-template-perl_2.95-1_all.deb ...
Unpacking libbhtml-template-perl (2.95-1) ...
Selecting previously unselected package mysql-server.
Preparing to unpack .../mysql-server_5.5.57-0+deb8u1_all.deb ...
Unpacking mysql-server (5.5.57-0+deb8u1) ...
Processing triggers for man-db (2.7.0.2-5) ...
Processing triggers for systemd (215-17+deb8u7) ...
Setting up libaio1:amd64 (0.3.110-1) ...
Setting up libdbi-perl (1.631-3+b1) ...
Setting up libdbd-mysql-perl (4.028-2+deb8u2) ...
Setting up libterm-readkey-perl (2.32-1+b1) ...
Setting up mysql-client-5.5 (5.5.57-0+deb8u1) ...
Setting up mysql-server-core-5.5 (5.5.57-0+deb8u1) ...
Setting up mysql-server-5.5 (5.5.57-0+deb8u1) ...
Setting up mysql-server-5.5_5.5.57-0+deb8u1 ...
170831 13:47:34 [Warning] Using unique option prefix key_buffer instead of key_buffer_size is deprecated and will be removed in a future release. Please use the full name instead.
170831 13:47:34 [Note] Ignoring --secure-file-priv value as server is running with --bootstrap.
170831 13:47:34 [Note] /usr/sbin/mysqld (mysqld 5.5.57-0+deb8u1) starting as process 32719 ...
Setting up libbhtml-template-perl (2.95-1) ...
Setting up mysql-server (5.5.57-0+deb8u1) ...
Processing triggers for libc-bin (2.19-18+deb8u10) ...
Processing triggers for systemd (215-17+deb8u7) ...
Package installation done.

Please read the Nyquist End User License Agreement (EULA):
Press enter key to display the Nyquist EULA ■

```

Step 5 Press **Enter** to read the End User License Agreement (EULA).

Step 6 Press the **Space bar** to continue reading the EULA.

The screenshot shows a terminal window titled "nyquist@debian: ~". The window contains the Nyquist End-User License Agreement (EULA). The text describes the license terms, including the grant of a limited, terminable, non-exclusive, non-sublicensable, non-transferable, revocable license to install and use the Platform. It also mentions Open Source Components included with the Platform, which are redistributed under the terms of their respective licenses. At the bottom of the EULA text, there is a prompt: "Do you accept the Nyquist EULA (Enter Yes or No)?".

Step 7 Type **yes** to accept the EULA.

Step 8 When prompted to select option (C)reate (E)nter, (I)mport or (S)kip, type **c**, and then press **Enter**.

The screenshot shows a terminal window titled "nyquist@debian: ~". The window displays the Apache SSL Certificate Configuration for Web Interface. It asks the user to choose one of the following SSL configuration options: Create, Enter, Import, or Skip. The "Create" option is described as creating a self-signed SSL certificate/key for the server. The "Enter" option is described as entering the Certificate and Private Key data for this server. The "Import" option is described as importing Certificate and Private Key files by specifying filenames. The "Skip" option is described as skipping SSL configuration for this server (already done or will do later). At the bottom of the configuration text, there is a prompt: "Select option: (C)reate, (E)nter, (I)mport or (S)kip? C".

Step 9 When prompted to select option (I)P Address or (D)omain name, type **i**.

Step 10 Type the server's IP address, and then press **Enter**.

Note that if the Nyquist application software has been previously installed, the following prompt appears:

It looks like you already have a Nyquist system installed: 2.0.0.528

Please choose from one of the following options to proceed:

Install - Use this option to fresh-install release: 2.0.0:528

- * Nyquist software will be fresh-installed, user data deleted.
- * All Configuration data will be deleted.
- * Uploaded tones/alarms/announcements will be deleted.
- * Uploaded songs and playlists will be deleted.
- * Recordings will be deleted.
- * Voicemail recordings will be deleted.
- * Call Detail Records (CDRs) will be deleted.
- * System Backups will be preserved and available after installation.

Update - Use this option to re-install the software to release: 2.0.0:528

- * Nyquist software will be re-installed, while preserving user data.
- * All Configuration data will be preserved.
- * Uploaded tones/alarms/announcements will be preserved.
- * Uploaded songs and playlists will be preserved.
- * Recordings will be preserved.
- * Voicemail recordings will be preserved.
- * Call Detail Records (CDRs) will be preserved.
- * System Backups will be preserved and available after installation.

Please enter your choice (Enter: Install or Update)?

If you enter **Update**, the new Nyquist version updates your existing system and keeps all of your already configured data (for example, schedules or station). If you enter **Install**, the new Nyquist version overwrites your existing version and all of your current configuration data is deleted.

4

Launching Wizards Following a Server Install



Your connection is not private

Attackers might be trying to steal your information from **10.10.10.168** (for example, passwords, messages, or credit cards). [Learn more](#)

NET::ERR_CERT_AUTHORITY_INVALID

Help improve Safe Browsing by sending some [system information and page content](#) to Google.
[Privacy policy](#)

[Advanced](#)

[Back to safety](#)

The first time you try to log on to your Nyquist E7000 system, you will get the notice that your connection is not private. Click **Advanced**.

Note: Selecting **Advanced** will prompt you to select the hyperlink to proceed to the URL.

When you first access Nyquist on a server (other than the NQ-SYSCTRL, the Customer Information Wizard appears. Enter your contact information and then select **Continue**.

Customer Information Wizard

Enter the following info that will be used to register the system to the specific customer.

First Name:	Address 1:
<input type="text"/>	<input type="text"/>
Last Name:	Address 2:
<input type="text"/>	<input type="text"/>
Company Name:	City:
<input type="text"/>	<input type="text"/>
Customer Type:	State:
<input type="button" value="Select ▾"/>	<input type="button" value="Select ▾"/>
Contact Email:	Zip:
<input type="text"/>	<input type="text"/>
Contact Phone:	
<input type="text"/>	

Figure 4-1, Customer Information Wizard

Enter your contact information and then select **Continue**.

The Dialing Length Wizard appears next. If you already know how to configure an E7000 system, you can select **Expert Setup**, which takes you to the E7000 system's Login page. The Station, User, Time Zone, and Network Time Server Wizard views also have an **Expert Setup** button. The **Expert Setup** button marks all the wizard-based setup database entries as "visited" so you are not redirected back to any of the wizards.

Note: If you select **Expert Setup** and have not set a new password, you will need to enter the default username **admin** and the default password **bogen** to log into the system. Login credentials are case sensitive.

If you log in after having selected to use the Expert Setup, you must manually complete system configuration using the Admin Web UI (see the *Nyquist E7000 System Administrator Manual*).

If you don't opt to use the Expert Setup, you can continue using the setup wizards.

Dialing Length Wizard

The Dialing Length specifies the number of digits required to dial stations within the System. If setting up more than 800 stations, start with at least a 4 digit Dialing Length.

Choose the Dialing Length:

3 Digits ▾

Expert Setup **Continue**

Set the dialing length (number of digits) used by stations in your system and select **Continue**.

Station Wizard

Create an Admin Web UI Station:

Extension: 

Name: 

Expert Setup **Continue**

Create the Admin Web UI station by entering the Extension and Name for this station. Then, select **Continue**

User Wizard

The administrative user (admin) has the ability to change all aspects of the System.

Update the administrative password:

 Show

Note: Minimum password length is 5 characters. Valid characters include Uppercase letter (A-Z), Lowercase letter (a-z), Digit (0-9), and Special Characters (!@#\$%).

Expert Setup **Continue**

Update the password for the Admin Web user.

Select **Continue**.

Time Zone Wizard

The system time zone sets the correct System local time.

Search for a city that represents the system time zone; for example, New York (Eastern), Chicago (Central), Denver (Mountain), Los Angeles (Pacific):

New York

Expert Setup Continue

Set the time zone to be used by your system and then select **Continue**.

Network Time Server Wizard

The Network Time Server provides the System with reliable synchronized time.

Enter a Network Time Server:

pool.ntp.org

Expert Setup Continue

Specify the Network Time Server and then select **Continue**.

NYQUIST™ - EGEN™									
Zone Wizard									
Remove	Zone Number	Name	Type	Volume	Audio Distribution Volume	Pre-Announce Tone	Multicast IP Address	Multicast Port	
☒	1	Zone1	Paging+Time+Audio	20	20	1-Second	239.1.1.10	6100	
☒	2	Zone2	Paging+Time+Audio	20	20	1-Second	239.1.1.11	6104	
☒	3	Zone3	Paging+Time+Audio	20	20	1-Second	239.1.1.12	6108	
☒	4	Zone4	Paging+Time+Audio	20	20	1-Second	239.1.1.13	6112	
☒	5	Zone5	Paging+Time+Audio	20	20	1-Second	239.1.1.14	6116	
☒	6	Zone6	Paging+Time+Audio	20	20	1-Second	239.1.1.15	6120	
☒	7	Zone7	Paging+Time+Audio	20	20	1-Second	239.1.1.16	6124	
☒	8	Zone8	Paging+Time+Audio	20	20	1-Second	239.1.1.17	6128	
☒	9	Zone9	Paging+Time+Audio	20	20	1-Second	239.1.1.18	6132	
☒	10	Zone10	Paging+Time+Audio	20	20	1-Second	239.1.1.19	6136	
☒	11	Zone11	Paging+Time+Audio	20	20	1-Second	239.1.1.20	6140	
☒	12	Zone12	Paging+Time+Audio	20	20	1-Second	239.1.1.21	6144	
☒	13	Zone13	Paging+Time+Audio	20	20	1-Second	239.1.1.22	6148	
☒	14	Zone14	Paging+Time+Audio	20	20	1-Second	239.1.1.23	6152	
☒	15	Zone15	Paging+Time+Audio	20	20	1-Second	239.1.1.24	6156	
☒	16	Zone16	Paging+Time+Audio	20	20	1-Second	239.1.1.25	6160	
☒	17	Zone17	Paging+Time+Audio	20	20	1-Second	239.1.1.26	6164	
☒	18	Zone18	Paging+Time+Audio	20	20	1-Second	239.1.1.27	6168	
☒	19	Zone19	Paging+Time+Audio	20	20	1-Second	239.1.1.28	6172	
☒	20	Zone20	Paging+Time+Audio	20	20	1-Second	239.1.1.29	6176	

The current license allows the creation of more than 20 zones. This wizard only allows the creation of 20 zones initially. You can create more zones after the setup is complete.

Save Skip Wizard

The Zone Wizard appears next. The number of zones that you can create depends upon your product license. However, regardless of what size system license purchased, the Zone Wizard will only assist in creating a maximum of 20 zones. (Additional zones, if desired and licensed, can be added via the Admin Web UI after the initial setup is

complete.) If you have purchased up to 20 zones, the system will automatically generate the zones.

You can delete an automatically generated zone by selecting the red X next to the zone you want to delete.

You can also make edits to a zone by selecting a hyperlink in any of a zone's parameters except for the number:

Name	Identifies the zone by the user-created name. The name can be alphanumeric (such as Bldg 1) and contain up to 255 characters.
Type	Identifies the zone as being able to receive paging, time, audio, or a combination of paging, time, or audio.
Volume	Sets the volume level for announcements. The volume level can range from 0 to 10.
Audio Distribution	Sets the volume level for audio distribution playing to stations in the zone. (See " <i>Using Audio Distribution</i> " on page 270.)
Volume	
Pre-Announce Tone	Identifies what, if any, tone should play before an announcement.
Multicast IP Address	Identifies the IP address for multicast calls to the zone.
Multicast Port Number	Identifies the port number for multicast calls to the zone.

For some parameters (Type and Pre-Announce Tone), you can select from the drop-down menu that appears; for others, type the change and select the check box when done.



After all zones have been created, select **Save**. Or, you can select **Skip Wizard** and create your zones later through the Admin Web UI.

Setup Wizards Complete

Click Continue to go to Expert Setup and start using the Nyquist System.

[Continue](#)

Once you complete all of the setup wizards, you can select **Continue** and the Nyquist C4000 logon screen appears.



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Attackers might be trying to steal your information from **10.10.10.168** (for example, passwords, messages, or credit cards). [Learn more](#)

NET::ERR_CERT_AUTHORITY_INVALID

Help improve Safe Browsing by sending some [system information and page content](#) to Google.
[Privacy policy](#)

[Advanced](#)

[Back to safety](#)

The first time you try to log on to your Nyquist E7000 system, you will get the notice that your connection is not private. Click **Advanced**.

Note: Selecting **Advanced** will prompt you to select the hyperlink to proceed to the URL.

5 Best Practices

This section details recommendations and best practices to use when:

- Updating the Nyquist E7000 system server software to a new software release
- Re-installing a previous Nyquist software release
- Re-installing the same Nyquist software release
- Updating Nyquist appliance firmware (computer software stored on the appliance)
- Using System Backups

Note: Before configuring or using any Nyquist appliances, you must ensure that the appliance firmware is updated to the latest release. The latest firmware release can be obtained from the secured ES Dealers website: <http://www.bogenedu.com/nyquist-secure-dealer-resources/>

5.1 Updating Nyquist Software

Note: Before beginning the install process, make sure that your Nyquist system server can access the required URLs or web sites (see "Whitelisted Web Addresses" on page 2 from a Chrome browser.

New Nyquist server software may include patches to address known issues or new releases that provide additional features. The latest E7000 server software can be accessed from the secured ES Dealers website:

Note: System backups created by older versions of the server software are not compatible with the newer releases and should **not** be used to restore configuration data.

When updating to a new Nyquist server software release, use the Admin Web UI to perform a system update unless directed by technical support. Performing a system update ensures that all configuration data, call detail records, recordings, voice mail, and all upload announcements, alarms, tones, and songs are retained and are available after the system software update.

To perform a system update:

- Step 1 From the navigation bar, select **System Parameters**.
- Step 2 From the System Parameters page, select **System Update**, locate the System Update file, and then select **Import**.

Perform the server system update process before updating Nyquist appliance software.

5.1.1 Assigning Permissions for New Features

After a new software release is installed, permissions for features introduced by this new release must be set for the roles that will use these features.

To assign permissions for these new features:

- Step 1 On the navigation bar, select **Roles**.
- Step 2 On the Roles page, select the **Permissions** icon next to the role that you want to edit permissions for.
- Step 3 On the Edit Permissions page, make desired changes.
- Step 4 Select **Save**.

For more information, refer to the *Nyquist E7000 System Administrator Manual*.

5.2 Re-installing an Earlier Software Release

Note: Before beginning the install process, make sure that your Nyquist system server can access the required URLs or web sites (see "*Whitelisted Web Addresses*" on page 2 from a Chrome browser).

If you want to re-install an earlier software release, you should first do a fresh install of the Debian software. Then, install Nyquist using the `install_nyquist` command (see "*Installing the Nyquist Software*" on page 39).

After the installation completes, you can restore user configuration data from a system backup provided the system backup was created from the same release that is now installed.

Nyquist appliance software may also need to be re-installed to a previous release to maintain compatibility with the E7000 system server.

5.3 Re-installing the Same Software Release

Note: Before beginning the install process, make sure that your Nyquist system server can access the required URLs or web sites (see "*Whitelisted Web Addresses*" on page 2 from a Chrome browser).

If you need to re-install the same software release, you should first perform a system backup. (Refer to the *Nyquist E7000 System Administrator Manual*.)

Next, install Nyquist using the `install_nyquist` command (see "*Installing the Nyquist Software*" on page 39).

Note: When using a system backup to restore configuration data, the system backup to be used should have been created by the same Nyquist server software release that is currently running.

After completing the software installation, restore user configuration data from the system backup.

System backups with descriptions that contain "OLD:" and "(for older release!)" should not be used to restore configuration data to the currently running software release. System backups are automatically marked as OLD when a System Update is performed to update the Nyquist server software to a new release.

You can use **Recordings** and **Voicemail** backups to restore recordings and voicemail on any Nyquist software release. These type of backups are not dependent on any specific release version (unless otherwise stated by Bogen on specific software releases).

5.4 Updating Appliance Firmware

Note: Before configuring or using any Nyquist appliances, you must ensure that the appliance firmware is updated to the latest release. The latest firmware release can be obtained from the secured ES Dealers website: <http://www.bogenedu.com/nyquist-secure-dealer-resources/>

The firmware for all devices used with the E7000 system must be compatible with the software installed on the E7000 server, and **all** Nyquist appliances in a given installation should be configured to run the same version firmware.

Nyquist application firmware releases can be accessed from the secured ES Dealers website:

<http://www.bogenedu.com/nyquist-secure-dealer-resources/>

Firmware can be updated for E7000 stations and Analog Station Bridge (ASB) devices through the Admin Web UI or through the appliance's web UI. For information about the appliance's web UI, refer to the device's configuration manual.

Through the E7000 Admin Web UI, you can upload a firmware file to the E7000 system server, download firmware to a station or ASB, view a list of stations and ASBs that are linked to a firmware name, set default firmware for any stations and bridge devices to be added, and delete firmware entries. For information about using the Admin Web UI, refer to the *Nyquist E7000 System Administrator Manual*.