Nyquist C4000 Server
Installation and Setup Guide

BOGEN®
COMMUNICATIONS, INC.

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Contents

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Nyquist C4000 Installation Introduction

Two options are available for installing and deploying Nyquist C4000:

1. Using a Nyquist System Controller (NQ-SYSCTRL), which already has the operating system and C4000 application software installed on it.

2. Using your own server platform and installing the Debian OS and C4000 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 C4000 installation process when using your own server. If you are using the Nyquist System Controller (NQ-SYSCTRL), refer to the *System Controller Setup Guide for Nyquist C4000*.

Before installing Nyquist C4000, ensure that:

- Required services are enabled on your network. Examples of required services include TFTP.

- Required multicast IP addresses and ports are known and available.

- Required static IP addresses are known and available.

- Required port numbers are open.

To install C4000 on your own server, you must have both a valid Nodelocked Key (NQ-C4000NLL) and a valid product License Activation Key (NQ-C4000-Bx) before beginning the process.

If you elect to build your own server, ensure it meets system requirements before beginning the Debian OS installation.

1.1   Understanding System Requirements

The C4000 web-based UI requires a secure Hypertext Transfer Protocol Secure (https) type network connection to the C4000 System Server. Users can log in to the C4000 system using a 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 C4000 System Server's IP address (for example, 10.10.20.12).

1.1.1   Whitelisted Web Addresses

C4000 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) is 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 C4000 License support
http://downloads.digium.com	Required for updates from Digium
http://downloads.asterisk.org/ (specifically, http://downloads.asterisk.org/pub/telephony/sounds/releases)	Required for Asterisk updates
http://www.pjsip.org/	Required for PJSIP updates
http://ftp.us.debian.org (specifically: http://ftp.us.debian.org/debian/)	Required during Linux package updates

Table 1-1, Whitelisted Web Sites (Continued)

URL	Description
http://security.debian.org (specifically: http://security.debian.org/)	Required during Linux package updates
stun01.sipphone.com	Required for STUN based IP address resolution (This is used by the C4000 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 https://2431612419.airable.io	airable URL
http://api.sound-machine.com https://api.sound-machine.com	SoundMachine URL
http://api.bogenedu.com/api/customers	Required for C4000 Warranty Support

URLs that are entered on the C4000 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   Nyquist System Server Requirements

The following are the minimum requirements for the C4000 System Server if you elect to not use the Nyquist System Controller (NQ-SYSCTRL):

Table 1-2, Nyquist System Server Minimum Requirements

OS	Debian Linux OS (AMD 64-bit version) release 8.xx.x
	Note: Refer to the most up to date release notes on the www.bogen-ip.com website for details about which Linux OS versions have been tested for use with the Nyquist system.
CPU	Quad-core Intel-based processor running at 3.0 GHz or higher
Hardware	Sound card with microphone port

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

Memory	8 GB RAM (Error Correcting Code (ECC) RAM is recommended for increase performance and reliability.)
Disk Storage	One 250 GB disk drive Some form of hardware-based RAID is recommended for redundancy and high availability. 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: • 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 acronyn 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, Session Initiation Protocol (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 C4000 system server as part of the C4000 installation. All other listed 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 C4000 web interface.	Mandatory	C4000 System Controller
DHCP	Supplies dynamic IP addresses to the C4000 System Controller 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 STUN TURN	Resolves IP addresses behind Network Address Translation (NAT)/ firewall. - Interactive Connectivity Establishment - Session Traversal Utilities for NAT - Traversal Using Relays around NAT	Optional	C4000 System Controller/ Network

Table 1-3, Network Application Services (Continued)

Service	Description	Required	Location
NTP	Provides date/time synchronization for the C4000 System Controller and the associated devices (IP Phones, appliances). (NTP is an acronym for Network Time Protocol.)	Mandatory	Network
SNMP	Provides the C4000 Linux server statistics via Simple Network Management Protocol (SNMP) v1 through Port 161.	Optional	C4000 System Controller
TFTP	TFTP is used by IP phone and C4000 device provisioning. A TFTP server runs on the C4000 System Controller on port 69 (the standard TFTP port #). Device provisioning files are stored on the C4000 System Controller in directory: `/srv/tftp`. This is the only directory exposed by the TFTP server.	Mandatory	C4000 System Controller

2 Installing Debian 8.xx.x AMD 64

Before beginning the install process, make sure that your Nyquist C4000 system server can access the required URLs, or web sites (see *"White-listed Web Addresses" on page 2*).

You must install the Debian OS on the Nyquist C4000 system server before you can install the Nyquist C4000 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
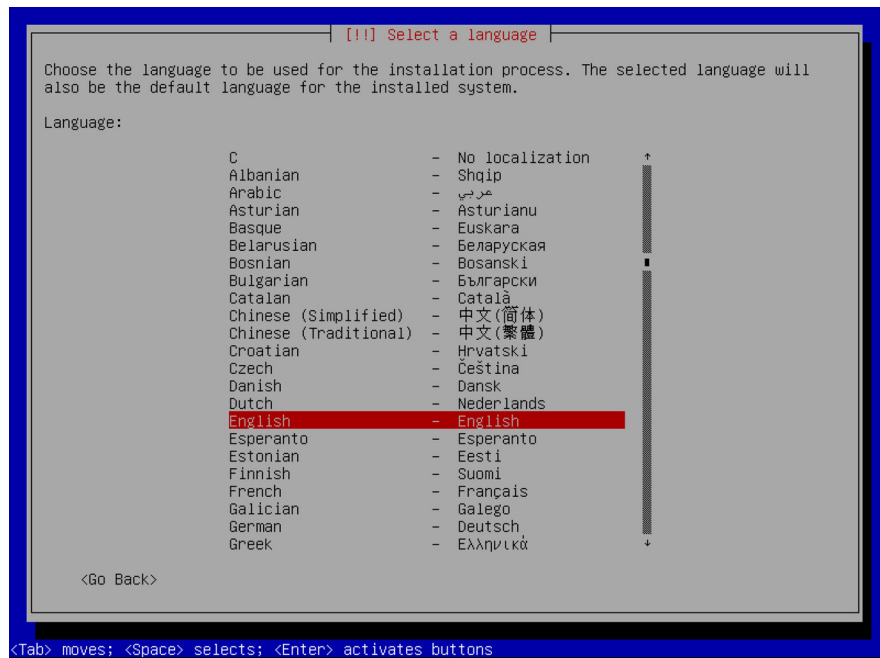
To install Debian 8.xx.x AMD 64 bit using the CLI:

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

The inital Debian install screen appears.
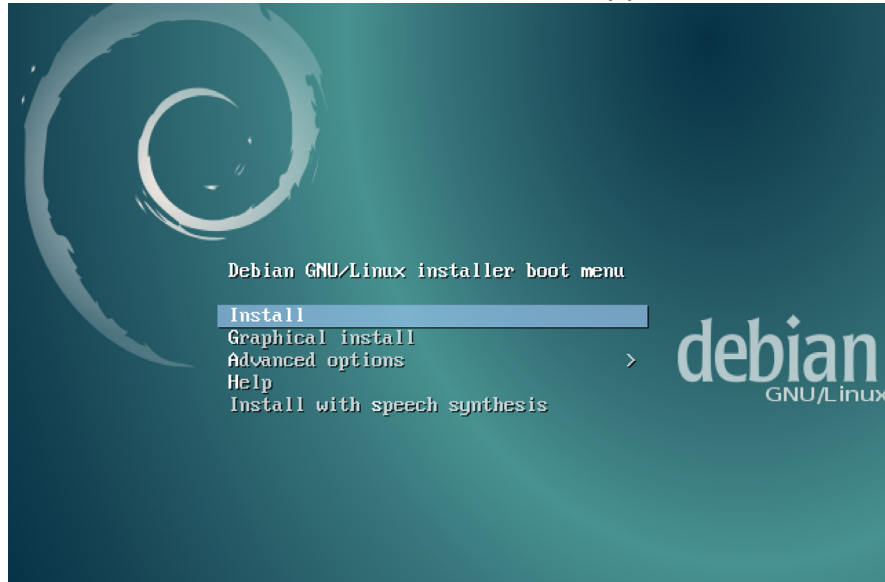
Step 2   From the Debian GNU/Linux Installer Boot Menu, select
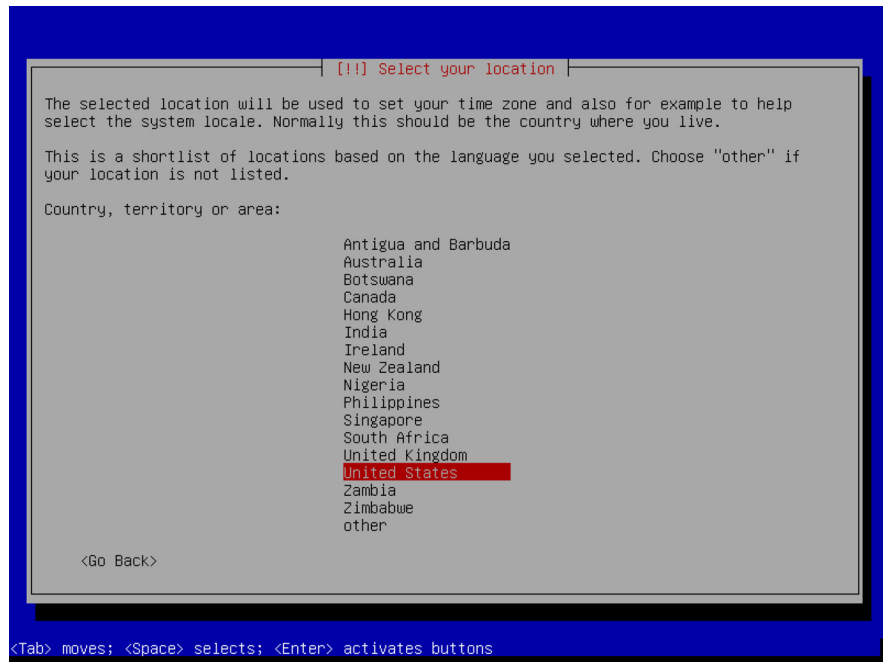   **Install** and then press **Enter**.

          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**.

```
┤ [!!] Select your location ├

The selected location will be used to set your time zone and also for example to help
select the system locale. Normally this should be the country where you live.

This is a shortlist of locations based on the language you selected. Choose "other" if
your location is not listed.

Country, territory or area:

                          Antigua and Barbuda
                          Australia
                          Botswana
                          Canada
                          Hong Kong
                          India
                          Ireland
                          New Zealand
                          Nigeria
                          Philippines
                          Singapore
                          South Africa
                          United Kingdom
                          United States
                          Zambia
                          Zimbabwe
                          other

        <Go Back>


<Tab> moves; <Space> selects; <Enter> activates buttons
```
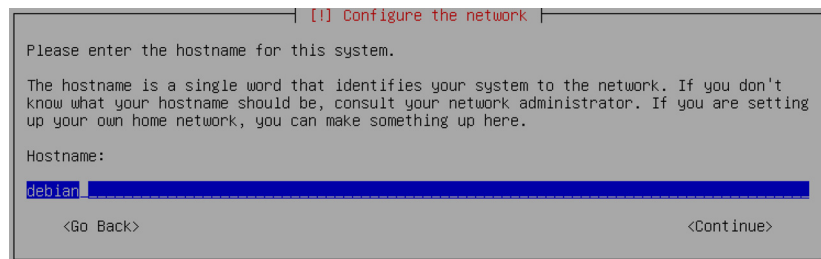
Step 4   Select your location and then press **Enter**.
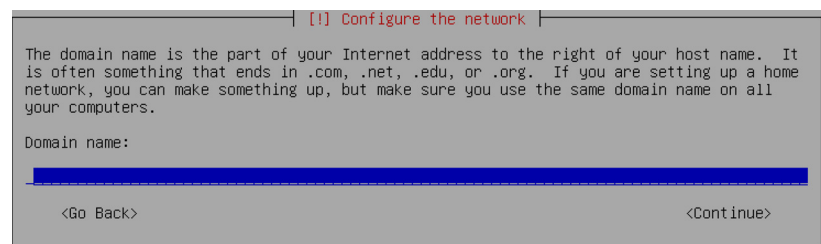
This selection is used to set your time zone.

You are next prompted to select a keyboard configuration. Keyboards are often tailored to the characters used in a language.
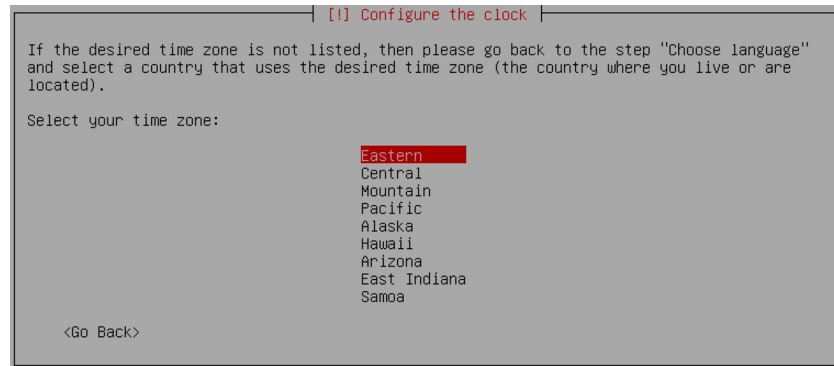
9
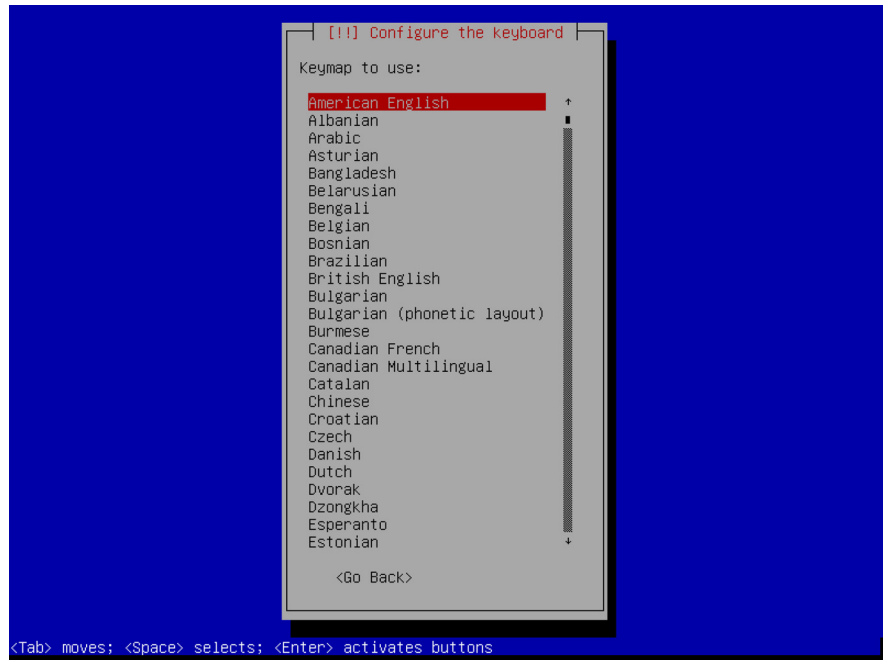
Step 5   Select the keyboard that you want to use and then press **Enter**.
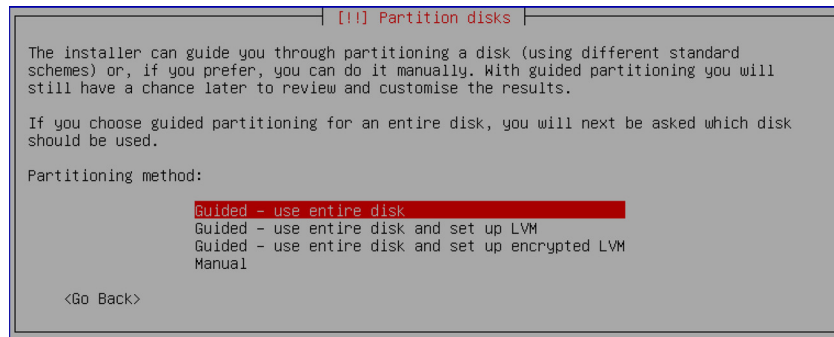

Step 6   When prompted for the hostname, type **debian**, select **Continue**, and press **Enter**.

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

```
┤ [!] Configure the clock ├
If the desired time zone is not listed, then please go back to the step "Choose language"
and select a country that uses the desired time zone (the country where you live or are
located).

Select your time zone:

                        Eastern
                        Central
                        Mountain
                        Pacific
                        Alaska
                        Hawaii
                        Arizona
                        East Indiana
                        Samoa

    <Go Back>
```

Step 8   Select your time zone and then press **Enter**.

```
┤ [!!] Partition disks ├
The installer can guide you through partitioning a disk (using different standard
schemes) or, if you prefer, you can do it manually. With guided partitioning you will
still have a chance later to review and customise the results.

If you choose guided partitioning for an entire disk, you will next be asked which disk
should be used.

Partitioning method:

                Guided - use entire disk
                Guided - use entire disk and set up LVM
                Guided - use entire disk and set up encrypted LVM
                Manual

    <Go Back>
```

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

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```
┤ [!!] Partition disks ├
Note that all data on the disk you select will be erased, but not before you have
confirmed that you really want to make the changes.

Select disk to partition:

                    SCSI1 (0,0,0) (sda) - 17.2 GB ATA VBOX HARDDISK

    <Go Back>
```

Step 10 Select the disk that you want to partition and press **Enter**.

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

```
┤ [!] Partition disks ├
Selected for partitioning:

SCSI1 (0,0,0) (sda) - ATA VBOX HARDDISK: 17.2 GB

The disk can be partitioned using one of several different schemes. If you are unsure,
choose the first one.

Partitioning scheme:

                    All files in one partition (recommended for new users)
                    Separate /home partition
                    Separate /home, /var, and /tmp partitions

    <Go Back>
```

Step 11 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 12 Press **Enter**.

```
                            ┤ [!!] Partition disks ├
  This is an overview of your currently configured partitions and mount points. Select a
  partition to modify its settings (file system, mount point, etc.), a free space to create
  partitions, or a device to initialize its partition table.

                  Guided partitioning
                  Configure software RAID
                  Configure the Logical Volume Manager
                  Configure encrypted volumes
                  Configure iSCSI volumes

                  SCSI1 (0,0,0) (sda) - 17.2 GB ATA VBOX HARDDISK
                      #1  primary   16.4 GB   f  ext4     /
                      #5  logical  748.7 MB   f  swap     swap

                  Undo changes to partitions
                  Finish partitioning and write changes to disk

        <Go Back>
```

Step 13   When prompted, select **Finish partition and write changes to disk** and then press **Enter**.

```
                            ┤ [!!] Partition disks ├
  If you continue, the changes listed below will be written to the disks. Otherwise, you
  will be able to make further changes manually.

  The partition tables of the following devices are changed:
      SCSI1 (0,0,0) (sda)

  The following partitions are going to be formatted:
      partition #1 of SCSI1 (0,0,0) (sda) as ext4
      partition #5 of SCSI1 (0,0,0) (sda) as swap

  Write the changes to disks?

      <Yes>                                                        <No>
```

Step 14   Select **Yes** to write changes to the disks and then press **Enter**.

```
                          ┤ [!] Configure the package manager ├
  The goal is to find a mirror of the Debian archive that is close to you on the network --
  be aware that nearby countries, or even your own, may not be the best choice.

  Debian archive mirror country:
                              Nicaragua                    ↑
                              Norway
                              Philippines
                              Poland
                              Portugal
                              Romania
                              Russian Federation
                              Serbia
                              Singapore
                              Slovakia
                              Slovenia
                              South Africa
                              Spain
                              Sweden
                              Switzerland
                              Taiwan
                              Tajikistan
                              Thailand
                              Tunisia
                              Turkey
                              Ukraine
                              United Kingdom
                              United States               ↓

        <Go Back>
```
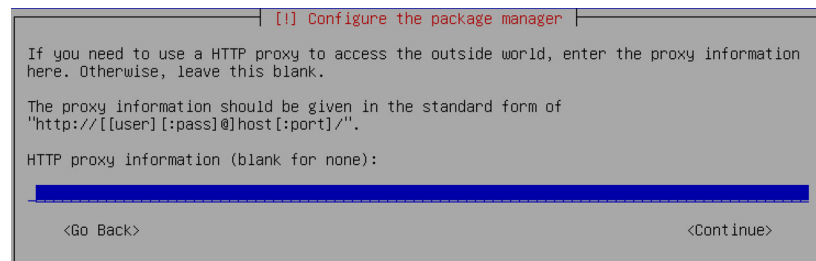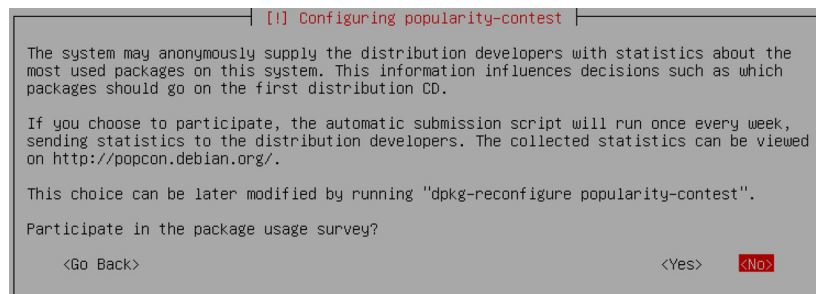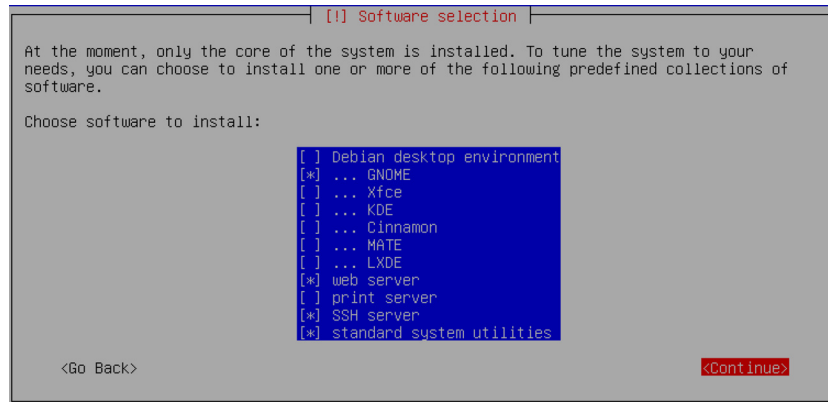
Step 15 When prompted, select an archive mirror country and then press **Enter**.

```
┤ [!] Configure the package manager ├

Please select a Debian archive mirror. You should use a mirror in your country or region
if you do not know which mirror has the best Internet connection to you.

Usually, ftp.<your country code>.debian.org is a good choice.

Debian archive mirror:

                              ftp.us.debian.org                ↑
                              mirrors.kernel.org               ▮
                              debian.csail.mit.edu
                              debian.osuosl.org
                              ftp-nyc.osuosl.org
                              ftp-chi.osuosl.org
                              debian.cse.msu.edu
                              mirror.cc.columbia.edu
                              mirror.hmc.edu
                              mirror.ancl.hawaii.edu
                              debian.cc.lehigh.edu
                              debian.gtisc.gatech.edu
                              httpredir.debian.org
                              ftp.gtlib.gatech.edu
                              ftp-mirror.internap.com
                              mirrors.linux.iu.edu
                              debian.uchicago.edu
                              carroll.aset.psu.edu
                              mirrors.xmission.com
                              mirror.keystealth.org
                              mirror.lug.udel.edu            ↓

        <Go Back>
```

Step 16 Select a Debian archive mirror and then press **Enter**.

```
┤ [!] Configure the package manager ├

If you need to use a HTTP proxy to access the outside world, enter the proxy information
here. Otherwise, leave this blank.

The proxy information should be given in the standard form of
"http://[[user][:pass]@]host[:port]/".

HTTP proxy information (blank for none):

_____

        <Go Back>                                              <Continue>
```

Step 17 When prompted to configure the package manager, leave the proxy field blank and press **Enter**.

```
┤ [!] Configuring popularity-contest ├

The system may anonymously supply the distribution developers with statistics about the
most used packages on this system. This information influences decisions such as which
packages should go on the first distribution CD.

If you choose to participate, the automatic submission script will run once every week,
sending statistics to the distribution developers. The collected statistics can be viewed
on http://popcon.debian.org/.

This choice can be later modified by running "dpkg-reconfigure popularity-contest".

Participate in the package usage survey?

        <Go Back>                                      <Yes>       <No>
```

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Step 18   When prompted to participate in the survey, select either **Yes** or **No** and press **Enter**.

```
┤ [!] Software selection ├
 At the moment, only the core of the system is installed. To tune the system to your
 needs, you can choose to install one or more of the following predefined collections of
 software.

 Choose software to install:

                           [ ] Debian desktop environment
                           [*] ... GNOME
                           [ ] ... Xfce
                           [ ] ... KDE
                           [ ] ... Cinnamon
                           [ ] ... MATE
                           [ ] ... LXDE
                           [*] web server
                           [ ] print server
                           [*] SSH server
                           [*] standard system utilities

      <Go Back>                                                          <Continue>
```

Step 19   Select the software that you want to install. As a minimum, select **GNOME**, **Web Server**, **SSH Server**, and **Standard System Utilities**.

Step 20   Select **Continue** and press **Enter**.

```
┤ [!] Install the GRUB boot loader on a hard disk ├
 It seems that this new installation is the only operating system on this computer. If so,
 it should be safe to install the GRUB boot loader to the master boot record of your first
 hard drive.

 Warning: If the installer failed to detect another operating system that is present on
 your computer, modifying the master boot record will make that operating system
 temporarily unbootable, though GRUB can be manually configured later to boot it.

 Install the GRUB boot loader to the master boot record?

      <Go Back>                                               <Yes>      <No>
```

Step 21   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.

```
┤ [!] Install the GRUB boot loader on a hard disk ├
 You need to make the newly installed system bootable, by installing the GRUB boot loader
 on a bootable device. The usual way to do this is to install GRUB on the master boot
 record of your first hard drive. If you prefer, you can install GRUB elsewhere on the
 drive, or to another drive, or even to a floppy.

 Device for boot loader installation:

                     Enter device manually
                     /dev/sda   (ata-VBOX_HARDDISK_VB791b28a0-f1f7c3df)

      <Go Back>
```

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Step 22   When prompted to select the hard disk where the boot-
           able software is to reside, select **Enter device manually**
           and then press **Enter**.

```
┤ [!!] Finish the installation ├

                    Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove
the installation media (CD-ROM, floppies), so that you boot into the new system rather
than restarting the installation.

    <Go Back>                                                         <Continue>
```

Step 23   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 C4000 software
           application.

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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 boot-
               able media can be a DVD, a CD, or a flash drive.
               The inital Debian install screen appears.
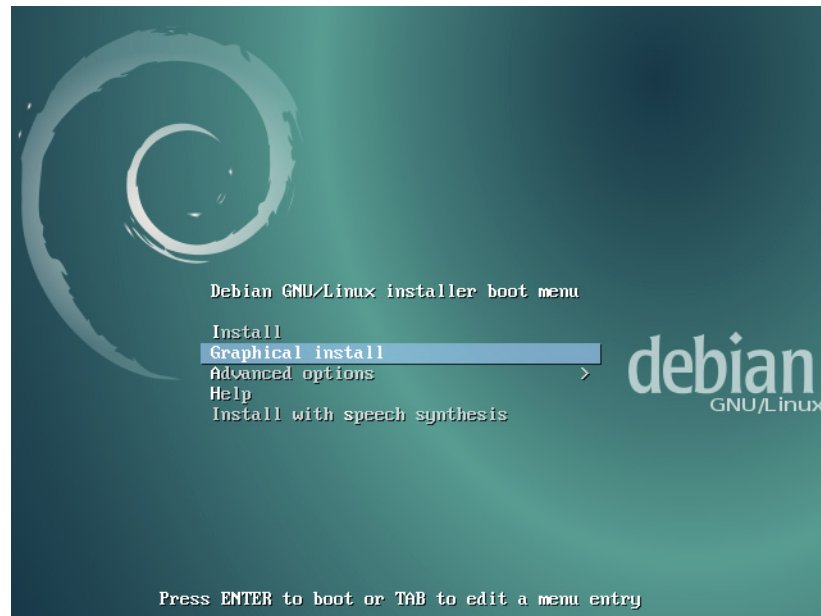
Step 2   From the Debian GNU/Linux Installer Boot Menu, select
               Graphical Install and then press **Enter**.

               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**.
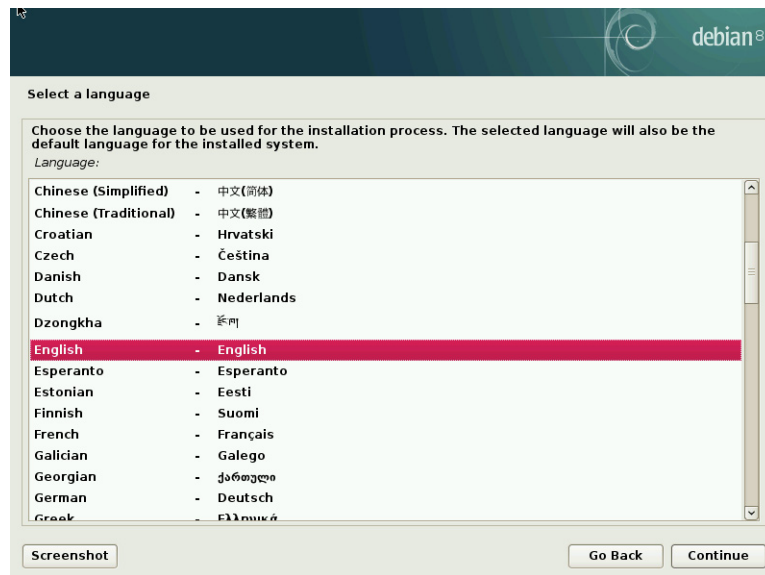
Step 3   Select a language and then select **Continue**.
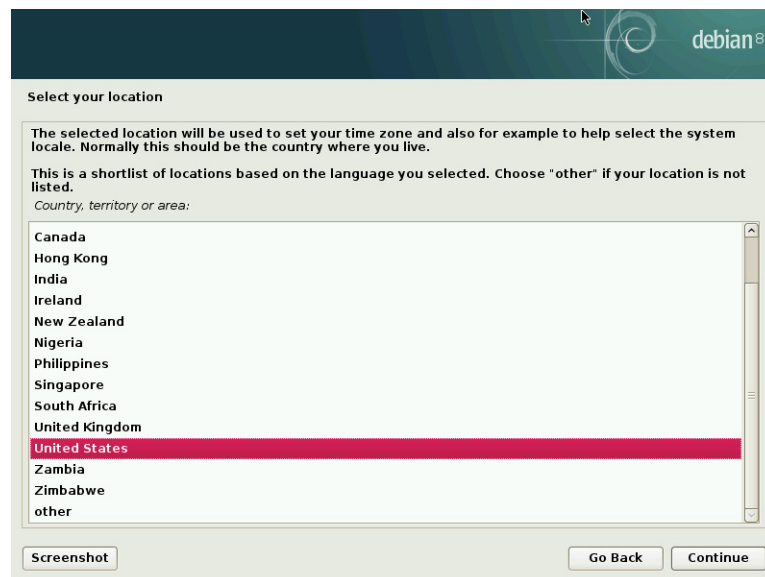
Step 4   Select your location and then select **Continue**.

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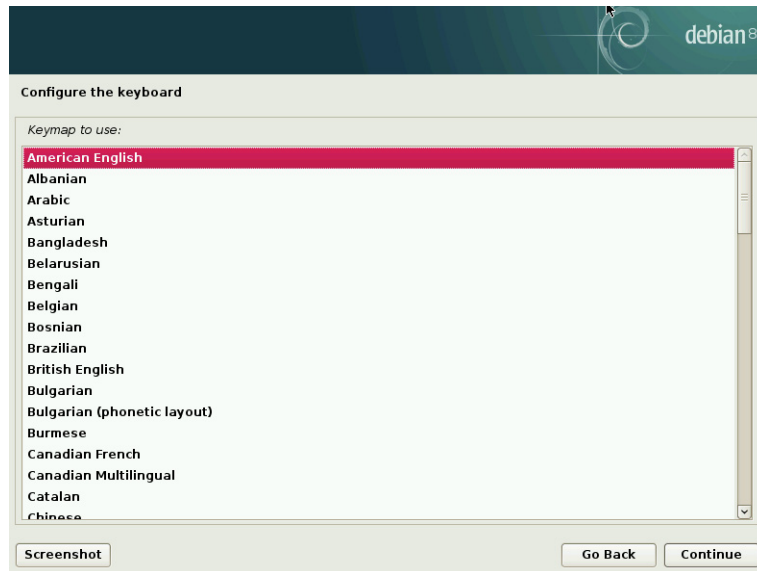
Step 5   Select the keyboard that you want to use and then select **Continue**.

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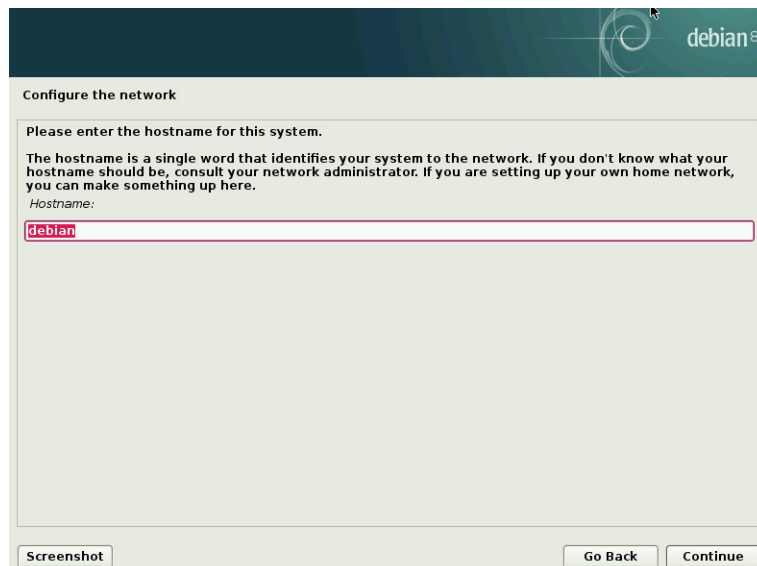
Step 6　　When prompted for the hostname, type **debian** and then select **Continue**.
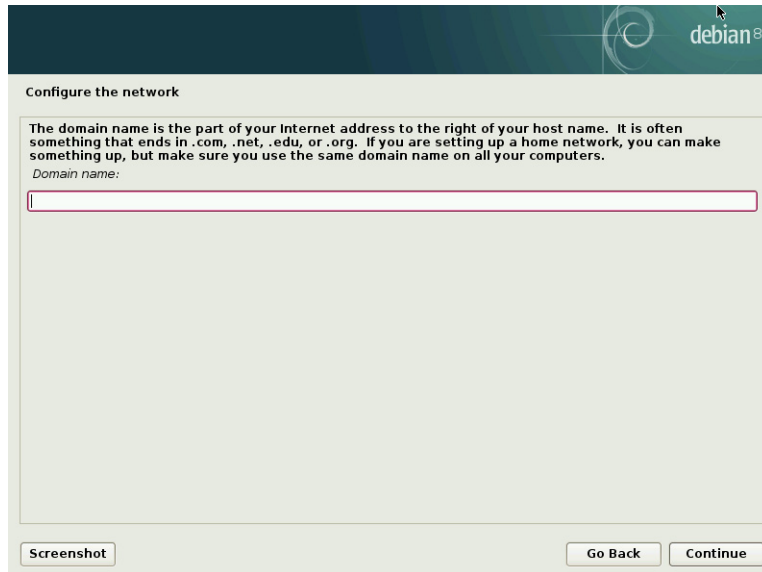
Step 7　　Type the domain name or leave this field blank if you are using an IP address. Then, select **Continue**.
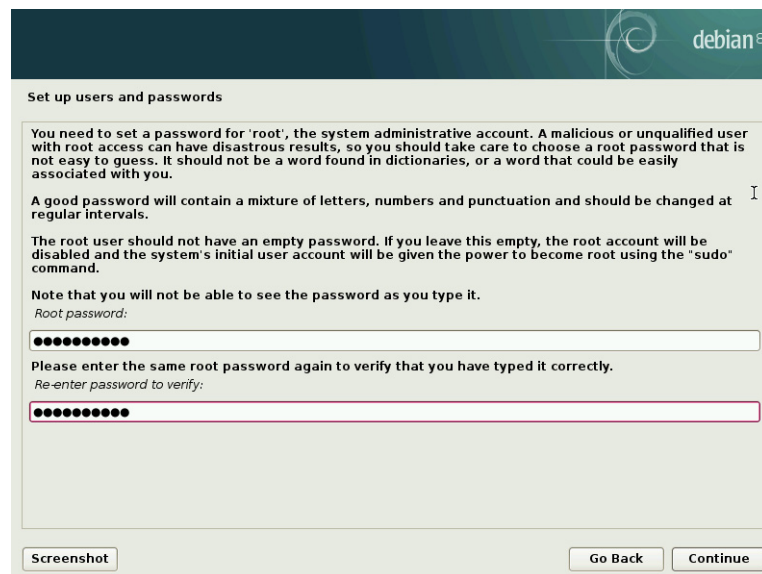
Step 8　　Type the password for the root system administrator account. Then, retype the password to verify that it was typed correctly and select **Continue**.

Note: Be sure to maintain a record of the password in a secure place.
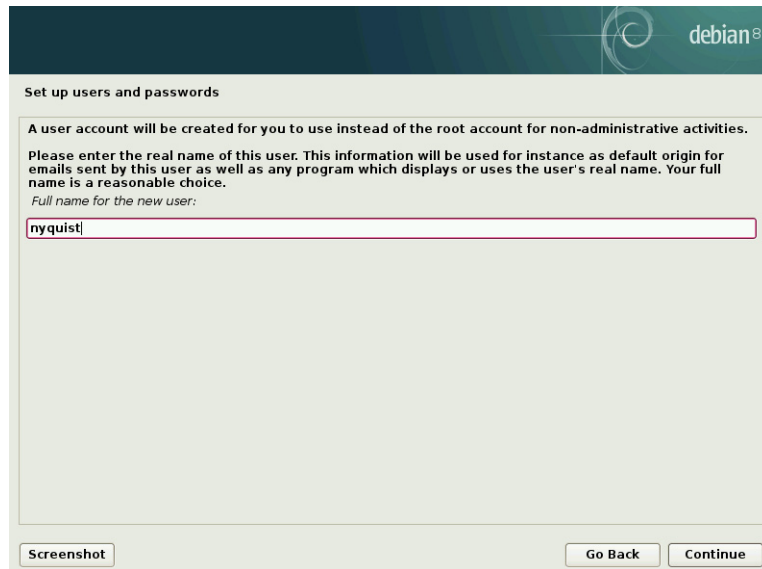
Step 9   Type the full name of a user who will perform non-administrative activities on the server. Then, select **Continue**.
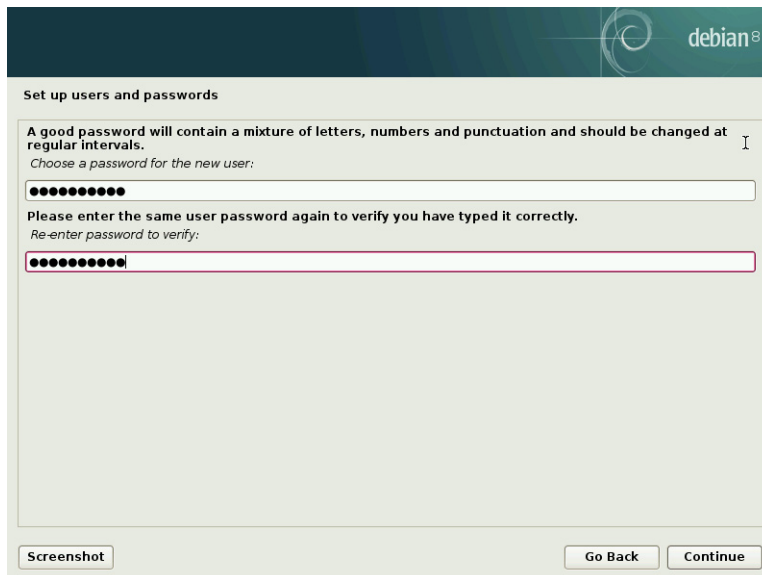
Step 10   Type a password for this user. Then, retype the password to verify that it was entered correctly and select **Continue**.

Note: Be sure to maintain a record of the password in a secure place.
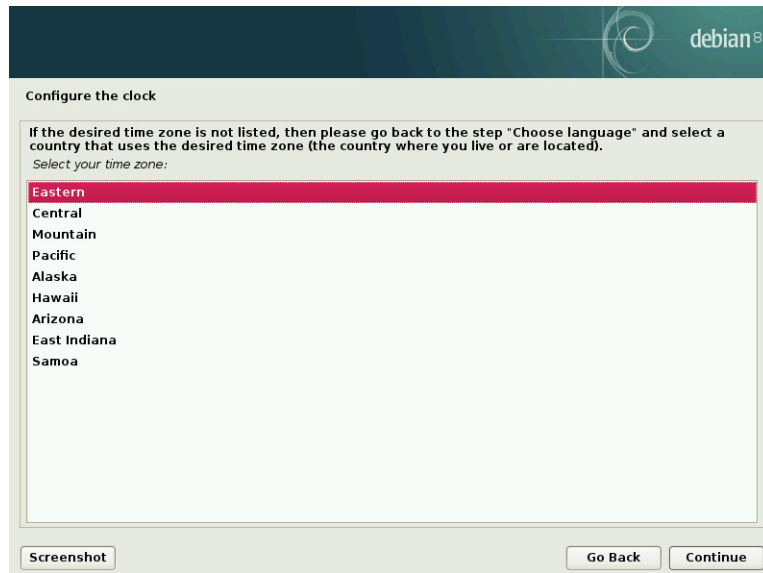
Step 11   Select your time zone and then select **Continue**.
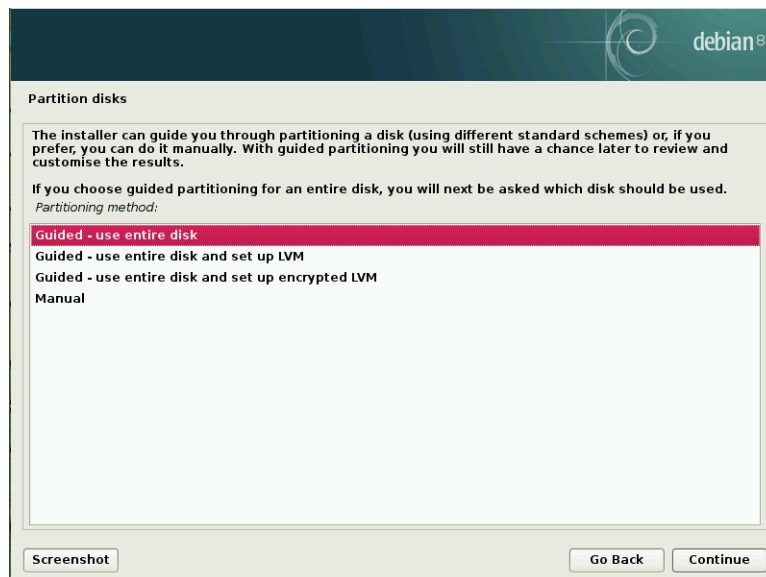
Note: While you can select a different partitioning scheme or select to manually partition the disk, the next few steps use the **Guide - use entire disk** option. You can later review and customize the results.

Step 12   Select **Guided - use entire disk** and select **Continue** to begin partitioning the disk.
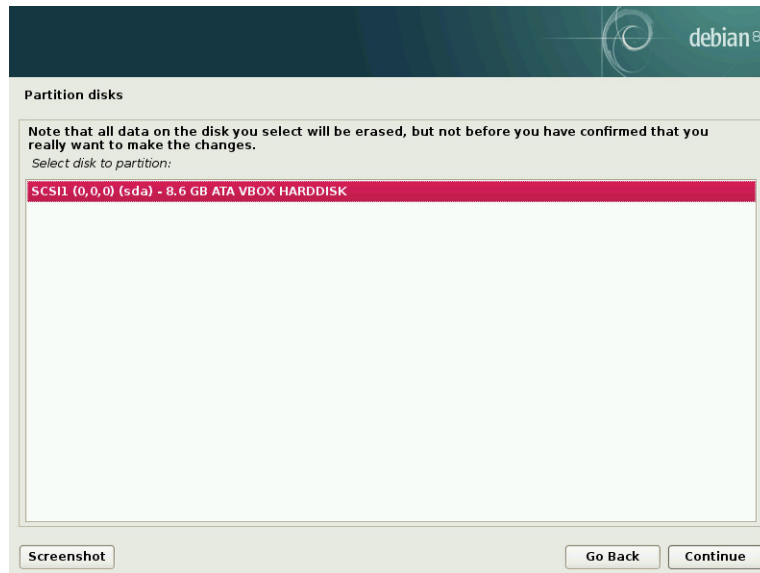
Step 13   Select the disk that you want to partition and select **Continue**.
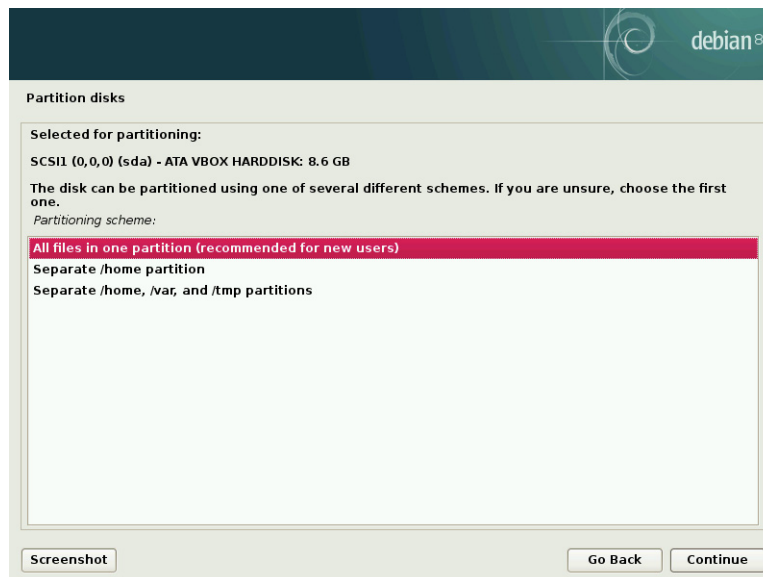
Step 14   Select the partitioning scheme that you want to use. If you are uncertain as to which scheme would be best, select **All files in one partition (recommended for new users)**.

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Step 15   Select **Continue**.
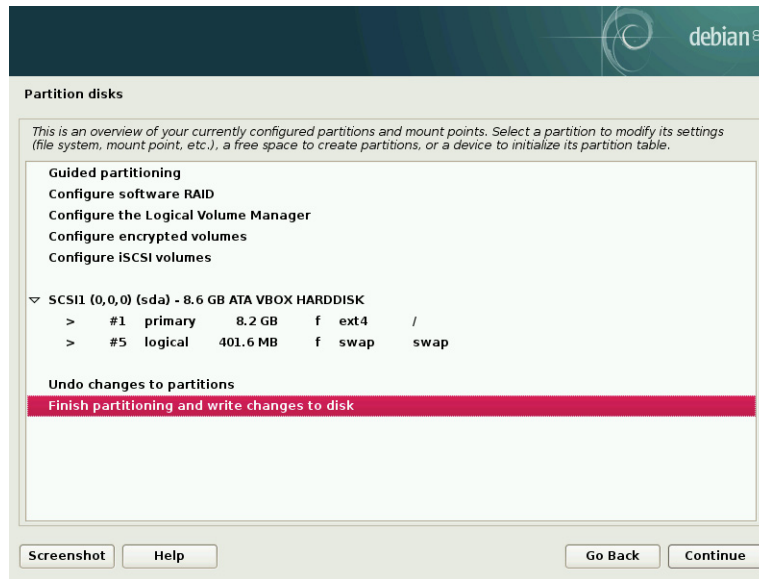
Step 16   When prompted, select **Finish partition and write changes to disk** and then select **Continue**.
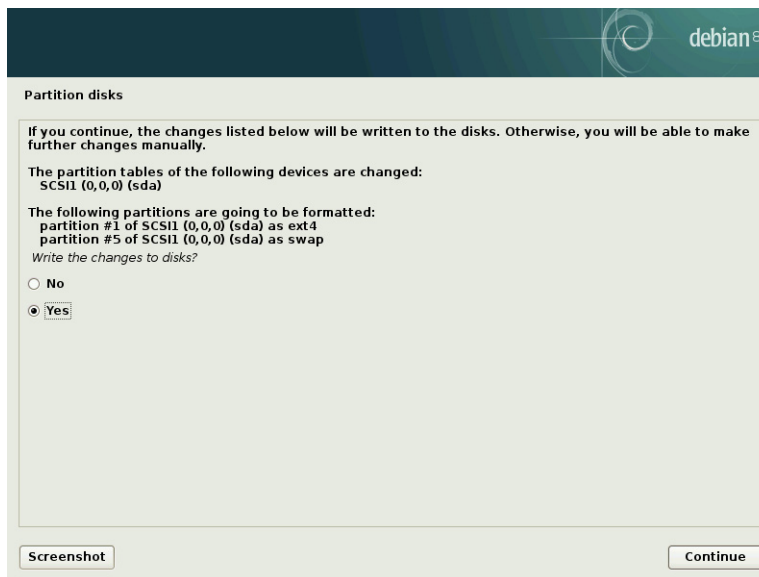
Step 17   Select **Yes** to write changes to the disks and then select **Continue**.
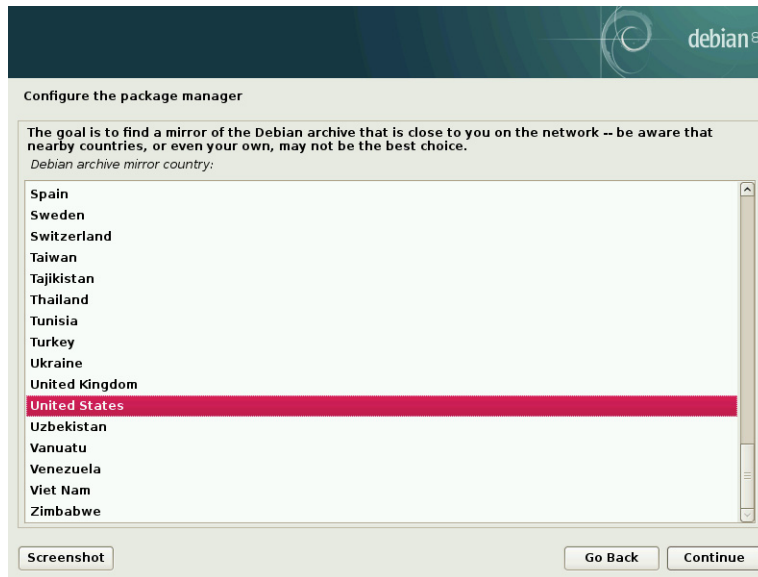
Step 18   When prompted, select an archive mirror country and
           then select **Continue**.
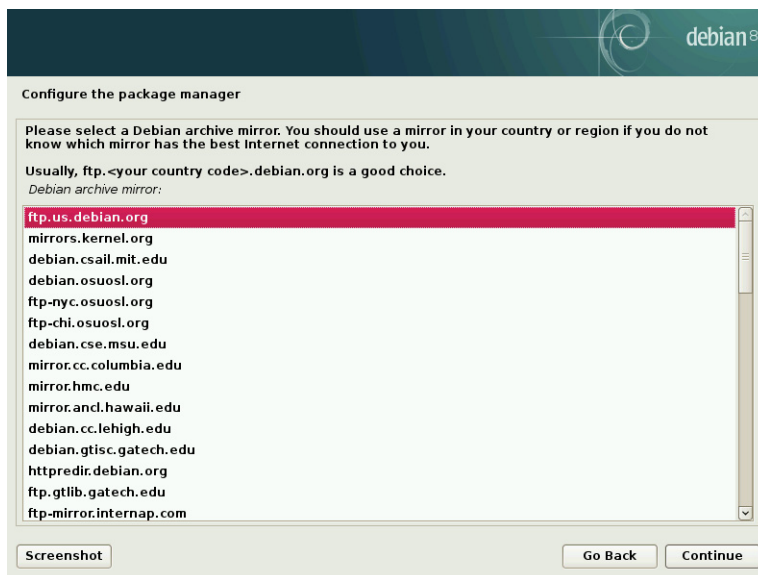
Step 19   Select a Debian archive mirror and then select **Continue**.
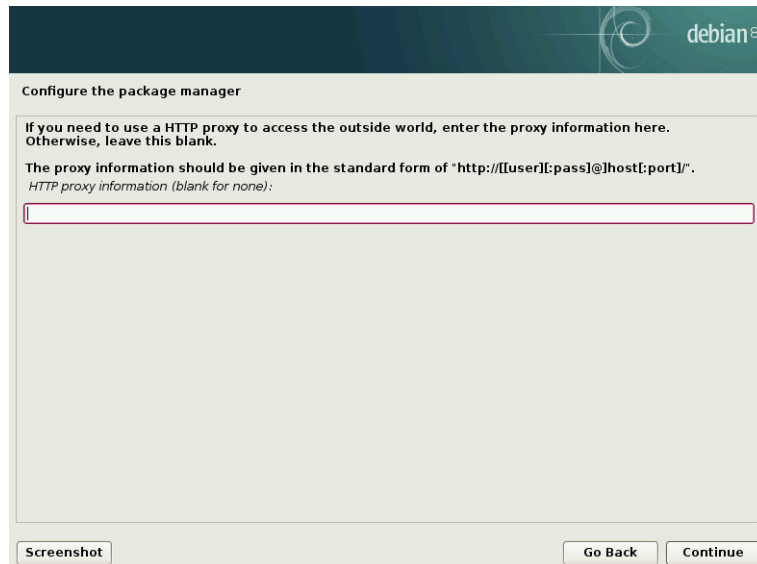
Step 20   When prompted to configure the package manager, leave the proxy field blank and select **Continue**.
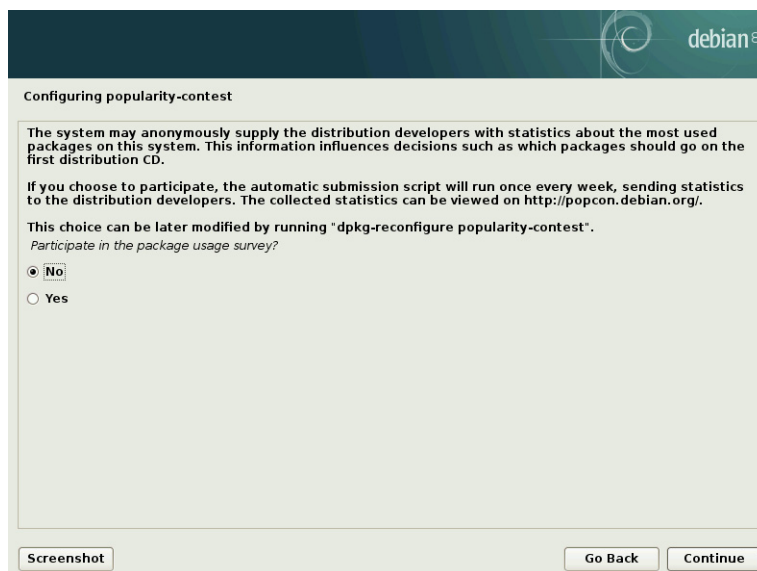
Step 21   When prompted to participate in the survey, select either **Yes** or **No** and select **Continue**.
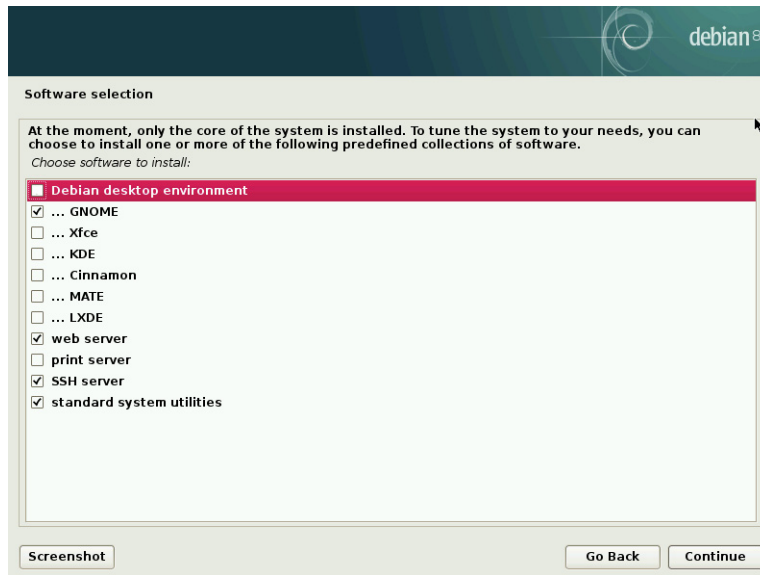
Step 22   Select the software that you want to install. As a mini-
            mum, select **GNOME**, **Web Server**, **SSH Server**, and
            Standard System Utilities.

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.
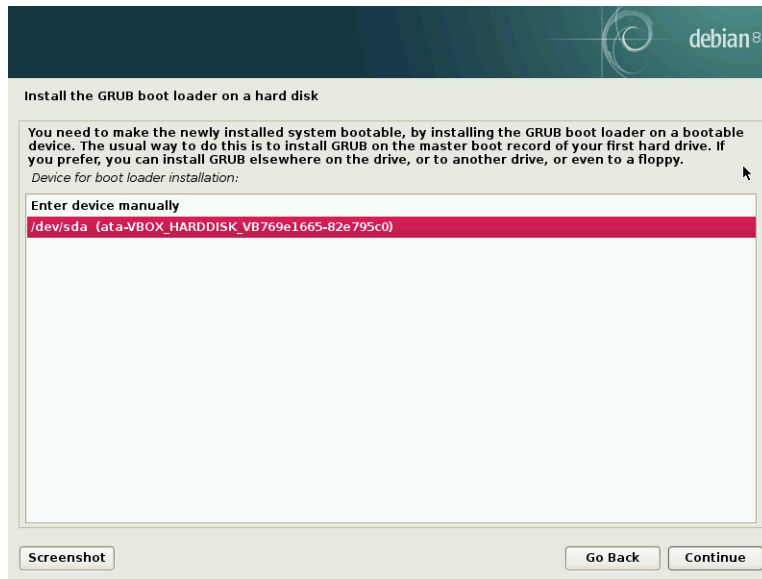
Step 25   When prompted, select the hard disk where the boot-
            able software is to reside and then select **Continue**.
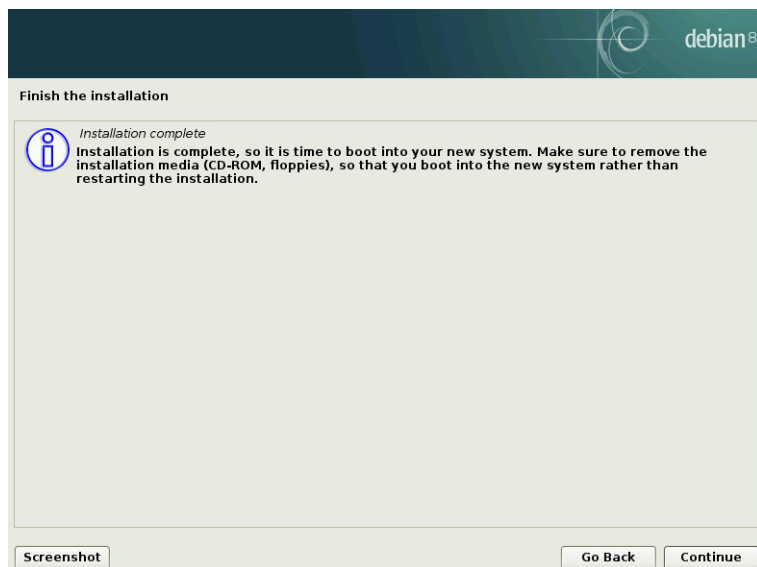
Step 26   When prompted that the installation is complete, make
            sure to remove the installation media, select **Continue**,
            and press **Enter**.

            The server boots into the new system and displays the
            GUI. You can now install the Nyquist C4000 software
            application.

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3 Installing the Nyquist C4000 System Server

The Nyquist C4000 system server install involves the following tasks:

- Setting up a static IP address for the Nyquist C4000 system server

- Copying and extracting the nyquist-c4000-xx.xx.xx.xxxx.tar.gz file

- Installing the Nyquist C4000 application software

Before installing Nyquist C4000, 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, obtain a static IP address from the network administrator.

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To set up a static IP address:

Step 1   Log into the Linux desktop.
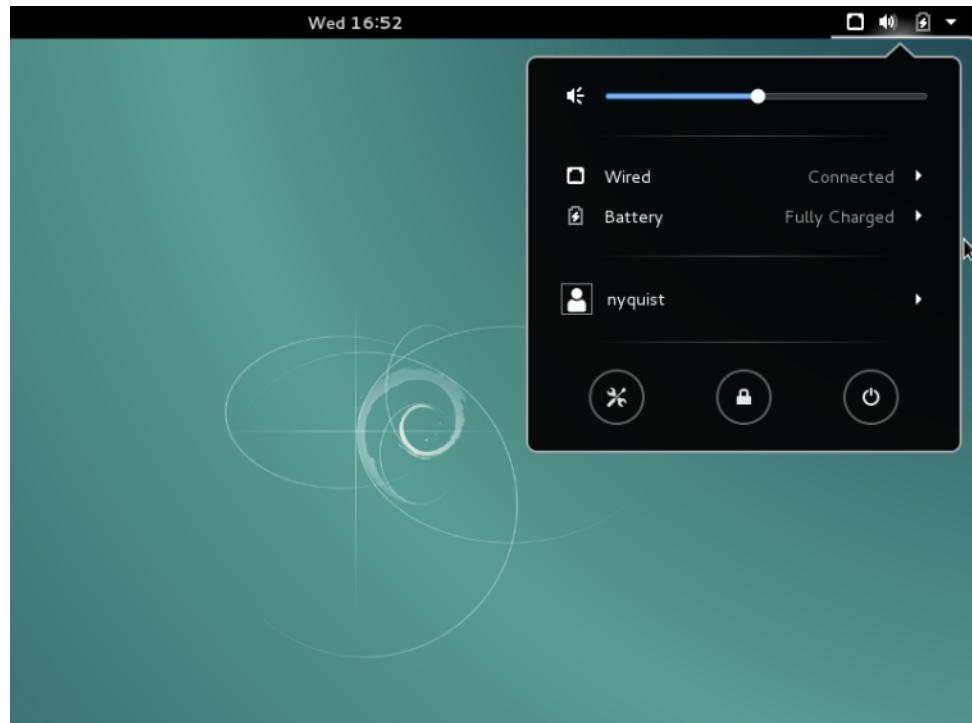
Step 2   From the menu on the top right of the screen, select
              the **Settings/Tool** icon.
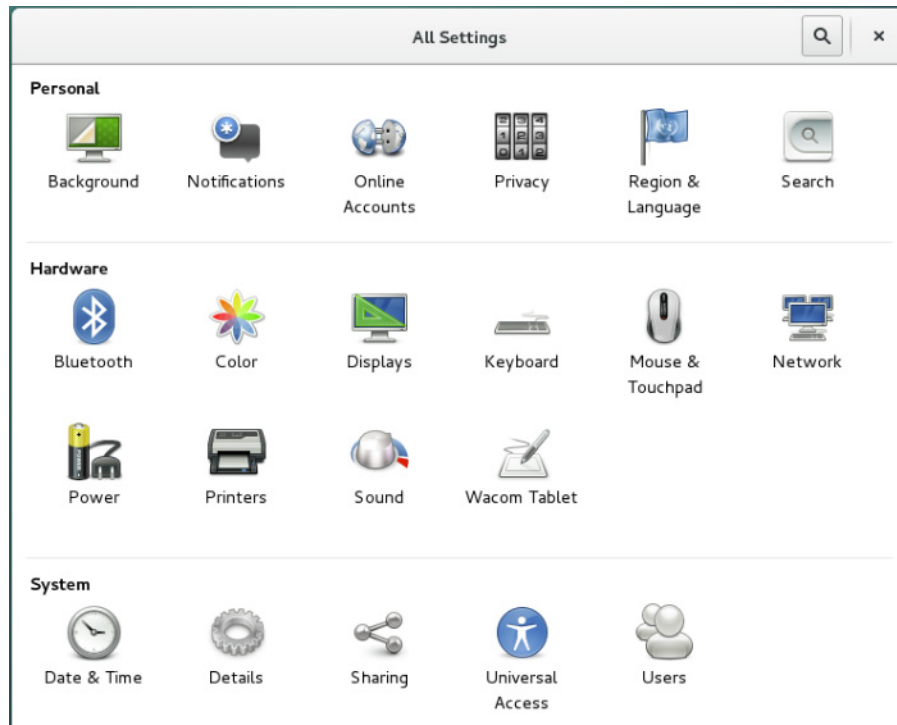
Step 3   Select **Users**.
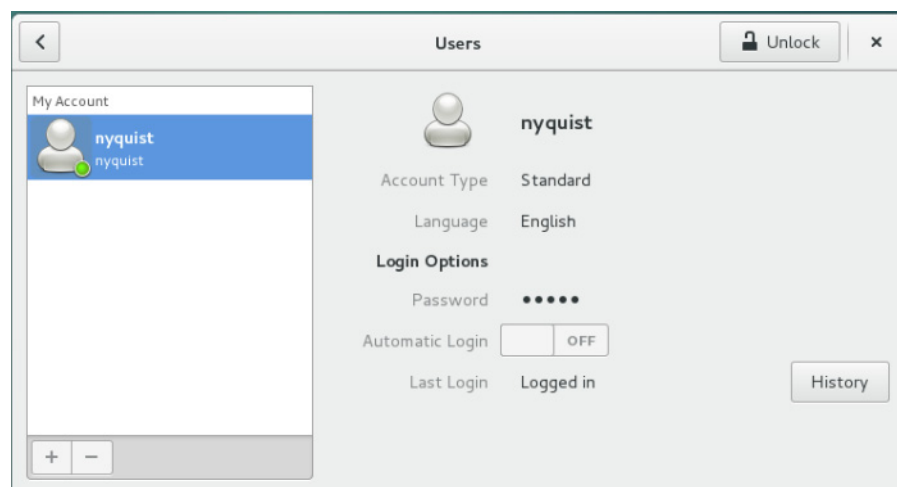
Step 4   Select **Unlock**.
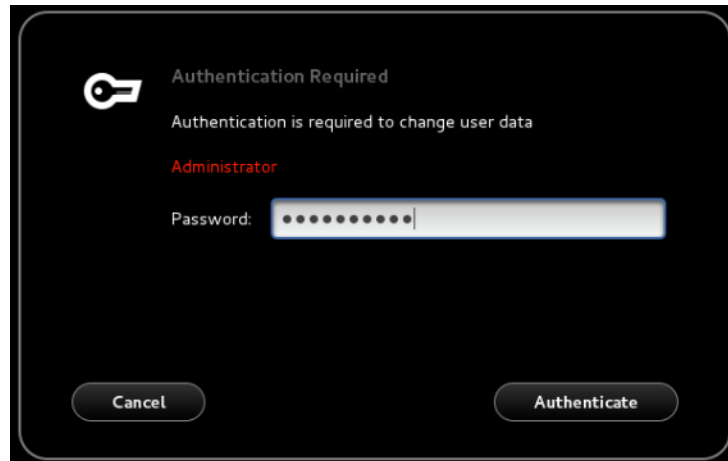
Step 5   Type the root password and then select **Authenticate**.
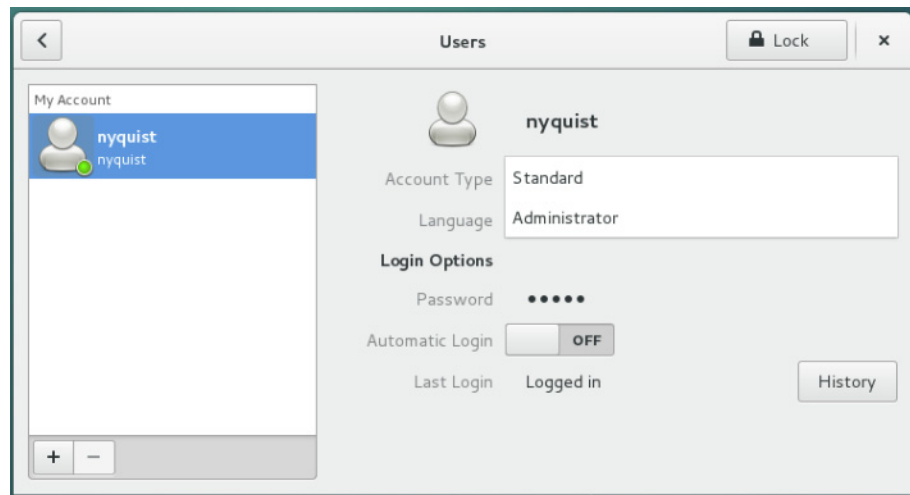
Step 6   Select **Account Type** and select **Administrator**. Then, select **Lock** and select the **Back** icon.
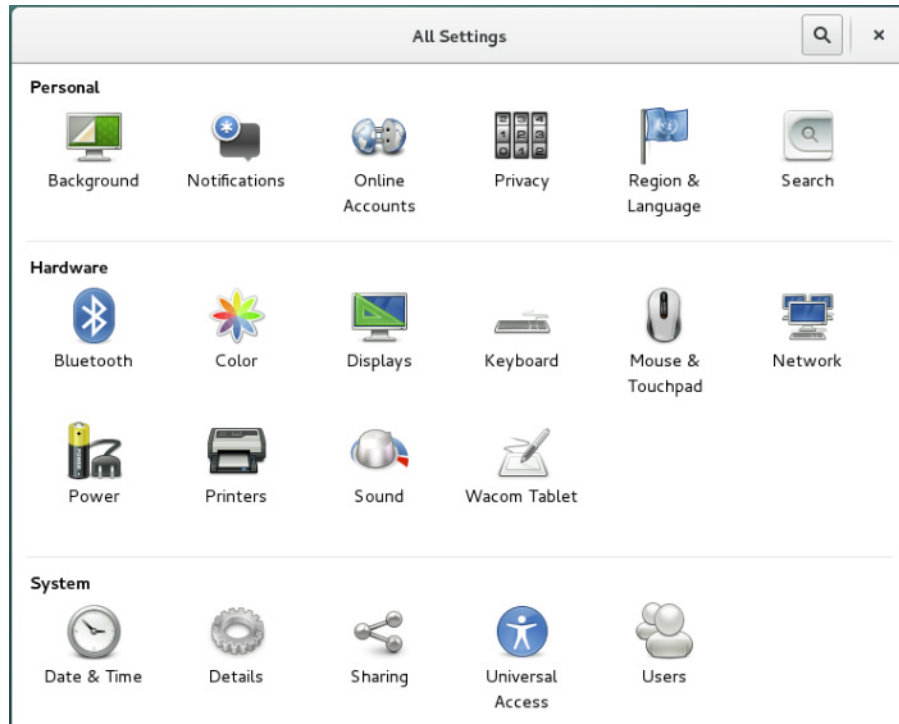
Step 7   From the All Settings screen, select **Network**.
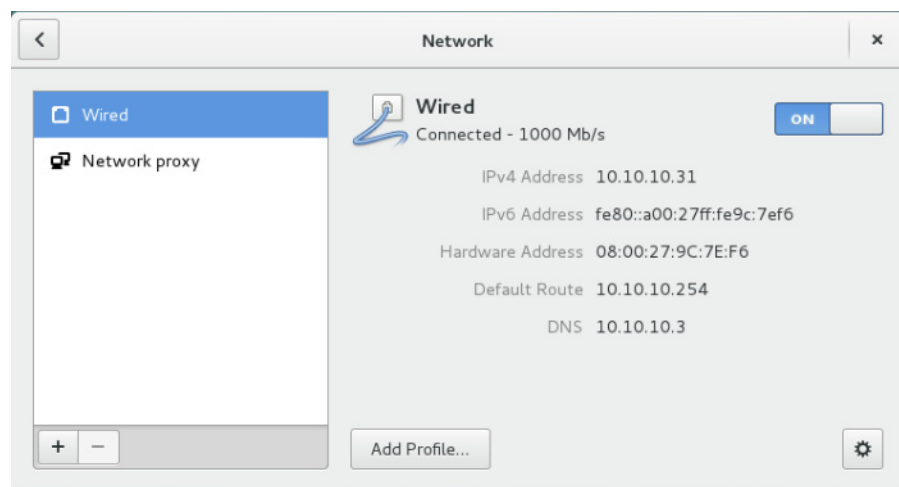
Step 8   Select the **Settings** icon, which is shaped like a gear, on the lower right of the screen.

33
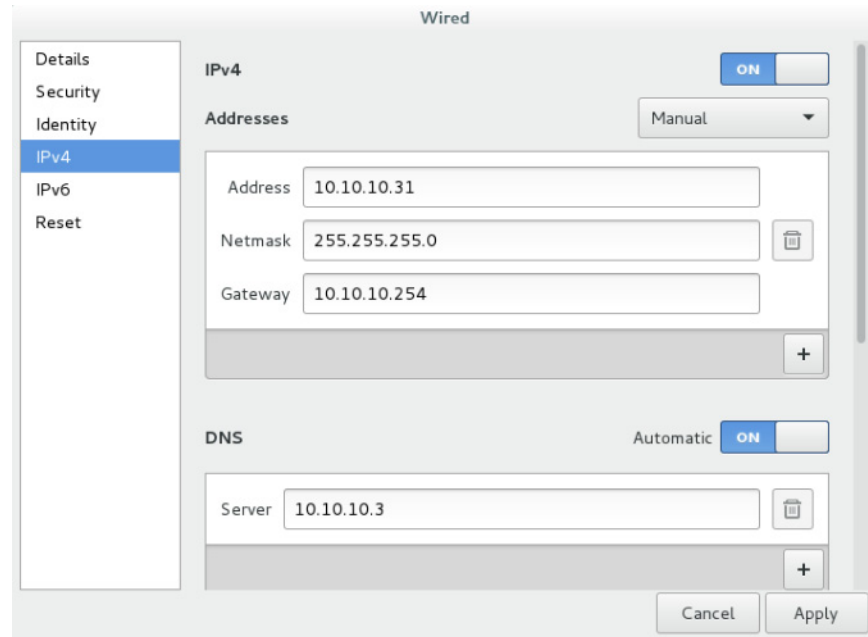
| Step 9 | Enter the IPv4 address settings and then click **Apply**. Next toggle the ON/OFF button to **OFF** and then to **ON** to apply the network settings. |
| Step 10 | Go to **Activities**, launch the Firefox browser, and verify Internet access. |

3.2   Copying and Extracting the .tar File

Note: The Nyquist C4000 system server must have access to the Internet in order to complete this procedure.

The <nyquist-c4000-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.xxxx must be replaced by the Nyquist C4000 version number. This version number can be obtained by typing the following at the shell prompt:

ls nyquist-*

To copy and extract the <nyquist-c4000-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.
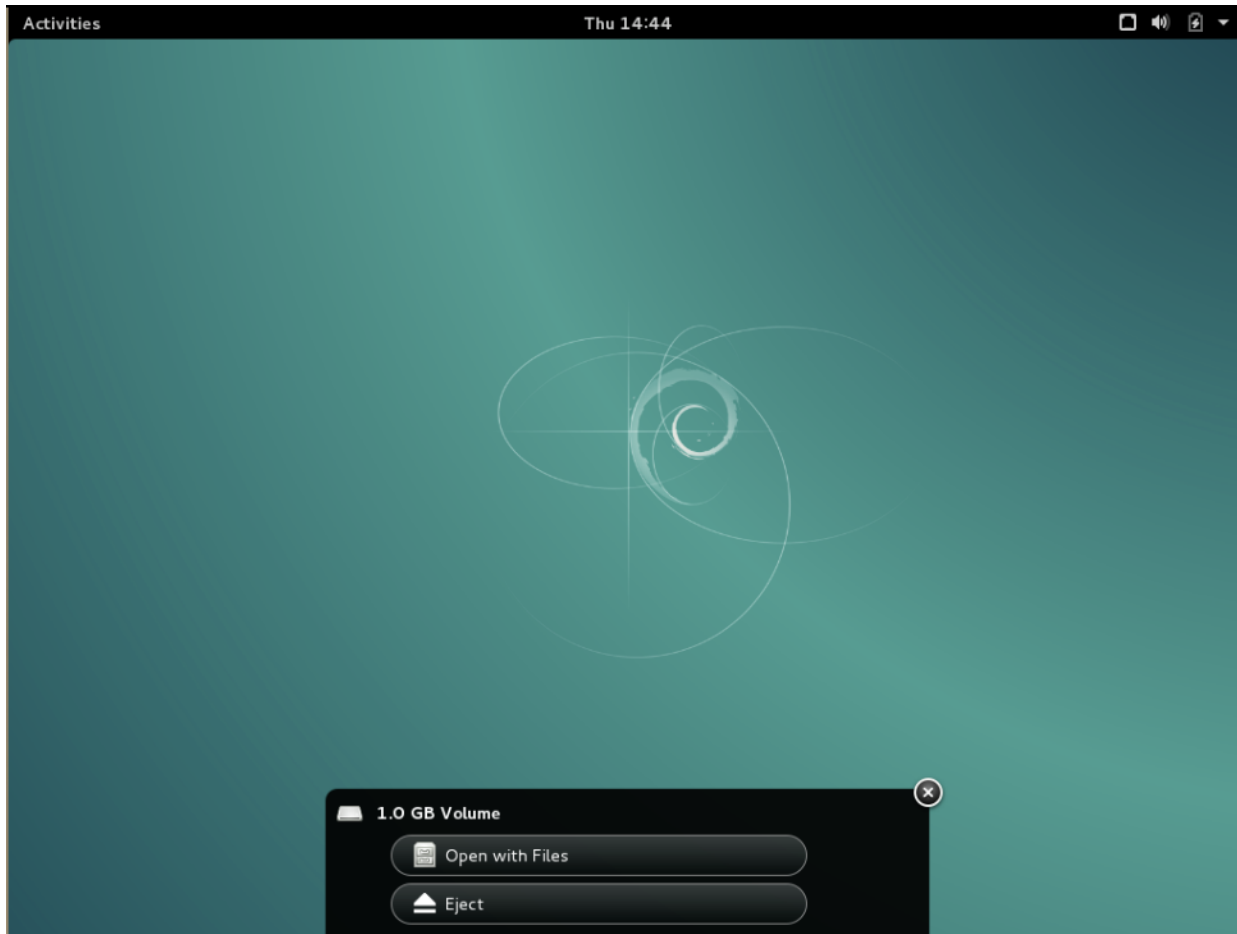
Step 2   Select **Open with Files**.

Step 3   Right-click **File** and select **Copy To**.
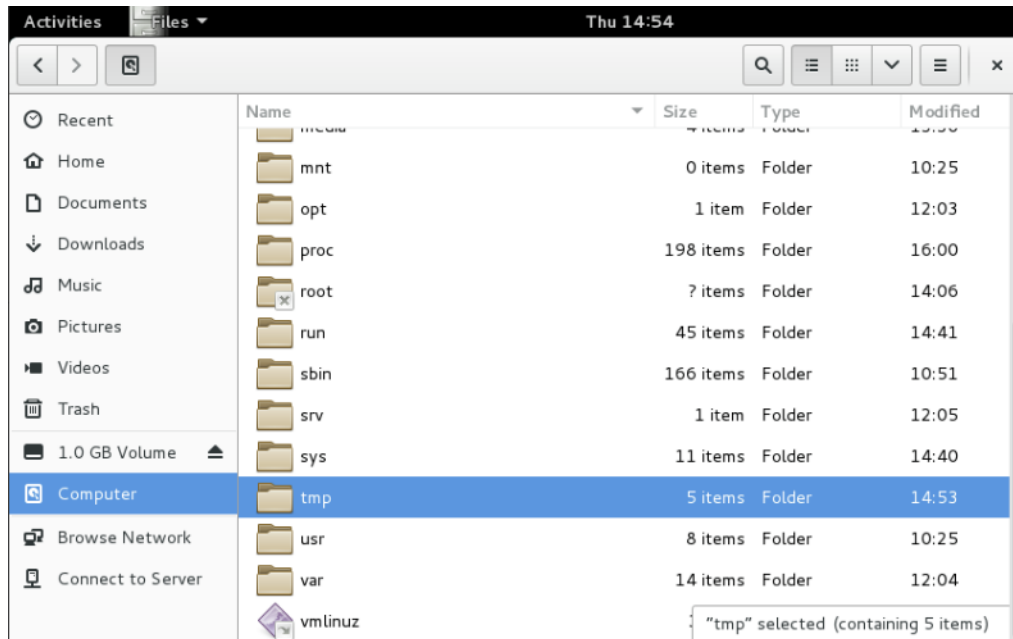
Step 4   Select **Computer** in the left column, click the **tmp**
              folder, and then click the **Select** button in the upper
              right hand corner.

Step 5   Click the **Terminal** icon to start a Command Line Inter-
          face, or CLI, session.

Step 6   Type **su** at the command prompt, press **Enter**, and then
          type the root password.


```
                                                                    bogen@C4000:
File  Edit  View  Search  Terminal  Help
bogen@C4000:~$ su
Password:
root@C4000:/home/bogen# tar xPvf /tmp/nyquist-c4000-1.0.0.1144.tar.gz
```

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-c4000-<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 C4000 Software

Note: Before beginning the install process, make sure that your
Nyquist C4000 system server can access the URLs, or web sites,
from a Chrome browser (see "*White-listed Web Addresses" on
page 2*).

After copying and extracting the nyquist-c4000-xx.xx.xx.xxxx.tar.gz
file, you can install the Nyquist C4000 application software. This
installation process takes about 1 hour and 45 minutes.

To install Nyquist C4000:

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

          /opt/bogen/install_nyquist

Step 2   Press **Enter**.

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```
                                                          bogen@C4
 File  Edit  View  Search  Terminal  Help
bogen@C4000:~$ su
Password:
root@C4000:/home/bogen# tar xPvf /tmp/nyquist-c4000-1.0.0.1144.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/licinfo-c4000
/opt/bogen/licinfo-e7000
/opt/bogen/nyquist/nyquist-files.tar
/opt/bogen/nyquist/nyquist-asterisk.tar
/opt/bogen/nyquist/scripts/install-packages
/opt/bogen/nyquist/scripts/check-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
/opt/bogen/nyquist/Cepstral-TTS.tar.gz
/opt/bogen/nyquist/teamviewer_amd64.deb
/opt/bogen/apt-sources.list
root@C4000:/home/bogen# /opt/bogen/install_nyquist
Checking Internet connectivity and access to license and download servers..
Enter License Activation Key (NXXX-XXXX-XXXX-XXXX-XXXX):
```

Step 3   When prompted for your License Activation Key, enter the Nodelocked (or Nyquist) License Activation Key (LAK). This key starts with an **N** and is in the format **N**XXX-XXXX-XXXX-XXXX-XXXX. The **N** must be upper-case.

Step 4   Press **Enter**.

```
Nyquist License Activated

Enter Product License Activation Key (PCXX-XX
```

Step 5   Next, enter the Product LAK, which appears in the format **PC**XX-XXXX-XXXX-XXXX-XXXX. **PC** must be upper-case.

```
                          ┤ Configuring libvpb0 ├
  This is the numeric code for the region your phone system will be operating in (eg. 61 for Australia or 33 for France).  It is used to configure the default regional standards that Voicetronix telephony
  hardware should comply with.

  ITU-T telephone code:

  01▌
                                        <Ok>
```
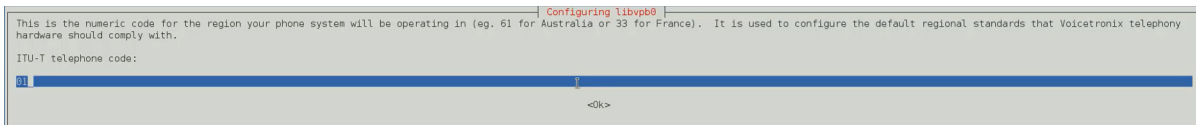
Step 6   When prompted, enter your country code. For the United States, type 01 and press **Enter**.

```
previously unselected package mysql-server.
to unpack .../mysql-server_5.5.57-0+deb8u1_all.deb ...
mysql-server (5.5.57-0+deb8u1) ...
| triggers for man-db (2.7.0.2-5) ...
| triggers for systemd (215-17+deb8u7) ...
| libaio1:amd64 (0.3.110-1) ...
| libdbi-perl (1.631-3+b1) ...
| libdbd-mysql-perl (4.028-2+deb8u2) ...
| libterm-readkey-perl (2.32-1+b1) ...
| mysql-client-5.5 (5.5.57-0+deb8u1) ...
| mysql-server-core-5.5 (5.5.57-0+deb8u1) ...
| mysql-server-5.5 (5.5.57-0+deb8u1) ...
47:34 [Warning] Using unique option prefix key_buffer instead of key_buffer_size is dep
| removed in a future release. Please use the full name instead.
47:34 [Note] Ignoring --secure-file-priv value as server is running with --bootstrap.
47:34 [Note] /usr/sbin/mysqld (mysqld 5.5.57-0+deb8u1) starting as process 32719 ...
| libhtml-template-perl (2.95-1) ...
| mysql-server (5.5.57-0+deb8u1) ...
| triggers for libc-bin (2.19-18+deb8u10) ...
| triggers for systemd (215-17+deb8u7) ...
|stallation done.



d the Nyquist End User License Agreement (EULA):

r key to display the Nyquist EULA█
```

Step 7   Press **Enter** to read the End User License Agreement (EULA).

Step 8   Press the **Space bar** to continue reading the EULA.

```
                         nyquist@debian: ~                              ×

File   Edit   View   Search   Terminal   Help

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Do you accept the Nyquist EULA (Enter Yes or No)?█
```

Step 9   Type **yes** to accept the EULA.

Step 10   When prompted to select option (C)reate (E)nter,
           (I)mport or (S)kip, type **c**, and then press **Enter**.

```
File  Edit  View  Search  Terminal  Help
php-pear is already the newest version.
php5 is already the newest version.
php5-mysql is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
PHP Install done
Remove Debian test index page
Enable copy hidden files
==> Copy Laravel website to /var/www/html/laravel/
Laravel website copy done
==> Add File Symbolic Links ...done
Create SSL directory
Apache SSL Certificate Configuration for Web Interface...
Please choose one of the following SSL configuration options:

Create - Create a self-signed SSL certificate/key for this server.
         A self-signed SSL certificate/key will be created for this server.
         NOTE: You can use this option to create a temporary key for testing,
         then later install a certificate issued by certificate authority.

Enter  - Enter the Certificate and Private Key data for this server.
         Notes:
         Certificate data starts with "-----BEGIN CERTIFICATE-----".
         Private Key data starts with "-----BEGIN PRIVATE KEY-----".

Import - Import Certificate and Private Key files by specifing filenames.
         Notes:
         Certificate filenames usually end with .crt (e.g. server.crt)
         Certificate files contain "-----BEGIN CERTIFICATE-----" on first line.
         Private Key filenames usually end with .key (e.g. server.key)
         Private Key files contain "-----BEGIN PRIVATE KEY-----" on first line.

Skip   - Skip SSL configuration for this server (already done or will do later)

Select option: (C)reate, (E)nter, (I)mport or (S)kip? C
Select option: (I)P Address or (D)omain Name? I
```

Step 11   When prompted to select option (I)P Address or
           (D)omain name, type **i**.

Step 12   Type the server's static IP address, and then press
           Enter.

           When the Linux prompt appears, you can log into the
           C4000 system using the Admin Web UI.

4   **Launching Wizards Following a Server Install**

The first time you try to log on to your Nyquist C4000 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 C4000 on a server (other than the NQ-SYSCTRL), the Customer Information Wizard appears.

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Customer Information Wizard

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

Company Name: ✱

Address 1: ✱

Contact First Name: ✱

Address 2:

Contact Last Name: ✱

City: ✱

Title: ✱

State/Province: ✱

Customer Type: ✱

Select ▾

Postal Code: ✱

Contact Email: ✱

Country: ✱

Contact Phone: ✱

Serial Number:

112233445566

✱ Required

[Continue]

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

The Dialing Length Wizard is next. If you already know how to configure a C4000 system and you want to skip the wizards, you can select **Expert Setup**, which takes you directly to the C4000 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 that 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 C4000 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 the select **Continue**.

Station Wizard

Create an Admin Web UI Station:

Extension: ⓘ

Name: ⓘ

Admin Web UI

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**.

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

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

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 Volume	Sets the volume level for audio distribution playing to stations in the zone. (See *"Using Audio Distribution" on page 270*.)
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 Contiue 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.

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 C4000 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 C4000 system software to a new software release
- Re-installing a previous Nyquist C4000 system software release
- Re-installing the same Nyquist C4000 system software release
- Updating Nyquist appliance or device firmware
- Using System Backups

5.1   Updating Nyquist C4000 Software

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

New Nyquist C4000 server software may include patches to address known issues or new releases that provide additional features. The latest software can be downloaded by going to the C4000 product website (http://www.bogen-ip.com/) and selecting **RESOURCES** from the **SUPPORT** tab.

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 C4000 software release, use the Admin web UI to perform a system update unless directed otherwise by Bogen Technical Support (1-800-999-2809). Performing a system update ensures that all configuration data, call detail records, record-

ings, 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.

For more information, refer to the *Nyquist C4000 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, from a Chrome browser (see *"White-listed Web Addresses" on page 2*.)

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 C4000 Software" on page 37*).

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 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*.

If you need to re-install the same software release, you should first perform a system backup. (Refer to the *Nyquist C4000 System Administrator Manual.*)

Next, install Nyquist using the install_nyquist command (see *"Installing the Nyquist C4000 Software" on page 37*).

> *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 C4000 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

When Nyquist C4000 software is installed or upgraded, the appliance firmware on any installed Nyquist appliance is automatically upgraded to the appropriate firmware compatible with the Nyquist C4000 system software installed. Also during the installation or upgrade, the appropriate version of firmware included with the new Nyquist C4000 application software is copied to the firmware folder and an entry is added to the firmware list available on the web UI.

Nyquist appliance firmware can be updated for specific Nyquist appliances and devices through the Admin web UI or directly through the appliance's web UI. For information about the appliance's web UI, refer to the device's configuration manual.

Through the Admin web UI, you can upload a firmware file to the system, download firmware to a Nyquist appliance or device, view a list of appliances and devices that are linked to a firmware name, set default firmware for any appliances and devices to be added, and delete firmware entries. For information about using the web UI, refer to the *Nyquist C4000 System Administrator Manual.*

The latest C4000 software can be accessed by going to the C4000 product website at http://www.bogen-ip.com/ and selecting **RESOURCES** from the **SUPPORT** tab.