PORTA ONE®

Porta UM
unified messaging

Installation Guide

www.portaone.com

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PortaUM – Unified Messaging System
March, 2004

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Preface

This document provides a general overview of the PortaUM installation process.

Where to Get the Latest Version of this Guide

The hard copy of this guide is updated at major releases only, and does not always contain the latest material on enhancements occurring in-between minor releases. The online copy of this guide is always up-to-date, integrating the latest changes to the product. You can access the latest copy of this guide at:
www.portaone.com/solutions/portaum/

Conventions

This publication uses the following conventions:

- Commands and keywords are given in **boldface**
- Terminal sessions, console screens, or system file names are displayed in `fixed width font`

Caution indicates that the described action might result in program malfunction or data loss.

NOTE: Notes contain helpful suggestions about or references to materials not contained in this manual.

Timesaver means that you can save time by performing the action described in the paragraph.

Tips provide information that might help you solve a problem.

1. Introduction

PortaUM runs on most modern UNIX operating systems (FreeBSD, Linux, Sun Solaris, etc.), assuming that these are equipped with such basic components as an ANSI C compiler. However, it may be difficult for an inexperienced system administrator to install and configure the operating system in such a way that it meets all the requirements and provides the best performance. Installing all the pre-requisite software (libraries, Perl modules, etc.) can also be a time-consuming task.

The PortaUM JumpStart installation CD offers a quick and seamless way of performing a complete server installation from scratch in less than 15 minutes! It contains the installation media for FreeBSD 4.8, including all the necessary packages, plus PortaSIP itself.

The installation wizard employs a text-mode GUI. Use the arrow keys to change your selection, "**Tab**" to move between the fields, and "**Enter**" to make a choice.

Hardware and Software Requirements

PortaUM requires a *dedicated* Cisco AS 5300/5350.

Cisco requirements

128M RAM, 64M flash, E1 or T1 voice ports, sufficient number of DSPs. IOS 12.3.5a (or other from the 12.3 branch).

AS5300 comes with 4 or 8 T1/E1's. You will not need more than 4 of them because of DSP resource limitation for AS5300.

For T1 configuration maximum voice resource will be 96 and for E1 -- 120.

Recommended configuration:

Server HW

- Pentium 4 CPU 3 GHz
- Motherboard with 533 MHz system bus support
- 512 MB of RAM

Make sure that your servers have been properly installed and equipped with all the required hardware, namely:

- Network card

- CD-ROM (in the case of an IDE CD-ROM, we recommend that it be connected as a slave on a secondary IDE channel)
- Video adapter/monitor/keyboard (required only during the installation process)
- At least one disk drive of sufficient size. The size of the drive should be selected based on the anticipated amount of PortaUM users, taking the following into consideration:
    - The operating system and all software packages take up about 2GB of disk space
    - Approx. 10 GB should be reserved for system use (temporary files, operating logs and such)
    - One second of recorded audio takes about 10 kilobytes of disk space
    - One fax page takes about 120 kilobytes of disk space

  Therefore, if your system is designed to serve, for example, 10,000 users and has an 80 GB disk, you can allocate 6.8 MB for each user, which will be sufficient to store audio messages with a total length of 10 minutes, or about 50 fax pages.

Please make sure that other hardware installed in your server (such as network adapter, RAID controller, etc.) is supported by the FreeBSD. You can check this on the FreeBSD web site: **http://www.freebsd.org**.

During installation you will be prompted for your network configuration parameters. Please decide on this matter before beginning installation, consulting your network administrator if necessary. While it is possible that you will have to perform installation before the network is available (in your office, for example, while the servers will be located in a server hosting center), you will still need to enter the correct data. Please have the following ready:

- IP addresses of master and slave PortaBilling100 servers
- IP address of the PortaSIP server
- Name of the MX domain designated for the hostname of the machine running PortaUM
- Subnet mask and address of the default gateway
- Address of your DNS server

If a hardware RAID controller is available in your system, configure the RAID array. Recommended configurations (depending on the number of hard drives in the system) are as follows:

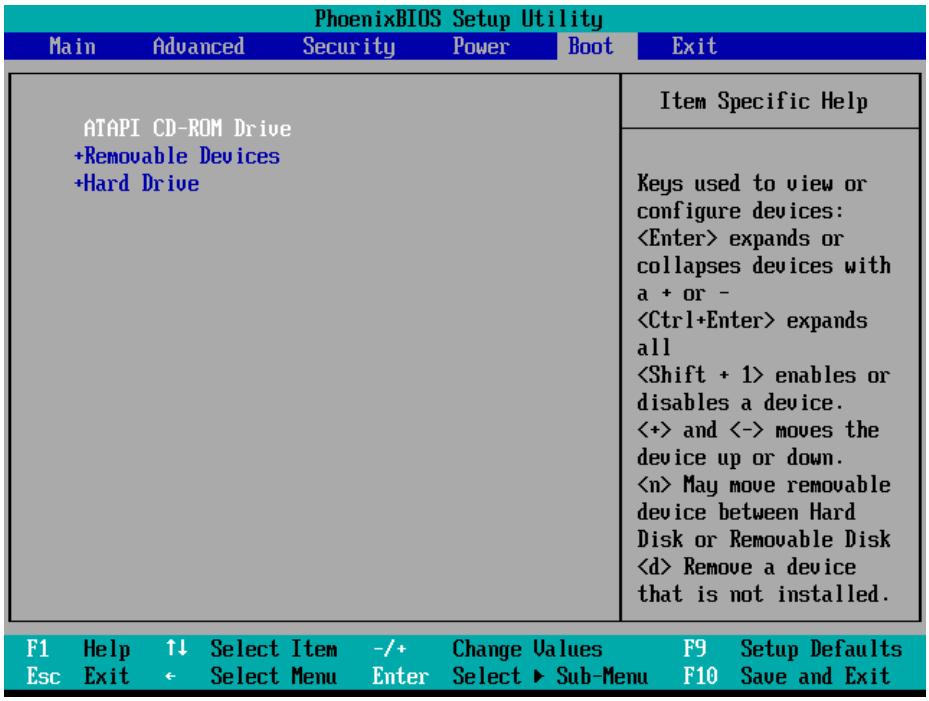
- 2 disks – RAID (mirroring)

3 disks – RAID 1 (mirroring) on the first two disks, with the third one left as a hot spare.

2. Installation Process

Step 1: Power-Up, Boot Order Setup

Power-up the computer which you plan to use as a server. Enter the BIOS setup, making sure that the CD-ROM is first in the list of boot devices. If you are installing a dual-server configuration, start your installation with a master server.



Note: This image is only an example. The BIOS on your system might look different.

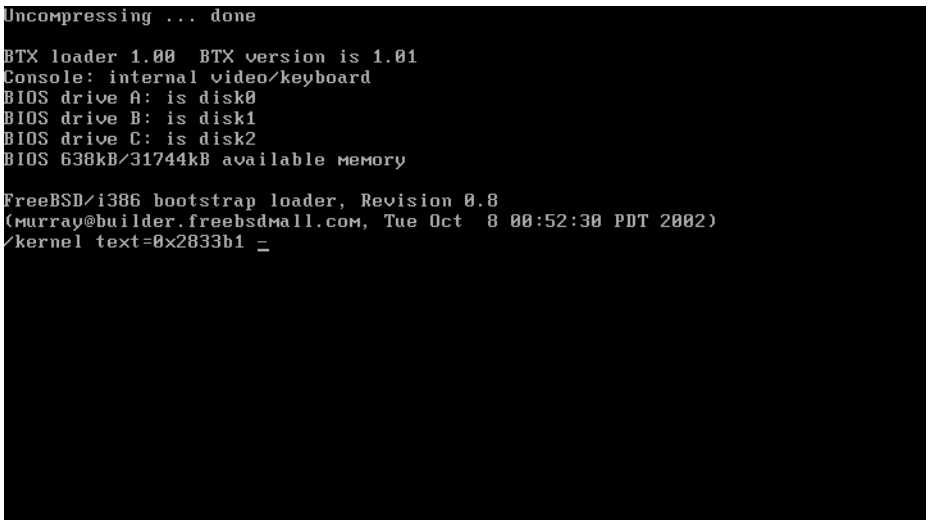
Save your changes and exit.

Step 2: Insert the CD-ROM

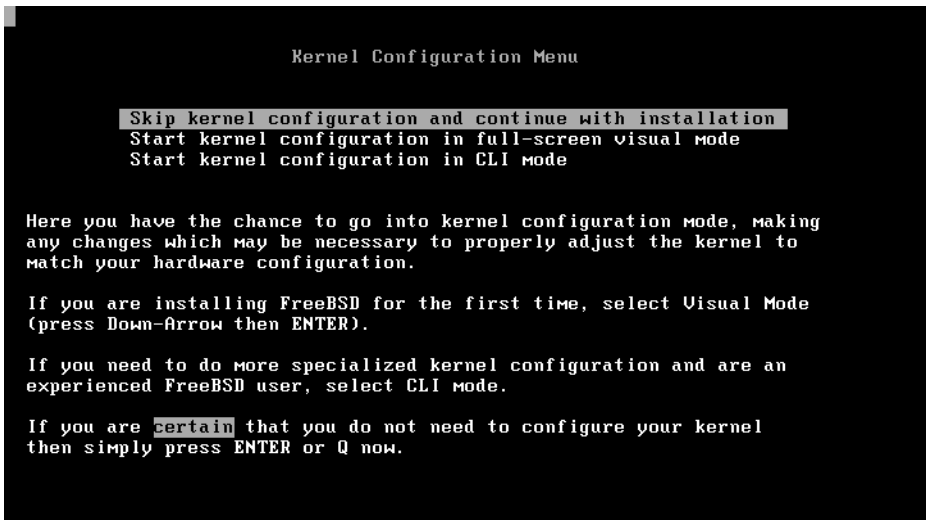
While rebooting the system, insert the PortaUM installation CD in the CD-ROM drive. If you do not insert it quickly enough and get a "no operation system" error (or a previously installed operating system starts its boot-up process), press the "Reset" button and make sure that you are booting from the CD.

Step 3: Start of Installation

You will know that JumpStart installation has started if you see a screen similar to the one below:



After the installation kernel is loaded, you will see the following menu:



Choose the first item in the menu and press "**Enter**" to go on.

Step 4: Welcome Screen

Next, the installation process starts. First you will see the PortaUM welcome screen:

Press "**Enter**" to proceed to disk partitioning.

Step 5: Disk Partitioning - Overview

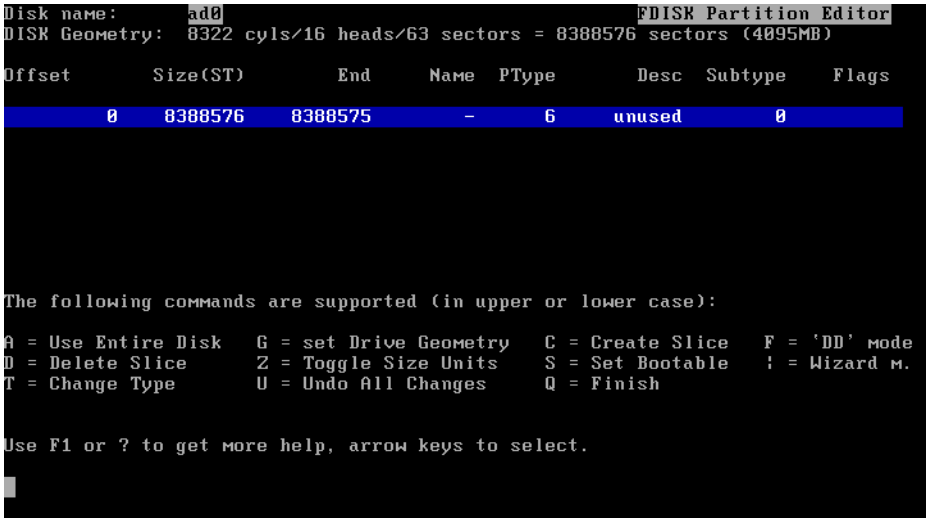
Now you must allocate the hard drive partitions where FreeBSD and PortaUM will be installed. If you have only one hard drive in your system, or your available disks are configured as a single volume array, then please skip the next step and go directly to **0**.

Step 6: Disk Partitioning - Choose Disk

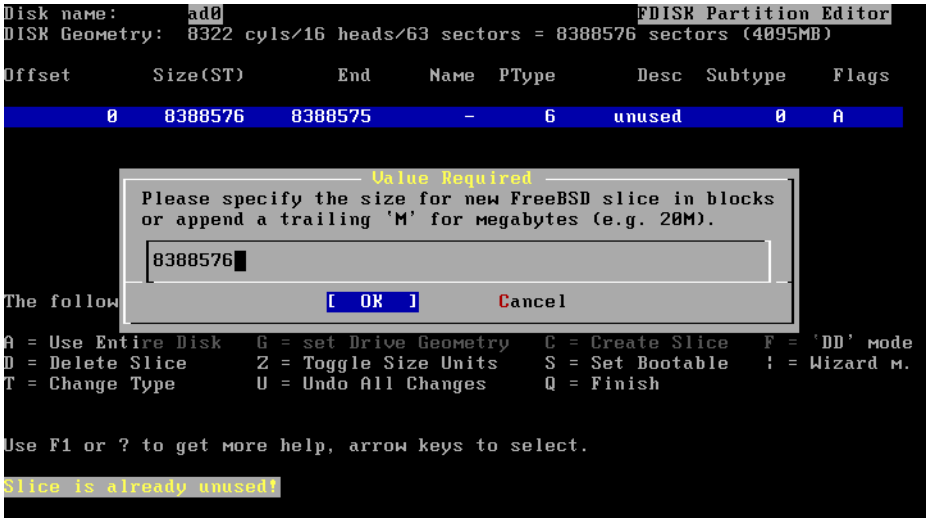
If you have more than one disk in your system, you will have to choose which one you would like to create the FreeBSD partitions on. If in doubt, choose the first disk on the list.

Step 7: Disk Partitioning - Create Partition

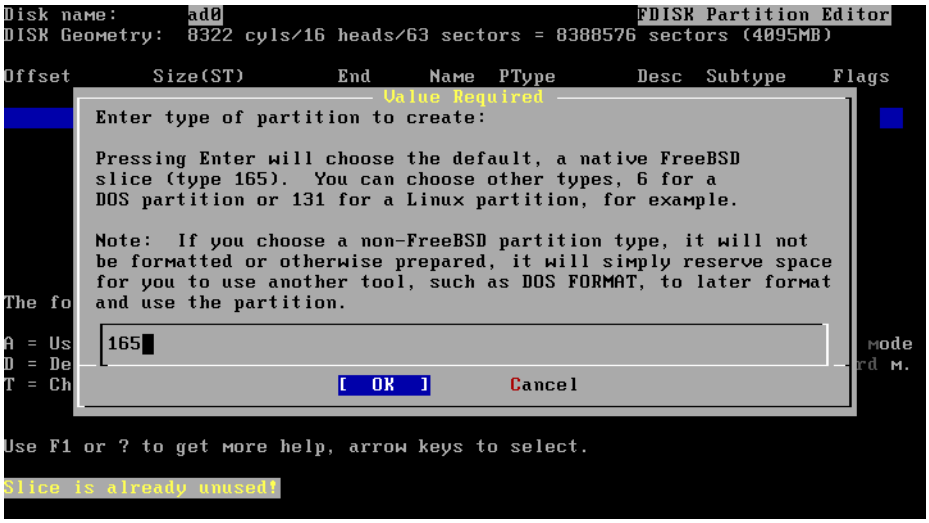
Now you need to create the partition, that is, the continuous area on the disk used to store all the operating system data. With the "**unused**" entry highlighted, press "**C**" to create a new partition.



When prompted for the partition size, simply press "**Enter**"; this will allocate all the available space on the disk for FreeBSD. Press "**Q**" to exit this configuration screen.



When asked about the partition type, press "**Enter**", so that the partition is created with the default FreeBSD type.

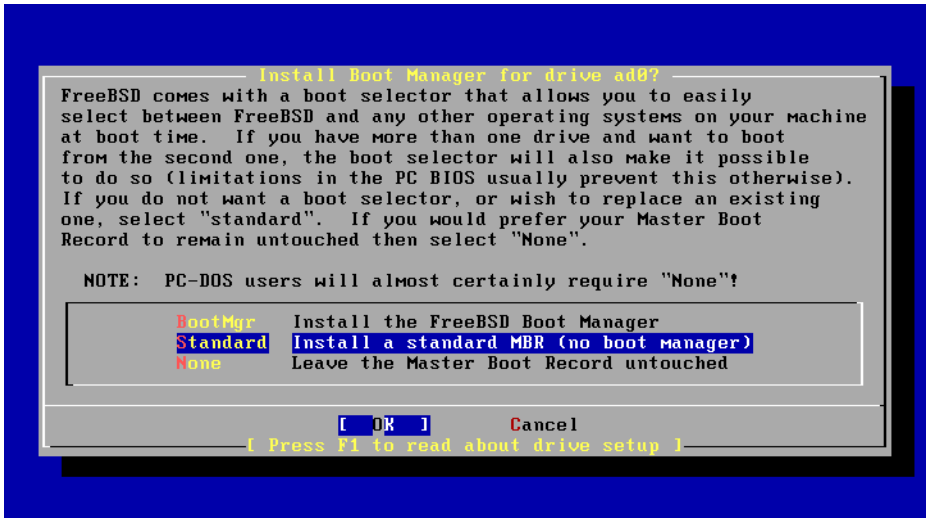


After the partition has been created, make sure it is marked as a bootable partition.

To do this, select the new partition using the cursor movement keys, and then press "**S**". Press "**Q**" to exit this configuration screen.

Step 8: Disk Partitioning - Boot Manager

The FreeBSD boot manager will let you boot one of the multiple operating systems installed on your server. Choose "Standard" if you are not planning to run anything other than FreeBSD and PortaUM on your server.



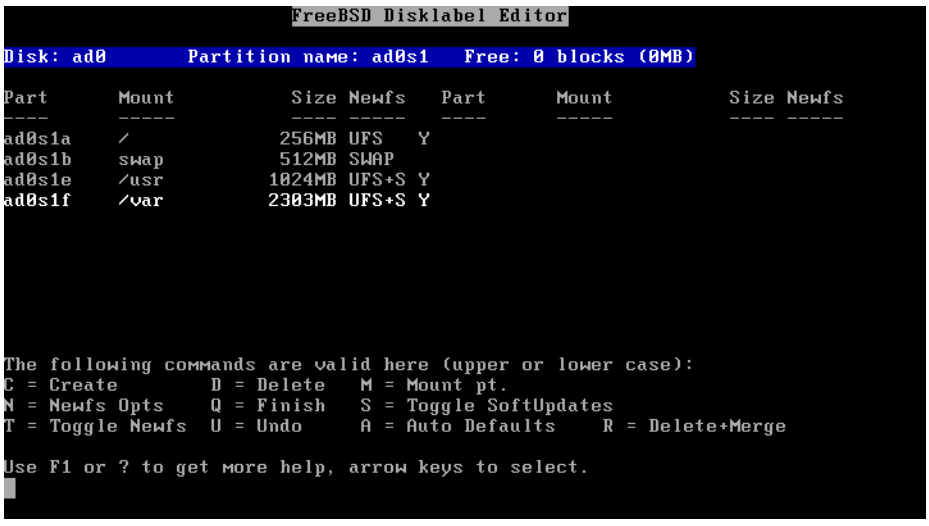
Step 9: Disk Partitioning - Slice Layout

You must create areas for holding different file systems within the FreeBSD partition. These areas are called slices.

Press "**A**" to use the install wizard default layout. If you want a custom slice layout, the recommended PortaUM slice set-up is:

- / (root) filesystem – 256MB
- swap – equal to the amount of RAM
- /usr filesystem – 2GB
- /var filesystem – the rest of the available space

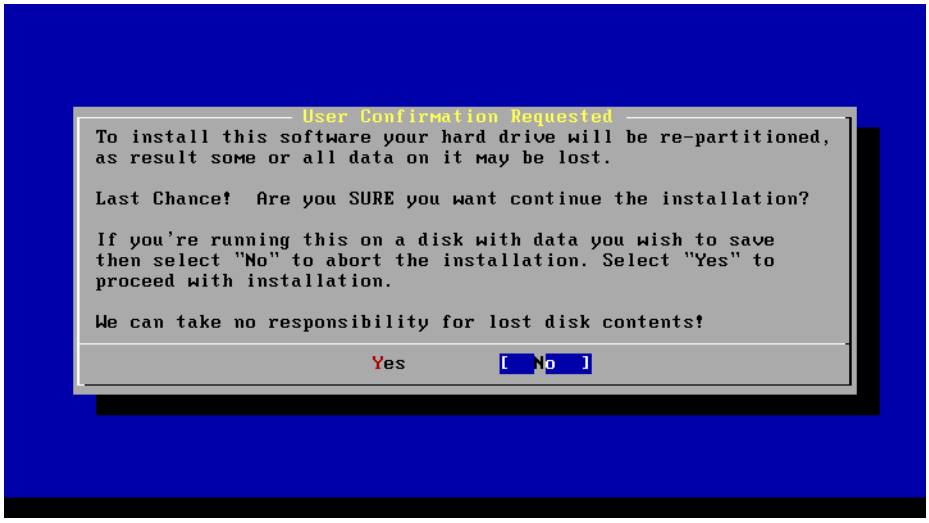
When finished, you should see something similar to the following screen:



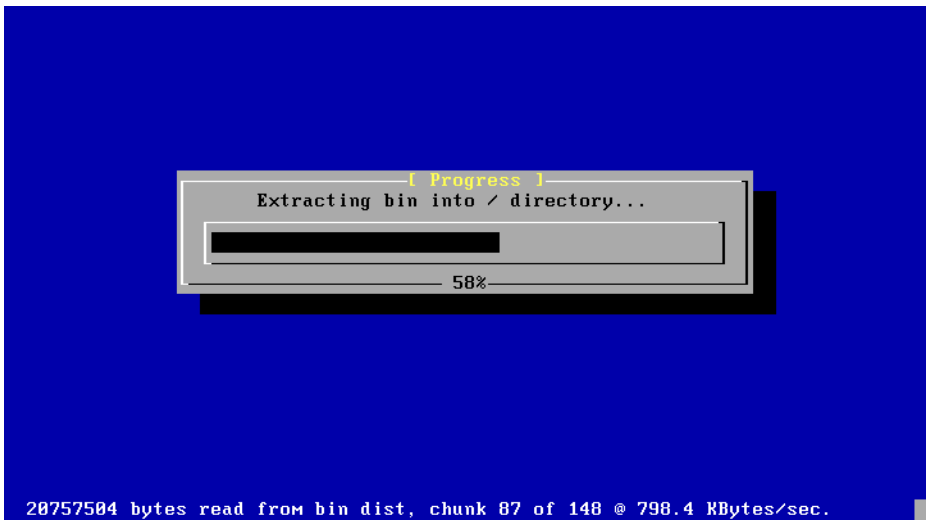
Press "**Q**" to proceed with the installation.

Step 10: Start of Installation

Your confirmation is required before the disk layout is changed and the partitions reformatted. Press "**Enter**" to proceed.



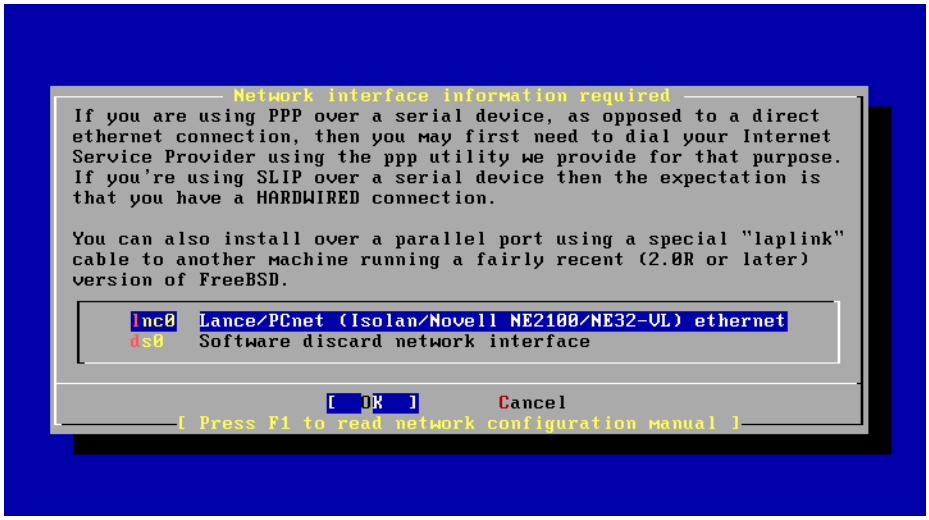
During installation you will see screens similar to the following:



Step 11: Network Configuration - Choose the Network Interface

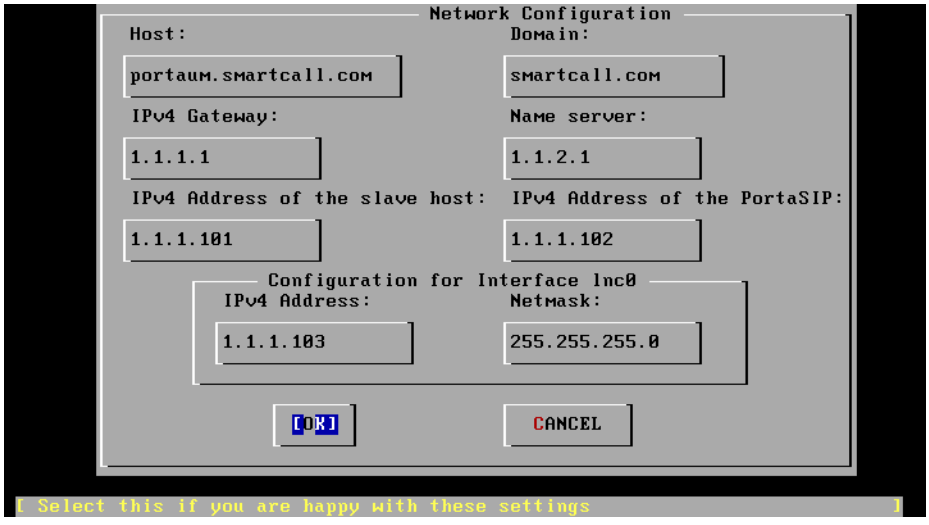
Choose the primary network interface for your server, that is, the interface through which the server will communicate with the rest of the Internet, including your VoIP gateways or RADIUS servers. Your Ethernet

network adapter should be on top of the list. If not, this could mean the adapter you have in your server is not supported by FreeBSD.



Step 12: Network Configuration - Parameters

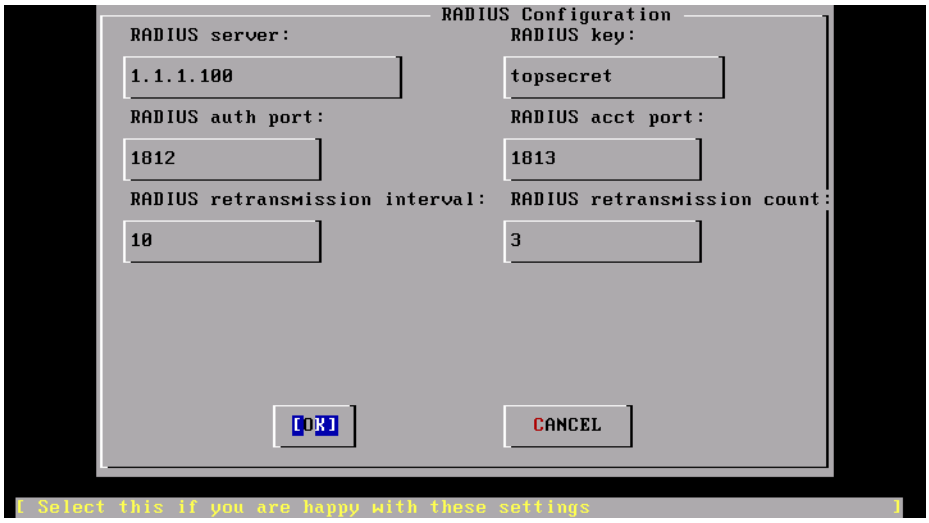
Now you need to enter the network parameters for your server. Press "**Enter**" when done.



Step 13: RADIUS configuration - Parameters

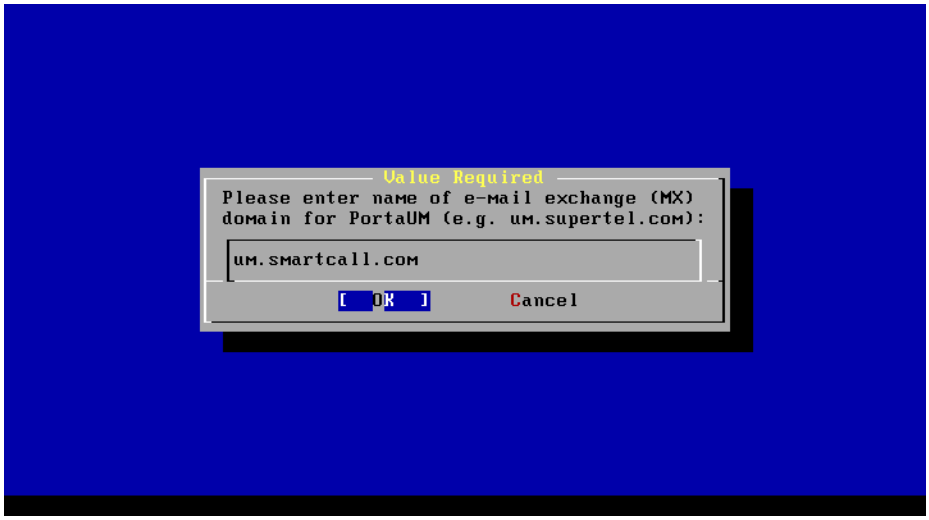
Parameter	Description
RADIUS server	IP address of the PB100 master host
RADIUS secret	authentication key for all radius interactions; select a password and write it down, as you will need to enter it later when adding the PortaSIP node to your PB100 system
RADIUS auth port	number of UDP ports at which your PB100 accepts authorization requests
RADIUS retransmission interval	number of seconds to wait for reply before retransmitting a RADIUS request
RADIUS retransmission count	maximum number of retransmissions

Note: Usually you can just retain the default values for the last 3 parameters.



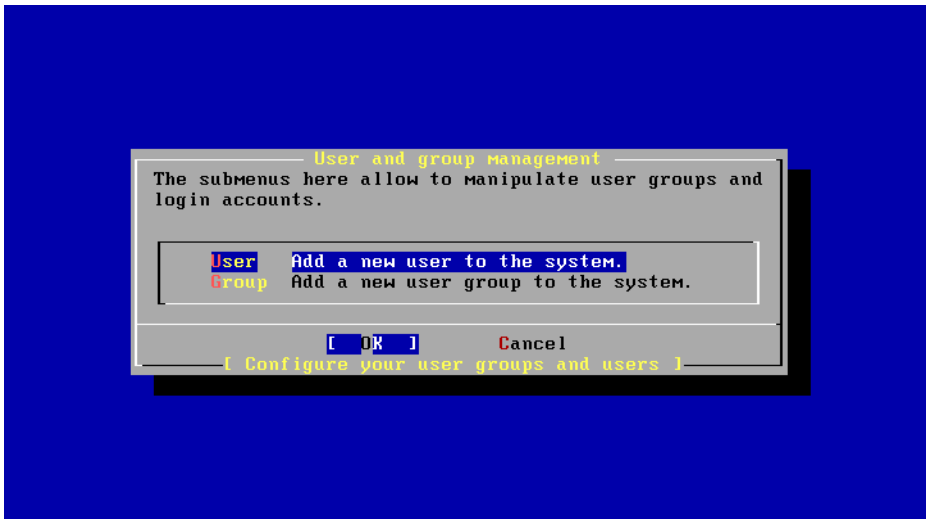
Step 14: MX Domain Configuration

You will need to enter the name of the mail exchange (MX) domain which you plan to use for PortaUM (that is, the name appearing after `@' in mail sent to/from the PortaUM system). You will also have to register this name in the DNS server for your domain.

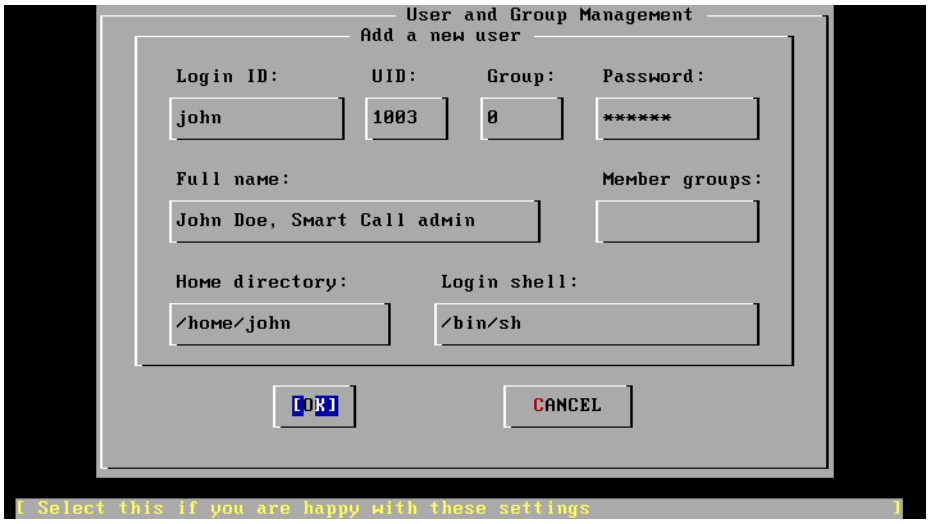


Step 15: Add User Accounts to the System

After the required packages have been installed, you can begin performing the configuration tasks. First you will be required to add user accounts to the system. Your staff may use these accounts to log in to the system. (It is not recommended to use the **root** account when logging in remotely.) If you plan to add users, choose the first menu item and press "**Enter**". Once you have finished the user creation process, press "**Tab**" once (to move to the "**Cancel**" button) and then press "**Enter**".



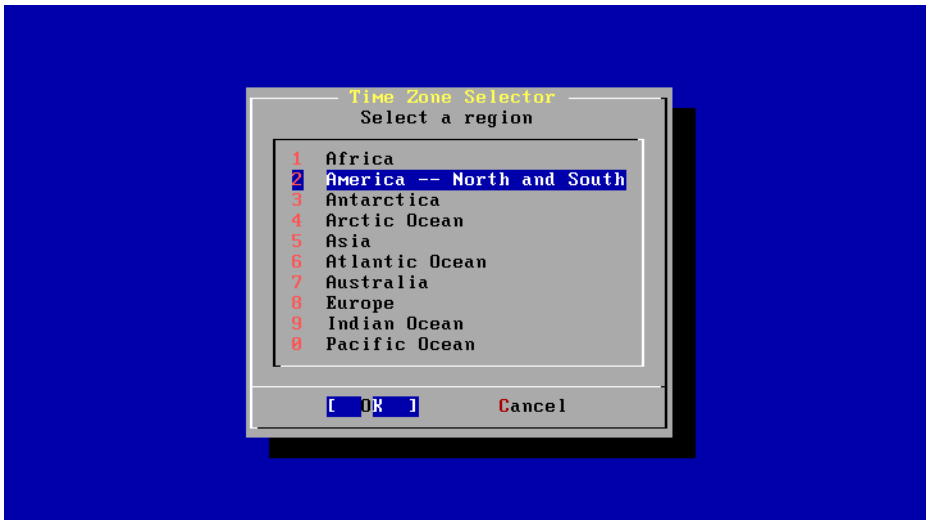
The dialog for creating a new user is shown below:



Step 16: Time Zone Configuration

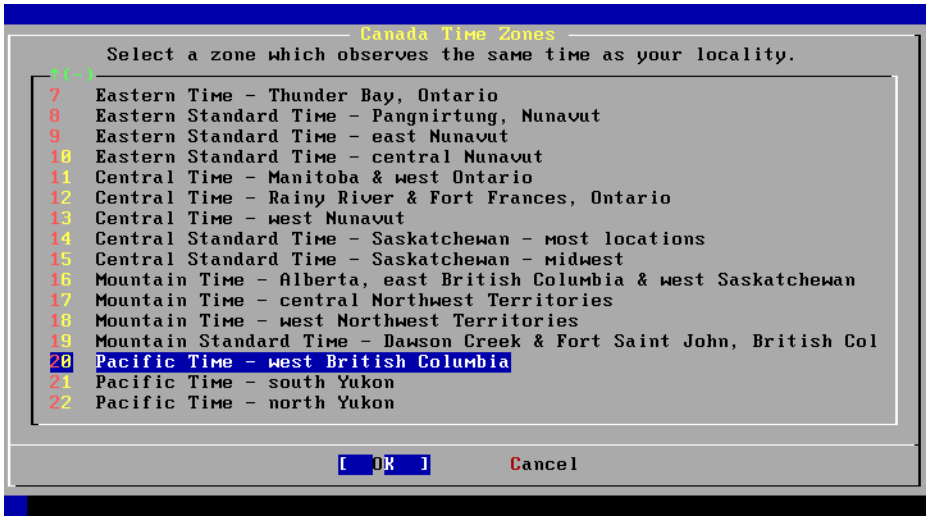
Having your clock adjusted properly and setting up a time zone correctly are essential for accurate billing. First of all, choose whether you want your server clock to be set according to the UTC or local time. We recommend using local time, in which case you should choose "**No**" here.

Next, choose which region you are in:

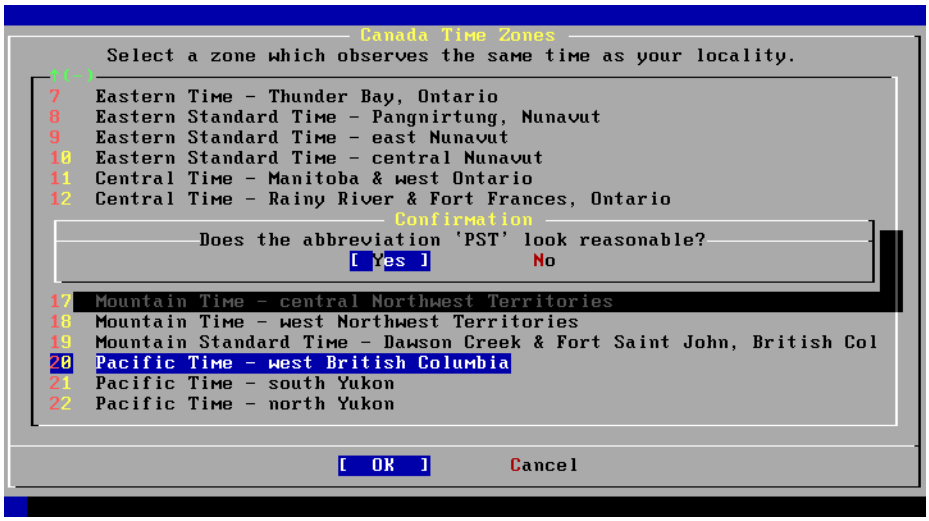


And then choose your country:

If there is more than one time zone in the given country, you will have to specify the correct one:

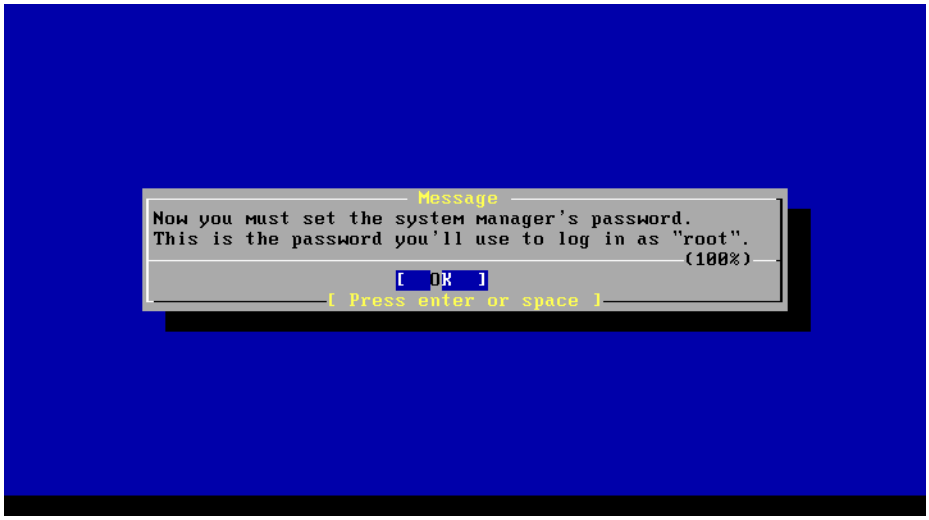


Please check the suggested time zone, and confirm:



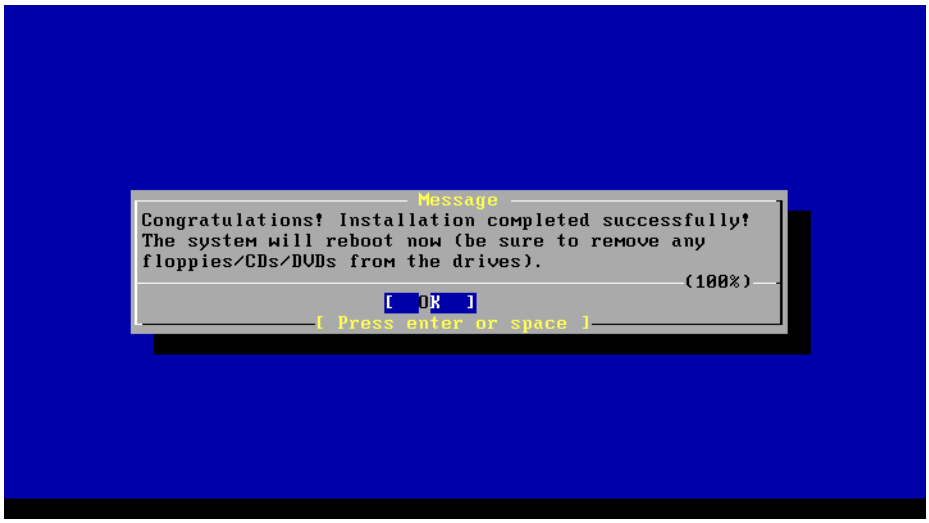
Step 17: Setting-up Root Password

Choosing a super user password is very important, as you will need it to perform system administration or system recovery. Choose a password that is difficult to guess or crack.



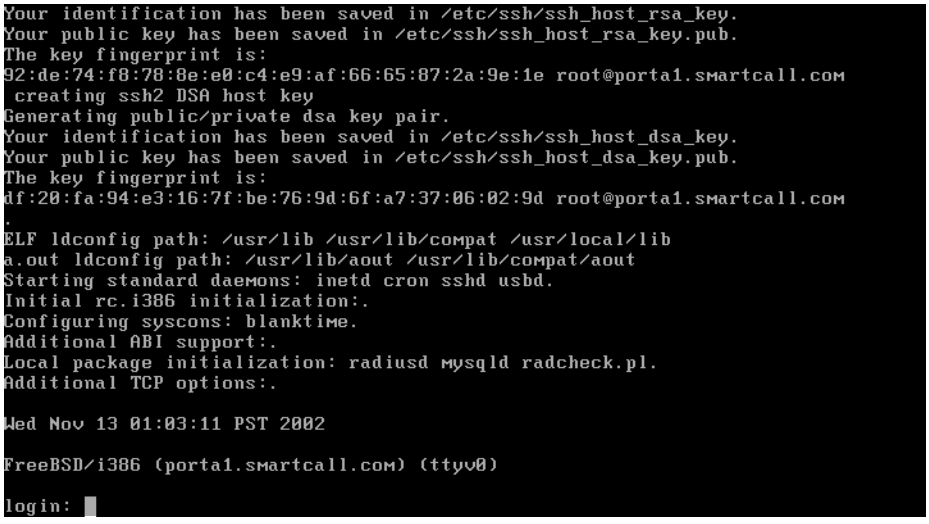
Step 18: Prepare to Reboot

Installation is now finished. Press "**Enter**" when you reach the following screen. Once the system begins its reboot process, remove the installation CD from the CD-ROM. Do not forget to enter BIOS again and change the priority of boot devices so that the hard drive will now be the first boot device attempted. (This ensures faster reboot when recycling the server.)



Step 19: Check that the System Reboots to a Normal State

It is good idea to make sure that the system is in a stable state, and that it returns to normal operations on reboot without the need for any intervention, especially if no keyboard or other peripherals are to be attached. The screen should look like this after a normal reboot:



Press **Ctrl + Alt +Del** if you need to reboot.

Step 20: Prepare System for Transportation (Optional)

If you need to transport the system to another location (e.g. hosting center) or otherwise power down the system safely, proceed as follows:

- Wait until the system finishes booting
- Log in as root
- Type `shutdown -p now`
- Wait until either the system powers down on its own or a message reading "The operating system has halted" appears, and then power off the server.

3. Cisco AS5300 Gateway Setup

Setting-up a Back-to-Back T1/E1 Connection

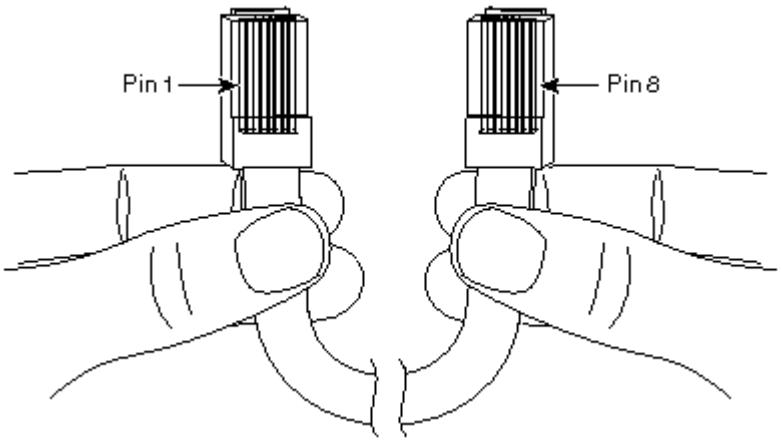
Hardware Setup

In order to use the Cisco AS5300 gateway as a media server and VXML platform in the PortaUM system, you need to physically loop one or more pairs of T1 or E1 voice ports on it, so that these can be used for the PSTN→PSTN connection. To do this, construct one or more RJ-48C cross-over cables using the following table:

T1/E1 CSU/DSU Cross-Over Pinout

From RJ 48C Pin	To RJ 48C Pin
1	4
2	5
4	1
5	2

Make sure you count the RJ-48C pins as shown in the illustration below:



Alternatively, you can order ready-made ones. You can find a number of vendors producing such cables by searching for "RJ-48C cross-over cable" on www.google.com.

Once the cable is ready, plug it into the designated pair of T1/E1 ports in your Cisco AS5300 gateway.

Software Configuration

You also have to configure the T1/E1 interfaces. The sample configuration below is for T1; adjust the time slots for E1:

```
isdn switch-type primary-5ess
!
controller T1 0
framing sf
clock source line primary
linecode ami
pri-group timeslots 1-24
!
controller T1 1
framing sf
clock source line secondary 1
linecode ami
pri-group timeslots 1-24
!
controller T1 2
framing sf
linecode ami
pri-group timeslots 1-24
!
controller T1 3
framing sf
linecode ami
pri-group timeslots 1-24
!
interface Serial0:23
no ip address
isdn switch-type primary-5ess
isdn protocol-emulate network
no cdp enable
!
interface Serial1:23
no ip address
isdn switch-type primary-5ess
no cdp enable
!
interface Serial2:23
no ip address
isdn switch-type primary-5ess
isdn protocol-emulate network
no cdp enable
!
interface Serial3:23
no ip address
isdn switch-type primary-5ess
no cdp enable
```

Other Important Considerations

Please ensure that the PortaUM machine and Cisco AS5300 gateway used as a media server and VXML platform have a good network connection between them. Ideally, they should be located on the same 100 Mbps or 1,000 Mbps LAN segment. This is important because the media server needs to load sounds interactively from the PortaUM machine in real time. Therefore, lossy and/or high-delay connections between the media server and the PortaUM machine can significantly impair service quality. Also, it is likely that there will be a significant amount of TCP traffic between the media server and the PortaUM machine, which can be quite expensive if they are not co-located.