PORTA ™ ONE

Porta UM
unified messaging

Installation Guide
Maintenance Release 12

Copyright Notice & Disclaimers

Copyright © 2000-2006 PortaOne, Inc. All rights reserved

PortaUM Installation Guide, May 2006
Maintenance Release 12
V1.12.3

Table of contents

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 between minor releases. The online copy of this guide is always up to date, and integrates the latest changes to the product. You can access the latest copy of this guide at: **www.portaone.com/resources/documentation/**

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), assuming these are equipped with basic items such as an ANSI C compiler. However, it might be difficult for an inexperienced system administrator to install and configure the operating system in such a way as to suit all of the requirements and provide the best performance. Installing all the prerequisite software (libraries, Perl modules, etc.) might also be a time-consuming task.

The PortaUM JumpStart installation CD provides a quick and seamless way to perform a complete server installation from scratch, in less than 15 minutes. It contains installation media for FreeBSD 6.1, with all the necessary packages and PortaUM itself.

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

Hardware and Software Requirements

Should you decide to use a Cisco gateway for processing UM calls, please note that PortaUM requires a *dedicated* Cisco AS 5300/5350.

Cisco requirements

- 128M RAM, 64M flash, E1 or T1 voice ports, and a sufficient number of DSPs. IOS 12.3.5a (or another from the 12.3 branch).
- AS5300 comes with 4 or 8 T1/E1's. You will not need more than four of them because of the DSP resource limitation for AS5300.
- For a T1 configuration, the maximum voice resource will be 96, and 120 for E1.

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 are installed and equipped with all the required hardware, in particular:

- Network card

- CD-ROM (in the case of an IDE CD-ROM, it is recommended that it be connected as a slave on the 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 chosen based on the anticipated number 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 the like).
    - One second of recorded audio takes about 10 kb of disk space.
    - One fax page takes about 120 kb 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 check that the other hardware installed in your server (such as network adapter, RAID controller, and so on) is supported by FreeBSD. You can check this at the FreeBSD website: **http://www.freebsd.org**.

During installation you will be prompted for the network configuration parameters. Please make a decision regarding these before installation, consulting your network administrator if necessary. It is possible that you will have to perform installation while the network is not yet available (from your office, for example, while the servers will be placed in a server hosting center), but you will need to enter the correct data anyway. Please have the following ready:

- IP addresses of the PortaBilling100 master and slave 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
- DNS server address

If you have a hardware RAID controller in your system, configure the RAID array. The recommended configurations (depending on the amount of hard drives in the system) are as follows:

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

6

2. Installation Process

Step 1: Insert the USB dongle

Before you start the installation, insert the USB dongle provided into one of the available USB ports.

Step 2: Power-up, boot order setup

Power up the computer which you plan to use as the 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 the master server.

```
                    PhoenixBIOS Setup Utility
   Main      Advanced     Security     Power     Boot     Exit

                                              Item Specific Help

     ATAPI CD-ROM Drive
    +Removable Devices
    +Hard Drive                             Keys used to view or
                                            configure devices:
                                            <Enter> expands or
                                            collapses devices with
                                            a + or -
                                            <Ctrl+Enter> expands
                                            all
                                            <Shift + 1> enables or
                                            disables a device.
                                            <+> and <-> moves the
                                            device up or down.
                                            <n> May move removable
                                            device between Hard
                                            Disk or Removable Disk
                                            <d> Remove a device
                                            that is not installed.

   F1   Help   ↑↓  Select Item   -/+   Change Values    F9   Setup Defaults
   Esc  Exit   ←   Select Menu   Enter  Select ▶ Sub-Menu  F10  Save and Exit
```

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

Save your changes and exit.

Step 3: Insert the CD-ROM

While rebooting the system, insert the PortaUM installation CD into the CD-ROM drive. If you do not insert it soon enough and get a "no operating system" error (or a previously installed operating system starts

its boot-up process) then press **Reset** and ensure that you are booting from the CD.

Step 4: Launch the installation process

First, you will be asked to boot from the CD.

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

Before proceeding any further, you will see the following screen:

```
                Welcome to PortaOne Software installation program!

            1. Proceed with PortaUM Installation
            2. Disable APIC
            3. Disable ACPI
            4. Enable USB keyboard support
            5. Escape to the command line prompt (for advanced users)
            6. Reboot




Press 1 or Enter to proceed with installation or [Space] to pause timer  10
```

If you select the first option, installation will start in default mode, which is suitable for most hardware configurations. However, in some cases, option 1 will return a device mounting error due to hardware conflicts. In this case, restart installation and, when you see this screen again, select options 2, 3 or both to enable/disable APIC/ACPI features.

For example, if you are installing to a computer with an ASUS P4VP-MX motherboard, you must disable APIC. In this case, select 2 on the screen above. You will then be shown the disabled features and asked to press 1 or Enter to proceed, as shown in the screen below:

```
                Welcome to PortaOne Software installation program!

            1. Proceed with PortaUM Installation
            2. Enable APIC
            3. Disable ACPI
            4. Enable USB keyboard support
            5. Escape to the command line prompt (for advanced users)
            6. Reboot




Press 1 or Enter to proceed with installation or [Space] to pause timer  10

APIC disabled
```

Step 5: Welcome screen

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


```
PortaUM MR12 Installation
------------------------
                    ┤ PortaUM MR12 Installation ├

          Welcome to the PortaOne Software installation
           program! This wizard will guide you through the
          installation process.




          --------------------------------------------------------

                        <Next>    <Cancel>
```
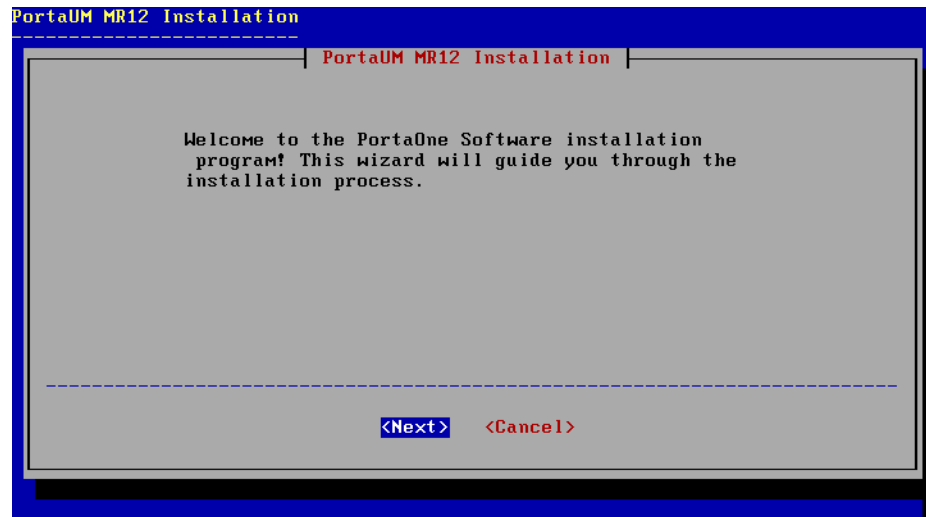
Press "**Enter**" to proceed.

Step 6: 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 have configured your available disks as a single volume array, this step will be skipped automatically and you will proceed to Step 8.

Step 7: Disk partitioning - choose disk

If you have more than one disk in your system, you will have to choose which disk you would like to create the FreeBSD partitions on. If in doubt, choose the first disk in the list.
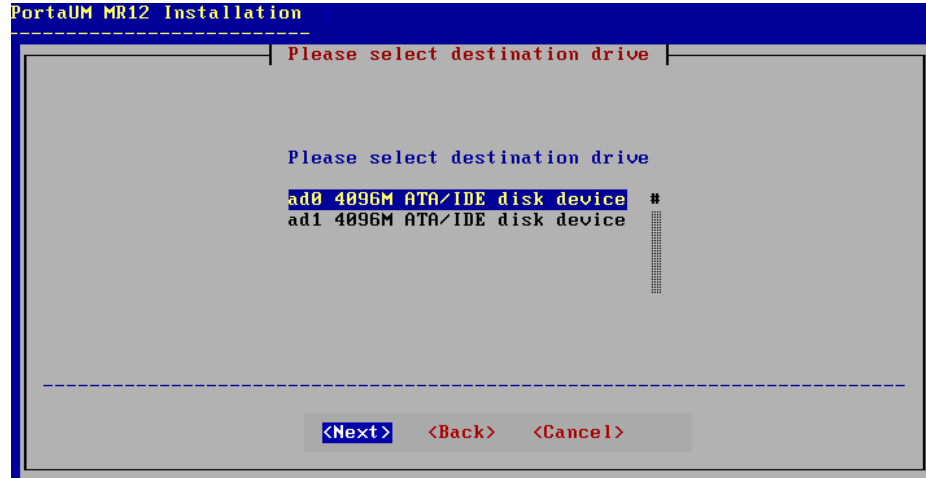
Step 8: Disk partitioning – slice layout

You will be prompted to enter or choose the slice sizes for holding different file systems.
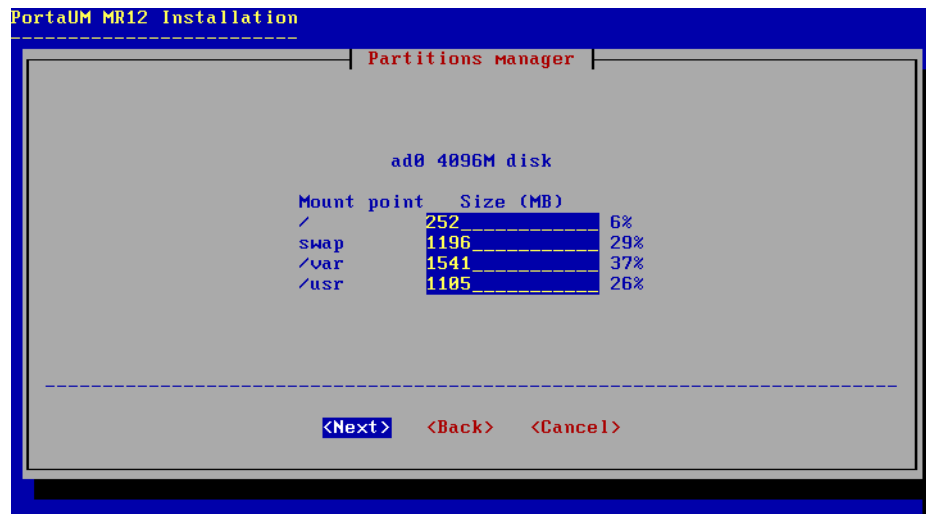
Step 9: PortaSwitch parameters

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 the UDP port on which your PortaBilling100 accepts authorization requests

RADIUS acct port	Number of the UDP port on which your PortaBilling100 accepts accounting requests.
RADIUS retransmission interval	Number of seconds to wait for a reply before retransmitting a RADIUS request.
RADIUS retransmission count	Maximum number of retransmissions.

Note: Only RADIUS server and RADIUS key are mandatory parameters. You can simply leave the default values for the last four parameters.
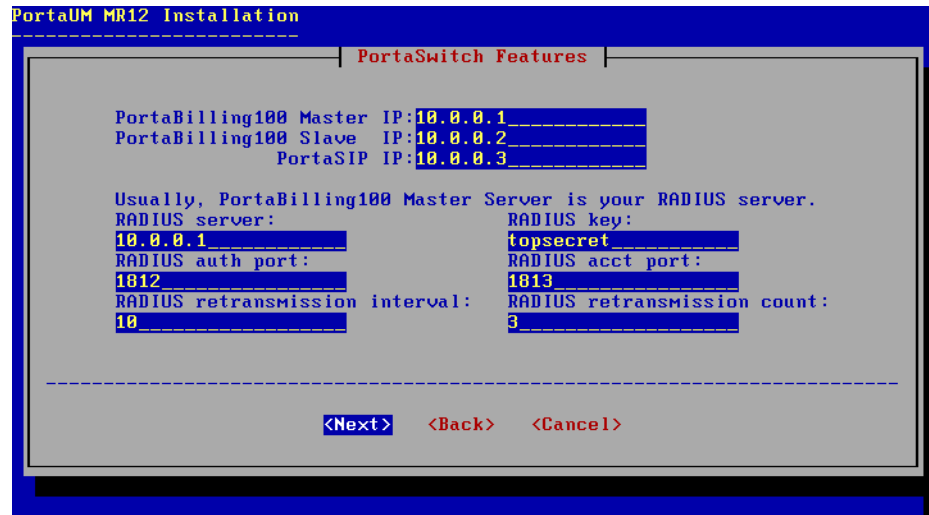
Step 10: Network configuration
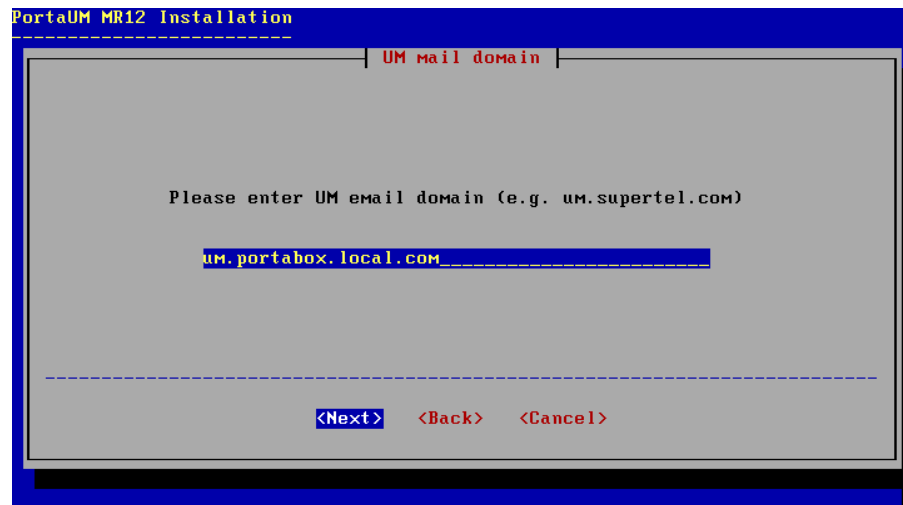
Fill in the appropriate fields for network configuration in this menu.
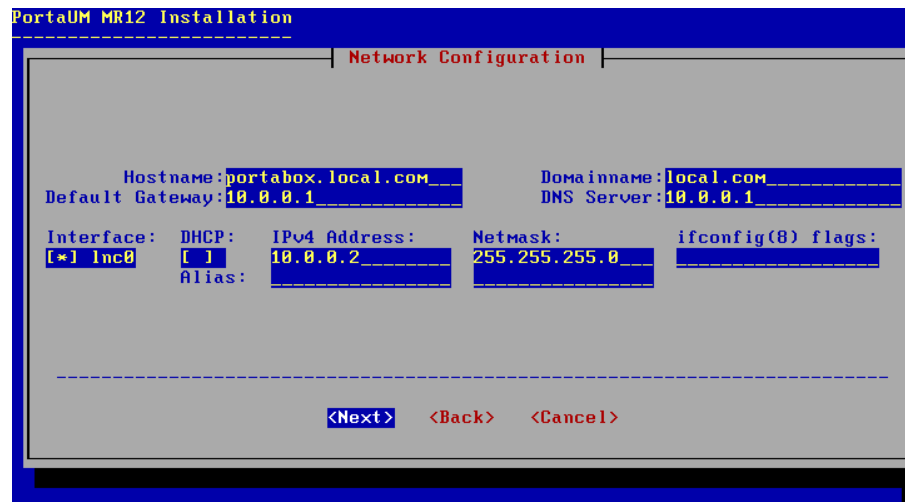
Use the space bar to set the check boxes for interface and DHCP. Use the Tab key to proceed to the next field. If you have multiple interfaces, set at least one of the interfaces on which your machine connects to the Internet. If you do not use DHCP, unset this box. You can leave the alias and ifconfig(8) flags field empty.

Step 11: UM mail domain configuration

You will need to enter the name of the UM mail domain which you plan to use for PortaUM (i.e. the name appearing after @ in emails sent to/from the PortaUM system). You will also have to register this name in the DNS server for your domain.

```
PortaUM MR12 Installation
------------------------
                    ┤ UM mail domain ├



           Please enter UM email domain (e.g. um.supertel.com)

              um.portabox.local.com_____



       _____
                       <Next>    <Back>    <Cancel>
```

Step 12: Time zone configuration

Proper adjustment of your clock and time zone is essential in order to achieve accurate billing.

```
PortaUM MR12 Installation
-------------------------
                          ┤ Timezone selection ├

              America/Toronto
              America/Tortola
              America/Vancouver
              America/Whitehorse
              America/Winnipeg
              America/Yakutat
              America/Yellowknife
              Antarctica/Casey
              Antarctica/Davis
              Antarctica/DumontDUrville

         ------------------------------------------------

                <Next>    <Back>    <Cancel>
```
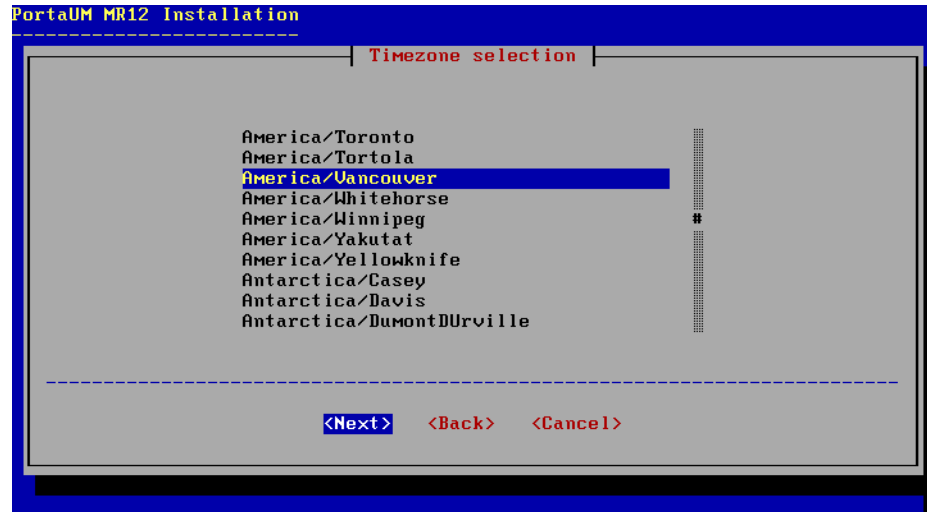
Step 13: Set up root password and user account

Choosing the super user password is very important, as you will need it to perform system administration or system recovery. Choose a password which is difficult to guess or crack. Add another user account especially for remote administration.

```
PortaUM MR12 Installation
-------------------------
                          ┤ Root password ├

    Now you must set the system manager's password.
    This is the password you'll use to log in as "root".
                        Password: ********_____
                Confirm password: ********_____

    For security reasons user root will not be allowed to access the
    machine remotely using ssh. If you want to be able to administer
    this machine remotely enter desired username and password below.
    If you don't want such feature then leave username blank.
                        Username: demo_____
                        Password: ********_____
                Confirm password: ********_____

         ------------------------------------------------

                <Next>    <Back>    <Cancel>
```

Step 14: Start installation

Your confirmation is required before the disk layout is changed and the partitions reformatted. Press **Enter** to proceed.
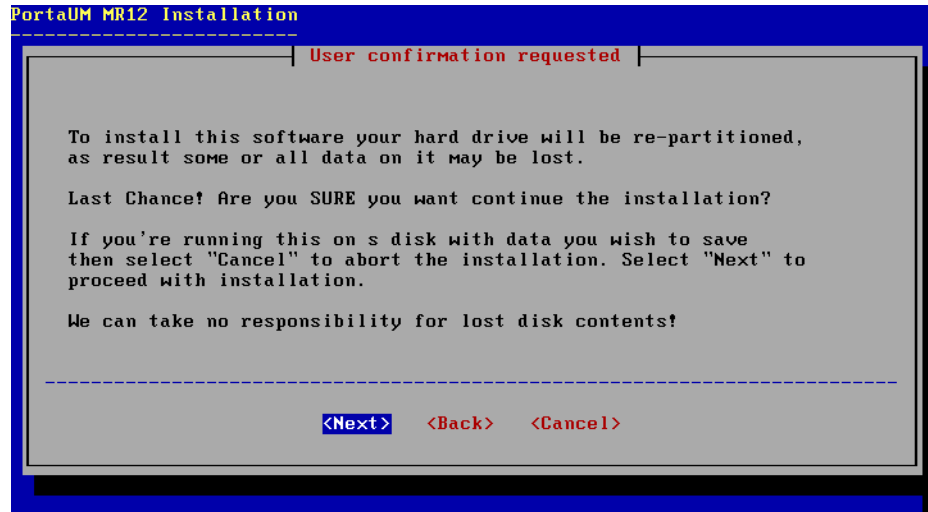
Progress will be shown on a screen similar to the following one:

During installation you will be asked to enable UM features on your PortaBilling web interface.

```
PortaUM MR12 Installation
-------------------------



                    ┤ PortaUM for PortaBilling100 ├

   Do you want to enable UM features on your PortaBilling100 web
   interface? You should have IP connectivity between this machine and
   PortaBilling100 Slave and Master machines to do this.



                        <Yes>  <No>

```

If you select **Yes** on the screen above and do not have IP connectivity to the PortaBilling slave machine, you will be prompted by the following screen. Choose **No** to proceed if you do not have such connectivity.

```
PortaUM MR12 Installation
-------------------------



                    ┤ Do you want to retry? ├

   Cannot connect to the PortaBilling100 Slave machine. Please verify
   that you have IP connectivity between this machine and
   PortaBilling100 Slave machine. Do you want to retry?



                        <Yes>  <No>

```
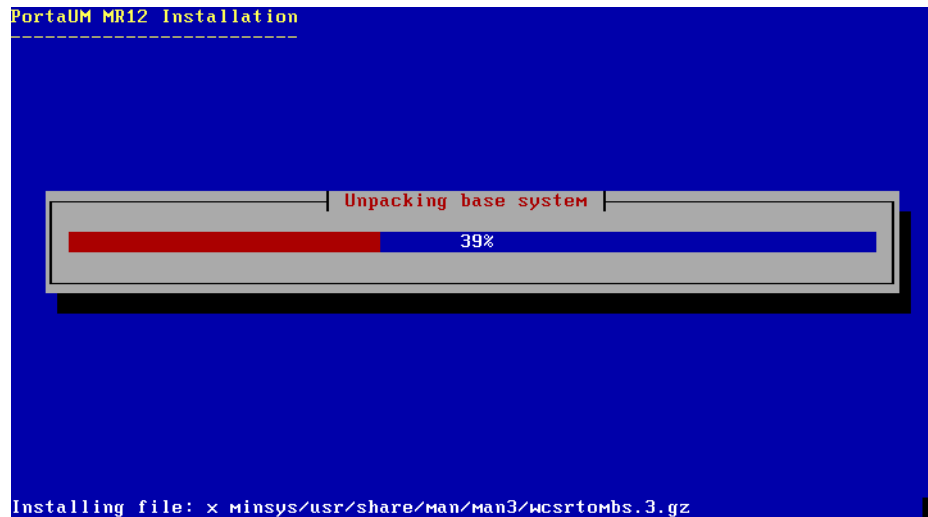
Step 15: Prepare to reboot

When installation has finished and you reach the following screen, press **Reboot**. After the system has begun its reboot process, remove the installation CD from the CD-ROM. Do not forget to enter BIOS again and change the priority of the boot devices so that the hard drive will be attempted first. (This ensures a quicker reboot when recycling the server.)

```
PortaUM MR12 Installation
-----------------------
┌───────────────────┤ PortaUM MR12 Installation ├───────────────┐
│                                                                │
│                                                                │
│   Congratulations! The installation has been completed successfully. │
│   The system will reboot now (be sure to remove any            │
│   floppies/CDs/DVDs from the drives).                          │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│   ---------------------------------------------------------------  │
│                                                                │
│                          <Reboot>                              │
│                                                                │
└────────────────────────────────────────────────────────────────┘
```
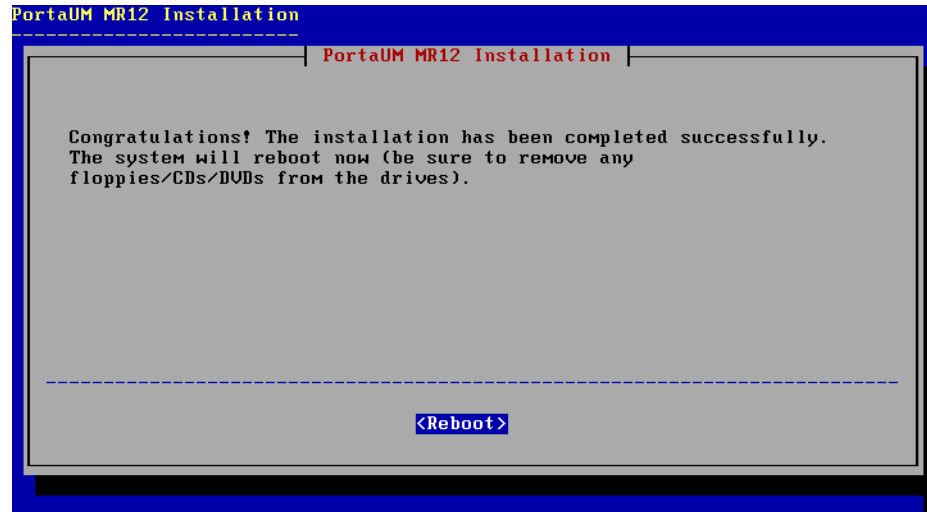
Step 16: Check that the system is able to reboot to its normal state

It is good to make sure that the system is in a stable state, and that it returns to normal operations without intervention on reboot, especially if there is no keyboard or other peripheral attached. Following a normal reboot, the screen should look like this:

```
Your identification has been saved in /etc/ssh/ssh_host_rsa_key.
Your public key has been saved in /etc/ssh/ssh_host_rsa_key.pub.
The key fingerprint is:
92:de:74:f8:78:8e:e0:c4:e9:af:66:65:87:2a:9e:1e root@portabox.local.com
 creating ssh2 DSA host key
Generating public/private dsa key pair.
Your identification has been saved in /etc/ssh/ssh_host_dsa_key.
Your public key has been saved in /etc/ssh/ssh_host_dsa_key.pub.
The key fingerprint is:
df:20:fa:94:e3:16:7f:be:76:9d:6f:a7:37:06:02:9d root@portabox.local.com
.
ELF ldconfig path: /usr/lib /usr/lib/compat /usr/local/lib
a.out ldconfig path: /usr/lib/aout /usr/lib/compat/aout
Starting standard daemons: inetd cron sshd usbd.
Initial rc.i386 initialization:.
Configuring syscons: blanktime.
Additional ABI support:.
Local package initialization: radiusd mysqld radcheck.pl.
Additional TCP options:.
Starting background file system checks in 60 seconds.

Thu Aug  4 02:30:30 PDT 2005

FreeBSD/i386 (portabox.local.com) (ttyv0)
```

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

Step 17: Prepare system for transport (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 the "The operating system has halted" message 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:
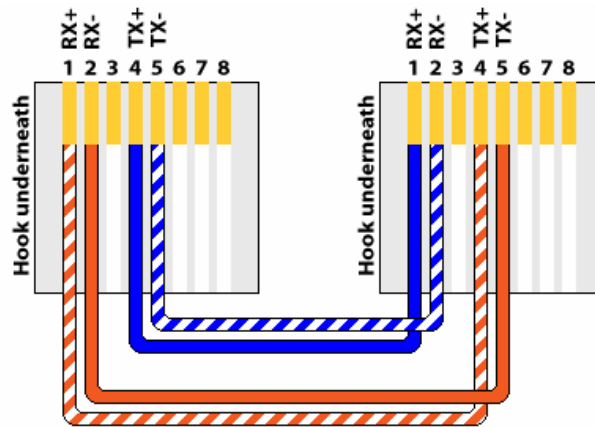
PRI (T1/E1) CrossOver/Loopback Cable

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 must also 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.