Welcome! If you want to follow along, borrow a flash drive, copy the contents to your drive, and see the README. Or, download from:

thewoolleyweb.com/ci_for_the_rails_guy_or_gal

Warning: If you are reading this from a handout or virtual machine, it may be outdated. See latest at:

thewoolleyweb.com/ ci_for_the_rails_guy_or_gal

OpenOffice Font Twiddling: For portability, this preso uses Helvetica Bold, which works fine on NeoOffice/mac. If this makes the text too big (and it probably will on OpenOffice/linux) use FreeSans Bold (which I've provided in tools/font): Outline Tab, Edit > Select All, change font to FreeSans Bold.

CI for the Rails /G(uylal)/

Obligatory Boiler Plate

Who

Chad Woolley
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PIVOTAL LABS

Who are YOU? CI? Linux? Virtualization? Javascript Testing? Selenium?

What

CI == Continuous Integration

Martin Fowler - Seminal CI Article

Running all your tests on every commit

Automatically

How

Takahashi
Method ==
Big Font!

Focused on how to install and make everything work together, not on details of how to use the tools

Just the basics, no obtuse shell tricks, won't use the latest extensions, wrappers, libraries, or plugins

But I encourage you to look into them, useful additions/ extensions will be mentioned later.

Well, maybe a few bleeding edge things, time permitting

Agenda:

1. Code: The simplest tutorial that could POSSIBLY work

Coding Tasks Outline

A. Install Linux on VMWare

B. Install Prereqs: ruby, java, sqlite, svn, ant, alternate browser

C. Create sample Rails Project

D. cruisecontrol.rb setup

E. JsUnit Setup

F. Selenium Setup

Z. Git

2. Gettin' Fancier

3. Gotchas

4. Questions

Tools Used

Cross-Platform, Mostly* Free

* VMware is not free on all platforms

VMware

Parallels is a Virtualization Alternative

Or, you can skip Virtualization and install Ubuntu directly on a spare PC. Just burn the ISO image to a CD.

Ubuntu Linux

cruisecontrol.rb

JsUnit

Selenium

There is a lot of material in this presentation

We will
move **FAST**

Maybe too fast for you to follow along during the preso (sorry!)

But it's all on the slides

Overachievers can yell “Bingo” if you finish it before I do.

Everyone else can pair up and help each other

Intended to be comprehensive, easily repeatable, generic, cross-platform

Contains everything* you need to try this on a real project

*** “everything” except the stuff that doesn't work on your project or environment or latest versions. Error messages and Google are your friend :)**

As a matter of fact, it almost certainly won't work perfectly for you. Integrating this stuff is hard, and new problems arise as tools and libraries evolve. Embrace the ~~bleeding~~ cutting edge, keep a positive attitude, and help fix bugs.

It's OK to sit back and watch

Try it at your home or workplace, at your own pace

You can try it on a mac, but slides target an Ubuntu VM for maximum portability and repeatability

Live!

No Hand Waving

Their WILL be typos!

You down with OCD?

Then you'll know me!

Just please don't be "That Guy" (or Gal)!

You know, “That Guy” who stands up and wants to expound on irrelevant minutiae during the middle of a presentation...

Nitpicks, Flames and Hints Welcome…

...over beer, AFTER the tutorial

...but seriously, if you are a bit OCDish, you might make a good CI G(uylal) - because there's a lot of moving parts that all have to integrate...

...Continuously!

1. Time to Code!

WARNING: If you try to cut and paste commands from the presentation (and you can, they're all there), use the OpenOffice doc. Pasting from PDF inserts bad line breaks

A. Install Linux on VMWare

No time to install Linux live, but VMWare and images are on USB Keys

My Barebones Linux VM Setup:

Base:
VMWare on Macbook Pro 17”
Ubuntu 7.10 desktop VM from ISO
VMware Tools installed

Optional:
Change resolution (System > Preferences > Screen Resolution)
Mouse Acceleration and Sensitivity
Terminal scrollback

Everything should work pretty much the same on any modern Unix platform

Following are screenshots and instructions to set up basic Ubuntu on VMware

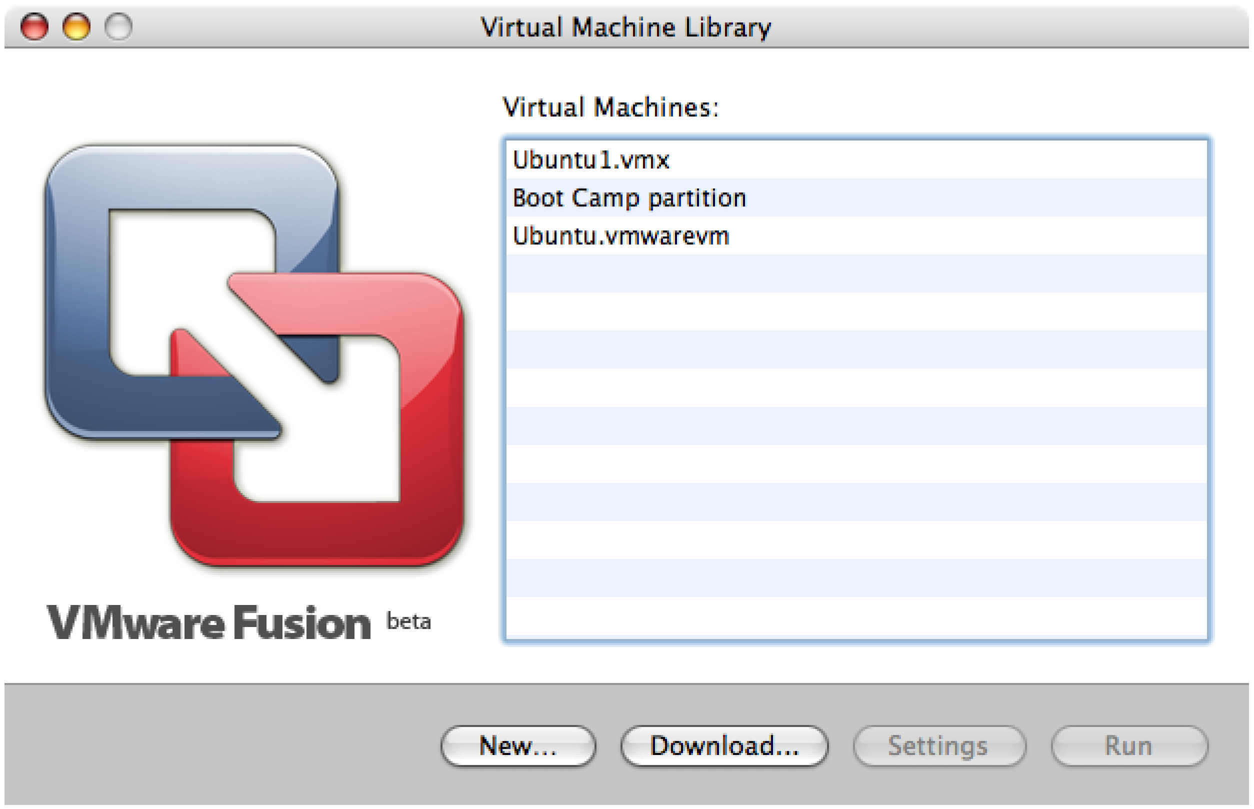
We will skip them for now, but you can use them as a guide when you try it later

Exact steps may vary depending on your hardware

Original screenshots in /presentation /screenshots if these are too small to read

VMware Mac Setup: /presentation /screenshots /01a_mac_vmware_fusion_screenshots

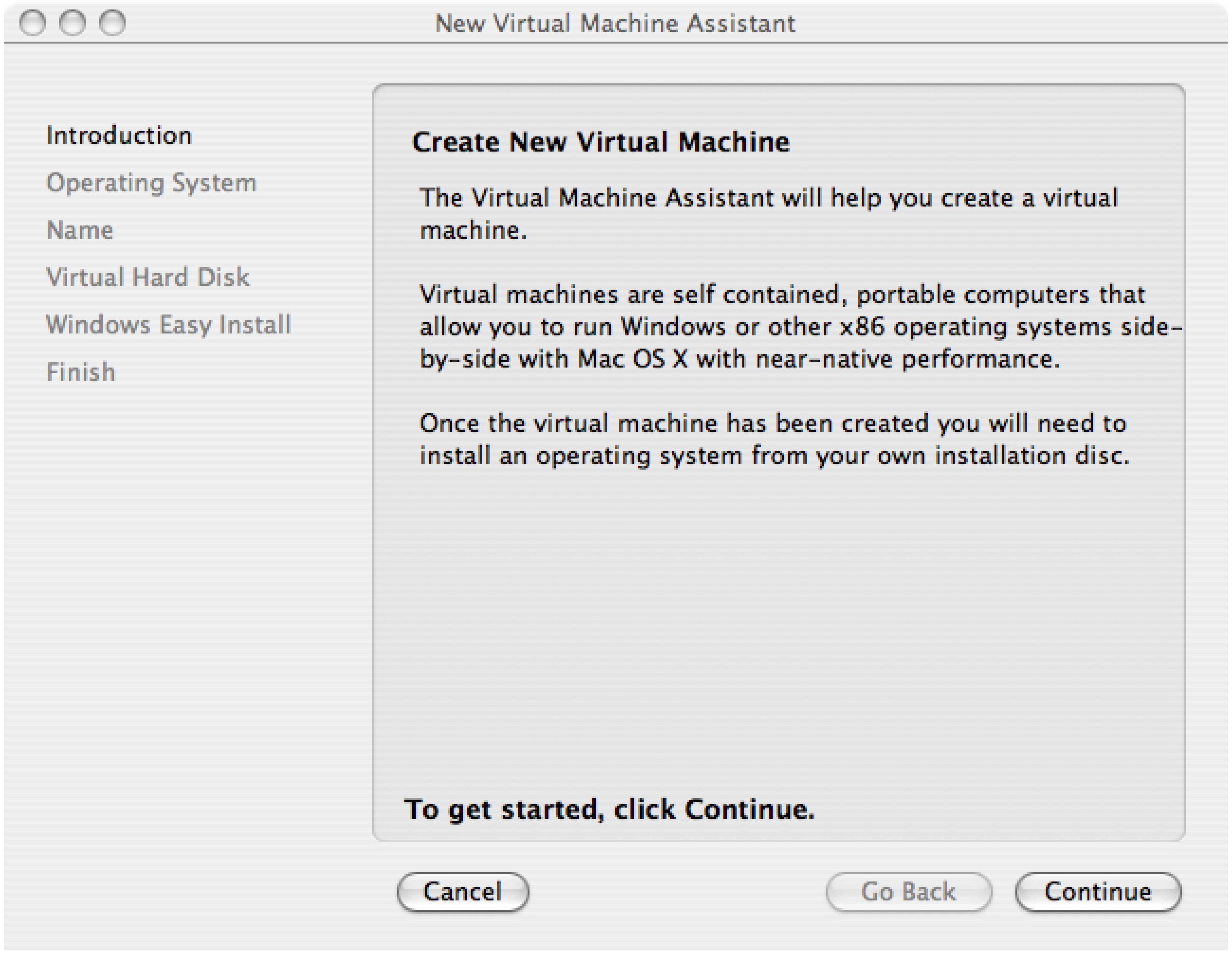
01_Virtual_Machine_Library.png



Virtual Machines:

Ubuntu1.vmx
Boot Camp partition
Ubuntu.vmwarevm

02_Create_New_Virtual_Machine.png



Create New Virtual Machine

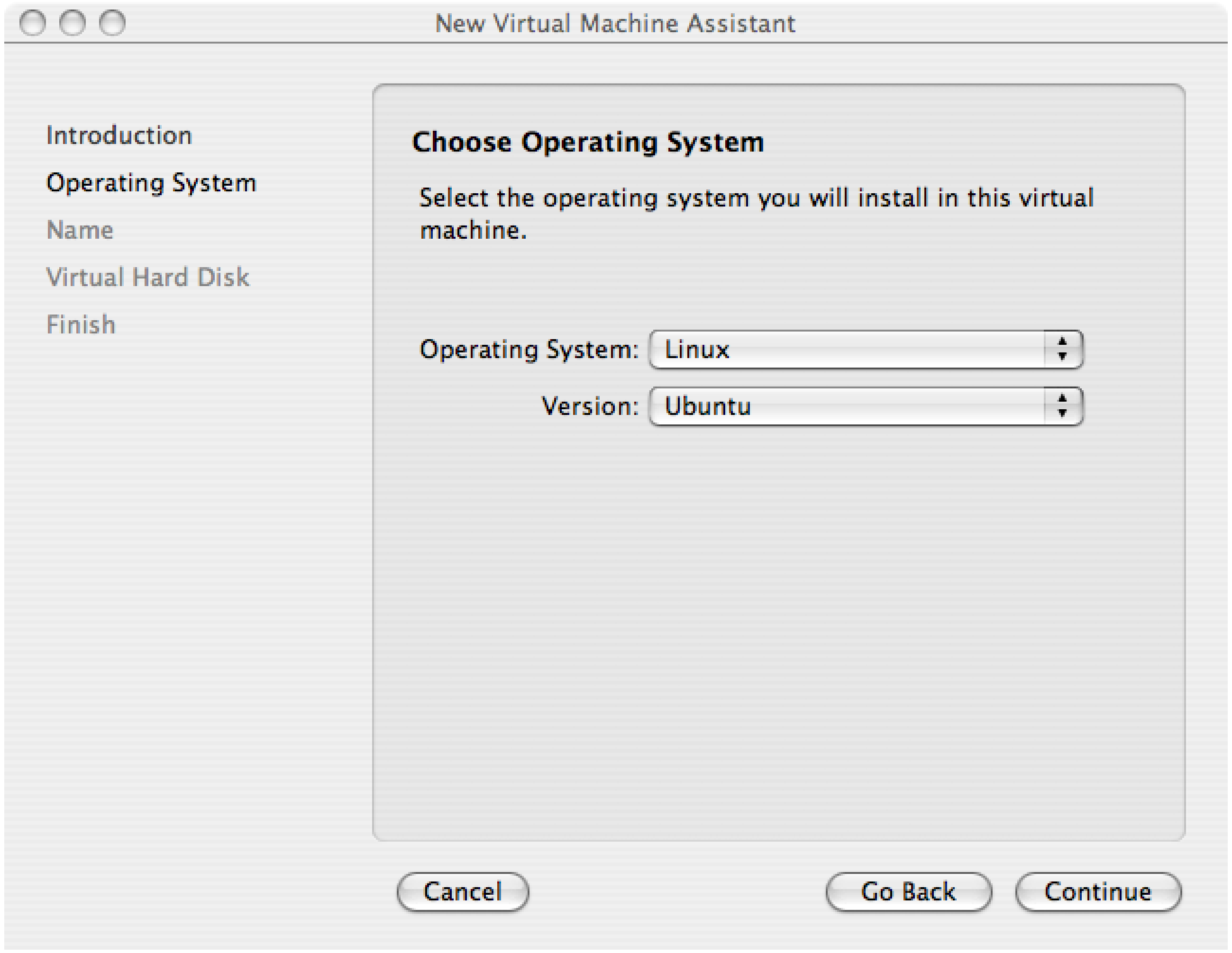
The Virtual Machine Assistant will help you create a virtual machine.

Virtual machines are self contained, portable computers that allow you to run Windows or other x86 operating systems side-by-side with Mac OS X with near-native performance.

Once the virtual machine has been created you will need to install an operating system from your own installation disc.

To get started, click Continue.

03_Choose_Operating_System.png



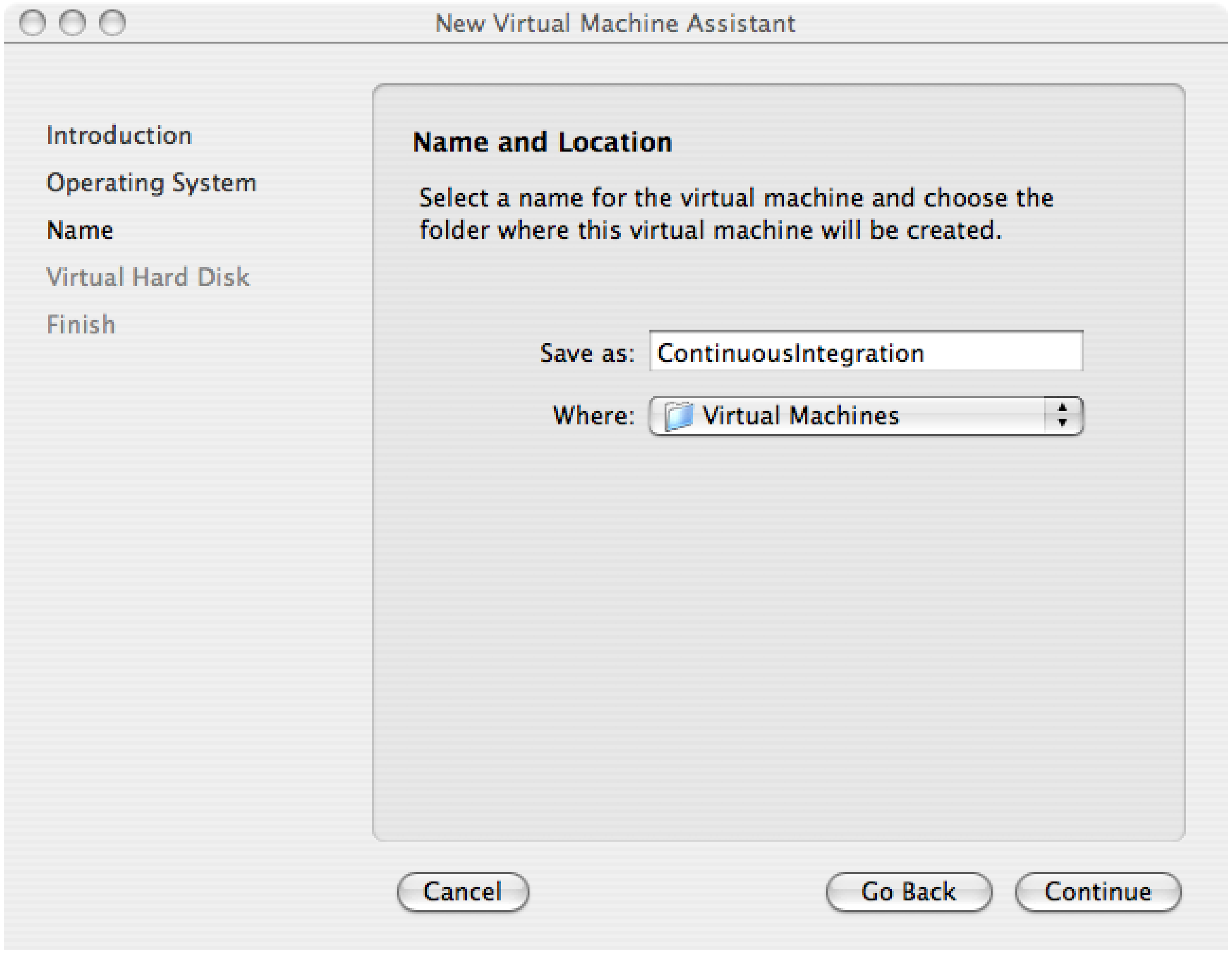
Choose Operating System

Select the operating system you will install in this virtual machine.

Operating System: Linux

Version: Ubuntu

04_Name_and_Location.png



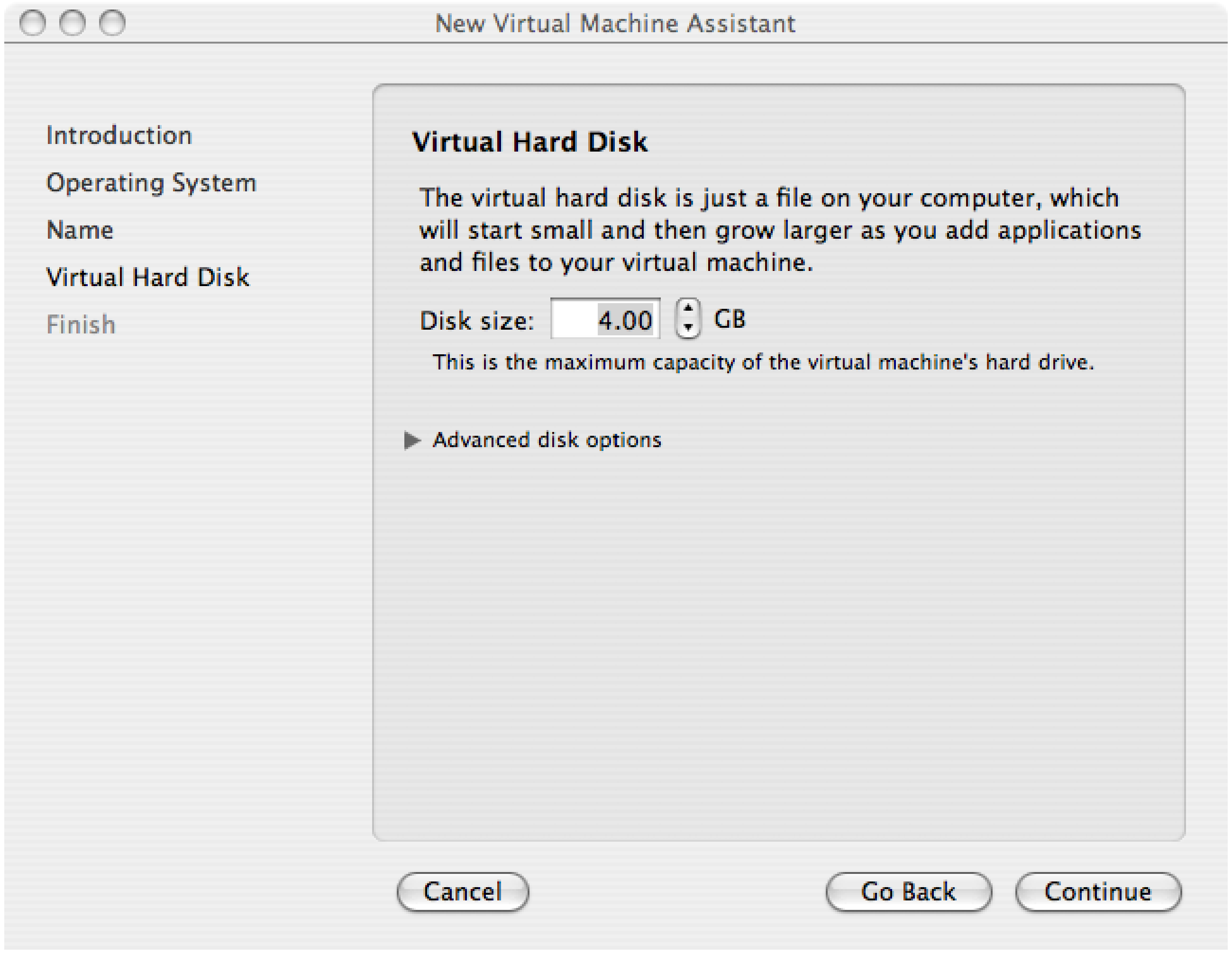
Name and Location

Select a name for the virtual machine and choose the folder where this virtual machine will be created.

Save as: ContinuousIntegration

Where: Virtual Machines

05_Virtual_Hard_Disk.png



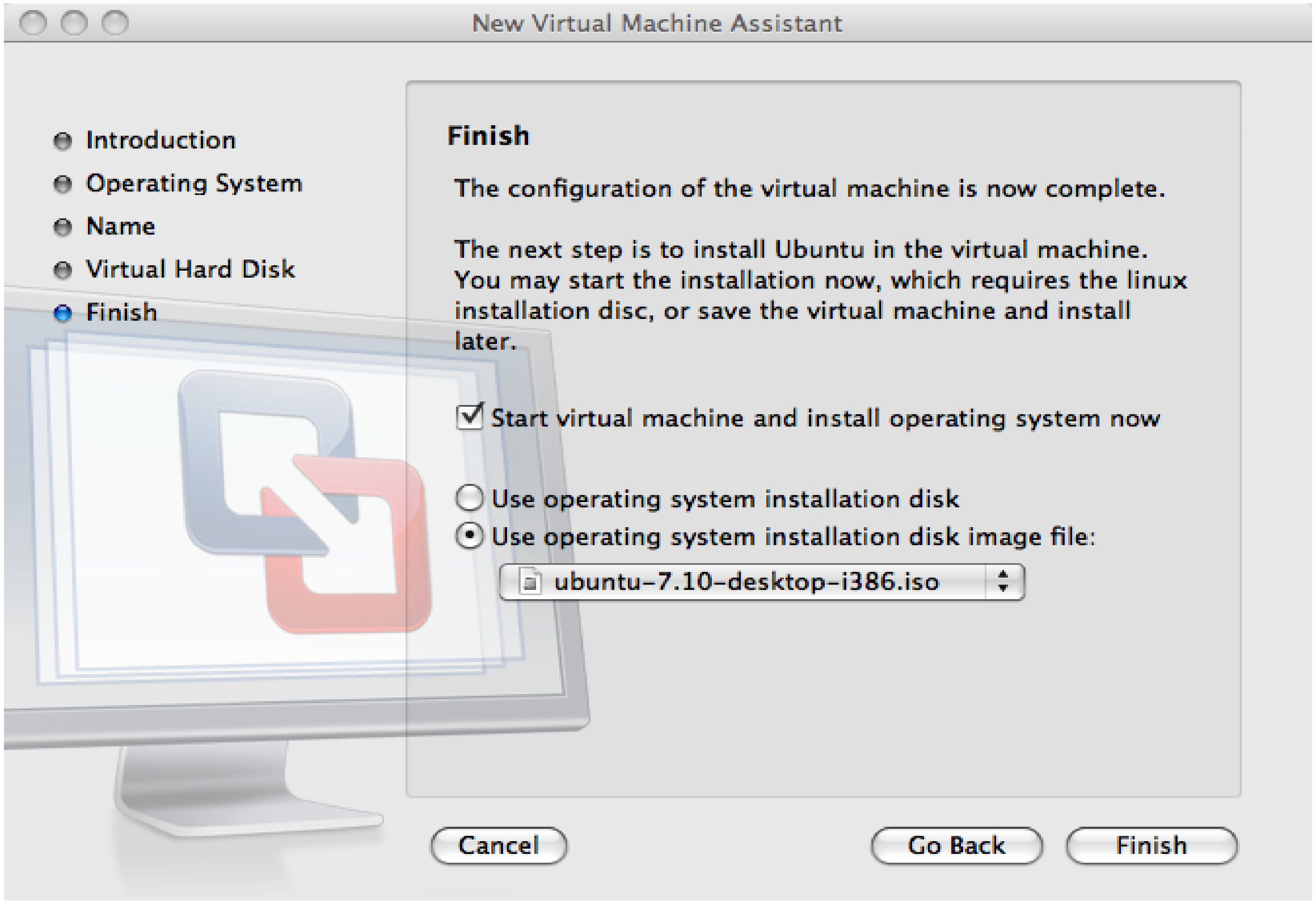
Virtual Hard Disk

The virtual hard disk is just a file on your computer, which will start small and then grow larger as you add applications and files to your virtual machine.

Disk size: 4.00 GB

This is the maximum capacity of the virtual machine's hard drive.

06_Finish.png



Finish

The configuration of the virtual machine is now complete.

The next step is to install Ubuntu in the virtual machine. You may start the installation now, which requires the linux installation disc, or save the virtual machine and install later.

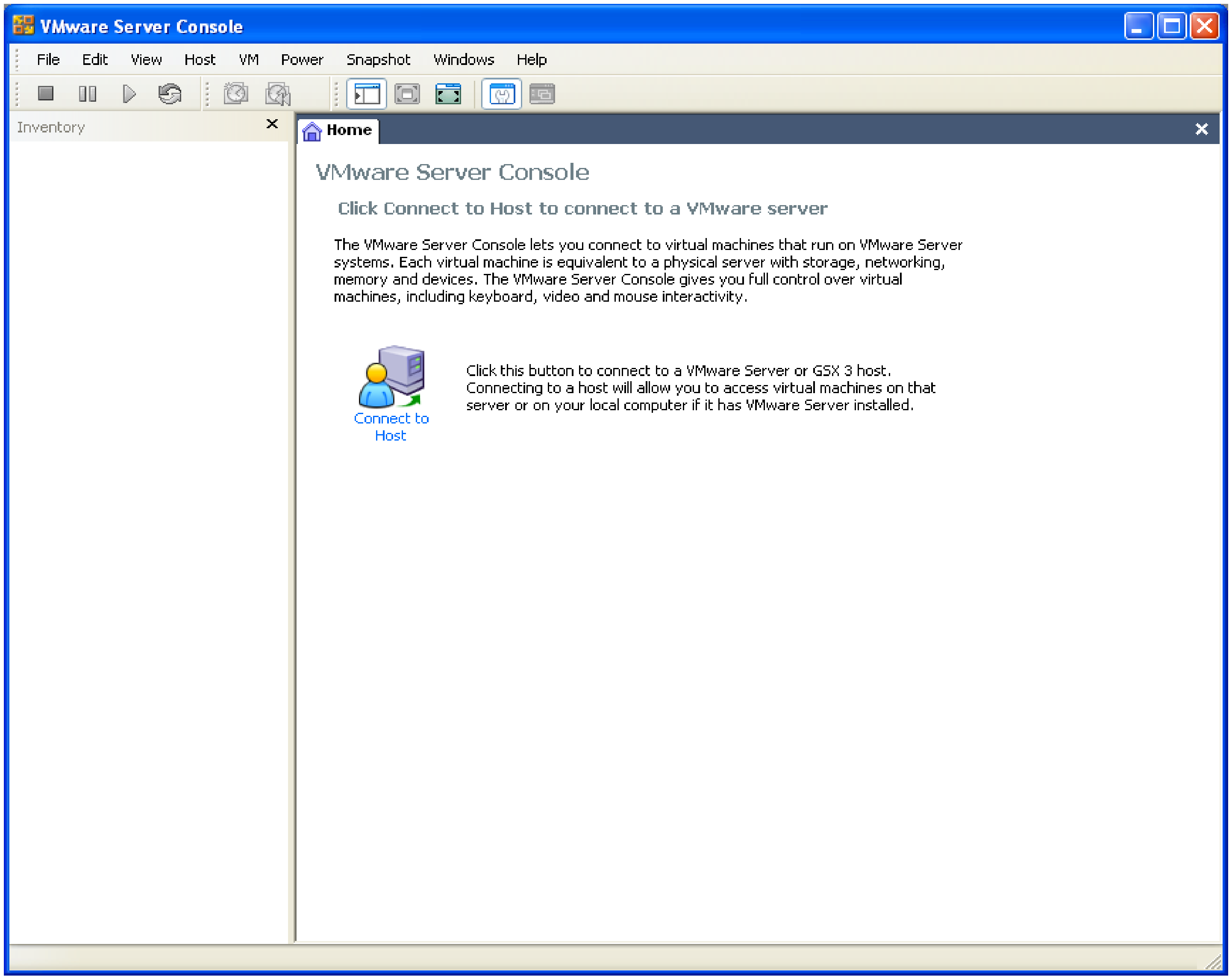
[✓] Start virtual machine and install operating system now

○ Use operating system installation disk
● Use operating system installation disk image file:

ubuntu-7.10-desktop-i386.iso

VMware Win Setup: /presentation /screenshots /01b_win_vmware_ server_screenshots

01_VMware_Server_Console.PNG



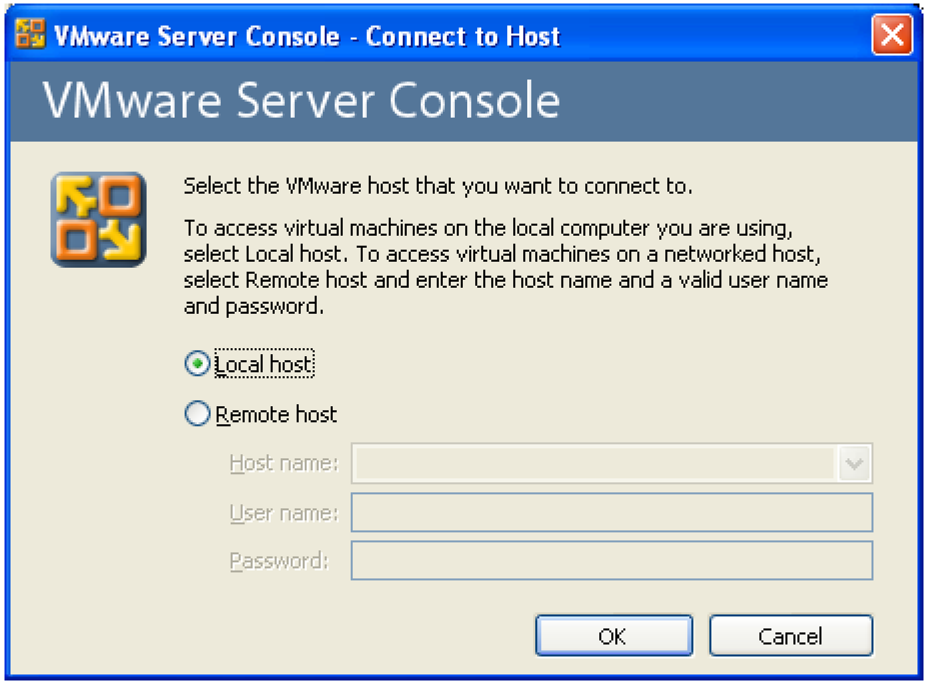
VMware Server Console

Click Connect to Host to connect to a VMware server

The VMware Server Console lets you connect to virtual machines that run on VMware Server systems. Each virtual machine is equivalent to a physical server with storage, networking, memory and devices. The VMware Server Console gives you full control over virtual machines, including keyboard, video and mouse interactivity.

Click this button to connect to a VMware Server or GSX 3 host. Connecting to a host will allow you to access virtual machines on that server or on your local computer if it has VMware Server installed.

02_Connect_To_Host.PNG



VMware Server Console - Connect to Host

VMware Server Console

Select the VMware host that you want to connect to.

To access virtual machines on the local computer you are using, select Local host. To access virtual machines on a networked host, select Remote host and enter the host name and a valid user name and password.

[✓ Local host]

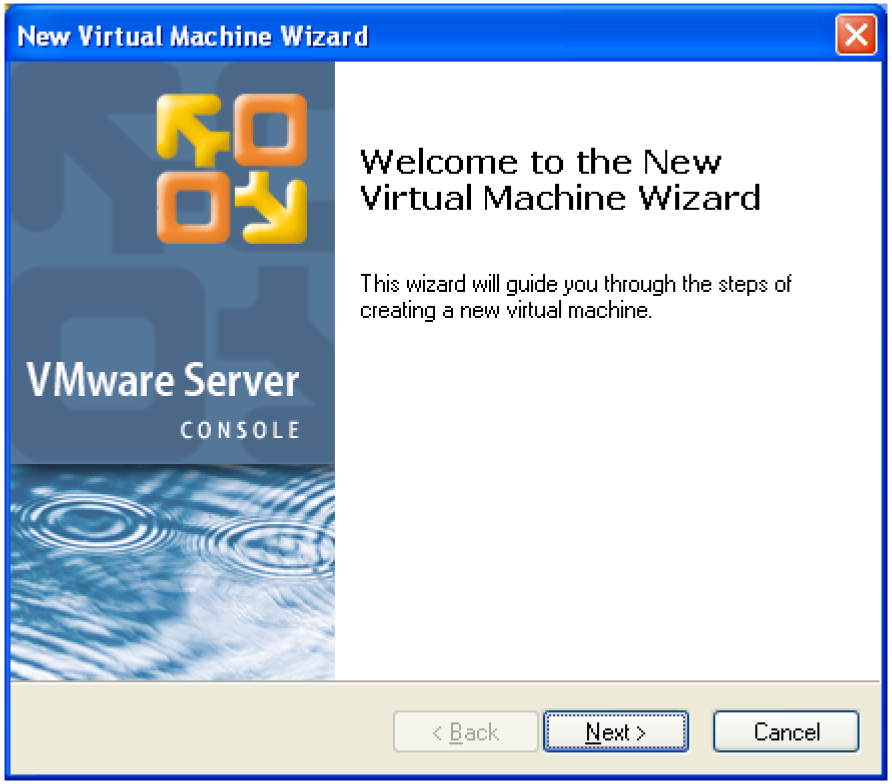
Remote host

Host name:

User name:

Password:

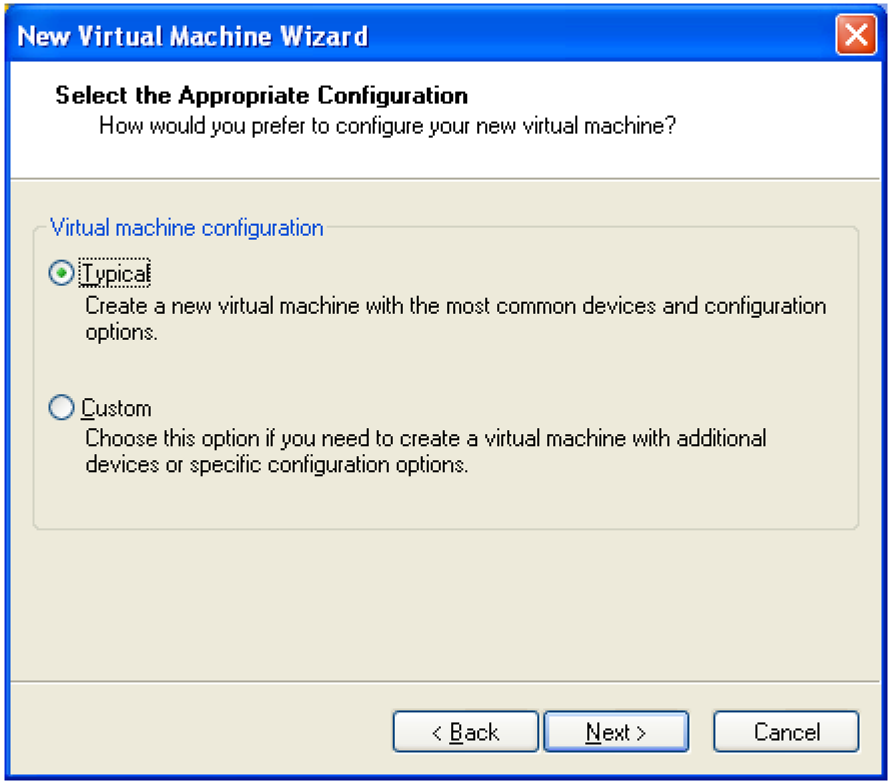
03_New_Virtual_Machine.PNG



Welcome to the New Virtual Machine Wizard

This wizard will guide you through the steps of creating a new virtual machine.

04_Virtual_Machine_Configuration.PNG



New Virtual Machine Wizard

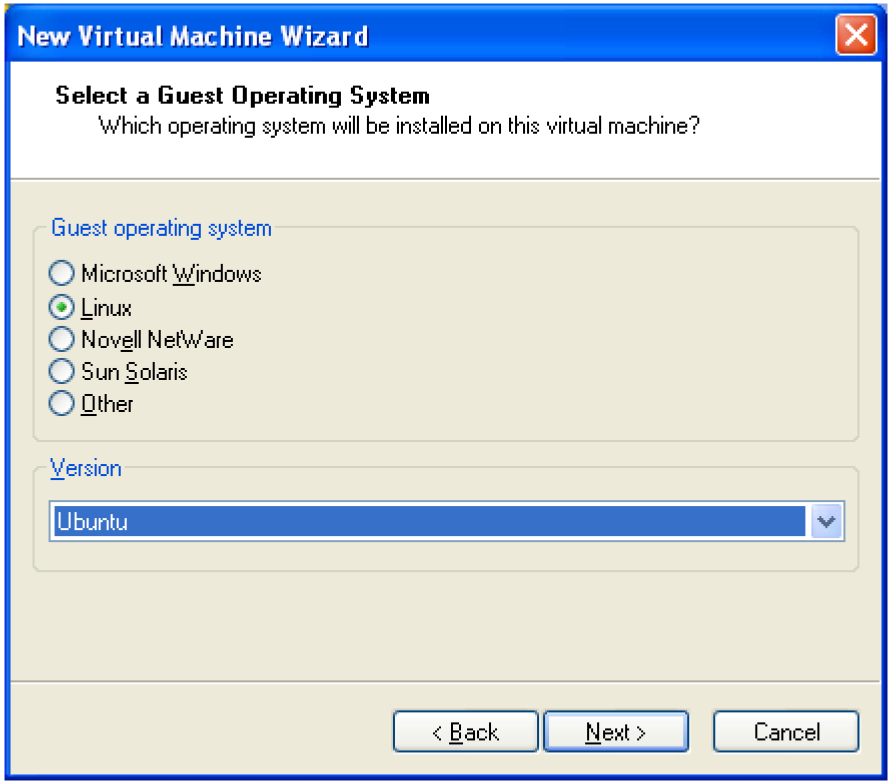
Select the Appropriate Configuration
How would you prefer to configure your new virtual machine?

Virtual machine configuration

[✓ Typical]
Create a new virtual machine with the most common devices and configuration options.

Custom
Choose this option if you need to create a virtual machine with additional devices or specific configuration options.

05_Select_a_Guest_Operating_System.PNG


New Virtual Machine Wizard

Select a Guest Operating System

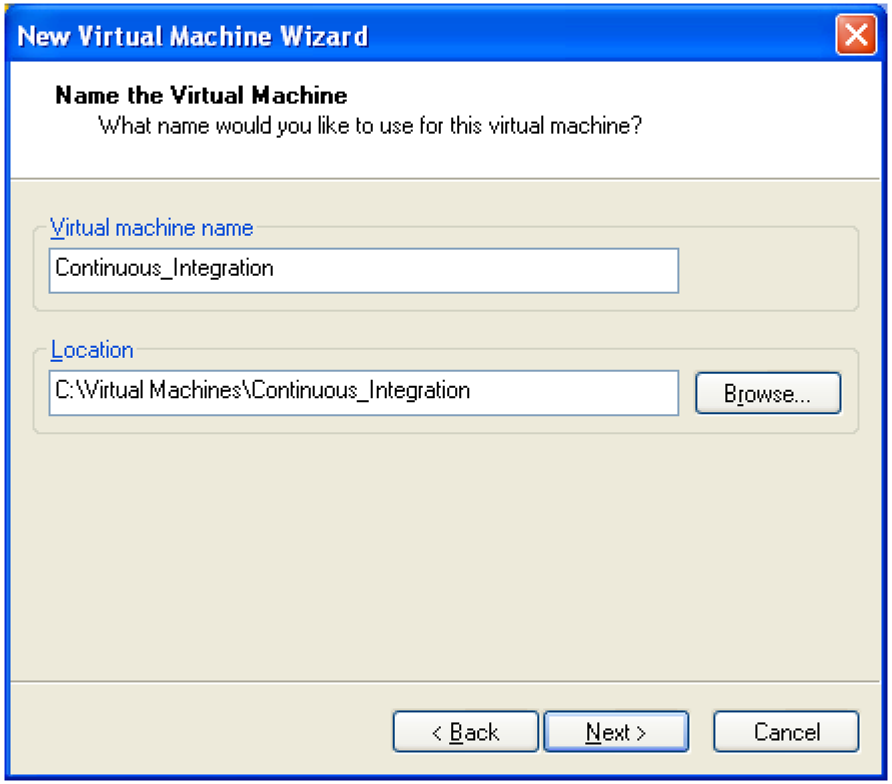
Which operating system will be installed on this virtual machine?

Guest operating system

- Microsoft Windows
- [✓ Linux]
- Novell NetWare
- Sun Solaris
- Other

Version: Ubuntu

06_Name_the_Virtual_Machine.PNG

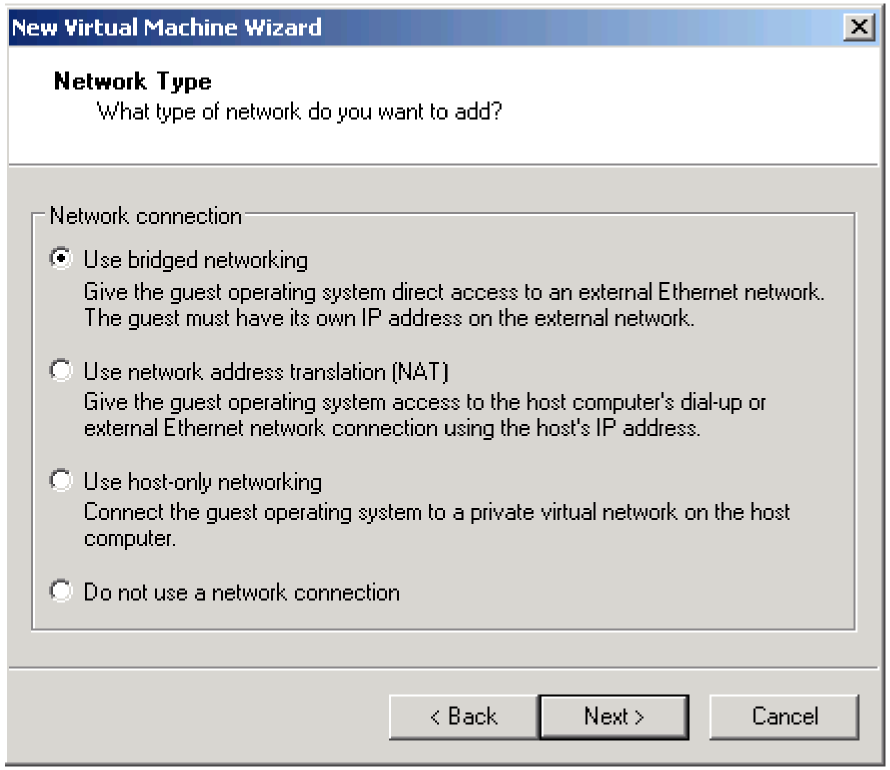

New Virtual Machine Wizard

Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name: Continuous_Integration

Location: C:\Virtual Machines\Continuous_Integration

07_Network_Type.PNG



New Virtual Machine Wizard

Network Type

What type of network do you want to add?

Network connection

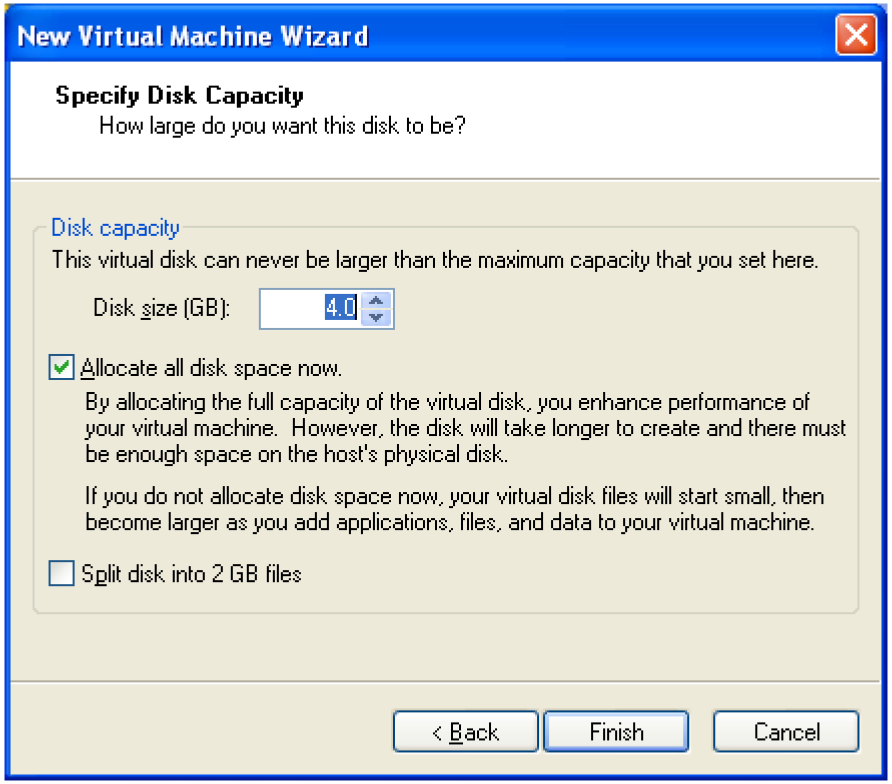
[✓ Use bridged networking]
Give the guest operating system direct access to an external Ethernet network. The guest must have its own IP address on the external network.

Use network address translation (NAT)
Give the guest operating system access to the host computer's dial-up or external Ethernet network connection using the host's IP address.

Use host-only networking
Connect the guest operating system to a private virtual network on the host computer.

Do not use a network connection

08_Specify_Disk_Capacity.PNG



New Virtual Machine Wizard

Specify Disk Capacity

How large do you want this disk to be?

Disk capacity

This virtual disk can never be larger than the maximum capacity that you set here.

Disk size (GB): 4.0

[✓] Allocate all disk space now.

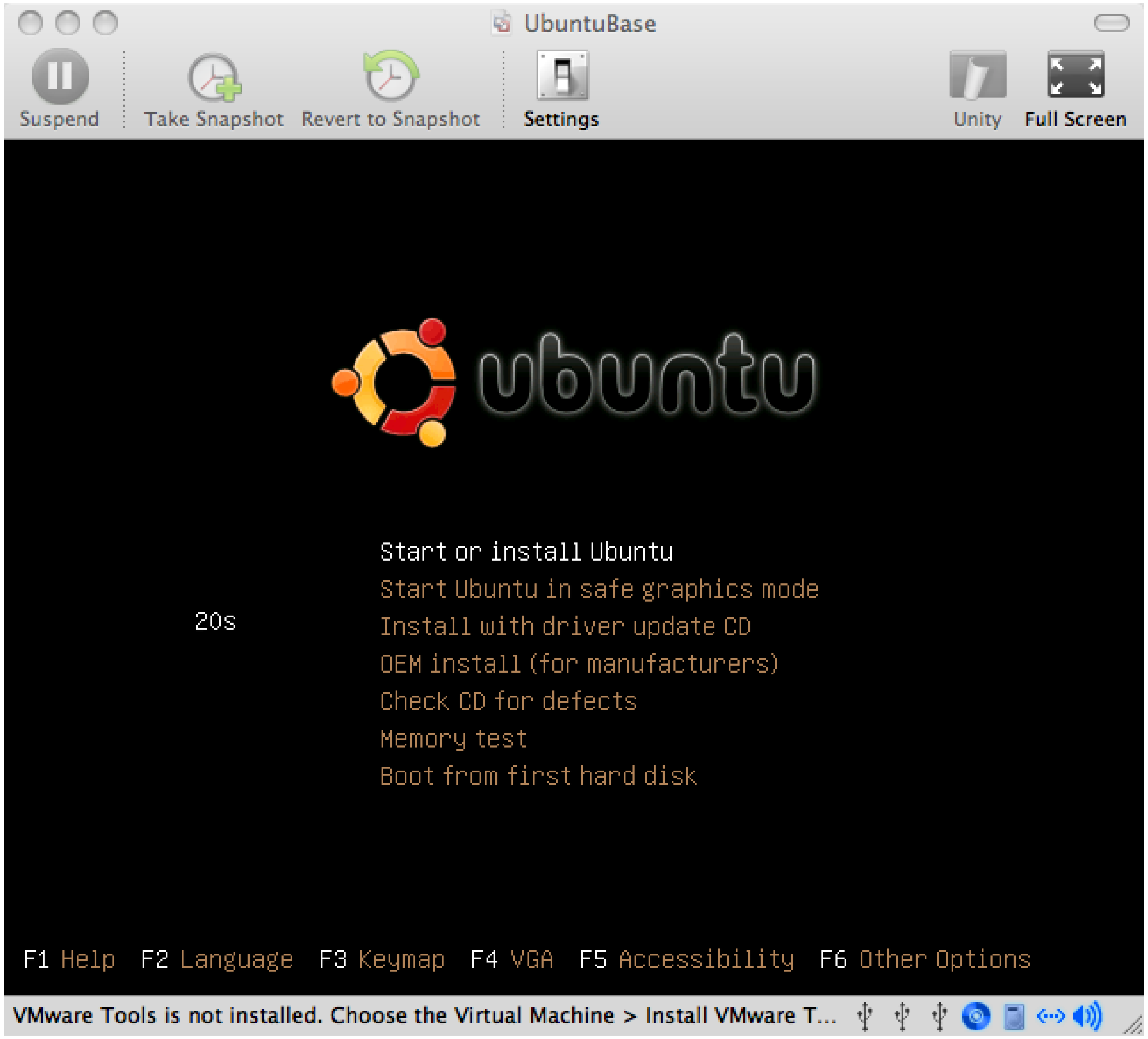
By allocating the full capacity of the virtual disk, you enhance performance of your virtual machine. However, the disk will take longer to create and there must be enough space on the host's physical disk.

If you do not allocate disk space now, your virtual disk files will start small, then become larger as you add applications, files, and data to your virtual machine.

[ ] Split disk into 2 GB files

Mac/Win Ubuntu VM Setup: /presentation /screenshots /02_ubuntu_vm_ setup_screenshots

01_Start_or_Install_Ubuntu.png



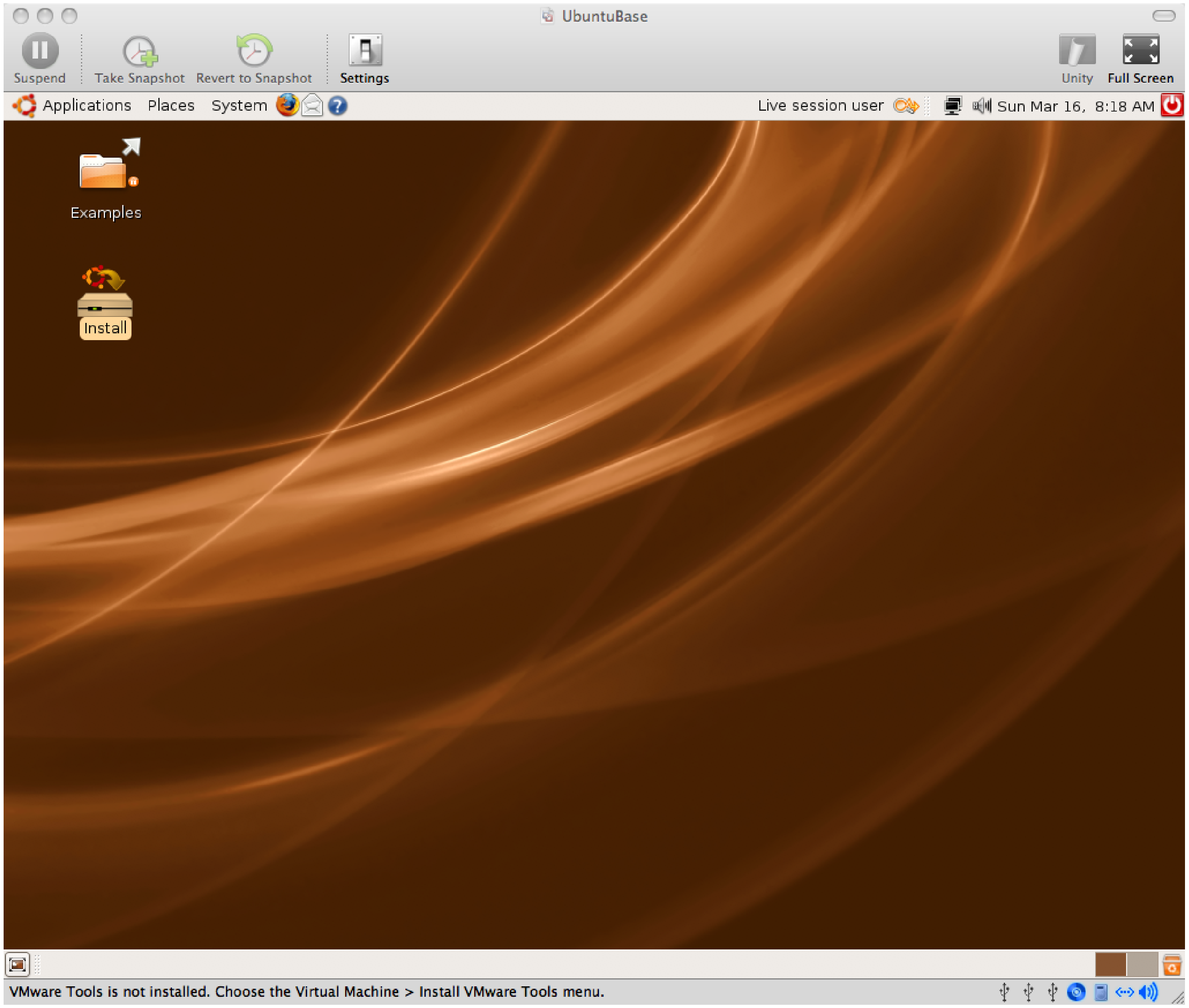
```
Start or install Ubuntu
Start Ubuntu in safe graphics mode
Install with driver update CD
OEM install (for manufacturers)
Check CD for defects
Memory test
Boot from first hard disk

20s

F1 Help  F2 Language  F3 Keymap  F4 VGA  F5 Accessibility  F6 Other Options
```

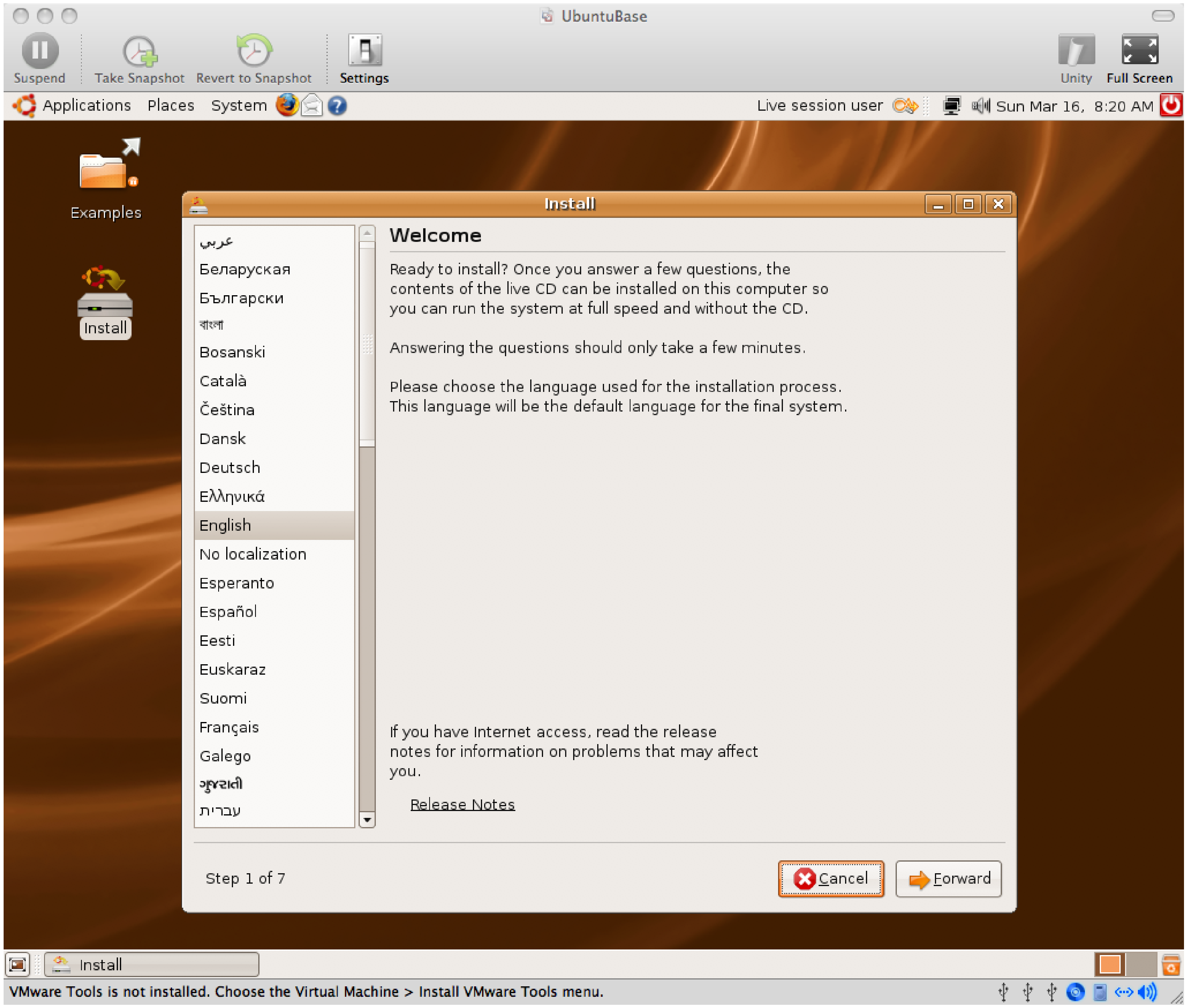
VMware Tools is not installed. Choose the Virtual Machine > Install VMware T...

02_Install_Icon.png



VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

03_Welcome.png



Welcome

Ready to install? Once you answer a few questions, the contents of the live CD can be installed on this computer so you can run the system at full speed and without the CD.

Answering the questions should only take a few minutes.

Please choose the language used for the installation process. This language will be the default language for the final system.

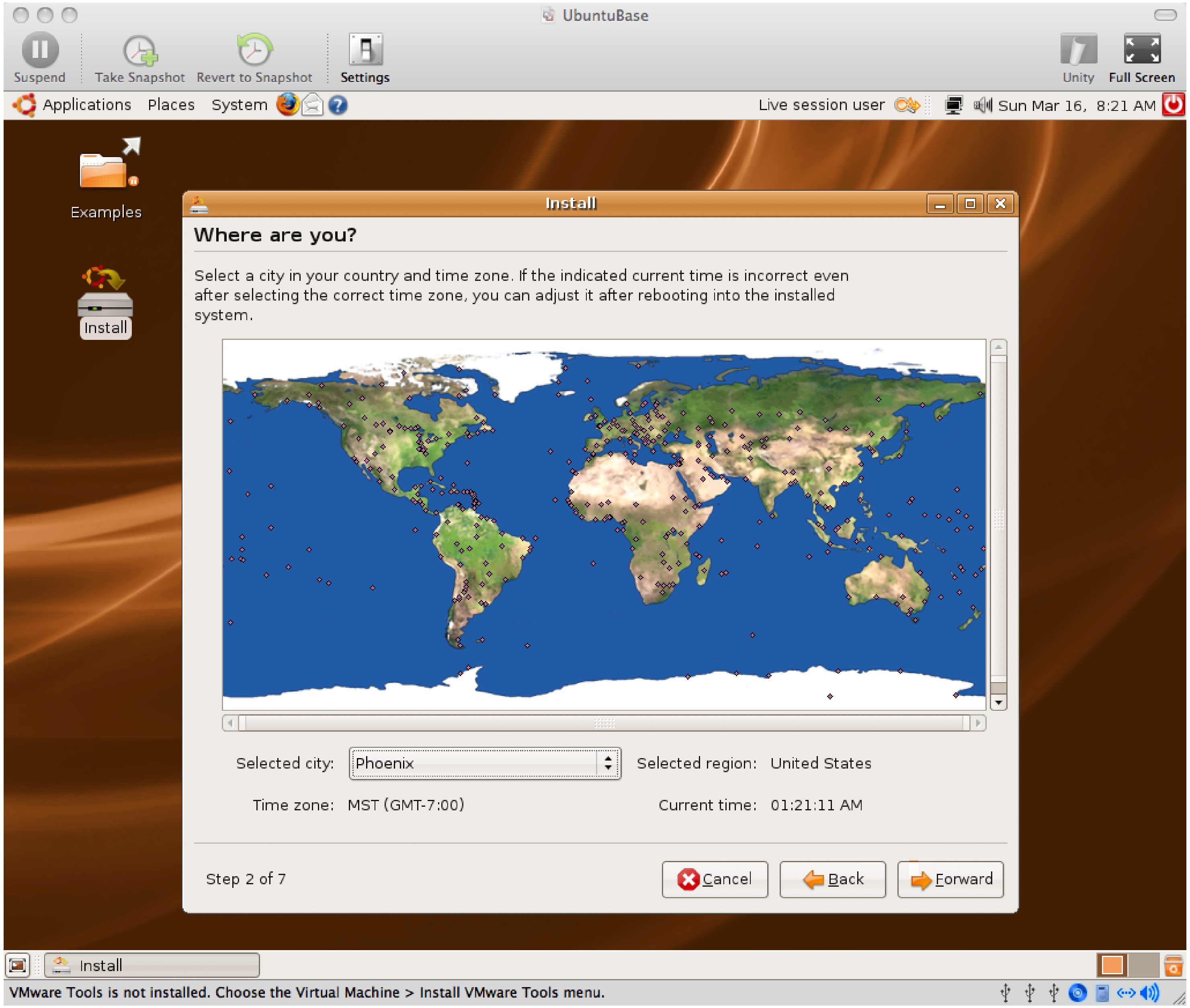
If you have Internet access, read the release notes for information on problems that may affect you.

Release Notes

Step 1 of 7

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

04_Where_are_you.png



Where are you?

Select a city in your country and time zone. If the indicated current time is incorrect even after selecting the correct time zone, you can adjust it after rebooting into the installed system.

Selected city: Phoenix

Selected region: United States

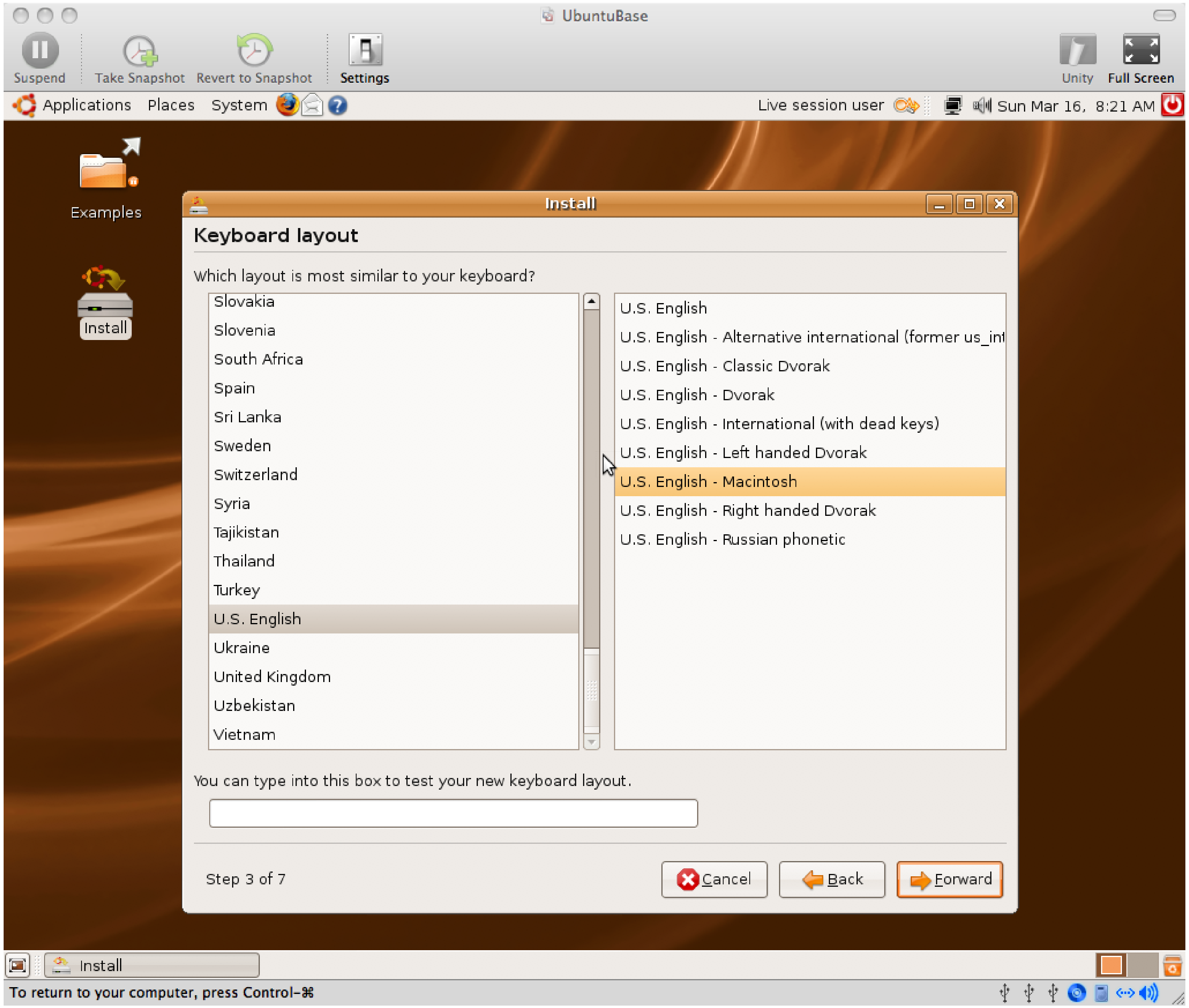
Time zone: MST (GMT-7:00)

Current time: 01:21:11 AM

Step 2 of 7

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

05_Keyboard_Layout.png



Install

Keyboard layout

Which layout is most similar to your keyboard?

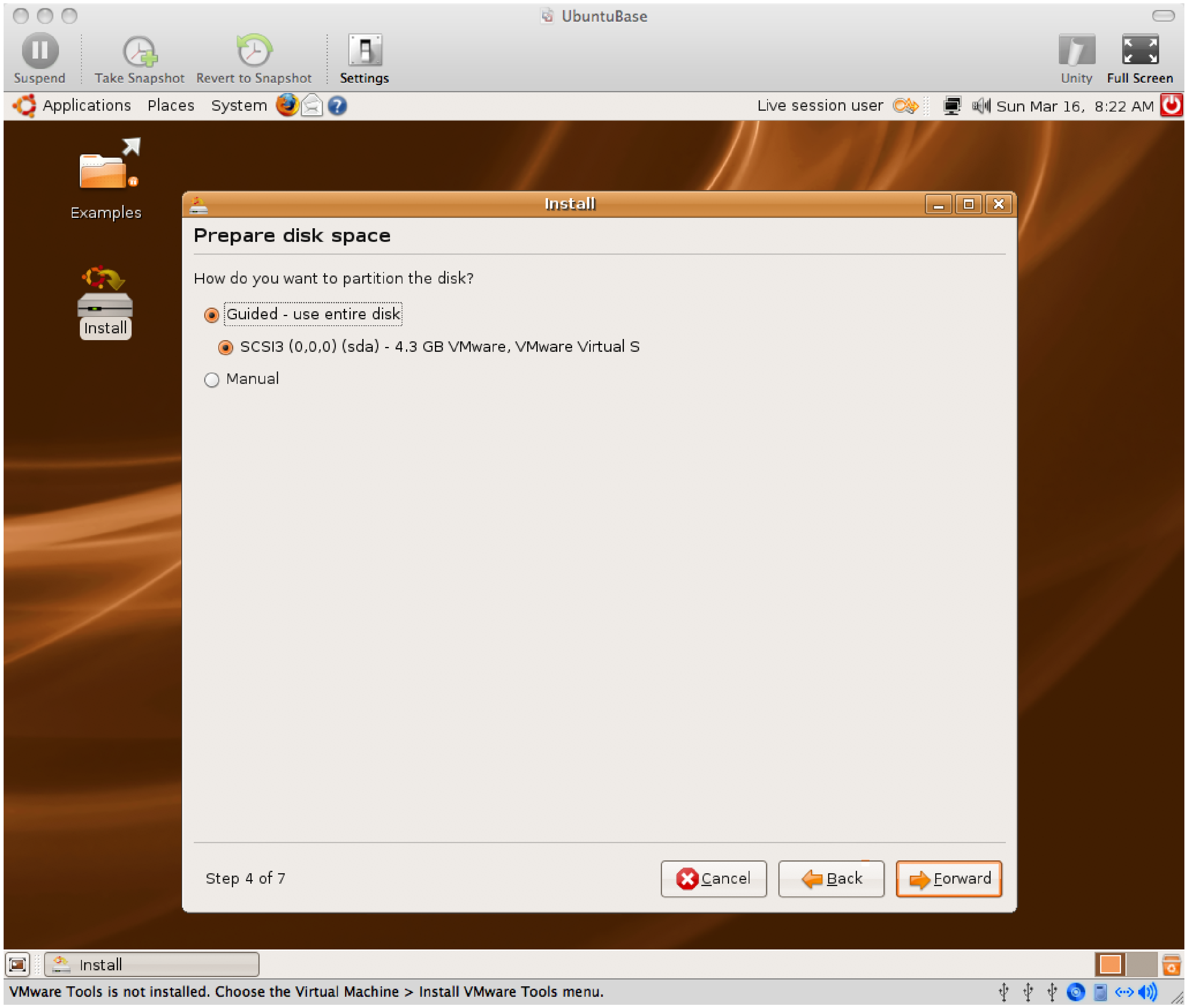
Slovakia
Slovenia
South Africa
Spain
Sri Lanka
Sweden
Switzerland
Syria
Tajikistan
Thailand
Turkey
U.S. English
Ukraine
United Kingdom
Uzbekistan
Vietnam

U.S. English
U.S. English - Alternative international (former us_int
U.S. English - Classic Dvorak
U.S. English - Dvorak
U.S. English - International (with dead keys)
U.S. English - Left handed Dvorak
U.S. English - Macintosh
U.S. English - Right handed Dvorak
U.S. English - Russian phonetic

You can type into this box to test your new keyboard layout.

Step 3 of 7

06_Prepare_disk_space.png



Prepare disk space

How do you want to partition the disk?

[✓ Guided - use entire disk]

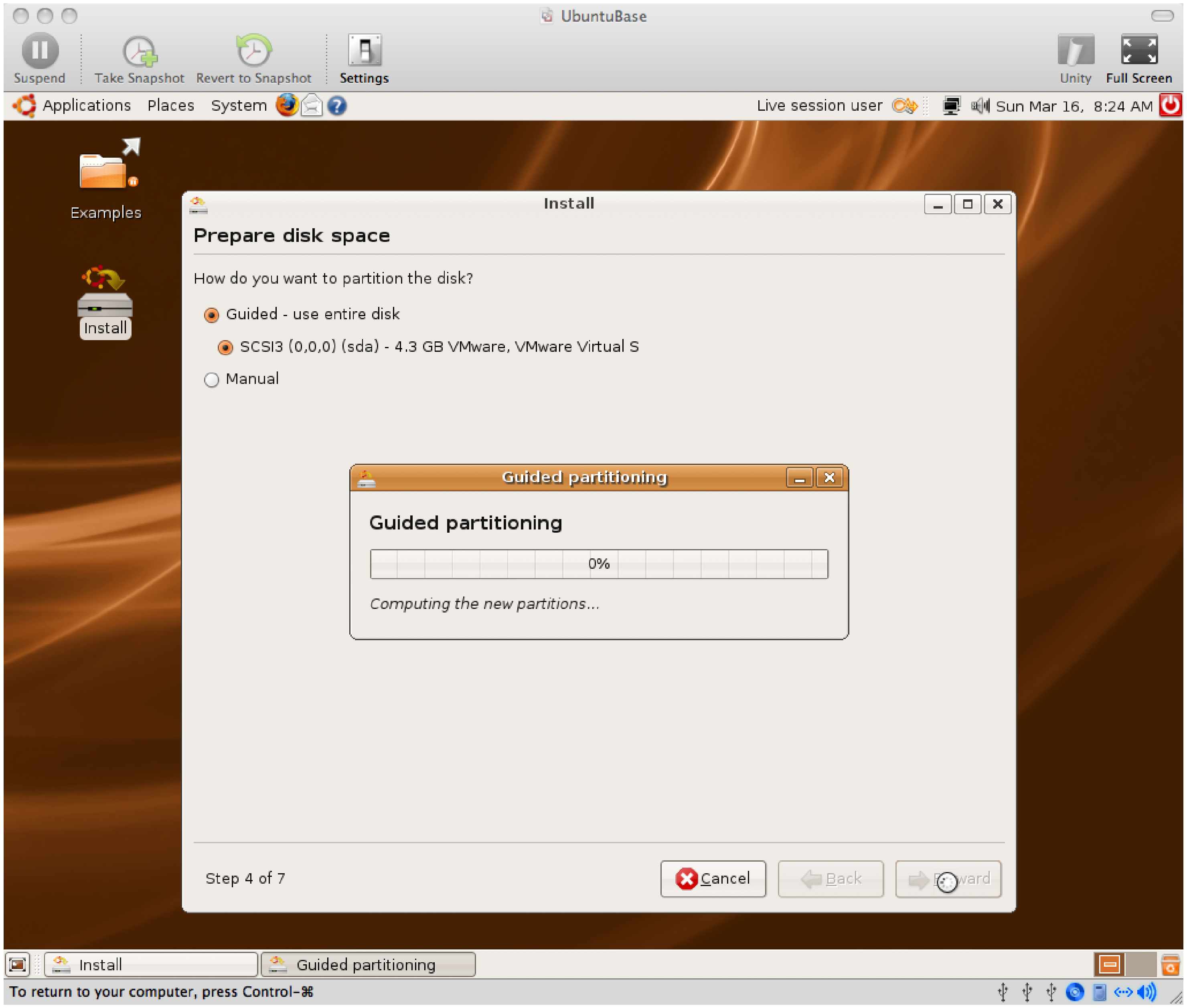
[✓ SCSI3 (0,0,0) (sda) - 4.3 GB VMware, VMware Virtual S]

Manual

Step 4 of 7

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

07_Guided_Partitioning.png



Install

Prepare disk space

How do you want to partition the disk?

[✓ Guided - use entire disk]

[✓ SCSI3 (0,0,0) (sda) - 4.3 GB VMware, VMware Virtual S]

Manual

Guided partitioning

Guided partitioning

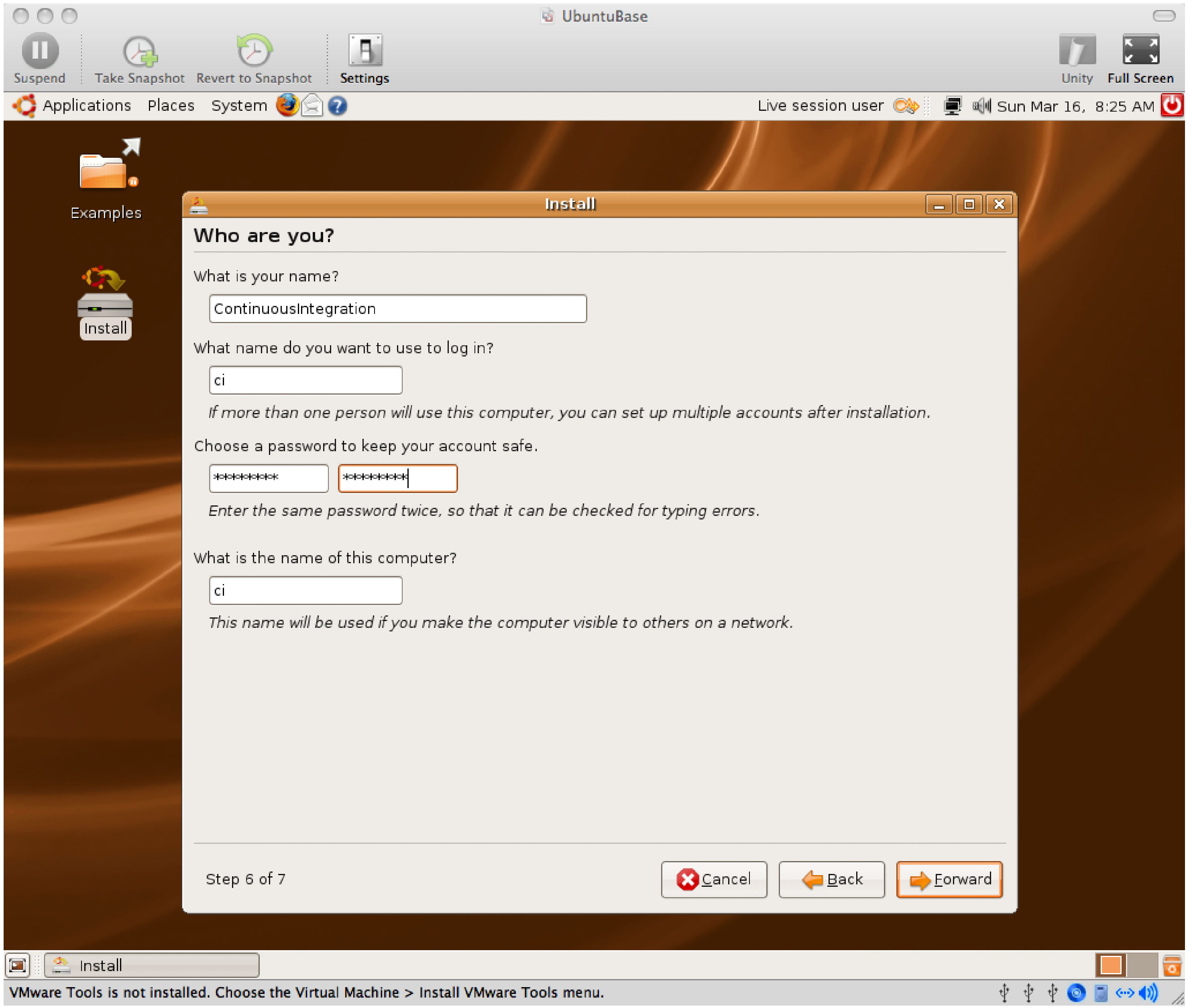
0%

Computing the new partitions...

Step 4 of 7

Cancel Back Forward

08_Who_are_you.png



Install

Who are you?

What is your name?

ContinuousIntegration

What name do you want to use to log in?

ci

If more than one person will use this computer, you can set up multiple accounts after installation.

Choose a password to keep your account safe.

********* *********

Enter the same password twice, so that it can be checked for typing errors.

What is the name of this computer?

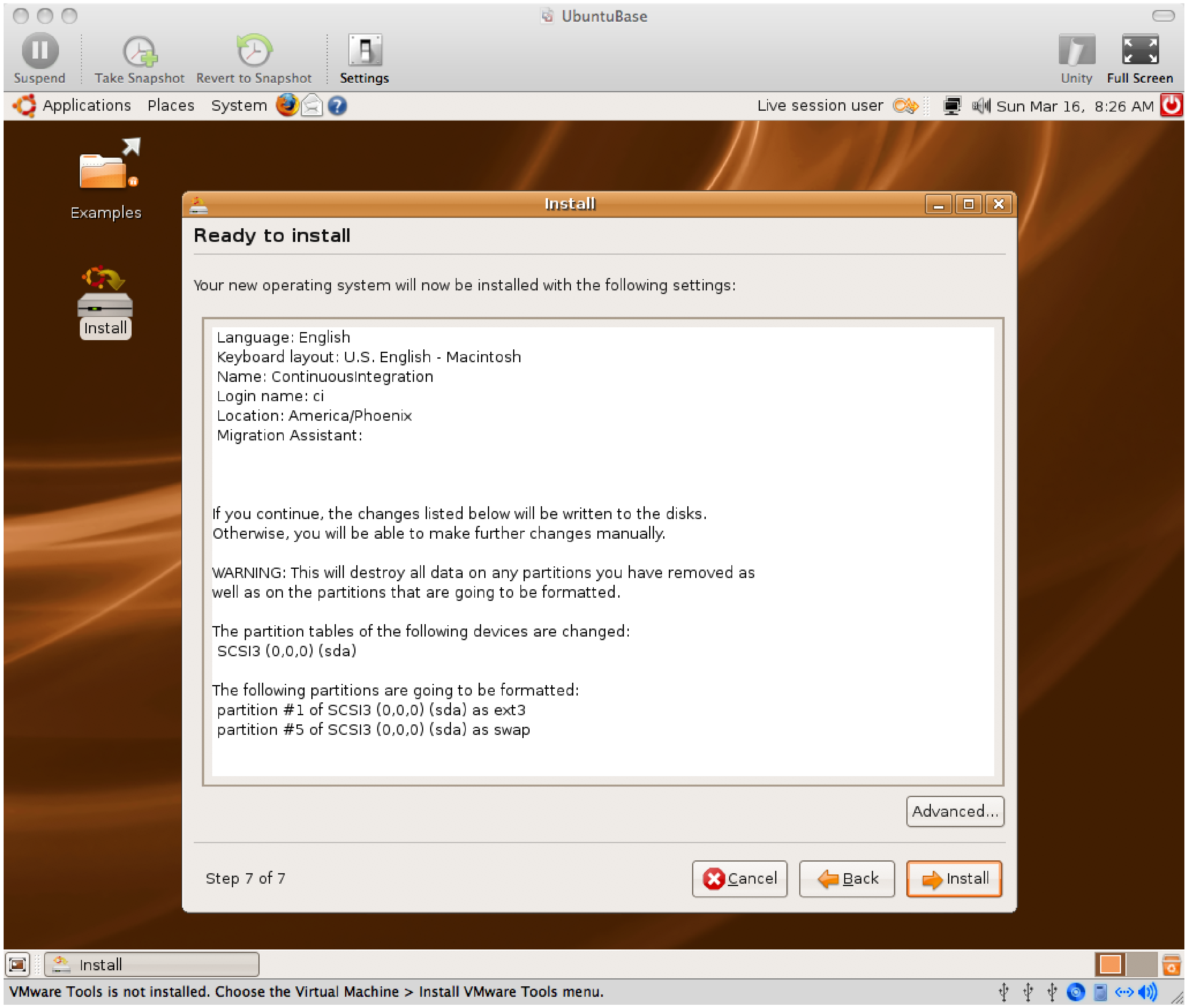
ci

This name will be used if you make the computer visible to others on a network.

Step 6 of 7

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

09_Ready_to_install.png



Ready to install

Your new operating system will now be installed with the following settings:

Language: English
Keyboard layout: U.S. English - Macintosh
Name: ContinuousIntegration
Login name: ci
Location: America/Phoenix
Migration Assistant:

If you continue, the changes listed below will be written to the disks.
Otherwise, you will be able to make further changes manually.

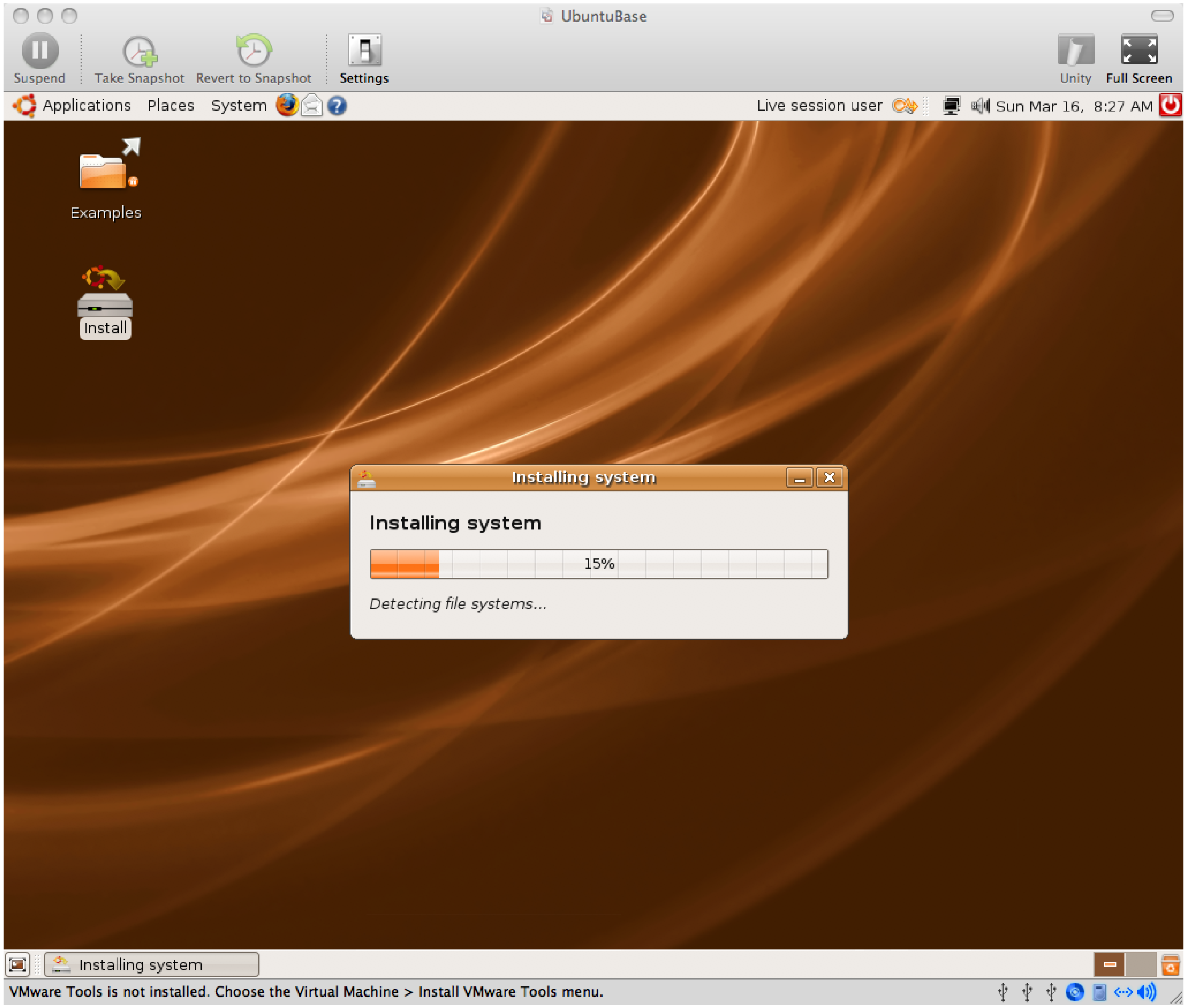
WARNING: This will destroy all data on any partitions you have removed as
well as on the partitions that are going to be formatted.

The partition tables of the following devices are changed:
SCSI3 (0,0,0) (sda)

The following partitions are going to be formatted:
partition #1 of SCSI3 (0,0,0) (sda) as ext3
partition #5 of SCSI3 (0,0,0) (sda) as swap

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

10_Installing_system.png

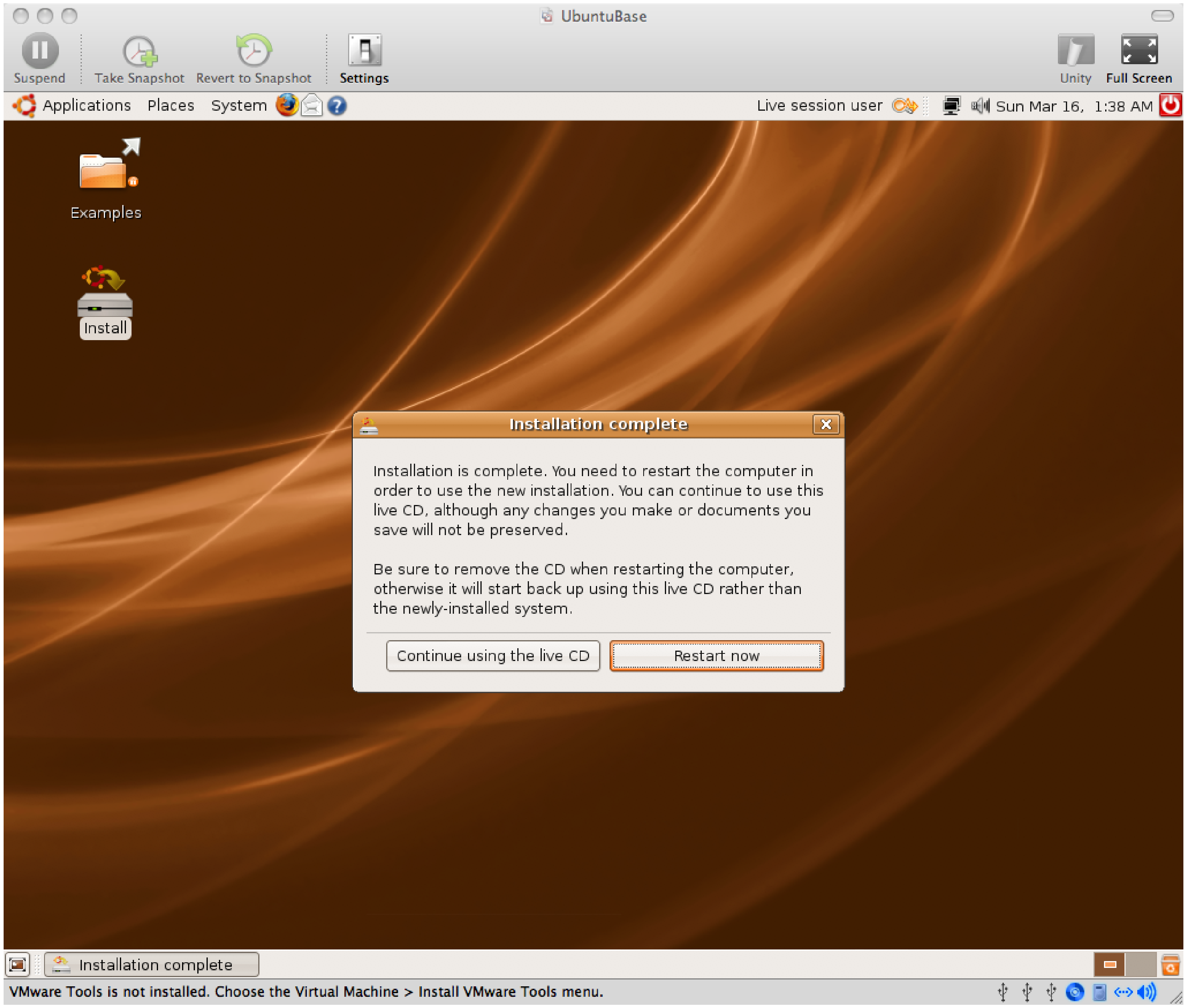


Installing system

Detecting file systems...

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

11_Installation_complete.png



Installation complete

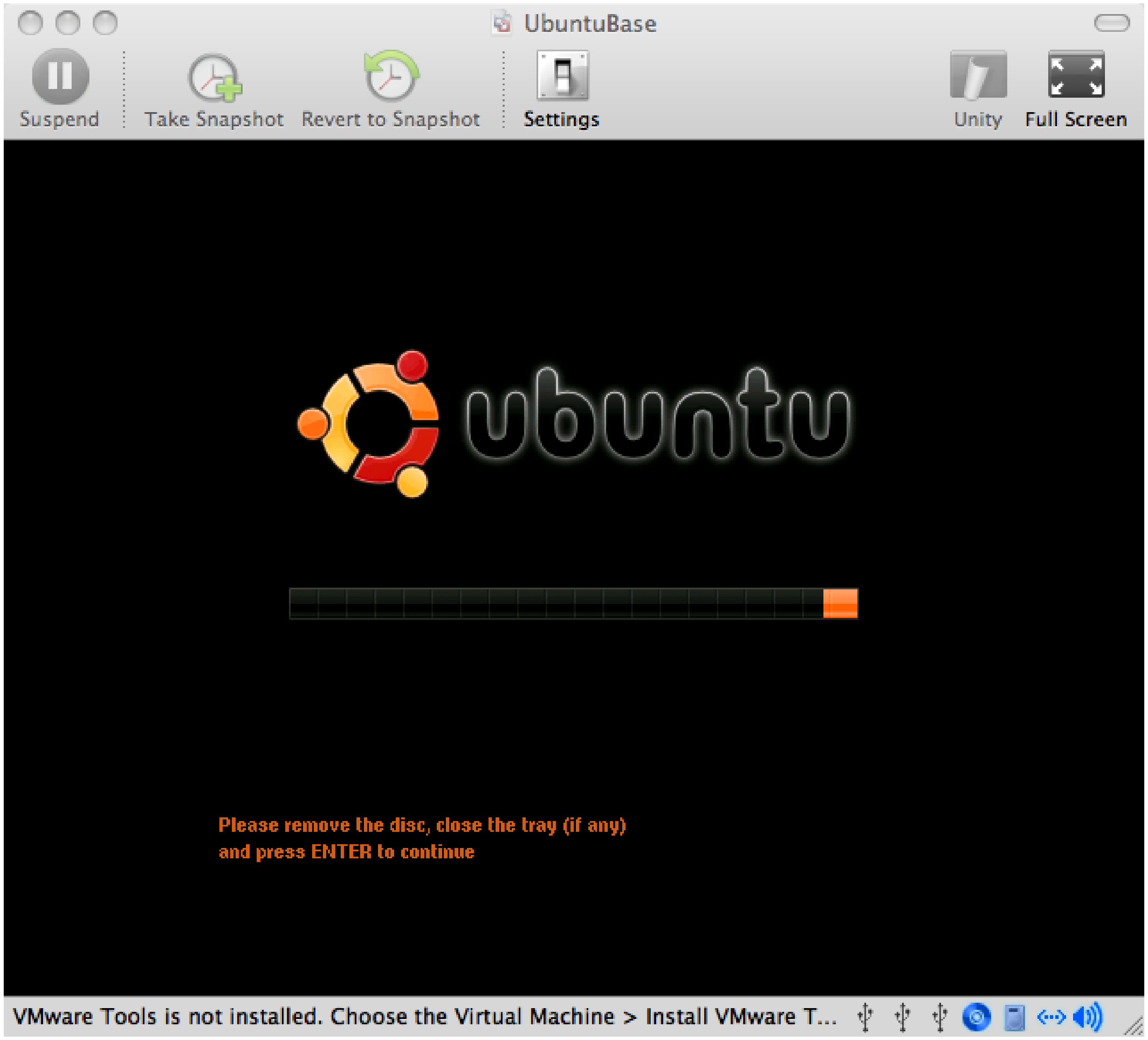
Installation is complete. You need to restart the computer in order to use the new installation. You can continue to use this live CD, although any changes you make or documents you save will not be preserved.

Be sure to remove the CD when restarting the computer, otherwise it will start back up using this live CD rather than the newly-installed system.

Continue using the live CD | Restart now

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

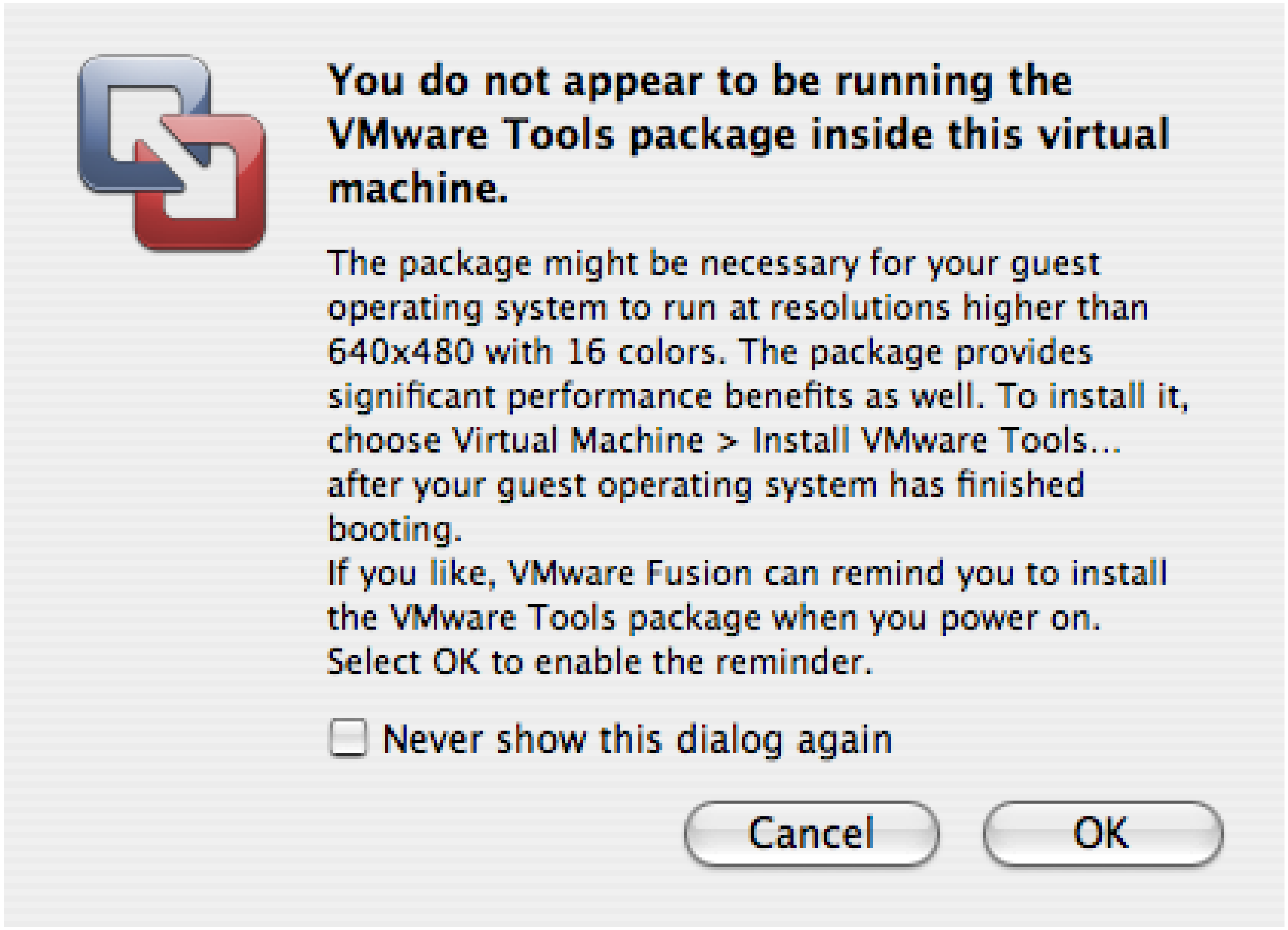
12_Please_Remove_The_Disk.png



Please remove the disc, close the tray (if any)
and press ENTER to continue

VMware Tools is not installed. Choose the Virtual Machine > Install VMware T...

13_VMware_Tools_reminder.png

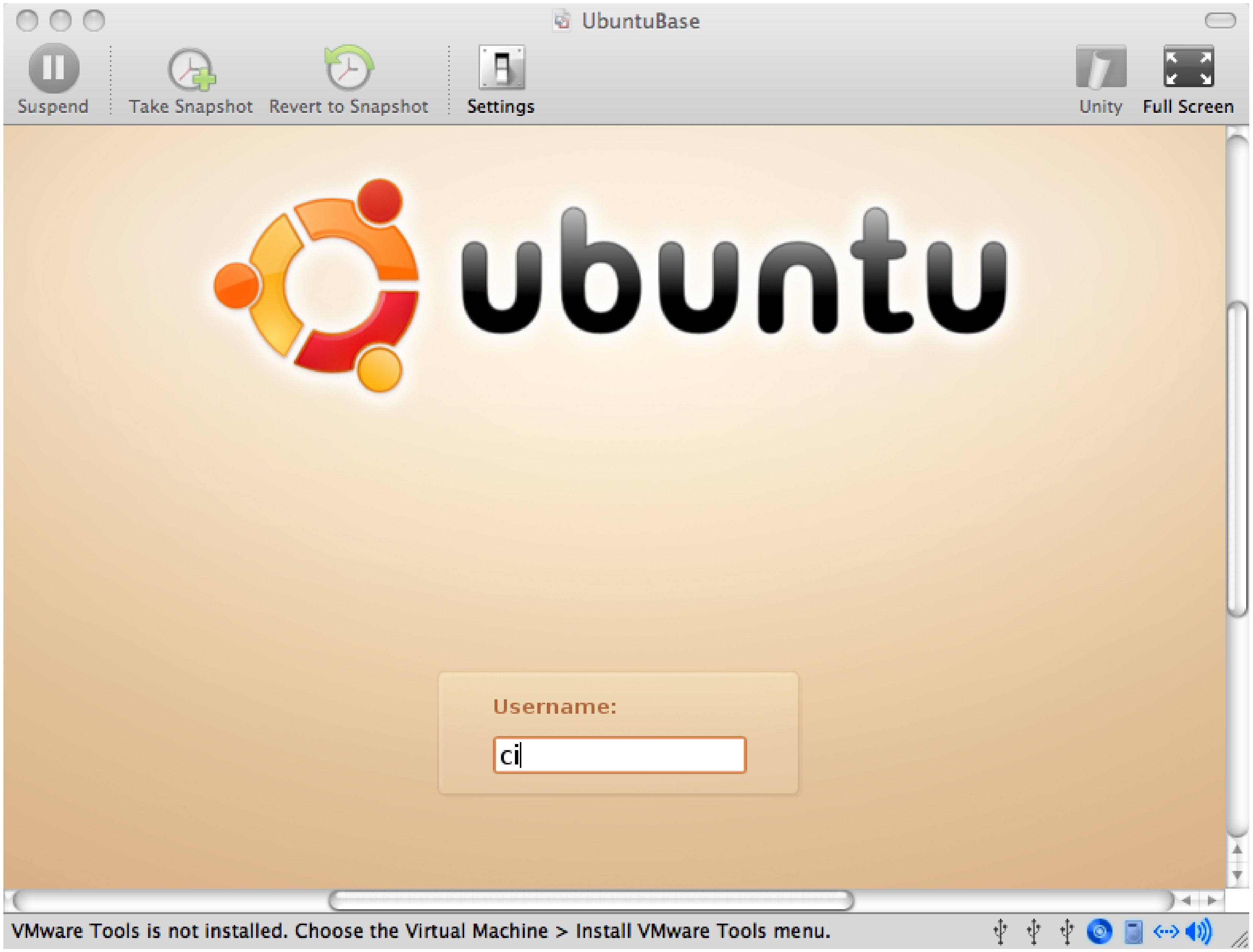


You do not appear to be running the VMware Tools package inside this virtual machine.

The package might be necessary for your guest operating system to run at resolutions higher than 640x480 with 16 colors. The package provides significant performance benefits as well. To install it, choose Virtual Machine > Install VMware Tools... after your guest operating system has finished booting.
If you like, VMware Fusion can remind you to install the VMware Tools package when you power on.
Select OK to enable the reminder.

☐ Never show this dialog again

14_Login.png

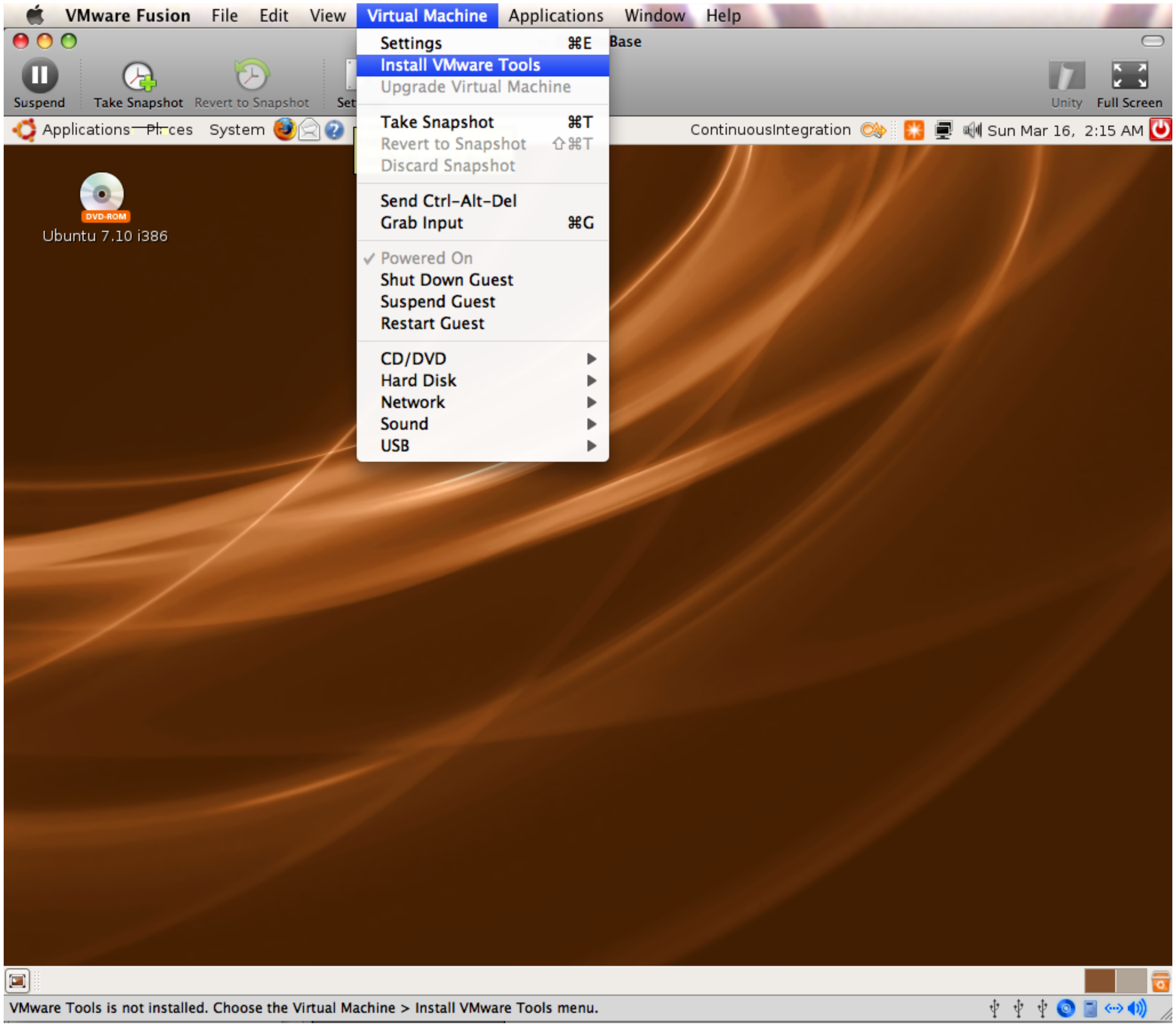


Username:

ci

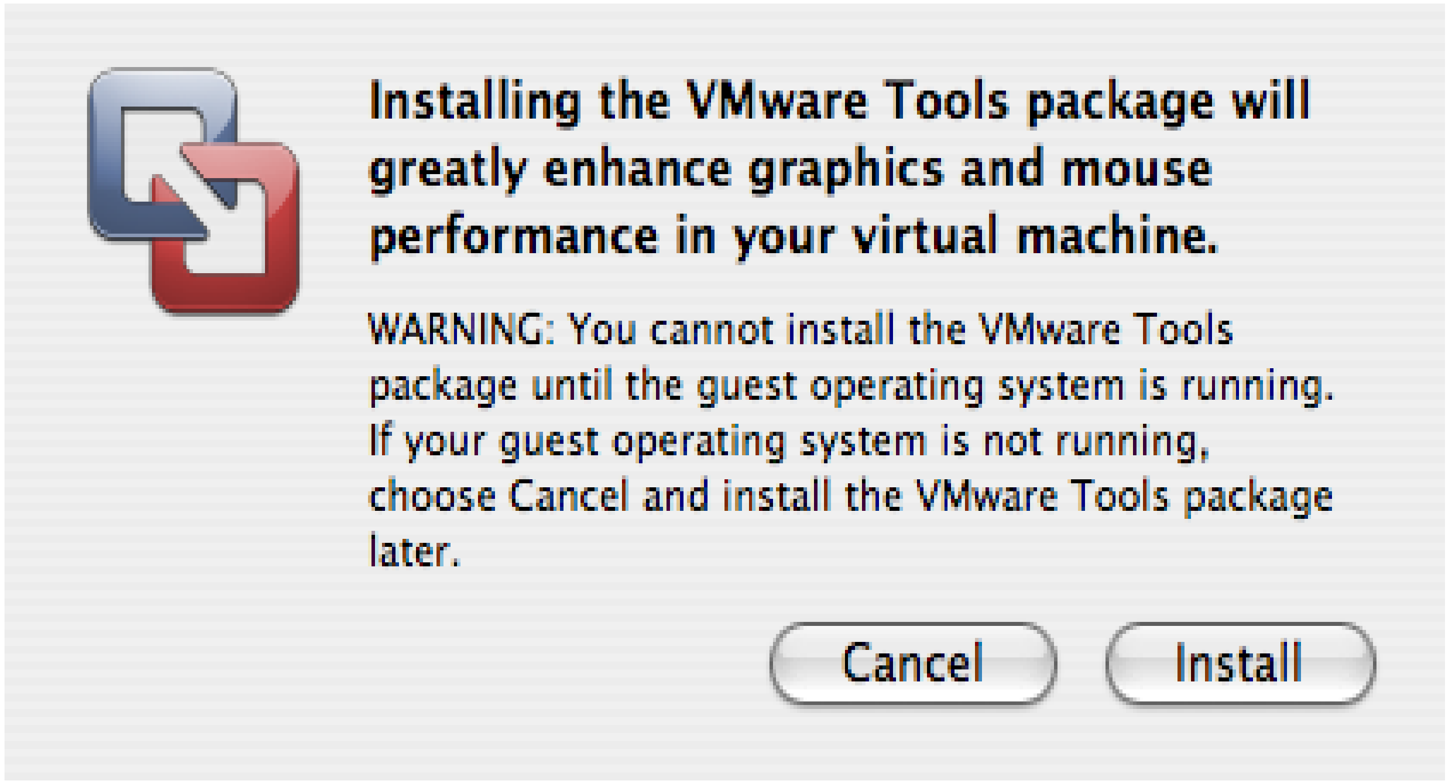
VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

15_Virtual_Machine_Menu_Install_VMware_Tools.png



VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

16_Installing_the_VMware_Tools_package.png

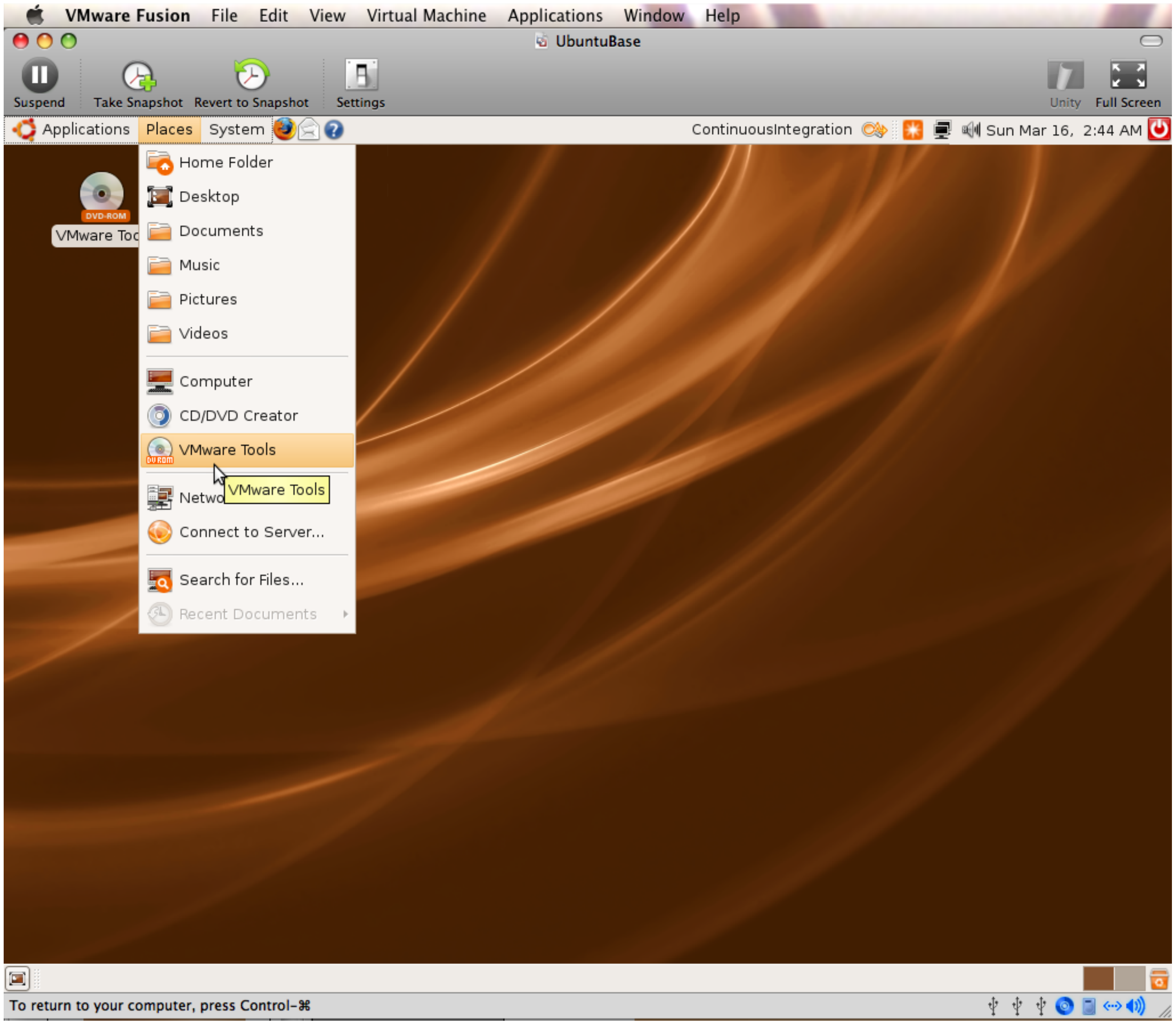

Installing the VMware Tools package will greatly enhance graphics and mouse performance in your virtual machine.

WARNING: You cannot install the VMware Tools package until the guest operating system is running. If your guest operating system is not running, choose Cancel and install the VMware Tools package later.

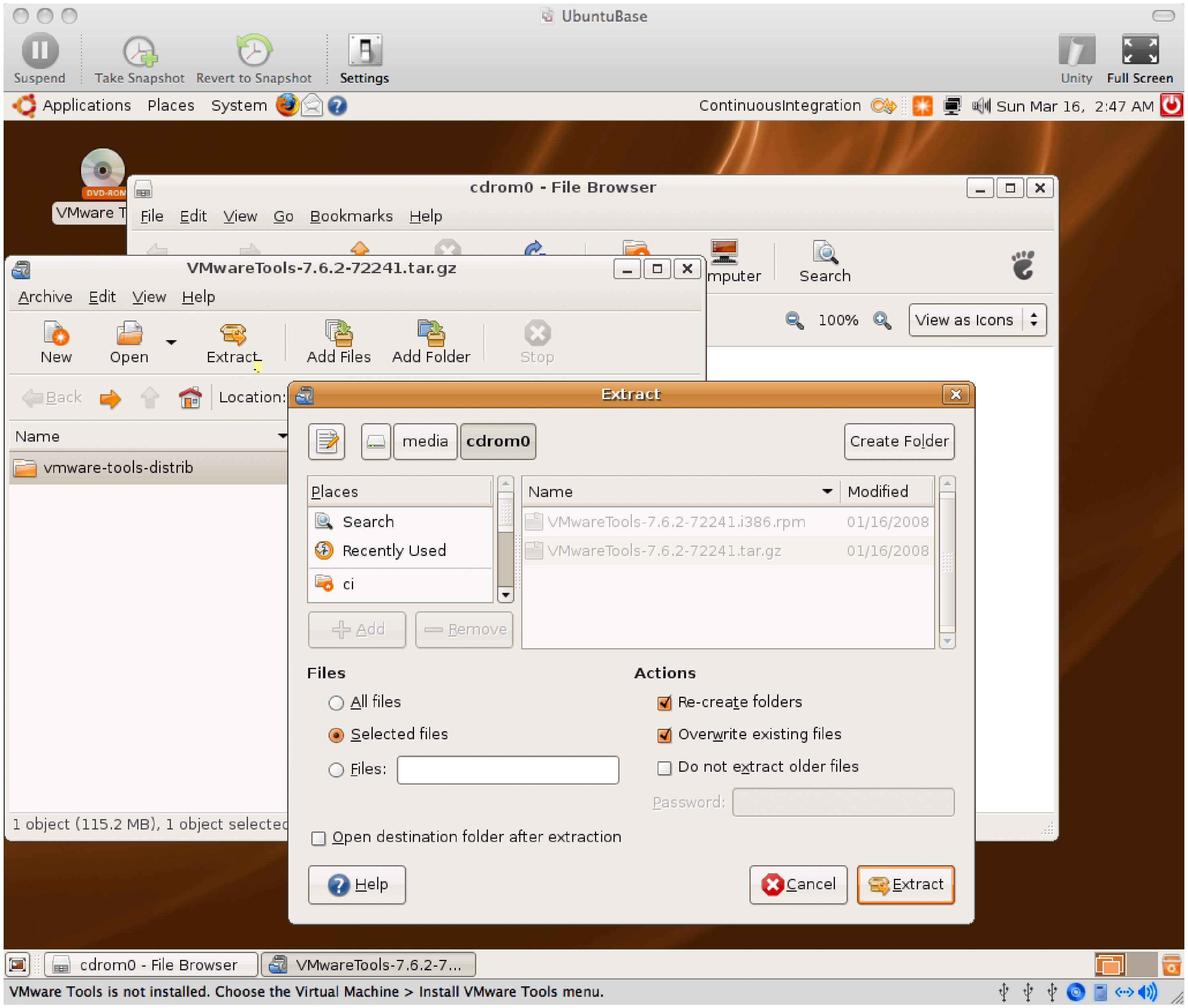
At this point, you may need to reboot (System -> Quit -> Restart) in order for the VMware Tools CD image to mount correctly, especially if you already have the Ubuntu ISO image mounted.

In fact, with Leopard/ VMWare Fusion 1.1.1/Ubuntu 7.10, the VMWare Tools image was corrupt until VM reboot. This didn't happen with Tiger/VMWare Fusion Beta/Ubuntu 7.04

17_Open_VMWare_Tools_Image.png



18_Extract_VMware_Tools.png



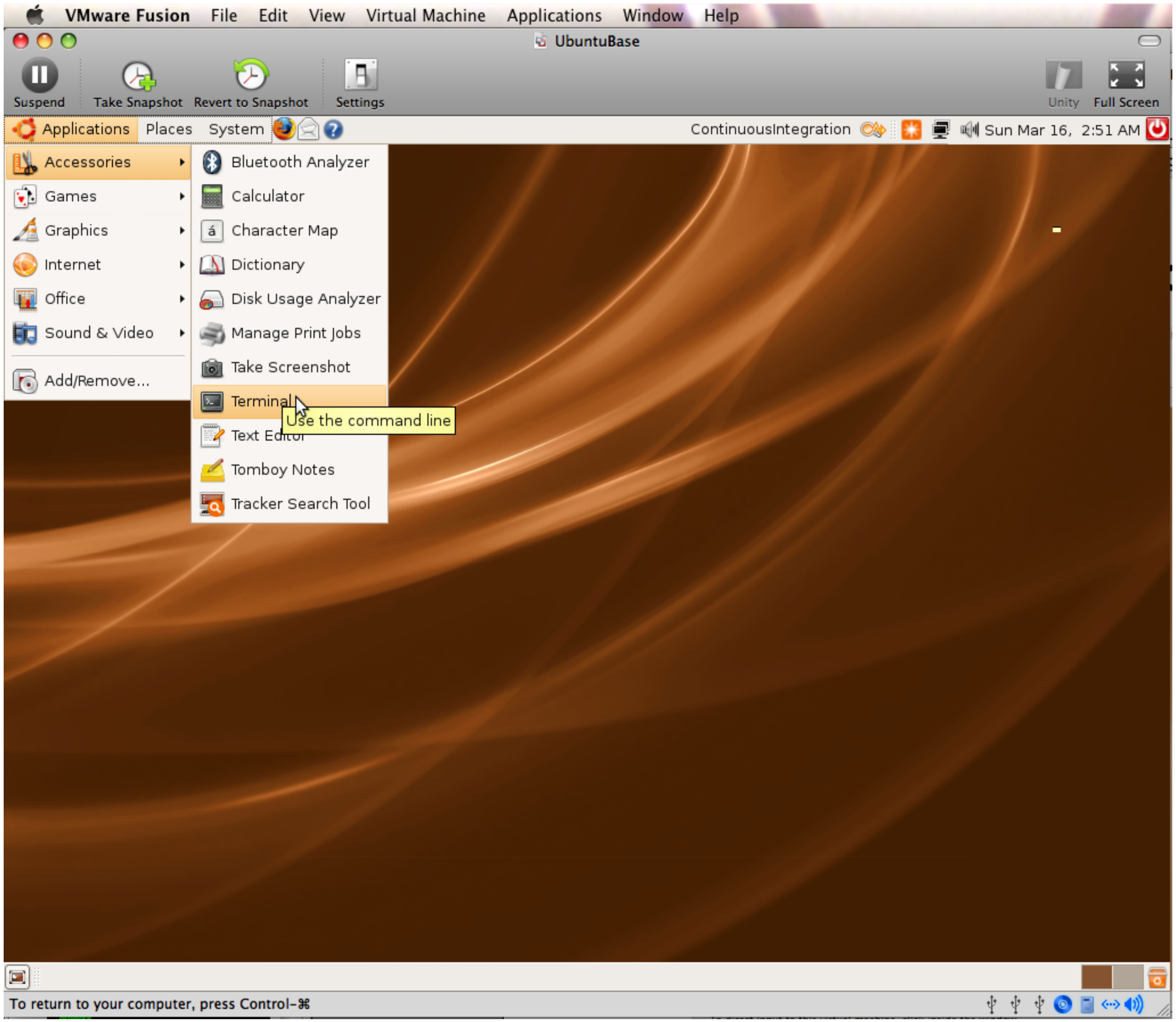
Files: ( ) All files [✓ Selected files] ( ) Files:

Actions: [✓ Re-create folders] [✓ Overwrite existing files] [ ] Do not extract older files

[ ] Open destination folder after extraction

VMware Tools is not installed. Choose the Virtual Machine > Install VMware Tools menu.

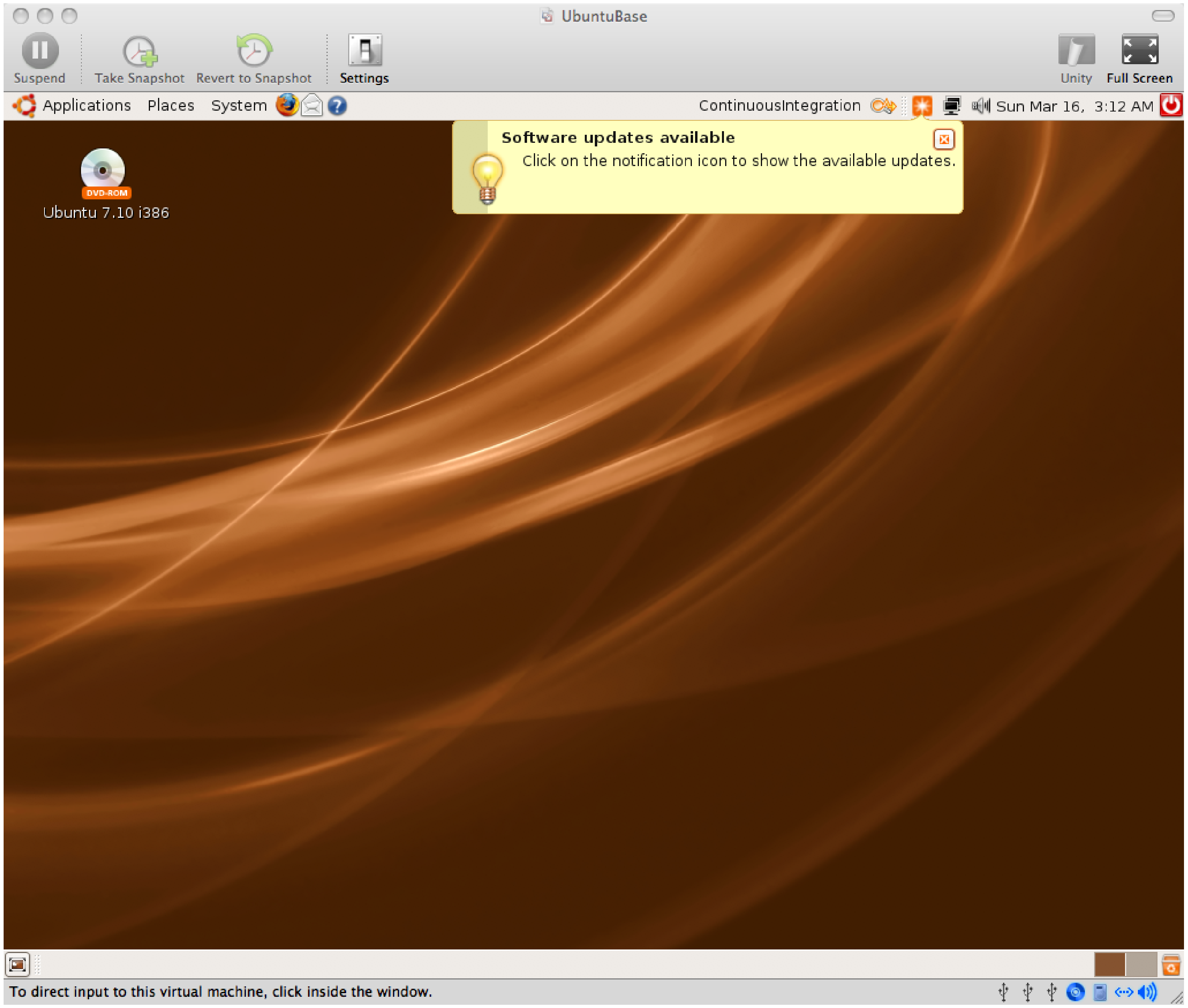
19_Applications_Accessories_Terminal.png



Install VMware Tools (Optional):

```
$ cd
$ tar -zxvf /media/cdrom0/VMwareTools-7.6.2-
72241.tar.gz
$ cd ~/vmware-tools-distrib
$ sudo ./vmware-install.pl
# enter password for sudo
# hit enter repeatedly to accept defaults for all
prompts, override display size if desired
# reboot (System -> Quit -> Restart)
```

20_Software_Updates_Available.png

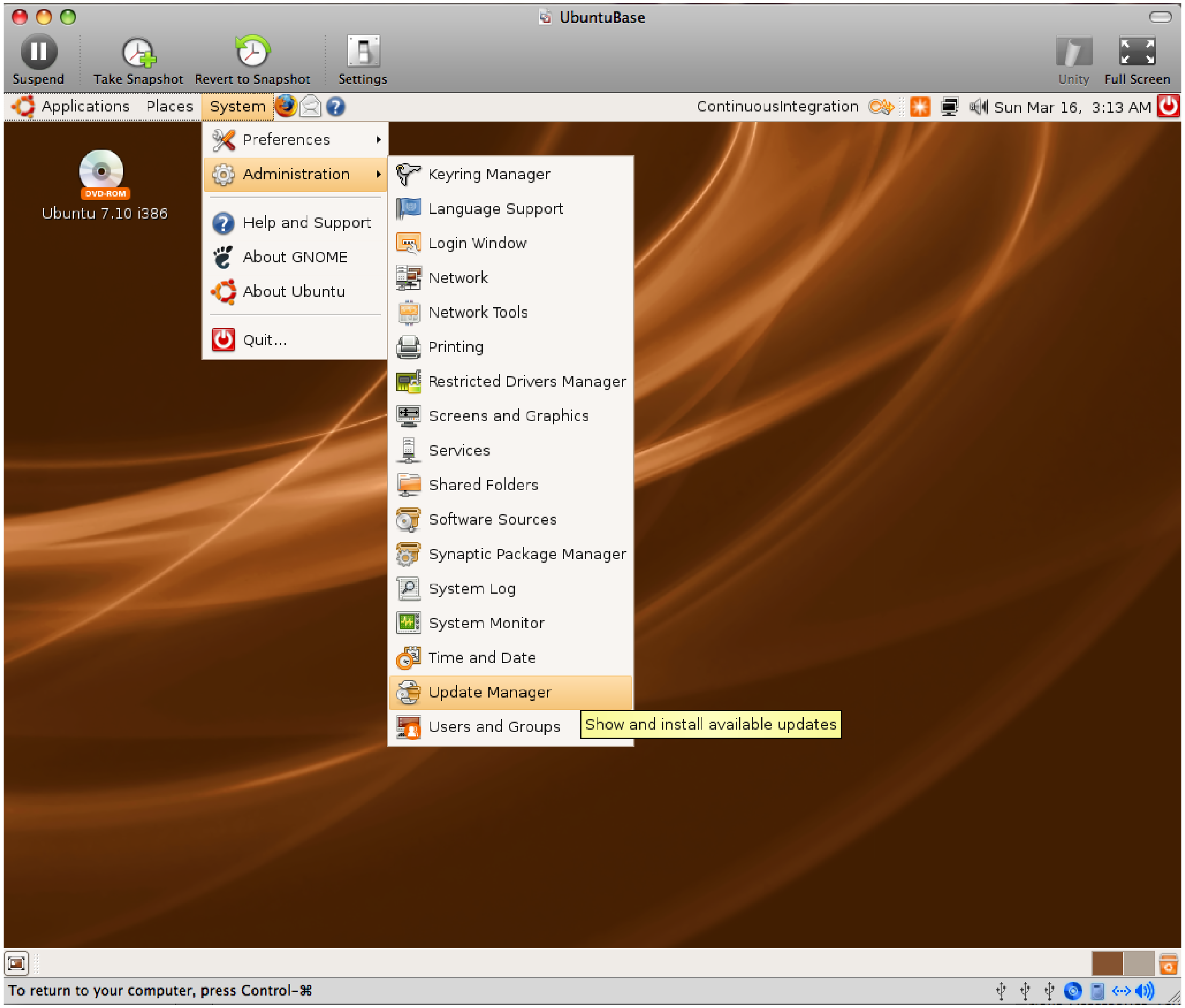


Software updates available

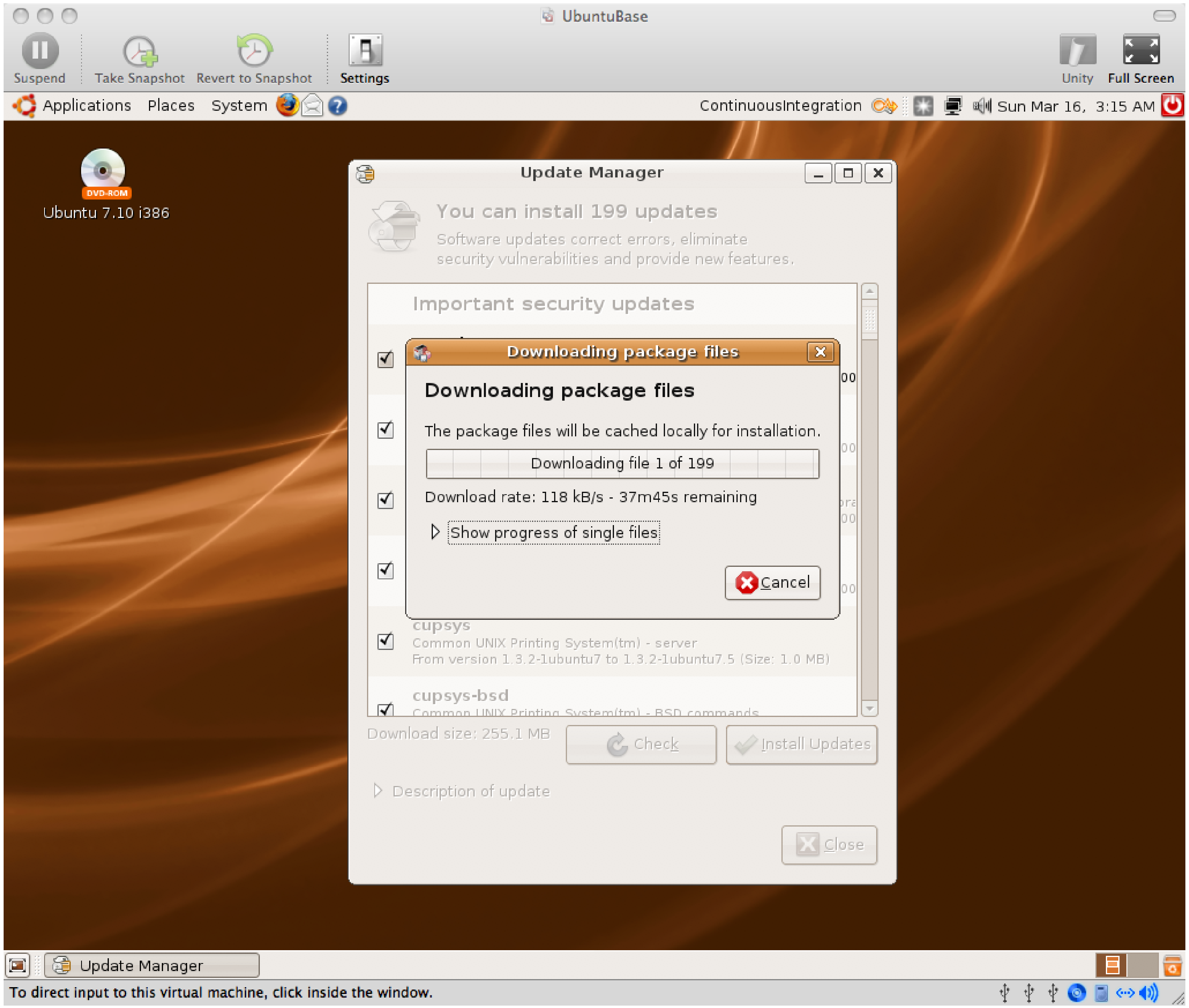
Click on the notification icon to show the available updates.

To direct input to this virtual machine, click inside the window.

21_Update_Manager_Menu_Item.png



22_Update_Manager_Downloading_Package_Files.png



You can install 199 updates

Software updates correct errors, eliminate security vulnerabilities and provide new features.

Important security updates

Downloading package files

The package files will be cached locally for installation.

Downloading file 1 of 199

Download rate: 118 kB/s - 37m45s remaining

Show progress of single files

Cancel

cupsys
Common UNIX Printing System(tm) - server
From version 1.3.2-1ubuntu7 to 1.3.2-1ubuntu7.5 (Size: 1.0 MB)

cupsys-bsd
Common UNIX Printing System(tm) - BSD commands

Download size: 255.1 MB

Check

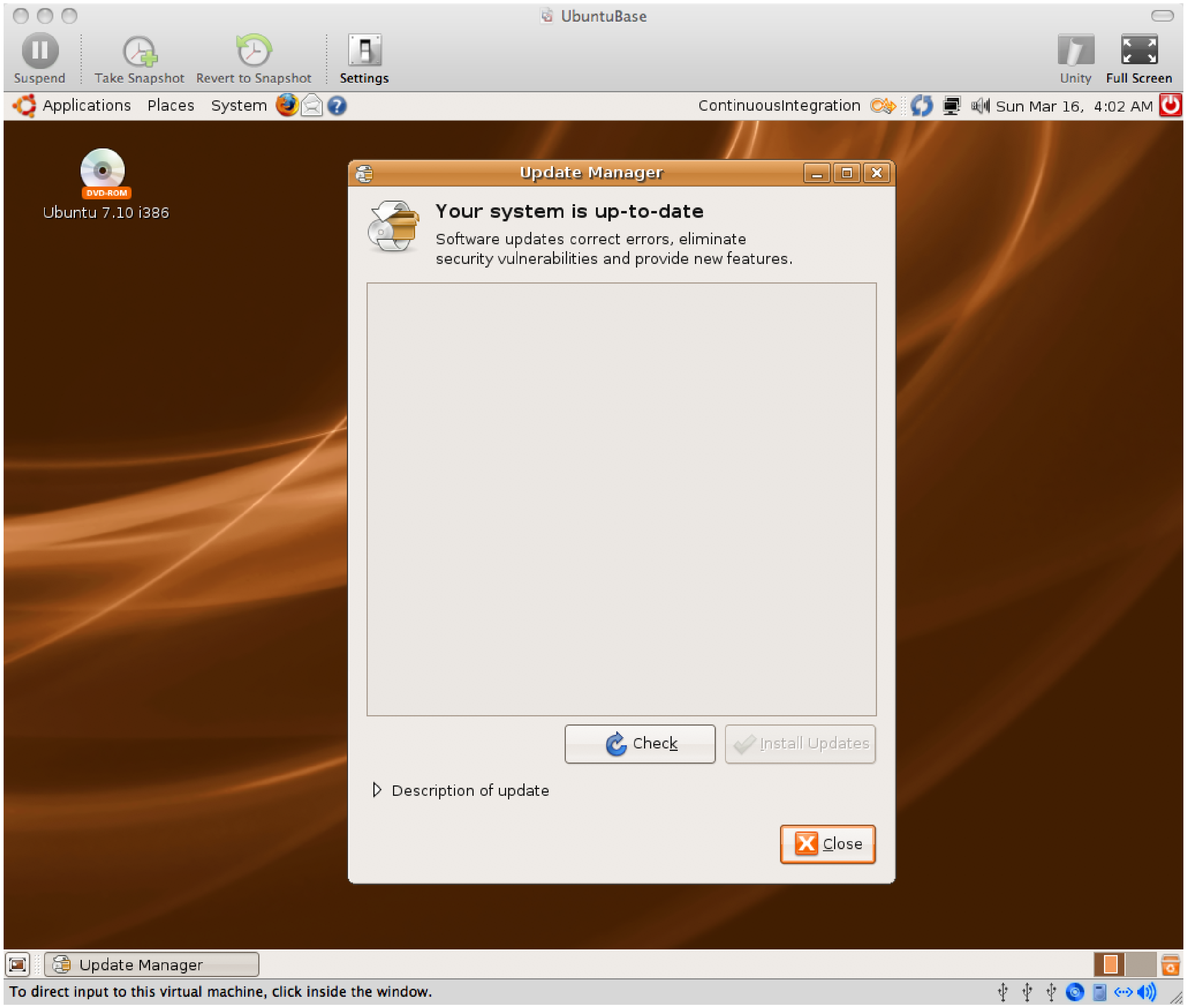
Install Updates

Description of update

Close

To direct input to this virtual machine, click inside the window.

23_Your_System_is_Up_To_Date.png



Your system is up-to-date

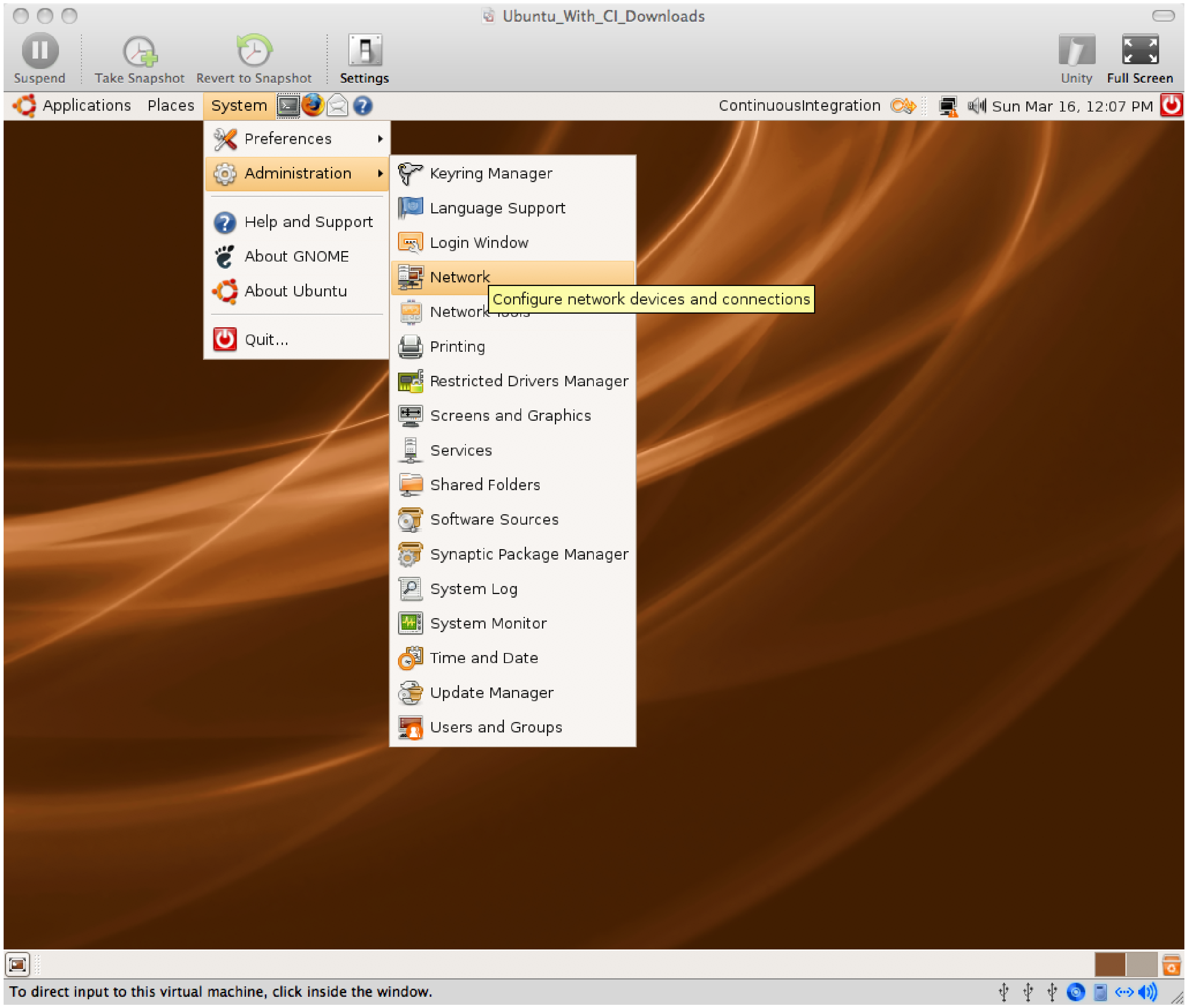
Software updates correct errors, eliminate security vulnerabilities and provide new features.

Description of update

To direct input to this virtual machine, click inside the window.

By default on Ubuntu 7.10, the virtual wired network connection was set to “enable roaming mode”. I had to manually disable this and enable DHCP to get network access.

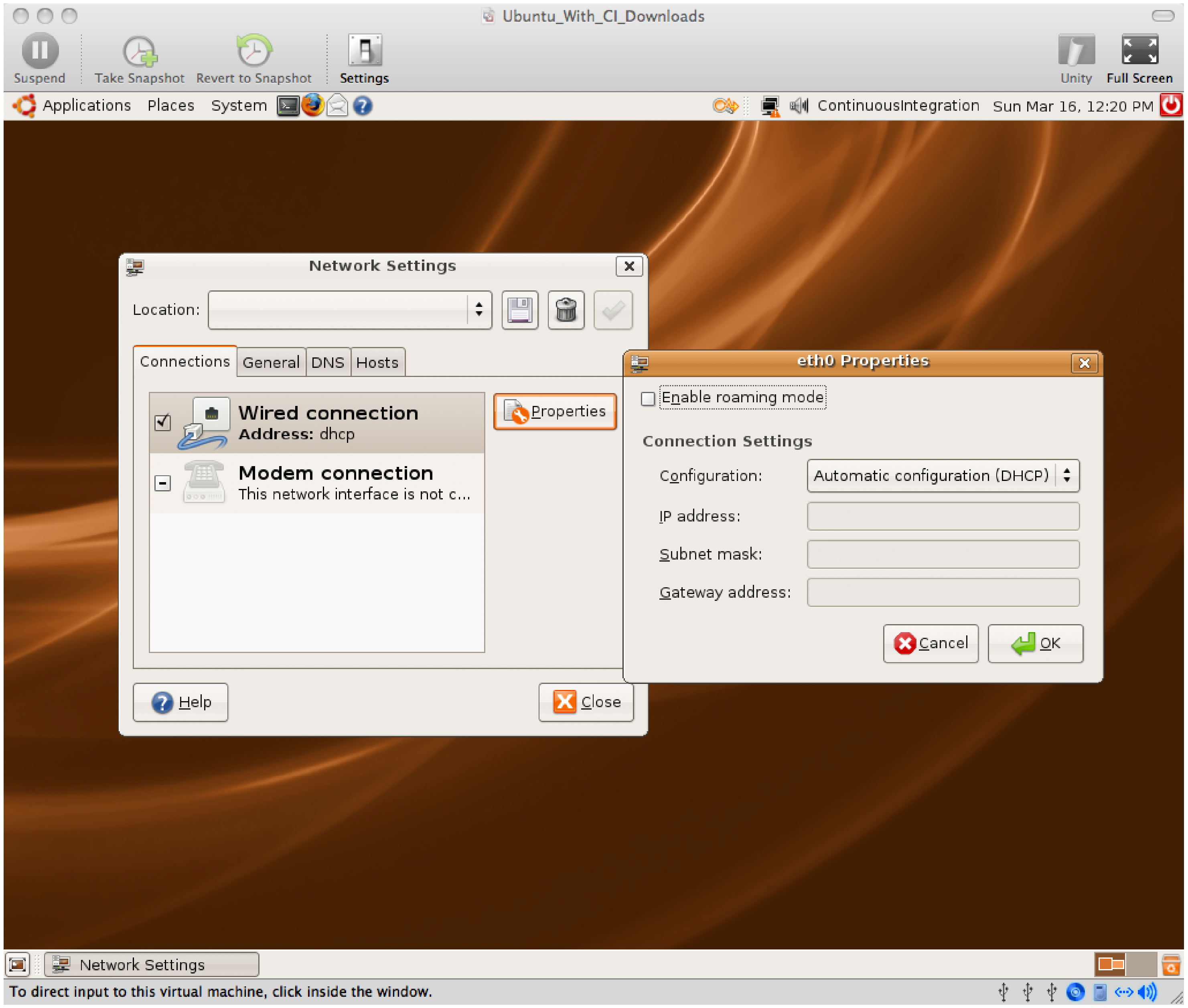
24_Network_Administration.png



Configure network devices and connections

To direct input to this virtual machine, click inside the window.

25_Checked_Wired_Connection_DHCP.png



[✓] Wired connection
Address: dhcp

Modem connection
This network interface is not c...

[ ] Enable roaming mode

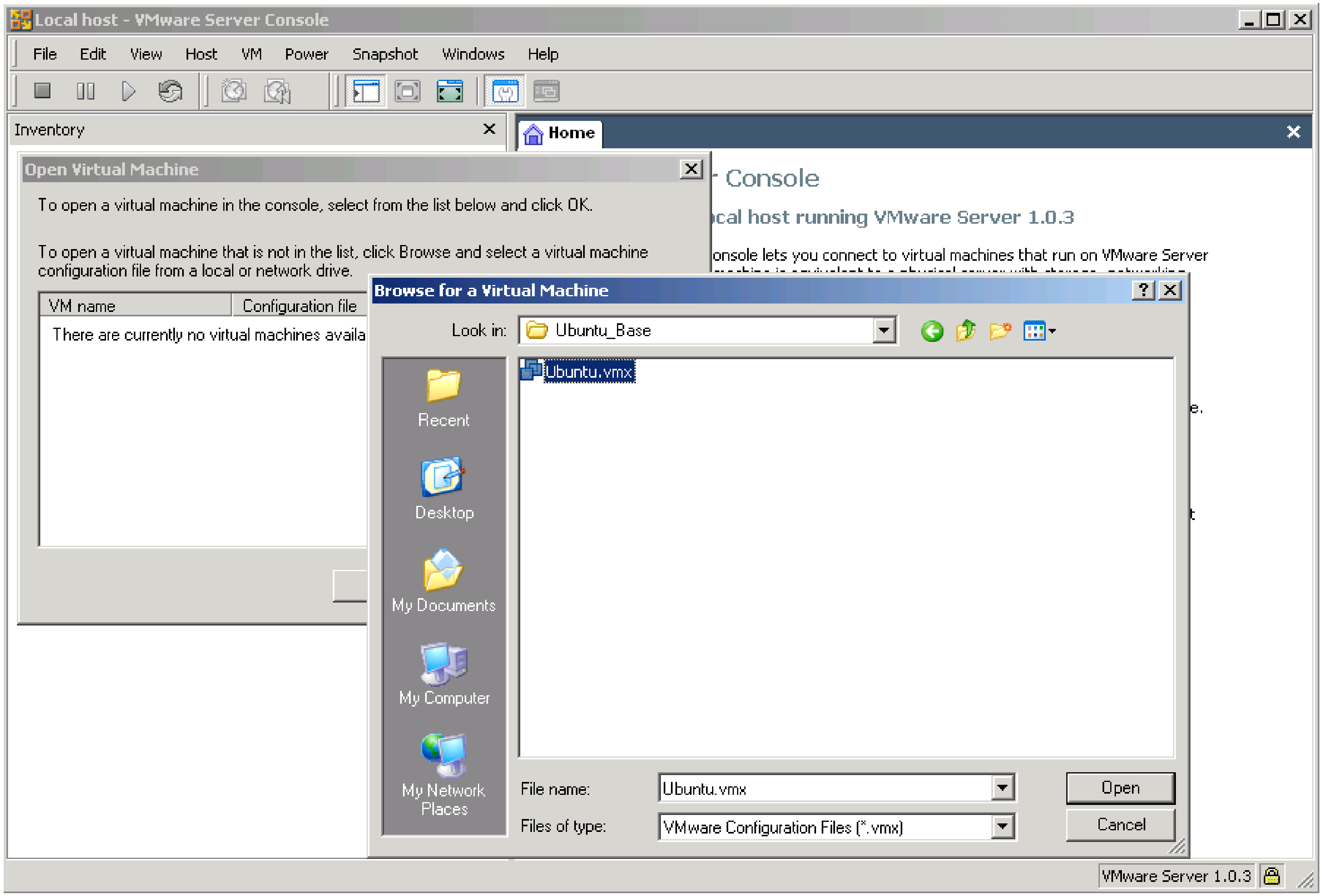
Connection Settings

Configuration:	Automatic configuration (DHCP)
IP address:	
Subnet mask:	
Gateway address:	

To direct input to this virtual machine, click inside the window.

Opening an existing VM Image Copy: /presentation /screenshots /03_virtual_machine_copy

01_Browse_for_a_Virtual_Machine.PNG



To open a virtual machine in the console, select from the list below and click OK.

To open a virtual machine that is not in the list, click Browse and select a virtual machine configuration file from a local or network drive.

VM name	Configuration file
There are currently no virtual machines availa	

- Console

cal host running VMware Server 1.0.3

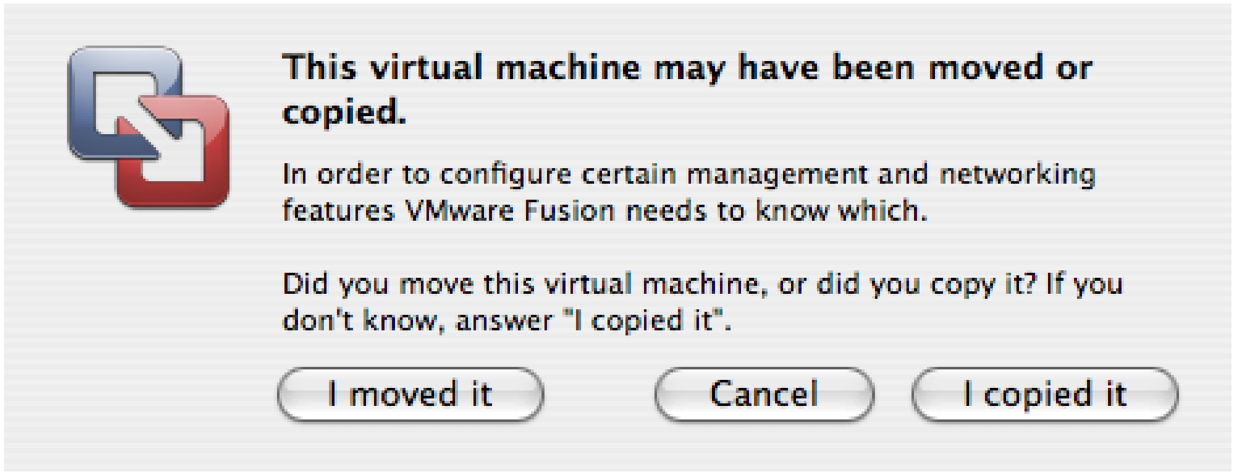
onsole lets you connect to virtual machines that run on VMware Server

Ubuntu.vmx

File name: Ubuntu.vmx

Files of type: VMware Configuration Files (*.vmx)

02a_Mac_Virtual_Machine_Copy.png

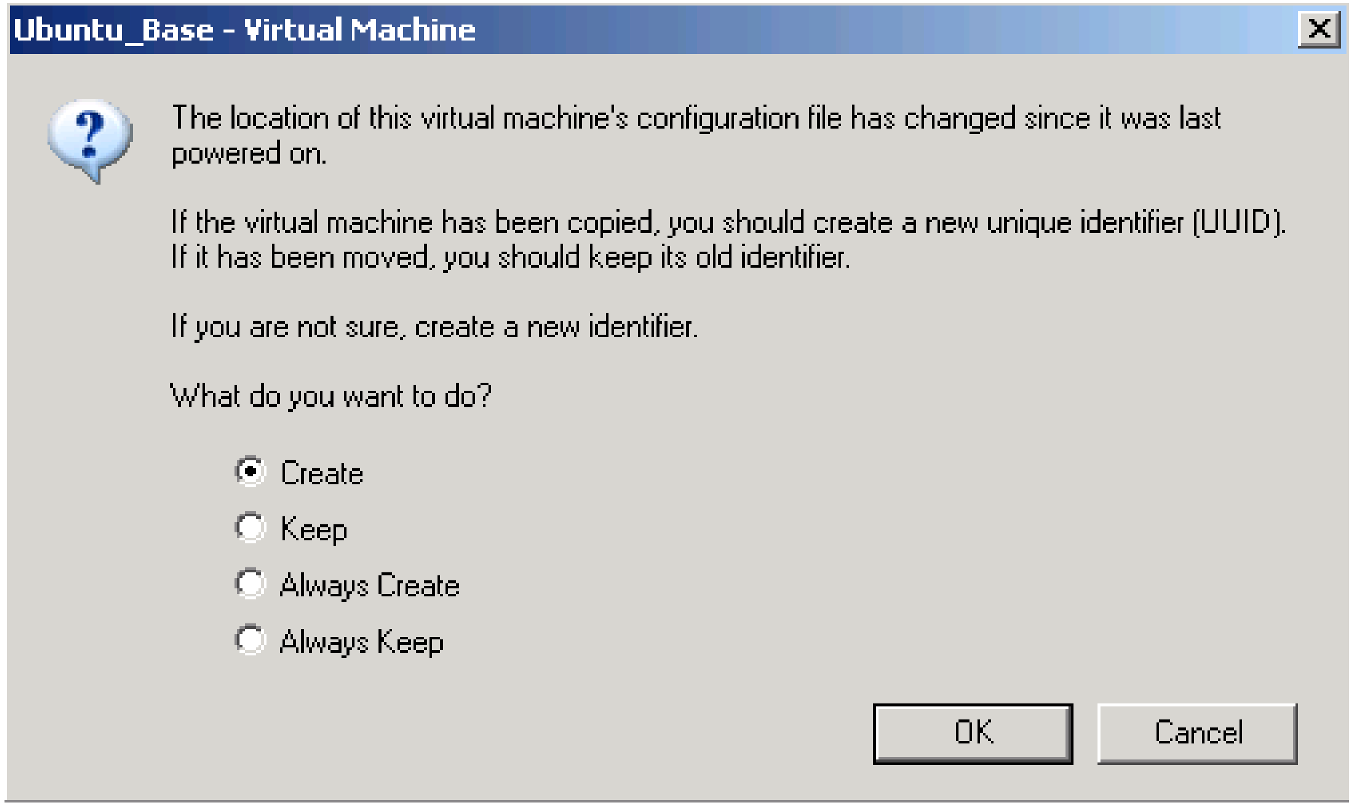


This virtual machine may have been moved or copied.

In order to configure certain management and networking features VMware Fusion needs to know which.

Did you move this virtual machine, or did you copy it? If you don't know, answer "I copied it".

02b_Win_Virtual_Machine_Copy.png


Ubuntu_Base - Virtual Machine

The location of this virtual machine's configuration file has changed since it was last powered on.

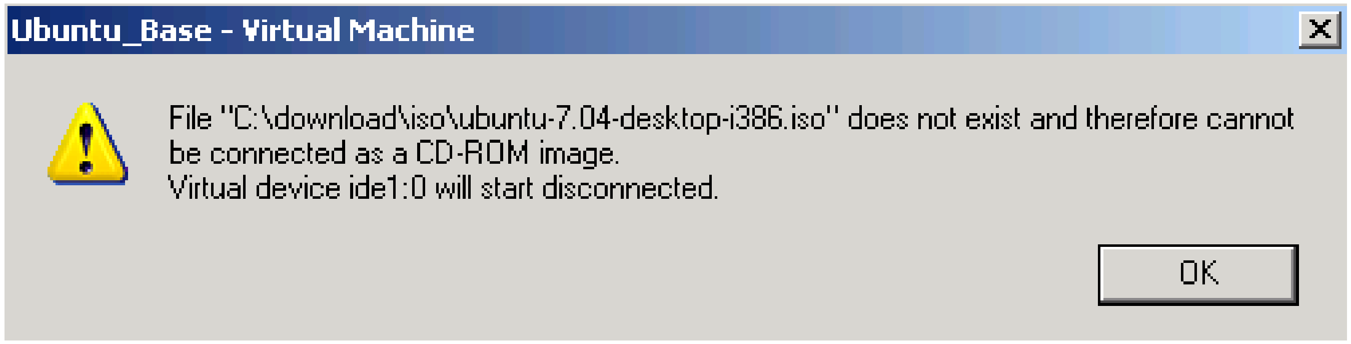
If the virtual machine has been copied, you should create a new unique identifier (UUID). If it has been moved, you should keep its old identifier.

If you are not sure, create a new identifier.

What do you want to do?

- [✓ Create]
- Keep
- Always Create
- Always Keep

03_Missing_ISO_CDROM_Image.PNG



File "C:\download\iso\ubuntu-7.04-desktop-i386.iso" does not exist and therefore cannot be connected as a CD-ROM image.
Virtual device ide1:0 will start disconnected.

Other Ubuntu Tweaks (Optional):

* System -> Preferences -> Screen Resolution
* System -> Preferences -> Mouse
* Drag Applications -> Accessories -> Terminal icon to quick launch area
* Terminal -> Edit -> Current Profile -> Scrolling -> Scrollback = 99999
* Ctrl +, Ctrl - in Terminal to change font size

B. Install Prerequisites

Legend
$ == shell input
# == comment or instructions
(nothing) == editor input or stdin

Example:

```
# sudo should prompt for a password unless you've sudo'd recently
$ sudo ls
password
# should get file list
```

We will keep everything in the home dir, or "~" You can put it wherever you want

You can install ruby via aptitude, I will build from source to make the instructions more portable.

Install Ruby from source:

```
# This is already done on the VMware image
“Ubuntu_With_CI_Downloads”
# install all prereqs/extensions in case you need
them
$ sudo aptitude update
$ sudo aptitude install -y zlib1g zlib1g-dev
$ sudo aptitude install -y libssl-dev openssl
$ wget ftp://ftp.ruby-lang.org/pub/ruby/ruby-1.8.6-
p114.tar.gz
$ tar -zxvf ruby-1.8.6-p114.tar.gz
$ cd ruby-1.8.6-p114
$ gedit ext/Setup
# Uncomment all “non-Win” lines (all except
Win32API and win32ole) by removing “#”
$ ./configure
$ make
$ sudo make install
```

Install RubyGems:

```
# Already done on “CI_Downloads” image
$ cd
$ wget
http://rubyforge.org/frs/download.php/35283/ru
bygems-1.1.1.tgz
# If this fails, check for a new mirror on:
# http://rubyforge.org/frs/?group_id=126
$ tar -zxvf rubygems-1.1.1.tgz
$ cd rubygems-1.1.1
$ sudo ruby setup.rb
```

Install Sun java:

```
# Already done on “CI_Downloads” image
$ sudo aptitude install -y sun-java6-bin
# accept all prompts
```

Install subversion:

```
# Already done on “CI_Downloads” image
$ sudo aptitude install -y subversion
```

Install ant:

```
# Already done on “CI_Downloads” image
# All remaining downloads are in that image
too, but won't be specifically pointed out
$ sudo aptitude install -y ant
$ sudo aptitude install -y ant-optional
# By default, this installs Gnu java, not Sun's...
```

Install “Galeon” as an alternate browser

```
# because jsunit will kill the browser it is testing
$ sudo aptitude install -y galeon
```

Create Subversion Repo

```
$ svnadmin create repo
```

C. Create sample Ruby on Rails Project

Install sqlite3 and gem (default database for Rails)

```
$ sudo aptitude install -y libsqlite3-dev sqlite3
$ sudo gem install sqlite3-ruby
```

Install Rails

```
$ sudo gem install rails
# version used in this tutorial is 2.0.2
# later versions may behave differently
```

Create a rails project

```
$ rails mysite
$ cd mysite
```

Remove default index.html and create a page

```
$ rm public/index.html
$ script/generate scaffold User name:string
$ rake db:migrate
```

Test rails site

```
$ rake  # should pass all tests
$ script/server
# New Terminal Tab: File -> Open Tab or Ctrl-Shift-T
# should be in mysite dir
$ firefox http://localhost:3000/users
# create a user
```

Import site into subversion

```
# back to Terminal, new tab
# change back to home dir (~)
$ cd
# remove temp files we don't want to check in
$ rm -rf mysite/log/*
$ rm -rf mysite/tmp
$ svn import mysite file:///home/ci/repo/mysite -m
"import"
$ rm -rf mysite
$ svn co file:///home/ci/repo/mysite mysite
```

Set svn:ignores

```
# ignore all temp files, always have a clean working
copy.  Boring and obsessive, but avoids 'mysterious'
errors on CI due to missing files
$ cd mysite
$ export EDITOR=gedit
$ svn propedit svn:ignore .
tmp
logs
$ svn propedit svn:ignore log
# add * to ignore list
*
$ svn commit -m "ignores"
$ cd
```

D. cruisecontrol.rb setup

cruisecontrol.rb is still in active development. We will use the 1.3.0 release, but there are new features in trunk, like Git support

Check http://cruisecontrolrb.thoughtworks.com/projects for a recent, successfully building revision if you want to use trunk - as soon as they have their new Git repo building there ;)

Download and unzip cruisecontrol.rb:

```
$ wget
http://rubyforge.org/frs/download.php/36026/cruisecontrolrb-
1.3.0.tgz
# If this fails, check for a new mirror on:
# http://rubyforge.org/frs/?group_id=2918
$ tar -zxvf cruisecontrolrb-1.3.0.tgz
# rename cruise dir to cc
$ mv cruisecontrolrb-1.3.0 cc
```

Set up project in cruisecontrol

```
$ cd cc
$ ./cruise add MySite --url file:///home/ci/repo/mysite
$ ./cruise start
```

View cruisecontrol web page

# Go to Galeon browser
# Applications -> Internet -> Galeon to start
# open http://localhost:3333
# click MySite
# Should be passing
# Remember, this can be any non-firefox browser, we are just using a different one that won't get killed by jsunit

Take this opportunity to familiarize yourself with cruisecontrol.rb. It's not covered here ;)

http://cruisecontrolrb.thoughtworks.com/

Add cruise task to Rakefile

```
# Go back to Terminal, open another tab
# cd to Rails project dir
$ cd ~/mysite
$ gedit Rakefile
# Add cruise task to bottom after 'requires':
task :cruise do
  Rake::Task['test'].invoke
end
$ svn commit Rakefile -m "add cruise task"
# Check cruise webpage, should still be passing
```

Tweak firefox for automation

```
# open or switch to firefox, navigate to 'about:config'
# search for
'browser.sessionstore.resume_from_crash'
# toggle to false
# Edit - Preferences - Tabs - uncheck all warnings
# Advanced - Update - turn off automatic updates
# Note – sometimes this doesn't “take”...
# Exit firefox
```

E. JsUnit Setup

Download and Unzip JsUnit

```
$ cd
$ wget
http://easynews.dl.sourceforge.net/sourceforge/jsuni
t/jsunit2.2alpha11.zip
$ unzip jsunit2.2alpha11.zip
# copy junit.jar file to Ant lib dir (required by Ant)
$ sudo cp jsunit/java/lib/junit.jar /usr/share/ant/lib/
```

Copy jsunit to your app and check in

```
$ cd ~/mysite/public/javascripts
$ mv ~/jsunit .
$ svn add jsunit
$ export EDITOR=gedit
$ svn propedit svn:ignore jsunit/logs
# add * to ignore list
*
$ svn propedit svn:executable jsunit/bin/unix/start-
firefox.sh
# enter “true”
$ svn commit -m "add jsunit"
```

Create a jsunit test

```
$ mkdir test_pages
$ gedit test_pages/prototype_test.html
<html>
<head>
  <script language="JavaScript"
type="text/javascript"
src="../jsunit/app/jsUnitCore.js"></script>
  <script language="JavaScript"
type="text/javascript" src="../prototype.js"></script>
  <script language="javascript">
    function testPrototypeWordSplit() {
      string = 'one two three';
      assertEquals('one', ($w(string))[0]);
    }
  </script>
</head>
<body></body>
</html>
```

Run the jsunit test manually from browser and commit

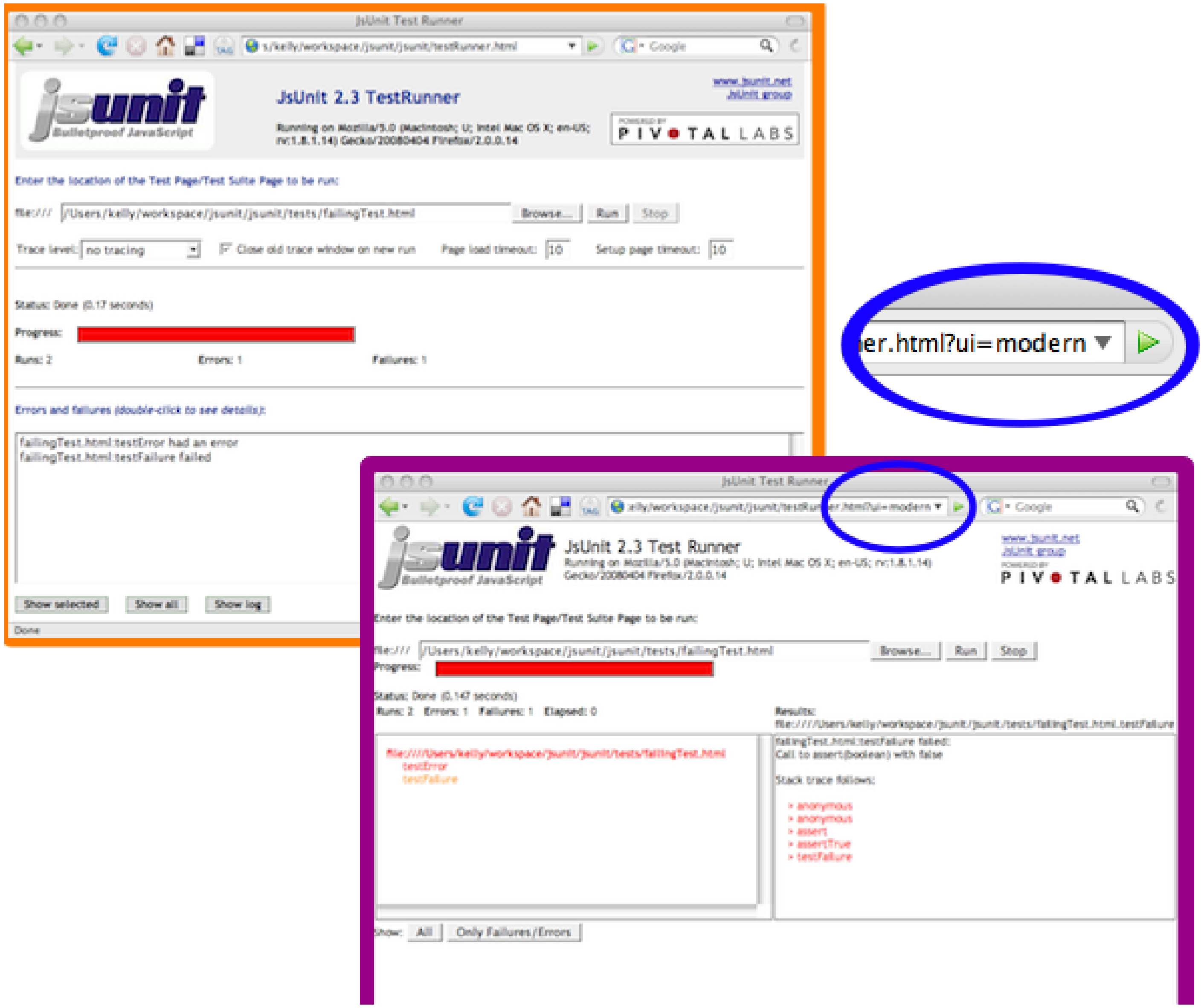
```
$ cd ~/mysite
$ ruby script/server # unless you still have it running

$ firefox
http://localhost:3000/javascripts/jsunit/testRunner.ht
ml
# Enter this in the "Run" field and click “Run”:
http://localhost:3000/javascripts/test_pages/prototyp
e_test.html
# exit Firefox, go back to terminal
$ svn add public/javascripts/test_pages
$ svn commit -m "jsunit test"
```

Take this opportunity to familiarize yourself with JsUnit and JsUnit Server. It's not covered here ;)

http://jsunit.net/

JsUnit Modern UI (in trunk)



JsUnit Test Runner

s/kelly/workspace/jsunit/jsunit/testRunner.html

JsUnit 2.3 TestRunner

Running on Mozilla/5.0 (Macintosh; U; Intel Mac OS X; en-US; rv:1.8.1.14) Gecko/20080404 Firefox/2.0.0.14

www.jsunit.net
JsUnit group

POWERED BY PIVOTAL LABS

Enter the location of the Test Page/Test Suite Page to be run:

file:/// /Users/kelly/workspace/jsunit/jsunit/tests/failingTest.html

Trace level: no tracing — Close old trace window on new run — Page load timeout: 10 — Setup page timeout: 10

Status: Done (0.17 seconds)

Progress:

Runs: 2 Errors: 1 Failures: 1

Errors and failures (double-click to see details):

```
failingTest.html:testError had an error
failingTest.html:testFailure failed
```

er.html?ui=modern

JsUnit Test Runner

elly/workspace/jsunit/jsunit/testRunner.html?ui=modern

JsUnit 2.3 Test Runner

Running on Mozilla/5.0 (Macintosh; U; Intel Mac OS X; en-US; rv:1.8.1.14) Gecko/20080404 Firefox/2.0.0.14

www.jsunit.net
JsUnit group

POWERED BY PIVOTAL LABS

Enter the location of the Test Page/Test Suite Page to be run:

file:/// /Users/kelly/workspace/jsunit/jsunit/tests/failingTest.html

Progress:

Status: Done (0.147 seconds)

Runs: 2 Errors: 1 Failures: 1 Elapsed: 0

```
file:///Users/kelly/workspace/jsunit/jsunit/tests/failingTest.html
    testError
    testFailure
```

Results:
file:///Users/kelly/workspace/jsunit/jsunit/tests/failingTest.html:testFailure

```
failingTest.html:testFailure failed:
Call to assert(boolean) with false

Stack trace follows:

  > anonymous
  > anonymous
  > assert
  > assertTrue
  > testFailure
```

```
"Punt" and make a manual jsunit_start_server script
# Because automated process management is not
TSTTCPW for this tutorial, and it's hard
# This is also easily ported to a batch file on windows
$ cd ~/mysite
$ gedit script/jsunit_start_server.sh
ant -f
/home/ci/mysite/public/javascripts/jsunit/build.xml
-DbrowserFileNames=
/home/ci/mysite/public/javascripts/jsunit/bin/unix/star
t-firefox.sh -Dport=8081 start_server
```

Check in jsunit_start_server script and leave it running

```
$ svn add script/jsunit_start_server.sh
$ svn propedit svn:executable
script/jsunit_start_server.sh
# add 'true' line
$ script/jsunit_start_server.sh
# ignore warning about tools.jar
# make sure it starts and leave it running
# (ctrl-c when you want to kill it later)
# open a new terminal tab
$ cd ~/mysite
$ svn ci -m "add jsunit start script"
```

Add jsunit task

```
$ gedit Rakefile
task :cruise do
  Rake::Task['test'].invoke
  Rake::Task['jsunit_distributed_test'].invoke
end

task :jsunit_distributed_test do
  output = `ant -f public/javascripts/jsunit/build.xml
-Durl=http:
//localhost:8080/jsunit/jsunit/testRunner.html?testPa
ge=/jsunit/test_pages/prototype_test.html
-DremoteMachineURLs=http://localhost:8081
-DresourceBase=public/javascripts distributed_test`
  raise "JsUnit Failed:\n" + output unless
$?.success?
  puts "JsUnit tests passed"
end
```

Commit jsunit task and check cruise

```
# Open cruise webpage under galeon, if not open
# jsunit will kill firefox, so we need a different browser
# Applications - Internet – Galeon, open http://localhost:3333
$ svn commit Rakefile -m "add jsunit_distributed_test task"
# Check cruise webpage, should still be passing
# You will see jsunit pop up Firefox automatically as the build is running
```

F. Selenium Setup

Install Selenium Gem

```
# WARNING: use capital “S” Selenium – there is
another rubyforge lowercase “s” selenium project,
and a dozen other similarly-named ones.
WhatEVER...
$ sudo gem install Selenium --version=1.0.7
# NOTE: Version 1.0.7 currently has some mirror
issue on RubyForge, if it doesn't download, try to pull
from my gem server:
$  sudo gem install Selenium --
source=http://gems.thewoolleyweb.com
```

Start selenium using command from Selenium gem

```
$ selenium
# make sure it starts and leave it running, ctrl-c to kill it
# Open new terminal tab
```

Set up selenium test dir

```
$ cd ~/mysite
$ mkdir test/selenium
```

Create selenium test stub

```
$ gedit test/selenium/user_test.rb
require 'test/unit'
require 'rubygems'
require 'selenium'

class UserTest < Test::Unit::TestCase
  def setup
    @browser = Selenium::SeleniumDriver.new("localhost",
4444, "*firefox /usr/lib/firefox/firefox-bin",
"http://localhost:3001", 10000)
    @browser.start
  end

  def teardown
    @browser.stop
  end

  def test_user_add_flow
  end
end
```

Fill in selenium test stub

```
$ gedit test/selenium/user_test.rb
  def test_user_add_flow
    timestamp = Time.new.to_s
    user_name = 'joe ' + timestamp
    @browser.open "http://localhost:3001/users"
    @browser.click "link=New user"
    @browser.wait_for_page_to_load
    @browser.type "id=user_name", user_name
    @browser.click "commit"
    @browser.wait_for_page_to_load
    assert @browser.is_text_present(user_name)
  end
```

Create selenium_test rake task including start and stop of server

```
$ gedit Rakefile
task :cruise do
  ...
  Rake::Task['selenium_test'].invoke
end

task :selenium_test do
  begin
    process = IO.popen("ruby /home/ci/.cruise/projects/MySite/work/script/server --port=3001")
    output = `ruby test/selenium/user_test.rb`
    raise "Selenium Failed:\n" + output unless $?.success?
    puts "Selenium tests passed"
  ensure
    Process.kill(9,process.pid)
  end
end
```

Check in and check cruise

```
$ svn add test/selenium
$ svn commit -m "selenium test"
# check cruise, it should run everything and be green
```

Break tests and fix them!

# cause ruby/jsunit/selenium failures, and check them in
# see cruise go red, then fix them
# click links for ruby/selenium failures
# there's a test bug! (next page after too many tests)
# good to drop DB before each CI run...
# This naive implementation has return code bugs (crash if webrick already running)

Same concept for other tools/ Languages/ CI Engines

Now for some bleeding edge ccrb + Git, hot off the press

Install Git:

```
# For some reason, Ubuntu/aptitude wanted to install
git off the Ubuntu CD, so disable that
$ sudo gedit /etc/apt/sources.list
# comment first 'cdrom' line and save
$ sudo aptitude install -y git-core git-svn
```

Clone current svn repository to git:

```
$  git-svn clone file:///home/ci/repo/mysite ~/mysite-
git
```

Clone and run trunk of ccrb, which has Git support:

```
$ git clone git://rubyforge.org/cruisecontrolrb.git
~/cc-git
# find tab currently running cc 1.3.0, ctrl-c to stop it
(look for localhost:3333 in console)
$ cd ~/cc-git
$ ./cruise start
# go to a new tab
```

Create and run ccrb project for the mysite git project:

```
$ cd ~/cc-git
$ ./cruise add MySiteGit -s git -r /home/ci/mysite-git
# open/refresh Galeon for new project
Applications -> Internet -> Galeon -> localhost:3333
Click “Start Builder”
# Watch for jsunit and selenium to run
# should get a successful build!
# Notice truncated GUID as build ID instead of svn
revision
```

Coding Done!

2. Gettin' Fancier

All Handwaving Now

Multiplatform

Multibrowser

Farms

SeleniumGrid
JsUnitServer

Virtualization: One Box, Three Platforms mac/win/linux

Automate and Test Deployment Process

Test Rollback process!

Configuration Management / Version Control

Auto-tag Green Builds

Automatically pre-create Release Branches

Build <u>ALL</u> active branches under CI

Multiple Libraries/ Projects

Dependencies Among Common Libraries and Projects

Dependency modifications should trigger builds of all dependents

Consistent Tags/Baselines Among Projects: Naming/Usage

Versioning of Dependencies (or not):

Mainline / Snapshot / trunk / HEAD
vs
baselines / tags

Different Builds for Different Environments: Development vs Demo/Prod

Publishing Artifacts/ Dependencies:

Deployed (Jars/Gems) vs SCM (svn:externals)

Hackability vs Stability: Fear should not inhibit improvement of common libraries

What dependency versions are you running on prod? Is it the same as dev?

Cautious Optimism

http://tinyurl.com/2cvbj4

Nirvana: Green tags/artifacts instantly used across all dev environments, all deploys have known, green, stable, baselined dependencies

Suites:
You can
have more
than one!

It's all about Feedback

Timely
vs
Comprehensive

Fast
vs
Thorough

Commit-Triggered vs Scheduled

Minimize Checkout Time

But safer to do clean builds

Get HUGE Dependencies and binaries out of Source Control if they take a long time to check out

RubyGems vs piston/ svn:externals

Metrics

Code Coverage - rcov

Mutation Testing – Heckle

Flog: Hurt Your Code

red/green
trends

Build Length Trends

Notification

Information Radiator(s)

email

CCMenu / CCTray

RSS

IM

Growl

Ambient Orb

13” CRT with red/green background

Suggested audio for first failure, continued failure, fixed: Homer Simpson & Arnold Schwarzenegger Doh!, You Lack Discipline!, WooHoo! (The Louder the Better)

Whatever people will pay attention to!

Aggregate and display multiple ccrb instances via RSS feeds (easy Rails app)

Tool Shoutouts

GemInstaller

http://geminstaller.rubyforge.org

jQuery

http://jquery.com

JSSpec

http://code.google.com/p/jsspec

Polonium, js_spec (runner), Funkytown

http://rubyforge.org/projects/pivotalrb

Screw::Unit

http://rubyforge.org/projects/screwunit

JsUnitTest

http://jsunittest.com/

Any More?

3. Gotchas

Random Gotchas / Mantras:

* “It's not easy being Green”
* Broken Windows are Bad (“Who cares, it's always red...”)
* False Negatives are Bad
* Crying Wolf (“it failed for no reason”)
* “Intermittent” failures (but it's not intermittent after you can reproduce it)
* “Works Locally” (is your local environment the same as CI? Which one is Prod closer to???)
* You can always “temporarily” disable a test in CI
* One disabled test is better than a red CI
* Browser Settings (autoupdate, etc) Preventing Browser Close

More Random Gotchas:

* False Positives are Bad too - being Green, when return code (echo $?) from some step is not 0
* Tricks to avoid false positives:
  * Use rake task exec
  * system("cmd") ll raise("cmd failed)
* Test::Unit had return code bugs for a long time due to not handling entire Exception class hierarchy correctly (Finally fixed in Ruby 1.8.6/1.9???)

4. Questions?

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ci_for_the_rails_guy_or_gal