



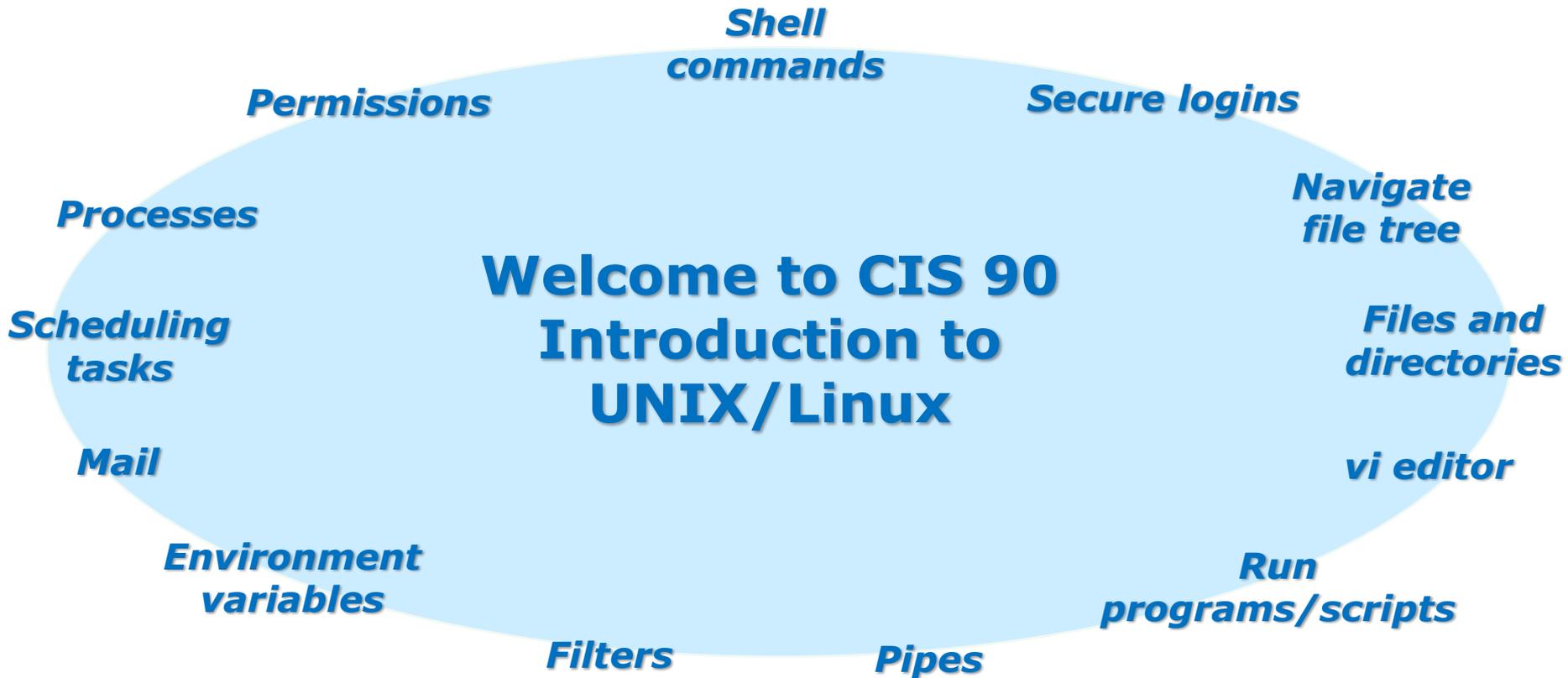
Rich's CCC Confer checklist - setup

- Slides posted
- WB converted from PowerPoint
- Print out agenda slide and annotate page numbers

- Flash cards
- Page numbers
- 1st minute quiz
- Web Calendar summary
- Web book pages
- Commands

- Download Centos image to Instructor PC (D:\ drive)
- Download CounterPath X-Lite to Instructor PC (D:\ drive)
- Test and bring VOIP/DAC demo equipment
- Blackboard Practice Test ready and scheduled
- Practice Test systems ready
- Schedule midnight turnin directory lock
- Schedule midnight backup of all myscript files

- Backup slides, CCC info, handouts on flash drive
- Spare 9v battery for mic
- Key card for classroom door



Student Learner Outcomes

1. Navigate and manage the UNIX/Linux file system by viewing, copying, moving, renaming, creating, and removing files and directories.
2. Use the UNIX features of file redirection and pipelines to control the flow of data to and from various commands.
3. With the aid of online manual pages, execute UNIX system commands from either a keyboard or a shell script using correct command syntax.

Introductions and Credits



Jim Griffin

- Created this Linux course
- Created Opus and the CIS VLab
- Jim's site: <http://cabrillo.edu/~jgriffin/>



Rich Simms

- HP Alumnus
- Started teaching this course in 2008 when Jim went on sabbatical
- Rich's site: <http://simms-teach.com>

And thanks to:

- John Govsky for many teaching best practices: e.g. the First Minute quizzes, the online forum, and the point grading system (<http://teacherjohn.com/>)



Student checklist (How to attend from home or in the classroom)

- 1) Browse to the CIS 90 website Calendar page
 - <http://simms-teach.com>
 - Click CIS 90 link on left panel
 - Click Calendar link near top of content area
 - Locate today's lesson on the Calendar

- 2) Download the presentation slides for today's lesson for easier viewing

- 3) Click Enter virtual classroom to join CCC Confer session

- 4) Connect to Opus using Putty or ssh command

Student checklist (How to layout your screen when attending class)

CCC Confer

Downloaded PDF of Lesson Slides

The screenshot displays a virtual classroom environment with several overlapping windows:

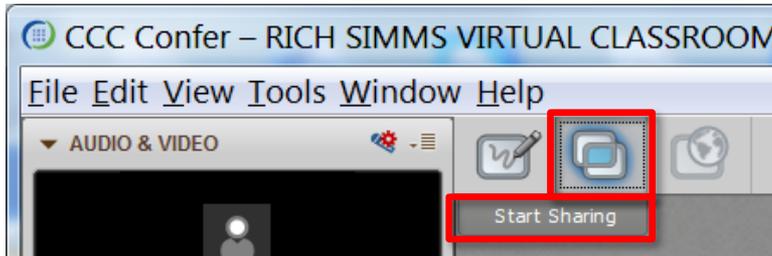
- Browser Window:** Shows the 'Rich's Cabrillo College CIS Classes' website with a 'CIS 90 (Spring) Course Home' page. A table lists lessons, with Lesson 1 on 1/28.
- CCC Confer - RICH SIMMS VIRTUAL CLASSROOM:** Features a video feed of Rich Simms, a 'PARTICIPANTS' list (Benji Simms, Rich Simms, Benji Simms), and a 'CHAT' window with messages about textbooks and Amazon prices.
- Google Maps:** Open to 'Cabrito College, Sogapat Drive, Aptos, CA'.
- Adobe Acrobat Pro:** Displays 'cis90lesson01.pdf - The CIS 90 System Playground' with a slide titled 'Configure for Graphics and Command Line'.
- Terminal Window:** Shows login prompts for 'edu's password:' and system messages like 'Welcome to Opus'.

CIS 90 website
Calendar page

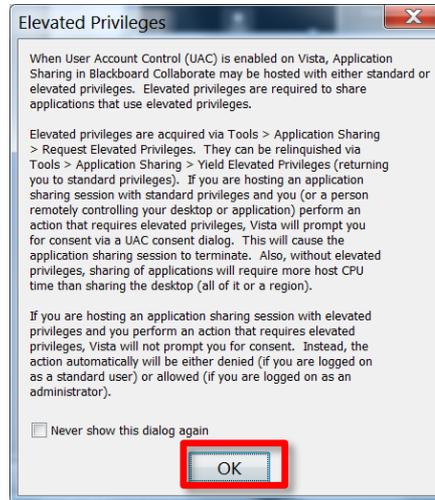
One or more login
sessions to Opus

Student checklist (To share your desktop with the class)

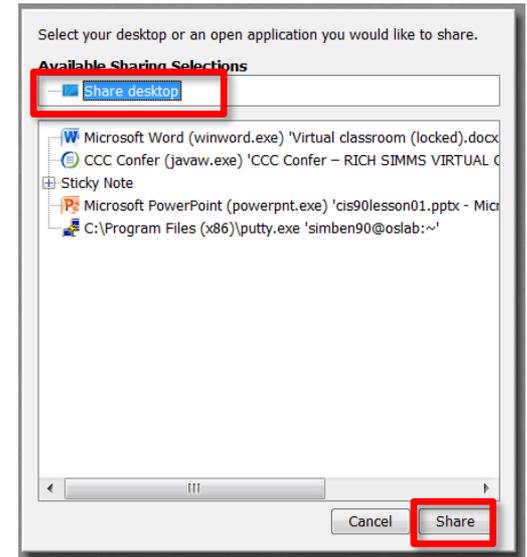
1) Instructor gives you sharing privileges



2) Click overlapping rectangles icon. If white "Start Sharing" text is present then click it as well.



3) Click OK button.



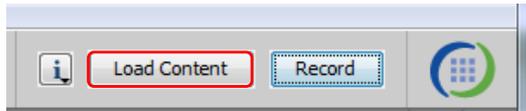
4) Select "Share desktop" and click Share button.



Rich's CCC Confer checklist - setup

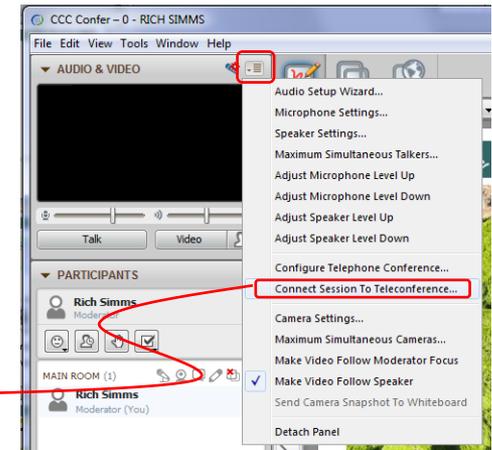
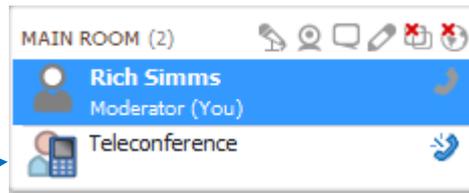


[] Preload White Board

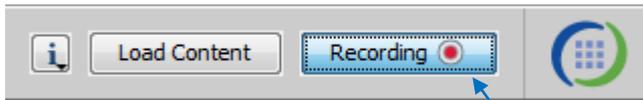


[] Connect session to Teleconference

Session now connected to teleconference



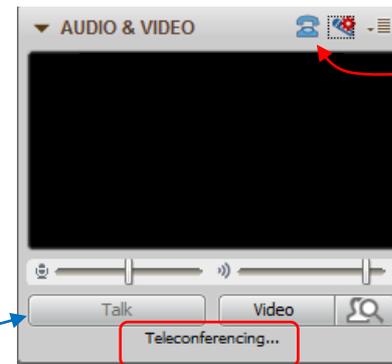
[] Is recording on?



Red dot means recording

[] Use teleconferencing, not mic

Should be greyed out



Should show as this live "off hook" telephone handset icon and the Teleconferencing ... message displayed



Rich's CCC Confer checklist - app layout



The screenshot displays a Windows desktop with several applications open:

- CCC Confer**: A window on the left showing a video feed of Rich Simms, participant controls, and chat.
- Chrome**: A browser window displaying a PDF document titled "Part 1 - Flashcards questions (1 point each)". The document contains two questions: [Q1] "What command shows the other users logged in to the computer?" and [Q2] "What environment variable is used by the shell to determine which directories to search when locating a command?".
- Putty**: A terminal window showing a directory listing of /home/cis90/simben: boot, bin, etc, sbin, mail, ls. Below the listing is a login attempt for simben90@oslab:~. The terminal output shows "Access denied" and "Last login: Mon Oct 8 18:58:43 2012 from d.com".
- vSphere Client**: A window on the bottom right showing the vCenter interface for CIS VLab, including a tree view of virtual machines and a "Recent Tasks" table.

Red callout boxes with white text label the following elements:

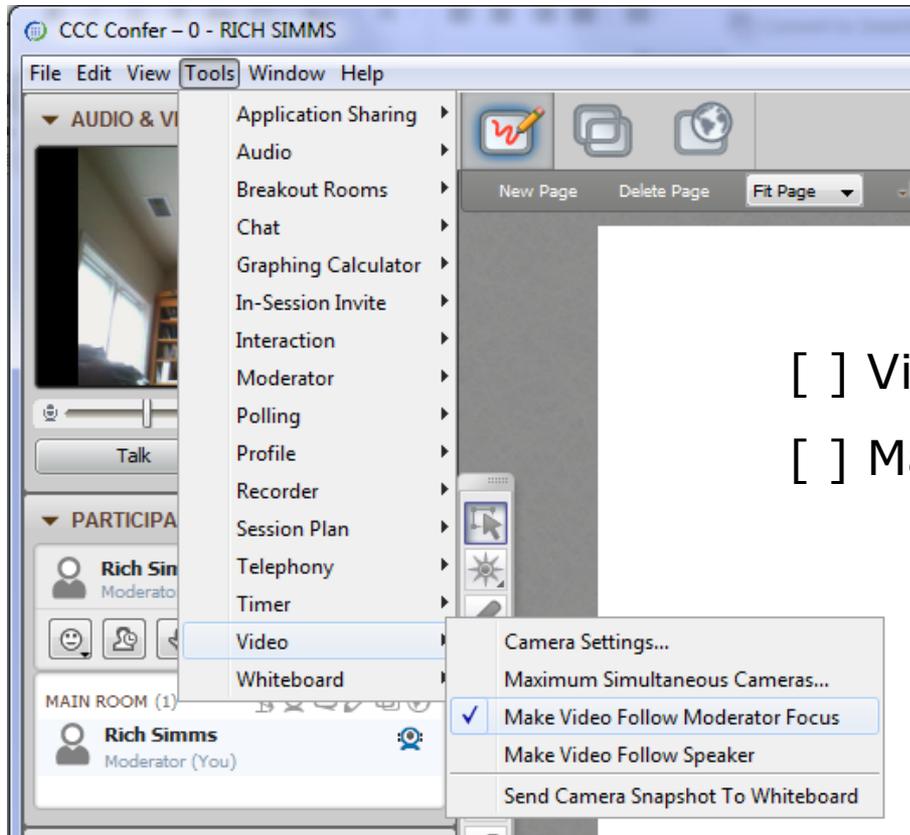
- foxit for slides**: Points to the PDF document in the Chrome browser window.
- chrome**: Points to the Chrome browser window.
- vSphere Client**: Points to the vSphere Client window.

[] layout and share apps





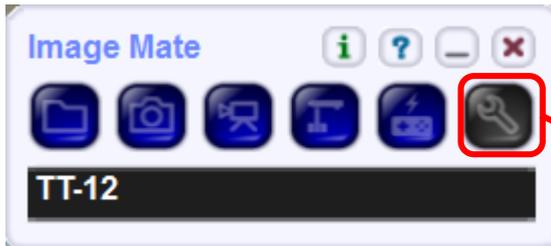
Rich's CCC Confer checklist - video



[] Video (webcam)

[] Make Video Follow Moderator Focus

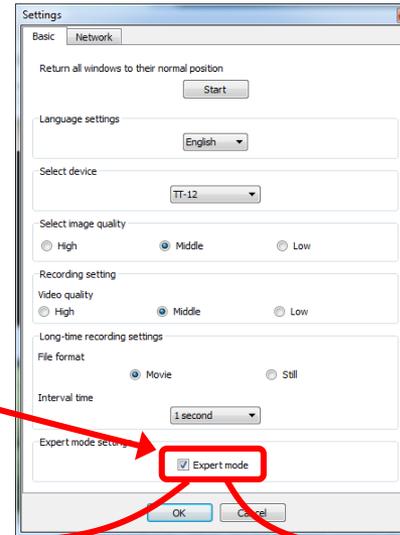
Rich's CCC Confer checklist - Elmo



Elmo rotated down to view side table



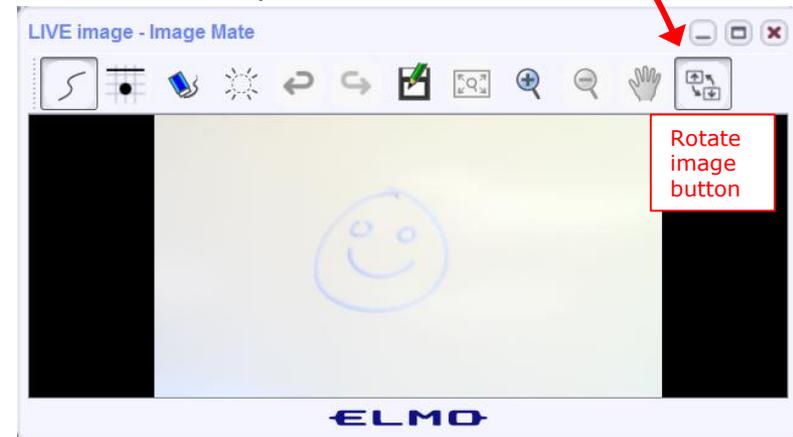
Run and share the Image Mate program just as you would any other app with CCC Confer



The "rotate image" button is necessary if you use both the side table and the white board.

Quite interesting that they consider you to be an "expert" in order to use this button!

Elmo rotated up to view white board



Rich's CCC Confer checklist - universal fix



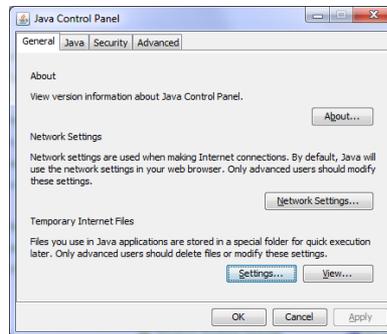
Universal Fix for CCC Confer:

- 1) Shrink (500 MB) and delete Java cache
- 2) Uninstall and reinstall latest Java runtime

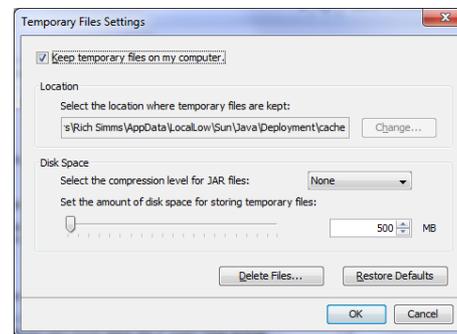
Control Panel (small icons)



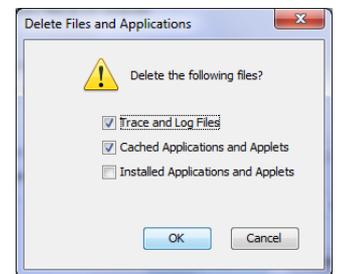
General Tab > Settings...



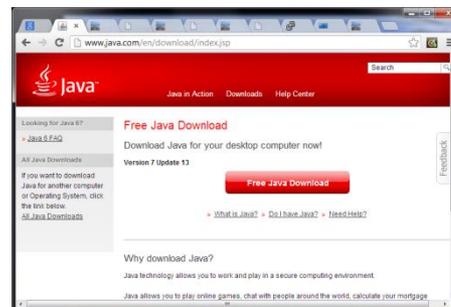
500MB cache size



Delete these



Google Java download





Start

Sound Check

*Students that dial-in should mute their line using *6 to prevent unintended noises distracting the web conference.*

*Instructor can use *96 to mute all student lines.*



Instructor: **Rich Simms**

Dial-in: **888-886-3951**

Passcode: **136690**



Chris



Jeremy



Jennifer



Joaquin



Joseph



Lisa



May



Sundance



Charlie



Sean



Brenda



Anthony



Will H.



Josh



Michael



Danny



Vic



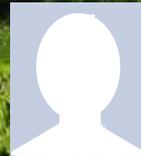
William D.



Taylor



Thomas



Miguel



Tony

Email me (risimms@cabrillo.edu) a relatively current photo of your face for 3 points extra credit

Quiz

**No Quiz
Today !**



File Transfer and Review

Objectives

- Transfer project files to Windows and Linux systems
- Prepare for final exam

Agenda

- No Quiz
- Questions
- Linux and Telephones
- Linux and Music
- Housekeeping
- Final Exam (Test 3)
- Test 3 Tips
- File transfer continued
- Compressed archives
- Make your own Opus
- Project Presentations
- Wrap up



Questions



Questions?

Lesson material?

Labs? Tests?

How this course works?

- Graded work in home directories
- Answers in /home/cis90/answers

Who questions much, shall learn much, and retain much.

- Francis Bacon

If you don't ask, you don't get.

- Mahatma Gandhi

Chinese
Proverb

他問一個問題，五分鐘是個傻子，他不問一個問題仍然是一個傻瓜永遠。

He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever.



Linux and Telephones



Way back in Lesson 1

Apple iOS



The Apple iOS, internally known as Darwin, like Mac OS X, runs on a Unix-like kernel (Mach kernel + BSD components)

Android



Android smartphones use the Linux kernel



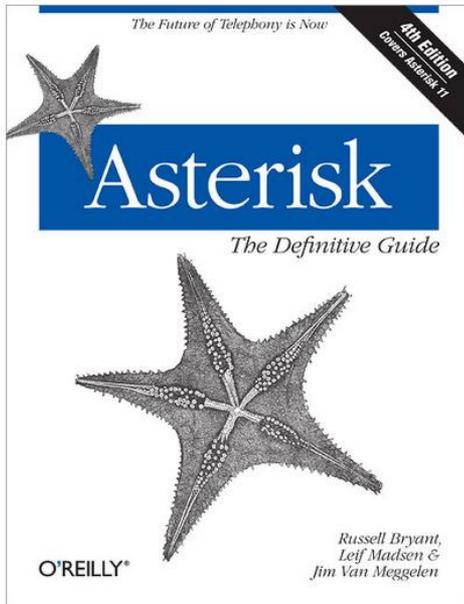
Telephone System Terminology

PSTN (Public Switched Telephone Network) - The global telecommunication infrastructure.

PBX (Private Branch Exchange) - a telephone system used by a business or organization. Each user has their own extension. Trunk lines connect the PBX to the PSTN for incoming and outgoing calls.

SIP (Session Initiation Protocol) - a protocol used for voice/video sessions.

VoIP (Voice over IP) - umbrella group of technologies for delivering voice communications and multimedia sessions.



- Open source PBX (Private Branch Exchange) software.
- Implements a complete VOIP phone system.
- Created in 1999 by Mark Spencer of Digium.
- <http://www.asterisk.org/>

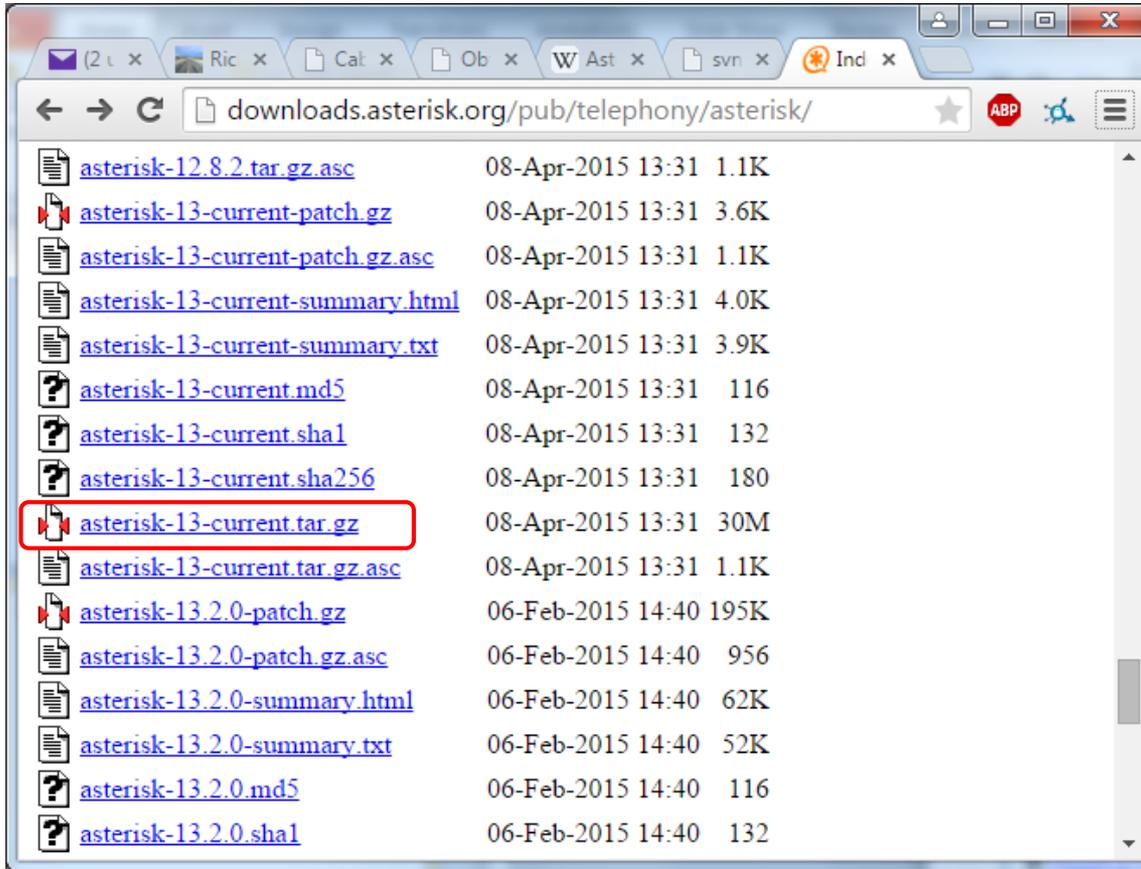


- Open-source web-based GUI (Graphical User Interface) to manage Asterisk.
- <http://www.freepbx.org/>

Asterisk Source Code



<http://downloads.asterisk.org/pub/telephony/asterisk/>



Asterisk is licensed under the GNU GPL which means you have the freedom to download, view and modify the source code.

All the files for each version have been tarred and compressed into a single tarball.

Obtaining the current version Asterisk source code to examine

Asterisk app_voicemail.c source code file



You can see it was authored by Mark Spencer and licensed under the GNU GPL (General Public License).

```

C:\cygwin\home\Rich Simms\app_voicemail.c - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
C:\cygwin\home\Rich Simms\app_voicemail.c
1 /*
2  * Asterisk -- An open source telephony toolkit.
3  *
4  * Copyright (C) 1999 - 2006, Digium, Inc.
5  *
6  * Mark Spencer <markster@digium.com>
7  *
8  * See http://www.asterisk.org for more information about
9  * the Asterisk project. Please do not directly contact
10 * any of the maintainers of this project for assistance;
11 * the project provides a web site, mailing lists and IRC
12 * channels for your use.
13 *
14 * This program is free software, distributed under the terms of
15 * the GNU General Public License Version 2. See the LICENSE file
16 * at the top of the source tree.
17 */
18
19 /*!
20  * \file
21  * \author Mark Spencer <markster@digium.com>
22  * \brief Comedian Mail - Voicemail System
23  *
24  * unixODBC (http://www.unixodbc.org/)
25  * A source distribution of University of Washington's IMAP c-client
26  * (http://www.washington.edu/imap/)
27  *
28  * \par See also
29  * \arg \ref Config_vm
30  * \note For information about voicemail IMAP storage, https://wiki.asterisk.
31  * \ingroup applications
32  * \todo This module requires res_adsi to load. This needs to be optional
33  * during compilation.
34  *
35  * \todo This file is now almost impossible to work with, due to all \ifdefs

```

```

C:\cygwin\home\Rich Simms\app_voicemail.c - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
C:\cygwin\home\Rich Simms\app_voicemail.c
1776
1777 /*!
1778  * \brief The handler for the change password option.
1779  * \param vmu The voicemail user to work with.
1780  * \param newpassword The new password (that has been gathered from the appropriate prompting).
1781  * This is called when a new user logs in for the first time and the option to force them to change their password is set.
1782  * It is also called when the user wants to change their password from menu option '5' on the mailbox options menu.
1783  */
1784 static void vm_change_password(struct ast_vm_user *vmu, const char *newpassword)
1785 {
1786     struct ast_config *cfg = NULL;
1787     struct ast_variable *var = NULL;
1788     struct ast_category *cat = NULL;
1789     char *category = NULL, *value = NULL, *new = NULL;
1790     const char *tmp = NULL;
1791     struct ast_flags config_flags = { CONFIG_FLAG_WITHCOMMENTS };
1792     char secretfn[PATH_MAX] = "";
1793     int found = 0;
1794
1795     if (!change_password_realtime(vmu, newpassword))
1796         return;
1797
1798     /* check if we should store the secret in the spool directory next to the messages */
1799     switch (vmu->passwordlocation) {
1800     case OPT_FWLOC_SPOOLDIR:
1801         snprintf(secretfn, sizeof(secretfn), "%s/%s/secret.conf", VM_SPOOL_DIR, vmu->context, vmu->mailbox);
1802         if (write_password_to_file(secretfn, newpassword) == 0) {
1803             ast_test_suite_event_notify("PASSWORDCHANGED", "Message: secret.conf updated with new password\r\nPasswordSource:
1804             secret.conf");
1805             ast_verb(4, "Writing voicemail password to file %s succeeded\n", secretfn);
1806             reset_user_pw(vmu->context, vmu->mailbox, newpassword);
1807             ast_copy_string(vmu->password, newpassword, sizeof(vmu->password));
1808             break;
1809         } else {
1810             ast_verb(4, "Writing voicemail password to file %s failed, falling back to config file\n", secretfn);

```

It is written in the C language.
The C function shown on the right implements voicemail user password changes.

Making your own telephone system on a budget



PC Soft Phone
X-Lite
Free

<http://www.counterpath.com/x-lite-download/>



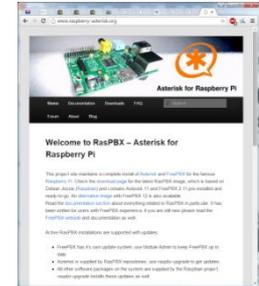
Android/iOS Soft Phone
Zoiper
Free

<http://www.zoiper.com/>



raspbx download
(Asterisk + FreePBX)

Free download, SD card ~\$12
<http://www.raspberry-asterisk.org/downloads/beta-image/>



raspbx documentation
Free

<http://www.raspberry-asterisk.org/>



Linux Computer
Raspberry Pi 2
\$39.99

<http://tinystore.com/>



Network Switch

RouterBoard (Mikrotik) RB260GS
\$38.95

<http://www.streakwave.com/>

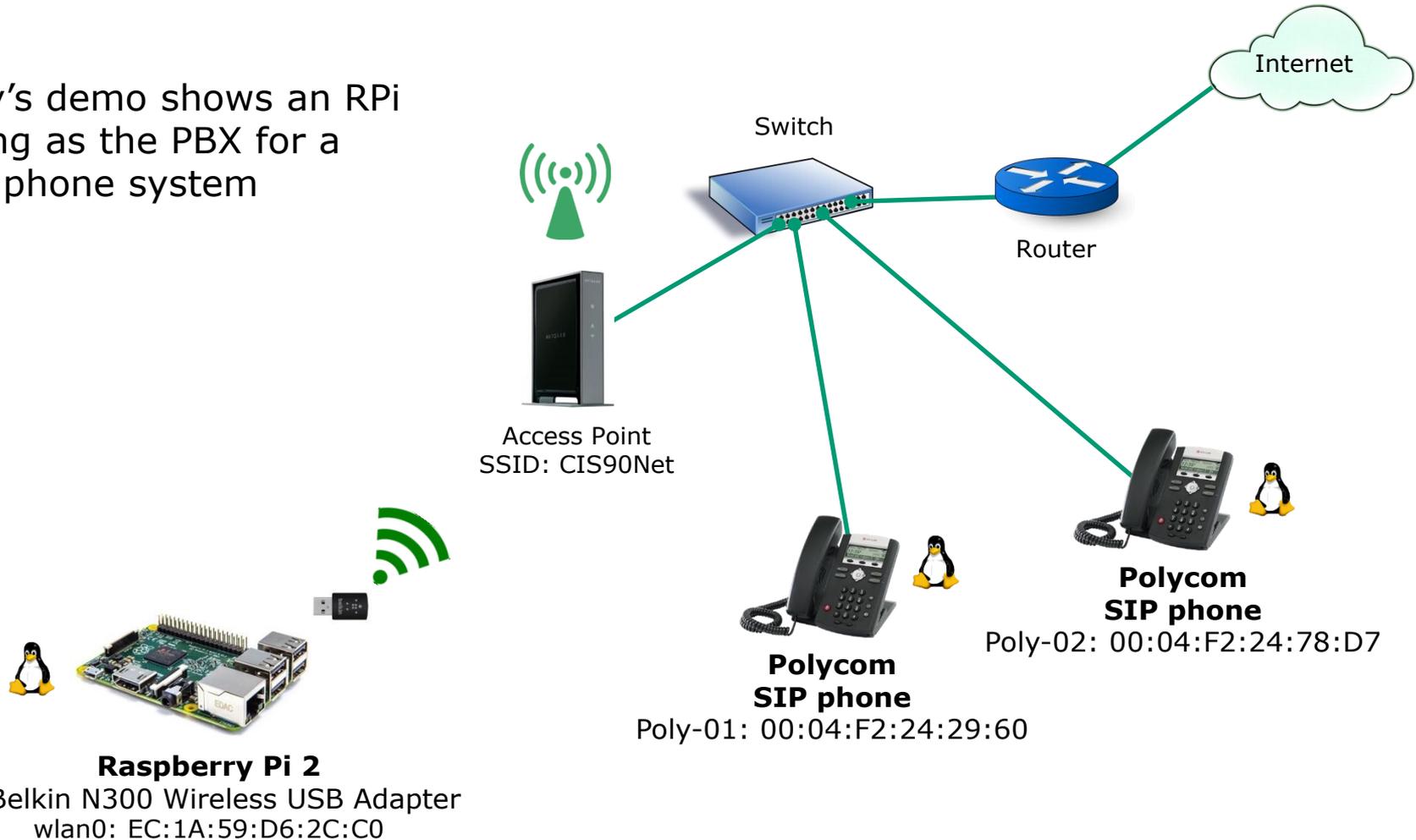


SIP phones

Polycom SoundPoint IP 331
\$15.00 each
<http://ebay.com/>

VOIP Demo on RPi and Polycom SIP phones

Today's demo shows an RPi serving as the PBX for a VOIP phone system



Download RPi raspbx image from
<http://www.raspberry-asterisk.org/>



Polycom SoundPoint IP Phones



SIP phone
Polycom SoundPoint IP 331

*Is it a phone?
Is it a computer?*



SEPTEMBER 2013 | 3725-47083-002/A

Polycom® Voice OFFER of Source for GPL and LGPL Software

You may have received from Polycom®, certain products that contain—in part—some free software (software licensed in a way that allows you the freedom to run, copy, distribute, change, and improve the software).

As a part of this product, Polycom may have distributed to you hardware and/or software, or made electronic downloads, that contain a version of alsa-lib, alsasink, alsa-utils, BlueZ, busybox-1.11.1, DirectFB, fbset, ffmpeg, ffmpegdec, glibc, glib2, gst-openmax, gstreamer, libomxil-bellagio, libstdc++ 4.3.2, libusb, Libxml, **Linux Kernel**, module-init-tools-3.2.2, mtd-utils-1.2.0-1.fc10, omxvideodec, procps-3.2.7-20.fc9, SDL, tsattach-1.0, tslib, u-boot, udev-092, WebKit, wireless-tools, wrsv-ltt, and x-loader, which are **free software programs developed by the Free Software Foundation**. With your purchase of the products listed in Table A, Polycom has granted you a license to the above-mentioned software under the terms of the GNU General Public License (GPL), GNU Library General Public License (LGPLv2), or GNU Lesser General Public License (LGPL). The text of these Licenses can be found in Licenses on page 19.

For at least three years from the date of distribution of the applicable product or software, we will give to anyone who contacts us at the contact information provided below, for a charge of no more than our cost of physically distributing, the following items:

- A copy of the complete corresponding machine-readable source code for programs listed below that are distributed under the GNU GPL
- A copy of the corresponding machine-readable source code for the libraries listed below that are distributed under the GNU LGPL, as well as the executable object code of the Polycom work that the library links with

The software included or distributed for the product, including any software that may be downloaded electronically via the internet or otherwise (the "Software") is licensed, not sold. The customer may modify any of the Libraries listed below licensed under the GNU LGPL, and then re-link to produce a modified executable containing the modified Library. Customers who choose to modify the original software delivered by Polycom for the product void all WARRANTY, SERVICE and SOFTWARE SUPPORT agreements.

Table A: Polycom® Products Incorporating GPL and LGPL Software

Business Media Phones: Polycom VVX® 300, Polycom VVX® 310, Polycom VVX® 400, Polycom VVX® 410, Polycom VVX® 500, Polycom VVX® 600, Polycom VVX® 1500, Polycom VVX® 1500 D

SoundStructure: Polycom SoundStructure® VoIP Interface Plug-in Card

Add User (extension) to PBX



Adding New Extension (user) on PBX



<http://<ip-of-pbx-server>>

A screenshot of the FreePBX web administration interface. The browser address bar shows "raspbx/admin/config.php?display=index". The main content area displays a "System Overview" section with a "Welcome to FreePBX" message and system status indicators. A left-hand navigation menu is visible, with the "Extensions" option highlighted by a red rectangular box.



raspbx server
(Asterisk + FreePBX on Linux)

A screenshot of the "Add an Extension" form in the FreePBX interface. The form includes a title "Add an Extension", a instruction "Please select your Device below then click Submit", a label "Device" next to a dropdown menu showing "Generic CHAN SIP Device", and a "Submit" button at the bottom.

Add new SIP phone extension using FreePBX web page

Adding New Extension (user) on PBX



CIS 90 VLab Assignments

| Student | Hostname |
|------------|----------|
| Abraham C. | Arya-12 |
| Abraham N. | Arya-66 |
| Ahmad | Arya-75 |
| Al | Arya-03 |
| Benji C. | Arya-54 |
| Benji S. | Arya-02 |
| Cameron | Arya-68 |
| Chris | Arya-35 |
| Clara | Arya-17 |
| Diego | Arya-73 |
| Django | Arya-08 |
| Duke | Arya-46 |
| Eddie | Arya-72 |
| Efrain | Arya-38 |
| Emilio | Arya-74 |
| Ethan | Arya-21 |
| Geoffrey | |
| Gerlinde | |
| Homer | |
| Ian | |
| Ivers | |
| John | |
| Mario | |
| Mateo | |
| Matt | |
| Melissa | |
| Mike | |
| Monte | |
| Nick | |
| Rick | |
| Roberto | |
| Ryan | |
| Sean | |
| Sherpa | |
| Sky | |
| Tanner | |
| Tess | |
| Tim | Arya-23 |
| TBD | Arya-57 |
| TBD | Arya-31 |
| TBD | Arya-47 |
| TBD | Arya-19 |
| TBD | Arya-13 |
| TBD | Arya-60 |



raspbx server
(Asterisk + FreePBX on Linux)

- Add Extension

User Extension [?]

Display Name [?]

CID Num Alias [?]

SIP Alias [?]

Portion of FreePBX "Add Extension" web page

*Enter User Extension and Display Name
(4xx is "4" + student CIS 90 VM pod number)*

Adding New Extension (user) on PBX



raspbx server
(Asterisk + FreePBX on Linux)

- Device Options

This device uses **CHAN_SIP** technology listening on **:5060**

Secret [?]

DTMF Signaling [?]

NAT Mode [?]

Portion of FreePBX "Add Extension" web page

Set Secret password to use when adding handset later

Adding New Extension (user) on PBX



raspbx server
(Asterisk + FreePBX on Linux)

- Voicemail

| | |
|--|---|
| Status | <input type="text" value="Enabled"/> |
| Voicemail Password [?] | <input type="text" value="12345"/> |
| Require From Same Extension [?] | <input checked="" type="radio"/> yes <input type="radio"/> no |
| Email Address [?] | <input type="text" value="watshe90@opus.cis.cabrillo.edu"/> |
| Pager Email Address [?] | <input type="text" value="watshe90@opus.cis.cabrillo.edu"/> |
| Email Attachment [?] | <input checked="" type="radio"/> yes <input type="radio"/> no |
| Play CID [?] | <input checked="" type="radio"/> yes <input type="radio"/> no |
| Play Envelope [?] | <input checked="" type="radio"/> yes <input type="radio"/> no |
| Delete Voicemail [?] | <input checked="" type="radio"/> yes <input type="radio"/> no |

Portion of FreePBX "Add Extension" web page

Configure voicemail and use Opus email address

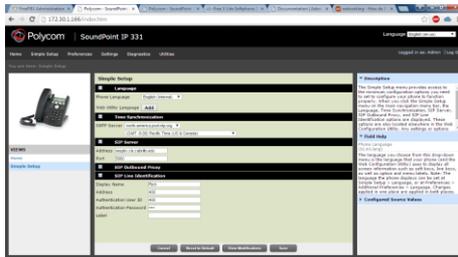
Add SIP Hard Phone to Network



Configure SIP "Hard" Phone as extension



<http://<ip-of-sip-phone>>



SIP phone

is connected using standard LAN cable

| Simple Setup | |
|--------------------------------|--|
| Language | |
| Phone Language | English (Internal) ▼ |
| Web Utility Language | Add |
| Time Synchronization | |
| SNTP Server | north-america.pool.ntp.org ▼ |
| | (GMT -8:00) Pacific Time (US & Canada) ▼ |
| SIP Server | |
| Address | raspbx.cis.cabrillo.edu |
| Port | 5060 |
| SIP Outbound Proxy | |
| SIP Line Identification | |
| Display Name | Rich |
| Address | 400 |
| Authentication User ID | 400 |
| Authentication Password | **** |
| Label | |

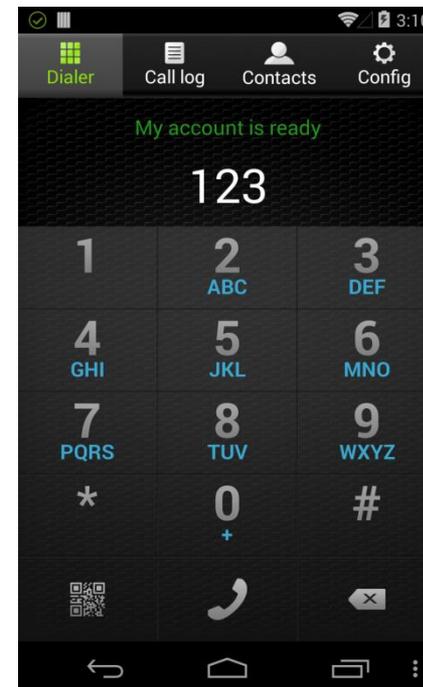
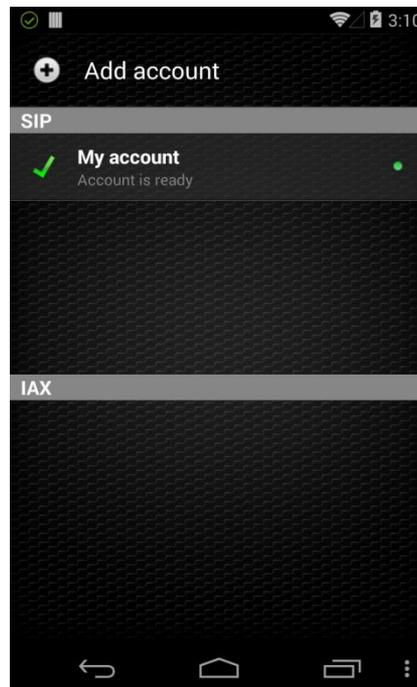
Configure SIP phone with extension number and address of PBX server

Install SIP Soft Phone on Android



Zoiper

<http://www.zoiper.com/>



Lets you use your Android device as an phone extension

Install SIP Soft Phone on PC



X-Lite soft phone

<http://www.counterpath.com/x-lite-download/>

COUNTERPATH PRODUCTS SOLUTIONS PARTNERS COMPANY SUPPORT **STORE**

Ready to Download the Free X-Lite Softphone?

Before you download X-Lite for Windows PC or Mac, please note that in order to use X-Lite to make audio calls to softphone/mobile/landline numbers and make video calls/send Instant Messages to softphones, a **VoIP subscription with a local service provider or Internet Service Provider is required**. Please contact your local service provider to subscribe.

[Download X-Lite 4.8.2 for Windows](#)

[Download X-Lite 4.8.2 for Mac](#)

[Download X-Lite 4.5 for Windows XP](#)

[Sales Request Form](#)

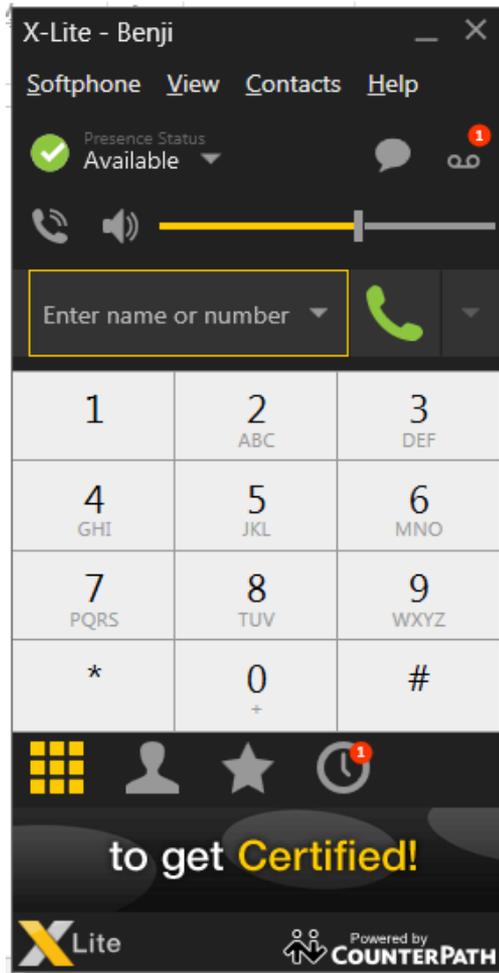
Try X-Lite for FREE - and try our most popular features of Bria!

Combining voice and video calls in a user-friendly interface, CounterPath's X-Lite helps you seamlessly transition from a traditional phone environment into the world of Voice over IP.

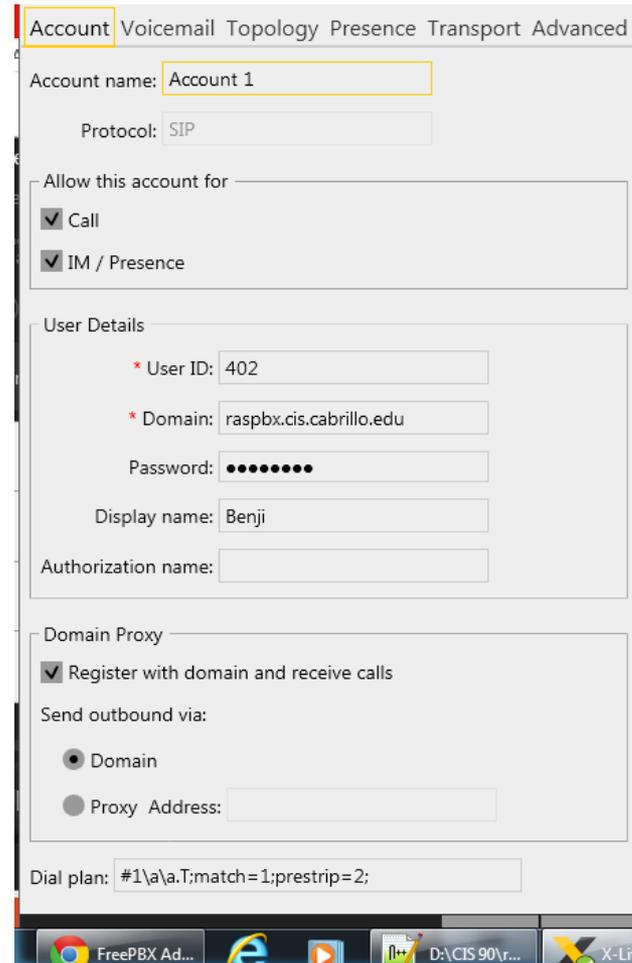
[DOWNLOAD](#)

Lets you use your PC as an phone extension

Configure soft phone as extension



Softphone > Account Settings



Configure soft phone with extension number and address of PBX server

Configure soft phone as extension



Softphone > Preferences > Devices > [Test Devices]

The image shows two overlapping windows from a softphone application. The background window is the 'Preferences' dialog, with the 'Devices' section selected. It shows options for 'Automatic gain control' and 'Reduce background noise', both checked. Under 'Test Devices', 'Headset Mode' is selected. The 'Speaker' is set to 'Speakers and Headset' and the 'Microphone' is 'Internal Mic (IDT HiFi)'. The foreground window is the 'Troubleshooting' dialog, which shows a green checkmark for 'Devices' and a yellow warning icon for 'Audio Diagnostics'. It states 'You are currently in: Headset mode'. Step 1 shows the microphone selection dropdown set to 'Microphone (High Definition Audio)'. Step 2 shows a green progress bar and a green checkmark with the text 'Your microphone works'. Step 3 shows the speaker selection dropdown set to 'Speakers (High Definition Audio Device) 2' and a 'Stop' button. Step 4 shows a green progress bar and a green checkmark with the text 'Your speakers work'. A 'Done' button is at the bottom right.

Troubleshooting





How to reset used Polycom phone to factory defaults

richsimms - Y x Rich's Cabrill x CIS 90 - Sprin x CIS Lab x FreePBX Adm x Polycom - So x Polycom VoIP x

voipt2.polycom.com

Polycom | Support
Click the ICON to go to Polycom Support pages

Welcome to the Polycom VoIP Phone Provisioning Server

Getting Started

This is a publicly accessible server intended only for use of provisioning, upgrading, or downgrading the software of Polycom IP phones with stock Polycom software and configuration files.

Multiple 'stock' directories exist with different versions of SIP, UC, and BootROM software, and are named according to the SIP or UC software version contained within. These directories are completely **Stock**; no changes should be made to any configuration files within.

Each directory contains an [ABOUT.TXT](#) to indicate which SIP and BootROM software versions exist within that directory.

To Provision Your Polycom VoIP Phone:

- From the phone's local menu interface, press **Menu > Settings > Advanced** (default password: 456) > **Administration Settings > Network Configuration > Server Menu**.
- Configure your DHCP menu:
On 3.x Phones: Main Menu > Settings > Advanced > Admin Settings > Network Configuration > DHCP Menu
On 4.x/5.x phones: Main Menu > Settings > Advanced > Admin Settings > Network Configuration > Provisioning Server > DHCP Menu set the following:
 Boot Server: **Static**
 BootSrv Type: **IP Address** (Once phone is upgraded, please remove the IP address from the phone!!!)
- From the Provisioning Server menu set: Server Type: **HTTP**
- Next input Server Address as **voipt2.polycom.com** or **IP** Example to load the latest SIP 4.06 = **voipt2.polycom.com/406**
 - Note **voipt2.polycom.com** can be entered in IP form, enter Example **140.242.64.35/406** for convenience.
- Unless otherwise instructed by VoIP Support, do not change Server User or Password.
 (Optional): Specify a directory for the SIP or UC software version you wish the phone to provision, as listed below.

IMPORTANT NOTE: Using this server to provision your phone will erase all preferences and will restore all settings to their Factory Default Values!
ALL SETTINGS WILL BE LOST!!

Used phones may have previous configuration on them



How to reset used Polycom phone to factory defaults

downloads.polycom.com/voice/voip/sip_sw_releases_matrix.html

Polycom® UC Software Release Matrix For SoundPoint IP and SoundStation IP Phones

The Polycom UC Software Release Matrix For VX Phones and SoundStructure VoIP Interface Card can be found [here](#).

| Release | Release Notes | IP301 | IP320/330 | IP321/331 | IP335 | IP430 | IP450 | IP501 | IP550 | IP560 | IP600 | IP601 | IP602 |
|---|----------------------|-------|-----------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 4.1.1 (MS Lync Only) Combined | View | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.1.1 (MS Lync Only) Split | | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.1.0 Rev S (MS Lync Only) Combined | View | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.1.0 Rev S (MS Lync Only) Split | | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.1.0 Rev B (MS Lync only) Combined | View | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.1.0 Rev B (MS Lync only) Split | | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.0.8 Rev C Combined | View | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.0.8 Rev C Split | | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.0.7 Combined | View | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.0.7 Split | | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |
| 4.0.6 Combined | View | No | No | Yes | Yes | No | Yes | No | Yes | Yes | No | No | Y |

Installing latest firmware on a Polycom phone



Freepbx "tampered" error fix

```
amportal chown  
amportal a ma refreshsignatures  
amportal a reload
```

Updates digital signatures after upgrading modules



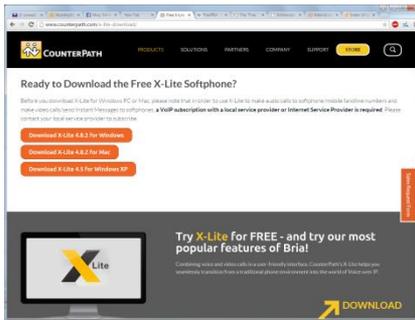
Miscellaneous



Student Volunteer Checklist



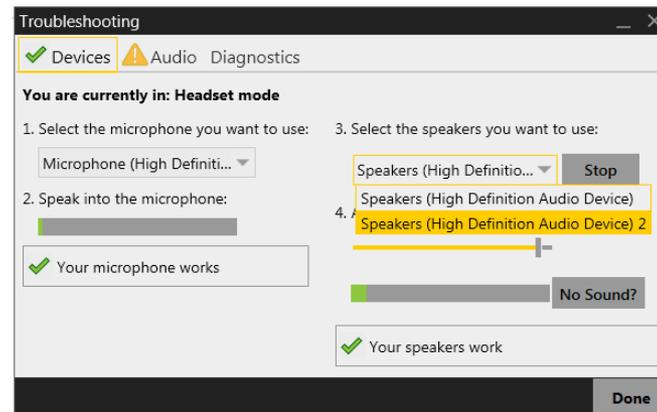
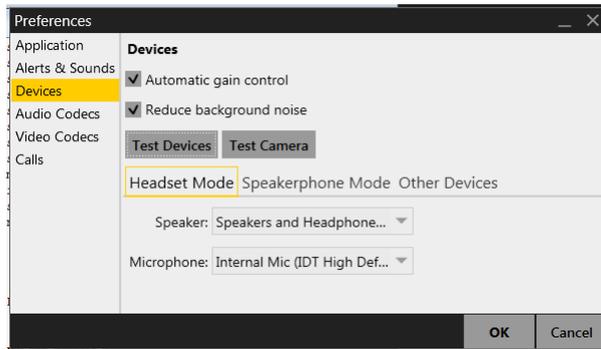
1. Google "x-lite download" and install X-Lite for Windows on workstation (including C++ libraries)



<http://www.counterpath.com/x-lite-download/>



2. Plugin in Plantronics headset and configure X-Lite audio speakers
Softphone > Preferences > Devices > [Test Devices]



Classroom Testing Checklist



1. Install X-Lite on instructor station
2. Connect Poly-01 and Poly-02 to classroom LAN
3. Find IP address of raspbx, poly-01 and poly-02
 - a) raspbx = 172.30.1.34
 - b) poly-01 = 172.30.1.36
 - c) poly-02 = 172.30.1.37
4. Delete all current extensions on PBX
5. Add Rich as x400 for Poly-01 hard phone
6. Add Benji as x412 for Poly-02 hard phone
7. Add Smartphone as x402 for Zoiper soft phone
8. Test x400 <-> x412 <-> 402
 - a) Voice session
 - b) Voicemail
9. Test voice mail. From phone dial own extension and hit * to enter voice mail. Check for email on each recorded message.

```
NoPar#show ip dhcp binding

ip dhcp pool raspbx-828-wifi
 host 172.30.1.34 255.255.255.0
 client-identifier 01ec.1a59.d62c.c0
!
ip dhcp pool poly-01
 host 172.30.1.36 255.255.255.0
 hardware-address 0004.f224.2960
!
ip dhcp pool poly-02
 host 172.30.1.37 255.255.255.0
 hardware-address 0004.f224.78d7
!
ip dhcp pool volumio
 host 172.30.1.38 255.255.255.0
 hardware-address 40a5.ef09.ae53
 hardware-address b827.ebcf.c47e (eth0)
```

```
Poly-01: 00:04:F2:24:29:60
Poly-02: 00:04:F2:24:78:D7
Raspbx-828 eth0: B8:27:EB:78:79:7D
Raspbx-828-wifi wlan0: EC:1A:59:D6:2C:C0
```

```
Volumio eth0: b8:27:eb:cf:c4:7e
Volumio wlan0: 40:a5:ef:09:ae:53
```



MACs and IPs

Poly-01: 00:04:F2:24:29:60
 Poly-02: 00:04:F2:24:78:D7
 Raspbx-828 eth0: B8:27:EB:78:79:7D
 Raspbx-828-wifi wlan0: EC:1A:59:D6:2C:C0

Volumio eth0: b8:27:eb:cf:c4:7e
 Volumio wlan0: 40:a5:ef:09:ae:53

```
NoPar#sh ip dhcp binding
Bindings from all pools not associated with VRF:
IP address          Client-ID/
                   Hardware address/
                   User name
172.20.4.150        0100.5056.65c0.b3    May 10 2015 07:30 PM    Automatic
172.20.9.247        01f0.4da2.4091.81    May 10 2015 07:52 PM    Automatic
172.30.1.31         b827.ebb7.b399      Infinite                Manual
raspbx 172.30.1.32         01b8.27eb.7879.7d    Infinite                Manual
172.30.1.164        01b8.ca3a.83e2.e0    May 10 2015 07:15 PM    Automatic
poly-01 172.30.1.166        0004.f224.2960       May 10 2015 07:22 PM    Automatic
172.30.1.167        0110.1f74.6b62.cc    May 10 2015 08:44 PM    Automatic
172.30.1.168        01f0.4da2.4091.7d    May 10 2015 07:52 PM    Automatic
poly-02 172.30.1.169        0004.f224.78d7       May 10 2015 08:56 PM    Automatic
172.30.1.170        01b8.ca3a.83df.2d    May 10 2015 08:56 PM    Automatic
172.30.1.190        b8ca.3a92.e0fd       May 10 2015 08:18 PM    Automatic
172.30.1.193        01b8.ca3a.7cc8.8a    May 10 2015 07:46 PM    Automatic
172.30.2.212        01f0.4da2.4091.7f    May 10 2015 07:52 PM    Automatic
NoPar#
```

To clear an IP address if reservation fails:
clear ip dhcp binding 172.30.1.165



PBX command line

```

root@raspbx:~# asterisk -r
Asterisk 11.17.0, Copyright (C) 1999 - 2013 Digium, Inc. and others.
Created by Mark Spencer <markster@digium.com>
Asterisk comes with ABSOLUTELY NO WARRANTY; type 'core show warranty' for details.
This is free software, with components licensed under the GNU General Public
License version 2 and other licenses; you are welcome to redistribute it under
certain conditions. Type 'core show license' for details.
=====
Connected to Asterisk 11.17.0 currently running on raspbx (pid = 4063)
raspbx*CLI> sip show users
Username                Secret                Accountcode           Def.Context           ACL
Forcerport
400                      Cabrillo              from-internal         Yes No
402                      Cabrillo              from-internal         Yes No
407                      Cabrillo              from-internal         Yes No
446                      Cabrillo              from-internal         Yes No
raspbx*CLI>
raspbx*CLI> exit
Asterisk cleanly ending (0).
Executing last minute cleanups

```

Show configured user extensions



PBX command line

```
root@raspbx:~# amportal stop
```

```
Please wait...
```

```
STOPPING ASTERISK
```

```
Waiting for Asterisk to Stop Gracefully...
```

```
Asterisk Stopped
```

```
root@raspbx:~#
```

Gracefully shutting down asterisk

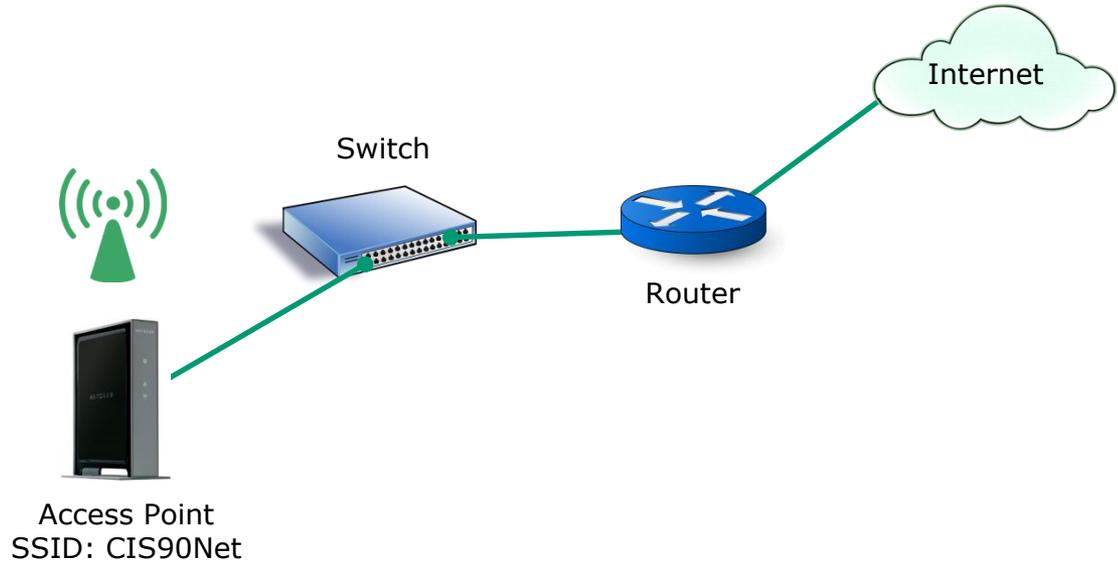


Linux and Music



HiFiBerry Audiofile Demo

Today's demo shows an RPi extended with a HiFiBerry to play streamed Internet music

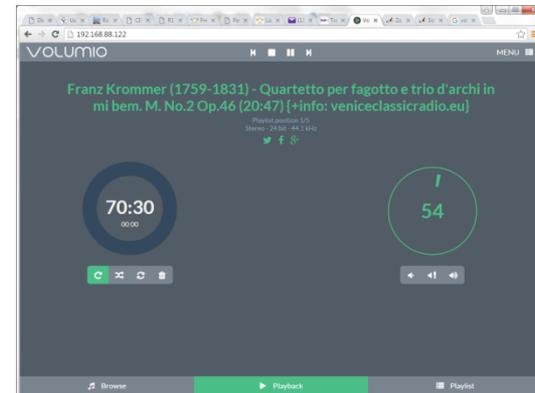


Raspberry Pi 2
With HiFiBerry DAC+
+ Wireless USB Adapter
+ VOLUMIO software
wlan0: EC:1A:59:D6:2C:C0



Download RPi VOLUMIO image
from <https://volumio.org/>

Browse to RPi IP address from
another computer to control



Housekeeping





**Project is
due tonight!**

- Final project **due 11:59 PM** tonight.
- Don't forget to **submit** using the instructions:

```
cp myscript /home/rsimms/turnin/cis90/myscript.$LOGNAME
```
- Project presentations after lesson material today.
- Final exam is next week **Monday** Dec 14th.
- Extra credit labs and forum posts due 11:59 PM day of the final exam.
- Practice test for final exam will be available at end of class today.
- Practice test server will shutdown 30 minutes before the final exam.

Grading rubric (60 points maximum)

| Possible Points | Requirements |
|---------------------|--|
| 30 | Implementing all five tasks (6 points each): <ul style="list-style-type: none"> Requirements for each task: <ul style="list-style-type: none"> Minimum of 10 "original" script command lines Has one or more non-generic comments to explain what it is doing Has user interaction |
| 25 | You don't have to do all of these but do at least five: <ul style="list-style-type: none"> Redirecting stdin (5 points) Redirecting stdout (5 points) Redirecting stderr (5 points) Use of permissions (5 points) Use of filename expansion characters (5 points) Use of absolute path (5 points) Use of relative path (5 points) Use of a PID (5 points) Use of inodes (5 points) Use of links (5 points) Use of scheduling (5 points) Use of a GID or group (5 points) Use of a UID or user (5 points) Use of a /dev/tty device (5 points) Use of a signal (5 points) Use of piping (5 points) Use of an environment variable (5 points) Use of /bin/mail (5 points) Use of a conditional (5 points) The maximum for this section is 25 points. |
| 5 | Present your script to the class |
| Points lost | |
| -15 | Fails to run from allscripts |
| -15 | Other students in the class are unable to read and execute your script. |
| -15 | Error messages are displayed when running one or more tasks |
| -up to 90 | No credit for any task which contains unoriginal script code that: <ul style="list-style-type: none"> Doesn't give full credit to the original author Doesn't indicate where the code was obtained from Doesn't include licensing terms Violates copyright or licensing terms |
| Extra credit | |
| 30 | Up to three additional tasks (10 points each) |

← *Make sure you have at least five of these implemented*

} ← *Log in as cis90 and test your script so you don't lose any points*

Final project status 12/8/2015

```
[rsimms@oslab project]$ ./progress
myscript file: (simben90) 2015-11-16 18:55:57 exists readable executable 246 lines
myscript file: (milhom90) 2015-12-01 14:50:55 exists readable executable 140 lines
myscript file: (rodduk90) 2015-12-01 14:49:50 exists readable executable 53 lines
myscript file: (gamant90) not found 53 lines
myscript file: (koujen90) 2015-12-08 17:35:18 exists readable executable 168 lines
myscript file: (neljoa90) 2015-12-08 21:36:28 exists readable executable 152 lines
myscript file: (beycha90) not found 152 lines
myscript file: (davwil90) not found 152 lines
myscript file: (drydan90) 2015-12-02 18:06:17 exists readable executable 67 lines
myscript file: (fertho90) 2015-11-19 09:59:10 exists readable executable 8 lines
myscript file: (johjos90) not found 8 lines
myscript file: (linmay90) 2015-11-23 20:23:46 exists readable executable 42 lines
myscript file: (popchr90) 2015-11-25 03:30:01 exists readable executable 42 lines
myscript file: (porjos90) not found 42 lines
myscript file: (remlis90) 2015-11-23 18:29:39 exists readable executable 42 lines
myscript file: (spiive90) not found 42 lines
myscript file: (tosbre90) not found 42 lines
myscript file: (brevic90) 2015-12-08 22:04:20 exists readable executable 97 lines
myscript file: (frisea90) 2015-12-08 15:27:47 exists readable executable 126 lines
myscript file: (hawwil90) 2015-12-02 14:42:21 exists readable executable 50 lines
myscript file: (hipmig90) 2015-12-07 19:23:54 exists readable executable 195 lines
myscript file: (juetay90) 2015-12-08 16:58:43 exists readable executable 115 lines
myscript file: (locjer90) not found 115 lines
myscript file: (primic90) not found 115 lines
myscript file: (schrob90) not found 115 lines
[rsimms@oslab project]$
```

*To get started see
Lesson 13 slides
83 to 100 ASAP*

*If you have
started but it
doesn't show here
make sure you
can run your
myscript file from
allscripts as the
cis90 user.*

Make backup copies of your script

modify, debug, modify, debug, ... rest

```
/home/cis90/simben/bin $ cp myscript myscript.v1
```

modify, debug, modify, debug, ... rest

```
/home/cis90/simben/bin $ cp myscript myscript.v2
```

modify, debug, modify, debug, ... rest

```
/home/cis90/simben/bin $ cp myscript myscript.v3
```

Spring 2016 Linux Classes and Prerequisites

CIS 90 Introduction to UNIX/Linux

Provides a technical overview of the UNIX/Linux operating system, including hands-on experience with commands, files, and tools. Recommended preparation CS 1L or CIS 72. Transfer Credit: CSU; UC.

| Section | Days | Times | Units | Instructor | Room |
|---------|------|----------------|-------|------------|------|
| 91342 | W | 9:00AM-12:05PM | 3.00 | R.Simms | OL |
| & | Arr. | Arr. | | R.Simms | OL |

Section 91342 is an ONLINE course. Meets weekly throughout the semester online during the scheduled times by remote technology with an additional 50 min arranged online lab per week. For details, see instructor's web page at go.cabrillo.edu/online.

| | | | | | |
|-------|------|----------------|------|---------|-----|
| 91343 | W | 9:00AM-12:05PM | 3.00 | R.Simms | 828 |
| & | Arr. | Arr. | | R.Simms | OL |

Section 91343 is a Hybrid ONLINE course. Meets weekly throughout the semester at the scheduled times with an additional 50 min online lab per week. For details, see instructor's web page at go.cabrillo.edu/online.

CIS 98 UNIX/Linux Shell Programming

Presents an introduction to shell programming in a UNIX/Linux environment, and is designed for system administrators or technical users with little or no programming background. Prerequisite: CIS 90. Transfer Credit: CSU; UC.

| Section | Days | Times | Units | Instructor | Room |
|---------|------|-------|-------|------------|------|
| 92784 | Arr. | Arr. | 4.00 | M.Matera | OL |

Section 92784 is an ONLINE course. For details, see instructor's web page at go.cabrillo.edu/online.

| | | | | | |
|-------|------|----------------|------|----------|-----|
| 92785 | TH | 10:00AM-2:05PM | 4.00 | M.Matera | 829 |
| & | Arr. | Arr. | | M.Matera | OL |

Section 92785 is a Hybrid ONLINE course. Meets weekly throughout the semester at the scheduled times with an additional 50 min online lab per week. Students will be required to show that they meet the course prerequisites. For details, see instructor's web page at go.cabrillo.edu/online.

CIS 192AB UNIX/Linux Network Administration

Teaches the building of network infrastructures, and the installation, configuration, and protection services on Linux TCP/IP networks. Prerequisites: CIS 81 and CIS 90 or equivalent skills. Recommended Preparation: CIS 191AB.

| Section | Days | Times | Units | Instructor | Room |
|---------|------|-------|-------|------------|------|
| 91328 | Arr. | Arr. | 4.00 | M.Matera | OL |

Section 91328 is an ONLINE course. For details, see instructor's web page at go.cabrillo.edu/online.

| | | | | | |
|-------|------|---------------|------|----------|-----|
| 91329 | TH | 5:30PM-9:35PM | 4.00 | M.Matera | 828 |
| & | Arr. | Arr. | | M.Matera | OL |

Section 91329 is a Hybrid ONLINE course. Meets weekly throughout the semester at the scheduled times with an additional 50 min online lab per week. Students will be required to show that they meet the course prerequisites. For details, see instructor's web page at go.cabrillo.edu/online.

More Spring 2016 CIS Courses

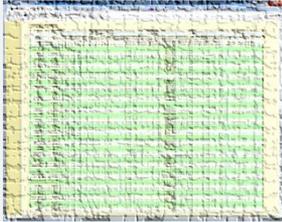
- CIS 103 - Technical Support As a Profession - required for any student planning on getting the CSS degree. Course is only offered spring even years.
- CIS 140 NA - Wireshark - a "must" for every networking student required for any student planning on getting the CSS degree. Course is only offered spring even years.
- CIS 154 - database course - almost new as it has not been offered in years.
- CIS 187 - Cisco CCNP Switch - might not come around for a while because Rick will be on sabbatical.

Where to find your grades

Send me your survey to get your LOR code name.

The CIS 90 website Grades page

<http://simms-teach.com/cis90grades.php>



Points that could have been earned:

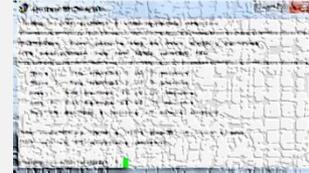
| | |
|-------------------|-------------------|
| 10 quizzes: | 30 points |
| 10 labs: | 300 points |
| 2 tests: | 60 points |
| 3 forum quarters: | 60 points |
| Total: | 450 points |

| Percentage | Total Points | Letter Grade | Pass/No Pass |
|---------------|---------------|--------------|--------------|
| 90% or higher | 504 or higher | A | Pass |
| 80% to 89.9% | 448 to 503 | B | Pass |
| 70% to 79.9% | 392 to 447 | C | Pass |
| 60% to 69.9% | 336 to 391 | D | No pass |
| 0% to 59.9% | 0 to 335 | F | No pass |

At the end of the term I'll add up all your points and assign you a grade using this table

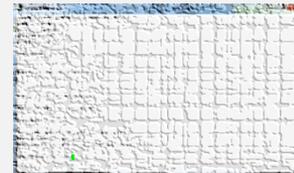
Or check on Opus

checkgrades *codename*
(where *codename* is your LOR codename)



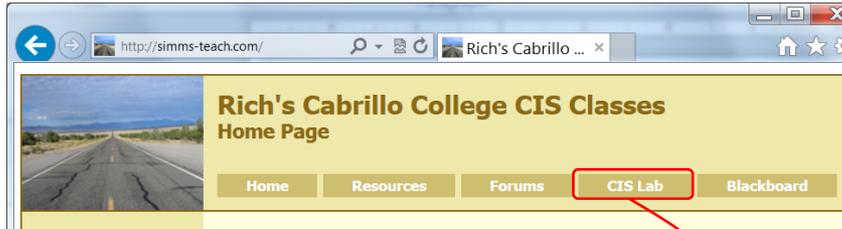
Written by Jesse Warren a past CIS 90 Alumnus

grades *codename*
(where *codename* is your LOR codename)



Written by Sam Tindell a past CIS 90 Alumnus.
Try his tips, schedule and forums scripts as well!

Would you like some help learning Linux?

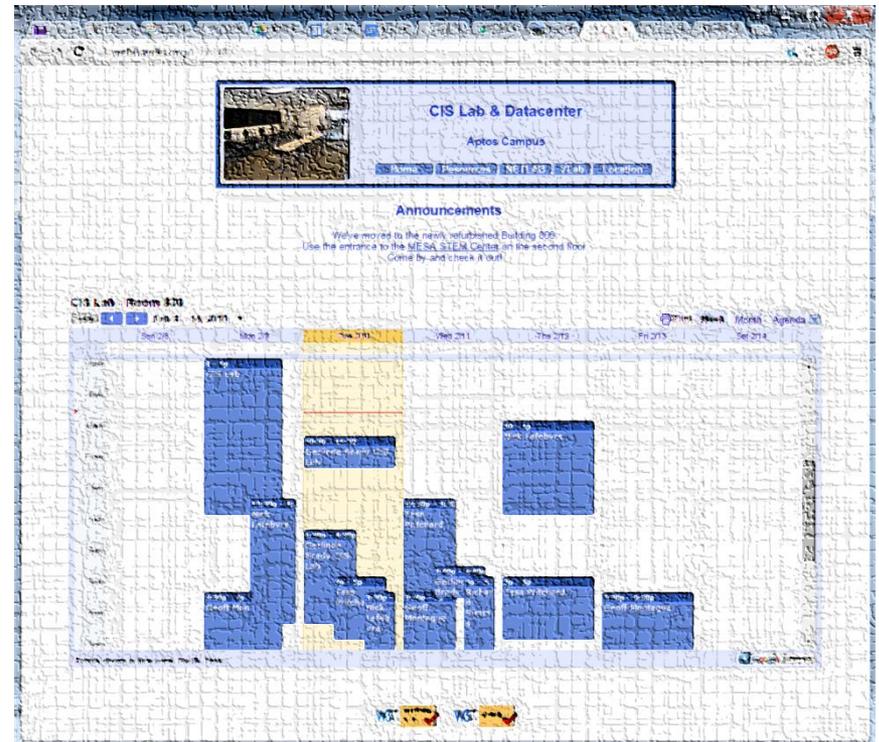


If you would like some additional come over to the CIS Lab. There are student lab assistants and instructors there to help you.

Tess, Michael, and Sam are CIS 90 Alumni.

Mike Matera is the other Linux instructor.

I'm in there Mondays.





Final Exam (Test 3)

Heads up on Final Exam

Test #3 (final exam) is **MONDAY** Dec 14 1-3:50PM

| | | | |
|---------------|-------|--|---|
| Monday | 12/14 | Test #3 (the final exam) | 5 posts Lab X1 Lab X2 |
| | | <p>Time</p> <ul style="list-style-type: none"> MONDAY 1:00PM - 3:50PM in Room 828 <p>Materials</p> <ul style="list-style-type: none"> Test (blackboard) <p>CCC Confer</p> <ul style="list-style-type: none"> Enter virtual classroom Class archives | |

*Extra credit
labs and
final posts
due by
11:59PM*

- All students will take the test at the same time. The test must be completed by 3:50PM.
- Working and long distance students can take the test online via CCC Confer and BlackBoard.
- **Working students will need to plan ahead to take time off from work for the test.**

Final Exam (Test #3)

- **The final exam will be Test #3
(worth 30 points + 3 points extra credit)**
 - Open book, open notes, open computer.
 - During the test you must work alone and not ask or give assistance to others.
 - Blackboard test, so make sure you can log into Blackboard before the test starts so you don't waste valuable time on this activity.

Final Exam (Test #3)

- **Blackboard Practice Test 3**

- Advice:

- ❖ Work EVERY question on the practice test and make a personal reference sheet for remembering how to do things
 - ❖ Use your reference sheet on the final exam.
 - ❖ Take the practice test more than once. Use the **restore** command to reset your directory on the testing system
- Use of study groups and the forum are a great way to work on the practice test and prepare for the final exam!



Test 3

Tips

Practice Test



**Do the practice test
multiple times.**

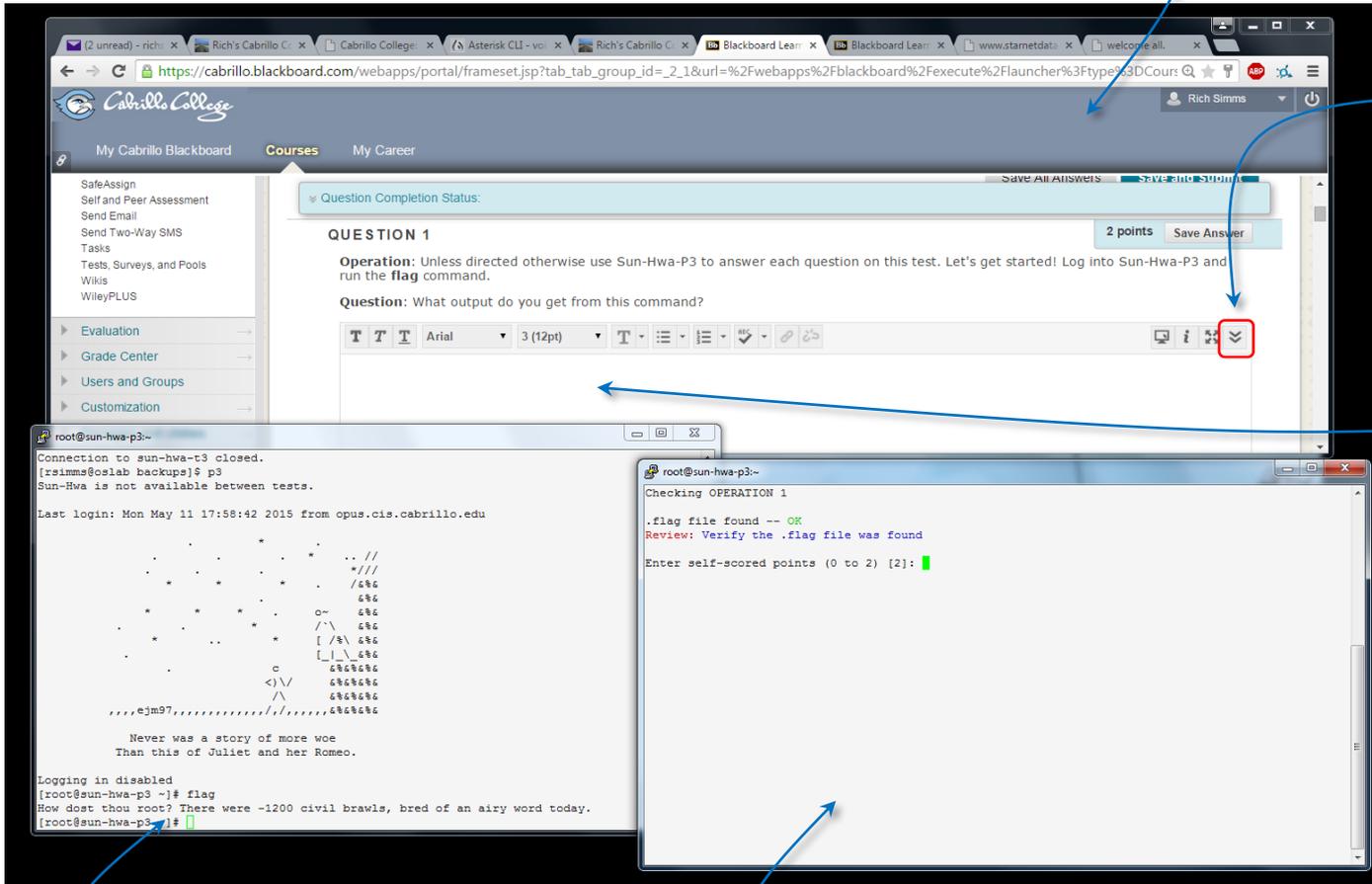
**Use the restore command
for a fresh start.**

Test Tips

Practice Test

Screen Layout

Resize Blackboard to show just one question at a time



Toggle expand/shrink icon to minimize number of formatting icons

Note: You can copy and paste text from your session into Blackboard if needed

One session to work the questions in

Another session to run the check script in, show specs, send signals etc.

Test Tips

Use the -v (verbose option) to double check your work

The -v (verbose) option

```
[rsimms@oslab ~]$ mkdir fun
[rsimms@oslab ~]$ touch fun/funny

[rsimms@oslab ~]$ chmod -R 700 fun

[rsimms@oslab ~]$ chmod -Rv 750 fun
mode of `fun' changed to 0750 (rwxr-x---)
mode of `fun/funny' changed to 0750 (rwxr-x---)

[rsimms@oslab ~]$ touch dog cat

[rsimms@oslab ~]$ mv dog fun

[rsimms@oslab ~]$ mv -v cat fun
`cat' -> `fun/cat'
```

Notice how using the -v option gives you additional feedback

Test Tips

head and tail pipelines
grep -n

Sample Task

Find a block of text in a large file that contains a specific text string. Then write a script that display the block of text.

Examine the *dickens* file in the */home/cis90/depot* directory and find the block of lines containing this quote:

```
"Father is so much kinder than he used to be"
```

In the dickens file, which line number contains the quote above?

Write your answer in the chat window

One way: use grep to find the quote in the file

Use grep to find the quote in the file

```
/home/cis90/simben $ grep "much kinder" ../depot/dickens  
for ever and ever. Father is so much kinder than he used to be, that
```

The -n option on grep shows the line number

```
/home/cis90/simben $ grep -n "much kinder" ../depot/dickens  
305:for ever and ever. Father is so much kinder than he used to be, that
```

Using grep we see that the quote is on line 305 of the dickens file

Use vi to view the block of lines containing the quote

```
vi ../depot/dickens
```

```
simben90@oslab:~
It opened; and a little girl, much younger than the boy, came darting in,
and putting her arms about his neck, and often kissing him, addressed
him as her "Dear, dear brother."

"I have come to bring you home, dear brother!" said the child, clapping
her tiny hands, and bending down to laugh. "To bring you home, home,
home!"

"Home, little Fan?" returned the boy.

"Yes!" said the child, brimful of glee. "Home, for good and all. Home,
for ever and ever. Father is so much kinder than he used to be, that
home's like Heaven! He spoke so gently to me one dear night when I
was going to bed, that I was not afraid to ask him once more if you
might come home; and he said Yes, you should; and sent me in a coach to
bring you. And you're to be a man!" said the child, opening her eyes,
"and are never to come back here; but first, we're to be together all
the Christmas long, and have the merriest time in all the world."

"You are quite a woman, little Fan!" exclaimed the boy.

She clapped her hands and laughed, and tried to touch his head; but being
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

305,19 43%

For a script to output the circled block of text above we must determine the line numbers of the start and end of the block

Starts on
line 304

```
simben90@oslab:~  
It opened; and a little girl, much younger than the boy, came darting in,  
and putting her arms about his neck, and often kissing him, addressed  
him as her "Dear, dear brother."  
  
"I have come to bring you home, dear brother!" said the child, clapping  
her tiny hands, and bending down to laugh. "To bring you home, home,  
home!"  
  
"Home, little Fan?" returned the boy.  
  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I
```

```
simben90@oslab:~  
It opened; and a little girl, much younger than the boy, came darting in,  
and putting her arms about his neck, and often kissing him, addressed  
him as her "Dear, dear brother."  
  
"I have come to bring you home, dear brother!" said the child, clapping  
her tiny hands, and bending down to laugh. "To bring you home, home,  
home!"  
  
"Home, little Fan?" returned the boy.  
  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I  
was going to bed, that I was not afraid to ask him once more if you  
might come home; and he said Yes, you should; and sent me in a coach to  
bring you. And you're to be a man!" said the child, opening her eyes,  
"and are never to come back here; but first, we're to be together all  
the Christmas long, and have the merriest time in all the world."  
  
"You are quite a woman, little Fan!" exclaimed the boy.  
  
She clapped her hands and laughed, and tried to touch his head; but being  
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

304,1

311,1

Ends on
line 311

Just move the cursor in vi and the line number in the lower right changes

`/home/cis90/depot/dickens`

```
simben90@oslab:~
It opened; and a little girl, much younger than the boy, came darting in,
and putting her arms about his neck, and often kissing him, addressed
him as her "Dear, dear brother."

"I have come to bring you home, dear brother!" said the child, clapping
her tiny hands, and bending down to laugh. "To bring you home, home,
home!"

"Home, little Fan?" returned the boy.

"Yes!" said the child, brimful of glee. "Home, for good and all. Home,
for ever and ever. Father is so much kinder than he used to be, that
home's like Heaven! He spoke so gently to me one dear night when I
was going to bed, that I was not afraid to ask him once more if you
might come home; and he said Yes, you should; and sent me in a coach to
bring you. And you're to be a man!" said the child, opening her eyes,
"and are never to come back here; but first, we're to be together all
the Christmas long, and have the merriest time in all the world."

"You are quite a woman, little Fan!" exclaimed the boy.

She clapped her hands and laughed, and tried to touch his head; but being
too little, laughed again, and stood on tiptoe to embrace him. Then she
```

305,19 43%

*Starts on
line 304*

*Ends on
line 311*

What pipeline command using head and tail would print just the block of text above?

Write your answer in the chat window

*The last line of
the block is 311*

*The number of lines in
the block would be
 $311 - 304 + 1$
or 8 lines*

```
/home/cis90/simben $ head -n311 ../depot/dickens | tail -n8  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I  
was going to bed, that I was not afraid to ask him once more if you  
might come home; and he said Yes, you should; and sent me in a coach to  
bring you. And you're to be a man!" said the child, opening her eyes,  
"and are never to come back here; but first, we're to be together all  
the Christmas long, and have the merriest time in all the world."  
/home/cis90/simben $
```

*This is how you would use a head and tail pipeline to print just
the block of text in the file containing the quote*

```
/home/cis90/simben $ head -n311 ../depot/dickens | tail -n8  
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,  
for ever and ever. Father is so much kinder than he used to be, that  
home's like Heaven! He spoke so gently to me one dear night when I  
was going to bed, that I was not afraid to ask him once more if you  
might come home; and he said Yes, you should; and sent me in a coach to  
bring you. And you're to be a man!" said the child, opening her eyes,  
"and are never to come back here; but first, we're to be together all  
the Christmas long, and have the merriest time in all the world."  
/home/cis90/simben $
```

Let's now make that long command into a script named dickens101

```
/home/cis90/simben $ vi dickens101
/home/cis90/simben $ cat dickens101
head -n311 ../depot/dickens | tail -n8
```

```
/home/cis90/simben $ chmod +x dickens101
/home/cis90/simben $ dickens101
```

```
"Yes!" said the child, brimful of glee. "Home, for good and all. Home,
for ever and ever. Father is so much kinder than he used to be, that
home's like Heaven! He spoke so gently to me one dear night when I
was going to bed, that I was not afraid to ask him once more if you
might come home; and he said Yes, you should; and sent me in a coach to
bring you. And you're to be a man!" said the child, opening her eyes,
"and are never to come back here; but first, we're to be together all
the Christmas long, and have the merriest time in all the world."
/home/cis90/simben $
```

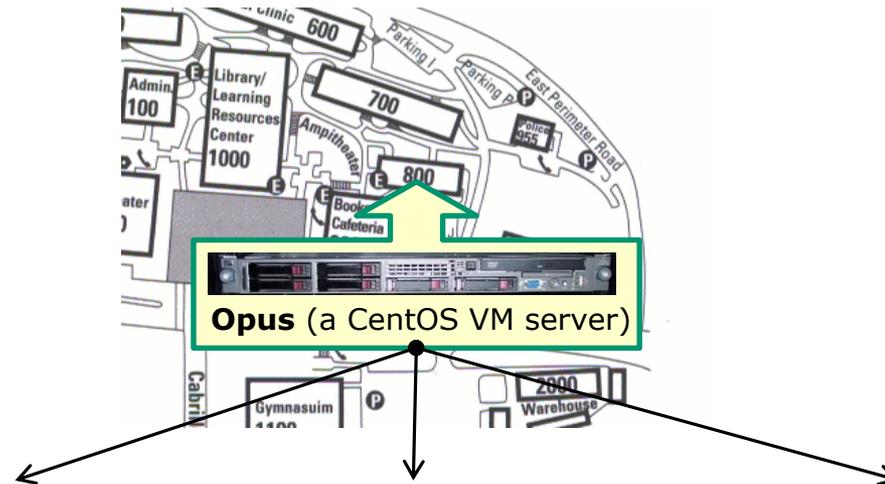
Now we have a one-line script to print the block of text containing the quote



File transfer continued

File Transfer

Downloading your Opus files to your home computer



Windows



Mac



Linux

Many ways to transfer files:

- Between Linux and Windows
 - **Filezilla** or related applications
 - Putty SCP (**PSCP**)
- Between Linux and Linux/Mac
 - **Filezilla** or related applications
 - **scp** command

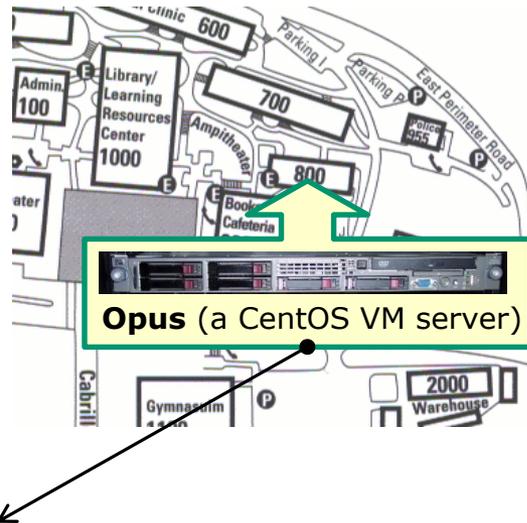


File Transfer To Windows

FileZilla

File Transfer

Downloading your Opus files to your home computer



Windows

Using  FileZilla

File Transfer

<http://filezilla-project.org>

The screenshot shows a web browser window with the URL <https://filezilla-project.org/download.php>. The page features the FileZilla logo and the text "The free FTP solution". A sidebar on the left contains navigation links for FileZilla (Home, Features, Screenshots, Download, Documentation), FileZilla Server (Download), Community (Forum, Project page, Wiki), General (Contact, License, Privacy Policy), Development (Source code, Nightly builds, Translations, Version history, Changelog, Issue tracker), and Other projects (OctoChess). A PayPal Donate button and a "Sponsors: Supported by artmotion" logo are also visible. The main content area is titled "Client Download" and states: "The latest stable version of FileZilla Client is 3.7.3. Please select the file appropriate for your platform below." Under the "Windows" section, there is a "Download Now" button with the SourceForge logo and the text "Trusted for Open Source (recommended)". Below this, it says "This installer may include bundled offers. Check below for more options. Windows XP, Vista and Windows 7 are supported, each both 32 and 64 bit." There is also a "More download options" section with the text "Not what you are looking for?" and a link "Show additional download options". An inset image shows a Windows File Explorer window displaying the contents of the FileZilla download directory.

FileZilla On Windows, connect to your Opus

The screenshot shows the FileZilla client interface. Annotations in yellow boxes point to specific fields:

- Opus username** points to the Username field containing "simben90".
- Port: 2220** points to the Port field containing "2220".
- Host: sftp://oslab.cis.cabrillo.edu** points to the Host field containing "sftp://oslab.cis.cabrillo.edu".
- Opus Password** points to the Password field, which is masked with dots.

The interface shows a local site at "C:\Users\Rich Simms\Documents\CIS 90 Class" and a remote site at "/home/cis90/simben". The remote site contains a directory listing:

| Filename | Filesize | Filetype | Last modified |
|----------|----------|-------------|------------------|
| .. | | | |
| Hidden | | File folder | 2/1/2002 |
| dogs | | File folder | 11/21/2010 |
| .ssh | | File folder | 9/3/2013 8:12: |
| etc | | File folder | 10/9/2013 1:50: |
| newdir | | File folder | 10/16/2013 9:00: |

At the bottom, the status bar shows "Queue: empty".

FileZilla Select destination and source directories

The screenshot shows the FileZilla interface with the following details:

- Host:** sftp://oslab.cishawks.net:2220
- Username:** simben90
- Password:** [Redacted]
- Port:** 2220
- Remote site:** /home/cis90/simben
- Local directory:** C:\Users\Rich Simms\Documents\CIS 90 Class\
- Remote directory:** /home/cis90/simben (containing subdirectories like home, cis90, simben)
- Status:** Calculating timezone offset of server...
Command: mtime "lab05.graded"
Response: 1381935818
Status: Timezone offsets: Server: -25200 seconds. Local: -28800 seconds. Difference: -3600 seconds.
Status: Directory listing successful

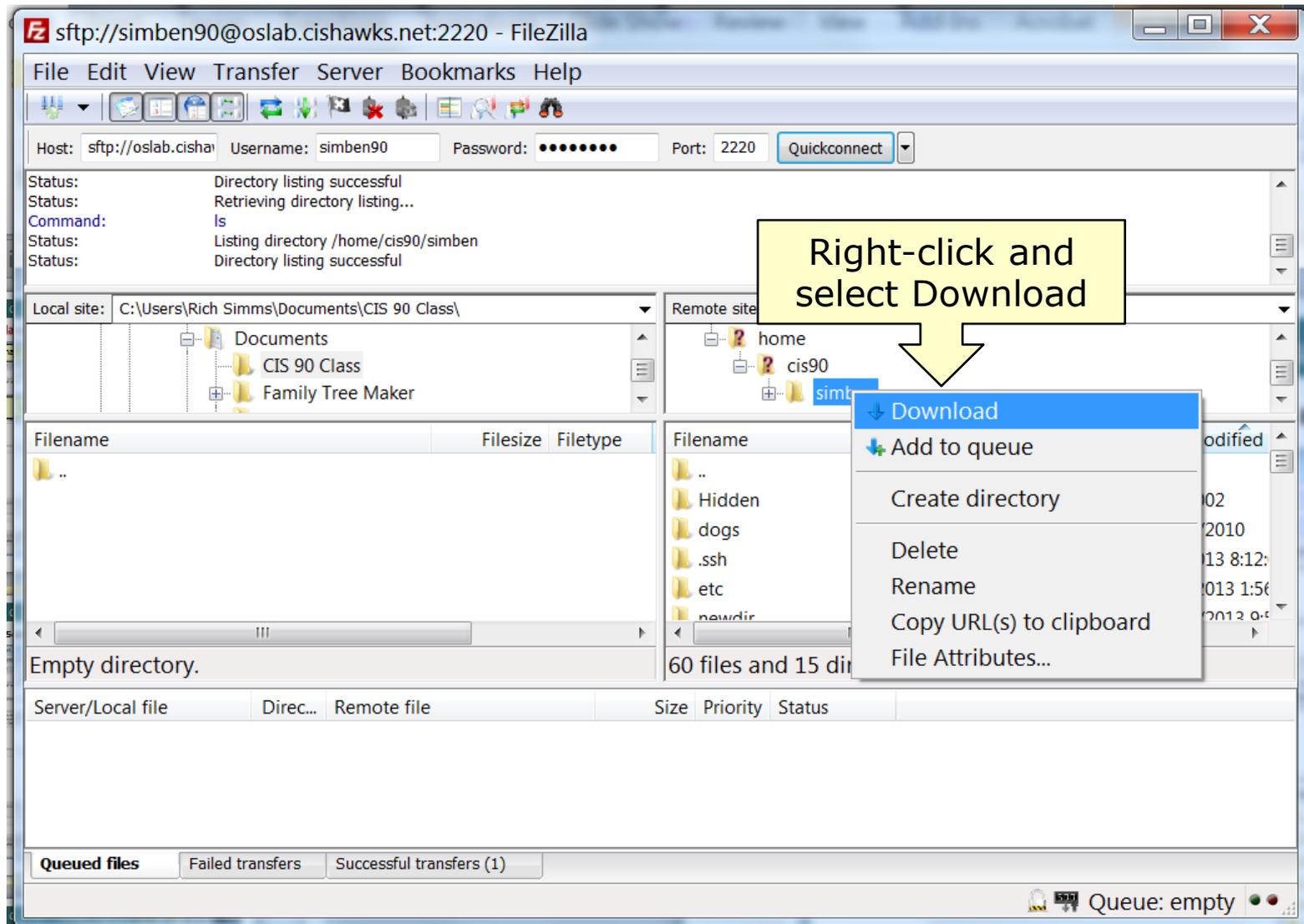
Annotations:

- As destination select a local folder:** Points to the local directory path.
- As source select your home directory (on Opus):** Points to the remote site path.

Files are downloaded from the source directory to the destination directory

Queue: empty

FileZilla Initiate Download



FileZilla Monitor transfer progress

Host: sftp://oslab.cishaw... Username: simben90 Password: Port: 2220 Quickconnect

Command: get "bin.tar" "C:\Users\Rich Simms\Documents\CIS 90 Class\simben\bin.tar"
 Response: New directory is: "/home/cis90/simben/olddir"
 Command: ls
 Status: remote:/home/cis90/simben/bin.tar => local:C:\Users\Rich Simms\Documents\CIS 90 Class\simben\bin.tar
 Status: Listing directory /home/cis90/simben/olddir

| Local site | Remote site |
|---|-------------------------|
| C:\Users\Rich Simms\Documents\CIS 90 Class\ | /home/cis90/simben/misc |

| Filename | Filesize | Filetype | Last modified |
|----------|----------|-------------|---------------|
| .. | | | |
| simben | | File folder | |

| Filename | Filesize | Filetype | Last modified |
|----------|----------|-------------|----------------|
| .. | | | |
| mystery | | File folder | 9/2/2013 6:39: |
| file.dos | 148 | DOS File | 7/20/2001 |
| manpage | 10,576 | File | 7/20/2001 |

And away it goes downloading every file and directory it finds in the selected Opus directory to your local Windows destination folder

| Server/Local file | Direc... | Remote file | Size | Priority | Status |
|------------------------|---------------|-------------------------------|--------|----------|--------------|
| sftp://simben90@osl... | | | | | |
| C:\Users\Rich Simms... | <-- | /home/cis90/simben/bin.tar | 71,680 | Norm... | Transferring |
| 00:00:00 elapsed | --:--:-- left | 32,768 bytes (? B/s) | | | |
| C:\Users\Rich Simms... | <-- | /home/cis90/simben/lab04.g... | 3,282 | Norm... | |

Queued files (92) Failed transfers Successful transfers (45)

Queue: >248.0

FileZilla Failed transfers

FileZilla window: sftp://simben90@oslab.cishawks.net:2220

Host: sftp://oslab.cisha Username: simben90 Password: Port: 2220 Quickconnect

Status: Starting download of /home/cis90/simben/dogs/Greece/Aesop/Shadow
 Command: get "Shadow" "C:\Users\Rich Simms\Documents\CIS 90 Class\simben\dogs\Greece\Aesop\Shadow"
 Status: remote:/home/cis90/simben/dogs/Greece/Aesop/Shadow => local:C:\Users\Rich Simms\Documents\CIS 90 Class\simben\dogs\Greece\Aesop\Shadow
 Status: File transfer successful, transferred 639 bytes in 1 second

| Local site: | Remote site: |
|---|--------------------|
| C:\Users\Rich Simms\Documents\CIS 90 Class\ | /home/cis90/simben |

| Local site files | Remote site files |
|-------------------|-------------------|
| Documents | simben |
| CIS 90 Class | .ssh |
| Family Tree Maker | basket |

| Local site | Remote site |
|------------|-------------|
| .. | .. |
| simben | Hidden |
| | dogs |

Failed transfers can happen if you lack read permission on a file

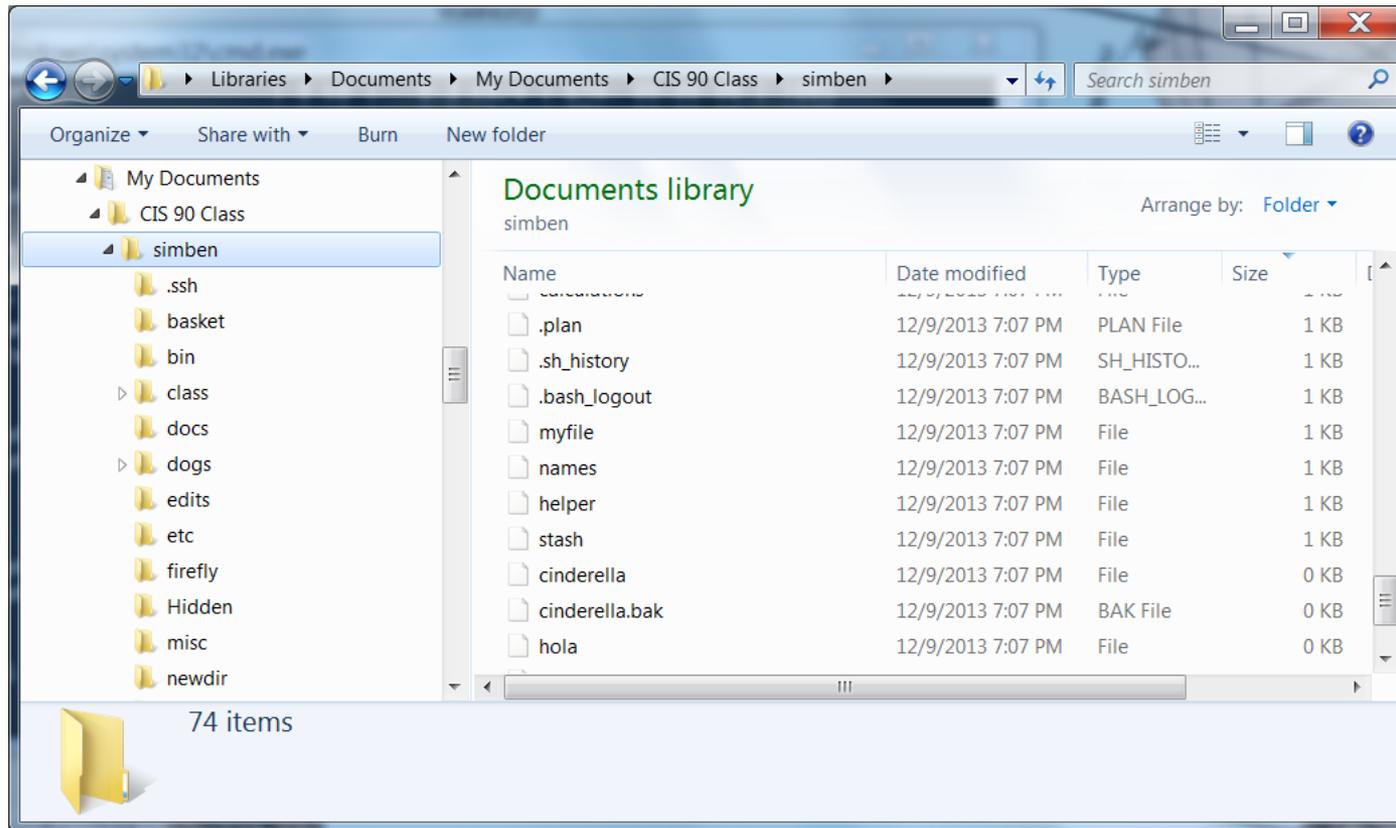
| Server/Local file | Dirac... | Remote file | Size | Priority | Time | Reason |
|------------------------|----------|--------------------------|------|----------|---------------|-------------------------|
| sftp://simben90@osl... | | | | | | |
| C:\Users\Rich Simms... | <<-- | /home/cis90/simben/newer | 0 | Norm... | 12/9/2013 ... | Could not start tran... |

Queued files: **Failed transfers (1)** Successful transfers (383)

Queue: empty

FileZilla File transfers

Your CIS 90 home directory files are
now on Windows



Empty files are copied as well



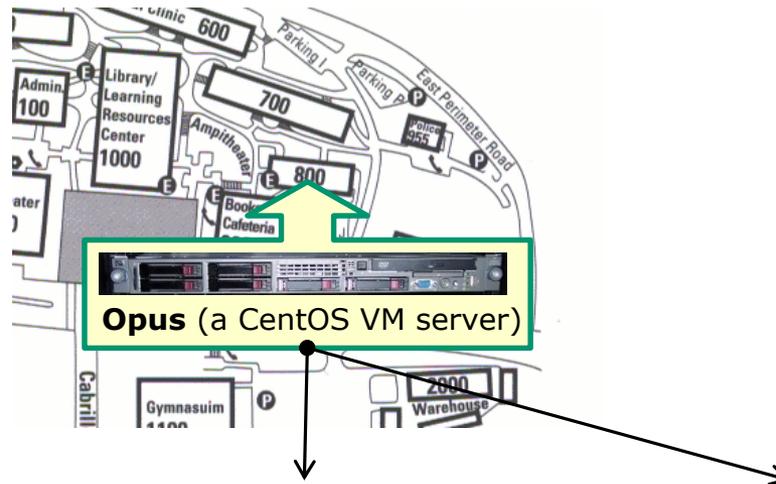
File Transfer

Linux or Mac

scp

File Transfer

Downloading your Opus files to your home computer



Mac



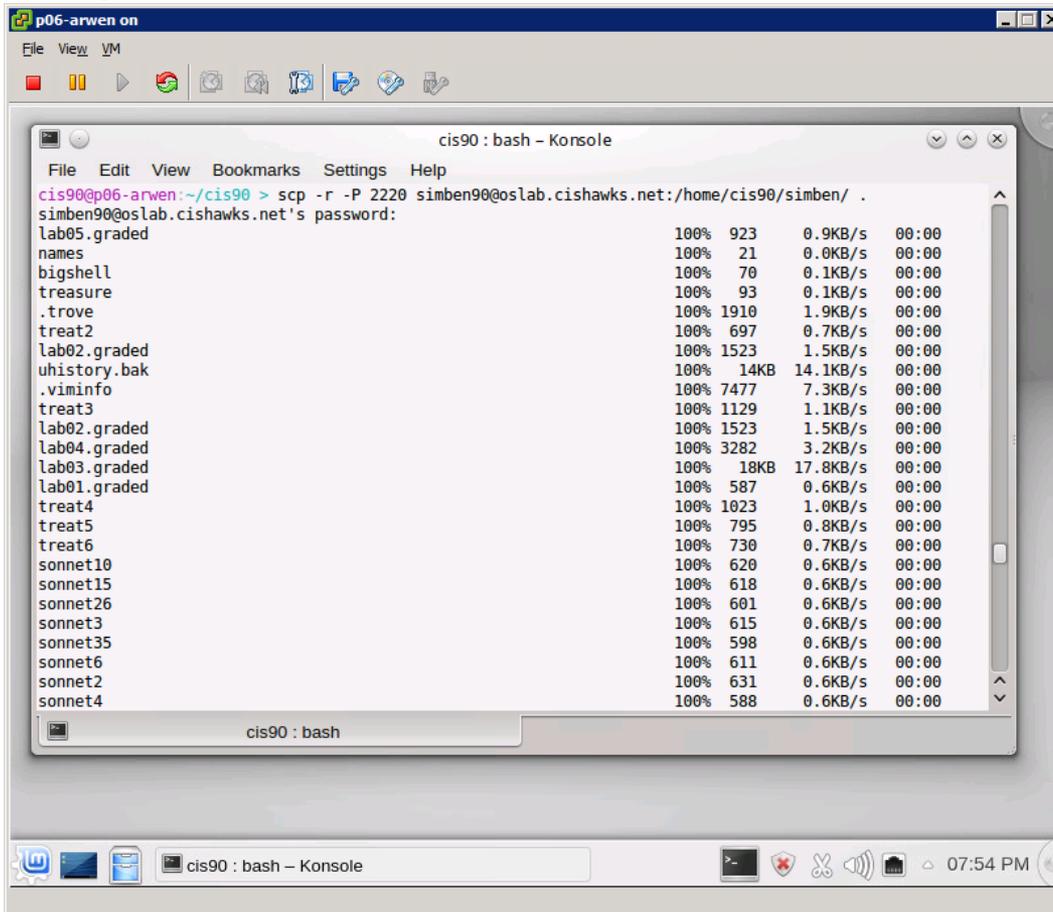
Linux

File Transfer

Downloading your Opus files to a Linux Mint VM

```
scp -P 2220 -r simben90@oslab.cis.cabrillo.edu:/home/cis90/simben .
```

Arwen



Source
directory on
Opus

Destination
directory on
Arwen

Files lacking read
permission generate
an error and are not
copied

Empty files are copied
as well

File Transfer

Downloading your Opus files to a Linux Mint VM

```

p06-arwen on
File View VM
cis90 : bash - Konsole
File Edit View Bookmarks Settings Help
cis90@p06-arwen:~/cis90 > ls
simben
cis90@p06-arwen:~/cis90 > ls simben
basket      class      experiment100 lab02.graded labx1.simben90 names      the
bf          cmds      experiment101 lab03.graded labx2          new        Torvalds
bigfile     dead.letter experiment99  lab04.graded labx2.graded  newdir    treat1
bigshell    docs      files.out    lab05.graded labx2.simben90 old        uhistory
bin         dogs      firefly      lab07         letter        olddir    uhistory.bak
bin.tar     dogs.tar  helper       lab07.graded log           poems     whoami
calculations edits     Hidden       lab08         log           smallshell whomai
cinderella  errors    hola         lab08.graded myfile        stash     words
cinderella.bak etc       lab01.graded lab09         myfiles      stash     words
test01.graded

cis90@p06-arwen:~/cis90 > clear
cis90@p06-arwen:~/cis90 >

```

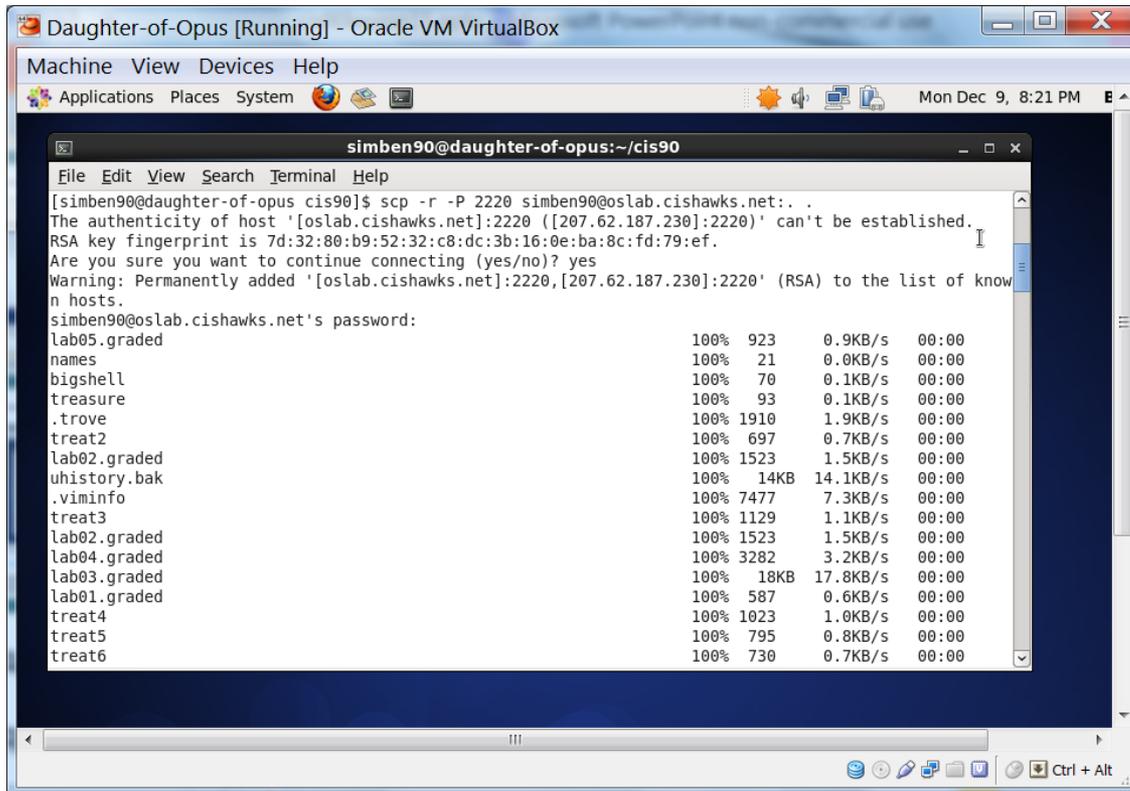
Now your Opus CIS 90 files are on the VM

File Transfer

Downloading your Opus files to Daughter-of-Opus (CentOS)

```
scp -P 2220 -r simben90@oslab.cis.cabrillo.edu:.. .
```

Daughter-of-Opus



Source
directory on
Opus

Destination
directory on
Daughter-of-
Opus

File Transfer

Downloading your Opus files to Daughter-of-Opus (CentOS)

The screenshot shows a terminal window titled 'simben90@daughter-of-opus:~/cis90'. The terminal displays the output of the 'ls' command, listing various files and directories. The output is as follows:

```

[simben90@daughter-of-opus cis90]$ ls
basket      class      experiment100  lab02.graded  labx1.simben90  names        the
bf          cmds      experiment101  lab03.graded  labx2           new          Torvalds
bigfile     dead.letter experiment99   lab04.graded  labx2.graded   newdir      treat1
bigshell    docs      files.out     lab05.graded  labx2.simben90  old         uhistory
bin         dogs      firefly       lab07         letter          olddir      uhistory.bak
bin.tar     dogs.tar   helper        lab07.graded  log            poems       whoami
calculations edits      Hidden        lab08         myfile         smallshell  whomai
cinderella  errors    hola          lab08.graded  myfiles        stash       words
cinderella.bak etc       lab01.graded  lab09         test01.graded

```

CIS 90 files copied from Opus to home Linux system

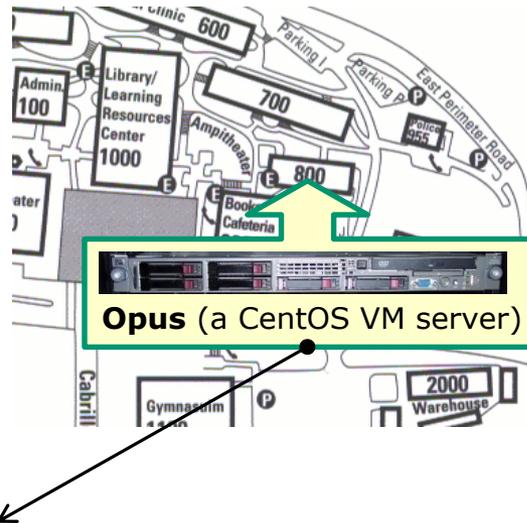


File Transfer To Windows

PSCP

File Transfer

Downloading your Opus files to your home computer



Using PSCP

Windows

PSCP (Putty SCP) Downloading

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

PuTTY Download Page

[Home](#) | [Licence](#) | [FAQ](#) | [Docs](#) | [Download](#) | [Keys](#) | [Links](#)
[Mirrors](#) | [Updates](#) | [Feedback](#) | [Changes](#) | [Wishlist](#) | [Team](#)

Here are the PuTTY files themselves:

- PuTTY (the Telnet and SSH client itself)
- PSCP (an SCP client, i.e. command-line secure file copy)
- PSFTP (an SFTP client, i.e. general file transfer sessions much like FTP)
- PuTTYtel (a Telnet-only client)
- Plink (a command-line interface to the PuTTY back ends)
- Pageant (an SSH authentication agent for PuTTY, PSCP and Plink)
- PuTTYgen (an RSA and DSA key generation utility).

LEGAL WARNING: Use of PuTTY, PSCP, PSFTP and Plink is illegal in countries where encryption is outlawed. I believe it is legal to use PuTTY, PSCP, PSFTP and Plink in England and Wales and in many other countries, but I am not a lawyer and so if in doubt you should seek legal advice before downloading it. You may find [this site](#) useful (it's a survey of cryptography laws in many countries) but I can't vouch for its correctness.

Use of the Telnet-only binary (PuTTYtel) is unrestricted by any cryptography laws.

The files we offer below are cryptographically signed. We also supply cryptographically signed lists of MD5 checksums. To download our public keys and find out more about our signature policy, visit the [Keys page](#). If you need a Windows program to compute MD5 checksums, you could try the one at [this site](#). (This MD5 program is also cryptographically signed by its author.)

Binaries

The latest release version (beta 0.60). This will generally be a version I think is reasonably likely to work well. If you have a problem with the release version, it might be worth trying out the latest development snapshot (below) to see if I've already fixed the bug, before reporting it to me.

For Windows on Intel x86

| | | | | |
|--------------|------------------------------|-----------------------------|---------------------------|---------------------------|
| PuTTY: | putty.exe | (or by FTP) | (RSA sig) | (DSA sig) |
| PuTTYtel: | puttytel.exe | (or by FTP) | (RSA sig) | (DSA sig) |
| PSCP: | pscp.exe | (or by FTP) | (RSA sig) | (DSA sig) |
| PSFTP: | psftp.exe | (or by FTP) | (RSA sig) | (DSA sig) |

*Download the
pscp.exe file and
place it in your
windows folder*

PSCP

PSCP syntax follows **scp** command syntax

recursive

*source
directory to
copy*

`pscp -P 2220 -r simben90@oslab.cishawks.net:/home/cis90/simben .`

```

C:\Windows\system32\cmd.exe
C:\Users\Rich Simms\Documents\CIS 90 Class>pscp -P 2220 -r simben90@oslab.cishawks.net:/home/cis90/simben .
simben90@oslab.cishawks.net's password:
lab05.graded | 0 kB | 0.9 kB/s | ETA: 00:00:00 | 100%
names | 0 kB | 0.0 kB/s | ETA: 00:00:00 | 100%
bigshell | 0 kB | 0.1 kB/s | ETA: 00:00:00 | 100%
treasure | 0 kB | 0.1 kB/s | ETA: 00:00:00 | 100%
.trove | 1 kB | 1.9 kB/s | ETA: 00:00:00 | 100%
treat2 | 0 kB | 0.7 kB/s | ETA: 00:00:00 | 100%
lab02.graded | 1 kB | 1.5 kB/s | ETA: 00:00:00 | 100%
uhistory.bak | 14 kB | 14.1 kB/s | ETA: 00:00:00 | 100%
.viminfo | 7 kB | 7.3 kB/s | ETA: 00:00:00 | 100%
treat3 | 1 kB | 1.1 kB/s | ETA: 00:00:00 | 100%
lab02.graded | 1 kB | 1.5 kB/s | ETA: 00:00:00 | 100%
lab04.graded | 3 kB | 3.2 kB/s | ETA: 00:00:00 | 100%
lab03.graded | 17 kB | 17.8 kB/s | ETA: 00:00:00 | 100%
lab01.graded | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%
treat4 | 0 kB | 1.0 kB/s | ETA: 00:00:00 | 100%
treat5 | 0 kB | 0.8 kB/s | ETA: 00:00:00 | 100%
treat6 | 0 kB | 0.7 kB/s | ETA: 00:00:00 | 100%
sonnet10 | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%
sonnet15 | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%
sonnet16 | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%
sonnet17 | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%
sonnet18 | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%

```

*destination is
"here" (the
current local
directory)*

*Note: empty
files or files
lacking read
permission
will not be
copied.*

Navigate to the local folder where you want to download your Opus files. Use the **pscp** command with the **-r** option to recursively download all the files from your home directory to the local Windows folder.

PSCP

Failed Transfers

```

C:\Windows\system32\cmd.exe
Moon | 1 kB | 1.3 kB/s | ETA: 00:00:00 | 100%
readme | 0 kB | 0.1 kB/s | ETA: 00:00:00 | 100%
Hamlet | 0 kB | 0.2 kB/s | ETA: 00:00:00 | 100%
Caesar | 0 kB | 0.8 kB/s | ETA: 00:00:00 | 100%
Romeo | 0 kB | 0.8 kB/s | ETA: 00:00:00 | 100%
author | 0 kB | 0.0 kB/s | ETA: 00:00:00 | 100%
Persuasion | 0 kB | 0.7 kB/s | ETA: 00:00:00 | 100%
author | 0 kB | 0.0 kB/s | ETA: 00:00:00 | 100%
Sensibility | 0 kB | 0.7 kB/s | ETA: 00:00:00 | 100%
Phaedo | 2 kB | 2.1 kB/s | ETA: 00:00:00 | 100%
author | 0 kB | 0.0 kB/s | ETA: 00:00:00 | 100%
Apology | 1 kB | 1.8 kB/s | ETA: 00:00:00 | 100%
Shadow | 0 kB | 0.6 kB/s | ETA: 00:00:00 | 100%
Ass | 0 kB | 0.9 kB/s | ETA: 00:00:00 | 100%
author | 0 kB | 0.0 kB/s | ETA: 00:00:00 | 100%
Fox | 0 kB | 1.0 kB/s | ETA: 00:00:00 | 100%
errors | 3 kB | 3.7 kB/s | ETA: 00:00:00 | 100%
myfiles | 8 kB | 8.8 kB/s | ETA: 00:00:00 | 100%
.history | 0 kB | 0.2 kB/s | ETA: 00:00:00 | 100%
whomai | 0 kB | 0.1 kB/s | ETA: 00:00:00 | 100%
lab08 graded | 5 kB | 5.1 kB/s | ETA: 00:00:00 | 100%
whoami | 0 kB | 0.1 kB/s | ETA: 00:00:00 | 100%
pscp: unable to open /home/cis90/simben/newer: permission denied
C:\Users\Rich Simms\Documents\CIS 90 Class>

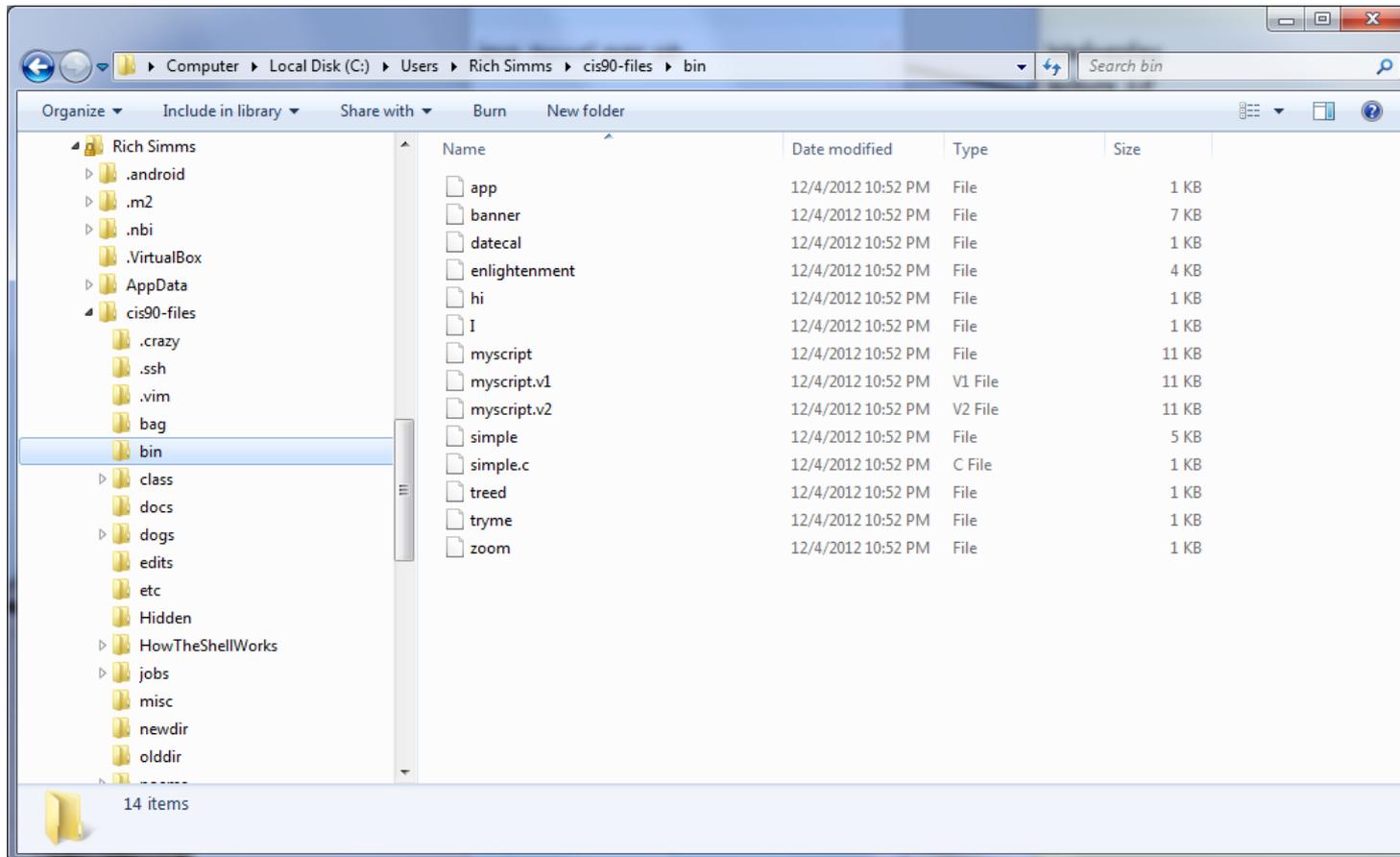
```

*Note: empty files are ignored and **not** copied*

Files lacking read permission generate an error and are not copied

PSCP

Your CIS 90 files are now on Windows



CIS 90 files copied from Opus to home Windows system



Compressed Archives

gzip and gunzip
tar -z option

gzip and gunzip commands

```
/home/cis90/simben $ ls -l simben90.tar
-rw-rw-r--. 1 simben90 cis90 1751040 Dec 10 07:57 simben90.tar
```

*Next, compress the archive with **gzip***

```
/home/cis90/simben $ gzip simben90.tar
/home/cis90/simben $ ls -l simben90.tar.gz
-rw-rw-r--. 1 simben90 cis90 440895 Dec 10 07:57 simben90.tar.gz
```

*Later, uncompress the archive with **gunzip***

```
/home/cis90/simben $ gunzip simben90.tar.gz
/home/cis90/simben $ ls -l simben90.tar
-rw-rw-r--. 1 simben90 cis90 1751040 Dec 10 07:57 simben90.tar
```

*Use **gzip** and **gunzip** to compress and un-compress regular tar files.*

*Note: **gzip** renames the tar file by adding the **.gz** suffix and **gunzip** removes the suffix*

tar -z option

```
/home/cis90/simben $ tar cf simben90.tar .
tar: ./Hidden: Cannot open: Permission denied
tar: ./simben90.tar: file is the archive; not dumped
tar: ./newer: Cannot open: Permission denied
tar: Exiting with failure status due to previous errors
```

```
/home/cis90/simben $ ls -l simben90.tar
-rw-rw----. 1 simben90 cis90 768000 Dec  9 07:52 simben90.tar
/home/cis90/simben $
```

```
/home/cis90/simben $ rm simben90.tar
rm: remove regular file `simben90.tar'? y
```

```
/home/cis90/simben $ tar czf simben90.tar.gz .
tar: ./Hidden: Cannot open: Permission denied
tar: ./newer: Cannot open: Permission denied
tar: Exiting with failure status due to previous errors
```

```
/home/cis90/simben $ ls -l simben90.tar.gz
-rw-rw----. 1 simben90 cis90 158724 Dec  9 07:51 simben90.tar.gz
```

Use the z option to compress files when creating the tarball

tar -z option

```
/home/cis90/simben $ tar tvzf simben90.tar.gz | head
drwxr-xr-x simben90/cis90      0 2014-12-09 07:58 ./
-r----- simben90/staff 1111 2014-10-15 10:09 ./lab05.graded
-rw-r--r-- simben90/cis90    22 2014-10-21 09:25 ./names
-rw-r--r-- simben90/cis90    70 2014-11-02 17:12 ./bigshell
-r----- simben90/staff 1276 2014-09-17 10:28 ./lab02.graded
-rw----- simben90/root    410 2014-11-24 07:44 ./bash_profile.fq
-rw----- simben90/cis90 5146 2014-12-08 19:10 ./viminfo
-rw----- simben90/cis90  406 2014-11-20 11:49 ./bash_profile.bug
drwx--x--- simben90/cis90     0 2014-10-28 15:48 ./class/
dr-x-wx--- simben90/users     0 2014-10-28 15:48 ./class/labs/
/home/cis90/simben $
```

Use the z option to when extracting or viewing compressed tar files

.tar.gz vs .tgz

```

/home/cis90/simben $ tar czf simben90.tar.gz .
tar: ./Hidden: Cannot open: Permission denied
tar: .: file changed as we read it
tar: Exiting with failure status due to previous errors
/home/cis90/simben $ ls -l simben90.tar.gz
-rw-rw-r--. 1 simben90 cis90 147319 May 12 20:01 simben90.tar.gz
/home/cis90/simben $ rm simben90.tar.gz

```

```

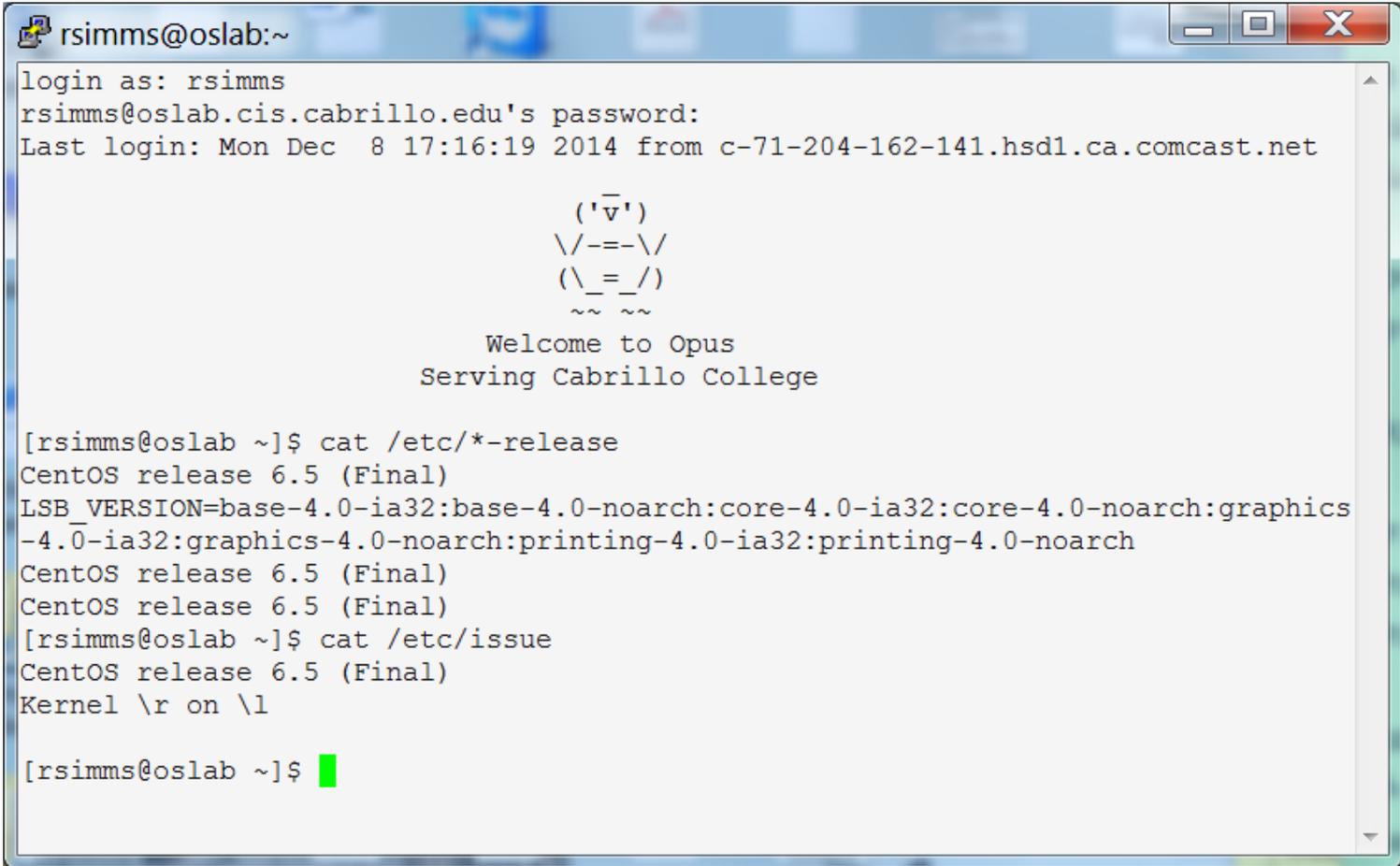
/home/cis90/simben $ tar czf simben90.tgz .
tar: ./Hidden: Cannot open: Permission denied
tar: .: file changed as we read it
tar: Exiting with failure status due to previous errors
/home/cis90/simben $ ls -l simben90.tgz
-rw-rw-r--. 1 simben90 cis90 147319 May 12 20:01 simben90.tgz
/home/cis90/simben $ rm simben90.tgz

```

The usage of .tgz and .tar.gz suffixes are equivalent and both indicate the tarball was compressed



Make your own Opus



```
rsimms@oslab:~  
login as: rsimms  
rsimms@oslab.cis.cabrillo.edu's password:  
Last login: Mon Dec 8 17:16:19 2014 from c-71-204-162-141.hsd1.ca.comcast.net  
  
      ( 'v' )  
    \/---\/  
   (\_=_/)  
    ~ ~ ~  
      Welcome to Opus  
      Serving Cabrillo College  
  
[rsimms@oslab ~]$ cat /etc/*-release  
CentOS release 6.5 (Final)  
LSB_VERSION=base-4.0-ia32:base-4.0-noarch:core-4.0-ia32:core-4.0-noarch:graphics-4.0-ia32:graphics-4.0-noarch:printing-4.0-ia32:printing-4.0-noarch  
CentOS release 6.5 (Final)  
CentOS release 6.5 (Final)  
[rsimms@oslab ~]$ cat /etc/issue  
CentOS release 6.5 (Final)  
Kernel \r on \l  
  
[rsimms@oslab ~]$ █
```

Opus is a CentOS 6.5 Linux system

Ingredients

To make your own Opus at home you will need to purchase the following to add to your home computer:

- A CentOS Linux distribution ... price: \$0.00
- Virtualization software
 - For Windows
 - VirtualBox ... price: \$0.00
 - *or* VMware Workstation ... price: \$0.00 (via VMware Academy)
 - For Mac
 - VirtualBox ... price: \$0.00
 - *or* VMware Fusion ... price: \$0.00 (via VMware Academy)
 - For Linux
 - VirtualBox ... price: \$0.00

Home Resources Forums CIS Lab Blackboard

Login
Flashcards
Admin

CIS 90
Previous Classes

11 days till term ends!

Cabrillo College
Web Advisor
Commands and Files

VLab RDP file

CIS 90 VLab VM Assignments

RIP Dennis Ritchie

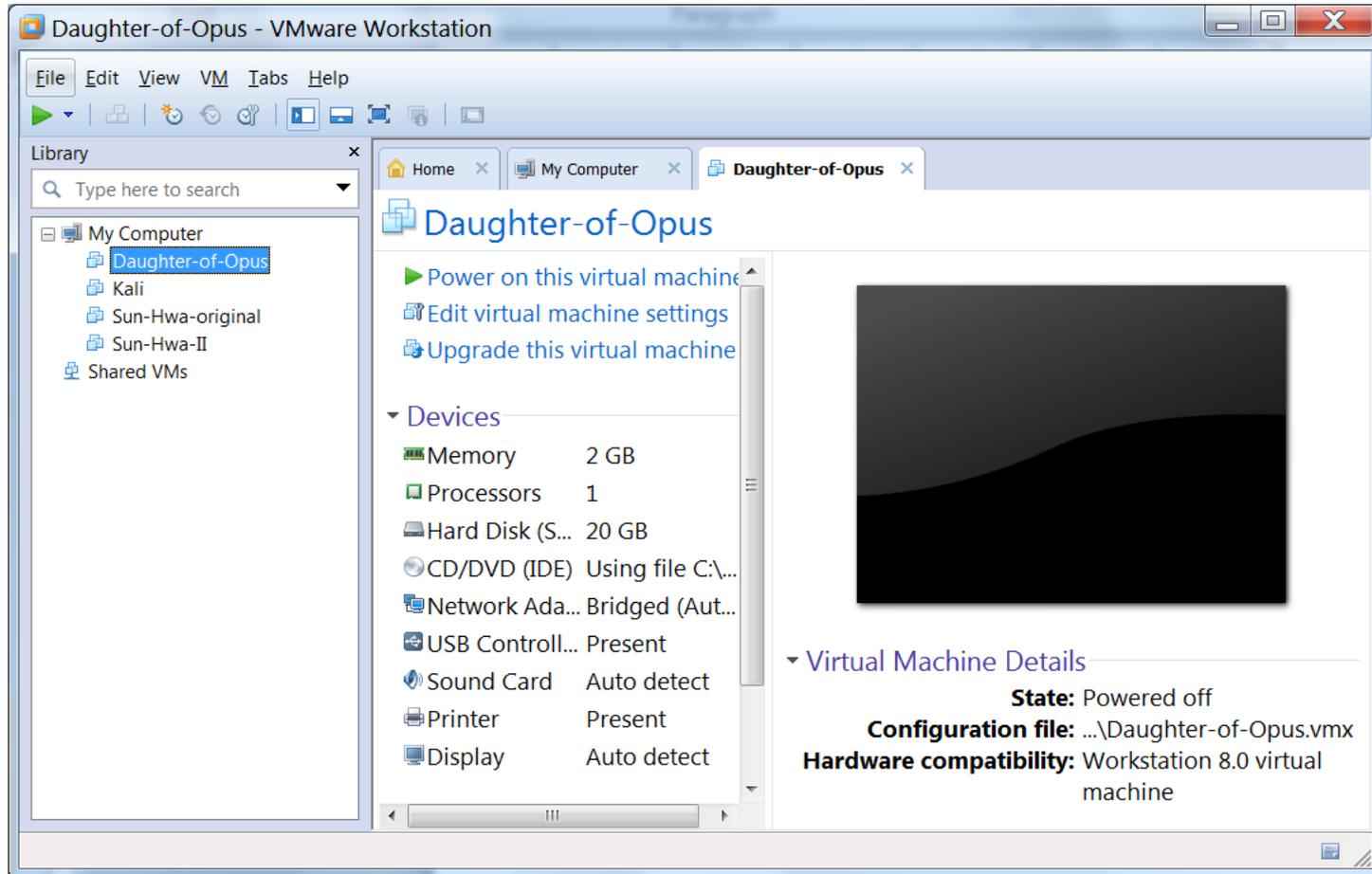
Opus Status: UP

Links

| | | |
|--|--|--|
| Instructors <ul style="list-style-type: none">Programming Master EdNetwork Master GerlindeProgramming Master JeffreyLinux Master JimWeb Master JohnSystems Master MichaelHardware Master MarceloNetwork Master RickProgramming Master Steve | Getting Linux/UNIX <ul style="list-style-type: none">Linux ISOSKernelsRPMs (rpmfind)RPMs (pbone)OpenSolaris Tools and Software <ul style="list-style-type: none">ApacheBastilleCoRDcygwinDOS boot disksDynamips/DynagenJohn the RipperNetfilterPutty SSH ToolsQuagga routing suiteTripwireWireshark Academic Software for CIS Students <ul style="list-style-type: none">Microsoft WebstoreVMware Webstore Virtualization <ul style="list-style-type: none">VirtualBoxVMware ESXi and vSphere client Standards | Commands <ul style="list-style-type: none">PracticalCommand DirectoryUsefulvi summaryvi cheat sheet Howtos <ul style="list-style-type: none">HowtoForgeemailDNSEthernet (NIC drivers)NFSNISPPPPutty SSH KeysUsing sed Student Howtos <ul style="list-style-type: none">Logging into Opus from a Mac by Laura Sreckovic and updated by Ann PikeMonitor Script by Sean CallahanWIFI Penetration by Ryan SchellLogging into Opus from a Mac by Laura SreckovicLDAP Implementation by Tim ChildersInstall and DualBoot into Microsoft Windows 7 and Linux Ubuntu by Richie Fou |
|--|--|--|

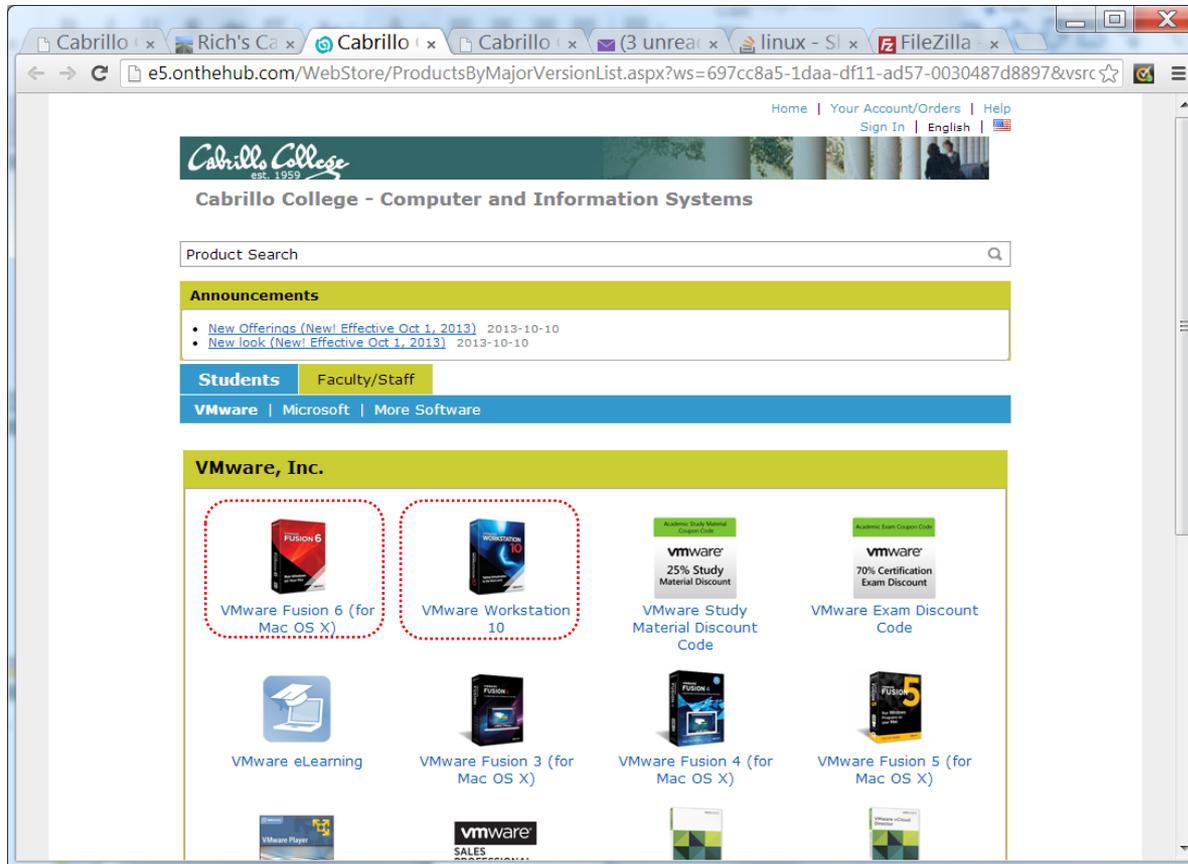
Shopping for the ingredients

VMware Workstation

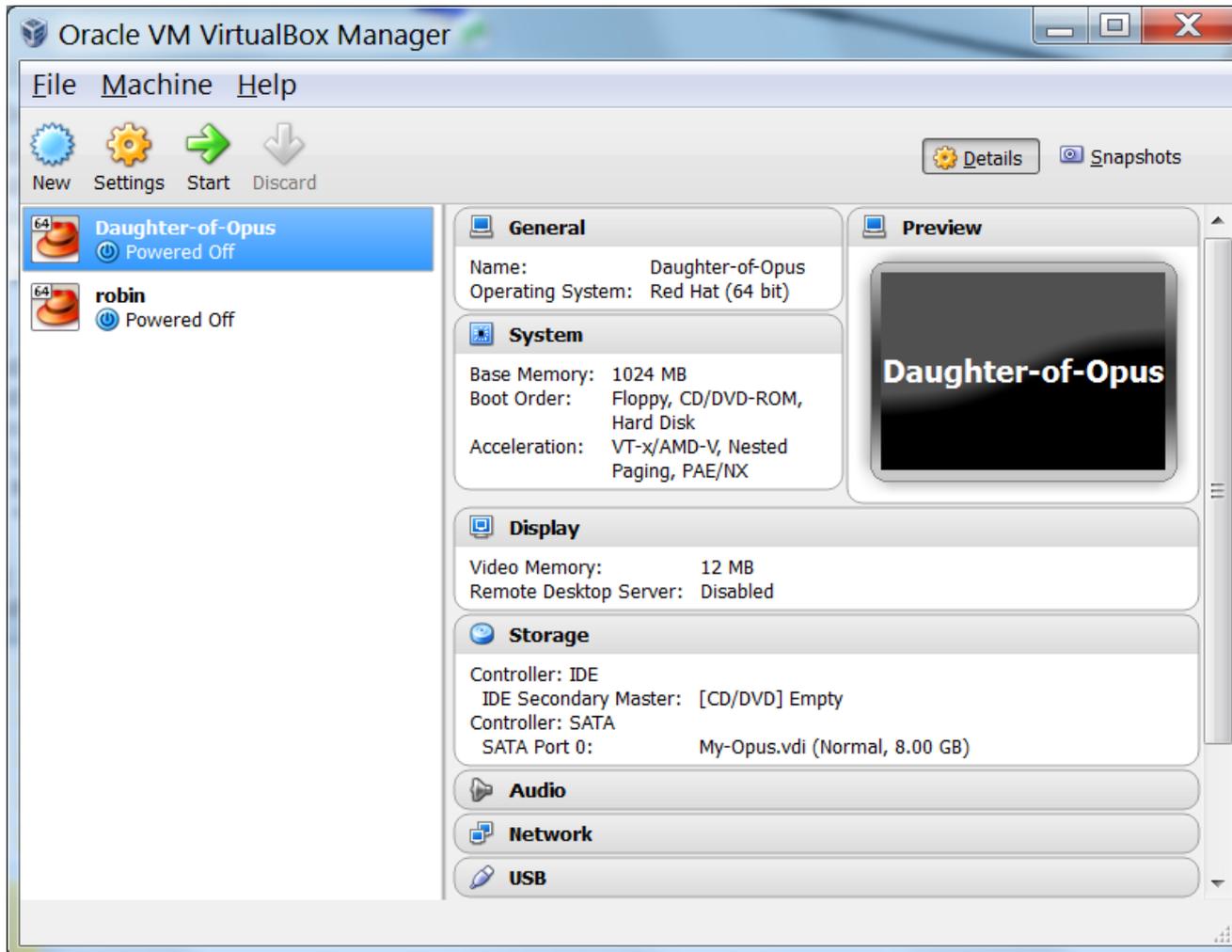


Provides you with an empty (No OS) virtual computer

VMware Workstation (Windows) or Fusion (Mac)



Oracle VirtualBox



Provides you with an empty (No OS) virtual computer

virtualbox.org

VirtualBox

Download VirtualBox

Here, you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

- VirtualBox platform packages.** The binaries are released under the terms of the GPL version 2.
 - VirtualBox 4.3.20 for Windows hosts [⇒ x86/amd64](#)
 - VirtualBox 4.3.20 for OS X hosts [⇒ x86/amd64](#)
 - VirtualBox 4.3.20 for Linux hosts
 - VirtualBox 4.3.20 for Solaris hosts [⇒ amd64](#)
- VirtualBox 4.3.20 Oracle VM VirtualBox Extension Pack** [⇒ All supported platforms](#)
 Support for USB 2.0 devices, VirtualBox RDP and PXE boot for Intel cards. See [this chapter from the User Manual](#) for an introduction to this Extension Pack. The Extension Pack binaries are released under the [VirtualBox Personal Use and Evaluation License \(PUEL\)](#).
Please install the extension pack with the same version as your installed version of VirtualBox!
 If you are using **VirtualBox 4.2.26**, please download the extension pack [⇒ here](#).
 If you are using **VirtualBox 4.1.34**, please download the extension pack [⇒ here](#).
 If you are using **VirtualBox 4.0.26**, please download the extension pack [⇒ here](#).
- VirtualBox 4.3.20 Software Developer Kit (SDK)** [⇒ All platforms](#)

See the [changelog](#) for what has changed.
 You might want to compare the

- SHA256 checksums or the
- MD5 checksums

to verify the integrity of downloaded packages.
The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

User Manual

http://iso.linuxquestions.org/

The screenshot shows a web browser window with the URL `iso.linuxquestions.org`. The page layout includes:

- Header:** LinuxQuestions.org logo with four penguins, a Rackspace Managed Cloud advertisement, and a 'SEE HOW' button.
- Navigation:** 'LinuxQuestions.org > ISOs' breadcrumb.
- Left Sidebar:**
 - LQ ISOs:** Search, Alphabetical List, Latest Releases, Release Notification, Suggest Additions.
 - Search:** Input field and 'Go' button.
 - Need Help?:** Downloading ISOs, Burning ISOs.
 - Sponsored Links:** Linux Os, Ubuntu Server, Download Linux, Laptop Deals, Programming, Linux Certification, Linux Operating System.
 - Statistics:** Distros: 465, Versions: 2760, Mirrors: 1849, Downloads: 55,668,721.
 - LQ Job Board:** Jobs button.
- Main Content:**
 - Welcome to LQ ISOs:** 'Linux Download' section with a green arrow button and the text 'Answer Your Linux Questions. Expert Articles & Tips. Free Guide!'.
 - Text:** 'Welcome to LQ ISO' followed by a paragraph explaining the site's purpose for finding Linux distribution downloads.
 - Text:** 'If you find the site useful, you can help spread the word by telling 10 friends the URL (http://www.lqiso.org/). Thanks.'
 - 15 Latest Linux Distribution Releases:**
 - Porteus 3.1
 - FreeNAS 9.3
 - SparkyLinux 3.6 "LXDE", "MATE", "Razor-qt", "Xfce"
 - MakuluLinux 7.0 "Xfce"
 - antiX 14.3 "MX"
 - Linux Lite 2.2
 - Manjaro Linux 0.8.11
 - Linux Mint 17.1
 - 4MLinux 10.1
 - DragonFly BSD 4.0.1
 - siduction 14.1.0
 - NetBSD 5.2.3, 5.1.5
 - Guadalinex 9
 - Univention Corporate Server 4.0
 - Grml 2014.11
 - Popular Linux Distributions:**
 - Ubuntu
 - Fedora
 - Linux Mint
 - openSUSE
 - PCLinuxOS
 - Debian
 - Mageia
 - Slackware
 - CentOS
 - Puppy
 - Arch
 - MEPIS
 - View by Topic:** Desktop, Server, Security, Mobile, Live, Firewall, Rescue.
- Right Sidebar:**
 - Main Menu:** Linux Forums, Android Forum, Chrome OS Forum, Linux HCL, Linux Tutorials, Linux Wiki, Distro Reviews, Book Reviews.
 - Ad:** Google Cloud Platform advertisement with a 'Try it now' button.

You will need a Linux Distro to install on your virtual Computer

centos.org

The image shows two browser windows. The left window displays the main CentOS website (www.centos.org) with the logo, navigation menu, and an overview section. The right window shows a mirror page (mirrors.sonic.net/centos/) with a table of available ISO images.

CentOS Overview

CentOS is an Enterprise-class Linux Distribution derived from sources freely provided to the public by a prominent North American Enterprise Linux vendor. CentOS conforms fully with the upstream vendor's redistribution policy and aims to be 100% binary compatible. (CentOS mainly changes packages to remove upstream vendor branding and artwork.) CentOS is free.

CentOS is developed by a small but growing team of core developers. In turn the core developers are supported by an active user community including system administrators, network administrators, enterprise users, managers, core Linux contributors and Linux enthusiasts from around the world.

CentOS has numerous advantages over some of the other done projects including: an active and growing user community, quickly rebuilt, tested, and QA'ed errata packages, an extensive **mirror network**, developers who are contactable and responsive, multiple free support avenues including **IRC Chat**, **Mailing Lists**, **Forums**, a dynamic **FAQ**.

This site makes use of Javascript. If your browser doesn't work with Javascript we recommend you use **Firefox**.

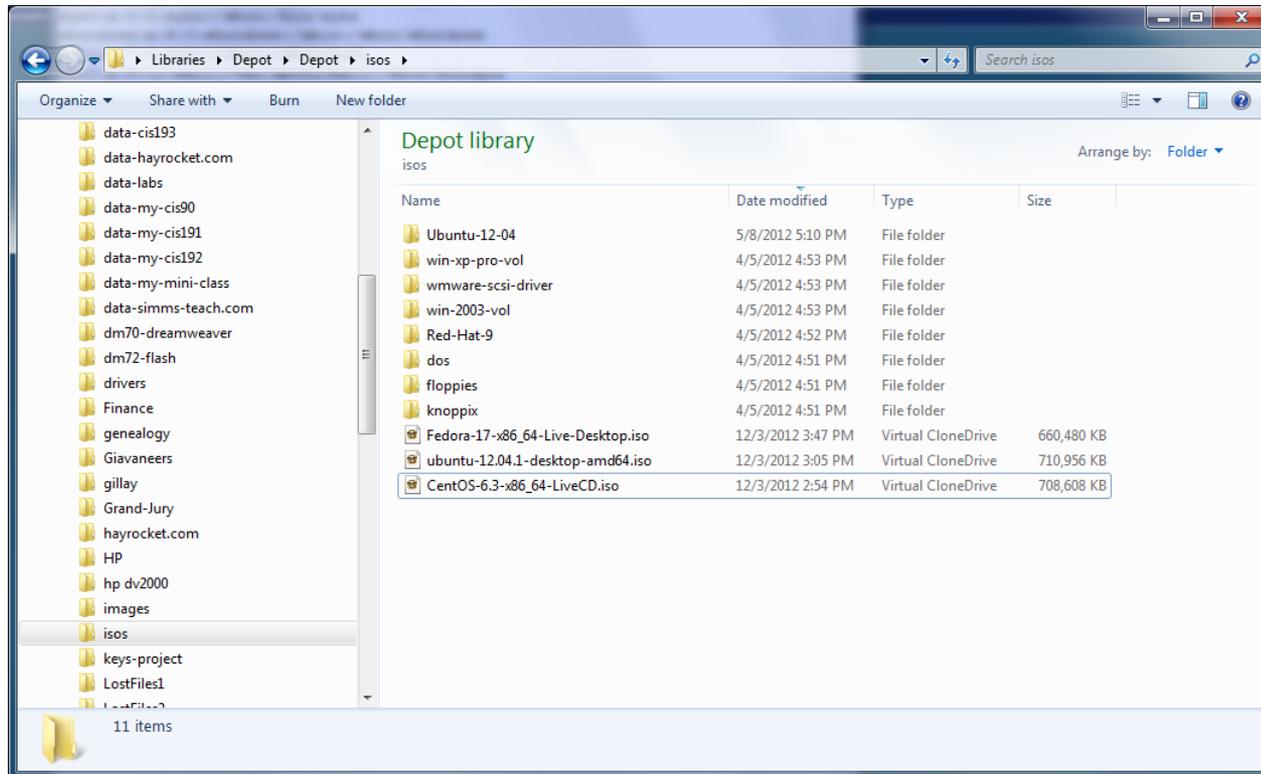
CentOS 6 Releases

July 9th 2012

The CentOS team is pleased to **announce** the immediate availability of CentOS-6.3 for i386 and x86_64 Architectures.

| Name | Last modified | Size | Description |
|-------------------------------|------------------------|------|-------------|
| Parent Directory | | | |
| 2.1/ | 08-Sep-2009 22:18 | - | |
| 2/ | 08-Sep-2009 22:18 | - | |
| 3.1/ | 02-Mar-2011 15:44 | - | |
| 3.3/ | 02-Mar-2011 15:44 | - | |
| 3.4/ | 02-Mar-2011 15:44 | - | |
| 3.5/ | 02-Mar-2011 15:44 | - | |
| 3.6/ | 02-Mar-2011 15:44 | - | |
| 3.7/ | 02-Mar-2011 15:44 | - | |
| 3.8/ | 02-Mar-2011 15:44 | - | |
| 3.9/ | 02-Mar-2011 15:44 | - | |
| 3/ | 02-Mar-2011 15:44 | - | |
| 4.0/ | 18-Jul-2005 14:11 | - | |
| 4.1/ | 21-Oct-2005 10:54 | - | |
| 4.2/ | 04-Nov-2006 04:43 | - | |
| 4.3/ | 10-Nov-2006 14:15 | - | |
| 4.4/ | 07-Jul-2007 11:21 | - | |
| 4.5/ | 10-Jan-2008 08:12 | - | |
| 4.6/ | 31-Mar-2009 04:55 | - | |
| 4.7/ | 08-Mar-2010 02:56 | - | |
| 4.8/ | 12-Mar-2012 17:14 | - | |
| 4.9/ | 12-Mar-2012 17:16 | - | |
| 4/ | 12-Mar-2012 17:16 | - | |
| 5.0/ | 10-Jan-2008 08:11 | - | |
| 5.1/ | 29-Jul-2008 14:01 | - | |
| 5.2/ | 07-Aug-2009 05:47 | - | |
| 5.3/ | 14-Feb-2010 04:36 | - | |
| 5.4/ | 11-Aug-2010 14:18 | - | |
| 5.5/ | 20-May-2011 02:28 | - | |
| 5.6/ | 19-Sep-2011 09:40 | - | |
| 5.7/ | 12-Mar-2012 17:20 | - | |
| 5.8/ | 27-Feb-2012 11:57 | - | |
| 5/ | 07-Mar-2012 19:47 | - | |
| 6.0/ | 31-Jul-2012 09:47 | - | |
| 6.1/ | 31-Jul-2012 09:47 | - | |
| 6.2/ | 31-Jul-2012 09:46 | - | |
| 6.3/ | 09-Jul-2012 13:10 | - | |
| 6/ | 09-Jul-2012 13:10 | - | |
| RPM-GPG-KEY-CentOS-3 | 15-Mar-2004 15:16 1.8K | | |
| RPM-GPG-KEY-CentOS-4 | 26-Feb-2005 09:51 1.8K | | |
| RPM-GPG-KEY-CentOS-5 | 19-Feb-2007 09:57 1.5K | | |
| RPM-GPG-KEY-CentOS-6 | 10-Jul-2011 07:28 1.7K | | |
| RPM-GPG-KEY-CentOS-Debug-6 | 10-Jul-2011 07:28 1.7K | | |
| RPM-GPG-KEY-CentOS-Security-6 | 10-Jul-2011 07:28 1.7K | | |
| RPM-GPG-KEY-CentOS-Testing-6 | 10-Jul-2011 07:28 1.7K | | |
| RPM-GPG-KEY-beta | 19-Feb-2007 09:56 1.5K | | |
| RPM-GPG-KEY-centos4 | 26-Feb-2005 09:51 1.8K | | |
| TIME | 03-Dec-2012 16:00 11 | | |
| html/ | 12-Jun-2005 05:56 | | |

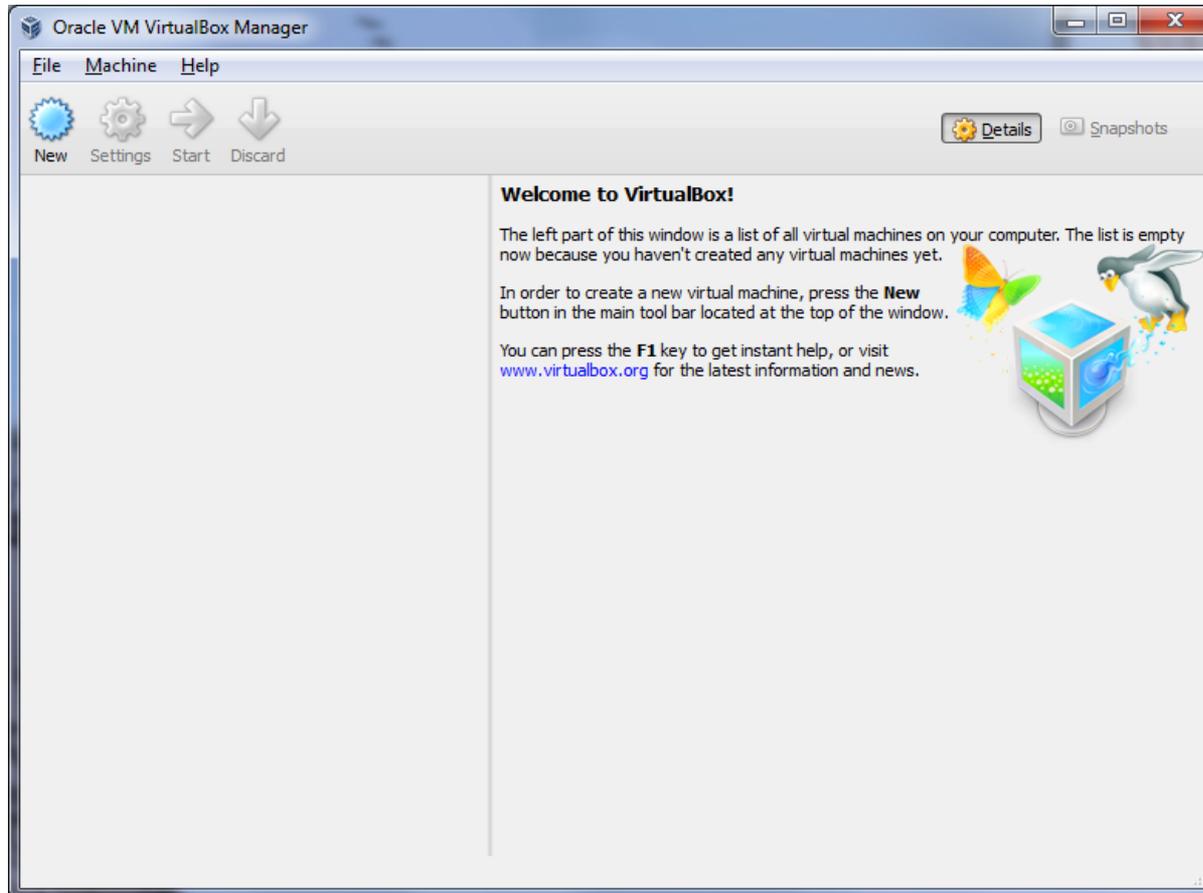
Use the CentOS Distro to make your own Opus



Download an iso image of the Linux distribution

VirtualBox

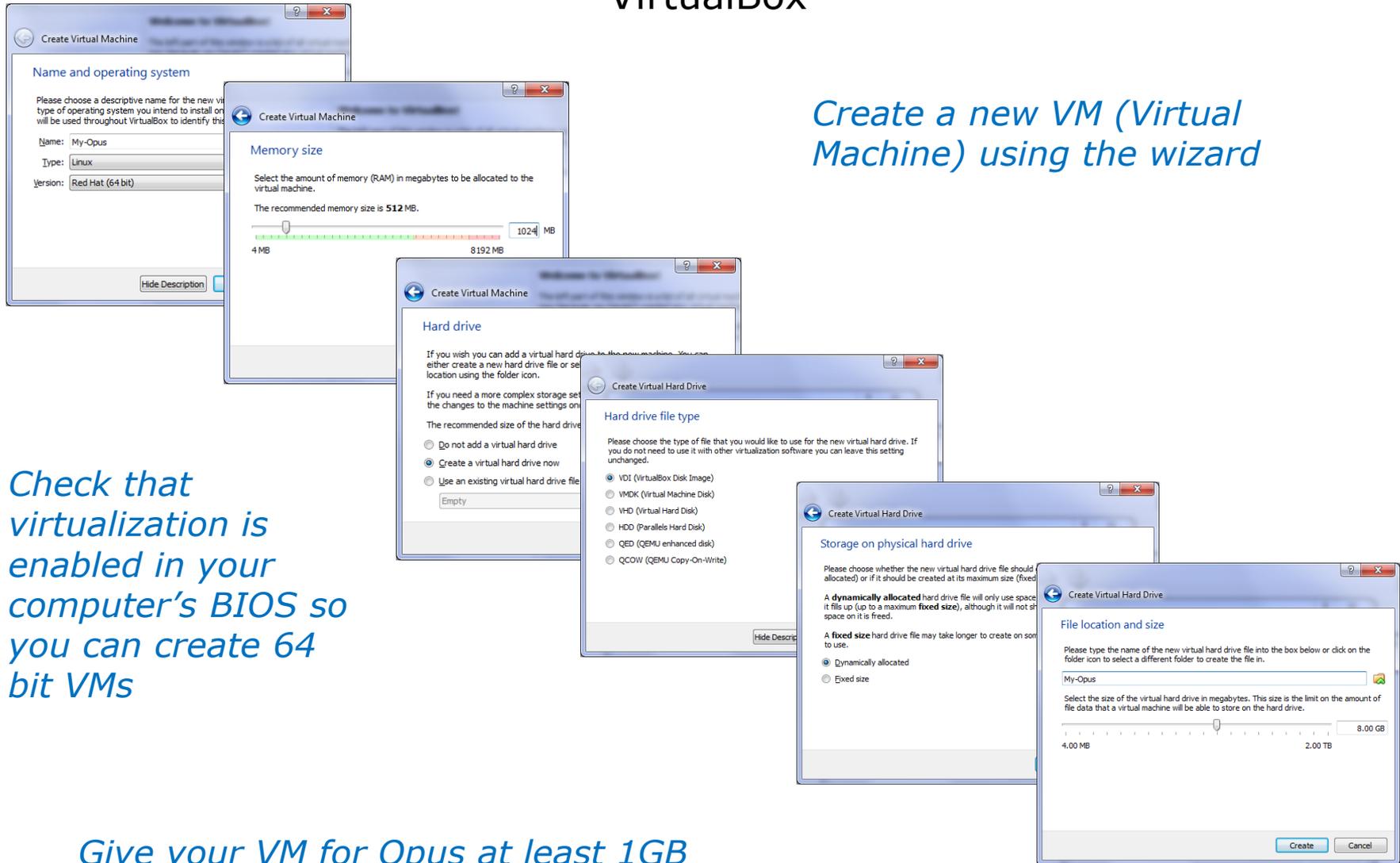
*Click the
New button
to create a
new VM.*



*Download and install one of the virtualization products.
This example will use VirtualBox.*

VirtualBox

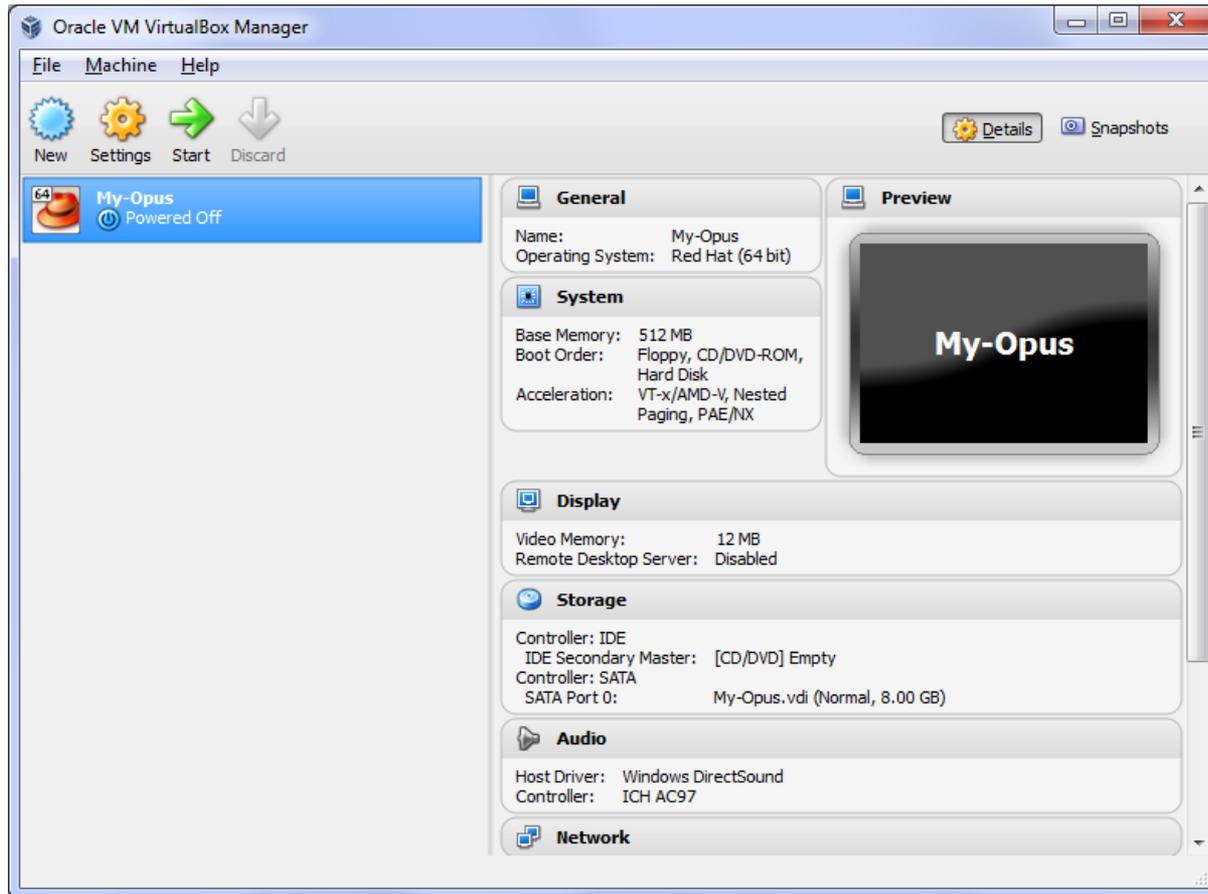
Create a new VM (Virtual Machine) using the wizard



Check that virtualization is enabled in your computer's BIOS so you can create 64 bit VMs

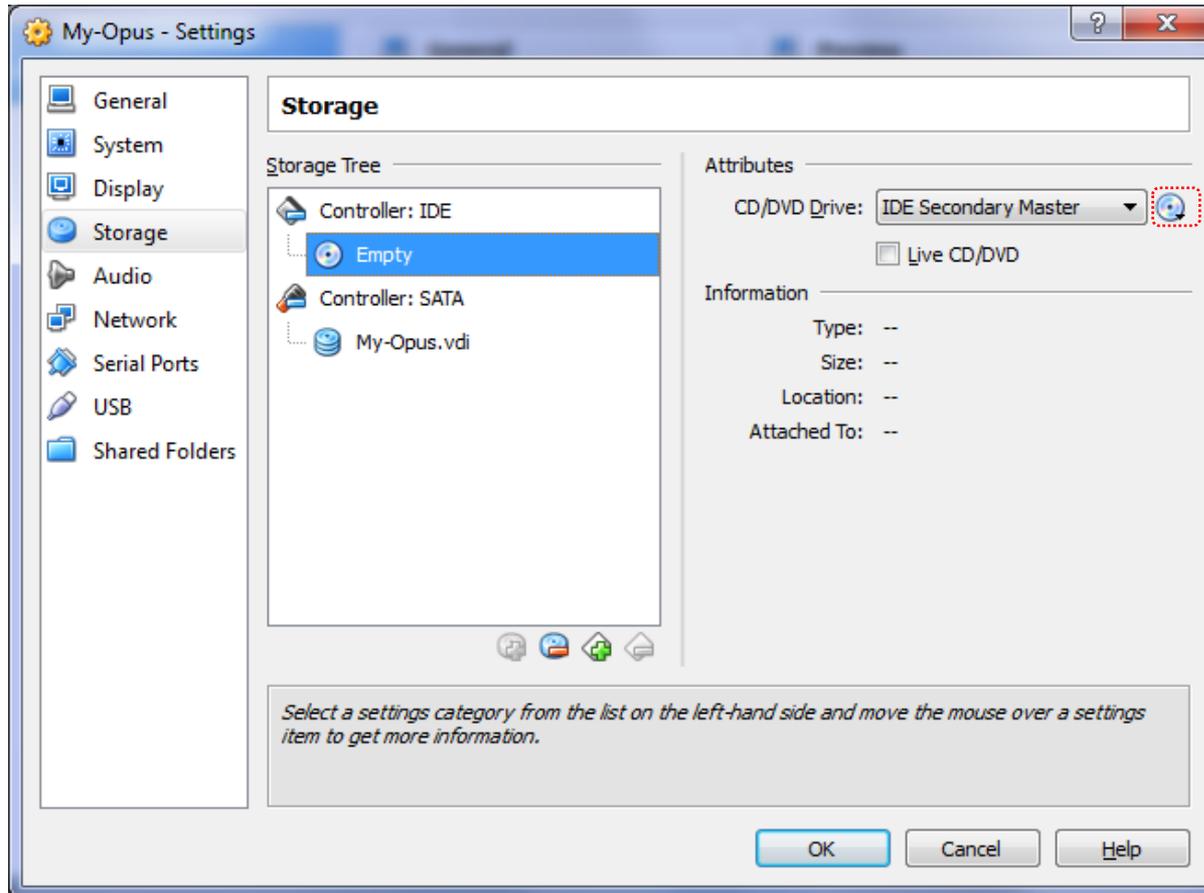
Give your VM for Opus at least 1GB of memory and an 8GB hard drive

VirtualBox



The new VM has no operating system

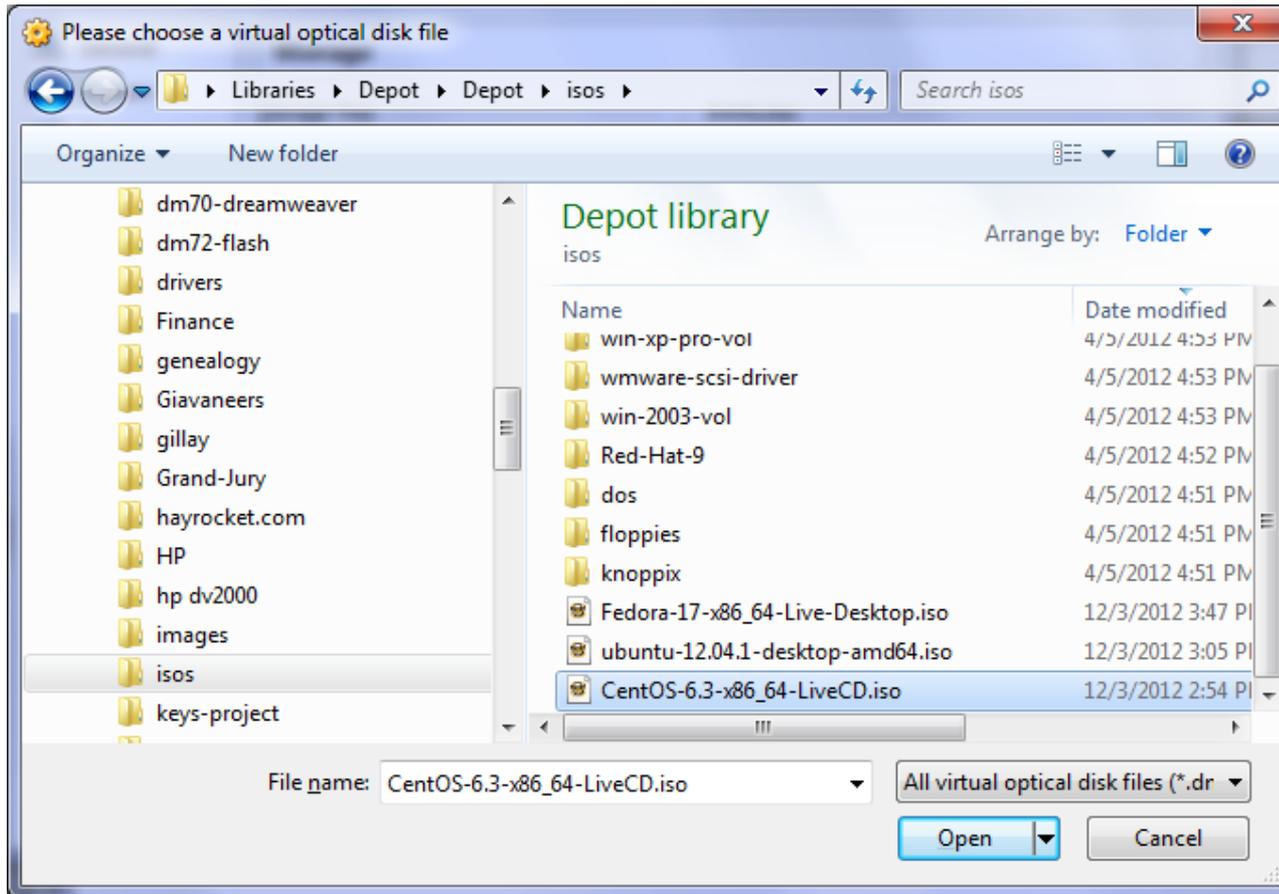
VirtualBox



Click the little CD icon to the left to browse to the CentOS ISO image to install

In Settings locate Storage so we can "put the CentOS CD into the DVD drive" by configuring the virtual IDE DVD drive with the ISO image downloaded earlier.

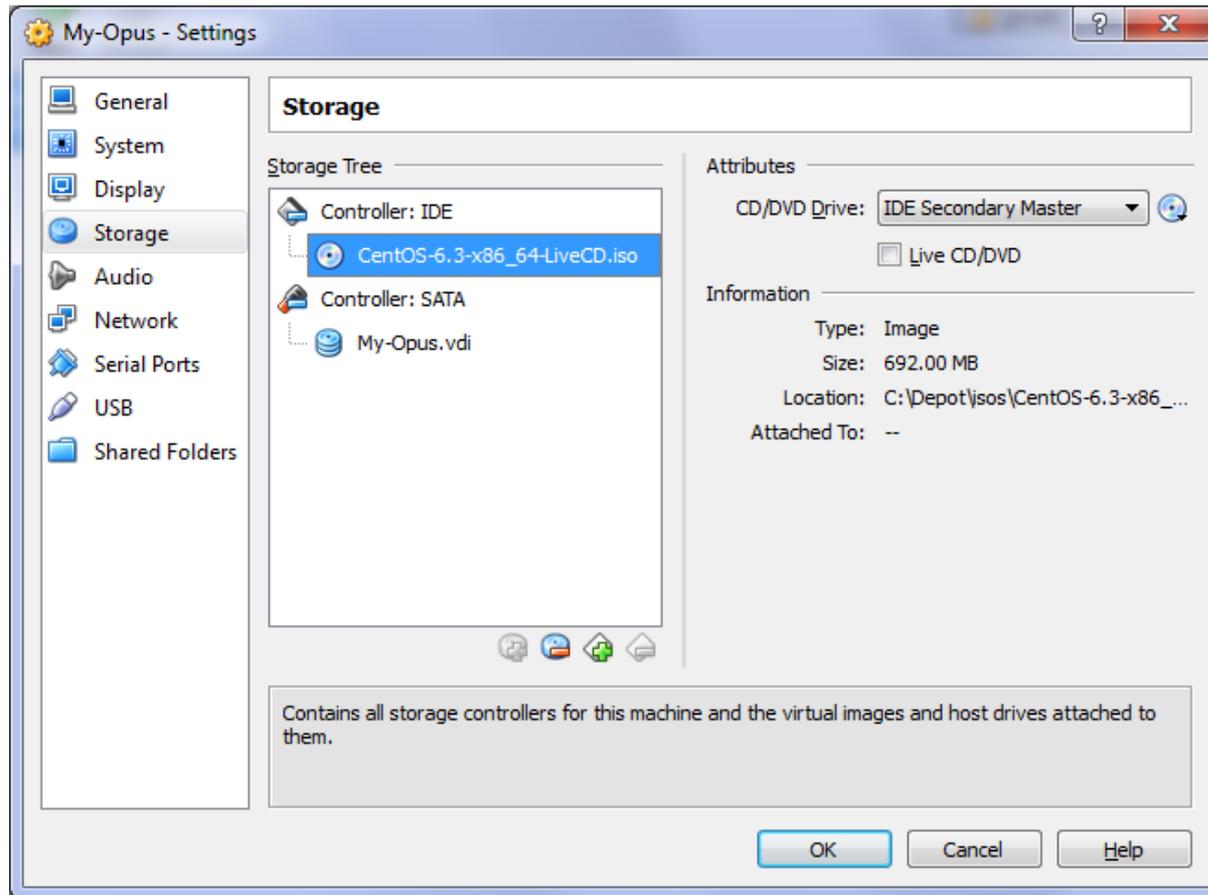
VirtualBox



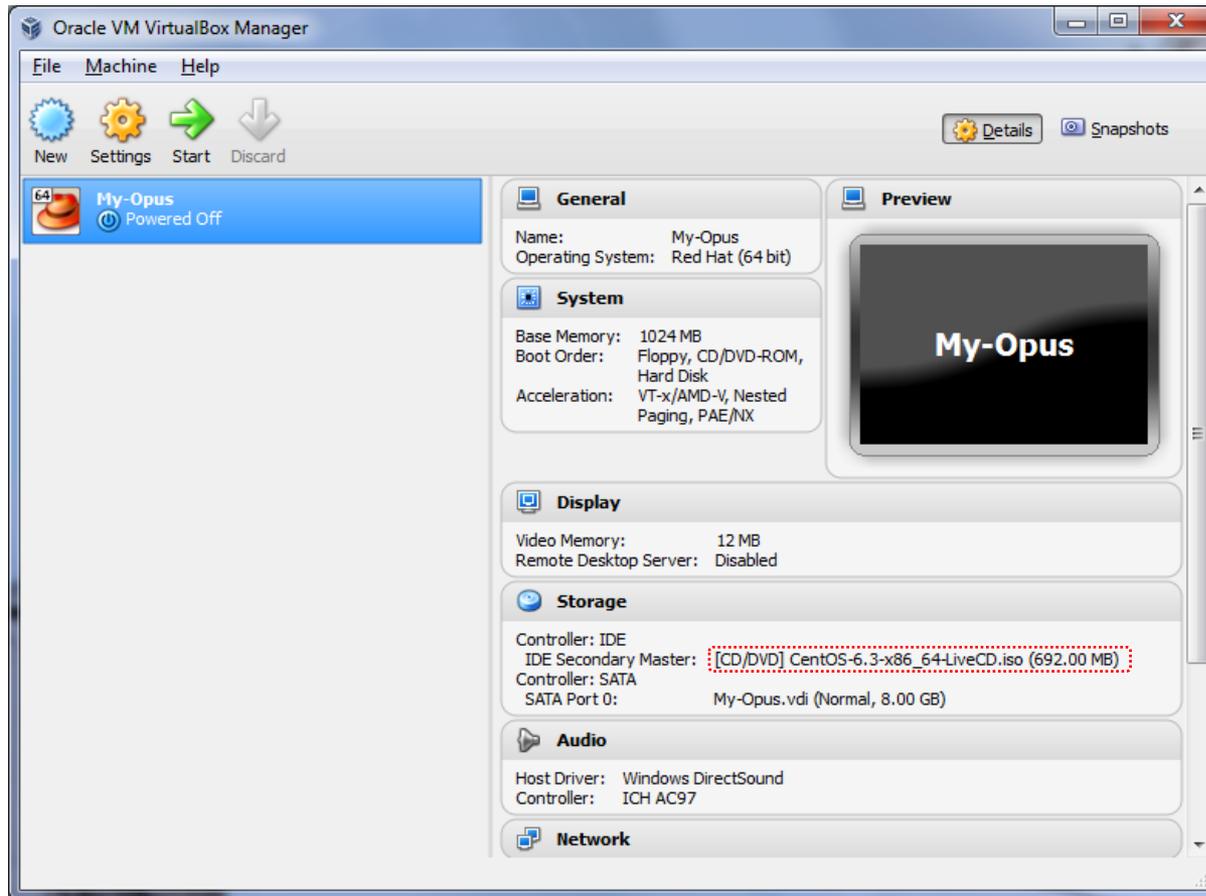
Locate the ISO image to install

CentOS-6.3-x86_64-LiveCD.iso

VirtualBox

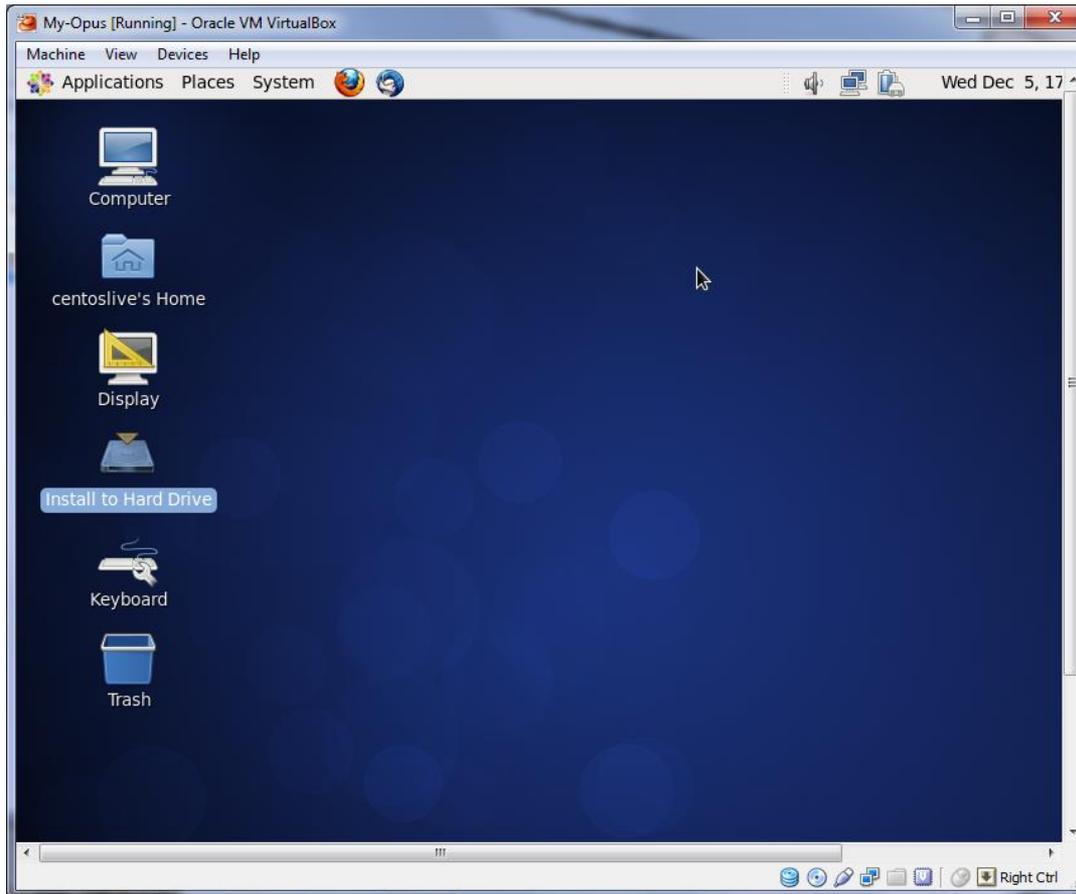


VirtualBox



If you see the correct ISO image in the drive you can power on the VM

VirtualBox



If it complains you don't have a 64-bit CPU (and you do have a 64-bit CPU) then enable Virtualization Technology in your BIOS.

Otherwise just let it boot up using the live image which runs in memory and is not installed to the hard drive.

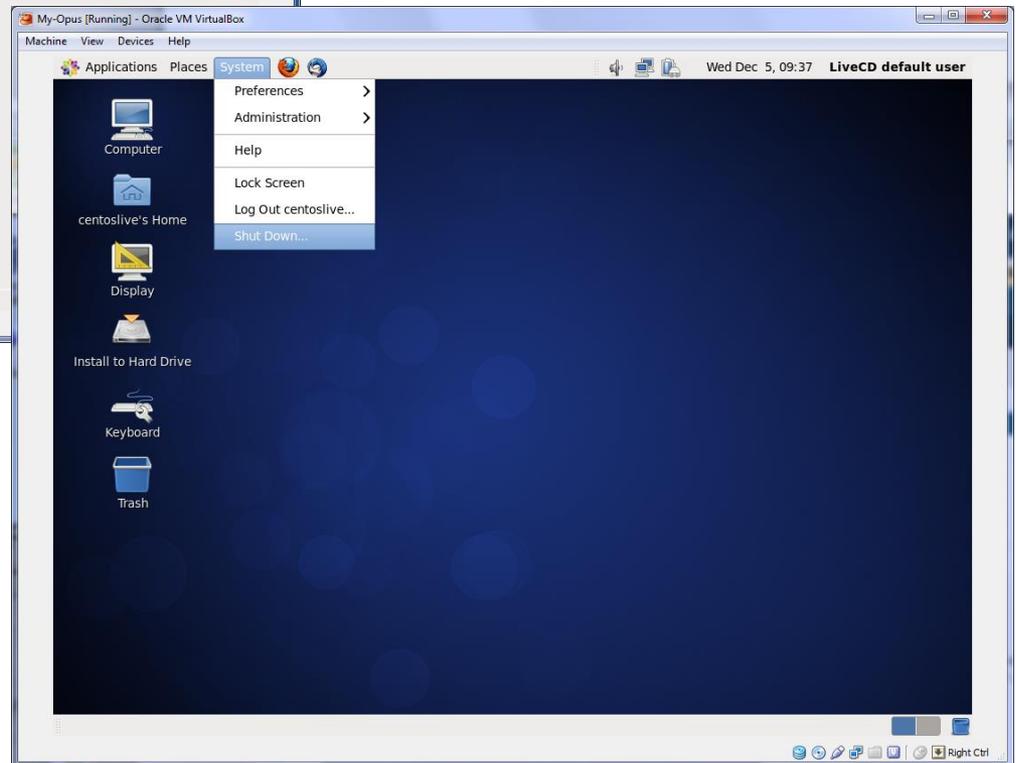
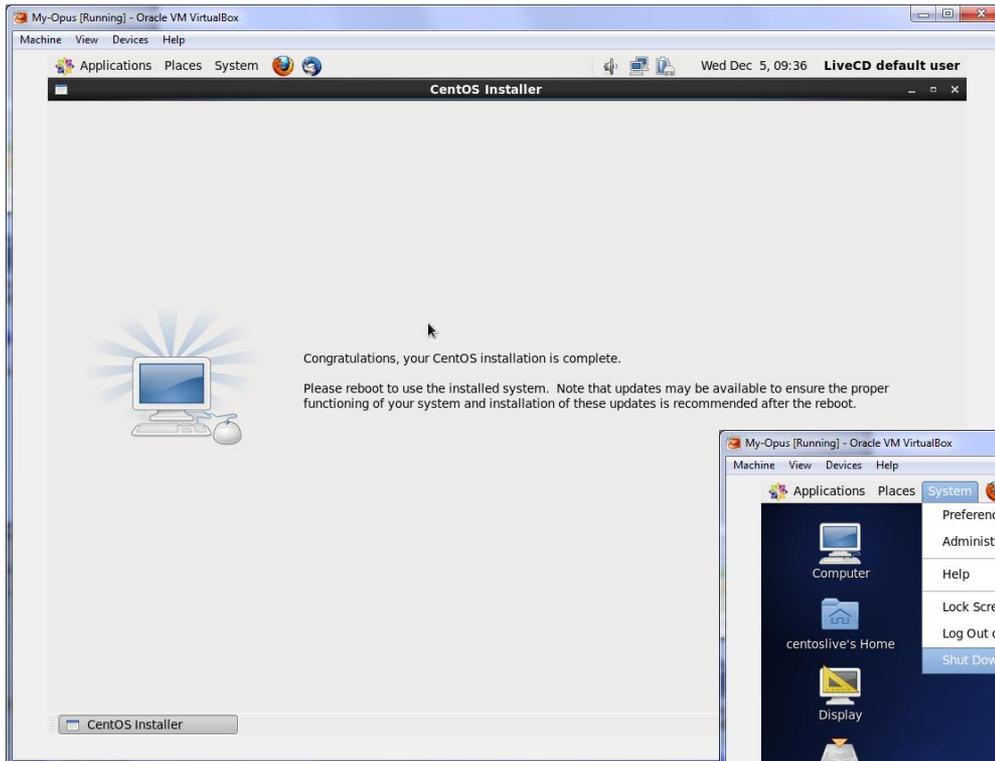
To install permanently to the VM hard drive open the "Install to Hard Drive" icon on the desktop

VirtualBox



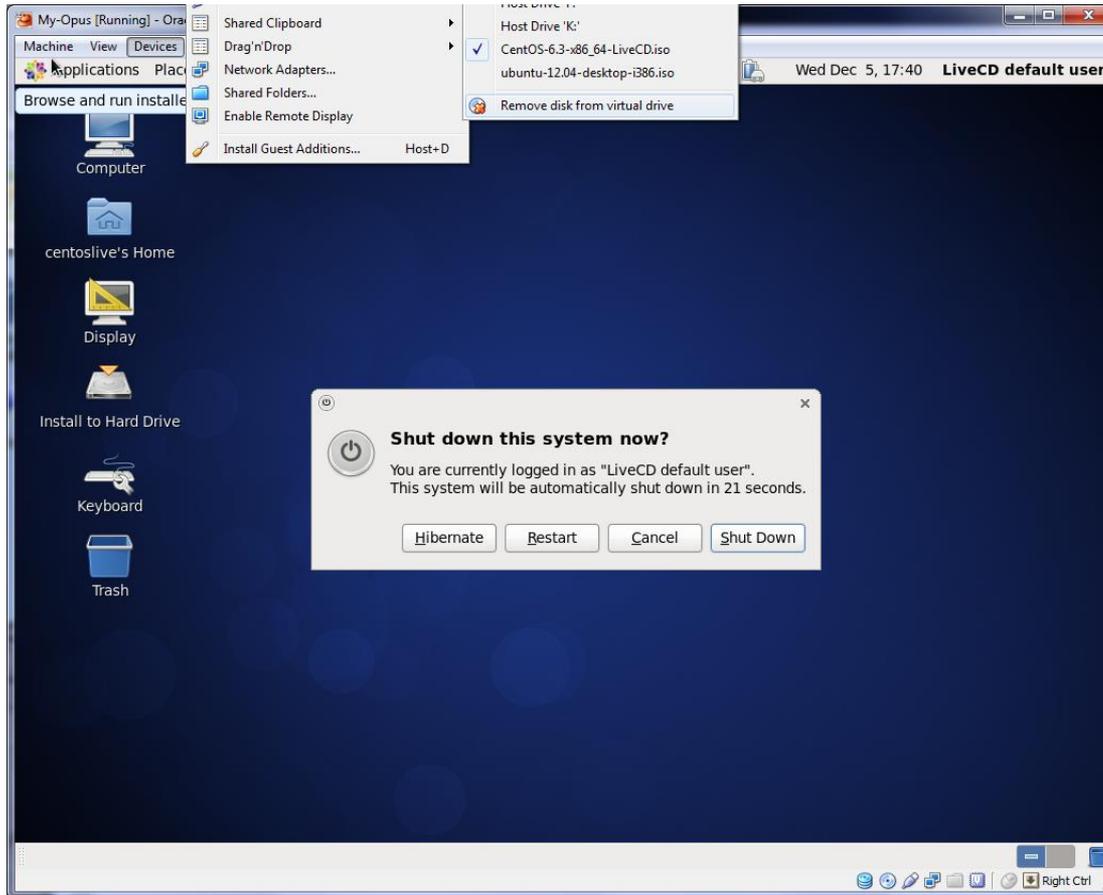
Keep hitting the Next button to let the wizard install the CentOS Linux distribution

VirtualBox

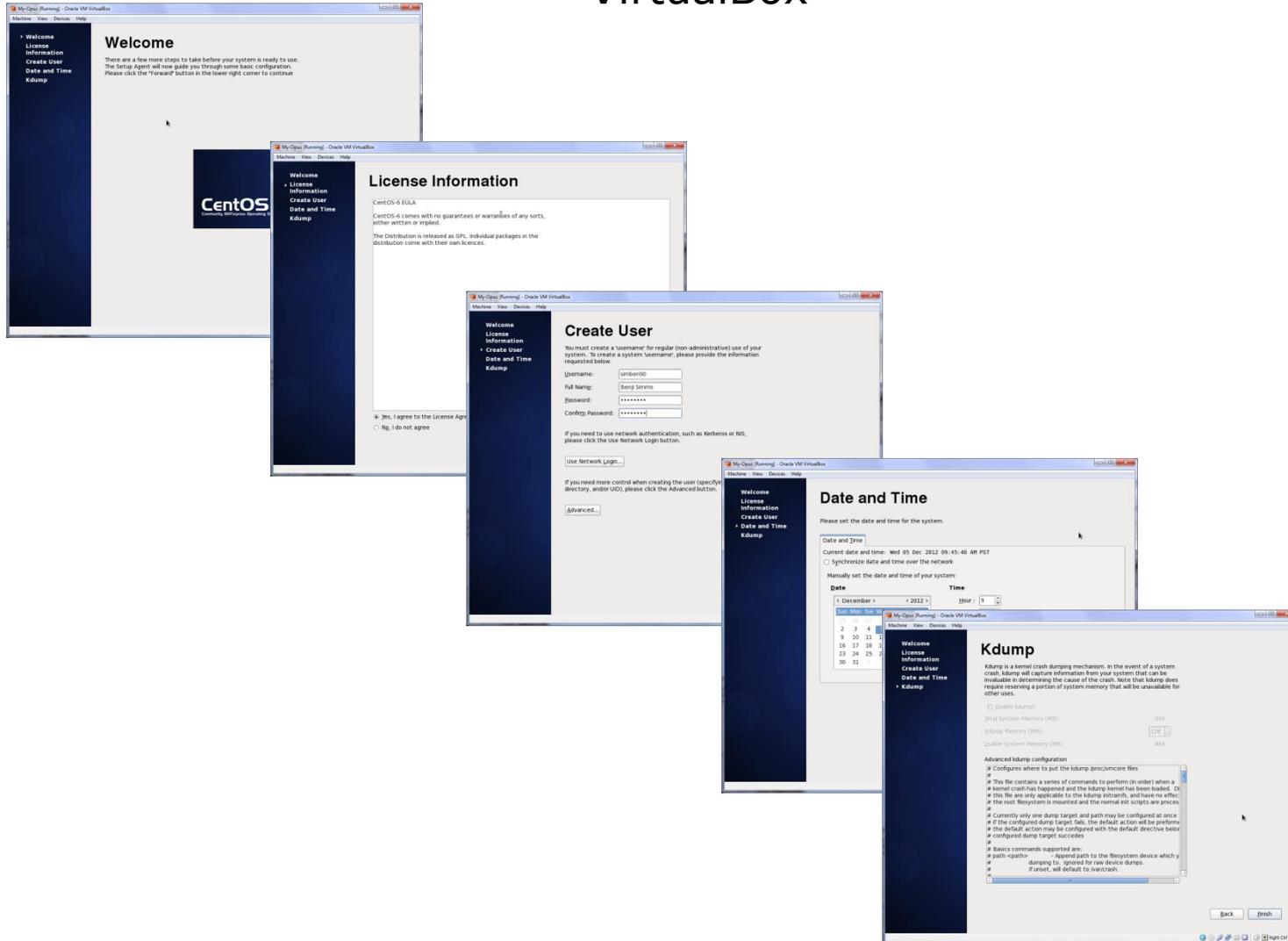


Shutdown the system and before starting again remove the CD from the drive (Settings > Storage)

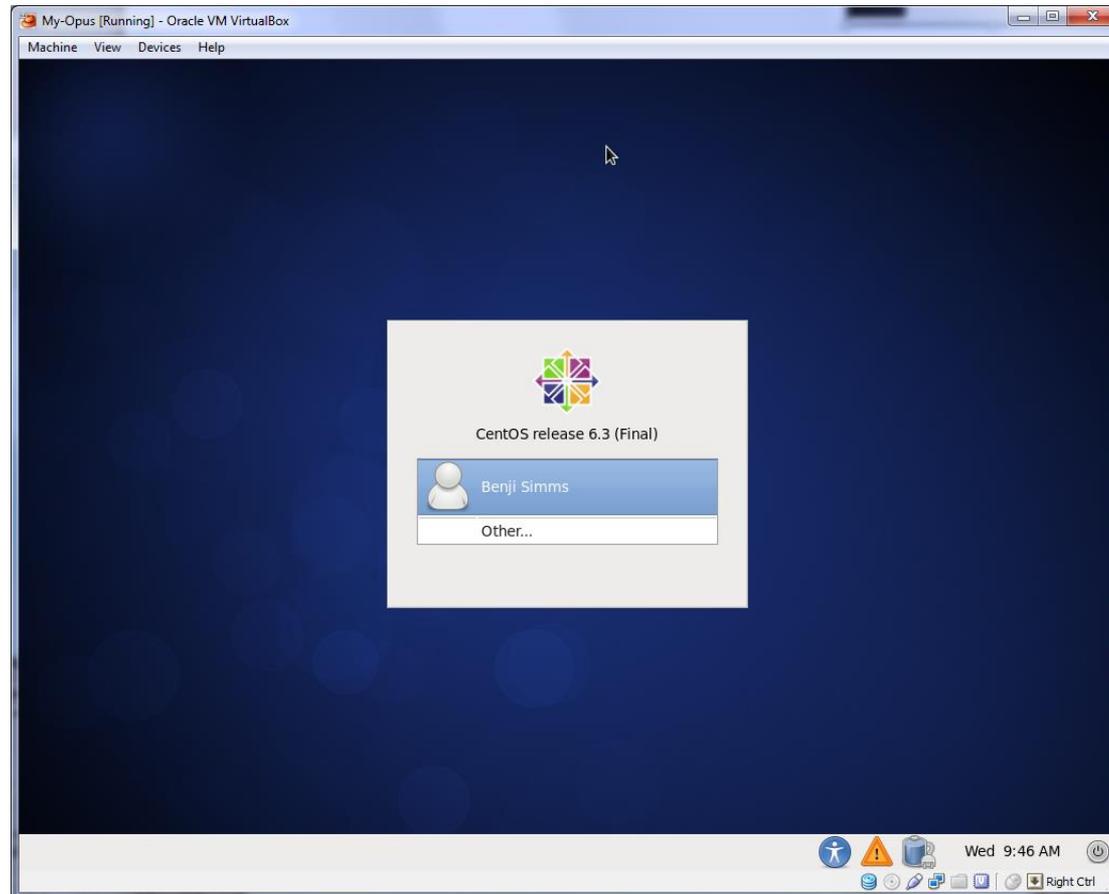
VirtualBox



VirtualBox



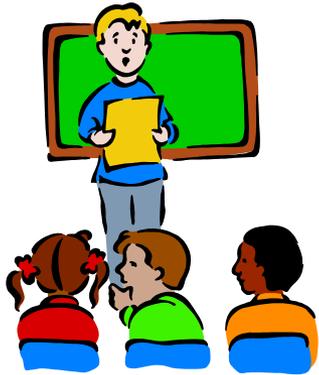
Voilà



If you like doing this you will love CIS 191!



Project Presentations



To demo your project and earn five points:

Join CCC Confer and share desktop when it is your turn

- Remote users should dial or Skype to 888-886-3951 and use passcode: 136690
- Classroom students can use the station next to the Polycom teleconference phone.

Five minutes max please!

CCC Confer - Attending class online

The screenshot displays the CCC Confer application window titled "CCC Confer - 0 - RICH SIMMS". The interface includes a menu bar (File, Edit, View, Tools, Window, Help) and a toolbar with icons for drawing, erasing, and navigating. The main content area shows a slide titled "CIS Linux Classes" with the Cabrillo College logo and instructor information: "Instructor: Rich Simms" and "Dial-in: 888-450-4821". A grid of 40 white silhouette icons represents participants in the "MAIN ROOM (2)".

On the left side, there are three panels:

- AUDIO & VIDEO:** Features a video feed for "Rich Simms" (currently blank), volume controls, and buttons for "Talk" and "Video".
- PARTICIPANTS:** Lists "Benji" and "Rich Simms (Moderator)". Below the list is a row of four icons: a smiley face, a hand, a hand with a raised index finger, and a checkmark. This row is highlighted with a red box.
- CHAT:** Shows a message history: "- You joined the Main Room. (2:23 PM) -" and "- Rich Simms joined the Main Room. (2:24 PM) -". This area is also highlighted with a red box.

Two blue callout boxes provide instructions:

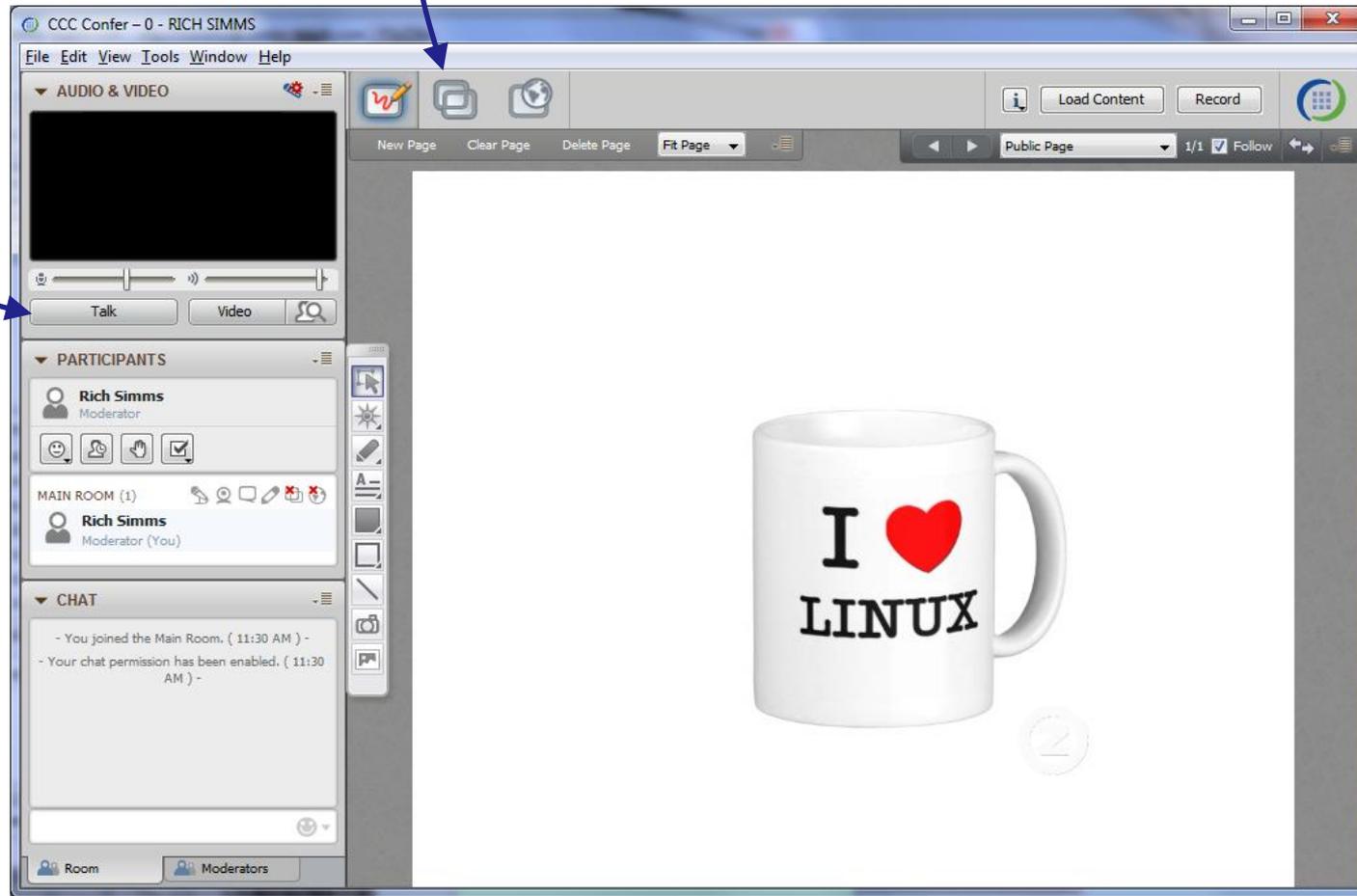
- The top callout, pointing to the participant control icons, says: "Raise your hand, make gestures, use emoticons and indicate responses using these controls".
- The bottom callout, pointing to the chat area, says: "Ask public or private questions using the chat area".

At the bottom right of the slide, there is a small text fragment: "of your face for 3 points extra credit".

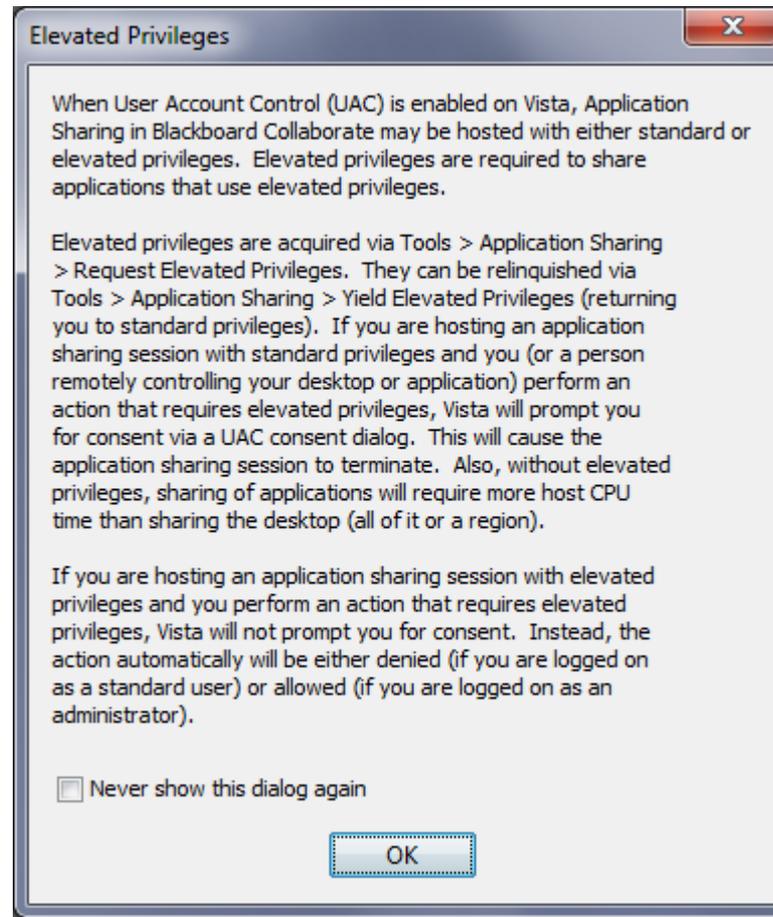
Sharing from CCC Confer

Click **Talk** so we can hear you from your computer's microphone

Click **overlapping rectangles** to share

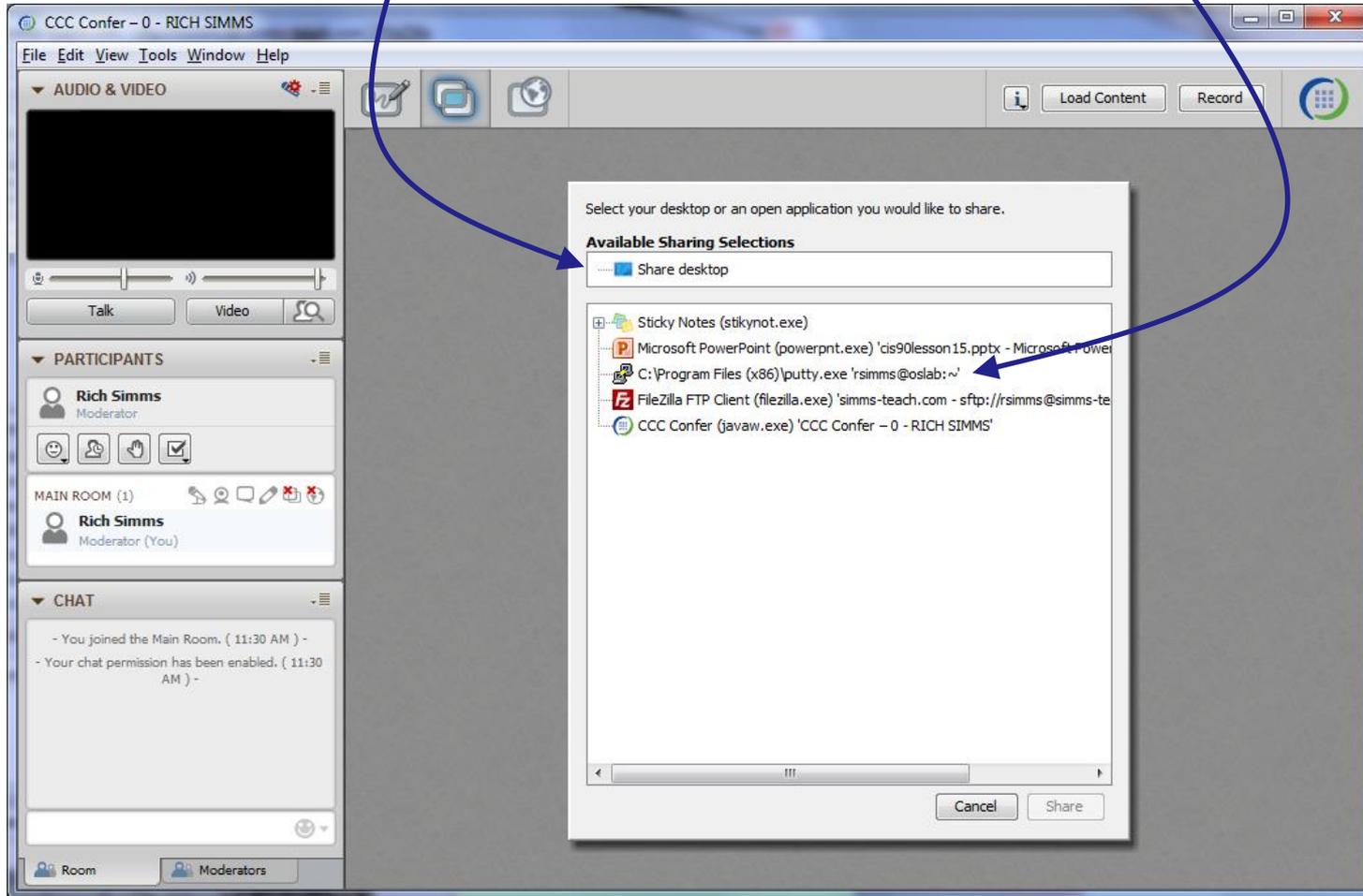


Sharing from CCC Confer



Sharing from CCC Confer

Either share putty/terminal or entire desktop



Sharing from CCC Confer

Click stop symbol to end sharing

The screenshot shows a Windows desktop environment. On the left, there is a 'CCC Confer' application window with sections for 'AUDIO & VIDEO', 'PARTICIPANTS' (listing Rich Simms as Moderator), and 'CHAT'. The desktop background features a technical drawing of a building. A terminal window titled 'rsimms@oslab:~' is open in the center, displaying the following text:

```
login as: rsimms
rsimms@oslab.cabrillo.edu's password:
Last login: Thu May 30 11:17:11 2013 from 50-0-68-177.dsl.dynamic.sonic.net

  ( 'v' )
 //---\
 (\ _ /)
  ~ ~ ~

Welcome to Opus
Serving Cabrillo College

[rsimms@oslab ~]$
```

A blue arrow points from the text 'Click stop symbol to end sharing' to the stop icon (two vertical bars) in the taskbar of the terminal window. The taskbar at the bottom shows various application icons and the system clock indicating 11:36 AM on 5/30/2013.

Assignment



Do Practice Test #3

Five Posts

Lab X1 (extra credit)

Lab X2 (extra credit)



Wrap up

New commands:

tar

gzip

gunzip

Backup and restore files

Zip and compress files

Unzip files

New Files and Directories:

Next Class is the Final Exam (Test #3)

Test #3

Five Posts

Lab X1 (extra credit)

Lab X2 (extra credit)



Backup