

## Polycom PVX Software:

First and foremost, this is a software-based system that is attempting to do the same job that some very expensive dedicated hardware does. So if you choose to run other software that take up a lot of CPU at the same time, do NOT expect the quality and reliability to be the same as a \$4000 desktop unit.

So now that I've said that, the good news is that modern laptops have quite a bit of horsepower compared to what was available just a few years ago; and this software does a fairly good job of providing video conferencing to laptop users.

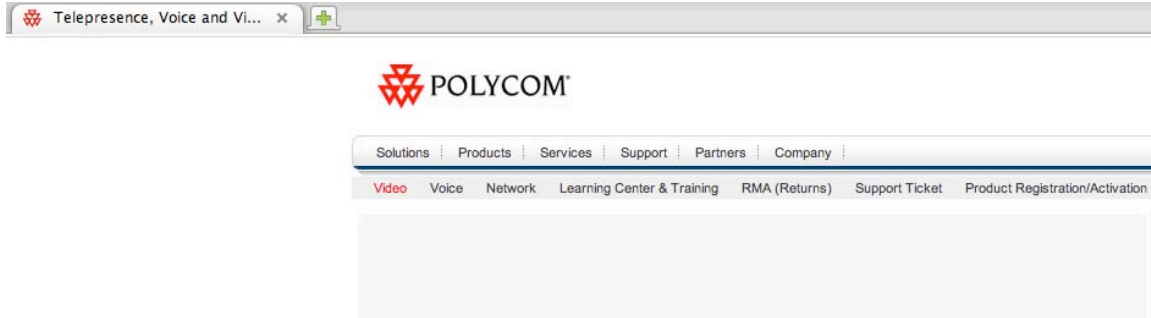
A few things to remember:

1. Experiment a bit, some programs will run just fine with the PVX software, and some won't. Try it out before you're defending your dissertation remotely.
2. This system uses the H.323 video conferencing standards, and unfortunately that translates to the system not being really happy behind home firewalls. So if you want this to work from home, you'll need to make a few changes to your home firewall if you want this to work. For this situation, see the addendum on setting up your home firewall.
3. This system isn't going to work in all hotels and hotspots. You'll just have to try it out first. We've tested at some Marriotts, a few Hyatts, and T-Mobile (aka Starbucks) hotspots and it works fine. Mileage may vary. If it's "Joe's Internet Café and garage" with an el'cheapo Linksys WiFi router, it's probably not going to work.
4. This is **video** conferencing, so beware of where and when you answer a call. I've had folks answer automatically when they're in the jammies to the embarrassment of both of us.
5. NOT all video conferencing systems are created equally, connecting to different sites will yield different quality audio and video even if you're at the same hotspot. Be patient and if you run into problems, document the problem as well as possible so that others can learn from your problems and potentially not have to go through the same pain.

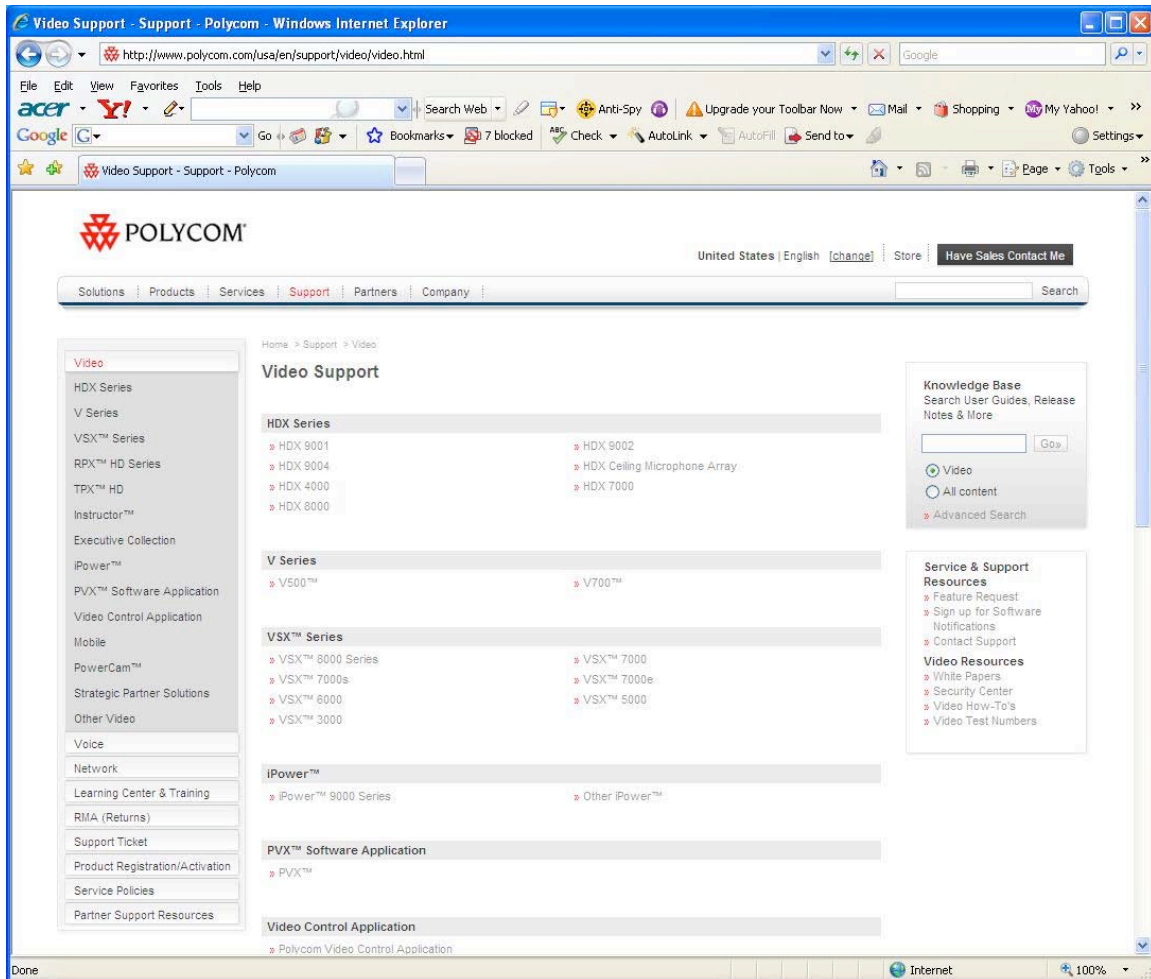
So this is software, and as such is out of date by the time the shrink-wrapped package has gotten to you. So instead of going through the hassles of trying to pass out CD copies to everyone, let's just download a fresh copy from Polycom and bypass the pain.

## Downloading the Polycom PVX Software:

NOTE: this is a Windows ONLY application. While we've gotten it working from within VMWare Fusion on the Mac, that's an unsupported configuration and while we'll be happy to help, it's not guaranteed to work.



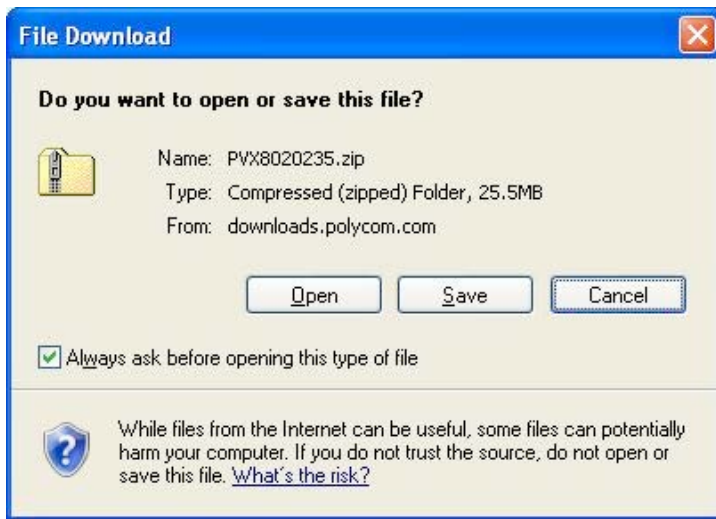
The Polycom website is a bit convoluted with no direct way to get to the software. So once you've gotten to [www.polycom.com](http://www.polycom.com) and told them where in the world you are. Choose "Support" from the first menu and the "Video" from the second layer of drop down menu.



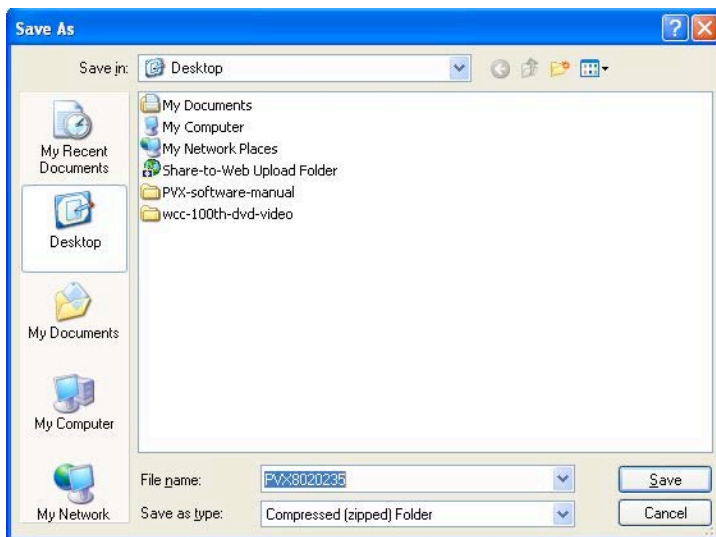
This is where you look down the screen for “PVX Software Application” and under that a menu choice “PVX”. Click on that.

This is where you get to make a decision before you download the program. IF you are running a NEW computer that has Windows Vista on it, or you’re running Windows XP on a new Dual CORE machine, you can use the absolute latest and greatest version, which is “PVX 8.0.4 for Vista and Dual Core Users”.

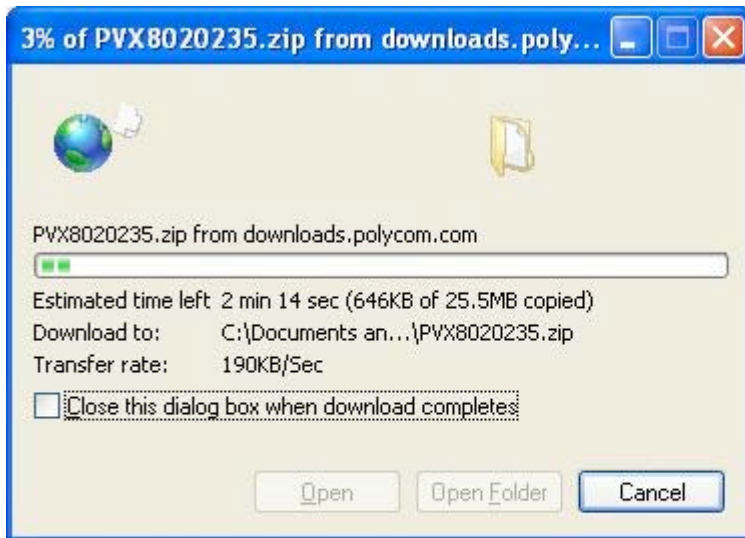
Otherwise for us mere mortals, choose “PVX 8.0.2 Maintenance Release” which has a few less features but will run significantly better on older machines.



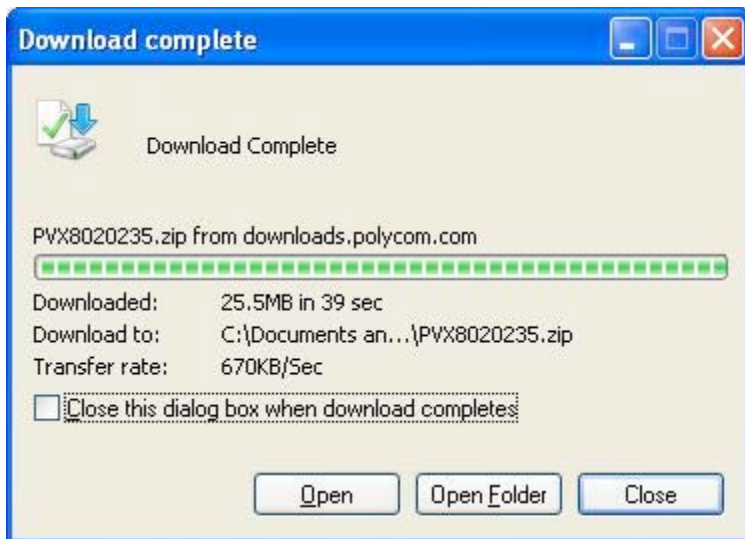
Unless you’re really low on disk space, I would really recommend you “save” the file someplace you can find again. I suggest the desktop.



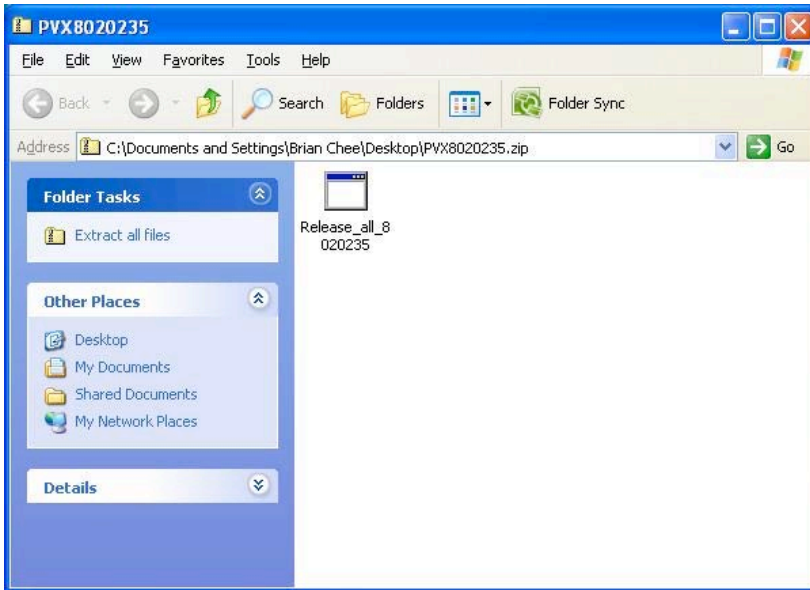
Don’t worry about the name; you just have to be able to find it once it’s saved.



Now, depending upon how fast your connection is, this could take a while. Notice that it's 25.5 meg in size. Probably not something you want to download over a dialup connection.



See I told you that we really don't care about the name...click "Open" here and make your life easier.



This is a .zip file so it will open up a folder. You could either extract the file someplace, or just double click on it from here. (If you have a slow machine, this might not work and you'd have to first extract the file and then double click on it)



Yes, you do want to run this file...



I'm assuming you want English and I'll continue these examples in English. However, the system does support quite a few different languages and you can choose them from this menu.

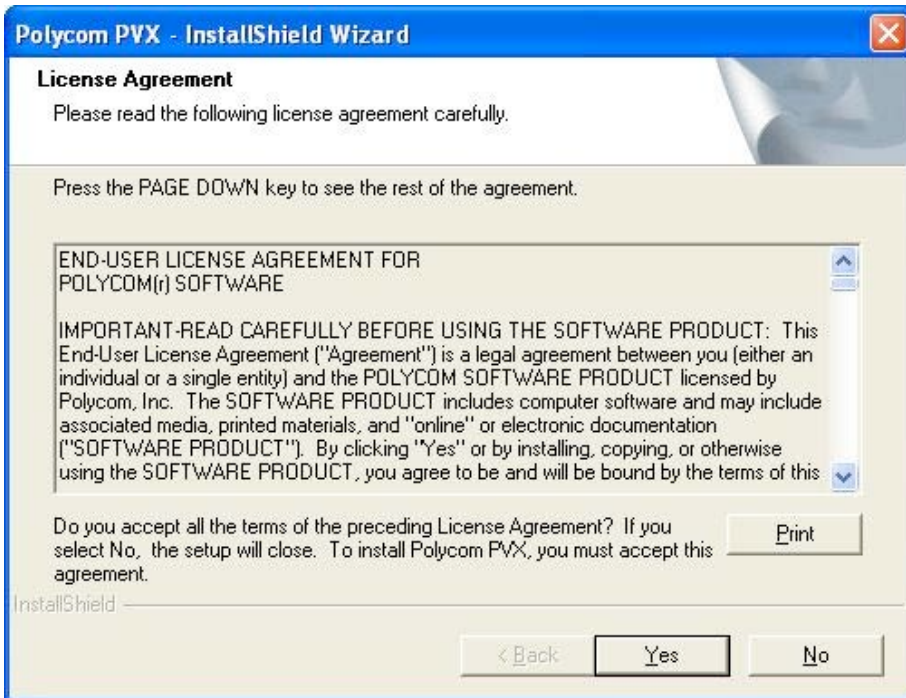


This uses the standard Windows Installer, and conversely you can yank this program out using the standard "uninstall" option from the Windows Control Panel.



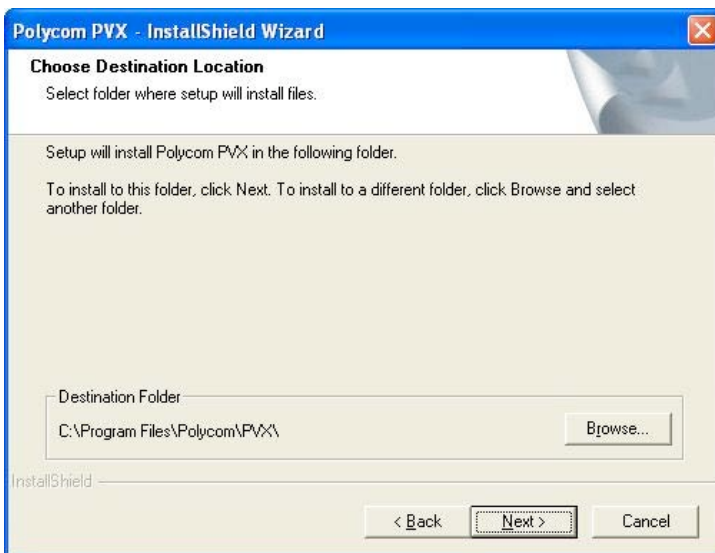
It is my sincerest hope that you get this far. Cause this is the real start of the install.



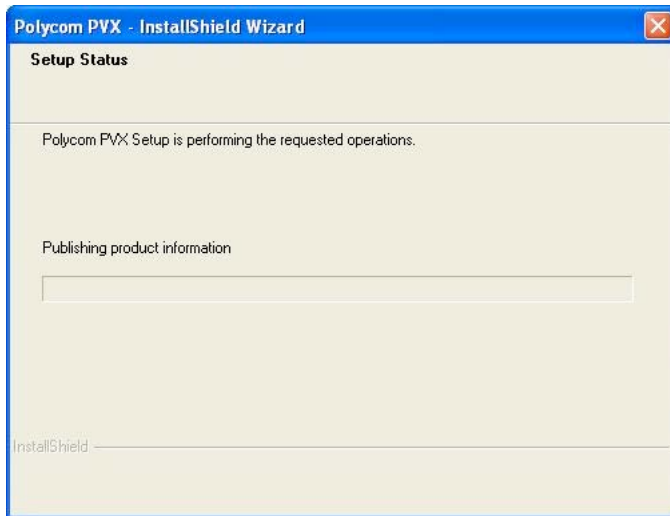


This isn't free software, so Polycom wants you to say yes here. Remember, ONLY C-MORE people should be using this software. DO NOT SHARE THE ACTIVATION CODES. Amazingly enough, you can share the program itself, because if not activated the software will only let you do a 5 minute video conference before automatically hanging up. This way Polycom can hand out copies and make them freely downloadable as demos.

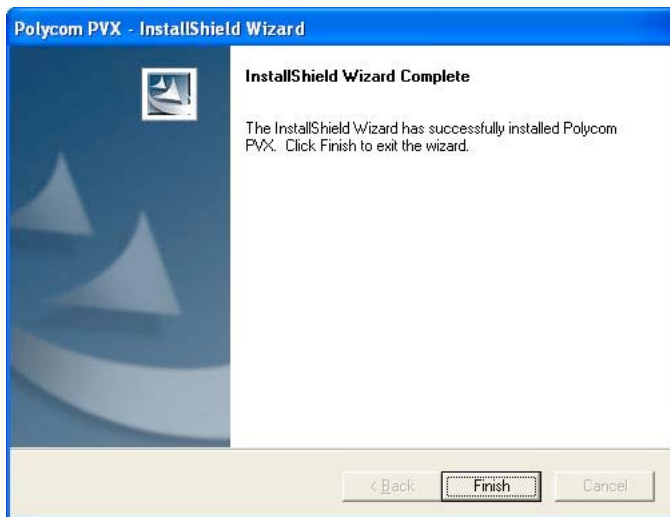
So once you click "yes" we'll be on our way.



If say for instance you have a much bigger hard drive called “D” or “E” or whatever, here is where you can click on “Browse” and tell the installer program to store the PVX software someplace else.



So far so good, now you just have to watch the thermometer march across the screen as it installs to your machine. Maybe it's time for a cuppa coffee or tea?



Congrats...it's installed, but you still have to configure the PVX software and if you have a home firewall you might still have to configure that and do a bit of fiddling with your computer.

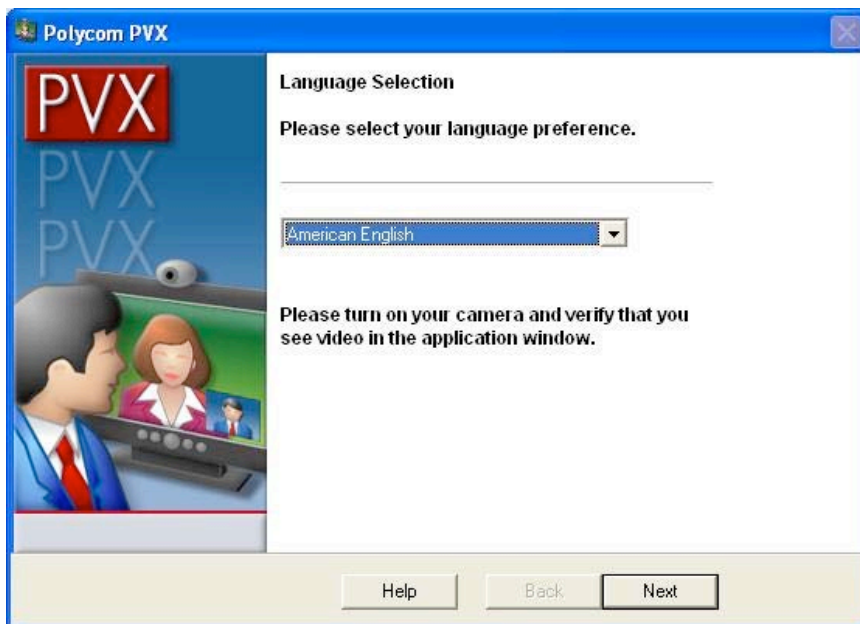
\*NOTE: if you have a home firewall and the video doesn't work when you try it, first check the webcam with the software it came with and the video works on that, then try the setup in the addendum on home firewall port forwarding.



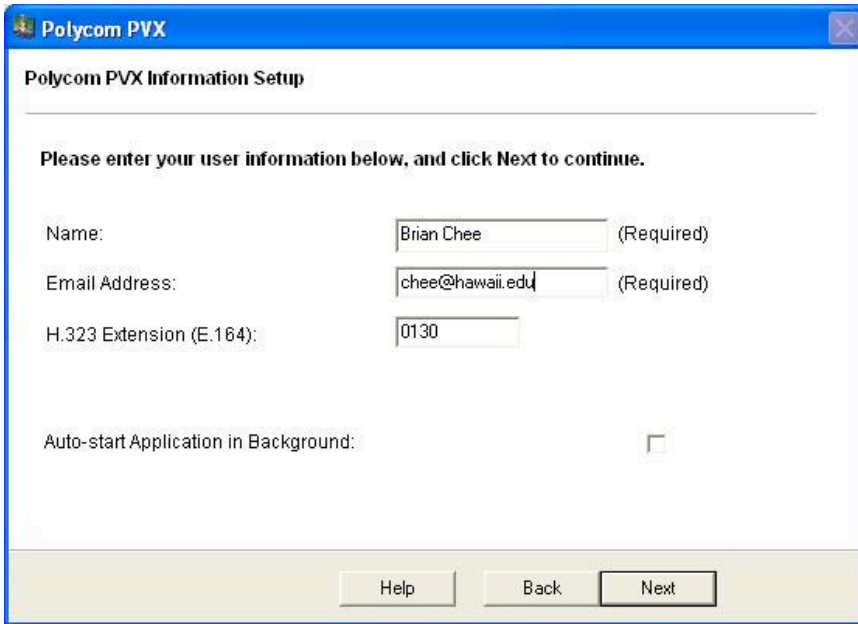
### **Configuring the Polycom PVX software for the first time:**



The installer should have dropped a “Polycom PVX” icon onto your desktop. You can also get to it from the “Start” menu, but the icon is just easier to find. Double click on the icon and it will start up for the first time.



You can again choose a different language if you want.



**Polycom PVX**

### Polycom PVX Information Setup

Please enter your user information below, and click Next to continue.

Name:  (Required)

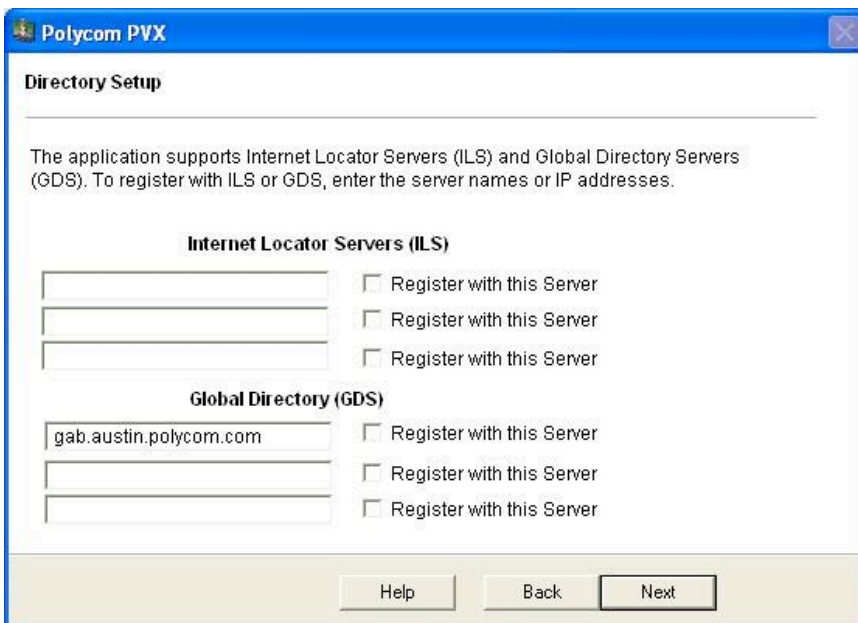
Email Address:  (Required)

H.323 Extension (E.164):

Auto-start Application in Background:

Help Back Next

Please put in a real name and real email address here...this will make troubleshooting much easier in the long run. For now, don't worry about the "H.323 Extension" since it won't matter if you're using the C-MORE Multipoint Control Unit (MCU).



**Polycom PVX**

### Directory Setup

The application supports Internet Locator Servers (ILS) and Global Directory Servers (GDS). To register with ILS or GDS, enter the server names or IP addresses.

**Internet Locator Servers (ILS)**

Register with this Server

Register with this Server

Register with this Server

**Global Directory (GDS)**

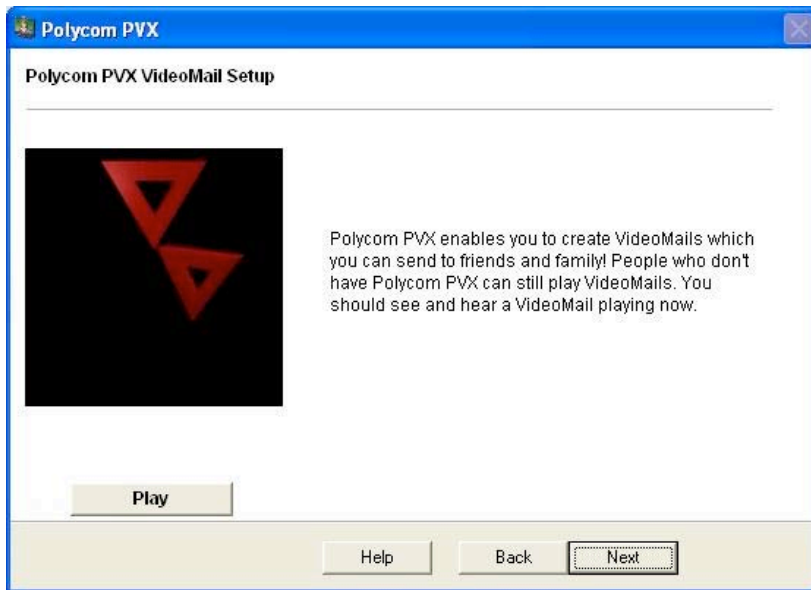
Register with this Server

Register with this Server

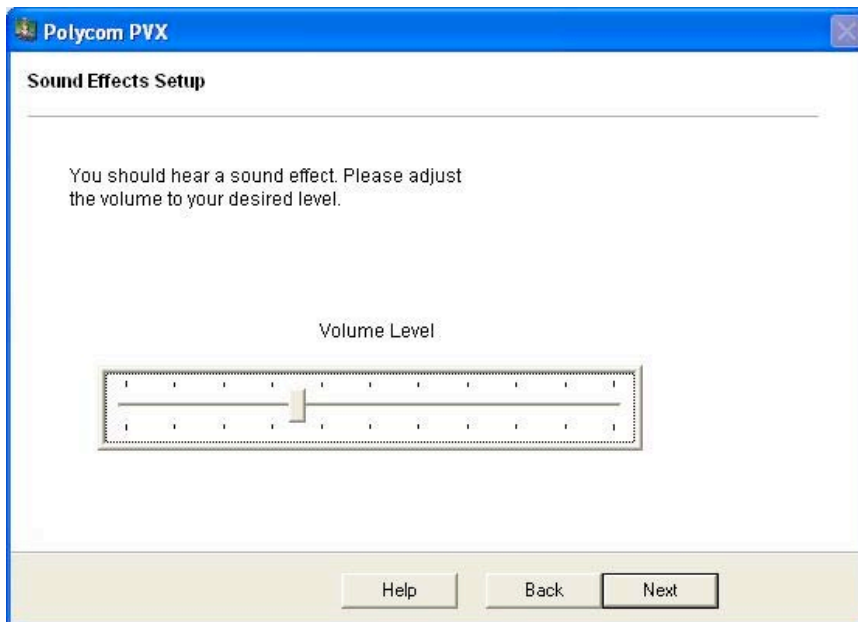
Register with this Server

Help Back Next

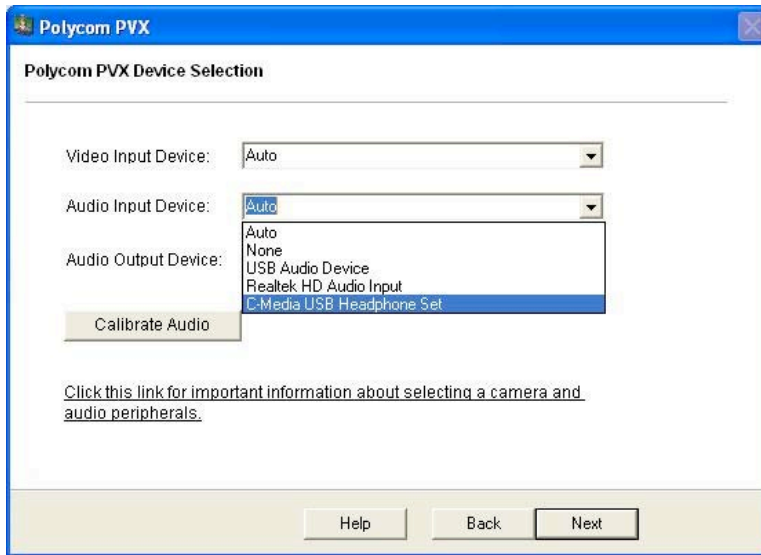
In this case we don't have either of these services yet. Leave it all blank for now and just click on "next".



The real reason for this screen is to test whether the video is correctly supported on your computer. The Polycom logo should slowly build as you hear music in the background. Remember that you'll need both audio and video working if you want to videoconference.

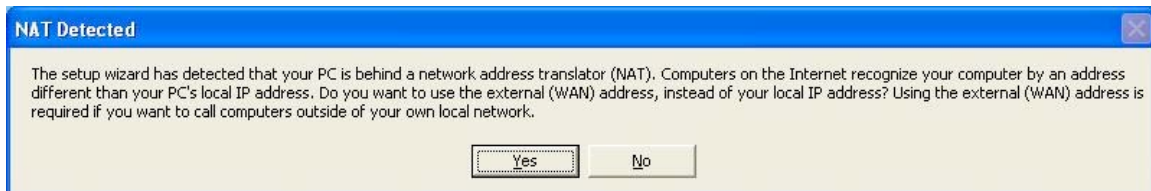


This part is making sure that your audio works...sometimes if you have an inexpensive headset, the volume might be pretty low. Just grab the slider and increase the default volume levels.



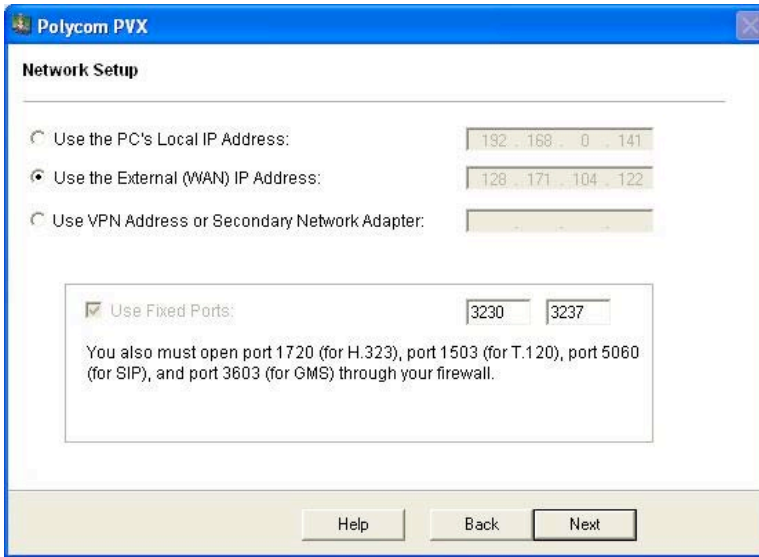
I've got a Plantronics DSP series headset on this machine. You may NOT need a headset, but if you start getting feedback (squealing) or bad echos, you might want to consider one. The Plantronics is one of the Polycom recommended units since the DSP circuitry takes a huge workload off the computer. However, other headsets will also work.

Choose the audio and video devices according to what you really have. Leaving it in auto typically will use the speakers and microphone in the laptop. Remember, mileage may vary, give it a try and if you don't like the audio quality, you might want to consider a headset.

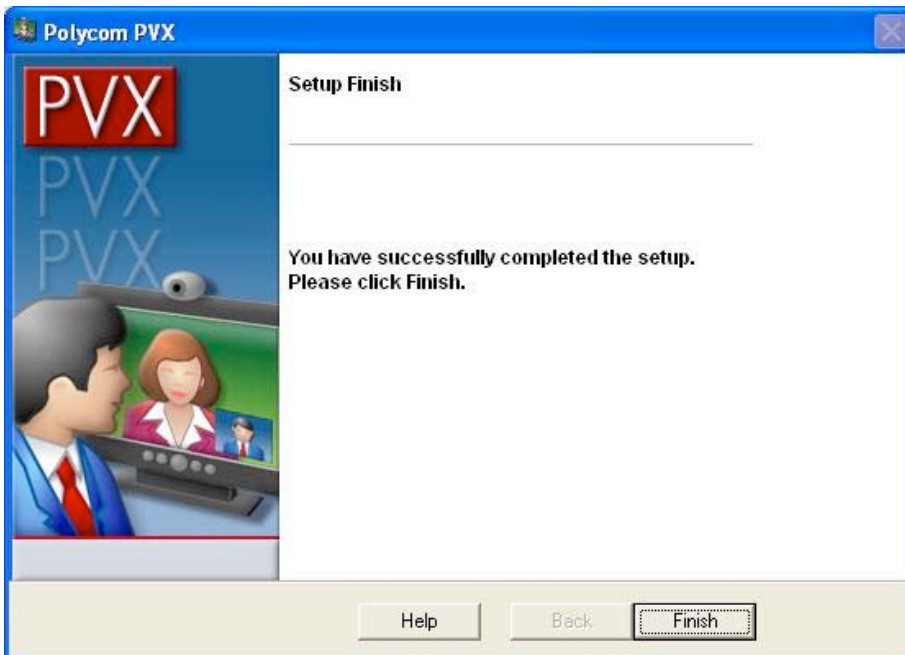


This screen will **only popup if you're behind a firewall** that uses Network Address Translation. If your laptop is setup with real Internet addresses like that on a university campus, then this will never appear.

For now, don't worry about this...click "Yes" and continue on. We'll solve this issue a bit later.



This is an important screen ONLY if you're trying to setup the PVX software to run behind a home firewall. If this is something you want to do, write down the values on this screen. You'll need them when you follow the directions in the addendum.





Here's another gotcha with Windows. The Windows firewall wants to know if this is a legitimate occurrence and will next ask whether you want to “unblock” the firewall for this particular application. Choose “Unblock” here.

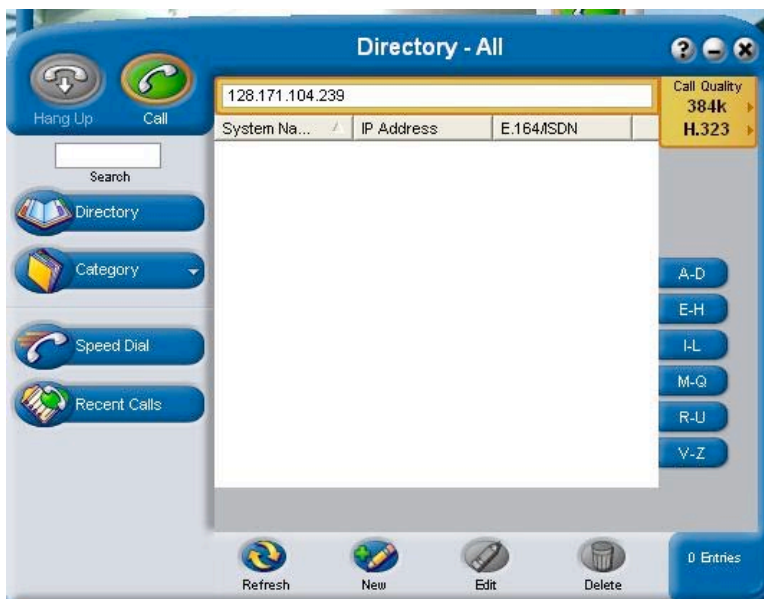


If the Polycom PVX software is detecting your camera correctly, then you should see yourself in the video window. I'm using a Logitech QuickCam which has tilt-pan-zoom capability. It also has face tracking which means it will follow me if I'm moving around.





Here's where I'm trying to connect to the C-MORE MCU but the home firewall isn't configured yet. If it's working, you'll see a Polycom splash screen and hear a voice in the background. To get the dialing keypad just click on the "Controls" button at the bottom.



You can click on directory and add in frequently dialed numbers and store them by names.

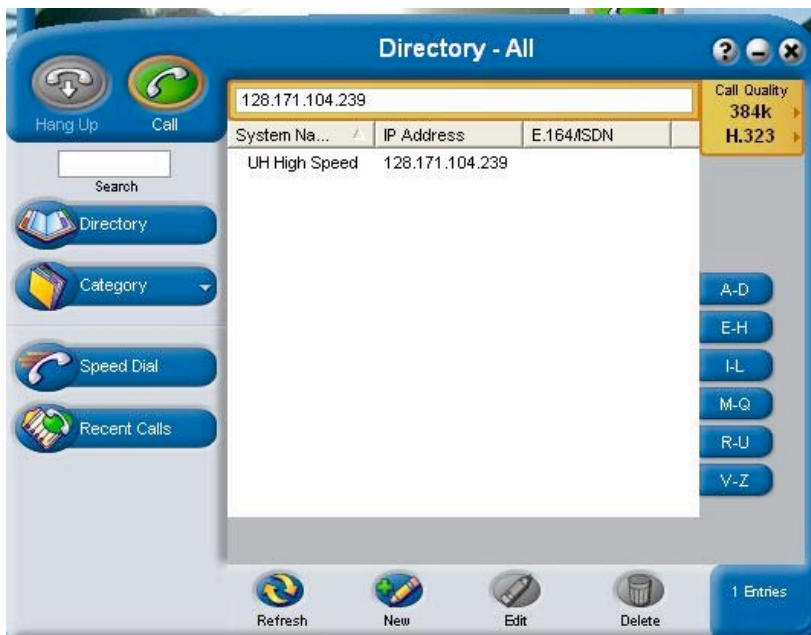


The 'New' dialog box contains the following fields:

- Name: UH High Speed
- Speed: 384
- IP Address: 128.171.104.239
- H.323 Extension (E.164): 8400
- SIP Address: (empty)
- ISDN Number: (empty)
- Phone Number: (empty)
- Email Address: (empty)
- Comment: (empty)

Buttons: Add, Cancel

This is the address you'll be using most often. This is for the C-MORE MCU and it allows more than 2 people at a time to see and talk to each other. So that's the most likely address to add first.



The 'Directory - All' interface shows a search bar with the IP address 128.171.104.239. Below the search bar is a table with the following data:

System Na...	IP Address	E.164/MSDN
UH High Speed	128.171.104.239	

Call Quality: 384k, H.323

Navigation buttons: A-D, E-H, I-L, M-Q, R-U, V-Z

Bottom bar: Refresh, New, Edit, Delete, 1 Entries

You can add all you want...they're only stored on this machine. Sorry, we don't have a shared directory in this configuration.

From here you can dial the MCU, or dial directly to another video conferencing unit if you know it's address. Since folks might move around, it might be best to meet in one of the MCU "Meeting Rooms" assigned to each C-MORE institution.

Lastly, you do NOT own this software. It is the property of the C-MORE project and if you should leave the project you must uninstall it and notify the C-MORE administration so that your license can be reused.

Here's a handy reference list of both the high speed and low speed meeting rooms for each C-MORE institution. Get the access codes from the respective institution C-MORE manager.

<b><u>Meeting Room Name</u></b>	<b><u>Extension</u></b>
UCSC-H264@384	8272
UCSC-H261@128	8273
OSU-H264@384	6780
OSU-H261@128	6781
MBARI-H264@384	6227
MBARI-H261@128	6228
WHOI-H264@384	9464
WHOI-H261@128	9465
MIT-H264@384	6480
MIT-H261@128	6481
UH-H264@384	8400
UH-H261@128	8401

H.264 is a much higher quality protocol and I've got these rooms setup to use 384kilobits/second. However, H.261 is a simpler protocol and is setup for 128kilobits/second, which might actually work over some WWAN cards like the EvD0 Cards from Sprint or a G3 Data Connection from T-Mobile or AT&T. Like many things in video conferencing, mileage may vary and WWAN connections might be iffy. Give it a try...video conferencing over the Internet doesn't cost us a thing, so try it.

## Addendum:

### How to do Video Conferencing behind a home Firewall

\*NOTE: if you're on a university campus, T-Mobile HotSpot, etc and are being given "real IP addresses" you can skip the rest of this manual. Its only here if you choose to do video conferencing from behind a home firewall.

Ok, this just means that the Polycom PVX software is ready; you still need to make sure that you're forwarding the correct ports to the correct address. So to do that we configure the home firewall next and then configure your machine to use a "Static IP address".

#### ***Configuring your home firewall:***

So a firewall is used to do a couple things, and your typical home firewall is most likely providing you with a couple important functions.

1. Protecting you from the worms, virae, and attackers on the outside
2. Taking the single Internet Address your broadband provider is allowing you to use and magically turning it into a couple hundred addresses through a process called Network Address Translation.
3. Automatically handing out Internet Addresses to your machines so that you don't normally have to manually configure your machines.

Sigh...the problem is that #1 and #2 are both going to make video conferencing difficult. To start off explaining #1, think of your firewall as a hotel with LOTS of places to put doors, but until the hotel manager orders them, the doors are missing. The cool part is that without a door, burglars typically can't open the door and get in to rob you. However, video conferencing requires that there be a bunch of doors for video, audio and control to flow through. So we have to not only install those doors, we have to leave them open to anyone.

The good news is that these doors aren't used that often and we're going to make those doors lead to ONLY one place. So if you're not using the video conferencing, those doors lead to a dead end.

Does this mean that attackers can't use those doors to exploit, sorry, but they could if they knew what they were doing. The good news is that you've at least narrowed down the field to only the most talented attackers.

So the mechanism that we use to direct all these doors to a single location is called "Port Forwarding" and unfortunately it goes by a whole lot of different names. In a very popular Linksys wireless router it comes under the heading of "Applications

and Games” since gamers were some of the first to demand this feature. So again, mileage may vary, but here’s the config from the Linksys WRT-54G router.

**LINKSYS**  
A Division of Cisco Systems, Inc. Firmware Version : v4.20.6

**Applications & Gaming** Wireless-G Broadband Router WRT54G

Setup Wireless Security Access Restrictions Applications & Gaming Administration Status

Port Range Forward | Port Triggering | DMZ | QoS

**Port Range Forward**

Port Range						
Application	Start	End	Protocol	IP Address	Enable	
PVX	3230 to	3237	Both	192.168.1.10	<input checked="" type="checkbox"/>	
R323	1720 to	1720	Both	192.168.1.10	<input checked="" type="checkbox"/>	
T120	1503 to	1503	Both	192.168.1.10	<input checked="" type="checkbox"/>	
SIP	5060 to	5060	Both	192.168.1.10	<input checked="" type="checkbox"/>	
BTIS	3603 to	3603	Both	192.168.1.10	<input checked="" type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	

**Port Range Forwarding :** Certain applications may require to open specific ports in order for it to function correctly. Examples of these applications include servers and certain online games. When a request for a certain port comes in from the Internet, the router will route the data to the computer you specify. Due to security concerns, you may want to limit port forwarding to only those ports you are using, and uncheck the Enable checkbox after you are finished. More...

Save Settings Cancel Changes

CISCO SYSTEMS

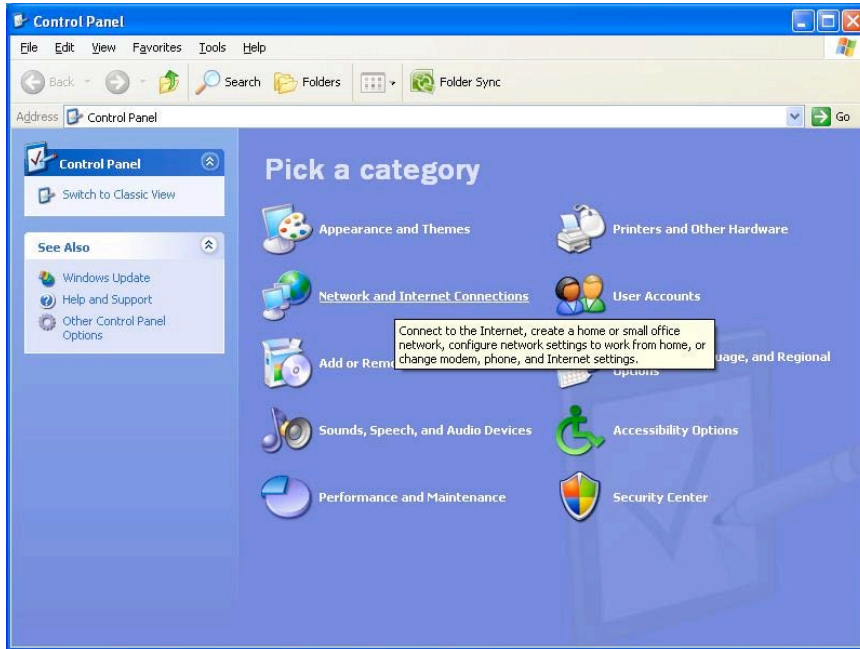
You need to login to your firewall as the administrator and find either “Port forwarding” or something like “Application and Gaming” support. Don’t worry if you can’t read the numbers...they’ll come up a bit later when you first start up the PVX software and start configuring it.

I’m bringing it up here since you have to choose a specific IP address to “port forward” to and that address can’t be used by anything else. Since most firewall start handing out IP addresses (using a DHCP server which is typically under the “Setup” area) at 100 I typically like choosing low numbers. You MUST NOT use the same address as the router or lots of things will break.

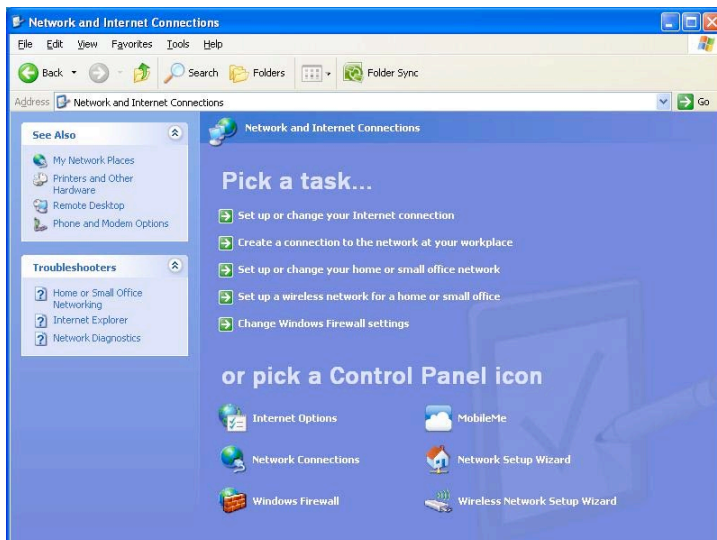
That’s it for the firewall, but now you have to make sure your computer is using that address or the video conferencing audio+video+control will just fly by and your machine will never see it. All you’ll get is a black screen and no audio.

## Configuring Windows XP for a set IP address:

Sorry, but unless your firewall has a way to create “static entries” for the DHCP (Dynamic Host Configuration Protocol) you’ll have to set your laptop to a specific IP address in order to play with video conferencing. This example is for Windows XP since that’s what most of C-MORE is using. I’ll add in Mac and Vista as time allows.

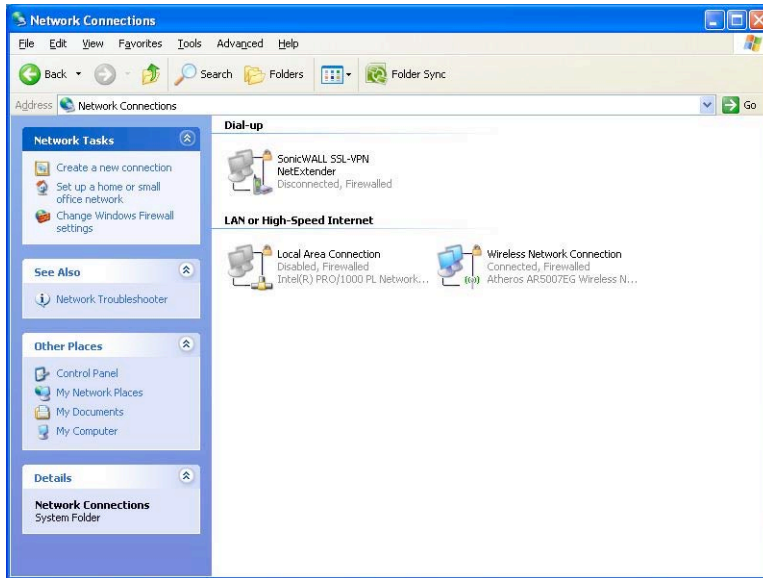


Click on “Start” and then choose “Control Panel” to get rolling. From here you need to choose “Network and Internet Connections” next.



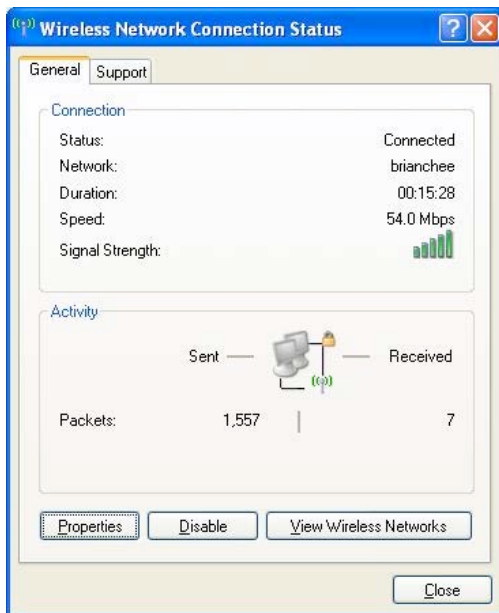
Now you need to choose “Network Connections” to configure one of your existing network connections.



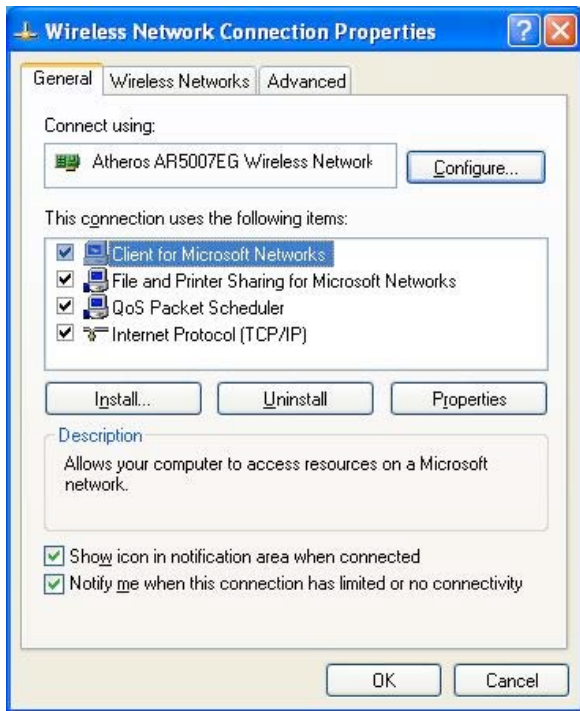


I'm choosing the "Wireless Network Connection", but like always, mileage may vary depending upon how your machine was setup. Since I didn't want to disconnect my wired Internet connection, I just right clicked on my "Local Area Connection" and choose "Disable" to tell my machine to temporarily ignore the wired connection.

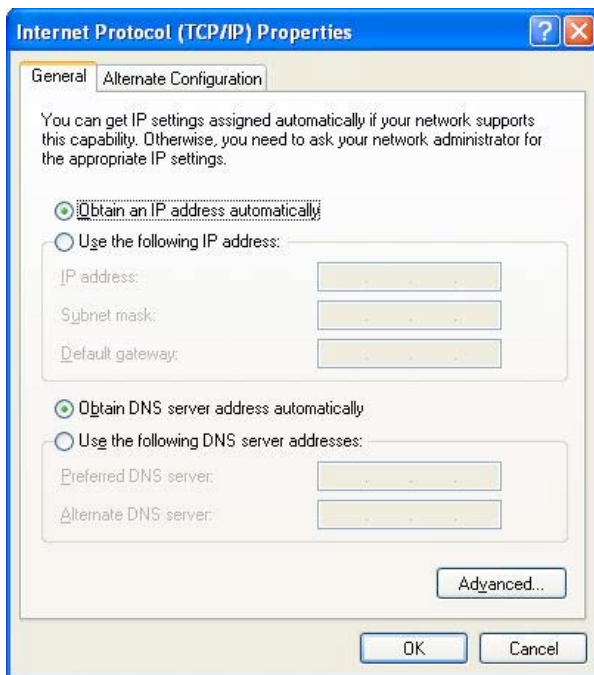
I then just double clicked on my "Wireless Network Connection" icon which takes me to this next screen.



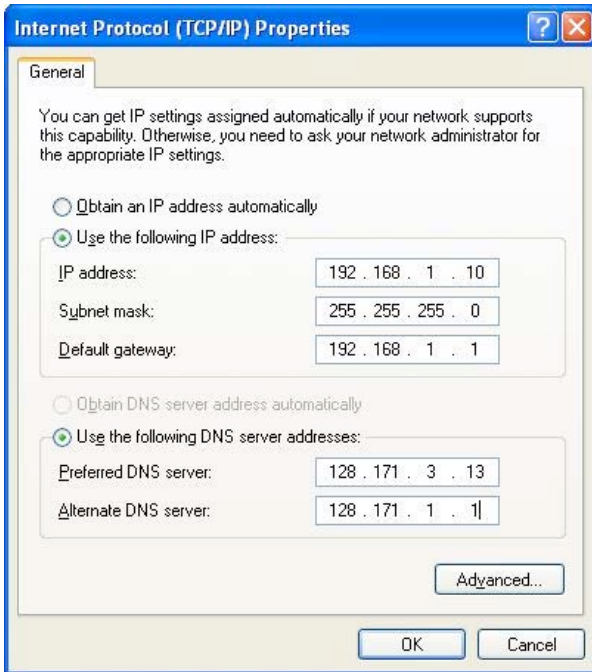
From here you click on "Properties" to make changes to the "Wireless Network Connection".



In the middle window, choose “Internet Protocol (TCP/IP)” and then click “Properties” since that’s what we want to change.



More than likely this is what you will get. What we’re doing to changing you from automatic (“Obtain an IP address automatically”) to “Use the following IP address” instead.



The address I entered in the form MUST match the address I chose when I was configuring the “Port Forwarding” in my home firewall.

**LINKSYS**  
A Division of Cisco Systems, Inc. Firmware Version : v4.20.6

**Wireless-G Broadband Router** WRT54G

**Applications & Gaming** | **Setup** | **Wireless** | **Security** | **Access Restrictions** | **Applications & Gaming** | **Administration** | **Status**

Port Range Forward | Port Triggering | DMZ | QoS

**Port Range Forward**

Port Range						
Application	Start	End	Protocol	IP Address	Enable	
PVX	3230 to	3237	Both	192.168.1.10	<input checked="" type="checkbox"/>	
H323	1720 to	1720	Both	192.168.1.10	<input checked="" type="checkbox"/>	
T120	1503 to	1503	Both	192.168.1.10	<input checked="" type="checkbox"/>	
SIP	5060 to	5060	Both	192.168.1.10	<input checked="" type="checkbox"/>	
STIS	3603 to	3603	Both	192.168.1.10	<input checked="" type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	
	0 to	0	Both	192.168.1.0	<input type="checkbox"/>	

**Port Range Forwarding** : Certain applications may require to open specific ports in order for it to function correctly. Examples of these applications include servers and certain online games. When a request for a certain port comes in from the Internet, the router will route the data to the computer you specify. Due to security concerns, you may want to limit port forwarding to only those ports you are using, and uncheck the **Enable** checkbox after you are finished.  
[More...](#)

**CISCO SYSTEMS**

Save Settings | Cancel Changes

Here is another place where mileage may vary....if you chose a different address, then make sure that both the firewall port forwarding address matches the address you're typing into the "Use the following IP address" section of the TCP/IP config window.

NOTE: the Polycom PVX software will attempt to make a best guess during the installation.

Once you've made the changes and applied them to your laptop you now have a good chance that you'll be able to see video when you startup the PVX software.