



Introducing iChalk.

Spill Creativity over Network
Camera Obscura Renovated
Rotoscope for Dummies
In Full Glorious Color

iChalk: The first internet enabled color chalkboard for the Mac OS X. *Camera Obscura* renovated. Rotoscope for the dummies.



Like iStorm, iChalk incorporates useful features such as a simple chatting system, and innovative tracing feature. iChalk also allows users to export the chalkboard images as JPEG file and even into a Quicktime movie file.



iChalk uses the new *Rendezvous* technology to let users collaborate on a shared chalkboard with zero configurations! When a user hosts a chalk board, others on the local area network will see it immediately in the join list without any hassle.



iChalk also features an elegant one-button interface that lets users utilize all of iChalk's networked editing functions with a click

of a mouse. (Or command + return.) The button doubles as a status indicator of the availability of the chalkboard. If it is red, a collaborator is using the chalkboard. If it is blue, you are using it. If it is green, the board is free for anyone to draw on. Could it be more intuitive?



iChalk let's users do anything they could do with a regular blackboard, and more! Users can use the blackboard for teaching math, swapping ideas on a graphical organizer, or just doodle! The endlessly amusing trace feature let's users drag and drop pictures onto the blackboard, and trace over it with ease. The whole history of collaboration may be captured into a QuickTime movie. iChalk also lets pen and tablet users to turn on pressure sensitivity and use the eraser on the top of their stylus the way it should be.

And by the way, it now supports full color as well as different board color options.

With iChalk 3.3, users can now add text to their drawing. With the built- in Quicktime archive capability, you know what? You are now an innovative comic book artist!

iChalk requires Mac OS 10.2 and a local area network.



iChalk in Action

Learn by copying the Masters

Camera Obscura Renovated

Recently, it was claimed* with significant credibility** that the Masters including Vermeer made use of the gadget of their times called Camera Obscura in creating some of their masterpieces.

Therefore, do not be ashamed. Learn by tracing the masters. Just drop the standard graphics files onto the chalkboard and impress your collaborator on the other end by tracing!



Jan traces



Jane is impressed!

*<http://reason.com/0208/cr.cf.traces.shtml>

**<http://www.grand-illusions.com/vermeer/vermeer1.htm>

The following were created using the tracing feature of iChalk. Wacom Intuos tablet with pressure sensitive stylus was used. Do not attempt to reproduce them using a mouse!



Inspired by Bathers at Asnières, (Georges-Pierre Seurat, 1884)



Inspired by Woman Drying Her Foot, (Hilaire-Germain-Edgar Degas, 1885-86)



Inspired by Kneeling Youth (George Minne, ca. 1925)



iChalk in Action

Rotoscope for Dummies

Deconstruct the Masterpieces using "Modern" Technology

You can use the built-in Quicktime interface to record the history of your creative process frame by frame. You may also make a *smooth* animation using our iRotoscope feature! You are limited only by your imagination (and bit of patience) !



Here is a silly animation about a frog created using a very serious technique called iRotoscope.





iChalk in Action

Oh well, do whatever you want...

We hope that iChalk will instigate people of all ages to try their hands on Art both high and low. We will feature some of the contributions made by users of iChalk in this page.



Ben with a smile



Pokemon

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Before you start:

If you are trying iChalk for the first time, please keep the following aspects in mind:

The current version of iChalk works only with OS X 10.2 (Jaguar) or later. For up-to-date information and coming attractions, visit www.mathgamehouse.com/ichalk/ . With iChalk v3.0 or later, you can change the board size, even during collaboration. Please make sure everyone uses the up-to-date version of iChalk.

Unregistered copy of iChalk will drop you off the collaboration 10 minutes after you join one. The Quicktime movie feature will allow only up to 20 frames. To obtain the single user license or find out about the site license, please visit www.mathgamehouse.com/ichalk/purchase.html.

Also note that license for iStorm, our more capable collaboration program also unlocks iChalk.

A single user license allows up to two people to work in a chalk session using the same license key and code pair.

The one control to remember: **command-return**. Please note that some iChalk tool buttons function differently when option- or control-clicked. Consult the following carefully to find more details.

Think different *together*. And have fun.


Please memorize the following and support the American legal system:

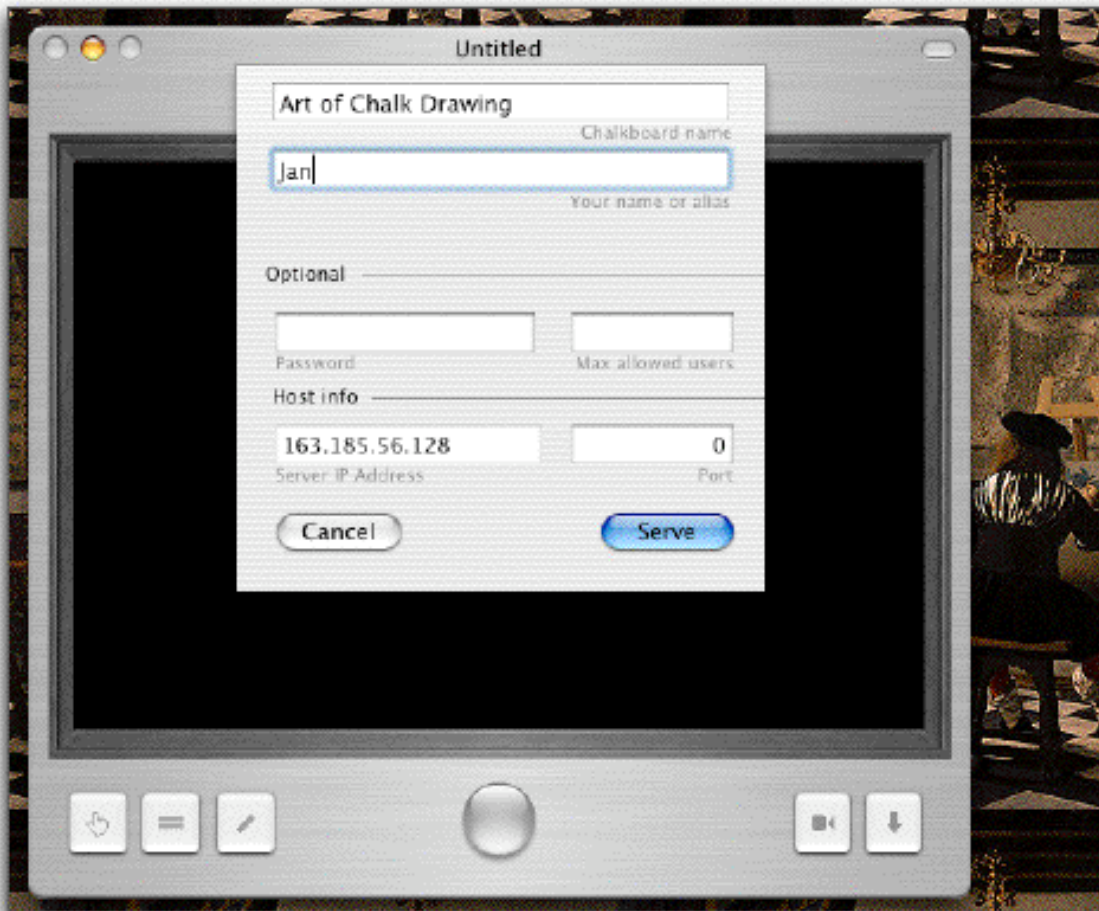
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER SPECIFIED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM THE NATURE OF THE CONTENT OF DATA OR THEIR LOSS WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Starting a Chalk Session


While the iChalk may function as a stand-alone chalk drawing/tracing program, it may also be used as an informal brainstorming tool with a collaborator or a group of people on a LAN (local area network). Like iStorm, it is possible to use it over internet (WAN, wide area network) with some extra measures, but we will get to that later in the manual.

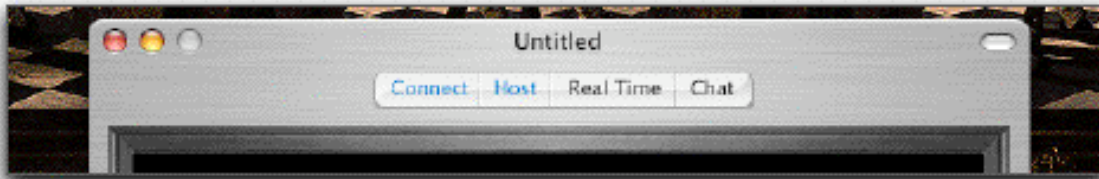
You, Jan, would like to show off your drawing skill which you inherited from your distant ancestors, to your friend, Jane. Start iChalk. Make sure you are connected to the local network, either through ethernet cable or via Airport. A blank chalkboard should open.

1. Important: As a host, you should disable the sleep mode. Go to the System Preferences. Choose EnergySaver module. In the Sleep tab, choose "Never" for the "Put the computer to sleep.....". You may keep the display and hard-disk sleep On if you want to.
2. Click on the Host button or choose Host (Cmd-Shift-K) from the Connections Menu. You may also click on the Host toolbar button  if it is visible.
3. Pick a good name for the shared chalk session (how about "Art of Chalk Drawing", if you are in a pompous mood?).
4. Pick a unique name or alias for yourself. (Jan)
5. Disregard other boxes (password, server IP Address, port) and simply press Serve button. There will be a momentary pause while iChalk allows the served document to start, and then it will automatically join the collaboration. Then the Host window will close itself.
6. At this point, you are ready to let other people join your party.
7. (To gracefully terminate the collaboration, follow instruction in the page titled "Leaving iChalk".)



If everything went well,

You should see something like this when you click the "chat" button to open the drawer. Notice that the Connect and Host buttons are lit blue (or like this  for toolbar icons if they are visible in the toolbar), indicating that you successfully started hosting (serving) the session as well as becoming a participant (naturally!) in it automatically. The chat box also serves as an information board. Here it shows some relevant Host information, the IP addresses and the name of your machine. It also shows that Jan joined the party at a certain time from Eastern USA [This is where you expose yourself as a fraud, not joining from Delft!].



On the bottom of the window, the button should have turned from gray to green. The document name and some relevant information are displayed there.



If you are curious,

Here are some details depending on your system version:

Do not use Rendezvous Mode

If you have played a networked game in the host-client mode, you should be already familiar with the way you connect with other people in what we call internet mode. The host on whose machine the actual file resides, should start a shared document, and will give two vital numbers to the collaborators to connect to: First, the IP address of the hosting machine, which can be either looked up from the Network module in the System Preferences or from the chat drawer as shown in the figure above. Secondly, the port number to which the hosting iChalk listens for incoming messages from the clients. [You may pick a number between 49151 and 65535 which are available private ports. If you don't pick a number and leave the port number cell as is, (usually displaying 0), a number will be automatically picked. The chosen port number may be found by opening the host panel again after the serving started

successfully. Then call your friend and give the IP address and port number. (If you intend to collaborate over the internet, and if you access internet through your network or if you are sharing a single internet connection, then you may need to follow a few steps in addition to what is described here. Please consult the section on Going beyond LAN.)

Rendezvous Mode

Things have gotten much easier with the Rendezvous technology. Finding an available shared document is as easy as finding a printer in the Chooser (if you still remember what Chooser means....) of old Mac OS. Here you don't have to worry about any numbers, but should just come up with the names of the document and yourself for your collaborators to recognize. This is the recommended way for users who collaborate only within their local network environment (LAN).

If you are having these troubles:

It seems the host is not visible to others?

First, make sure if the firewall arrangement is not causing it. Open the Sharing panel in the System Preferences. Choose Firewall tab. If you find firewall off here, close it and move on to the next step. If the firewall is on, you may want to add an item to the Allow list to let the iChalk traffic through. Find the port number (you may choose a number here and manually force iChalk to use it) of current iChalk shared document (by opening the Host panel in iChalk) and add to the list.

(If you intend to share the document over the internet, there are some additional considerations. Consult the chapter on making connections beyond LAN.)

If this is not an issue, maybe your network set-up demands a bit more looking into. Here are some of the hints we can offer. Beware of IP addresses starting as 10.0.1.x, 163.185.x.x or 192.168.1.x: These are "internal" IP addresses given out to

machines by DHCP servers/routers and therefore are not very useful for machines outside its domain. If you live in an apartment #66 on Broadway, New York, it is like giving just the number #66 to your friend to find your home in New York. It works well if all your friends live on the same street. If your network is made of ten iBooks connected by Airport, (lucky you!) it should work just fine by giving the address you see (10.0.1.3, say) to other 10.0.1.x's. However, if there is someone who is connected to the network through a router at the same level as the Airport, a rung above your level, then the machine may not be able to see you easily. [For a specific case example, look at the next question in this section.]

What is called "Port forwarding" may be one of the solutions in such cases. We recommend finding the person responsible for creating such a messy network environment and make him/her solve your problem and pay for the sin.

That same person probably has made it even harder by setting up firewalls in the name of network security. Not that it is a bad habit, but firewall requires that you take extra effort to allow (at your own risk!) the special communication through the port of your choice in advance. We believe that one of the important ingredients of creative collaboration is openness and it conflicts head-on with the notion of tight security, which seems to be the big idea with all the IT professionals these days. (Remember Y2K?)

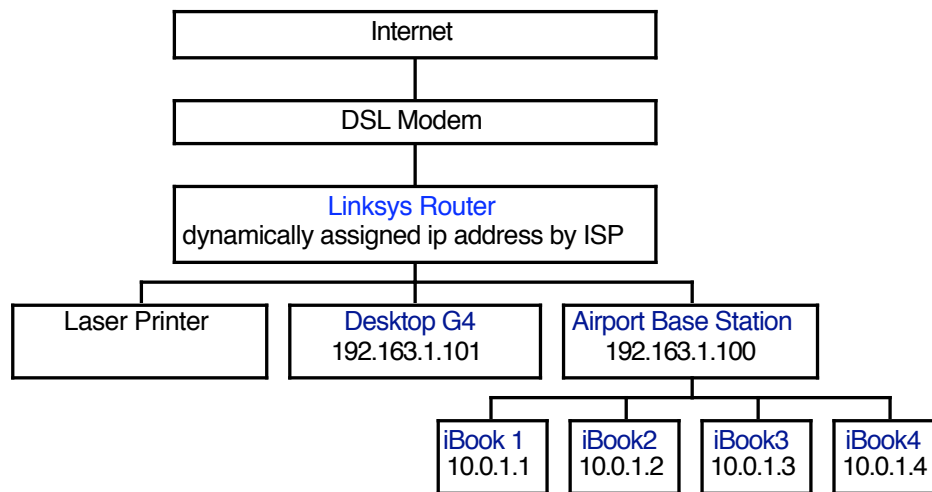
We need to make a compromise. Be nice to your IT specialists as you won't have much creative juice left in you if you have to figure this out by yourself!

We are currently seeking ways to make iChalk intelligently bypass most of these issues.

Can you give a more specific case example?

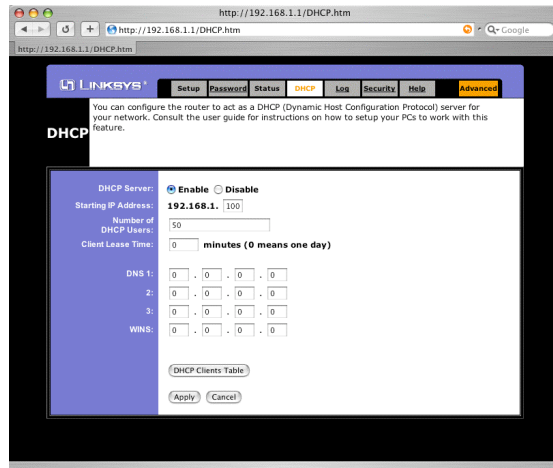
Here is a potentially problematic configuration where several machines share an internet router using both wireless and hard-wired Ethernet connections.

We use Linksys router which connects to the internet via a DSL modem. It also acts as the DHCP server, issuing 192.168.1.x local IP numbers to Macs connected to its Ethernet slots, so that many machines share the internet connection. One of the slots is occupied by Apple's Airport base station. The station itself is assigned one of the 192.168.1.x addresses, but each wireless laptop using the airport base is now assigned by the base one of the 10.0.1.x addresses. This creates a problem if the document is hosted by one of the 10.0.1.x machines, as it becomes invisible to anything beyond the 10.0.1 neighbor, for example, our desktop G4 which is directly connected to the Linksys box and has a 192.168.1.101 for its address.

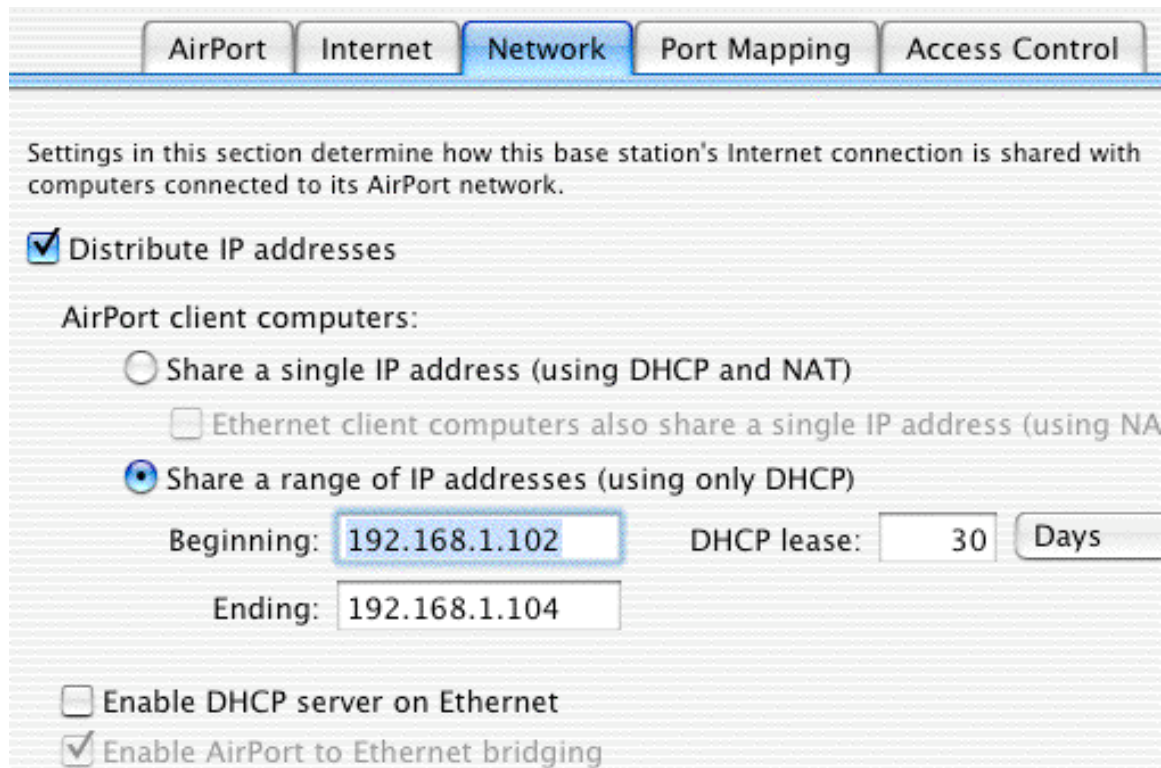


The easiest remedy is to modify the Airport base configuration. To do so, one should use AirPort Admin Utility program (found usually in the Applications/Utilities/ directory). There one can make it use a range of numbers in the 192.168.1.x form. The following snapshots from the Linksys configuration and the Network tab in the Airport Admin program illustrates the point.

Shown below is the DHCP tab for the Linksys router configuration setting. We have enabled DHCP server with the addresses starting with 192.168.1.100. The result is that the Airport base station was assigned 192.168.1.100 and our desktop G4 was assigned 192.168.1.101 .



Next, we set the airport base station in the following way using the Airport Admin program:



Now, all Macs using airport have internal IP addresses beginning with 192.168.1.102 and Rendezvous finds any document hosted by any machine in our LAN.

Once this is set up properly, then you are ready to extend beyond the local network. We provide some additional

information on connecting over internet. (See section titled Beyond LAN later.)

Even the Host button in the toolbar is not lit blue.

It is likely that you tried to set the port number manually and the port was not available. If you keep it empty or as 0 (zero), the system will automatically provide a private port. Also, for some reason, if a previous collaboration attempt aborted anomalously using a given port number, subsequent trial to start a new one using the same port number may fail until the port clears. It takes about 2 minutes for a freed port to become ready again. If you absolutely need to use the same port number, try after waiting for a few minutes. Otherwise, choose 0 for the port number so that an available one is picked automatically.

How do I change Firewall configuration?

Detailed procedures are described in the section on how to make connection beyond LAN.

I switched off (or lost) my internet connection, but intend to collaborate within our internal network served by a router. Suddenly, there is a long (about 10–20 seconds) delay (spinning rainbow....) whenever I try to serve or join a group using Rendezvous.

This is probably because your network setting is not updated to reflect that you do not have connection outside your LAN. Usually, this delay is caused as an NSHost call in the program try for a while to reach the DNS server as listed in your network or router setting, which is no longer reachable. Eventually it gives up and proceeds. Once the connections are made, it will no longer interfere your collaboration. It is annoying though... If the absence of internet service is rather permanent, it may be worthwhile to correct your network configuration. For example, in your System (not iStorm!) Preferences->Network->TCP/IP tab, check if there is any DNS Servers specified. If you

are not connected outside LAN, you should reset it with nothing in the DNS Servers field. You may have to make similar changes to your router or airport administration program.


What is the best strategy to resolve a network-congestion related crisis during a collaboration?

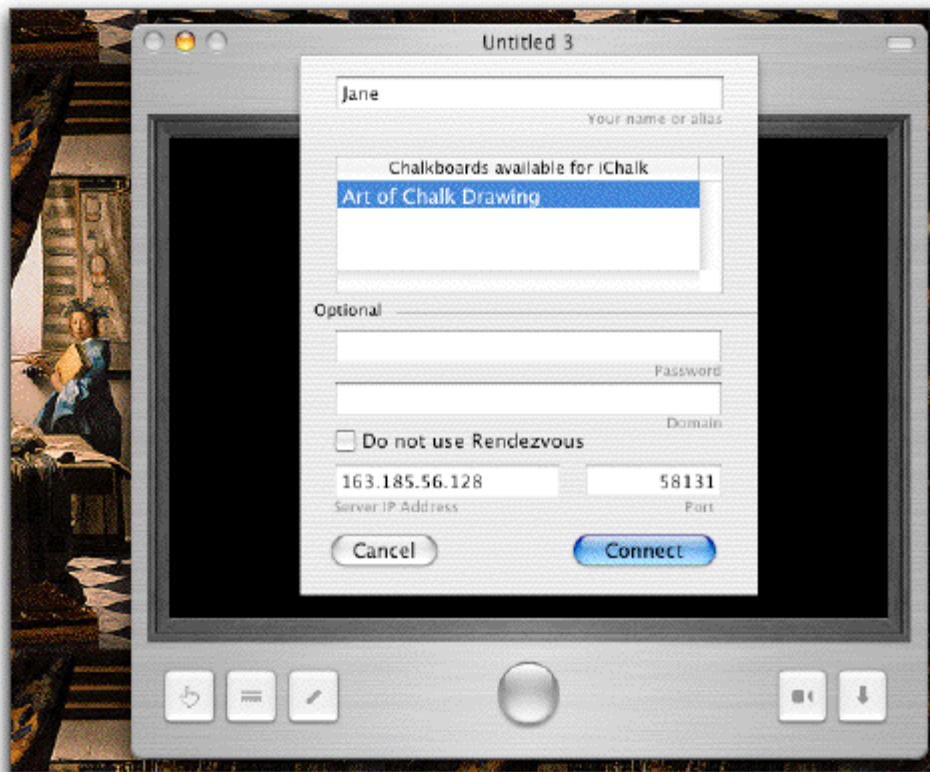
- Initially, *Server: Force Yield* in the *Connections* menu may be the best shot. It will take several steps to bring Green button to everybody.
- If it is certain that a particular member causes a trouble, the server can select the person in the users list available in the chat drawer and then issue the *Server:Drop Selected* command to toss him out.
- If the collaboration is image-heavy with fairly frequent changes in sizes exceeding 100 kb, it is strongly recommended to turn off the real time updating mode. One may also increase the real time update cycle in the preferences. Also, use the scale image feature of iChalk to alleviate the load.
- The group size may also be a factor. Use the optional “Max Allowed Users” feature in the Host window to cap the maximum group size to begin with. The server can also put a cap later via *Server:Toggle Bouncer* command in the *Connections* menu.
- Very rarely, one may encounter a situation where the button is green, yet can not edit the document. *Server: Unlock Keys or/and Force Yield* will usually resolve the situation.
- If, due to communication problem, documents are not synchronized, then try *Server: Fresh Copy* which will try to restore everybody to the last updated state. If it still leaves one stuck, then as the last resort, the person who is stuck may try Go Local in the Connections. You will drop out cold, but at least will gain full control of the document in the local mode. At least part of your day is saved. Note that if you were serving, but chose to go Local, you are no longer

connected to the document, but your machine may still be serving the document and others still connected to it. Be sure to save your work, and also open the Host panel (Command-Shift-K) and Retire before quitting.

. Joining a Chalk Session

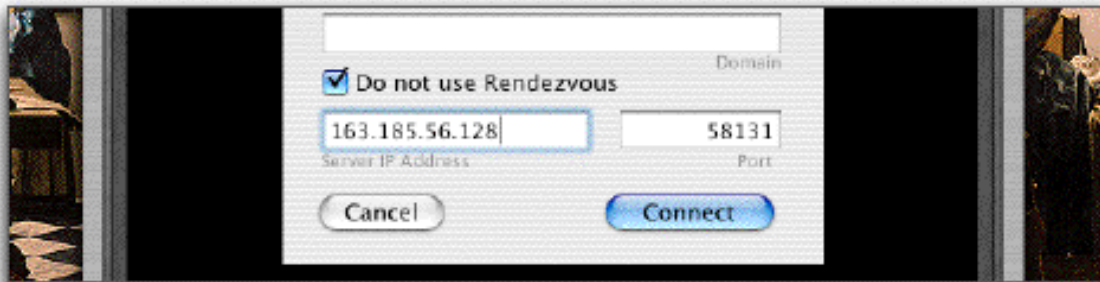
Now that your friend Jan has set up a chalk session, you want to join the fun. Start your copy of iChalk. Make sure you are connected to the local network, either through ethernet cable or via Airport. A blank chalkboard should open.

1. Click on the Connect button or choose Connect (Cmd-k) from the Connections Menu. You may also click the toolbar button  if it is visible in the toolbar.
2. Pick a unique name or alias for yourself (Jane) if you do not prefer the name iChalk suggested by default. (You can make the choice permanent by setting it in the Preferences.)
3. If you choose to use Rendezvous, you will see that it works behind you and has already found the session. If you see the document in the table, just click it to select, then press connect button.




4. If you need to type in the IP address manually, click the checkbox (do not use Rendezvous) on, and type in the IP address and the port number Jan gave you. Press the Connect button. With v3.1 or later, we have added a way to query the server machine and obtain available shared documents to be listed in the table, in a manner similar to how Rendezvous works. To utilize it, the server should have taken appropriate steps regarding Firewall and port opening. In that case, as soon as you type in the valid IP address (or even the machine name such as loki.stanford.edu will work if it is served by a DNS name server.) and the available documents on that server will appear in the list. Just click on the document: the port number will be automatically found. Then press Connect!

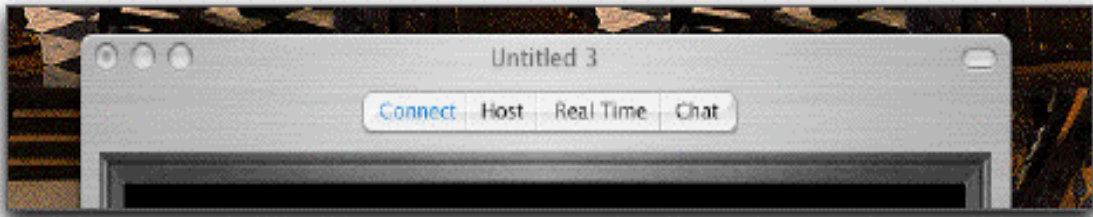
If you make a successful connection this way, the IP address of the machine will be stored in a list for your later reference. The list will remember the last 10 successfully connected hosts.



5. (To gracefully leave the session thus joined, follow instructions on section titled “Leaving iChalk”.)

If everything went well,

The Connect button in the document toolbar should lit blue,  indicating that you successfully joined the session.



On the bottom of the window, the button should have turned from gray to green. The document name and some relevant information are displayed there. If Jan had already started and is in the middle of editing the document, you would instead see the red button, and you will not be able to edit it unless Jan frees it.

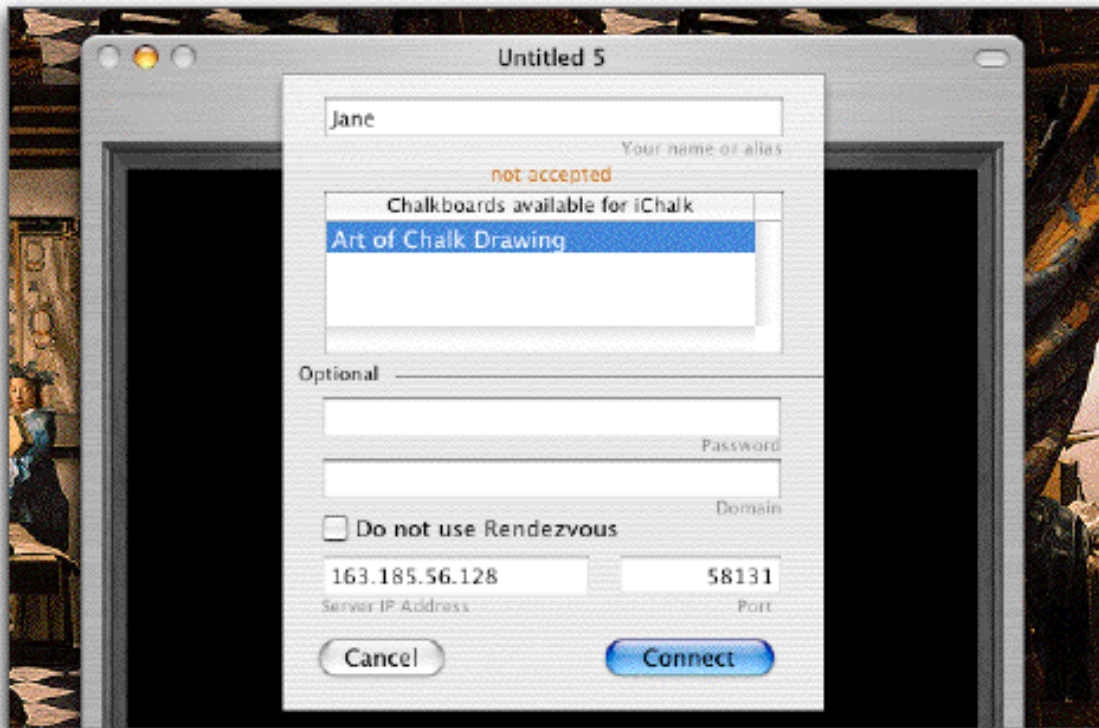


If you are having these troubles:

I pressed the connect button, but it will not let me join. An orange message appears below the Name/Alias field.

This happens if somebody else has already used your name/alias (Jane) and joined the collaboration. iChalk running on Jan's machine (as he is serving) keeps track of the list of participants and the name/alias you type in here is meant to identify you uniquely. A way around would be to add more descriptive words to it, such as "an Angry Jane".

OK. I made sure there is nobody named "Bad Jane", yet it still refuses with other messages.



This happens for various reasons:

wrong password The collaboration requires the correct password to be typed in the password field. Ask the host to find out.

no more clients accepted The host has decided that there are too many in the kitchen and therefore set up a bouncer. Beg the host to change its mind.

allowed clients number exceeded iChalk allows only up to two people using the same License code (this is the 16 characters code you type in the Preferences after purchasing the license) to join a group. May we suggest somebody in the group purchase his/her own license unless we have a multiple personality syndrome here?

maximum connections exceeded When the host starts a collaboration, he/she can set a limit to the allowed number of people in the group in advance. The number is reached and you are out of luck, until somebody leaves.

not accepted This may be the case where either the host or the client is using an older version of iChalk.

no clue! We don't have a clue either. Hopefully, nobody will ever encounter this message.

protocol mismatch:2.0 vs 1.0:Update iChalk. A message like this indicates that some one needs to update the iChalk.

I switched off (or lost) my internet connection, but intend to collaborate within our internal network served by a router. Suddenly, there is a long (about 10–20 seconds) delay (spinning rainbow....) whenever I try to serve or join a group using Rendezvous.

Please check at the end of the previous chapter on Hosting for an answer.

What is the best strategy to resolve a network–congestion related crisis during a collaboration?

Please check at the end of the previous chapter on Hosting for an answer.

Chalking the iChalk Way

Now that you and your friend Jane started a chalk session, you and Jane will end up spending some time having all kinds of fun, even forgetting about your original plan for the evening.

1. Click on the main window. If the big button at the bottom was green, you will notice it now turns blue. On the other side, it should have turned red, barring your friend from taking control.

2. Clicking on one of the three buttons (hand, the eraser and the chalk) at its left corner repeatedly, he finds that **each button cycles through different options**. They are followed by the color well and two more buttons: one for QuickTime movie making and the other for controlling pressure sensitivity of stylus.



Changing window sizes

With iChalk 3.0 or later, Jane finds that she can change the size of its Window. She finds that the joining party will automatically adjust its window size to match what is initially set up. The person in control of the document may even change the window size on the fly. All joined parties will see their document size adjusted accordingly!

The previously saved window size can be recovered by choosing the Restore Saved Window Size item in the Window Menu.

There are two limitations for changing window size that you may keep in mind:

If your document is being shared, the window size may be changed only when you have the control. (The button on the bottom of the window should lit blue.) If you were in the middle of adding a text block (caption) to the board, you first have to close the text input field before being able to change the window size.

Window size variation works only when every body is using the version of iChalk 3.0 or later. Changing both the size and the board color with pressure sensitivity on may yield an inferior image quality.

Explore what you can do with the tools

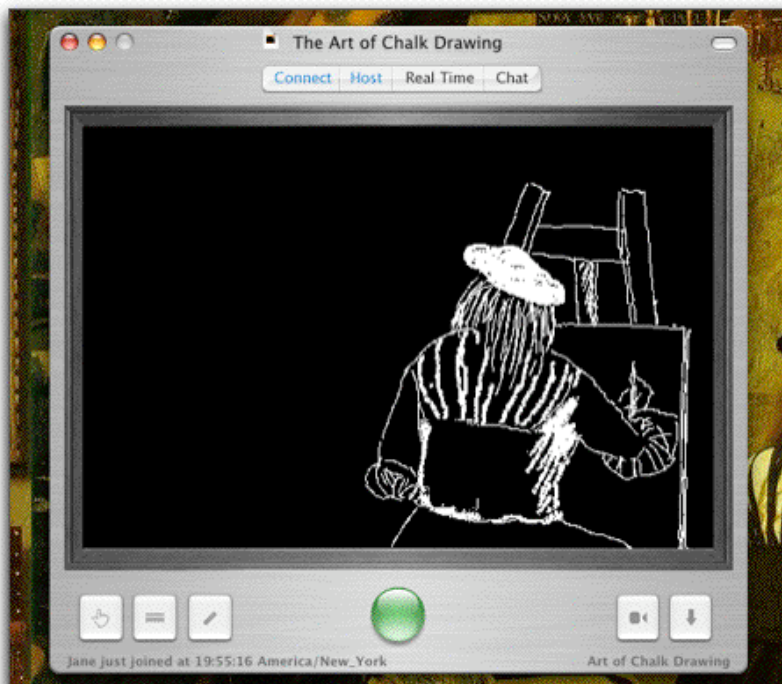
Chalks



Some of you may find the range of drawing tools offered in iChalk extremely limited. Given that there are amazing paint and drawing programs for serious professionals, we chose to offer an alternative approach. Let us pretend, at least while using iChalk, that quality of your final work is limited by your creativity rather than by the range of tools. We are not claiming that this is always the case. But when we watch a good artist go about his or her usual work, we are struck by the masterful, and easy-going strokes rather than by the variety of tools and pigments on their table. Of course you will not expect to create a Vermeer painting or a Miyazaki anime using iChalk. But how about an initial germ of such masterwork? Do you have your own studio with all those tools conducive to the flow of your genius in your house? What about the possibility of some spark coming off the rough sketch you and your buddy create? We would like iChalk to be a tool available for such needs. Current version of iChalk offers three types of chalks. We do not expect that everybody will agree with this Spartan way of thinking, and iChalk in the future may become more versatile. In the mean time, we would like users to experiment with the

boundary of their creativity under self-imposed constraints. Think Dogme cinema. Venus of Milo. Paper cuts of late Matisse. A New Yorker cartoon. All right. We are stretching too far.

In this spirit anyway, Jan created this:



Mmmmmm. Given Jan's initial ambition regarding Jane, we think he could have done a little better. But it is for a start, so let us hope for the better later on.

First, he finds that the chalk tool cycles through three different sizes as he keeps clicking on the button. Double-clicking on the main drawing board also cycles through the currently selected tool. However, if you use a stylus, you may find the board responding to double-clicks tend to interfere with your rapid strokes. In that case, you may switch off the response behavior by clicking the appropriate button in the tool chest.



[The tool chest is accessed by clicking on the empty area (marked yellow above) to the left and right of main button at the bottom of the window. It can be done also from the menu.]




Selecting a chalk, Jan notices that the granularity slider becomes available which controls the texture of the chalk. In the tool chest, he also finds a color well to choose different colors for the chalk.

When you choose a different tool, the chalk tool switches back to its default (medium size) or maintain your choice depending on how you set it in the Preferences.

Attention: Wacom tablet users

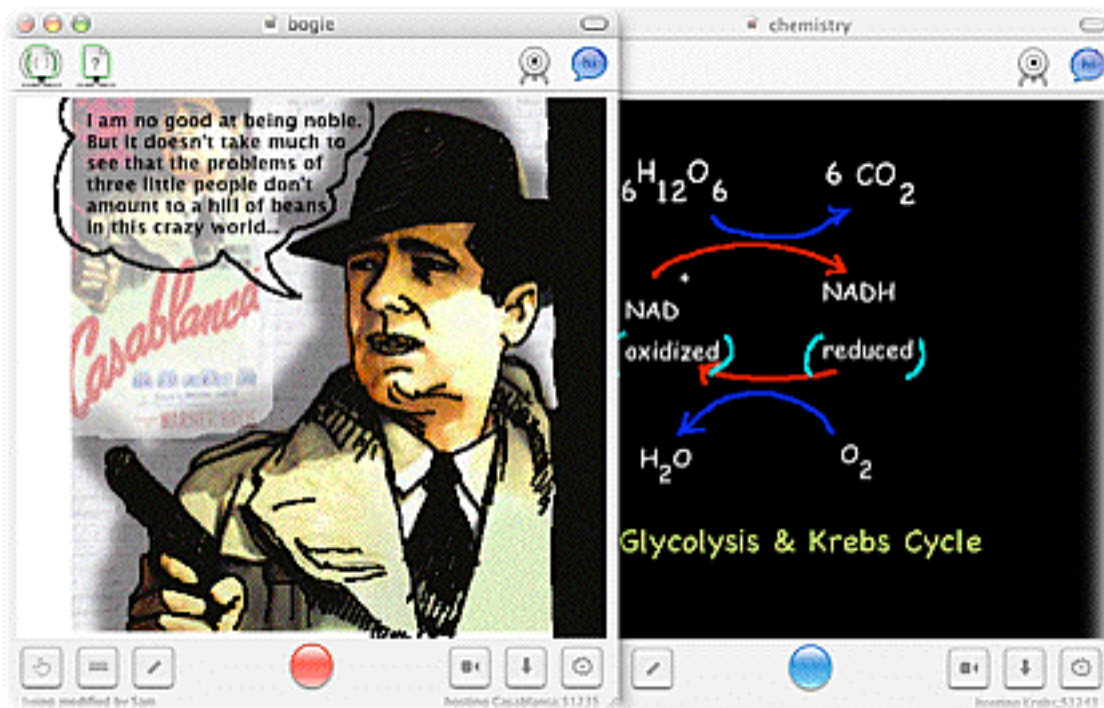
With iStorm/iChalk version 3.0 or later, the eraser on top of wacom stylus is automatically recognized. Just flip the stylus while using the chalk tool, and it will automatically function as an eraser with its size determined by the current chalk size.

[v 3.3 and later only]

 The last item in the chalk tool is the caption/text block tool with which you can type in rich text line by line. (You can change the style, color, baseline (super- or sub-scripts) etc in the middle of composing a line, or apply to the whole selection in the line during its composition.) Since it is primarily meant to be adding something like speech bubbles in a comic book panel, it has a limited editing capabilities. Just click on the board and start typing a simple line. When you are done for the line, press return key for the next line. If your line needs to be extended horizontally, just click on the board where you want the left-bottom corner of the block of text to be. When you are done with a few lines of text, how do you terminate the process? Press Tab or Esc key. Or simply press the return key twice in a row (as if you want to enter an empty line). The board will take it as your signal to terminate the process. That way, you are saved one more trip to the mouse.

If your line needs to be extended horizontally, just click on the board where you want the left-bottom corner of the block of text to be.

When you are done with a few lines of text, how do you terminate the process? Press Tab or Esc key. Or simply press the return key twice in a row (as if you want to enter an empty line). The board will take it as your signal to terminate the process. That way, you are saved one more trip to the mouse.



The figure above shows the kinds of things you can do with the new caption tool. When you input a line of caption, remember that you can change its various attributes such as font, size, color and base line. [for super- or subscripting, use Command-}, Command-{ and Command-| .]

Once you have created a caption block like this, then you can use the caption-hand tool (part of the Hand tools below) to reposition or delete it later.

Currently, this tool does not offer a way to revise an existing caption, though.


Erasers



And we have Jane to save Jan. In the following figure, we see that Jane is indeed trying to help Jan by taking control (red button on Jan's side, blue on Jane's) and adding a figure. It is not exactly helping Jan, but she seems to have a distinct style of her own.... She even dared erasing some of Jan's drawing, without his permission!

The eraser button cycles through three different types. The first one with the rugged bottom has a slightly annoying feature of leaving some dust. This is partly developer's whim, and partly to provide some sense of history of activity on the board as it gathers dust and leaves trace around. The more you use it, the more dust it will gather, up to a point. The second one with flat bottom will correspond to super-clean eraser with slightly bigger size. (The dust on the first one is reset to minimum once you choose the super eraser.) The third one, which looks like the eraser tip of a pencil provides finer eraser control.



 The last one is for erasing a text box. It does not allow erasing individual characters but the whole block of text (caption) whose rectangle center lies closest to the mouse point. If one wants to delete several captions at the same time, one may use the caption hand tool to select the captions (by Shift- or Command-clicking them) and pressing the delete key.

With iStorm/iChalk v3.0 or later, pressing option key while using either the chalk or the eraser will double its size. Control-key will quadruple the size. This is useful especially for iChalk v3.0 or later when the window size has been enlarged and the normal tool size is no longer adequate in size.

Puffers



Choosing puffer and clicking on the board erases all previous drawing of Jan. A feature Jane is resisting hard to use now. It cycles through three options. First, it will erase only the front

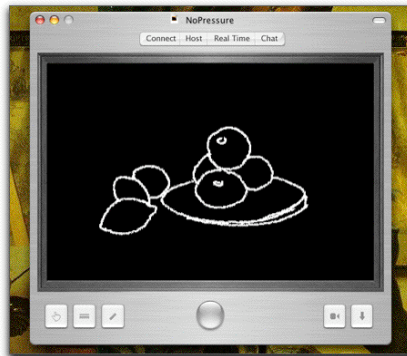
layer (the one Jan drew with chalks). The second setting will erase only the background imported image, if any. The last will erase both. This action has limited undo support.

Pressure Sensitivity



Jan has a pressure sensitive stylus, so he can take advantage of it by toggling the button for pressure sensitivity. Both the chalks and erasers become pressure sensitive when the button is lit blue. Even without pressure sensitivity, he finds that the use of tablet and stylus immensely enhances the experience with iChalk.

This is how Cezanne would start his still life with a stylus without pressure sensitivity.



With the pressure sensitivity on, one could be much more expressive as show below. We are aware that most art teachers will still cringe at the drawing below.



Of course, having full color helps mask your deficiency in sketching.





Undoing a stroke

iChalk has somewhat limited undo capability. Only the immediately preceding stroke will be undoable. This limitation is due to some compromise we had to make in optimizing the network communication of changes made.



Hand tool



The hand tool is for moving the picture into programs which accept dragged-in Tiff images, such as Apple's rich text editor, or Microsoft Word. When moved onto Finder, it will be in the format of in the format of the ubiquitous tiff file, which may be imported into Photoshop or similar programs for a very serious touch-up. (We find jpeg is the most convenient format for general use. iChalk can save the board content as a JPEG file as well as its native format.)

The first two hand tools will give you either original drawing  or an inverted color version  of the front layer (only those touched by a chalk or an eraser) plus the background image if any. The relative transparency of the background image as set by the transparency slider control is preserved. If you want to move only the chalk drawing, adjust the slider so that

background image becomes invisible. These two hand tools do not copy the board color. Therefore, if the imported image is set to be transparent, you will see that only the chalk drawing will be moved with clear (transparent) background.

The last two hand tools are to move both the chalk (normal  or inverted ) and imported background images and the chalk background color.

When a background image is imported, it is automatically resized to fit inside the current board, while preserving its aspect ratio. Sometimes, one may want to trace only a part of the image with its size enlarged.

With v3.0 or later, you can rescale and move background image to do that: With any of these hand tool chosen, press **option key** while dragging the mouse to make a rectangular lasso around the area of the imported image to be enlarged. Upon releasing the mouse button, the image will be resized and moved in proper location to let you focus on the area of your selection.

This is undoable with limitation. Once you zoom-in on the background image, you can not zoom out to an arbitrary size and location. The only way to do so is to drag in the original background image again.

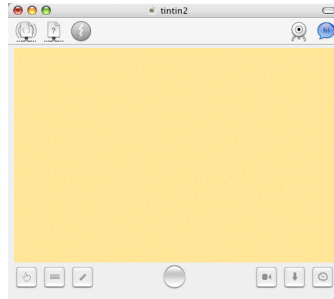
Attention: Users of iChalk version 2.63 or earlier

Please note that the behavior of the hand tools described above is subtly different from what you had in earlier versions of iChalk.

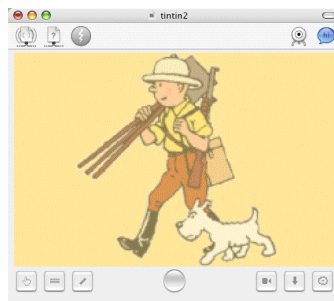
Confused with too many hand tool options? Let us assume that you imported a gif image of Tintin and Snowy with transparent background and traced over it using a black chalk, while having the chalkboard color in yellow. [The following

description applies to iChalk 3.0 or later. Earlier versions may yield different results.]

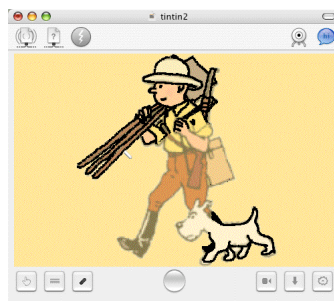
Start with an empty board with its background color chosen yellow.



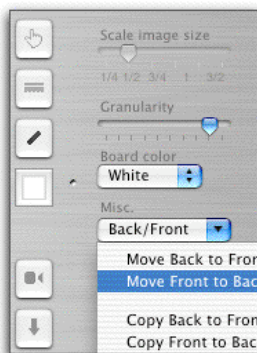
Import a gif image with transparent background.(With alpha channel). Note that many images do not have alpha channel. In that case, the background image will fill the whole rectangular area, obscuring the yellow board background.



Choose a chalk tool with black color and begin tracing. Note that one can adjust the strength of the background image by Transparency control slider in the Toolchest.



Here is the grand summary for what is moved into a Keynote slide with different combinations of transparency and hand tool selections after you finish tracing.



Another way to move images back and forth is to use the Misc. selection bar in the tool chest which gives four different ways to move or copy the images from back to front or vice versa within iChalk.

Normally, iChalk shares only what is on the front over network. The background is hidden from other members. The move- or copy- to Front operation provides a way to share an image. Of course, one can drag the image into the main document window. The move to back operation is handy for rotoscoping (more on this

later) and the same functionality is accessible also from a button which appears (named “to Back”) next to the Quicktime movie button.

One can exchange commentary on an imported image by first making it to the front (to have it visible to others). Add your own commentary, and send it over for others to add their own.



The last hand tool is for selecting and moving caption (text block) around in the blackboard.

Scaling image sizes to move

When you use one of the hand tools to move image outside iChalk, you can use the image size scaling slider control in the tool chest to make it smaller or bigger.

The video frame grabber: [for v2.5 and later]



If you have a web cam or a digital video camera, connect it and switch on before starting iChalk. Choose "Video Grabber" in the Tools menu or click on the frame grab button in the toolbar. A small window named "Grab Video" will open and show the video in real time as long as the window is active. Click and drag the image either into the iChalk document, iChalk window or Finder. You may use this to write a lab report for your chemistry class using the video footage you made in the laboratory. How about a quick inventory of junks on your desk? Or you'd rather think you look cooler than Tintin?

Explore aspects of collaboration

iCourtesy: If you take control and do nothing for too long:

You thought you had such a cool idea and seized the control but immediately hit the painter's block, if there is such a thing. At the same time, you just remember the Grater's ice cream in the fridge, and then caught the sight of Princess Mononoke on TV on your way back to iChalk. Having realized that you don't have to worry about your pigments going dry with iChalk, you settle in front of the TV for a while.

If you dare do this while Jane is waiting for her turn to finish that right foot of the figure, iChalk will have to do something to save your relationship. After a few minutes (which you can change from the Preferences) of such indulgence, iChalk will automatically yield your control so that Jane can finish her masterstroke.

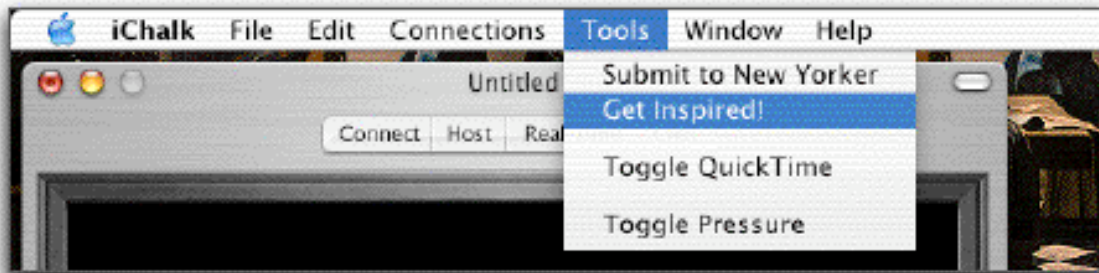
Real time update:



If you and Jane have fast and robust connection, you can send your update every few seconds (the interval can be changed from the Preferences) to the other person while drawing on the board. You turn this on and off either from the Realtime button in the toolbar or in the Connections menu. We strongly discourage you from using this feature if you have a slow connection (especially across internet) or if you constantly move large images back and forth. It often bogs down the performance due to network contingencies. You will notice that the response of the chalk may not be as natural. Use it only to impress your Windows friend or uncle who is still championing OS 9.

Be inspired!

In our sparsely populated Tools menu, you will find two unusual items:



The one called "Submit to New Yorker" is our quirky way of paying tribute to the venerable institute which is universally identified with the inspired cartoons. We hope that some of you will knock this very difficult-to-pass but worthwhile door with your inspired creation someday. Let us quote what Mr. Mankoff, New Yorker's current editor of cartoon department said in an interview: *Cartooning is creativity stripped down to its core, because it's removed from the real-world constraints (and consequences) that complicate other applications of the creative mind. It's a form of play which depends on spontaneity and, by extension, creativity. Bob Mankoff*

Another item called "Be inspired" will take you to a random choice from our carefully selected web sites which feature timeless awe-inspiring arts as well as art works from children all around the world. The available sites will be periodically updated and iChalk will automatically fetch the updated list.

If you have problems or questions:

I connected the camcorder, but the frame grabber still complains that there is no video source.

You may have switched on the video camera after iChalk launched. Please quit iChalk, make sure the camera is turned on in a appropriate mode, and re-launch iChalk.

I connected my digital camera and the video grabber doesn't work. Please don't tell me that digital camera is not a video source!

Unfortunately, digital cameras do not interact with your computer as the camcoders do, and iChalk is not yet capable with utilize digital camera input. We heard rumors that one may force some special brands of digital camera to work like a web-cam, but we could not verify it.

Any luck with analog video camera?

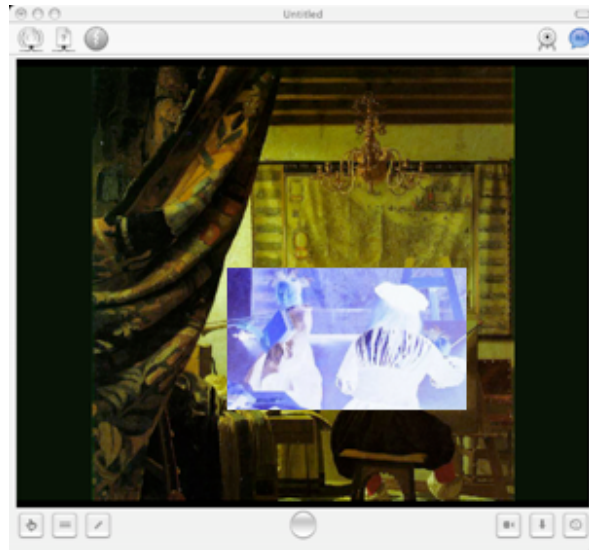
If you have a third party video card installed on your machine and if the Mac receives video signal from an analog video source, it may possibly work without glitch. However, we could not test this possibility ourselves. Please let us know your story, if you had success with it.

Naturally, I wonder why real-time movie capture is not offered?

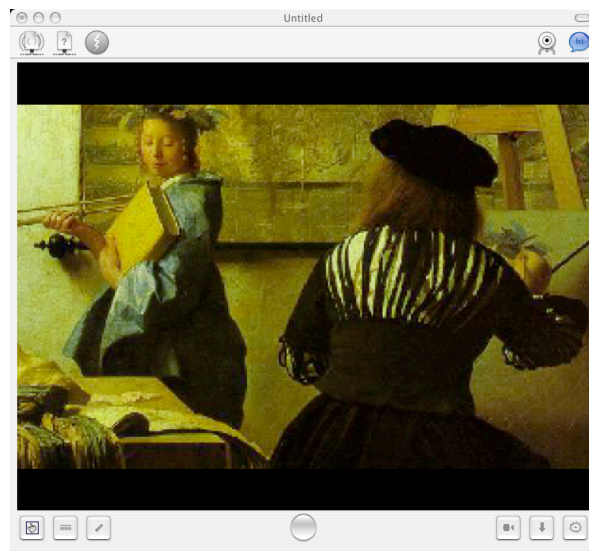
Given the array of Quicktime functions utilized by iChalk, it is indeed natural to expect so. However, real time video grabbing is a very intensive process and likely to conflict with the idea of seamless collaboration. If you doubt this, try video capture in iMovie and feel how it affects other processes. Furthermore, while recognizing that it could be essential for some type of collaboration, we believe that exchanging a few frames may often be more productive.

I dragged in a huge image. I need to trace only a small part of it. How do I enlarge only part of the image?

With iChalk v3.0 or later, you can easily do it by:
First, drag in the image.



Second, choose the hand tool if it is not selected already. Then with the option key and the mouse button pressed, drag the mouse to select the region to be blown up. Releasing the mouse button, the background image will be replaced with a new one with the selected area.



[The images here were taken using iChalk v3.0. They may look different for iStorm or other versions of iChalk.]

I have only a small sketch in the document, yet the saved document size is several megabytes? How come?

Most likely, you have dragged in a large background image into the chalkboard to trace, and set it to be transparent. Having made it invisible, you see only the part of your drawing. When you save the document, however, iStorm/iChalk saves the imported image along with your own work. If you find it unnecessary, resave it after removing the background image using one of the Puffer tool.

Buttons and Controls

The most conspicuous thing that strikes you when you open an iChalk board would be the big round button at the bottom of the window. We thought it important to minimize the user interface elements so that you can concentrate on the creative process without a moment's confusion in front of the control panel of a Jet plane. Therefore, it is there to serve most of the important functions during your collaboration.

The Button as Status indicator

The colors of the button in iChalk display the status of the document.

[The look of the buttons may differ depending on the setting in the Preferences.](#)



You are not connected to a shared board yet or have lost connection to one.



The board is open for anyone to grab and edit.



You are editing the board. Others will see Red.



Someone else is editing the board, and you can not take control. (It also enables you to snatch control, if you are desperate. See below.)

The Button as Control



The button when pressed while it is green will try to take control of the board for you if it is available. When the board is free, just pressing a tool button will grab the control.



Pressing it when it is blue (while editing) will update the board for everyone else, and free up control. To avoid yielding control while sending out the update, press control-space key instead.



Pressing it when it is red twice will send a private message to the current holder of the document saying you'd like to get the control as soon as possible. (Both parties will hear the "Frog" sound when iChalk does this.) Pressing it repeatedly further four more times in a row will snatch the control away from the current owner. Do not use it unless you know what you are getting into.



The button can also be activated by pressing the [command and return](#) keys together.

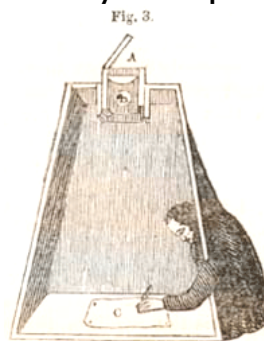
Other control elements

There are times when you are rapidly drawing, and do not want to be interrupted. At the same time, you would like others to follow you closely. You already know that pressing the Button (or Command-Return) will update the board on their window, but will also yield control momentarily.

In such special occasions when you can not afford to lose control, you may press Control-Space to send updates as frequently as you'd like while maintaining the control.

Camera Obscura : Cheating the iChalk Way

After spending some time on iChalk, it dawns on Jan and Jane that maybe their creative talent lies somewhere else. Their first trial, as we witnessed, left a lot to be desired. Jan can no longer claim direct genetic link to any of the Dutch Masters. Always being a supportive friend, Jane remembers reading about David Hockney and his claims on Old masters cheating with a device called Camera Obscura or Camera Lucida. Hearing this, Jan grins since he knows iChalk has something in store for them. Welcome to the world of "Trace drawing", the best friend of not only second-rate artists but also the Masters, according to Hockney and professor Steadman.



(Image courtesy of brightbytes.com)

1. Find a picture (in standard format such as TIFF, jpg, gif, etc.) which you always wished to be of your creation. Drag it into the iChalk board.



2. If Jan sneaks upon Jane's computer, he will see that the the Tintin picture is not on her display. The picture is loaded into only your screen as a "background". If you would like to change the picture, just drop a new one. If you want to remove the background altogether to make it black, choose the third hand tool and use it to grab the background and toss it out. But for now, we want to use the picture, as Jan knows that Jane has a devastating craving for Tintin. Here comes Jan's last chance to save the evening.

3. Switch background color to white. Select an appropriate chalk, turn on the Real time mode. Choose black for chalk color. And trace the image slowly in a masterful manner.



4. In the living room, Jane will be in astonishment finding something truly charming about Jan for the first time! Here is what she will see:



5. With the addition of Snowy as if an afterthought, Jan has regained Jane's respect he lost earlier this afternoon.



Who did say that technology doesn't help and only complicate our lives?

From iChalk To QuickTime

There was a time when the master artists could build their career on still life paintings. On the other hand, many masterpieces are admired for their dynamic element, the motion captured and frozen for posterity. Our age is that of the hyper-kinetic. We have evolved ourselves to find pleasure not only in the beauty of an object, but also in the sensation of succeeding "frames".

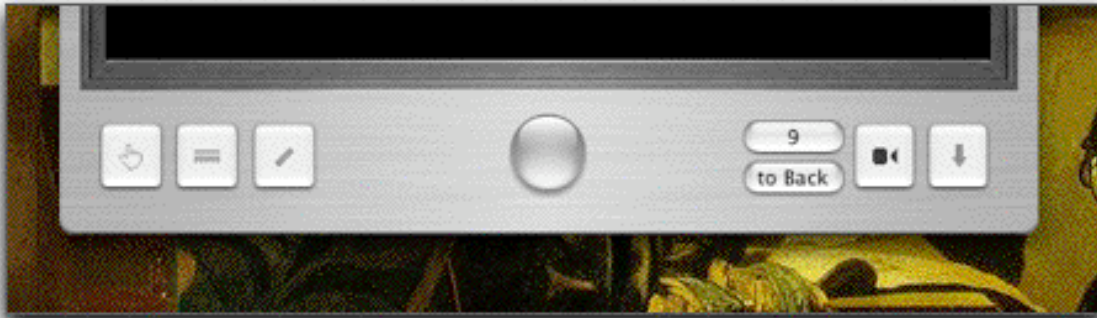
iChalk invites users to experiment with changes and transformations by providing a small tool to capture images into a QuickTime movie. To some, it will not serve any practical needs at all. Potentially, one may want to archive various stages of a brainstorming session to review them later. Some will be just fascinated by being able to do it.

Some of us had spent hours tracing favorite comic book panels one scene after another when ten years old. Current generation satisfies the same impulse with hours of digital video footages. Programs like iMovie makes it look easy to create a stunning video. So why go retro? We would like iChalk to fill some gap by providing a very casual and inexpensive way to create amusing clips which champions wit, humor and intelligence above all. (Making a short motion clip using this feature is not necessarily a vital element of "collaboration" over network. Users may find that careful planning and hours of "solitary" effort are required to produce something amusing. But that is a good lesson to learn, even for a budding digital cinema auteur.)



1. Click on the QuickTime button. It will ask for the name of the movie file to be saved. Give a name, such as "testmovie1" making sure that the file is not open at the moment by other program such as Movie Player. After successfully creating the empty movie container file, the button will turn blue to indicate that you have a movie file ready to accumulate clips. Two

additional buttons will appear and remain visible until you press the QuickTime button again to close the movie file.



2. The button on the top (which initially says "0") is for adding a frame. Most people will find it easier to press the Tab key to do the same. The number of accumulated frames will replace the current number. If you add a frame by accident, you can edit it out in the QuickTime Movie Player program (upgrade to Pro may be necessary). The button below ("to Back") is for moving your current drawing into the background. (Escape key will do the same.) Its purpose will be explained below.

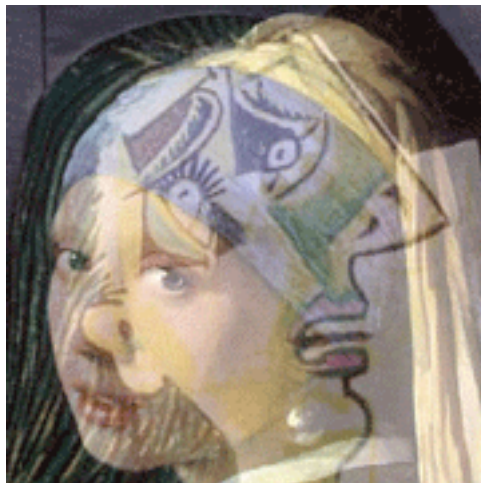
Simple animation

With the movie file open, start drawing or tracing an imported background. After every meaningful stroke, press the add frame button to accumulate frame. Note that quicktime movies with hundreds of frames tend to be large in size, and we recommend you limit yourself to maybe about a hundred frames per movie. Here is what Jane created after Jan confessed about the tracing feature he found out:



Smooth animation

From Vermeer to Picasso. Here Jan started out tracing the famous Vermeer (Girl with the Earring). After it is done, he tossed out the background picture, and replaces it with a Picasso. Using it as a guide, he gradually erased the Vermeer and added bits of Picasso, while diligently pressing Tab button every few strokes.

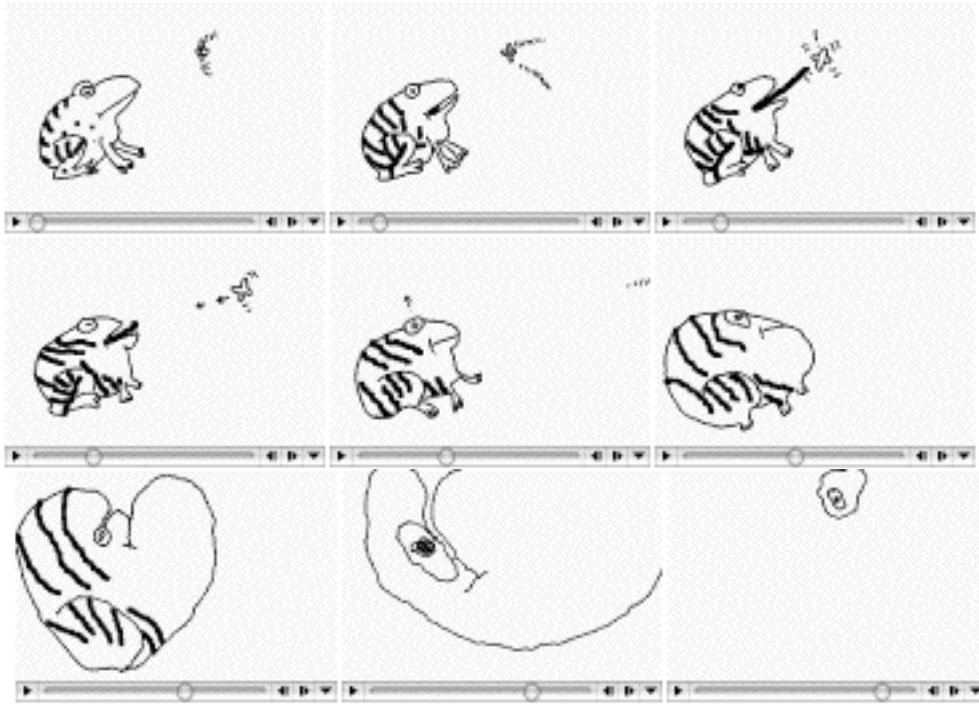




Advanced animation using backgrounds

Unless you have genius in animation, you will find it rather difficult to create a smooth animation, even with the help of a background picture. That is because as you move along the succeeding frames, the scene eventually changes significantly from the static background, if you use one. More helpful will be if you use the previous frame as a template for the next frame. Here is how:

1. First, open a QuickTime movie. Drag in a background picture if you want to start with a guide.
2. Draw a small scene. In our example, we start with a frog and a fly.
3. Add the scene as the first frame in the movie file. Then press the "to Back" button. You will notice that the scene is slightly dimmed and recede into the background. Notice now that you have a blank board with the first frame as a background (guide).
4. You may trace it with variation appropriate for the next frame in the movie. For example, the fly would move a tiny bit, the frog may move its eyeball a bit. After you finish drawing the second frame, add it to the movie file. Then move it to the background by pressing "to Back" again.



Anyone who ever tried to make an animation or stop-motion movie seriously should know the drill as well as the amount of patience that will be needed to finish one. Will Jan have the patience to do it? It seems he does, looking at the following animation.

The Chat Module

It is difficult to imagine the master artist being talkative while painting the masterpiece. As we are not Leonardo, however, some of us may need to talk while working on our humble drawing. And your need is justified if you are engineers working on a prototype anti-gravity machine as you will have a lot to discuss... (make sure you use the password!) Can you think of any chalkboard activity carried out in total silence? If not, you will find the chat module somewhat essential. At least, you may attempt to play Pictionary when your creativity runs out.

As the native iChalk document saves the transcript of the chat module as well as the board content, you may revisit what went on line by line during the session, and try to grasp a deep undercurrent which you missed during the heat of collaboration.

Draw a cartoon and run an impromptu contest for the best caption!

When the text falls short of expressing your feeling faithfully: [version 2.5 or later]



The small round button in the chat message compose area is for recording and sending a short voicegram. Click on the gray button (or Escape key if your cursor is in the message compose area already) to start recording. The button will turn red. (The maximum duration is 10 seconds. Make it brief and to the point.) At the end of your message, just press the button again to stop recording and immediately send the message. You can not un-say what you sent. Unless you stop it yourself, it will automatically truncate at 10 seconds and send it away. Remember that this is not intended as a substitute phone.

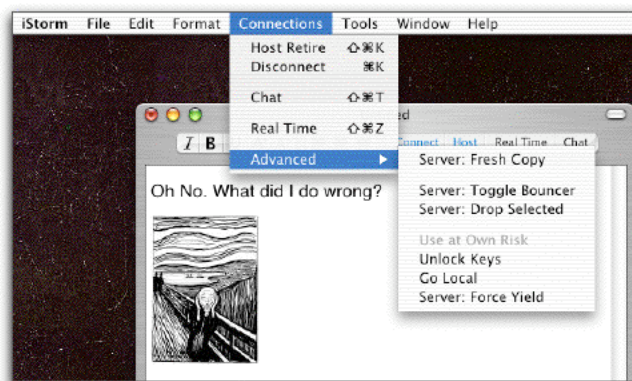
Umbrellas for iChalk

The Most Common Problem

You may occasionally run into trouble due to imperfection in iChalk or in your network condition. The most common problem occurs when you have real time mode on with the update-cycle set to less than a few seconds. While it is impressive to have your drawing almost instantaneously updated at the other end, for complex pictures and less than optimal network conditions, it is possible to lose some of the data. When this happens, the first thing you may try is to switch off the real-time mode as it is most likely the culprit. You may, instead, try to increase the real-time update cycle time to more than three seconds in the preferences.

The server (who started the shared board) may order everybody to make fresh copy of the last transmitted board by issuing the "Server: Fresh Copy" command in the Connections:Advanced menu. (See below) This way, everybody can make a fresh restart with good part of data retained.

Using Panic Items in the Menu



*Needless to say, we had told you to SAVE often. That way, at least someone in the group has the up-to-date copy of the group work, and in the worst case, the whole group can start from there afresh.

If not, before folding the table, try one of the items from the sub-menu humorously titled "Advanced" in the "Connections" menu. Please do not try them if not as the last resort. Some of the items are available only for the host. As someone who did extra work to set up a collaboration, we thought he or she deserves some extra control. They will be gray-out for non-hosts.

***Unlock Keys** The most benign problem may arise because some of vital exchange of information got sucked into a network congestion. This could have left the server in an inconsistent state, especially leaving its content in a "locked" state. Any subsequent attempt to change the board content may be silently ignored. Here is what you do: in the Connection menu, go to the submenu called "panic", find the item called "unlock Keys". It is safer if you do this when everybody has green button.

***Force Local** More serious trouble may have left your connection in such a mess that you really feel like opting out to rescue whatever remains on your machine. Item called "Force Local" will force yourself dropped from session into the local mode. This is similar to the normal "disconnect" mode, but this time you do it without notifying the other members of the group. This may leave other people (if they are still there) in a slightly confused state since they still have you in their list. But what do they expect? You didn't cause this yourself! As a penalty, you may have trouble joining again later, since the server still carries your (ghost) name with it.

Server only

***Server:Force Yield** As the server, you (and only you) have the authority to make anybody in the group yield control of the document. This is for when, for either a psychological or physical reason, one can not let go of the hold on the document. The item called "Server:Force Yield" will cause the document to be freed. (assuming that everybody still listens to and obeys you....) If your collaborator keeps you on hold for

unreasonable duration, bribe the leader of your group to exercise this option.

***Server: Fresh Copy** When network congestion forces an update process to terminate prematurely, some members in the group may end up with a corrupted document. If you suspect that the users do not see the same content in the board, the server should issue the "Server: Fresh Copy" command to re-synchronize. It will initiate a process where every member will restore the document to the state when it was updated the last time. (just one cmd-return key ago) It will be rather unfortunate for someone who is in control and is busy editing it at the very moment, since it may be lost, but it is better to pull everybody up to speed before it gets irrevocably out of control.

As you know by now, it is possible for the server to remain serving while not being a client to oneself. That is, one can do all the drudgery not participating in the collaboration by disconnecting from oneself. In that rare situation, one should not exercise this option as it will replace the group work with whatever is locally on the serving side.

***Server: Toggle Bouncer** This is one of the preventive measures the server may take when the size of the group becomes uncomfortable for efficient communications. When this menu item is turned on, iChalk will put up a blunt bouncer against anyone who tries to join the group. (He will be immediately fired when the host deactivates it.) If one could foresee the problem, then the maximum number may be set in the Host panel at the beginning of the collaboration.

***Server: Drop Selected** The server may choose a group member in the list (accessed in the Chat drawer) and toss out. We hope it is with a good reason. One legitimate reason could be to remove the ghost client out of the way. A client becomes a ghost when he or she chooses the "Go Local" in panic for some reason. [Under normal circumstances, the member should have left the group by choosing "Disconnect" properly notifying everybody in the group.] The ghost status will remain so unless the server detects it and take care of it as part of its automatic

patrol (see below). While it is better to keep clean account of everybody, this may not be a critical issue for most cases.

Hijacking the control of the session

We hope you will not be reading this and find out about this shameful technique. When the status button is red, if you press it once, the auxiliary window opens for you to while away. However, if you persist and press it six times in a row, it will grab the control from the current (and rightful) owner. Now, let us see what a brilliant idea you had to justify this!

Fine tuning the connection timeout parameters

In the iChalk Preferences, you will come across the Network section with various timeout and tolerance parameters. Finding the right parameters may be critical for a smooth session especially when group members have a wide range of network quality. With some patience, you may be able to dramatically reduce need for "umbrellas" tweaking these parameters. We find that 120.0 seconds for Host timeout works for both LAN and internet connections. Client timeout may be between 5.0 and 10.0 seconds for fast LAN, maybe 30.0 seconds for internet. Poll interval for host may be as small as a few seconds, but give it at least 30 seconds, if you anticipate a laggard among your clients.

Leaving iChalk

Leaving a collaboration

So, you feel that you had enough of your collaborators' company. Or you are being called at the dining table. How do you leave the group behind?

Save the document

If you choose to save in the native iChalk document format (default), all the content of the document including the transcript in the chat window will be saved. If you save as a generic JPEG file, it discards the chatting content. This will save a file compatible with most Graphics programs such as Photoshop as well as document editors.

If you were not hosting:

Your responsibility is little. Click the Connect button on the toolbar or choose Connect (command-K) to bring up the connect window. You will see the blue button, which says Disconnect. Click. All others remaining on the collaboration will hear a rude door-closing sound and your name will be dropped from the list of people in the group. From then on, your document remains local and you are free to do whatever you desire. Your collaborators will go on as if nothing important happened....

If you were hosting:

You are just about to drop all your collaborators cold. With a heavy heart, click the Host button on the toolbar or choose Host (command-shift-K) to bring up the Host window. You will see the blue button, which says Retire. Click. This sends signals to everybody in the group notifying them that you are retiring. Each of them will then stop, and will drop their connection. If everything goes well, everybody will have

dropped connection, with his or her document in the local mode.

Closing an active window

The first thing that happens is equivalent to choosing retire/disconnect described above. You will be asked if you would like to save if the document is dirty.

Daring to go beyond your local neighborhood?

So, you believe yourself to be among the jet-set crowd, with urgent need for a session with colleagues across the Continent and the Atlantic... The very fact that you are reading this manual yourself now seems to contradict the notion¹, but it is not our job to offer you some psychoanalysis. Let us assume that you are genuinely interested in what's happening beyond your domain.

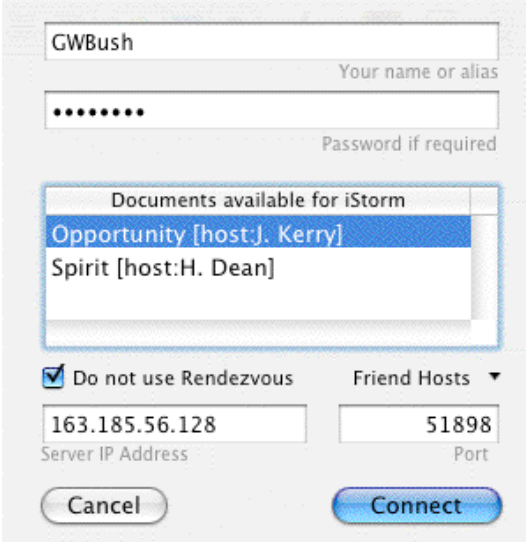
It is possible to use iChalk over the Internet if proper steps are taken depending on your network configuration. Lest you should disappoint yourself, you may first want to adjust your expectation here. For a reality check, run an ftp program and try downloading a file of size about 100 kb. What used to be possible within local area network during an eye-blink now requires at least a few seconds. Now, try uploading a file, if you can. As most stingy DSL or cable service providers place a gag on your uploads, you will find it even slower. Even though impressive progress has been made in online-gaming and video streaming lately, a free-form collaboration poses more serious challenge with all kinds of contingencies. We alleviate some of the lag-problems by making iChalk multi-threaded and have it use differential updates whenever possible. Still, a satisfactory experience may be expected only when every member of the group has a robust (DSL or better) connection speed. According to science and telecom sources, we are entangled with fiber-optic cables all around but our neighborhood. (we are still digging our backyard and yet to find that optical cable!) In the near future, iStorm may benefit

¹ A recent news article revealed that Bill Clinton sent out an email only twice during his entire term as the president of USA. One of them was to see if he knows which button to press. Now this is a standard you should aspire to!

from such infrastructure and we will happily dispense with this paragraph.

Connecting to an existing collaboration over the Internet

First, easy one first. You should have received the WAN address of the serving machine already either through email or by phone.



The screenshot shows a dialog box for connecting to a document server. At the top, there is a text field containing "GWBush" with the label "Your name or alias" below it. Below that is a password field with seven dots and the label "Password if required". In the center is a list box titled "Documents available for iStorm" containing two entries: "Opportunity [host:J. Kerry]" (highlighted in blue) and "Spirit [host:H. Dean]". Below the list box is a checked checkbox labeled "Do not use Rendezvous" and a dropdown menu labeled "Friend Hosts". At the bottom, there are two text fields: "Server IP Address" containing "163.185.56.128" and "Port" containing "51898". At the very bottom are two buttons: "Cancel" and "Connect".

In the Connect sheet, check Do not use Rendezvous button. Then the available document list will initially go blank. Type in the WAN address you received from your friend in the Server IP Address field. Press Tab key. If the server is set up properly, the list will show all available documents on the host at the typed address. Select the one you want to join, and the port field will be automatically filled. Press Connect button to join.

If no document shows up in the list, maybe the server's configuration was not good enough to provide the documents list. In this case, you need to manually type in the port number in addition to the IP address. If the friend did not give you the port number already, maybe you should make a phone call now.

The pull down menu titled Friend Hosts appears when you check the Do not use Rendezvous option. It remembers the last ten successful hosts, in case you find it tedious to type in the server ip address. If the host's machine is served by a domain name server, you can also type in the machine name such as sword.whitehouse.gov, instead of its boring numeric address.

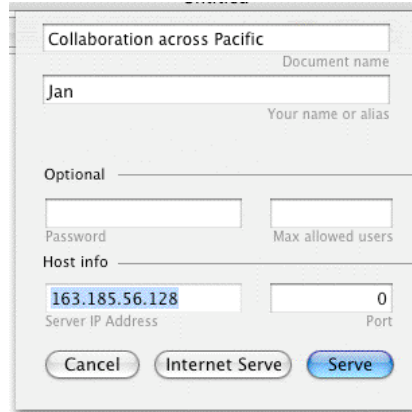
Serving (Hosting) a Document over the Internet

Making the shared document accessible to outside world requires some serious effort in today's security-obsessed network environment. This burden, not encountered by on-line game players or chatters who need only to connect to a big, inviting servers, comes about since you aim to do the serving, usually multiple documents to different set of people. To do so requires opening your machine to the outside world to varying degrees.

We can not possibly address all possible network variations, and we can offer only some hints here.

Get to the Point Already!

With iChalk 3.1, we added some features which will provide pertinent information to make it easy to serve over internet. If you are using an earlier version of iChalk, please make sure you download the latest version to take advantage of it. When you open the Host (serve) sheet by pressing Command-Shift K, you will now see a new button at the bottom titled Internet Serve.



Press the new button to start serving and get relevant information to provide your collaborators with. Essentially, they need the WAN (wide area network) IP address (preferably the numeric ip address such as 68.128.19.11, or the name of the machine such as mathgamehouse.edu, if it is served by the domain name server) and the port number that the served document is using to listen to the incoming messages.

If you have a static IP address and has already arranged for the Firewall for a specific port number of your choice, the information shown in the Server IP Address and Port fields at the bottom of the sheet will suffice. iChalk will try to figure out whether you have a more complicated situation, and will provide the steps to be taken if necessary. If you suspect you have complications due to dynamic IP address, firewall or any other reasons, please read on.

There are essentially three points to check if you are in doubt:

1. Is the IP you gave out is your correct WAN address?
2. Is Firewall blocking the port your shared document uses?
3. If your machine is in a network, are messages sent to the WAN address and the set port properly forwarded to your machine?

WAN address

If your machine is in an institution which granted you a permanent (static) IP address, (one way to check is to look into the Network preference panel and make sure TCP/IP is set to "manually" and with a decent looking IP address.) In that case, that address is most likely to be also your WAN address and you need not bother with most of this section, except for the Firewall. If your machine is directly connected to a broadband modem (be it DSL or Cable) via PPPoE, the IP address that you may read off from the Network preferences will do, although that may change from time to time (on the vagaries of your internet provider or network interruptions).

On the other hand, if your machine is attached to a sub-network, or if you have several machines at home sharing an internet connection using a router attached to the DSL or cable modem, then you have good reason to read on.

If you are like us, your machine is probably attached to a DSL/Cable router, and is sharing a dynamic internet connection with other machines. Usually the router or a machine on the network acts as a DHCP server and it distributes the "local" addresses to its siblings. If you see something like 10.0.x.x, 192.168.1.x.x or 163.185.x.x as your IP address in the network preferences, this is likely the case. These local addresses are useless for anyone outside this sub-network, since thousands of machines across the internet probably have the same local address. In this case, you need to take the following steps:

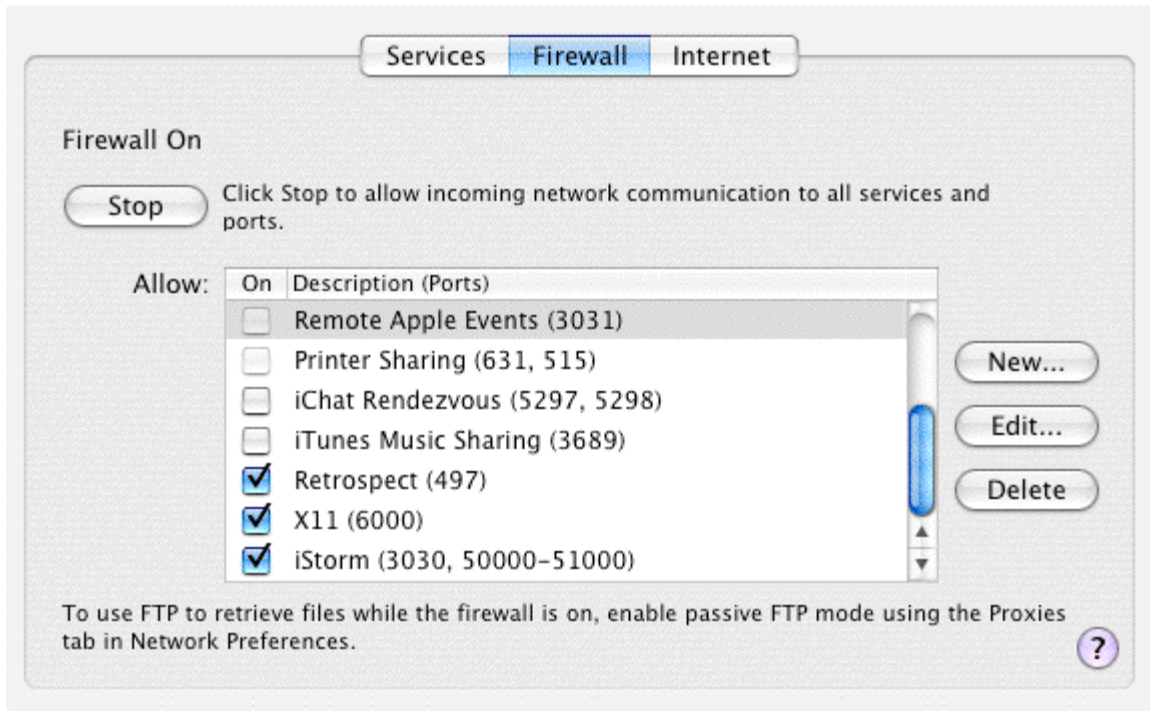
*Find your WAN (Wide area network) IP address, which probably is the one assigned to the routing unit by the internet provider. You or your IP person should know what it is. Find that PostIt paper you slipped in a book six months ago. A better way is probably going to the www.myipaddress.com (active as of Jan. 2004) or similar services which will do it for you. (See one of the Q/A items at the end of this section for more details.)

*In the router (say, the popular Linksys box or the Airport Base station) setup program, you should be able to do so-called port-forwarding. That is, all TCP requests coming to the router (at the WAN IP address) for ports 4040 and 50000 (assuming that the latter is what iChalk chose for the shared document. If you are serving several documents, the same applies to every port number thus associated.) should be forwarded to 10.0.1.12 (if that is the local IP address of your serving machine). (See one of the Q/A items at the end of this section for more details on port forwarding.)

Firewalls

Most likely, your machine is heavily guarded by a Firewall or two as erected by your mighty IT administrator. You need to dig a hole (matching your chosen private port number) through your firewall to allow in requests coming from outside.

Ports are like your ear and mouth. Computers have about 50000 of them available. So, what ports? For example, port number 80 is used if you serve Web pages using Apache web server. With iChalk, these ports include 4040 in particular and others either manually or automatically picked (between 49151 and 65535). In a large organization or schools, you will have to ask your IT administrator to make necessary arrangements. Unless this is taken care of, those joining you across the Ocean with valid IP address and the port number will end up with a spinning rainbow for quite a long while. Get ready to receive a phone call now.



<This figure is taken from our iStorm user manual. For iChalk, appropriate changes should be made. Please refer to the text below.>

To allow communications through particular ports, you may first need to check the built-in Firewall setting for your machine. Open the System Preferences->Sharing->Firewall tab. If you chose to have Firewall Off for some reason, you may not bother with the following at all.

If it is on, you now have to add a New item to the list. Choose New... button and Choose Other for Port Name option. It will prompt for Port Number, range or Series and Description. Type iChalk in the Description, and (4040, 50000-51000) for example. 4040 is for iChalk to serve shared documents list to users outside your local network. By choosing the range 50000-51000 in this example, you are promising yourself that you will manually supply a port number in the range when you serve.

If you can't discipline yourself to always remember to manually pick a port number in a narrow range, then you may set the range of open ports to be (3030, 49151-65535) instead. Note however that this may be considered recklessly lenient by

security experts! If you are sensitive to security issues, make it a habit of temporarily adjusting your Firewall setting only during collaboration and switch back to close the ports no longer in use.

For some of you, this may not be the end of the chore about Firewall. Your network administrator might know a thing about how medieval castles were surrounded by layers of defensive elements, such as moats and forests with dragons, before allowing a ladder set against the Wall. You may want to check if there is additional hardware firewall or other measures that you are not aware of.

Port Numbers

By default, iChalk picks a port number automatically in the range between 49151 and 65535. You can override this by manually typing in a port number (again in the same range) of your choice. This is OK as long as you do not have multiple documents to share. (Note that each shared document should have a unique port assigned to it.) [Warning: LAN users: You also need to find out whether another user is using the same port number and is forwarding that port already to his own machine in the same local area network as yours. In this case, you may have a nasty situation where your unsuspecting collaborator join a wrong session on a different machine.]

If you find it tedious to find the port number of each document and send it to your colleagues every time, you will find a way to make it almost as easy as using Rendezvous if the following step is taken:

With version 3.1, iChalk serves names and port numbers of all served documents on your machine to outside through a dedicated port number 4040. (Similarly, 3030 is used for the iStorm application.)

Therefore, if these ports are open on your machine (if you have Firewall, you may want to set the ports 3030 and 4040 open always for iStorm and iChalk applications.), your friends, upon

entering your IP address at their end, will automatically find all shared documents with their names and port numbers in the list when they try to connect. Again, if your machine is one of many in your LAN, sharing an internet connection, you will have to make arrangement for port forwarding for 3030 and 4040 as well as those for the shared documents.

For some reason, if you had to quit iStorm/iChalk and immediately restart, it takes about two minutes or so for the ports 3030/4040 to clear and become available again. Therefore, your colleagues may not see your served document until after a few minutes since you started serving.

I find my WAN address keeps changing

Maybe you have an unstable network connection. DSL service, for example, may assign different ip address to you every time you reconnect for some reason. Also, you may have set the network setting to renew connection too frequently. If you can not remedy the situation, we recommend not to serve from your machine. It is preferable for everybody to serve a document from a machine with stable network environment.

I try to set the port number manually, but I often get the message saying the port is not available.

This means that the particular port is either being used by another document shared from your machine, or was previously used but recently stopped serving. If you stop serving a document, the port it was using is immediately closed, but takes a few minutes to clear for it to be used again. This is to ensure that orphaned datagram, if any, to die gracefully lest they should come to haunt you through the newly established port. If this is the case, just wait at least for two minutes before trying the port number again.

What is this new complication about port 3030/4040?

In versions prior to 3.1, it was necessary to give group members outside your LAN both IP address of the server machine and the port number used for the shared document. With v.3.1, if the server machine has port 4040 (3030 for iStorm application) active, the program will maintain all served document list for the machine and will give out to request from outside. On the client side, when the user checks the “do not use Rendezvous” option in the Connect sheet and type in the valid IP address, the list will show up in the available documents list, in ways similar to using Rendezvous in LAN. Then the client will pick a document, which will automatically fill in the necessary port number.

If you are serving had have to quit and restart the application, you may have to allow a few minutes for this feature to be up and running, as it requires the port to be cleared first.

How do I make my firewall keep a port number open?

It is described in detail above under the heading Firewall.

I even disabled the built-in firewall. Yet, the other party cannot connect to my document. (Yes, I am sure I gave out correct WAN address and port number.)

There may be additional (at the hardware level) firewall. Consult your network administrator if you do not remember any. If firewall is not an issue, then you may need to check to see if port forwarding is the problem.

I want to use a fixed port number for all my collaborations over the internet. Why can't I?

If you happen to work with a single group of people using only a single shared document all the time, this is a very relevant question. It will save a lot of hassle regarding Firewall, port forwarding, etc. However, as each shared document requires a distinct, dedicated port, and often one runs several

collaborations in parallel therefore requiring several ports involved, we wanted to keep it more flexible.

How do I find out my WAN address to give to my colleagues?

First, the ip address displayed in the Host sheet may well be your WAN address if you have a static ip address assigned, and if you are not sharing an internet connection with other machines.

If you find that address starts with “192.168...” , “163.185...” or “10.0...” then you have good reason to believe that you have to find the WAN address using the following method.

There are several ways to find the WAN address.

When you press the Internet Serve button (available for v.3.3 or later) in the Host sheet, iChalk will try to find it and let you know. However, due to the dynamic nature of the method it uses, it may fail occasionally.

In that case, you should try one of the following:

The orthodox way will be to harass your network administrator. If you made internet connection yourself, the program you used to do so will usually display the address. If you are using a router such as a Linksys box or Airport base station, their control software will display the address.

If these sound too much for you, simply try one of the following web pages (they are all active as of January 2004) using your web browser:

www.myipaddress.com, www.ipaddressworld.com ,
www.whatismyip.com, or www.ipchicken.com

Why should I bother about port forwarding?

(If your WAN address found by methods described above is the same as the address shown in the ip address field of the Host sheet, you do not have to worry at all.)

In a typical network configuration, your machine is not directly exposed to the internet. Rather it is fronted by a router such as an Airport base station or a Linksys box, attached to the internet service source (DSL or cable modem). To the outside world, your network is identified by the address assigned to the router, and therefore, messages destined to reach your machine will first have to be addressed to that fronting address, not your local address. As the messages arrive with its destination port number, then the router will have to forward each datagram to appropriate local host, which is listening to that particular port. This can be arranged through the configuration software for the router. (for Airport base station, one would use the AirPort Admin Utility found in the Applications->Utilities.) So, if you just started a shared document at port number 55555, and if your LAN address is 10.0.1.11 and if your WAN address happens to be 68.25.3.102, then you will set the router to forward port 55555 (and 3030 as well) to 10.0.1.11.

My collaborator complains his machine hangs or crashes when trying the WAN address and the port number I gave.

It is probably because the port is blocked by your Firewall. Or the port may be forwarded to a different machine on your network by another user.

Another possibility is that you have an unstable connection to your internet service provider. For example, your dsl connection may constantly shift your assigned address. When the dsl modem disconnect and reconnect, it usually ends up with a different ip address.

Please read through this section carefully and consult a network expert, if available. We also appreciate if you would contact us to report a potential bug, but only if all measures described here fail to solve the problem.

We use multiple iBooks equipped with Airport cards, sitting on a campus lawn in a sunny Californian afternoon or gathered around a cozy bonfire in the state of Maine. Can we use one machine to create a network and let others join?

One person will opt to create a network, and everybody else will then switch their network to use the impromptu network and iSotrm and Rendezvous will work transparently. However, documents shared in this manner may not become available over the internet.

I switched off (or lost) my internet connection, but intend to collaborate within our internal network served by a router. Suddenly, there is a long (about 10–20 seconds) delay (spinning rainbow....) whenever I try to serve or join a group using Rendezvous.

Please check at the end of the previous chapter on Hosting for an answer.

What is the best strategy to resolve a network–congestion related crisis during a collaboration?

Please check at the end of the previous chapter on Hosting for an answer.

I give up!

We apologize for not being able to offer a more transparent way to serve your document over internet at the moment. However, we would like to encourage you, if we may, to consult this chapter more carefully to track down the origin of your difficulty. Even if it turns out to be simply due to a bug in the program, you would have done a tremendous service to the user community by helping us improve the program.

Unless your network configuration is extraordinarily different from others, we can assure you that groups have used iStorm/iChalk successfully across the internet. Our recent in-house testings included people from Hawaii, Michigan, Connecticut, California and New York using dsl connections.

Notes regarding security

We observe that overzealous measures taken for network security tend to suppress our creative impulse. An exclusive, closed group is a notion hostile to germinating and cultivation of original ideas.

That is one of the reasons why we did not implement a tight password system for the original iChalk v1.0 to allow forming closed collaboration group. However, we received quite a loud feedback on the need for it at least as an option. Yet we were still deliberating. The clinch came when we received a short suggestion from a professor at Berkeley. Didn't leave much room for our naïve liberal bias.

Even with password protection, you should be aware that a stranger, who acquired the IP address of the server machine and the port number, may attempt to join the ongoing collaboration posing as your friend or instructor and disrupt or steal your effort. Even in a LAN environment, this could be pretty hazardous if you happen to be in a company or a family with rampant internal politics. Please use iChalk at your discretion in such an environment.

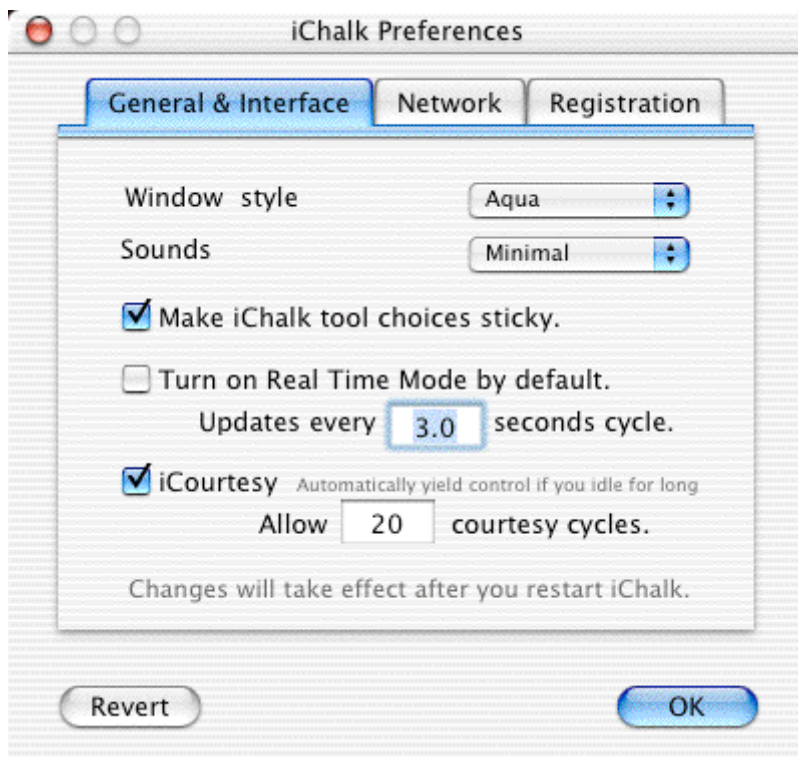
By using iStorm/iChalk and following suggestions regarding Firewall or other security measures, you are agreeing to take full responsibility and do not implicate the developers of iStorm/iChalk if an intellectual theft occurs.

Preferences

There are some parameters which you change in the Preferences and save for subsequent sessions. Here we explain what they are.

Note that all changes you make take effect after you restart iChalk. The exception is the registration code, which takes immediate effect.

Collaboration



*[iCourtesy](#) allows you to switch on or off the feature by which iChalk automatically relieve you of the control of the document edit when you do nothing for a while. The duration of idling allowed is determined by the number of courtesy cycles times the update interval, both of which are set in this panel too.

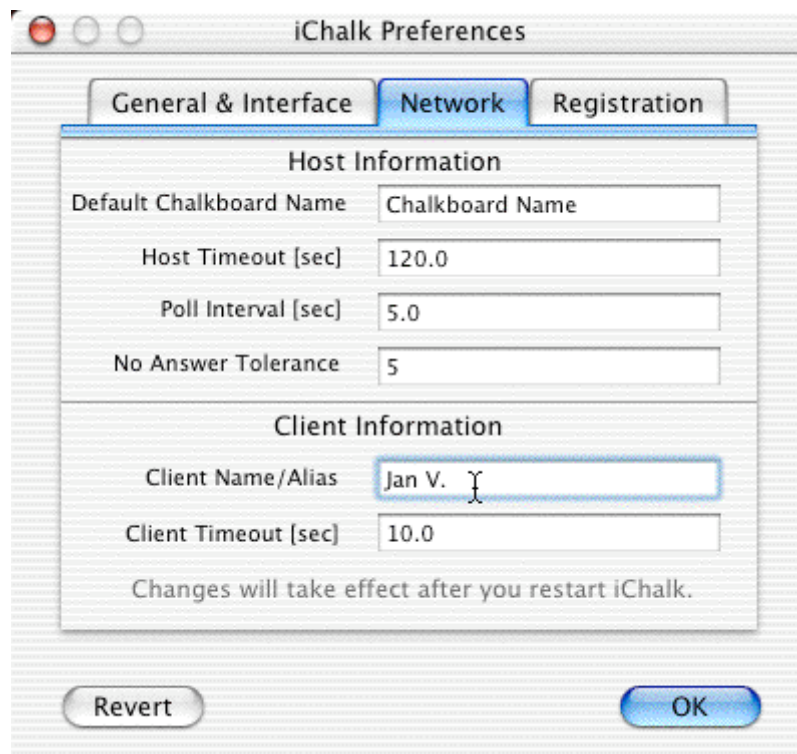
*[Real Time Mode](#) turns on or off the feature by which iChalk automatically updates and displays document at regular

intervals. The interval is set below. For fast connections (LAN), we recommend 3.0 – 5.0 seconds, but for slow connections/internet, this may be set 30–or more. In such cases, courtesy cycle should be reduced to make the iCourtesy tolerance reasonable. For example, if you set update interval to be 10 seconds, choosing 12 courtesy cycles will force you to give up control when you idle for $12 \cdot 10 = 120$ seconds.

*Sounds turns on the funky sound effect for the chat messages. Unless you are a kid, you may want to keep this off. Happy sound effect is always on, though.

*[Make iChalk tool choices sticky](#) is off by default. If you use the same tool choices(say thick line for chalk, erase–all for eraser..), you may want to switch it on for your convenience.

Network

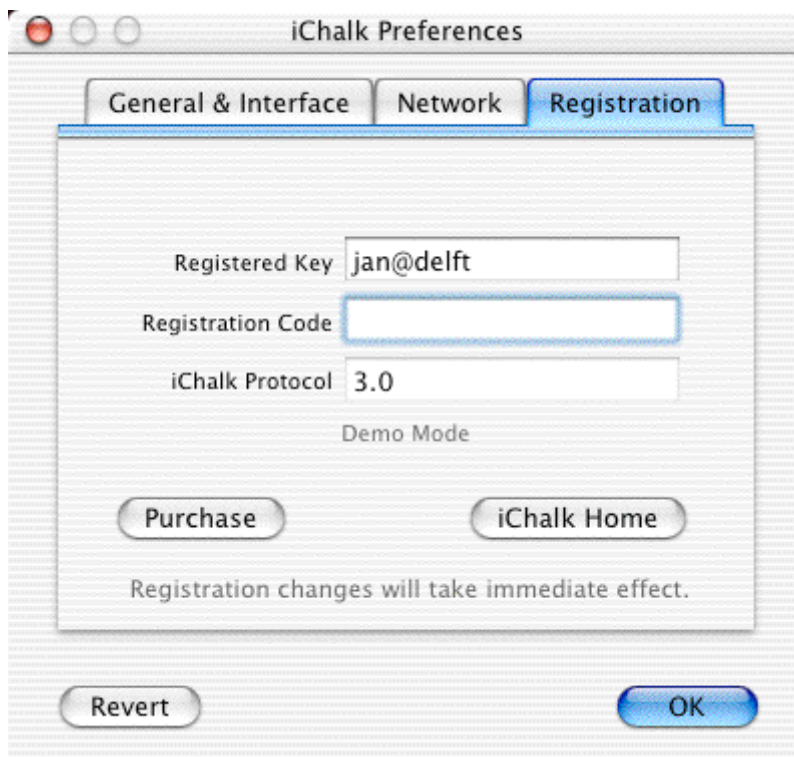


In making connections, you always need to supply a unique alias. You can enter your preferred id here to be automatically entered next time. Same with the Default document name. We recommend 120.0 sec for the Host timeout and at least 30.0 sec for the client timeout. If you set these numbers too low,

the net connection will become very prone to lose parcels of data whenever network contingencies occurs. When the group is composed of people with a widely varying bandwidth, careful experimentation may be necessary to find the optimum values for these numbers.

The following applies only to users of earlier (v2.6 or before) versions of iStorm/iChalk: The server regularly polls each member of the group to ask if they are all right. If you set poll interval at 30 sec, and No Answer Tolerance at 5, it will ask them every 30 seconds, and if a member fails to answer them five times in a row, the server will take that the member dropped off for some reason. This is to prevent any member with erratic network environment from negatively affecting the flow of collaboration. When someone is dropped from the group all too often, the server may need to increase tolerance and also the poll interval. Especially when the document size has grown so much that it takes a while just to update the document, during which a member may fail to respond to the call.

Registration



You enter a valid license code and the key here to fully enable iChalk. The code is 16 alphanumeric string, supplied through email when you pay the shareware support fee. Type it in, and press tab. If the code is valid, it will take immediate effect and will disable the limitations. The protocol number identifies the

shared document interface used for the current version of iChalk. Generally, versions using different interfaces will not allow connection to each other.

Where is this stored?

From time to time, you may need to start iChalk afresh and replace the old preferences with a new one. The file you want to delete before restarting iChalk is named:

"com.mathgamehouse.ichalk.plist" and can be found inside:
(Your Home Directory)/Library/Preferences.

I am an administrator in a K12 school district. Our principal just told me to input site license code on 100 machines we have. Each machine has 10 user accounts, most of which do not have admin privileges. So, I spent last few hours visiting each account, typing in the code manually. You are driving me nuts!

There are two ways to make your life a littler easier.

[The following applies only to site licenses.]

First technique: To copy the preference file with valid site license info into the system-wide preferences directory. This is handy, if you want to type in the code just once, and copy the file for all 100 machines via network.

1. Log into a user account with an admin privilege. Start iStorm/iChalk and open its Preferences panel. Go to its Network tab. If you see your name in the Client Name/Alias field, you may want to empty the field.
2. Press the Registration tab. Type the key and code. When the site license code is verified, there will appear in the center of the window a small message saying valid site license. The code will become invisible.
3. Press the OK button.
4. Quit iStorm/iChalk.

5. Go to the user preferences directory and find the newly created iStorm/iChalk preference file:
[YourHome]/Library/Preferences/com.mathgamehouse.iStorm
(or iChalk).plist
6. Copy that file into the system level preferences directory: /Library/Preferences/
7. Make sure that the copied file has the right user privilege: It should have at least ReadOnly for everybody.
8. Now you can repeat 1–7 on each machine or repeat 6–7 on each mounted volumes if you can access them via network.
9. Ask each user to do the following when he or she uses the iStorm/iChalk for the first time: Open its Preferences->Network and type in their name (if it is not there already automatically) and press OK. [This is to prevent the common mistake when student tries to join a group using the default Alias and fail since the name is already used by someone else.]

Second Technique: (This works only for iStorm/iChalk v.3.3 or later)

This is more elegant, if you can depend on a user on each machine. Just let a user on each machine type in the key and code accurately. Make sure they see the Valid Site License message appear at the center of the Registration window. That's it. Once a user successfully enter the valid site license code, it will be applied to every login account on the same machine.

I have a license for iStorm. Do I need to type it in again for iChalk or rendezvousPong?

No. iChalk and rendezvousPong will automatically recognize a valid iStorm license. If you have only a valid iChalk license, then only rendezvousPong will recognize it.

Credits

iChalk Team:

The Creative Minds at MathGameHouse

Icons Design:

Phillip Ryu phillryu@mac.com [iChalk buttons]

Jasper Howser jk@jasperhauser.nl [App and Toolbar icons for v2.5]

All snapshots in this document were made using Snapz Pro X from Ambrosia software.

We would like to acknowledge frequent help from people participating in the Cocoa development forums: macosx-dev@omnigroup.com, cocoa-dev@lists.apple.com and lately cocoa-pro@cocoadevcentral.com. The ultimate inspiration for our striving for perfection is Johannes Vermeer.



The Art of Painting, c. 1666–1667
Kunsthistorisches Museum, Vienna.

Who are the Creative Minds at Math Game House?

Project Management : Hyejung



Hyejung is the mastermind at Math Game House, which provides high quality, focused educational service to gifted and special-needs students. Hyejung has a Master's degree in Education from Stanford University.

hyejungK@mac.com

Daring Imagination and Program Design : Phillip



Top among his interest is everything that has to do with Mac. He also pursues graphics design as hobby. He is a serious student of music, regularly playing piano in the Trio Alliance, and recently won first prize in a competition playing a Chopin Waltz. He doesn't have any grand plan for his life yet.

phillryu@mac.com www.macthemes.net

Technical Expertise and Details : Seungoh



A theoretical physicist, trained at Stanford University. He has an unfortunate tendency to confuse his vacation activities with programming. Otherwise, he is pretty normal. The iChalk is his tribute to the academia in which he had lots of fun.

sryu@mac.com

Extreme Test : Ben



Ben is a Tae Kwon Do master. He applied the powerful martial arts technique in beta-testing the program. He also designed the initial Help system, which seemed to require a help system all its own

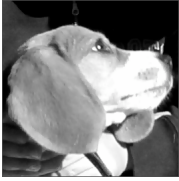
;-) benryu@mac.com

Guiding Spirit : Camadee



I oversaw everything with a disinterested mind.

The Enforcer : Syd



I am new here. Currently my interest is concentrated on the cupboard where "they" keep my daily treat ...

You may reach the makers of iChalk at :

mathgamehouse@mac.com

www.mathgamehouse.com/ichalk

To download current version of iChalk

www.mathgamehouse.com/ichalk/download.html

To purchase single user license

www.mathgamehouse.com/ichalk/purchase.html

To find out about site license options

contact: mathgamehouse@mac.com

To find out about powerful collaboration program iStorm,

www.mathgamehouse.com/istorm

