1. Brief Introduction

1.1 This software is used in the environment of e-classroom or e-meeting room. One terminal installs the server end “Control Center”, all the peer terminals install the client “Peer”. The Control Center can manage the peers by dividing them into groups, and create broadcast session to share one desktop to all others in the same session. In the meanwhile, the Control Center can also monitor any desktop at any time.

1. Operating Environment

2.1 OS environment

Desktop Edition: Windows 7 or later

Server Edition: Windows Server 2008 or later

Development Tools: Microsoft Visual Studio 2012 with VC++

2.2 Network Environment

Local area network

Microsoft’s remote desktop ( One OS, different terminals log on remotely with different accounts )

1. Detailed Operations

3.1 Server-side software

The server-side software as “Control Center” is responsible for managing peers and sessions. The main interface is made up of “Manage Group”,”Broadcast Desktop”,”Monitor Desktop” three tab pages and a hided “Handup Message” window. The former three can be reached by clicking the corresponding tab title. The “Handup Message” window can be navigated by clicking the text “Num of Hand Message...” . The main interaction with the UI is through right -click menu. The following are details.

3.1.1 Manage Group

This module is responsible for manage peer and groups. The interface is a tree control representing peers in groups. Nodes of second level stand for groups, Nodes of third level stand for peers. Icon of peers are of two types: online and offline. When some logs on, the icon become the green online icon, while it becomes gray offline icon when logging off. Therefore the tree is dynamic. There is a group named “Unknown Group”. It’s not an actual group. It only means the peers under it are not divided into any of existed groups. Peers with no group will show up here on logging.

Operations are of two types: right click the peer: peer management; right click the group: group management.

3.1.1.1 peer management

Move peer: move one peer from a group to another.

Delete peer: delete peer. Note that the deletion of an online peer and an offline peer is different, the online peer would be moved into the “Unknown Group”, while the offline peer is deleted directly.

3.1.1.2 group management

Rename group: rename. New group name can’t be the same as any of existing group names. The “Unknown Group” can’t be renamed.

Insert group: insert a new group after current group. Group name will be specified through a input dialog. Note that the “Unknown Group” is usually the last group until you insert a group after it. But once the Control Center is restarted, the “Unknown Group” will be the last one again. The order the rest groups might also change.

Delete group: Delete current group. Note that the peers of this group will be moved into “Unknown Group” if the group has. The “Unknown Group” cannot be deleted.

3.1.2 Broadcast Desktop

“Desktop broadcast session” means a desktop sharing session, featured that one peer share his desktop to the all the rest in the same session. In later context, this kind of session may also be called as “desktop share session” or even “desktop broadcast share session” or shorted as “broadcast session” or “share session”, meaning the same. Note that there are must be one sharer, 0 or many viewers in the session.

Operations are of two kinds: right click in blank area, right click on session item.

3.1.2.1 Right click on blank

Add session: create a new broadcast session. Note that the situation of a peer of a existing session attending a new session is not allowed.

3.1.2.2 Right click on session item

Stop session: stop the current broadcast session , after which it will become Start session to restart the session.

Delete session: delete a stopped session.

Grant control: in the pop-up control dialog you can choose a viewer to let it control the desktop the sharer. Make sure none of the viewers is selected then click OK to revoke the privilege. Note that there can be at most one viewer having the control privilege.

Lock viewers: lock systems of all the viewers, so that they cannot operate through keyboards and mice. They can only view the desktop being shared.

3.1.3 Monitor Desktop

“Monitor session” means share the desktop of the peer being monitored to the Control Center. It featured that there is only one peer monitored.

Operation are of two types: right click in blank area; right click on a session item.

3.1.3.1 right click on blank

Create monitor: create new monitor sessions.

Open monitor window: open a window of all the monitored desktops.

3.1.3.2 right click on session item

Open monitor window: Open a independent window for current monitor session, so that you can resize the view or view in full screen mode by click the maximize box on right-top corner of the window. In the system menu of the window(popped up by right click on the caption of the window), there is a “Control” button indicating you can control the desktop and a “Thumbnail” button indicating you can also view the whole image in small size.

Delete monitor: delete current monitor session.

3.2 Client-side software

The client software is called “Peer”, it is minimized to the system tray area once started. The tray icon are of connected and unconnected two types.

Main operations show up by right clicking the tray icon.

Connect to the server: connect to the server according to the connection information provided by configuration file. If the client has already connected to the server, no action will be taken. Double click on the tray icon has the same function.

Open view window: open the view window if there is a desktop broadcast session. If the window is closed, you can also find it back through this button.

Electric hand up: send a hand-up message to the server.

Exit program: exit the client software.

View window:

There is a “Thumbnail” button in the system menu of this window , watch thumbnail image by this button. Click the maximize box to enter full screen mode. Once you enter into full screen mode, on top edge of the screen, 1/4 length of the width of the screen to the left edge, there is an auto-hide “Exit full screen” button, move you cursor to this area and stay to let it show up and exit full screen mode. Note: if the peer is locked, nothing shows up.

1. Software Configuration and Advise

Both of the server side and the client side have a configuration file named “Config.ini” in respective main directories. In the Config.ini of the Control Center, there is a “Connection” section and a “port” key under it, which is corresponding to the TCP port number the Control Center is going to listen on its start. In the “Config.ini” of the client end “Peer”, there is also a “Connection” section, but an “address” key is added to indicate the IP address “Peer” wants to connect to. The “port” key here indicates the TCP port number “Peer” will try to access on the server side. In order to connect successfully, the consistency between the two ports and between the value of “address” key and the IP address where the Control Center is running must be guaranteed. If the software is used in multiple remote desktop environment, the value of “address” can be local address or “localhost” or “127.0.0.1”. In order to take new value effect, the modification must happen before Control Center started on the server side , before connection on the client side.

Note that if the configuration files are lost or corrupted , the software will use default port and default IP address . The server side will listen port 5000 , and the client will try to connect to TCP port 5000 on localhost.

Note that if you want stricter control over the peers , it is advised that you disable the task manager on the client and set the Peer as auto-start on the system starting. However, the Peer can connect successfully only under condition that the Control Center has already been started.

When Peer is connected to the Control Center , the “Exit Program” button is disabled. It is assumed that the client software is neither necessary nor expected to be exited (You can also enable the Exit button through the Control Center if you want, for more details refer to the detailed operation of the server side) . However, the Peer can still be killed through the task manager. On the other hand, after the viewers are locked, they might still operate the system through task manager by press “Ctrl+Alt+Del”. Therefore, task manager should be disable by advise.

1. Software Operation and Performance Advise

This software provides the biggest freedom degree of desktop sharing. Any peer can be sharer and viewer and in the same time can be monitored because the monitor session is independent of the share session. The only collision is that one peer can not be viewers of different share sessions just as one cannot be on different spots at the same time.

As you have been given such flexibility, you can try every structure out of you imagination. For instance, you can create a broadcast session in which the sharer and the viewer are the same machine, and then view the desktop in full screen mode. You can do this, but do not expect good consequence. In order to let many people view one desktop, you can create a session with one sharer and many viewers as the rest. Another way is that you create many sessions, let B views A, C views B, D views C......such a long chain. However, you cannot expect good performance of the tail the chain. You can also make the chain into a ring , to see what interesting thing will happen.

Something worth mentioning is that to let many people view one desktop, I am not sure the way of one sharer , the rest as the viewers are the best form because of the heavy load of the only sharer. Maybe there is a better structure to improve performance and you might figure it out if you are that good at math.

One peer can be the sharer of one share session , and in the meanwhile can be the sharer of another share session. This is enforced by organize the viewers of the second session into the first session’s viewer group.

You can create monitor session. In fact, monitor session is the same as the share session in the low level, the only difference is that the sharer of a monitor session is the peer being monitored, the only one viewer is the Control Center. Therefore monitor session should also be taken into consideration when it comes to the problems mentioned above.

Whatever, remember that : if sometimes something is wrong, that maybe not because of the problem of the software, nor the problem of the author of the software, it might be called logic.