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Running Multiple Glasses Inventory Systems On A Single Physical Inventory By Holland Kendall

Version 2

05/02/2007 Updated: 10/23/2012

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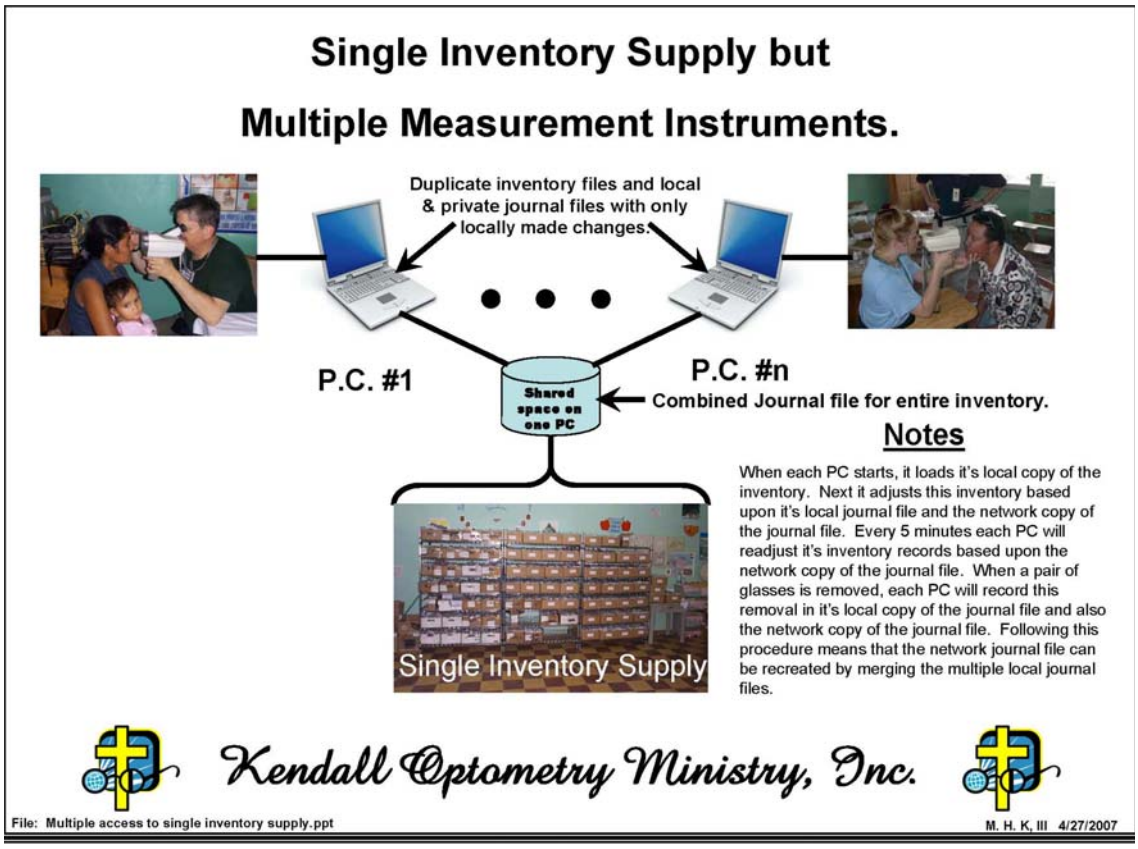
1.0 Introduction.

Several mission teams have traveled to locations where the number of patients is so large that it exceeds the ability of the team to measure their eyes in a timely fashion. As a result, patients are turned away without any kind of eyeglasses. Teams could bring in a second autorefractor but this still does not allow them to use both at the same time while tied to a single inventory computer. Adding computers to the system introduces another problem—how to operate on the same physical inventory. This document describes a solution to that problem.

This document has been written using a top-down approach. Sections 1 thru 3 will need to be read by everyone. The remaining sections of the document would normally be read by those setting up their own network or should there be problems with the wireless network provided by Kendall Optometry Ministry (KOM).

1.1 Original Development.

In 2007, updates were made to both the Glasses Inventory (Version 6.3 or above) and the Glasses Reader (Version 3.1-5 or above) programs to allow their operation on a network environment. Below is a picture of that setup:



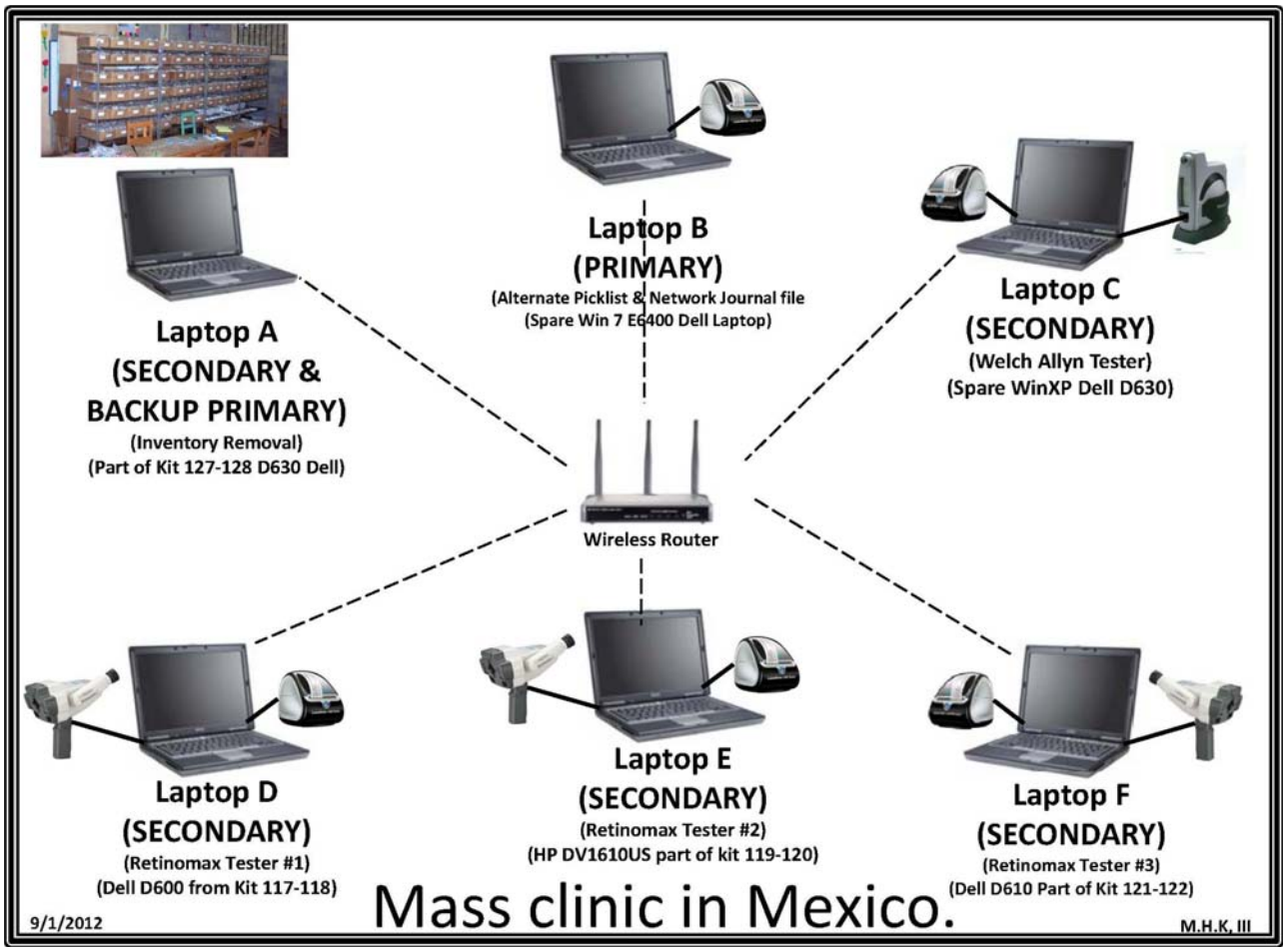
Even though the above picture shows two PCs, it can be expanded to several PCs. As of 2007, it had only been tested with two PCs.

1.2 Later Improvements.

In 2012, there was a need to have an optical clinic in Mexico to handle up to 1,000 patients every day. This required further enhancements to this shared inventory feature leading to version 7.2-2 (or above) of the Glasses Inventory program and version 4.3-1 (or above) of the Glasses Reader program. The below functional requirement list was produced for this Mexican clinic.

1) Speedy testing of eyes and finding glasses was a primary requirement if the system were to help this many patients each day.
2) The interconnections between systems must be wireless as it would be prohibitive to run the necessary network wires to support a larger system.
3) Multiple measurement stations (PCs with attached autorefractors) must be provided. It was decided that four stations would be available. Kendall Optometry Ministry (KOM) provided three out of the four autorefractors required.
4) Since producing a reasonable list of glasses for every patient might take too much time by the operators of the measurement stations, a fifth PC was provided to further expand this list of suggested glasses. This PC would also be the storage location (Primary PC) for the network files.
5) A sixth PC would be located near the inventory of glasses for the fitters to record the removal of a pair from the inventory for the patient.
6) Inventory updates to all the PCs could be made from any one of the PCs.
7) The system is configured for maximum reliability and redundancy.
8) Remote support features are built into the system.

Below is the network configuration for the equipment to be used in the mass clinic in Mexico.



1.3 Assigned Functions for Each Component.

Referring to the drawing on the previous page, the function of each component is as follows:

Laptop A: (Runs Windows XP)

- This laptop is mainly used to remove glasses from inventory as soon as they are dispensed to the patient. Removing glasses soon after they are dispensed keeps them from being assigned to another patient by other PCs in the network.
- This laptop also provides a backup copy of the network journal. Automated procedures running on this laptop regularly backup the Primary PC (Laptop B) network journal files to a NetworkJournal directory on this PC. This directory is offered as a network share. See Appendix E for information on this procedure.

Laptop B: (Runs Windows 7)

- This PC is used when the operators of Laptops C thru F cannot find a reasonable number of appropriate glasses for the patient. The operator of this laptop uses the "Wizard" feature of the Glasses Inventory program to find a more extensive list. If the operator of this laptop gets too busy, he/she can send the patient to any of the laptops to extend the list of glasses.
- This laptop also holds the primary journal and autorefractor readings files for the network.
- This laptop (and others) can also be used to update the inventory for the entire network.

Laptops C thru F: (Runs Windows XP)

- These PCs are used with an autorefractor to measure the patient's eyes. The autorefractor used for Laptop C is a Welch Allyn Suresight while Laptops D thru F use the Retinomax 3 Autorefractor. Every measurement made by this autorefractor is posted to a local copy of **AutorefractorReadings.txt** on the PC and also to an **AutorefractorReadings.txt** file located on the network journal PC.
- If the operator of this station prints out a short list of matching glasses, he/she will send the patient to Laptop B or A to produce a more extensive list. If the list is long enough, then the operator will send the patient directly to Laptop A to get a pair of glasses.

On all Laptops:

- A scheduled procedure backs up the local journal and autorefractor readings file to the **Control** folder of the Network Journal (Primary) PC. These files can be merged together to replace the consolidated versions of these files should this version be corrupted. See Appendix E for setup of the procedure and section 10.2 for how to do the merge.

Wireless Router:

- This device provides a wireless network, which allows all the laptops to both communicate with each other and also to communicate with the primary network journal PC. See Appendix B for information on setting up the Wireless Router.

2.0 Initial Setup of a Previously Staged System.

If the system has been totally provided by Kendall Optometry Ministry (KOM), it has certainly been staged. However, if parts of the system came from other locations, it might not have been initially staged. This section *assumes* that this system has been previously staged.

Starting up the system:

1) Setup and power up the wireless router. Details are in Appendix B.
2) Setup and power up all the PCs involved starting with the Primary PC. Wait until it comes up, and then log into the **Optical_User** account using the global password (all PCs use the same password for this account). Do the Secondary PCs one at a time; log into them before proceeding to the next PC.
3) Verify that each PC is able to see the wireless network where the other PCs can be found. One easy way is to see if drive letter "N" can be browsed by Windows Explorer. If you double click this drive and get a prompt to login, then enter the correct username (**Optical_User**) and password to attach to the Primary PC. If wireless connectivity is intact, this drive should be accessible.
4) Be sure each PC is aware of the network address (IP address) of every other PC by double clicking the file named **PingTest.cmd** (see Appendix A) in the root of the network journal drive. You should be able to ping every PC successfully.
5) Launch the Glasses Inventory program on every PC. Be sure that you do not see in the bottom left of the screen **Network Journal is down!** If you have not previously loaded your inventory file, then go to the **Installing the Initial Inventory File** section later in this document.

Problems with the Above Steps:

Step 1: If the wireless router does not work, then install the backup router. See Appendix B for router installation instructions.

Step 2: If one of the PCs fails to come up or the user login fails, call KOM for support. Remember that passwords are case sensitive.

Step 3: Make sure the wireless adapter of each PC shows connected to the wireless network. They should be connected to the wireless SSID named **KOM-CLC** if the wireless system is provided by KOM.

Step 4: If any PC fails to PING, then there are two possibilities: **1)** The PC is not connected to the network—check Step 3 again; or **2)** The PC acquired a different IP address than originally intended—go to Appendix A for information on changing this.

Step 5: Press **Refresh Person List** several times to see if it goes away. If not, browse drive letter "N" with Windows Explorer and press it again. There are two reasons why this can occur: **a)** the network journal drive letter "N" is not connected; or **b)** there is no **JournalFile.txt** file in the root of the "N" drive. If a journal file is missing, then you have likely not installed your initial inventory.

Shutting down the system:

--Shut down the system doing all Secondary PCs in reverse sequence from above one at a time.
--Shut down the Primary PC last.
--Shut down the wireless system.
Now you are ready to pack things up.

3.0 Step-By-Step Operating Instructions.

Details on each of these steps will be provided in later sections. This section is to be used as brief instructions, which the head of the optical clinic can use to perform day-by-day operations.

3.1 Installing the Initial Inventory File.

Before installing your inventory file on all network PCs, be sure all PCs are connected to the wireless network and all network journal drives (traditionally drive letter "N") are mapped to the **NetworkJournal** share on the Primary PC (Laptop B). Also, be sure all Glasses Inventory programs on all PCs are aware that they are operating in a network and are aware of the location of the network journal shared drive. Subsequent sections detail how these checks are performed.

Initial Update of the Primary PC.

Follow these steps:

1) On your personal PC under **My Documents** directory is a folder called **Glasses_Data**. You will find a file named **Total_Inventory.txt**. Put a copy of this file on a thumb drive.
2) Insert this thumb drive into a USB port on the Primary PC (Laptop B).
3) Using Windows Explorer, copy this file into the **<My Documents>\Glasses_Data** directory of Laptop B.
4) Launch the Glasses Reader program.
5) Under Glasses Reader do **File | Transfer Inventory to Glasses Inventory Program** followed by clicking the **CONTINUE** button on the next window.
6) If you get a window entitled **Warning!,** then click OK, and then click the **Write Sorted Inventory and Check for Errors** button (plus **CONTINUE**) on the bottom right of the screen. Then try Step 5 transfer again.
7) The status window should show **Inventory Copied. Journal written.**

The Glasses Inventory program on Laptop B has now been updated. The latest **Total_Inventory.txt** file and an empty **JournalFile.txt** file have been placed on the **NetworkJournal** share directory. In addition, a command procedure named **MoveNetworkInventory.bat** is created.

Updating the Secondary PCs.

There are two ways you can update the Secondary PCs. When performing this update, be sure Glasses Reader and Glasses Inventory programs aren't running on the other PCs. If Glasses Inventory is running, it won't hurt; but you will have to exit/restart to see the new inventory file.

NOTE (10/23/2012)
A problem has been discovered with Option 1. Use Option 2 until Option 1 is fixed.

Option 1: (Typically the Primary PC, but can be executed from any PC) ***Faster***

1) Click on the **START** button, click **All Programs**, click **Network Files Rebuild** folder, and then click **Network Files Rebuild** program. See program window in Section 10.1.
2) Click **OK** on the password request window.
3) Click the **Transfer Inventory Updates to all PCs** button in the center of the window. A DOS window will appear. The procedure that it starts will update all PCs in the network to the latest inventory file and the DOS window will disappear.

Option 2:

1) Go to each PC (or use VNC documented in Appendix F) and browse to the network journal drive letter (typically "N").
2) Double click the **MoveNetworkInventory.bat** file on drive "N".
3) After **NOTICE:** appears, press **ENTER** to continue the update. Glasses Reader will be activated and will exit automatically. This PC is now fully updated.
4) Press **ENTER** to exit the procedure.

3.2 Updating the Inventory File after a Day of Operation.

The greater the number glasses you have in your inventory file, the higher the probability you will find a good match for the patients' prescriptions. This is why you should replenish your inventory as often as possible to keep the number of available glasses high.

Updating the Primary PC.

Follow these steps:

1) Launch the Glasses Inventory program and make note of the **USED** count.
2) Click **File | Save Deleted and Rejected Inventory,** and then click OK.
3) Launch the Glasses Reader Program.
4) Click **File | Load Deleted & Rejected inventory from Glasses Inventory Program,** and then click **OPEN** on the subsequent window which appears. Compare the "Deleted" count to the **USED** count above. If unequal contact KOM support.
5) Now produce a report of the vacancy list by doing **Reports | Vacancy Report**. This report can be used to hand write labels to put on glasses you plan to insert in the inventory. You can also do **File | Create Vacancy List file for Label Generation** to produce a file which can be used by the **Print Update Labels with Excel** spreadsheet under **Start | Programs | Glasses Reader**. Press the **Click to print labels for vacancies found in your inventory** bottom button of this spreadsheet. To do this, you will need a wide carriage printer attached to the PC.
6) Apply labels to your glasses and bags.
7) Use Glasses Reader to update your inventory manually one of three ways: **a)** scanning barcoded glasses, **b)** using the OCR scanner, or **c)** directly from a lensmeter. Update Inventory is the fastest possible update method to use. See Section 3.6 of the KOM Usage Guide in tab 2 of your training manual.
8) When finished with your update, click the **Write Sorted Inventory and Check for Errors** button, and then click **CONTINUE**.
9) Under Glasses Reader do **File | Transfer Inventory to Glasses Inventory Program,** followed by clicking the **CONTINUE** button on the next window.
10) After the sort, the status window will show **Inventory Copied. Journal written.**

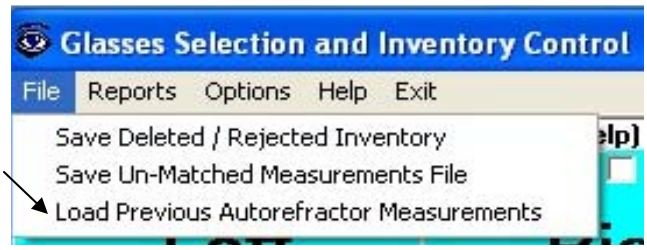
At this point:
--The local Glasses Inventory program on the Primary PC has now been updated.
--A copy of the latest **Total_Inventory.txt** file and an empty **JournalFile.txt** file have been placed on the **NetworkJournal** share directory.
--A command procedure named **MoveNetworkInventory.bat** has been created.

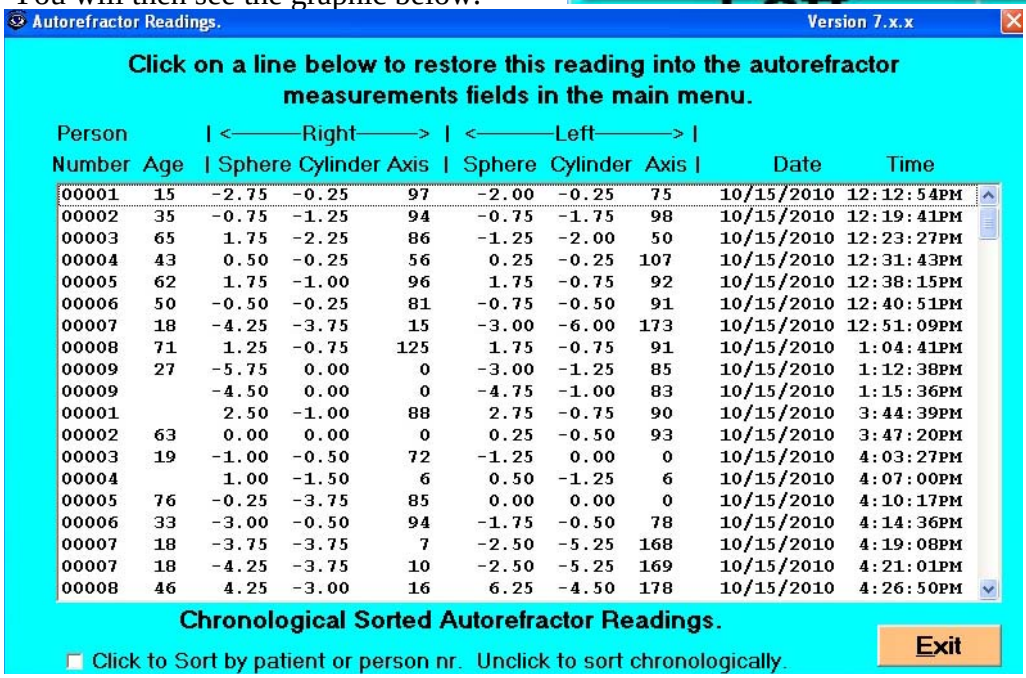
Please note that this update can be performed on any of the network PCs and propagated to all of the PCs.

Go to the previous section for information on updating the Secondary PCs.

3.3 Operation during the day.

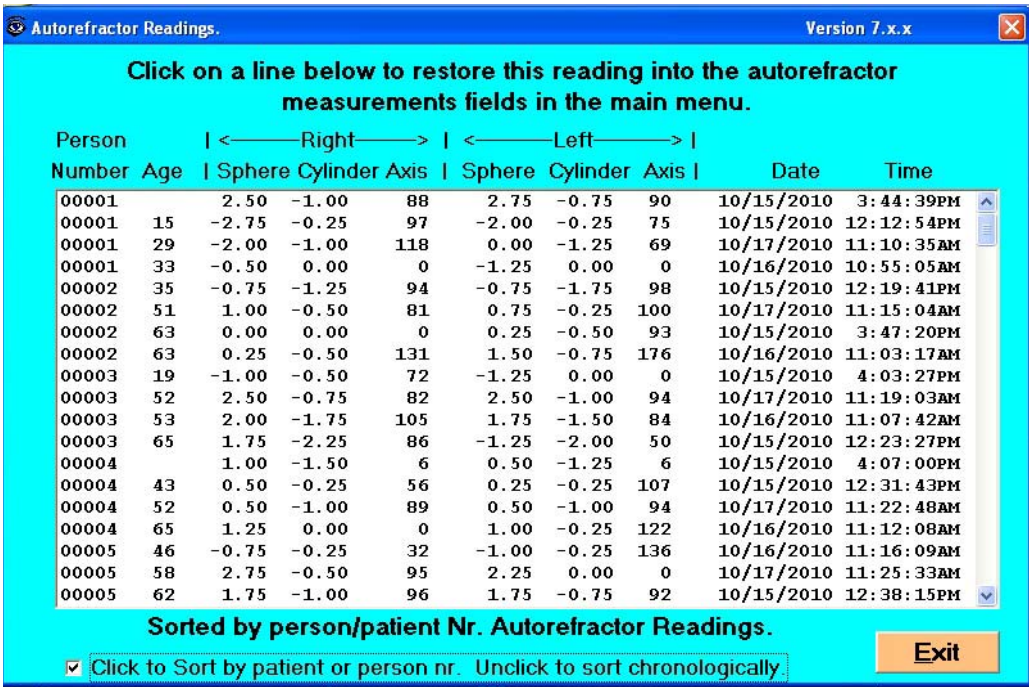
When a patient is measured with an autorefractor, they may have to go to Laptop B or A to get a more extensive listing of glasses. If so, the operator of that laptop can bring up their measurement by doing **Load Previous Autorefractor Measurements** (as you see to the *right*). You will then see the graphic below.





Person Number	Age	Right Sphere	Right Cylinder	Right Axis	Left Sphere	Left Cylinder	Left Axis	Date	Time
00001	15	-2.75	-0.25	97	-2.00	-0.25	75	10/15/2010	12:12:54PM
00002	35	-0.75	-1.25	94	-0.75	-1.75	98	10/15/2010	12:19:41PM
00003	65	1.75	-2.25	86	-1.25	-2.00	50	10/15/2010	12:23:27PM
00004	43	0.50	-0.25	56	0.25	-0.25	107	10/15/2010	12:31:43PM
00005	62	1.75	-1.00	96	1.75	-0.75	92	10/15/2010	12:38:15PM
00006	50	-0.50	-0.25	81	-0.75	-0.50	91	10/15/2010	12:40:51PM
00007	18	-4.25	-3.75	15	-3.00	-6.00	173	10/15/2010	12:51:09PM
00008	71	1.25	-0.75	125	1.75	-0.75	91	10/15/2010	1:04:41PM
00009	27	-5.75	0.00	0	-3.00	-1.25	85	10/15/2010	1:12:38PM
00009		-4.50	0.00	0	-4.75	-1.00	83	10/15/2010	1:15:36PM
00001		2.50	-1.00	88	2.75	-0.75	90	10/15/2010	3:44:39PM
00002	63	0.00	0.00	0	0.25	-0.50	93	10/15/2010	3:47:20PM
00003	19	-1.00	-0.50	72	-1.25	0.00	0	10/15/2010	4:03:27PM
00004		1.00	-1.50	6	0.50	-1.25	6	10/15/2010	4:07:00PM
00005	76	-0.25	-3.75	85	0.00	0.00	0	10/15/2010	4:10:17PM
00006	33	-3.00	-0.50	94	-1.75	-0.50	78	10/15/2010	4:14:36PM
00007	18	-3.75	-3.75	7	-2.50	-5.25	168	10/15/2010	4:19:08PM
00007	18	-4.25	-3.75	10	-2.50	-5.25	169	10/15/2010	4:21:01PM
00008	46	4.25	-3.00	16	6.25	-4.50	178	10/15/2010	4:26:50PM

If you want to find a particular patient number (from the number on the top of the pick list), then click the checkmark on the bottom of the graphic above, and you will see the sorted graphic below.



Person Number	Age	Right Sphere	Right Cylinder	Right Axis	Left Sphere	Left Cylinder	Left Axis	Date	Time
00001		2.50	-1.00	88	2.75	-0.75	90	10/15/2010	3:44:39PM
00001	15	-2.75	-0.25	97	-2.00	-0.25	75	10/15/2010	12:12:54PM
00001	29	-2.00	-1.00	118	0.00	-1.25	69	10/17/2010	11:10:35AM
00001	33	-0.50	0.00	0	-1.25	0.00	0	10/16/2010	10:55:05AM
00002	35	-0.75	-1.25	94	-0.75	-1.75	98	10/15/2010	12:19:41PM
00002	51	1.00	-0.50	81	0.75	-0.25	100	10/17/2010	11:15:04AM
00002	63	0.00	0.00	0	0.25	-0.50	93	10/15/2010	3:47:20PM
00002	63	0.25	-0.50	131	1.50	-0.75	176	10/16/2010	11:03:17AM
00003	19	-1.00	-0.50	72	-1.25	0.00	0	10/15/2010	4:03:27PM
00003	52	2.50	-0.75	82	2.50	-1.00	94	10/17/2010	11:19:03AM
00003	53	2.00	-1.75	105	1.75	-1.50	84	10/16/2010	11:07:42AM
00003	65	1.75	-2.25	86	-1.25	-2.00	50	10/15/2010	12:23:27PM
00004		1.00	-1.50	6	0.50	-1.25	6	10/15/2010	4:07:00PM
00004	43	0.50	-0.25	56	0.25	-0.25	107	10/15/2010	12:31:43PM
00004	52	0.50	-1.00	89	0.50	-1.00	94	10/17/2010	11:22:48AM
00004	65	1.25	0.00	0	1.00	-0.25	122	10/16/2010	11:12:08AM
00005	46	-0.75	-0.25	32	-1.00	-0.25	136	10/16/2010	11:16:09AM
00005	58	2.75	-0.50	95	2.25	0.00	0	10/17/2010	11:25:33AM
00005	62	1.75	-1.00	96	1.75	-0.75	92	10/15/2010	12:38:15PM

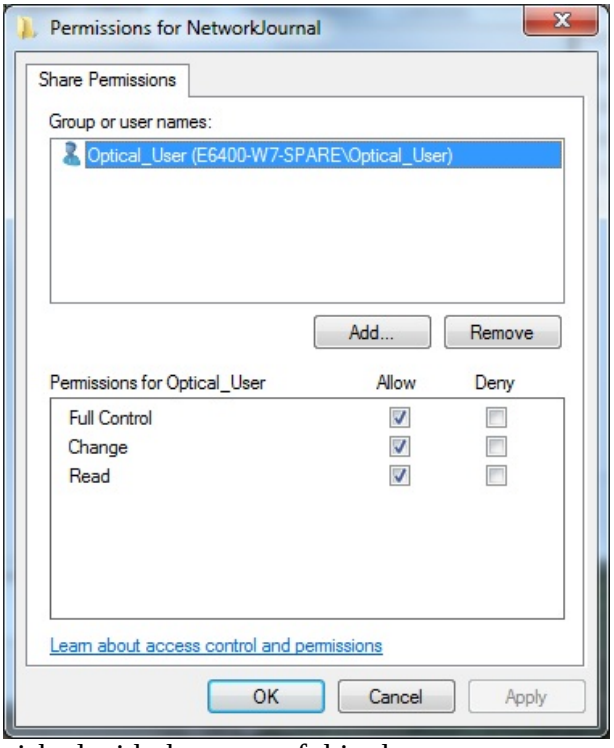
All measured prescriptions are available from all laptops in the network.

4.0 Setup of the Primary PC.

One PC is identified as "Primary". This PC holds the network copy of the Journal File and the Autorefractor Readings file. The Journal File records all changes which have been made to the inventory by all PCs on the network. Each PC also keeps a local journal file of the changes made by that PC alone. The Network Journal file can be created (if lost) by appending together all local journal files using the POST function on each network PC followed by the COMBINE function (on the last PC) of the **Network Files Rebuild** program. Look at a description of this program in Section 10.1.

The first step is to create a directory on the PC hard drive to hold this journal file. This example uses **NetworkJournal.** Follow the steps below to setup the **NetworkJournal** share:

1. Launch Windows Explorer by right clicking the start button, and then left click **Explore**.
2. Scroll up on the left hand side of the window, and then double click on your "C" drive.
3. Move the mouse to the right hand side of the window, right click mouse, then click **New,** then click **Folder.** Type the folder name of **NetworkJournal**.
4. Right click the new folder and click **Sharing and Security**.
5. Click **Share this folder,** and then click on the **Permissions** button.
6. Click **Add** and enter the name of a local user (**Optical_user**) on the machine, then click OK.
7. Select the local user from the list shown. Make sure all items on the **Allow** column are clicked as shown below. **Optical_User** is selected on the KOM PCs.



8. Click OK. You are finished with the setup of this share.

If this PC is connected to a network, it will automatically get an internet (IP) address. This will always be the case with the wireless router configuration as it is configured to automatically hand out IP addresses. The DHCP Reservation List shown on the second page of Appendix B illustrates how you can be certain each PC always gets the same IP address.

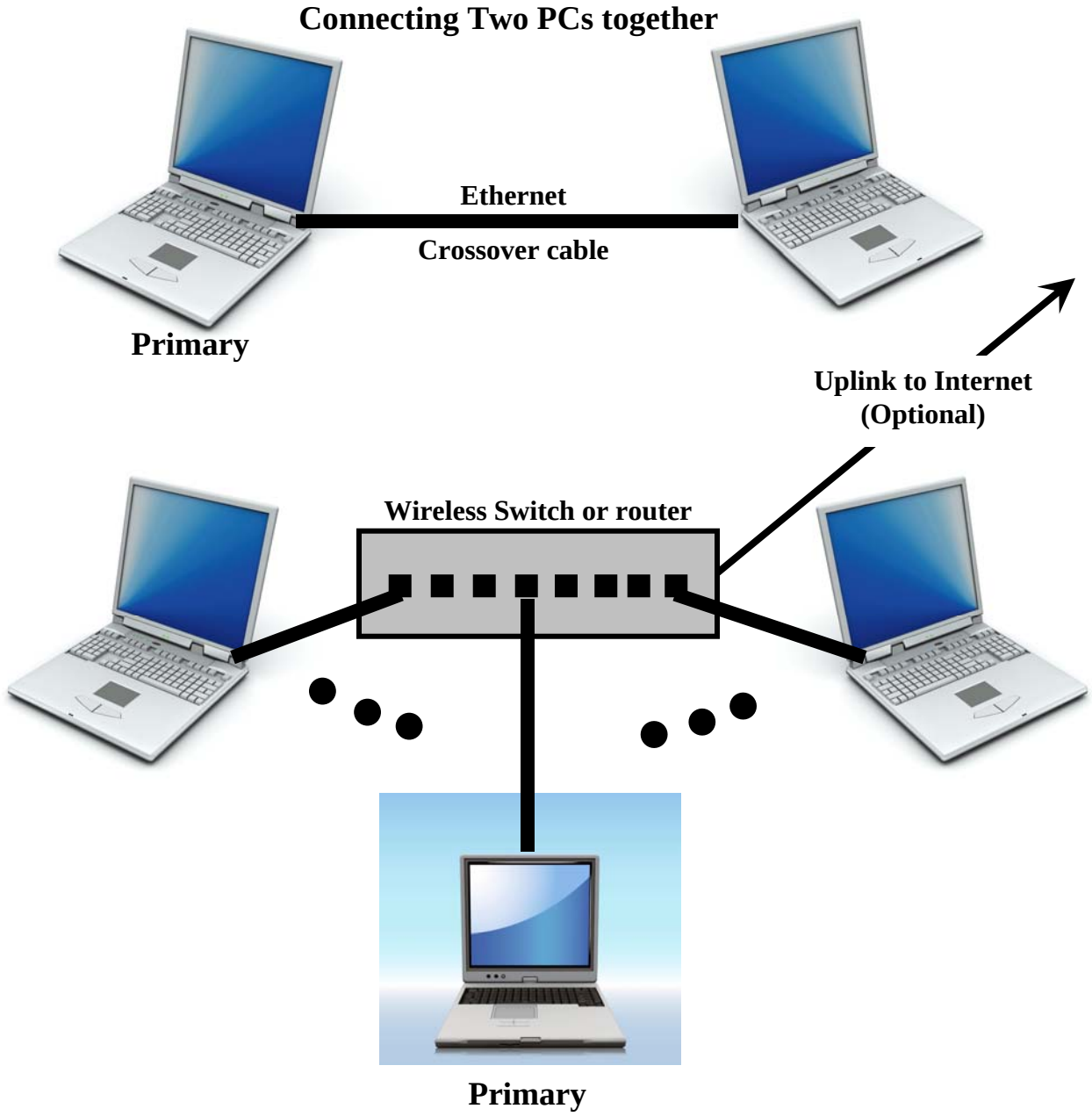
Your PC is now ready to be used as the Primary PC.

5.0 Setup of Secondary PCs.

If this PC is connected to a network (wireless router), it will automatically receive an internet (IP) address. See Appendix B. If you plan to directly connect this PC to another PC, you may need to manually establish an internet address for this PC. Refer to Appendix D for manual IP address setup for Secondary PCs.

6.0 Connecting PCs together.

The PCs need to be physically connected together and also the Secondary PCs need to be mapped to share on the Primary PC. Here are the steps involved:



Any of the three PCs above could be designated as “Primary”.

7.0 Configuring the Glasses Inventory Software.

Only the Glasses Inventory program needs to be configured to operate in a network. The Glasses Reader program analyzes the setup of the Glasses Inventory program and adjusts itself for network operation.

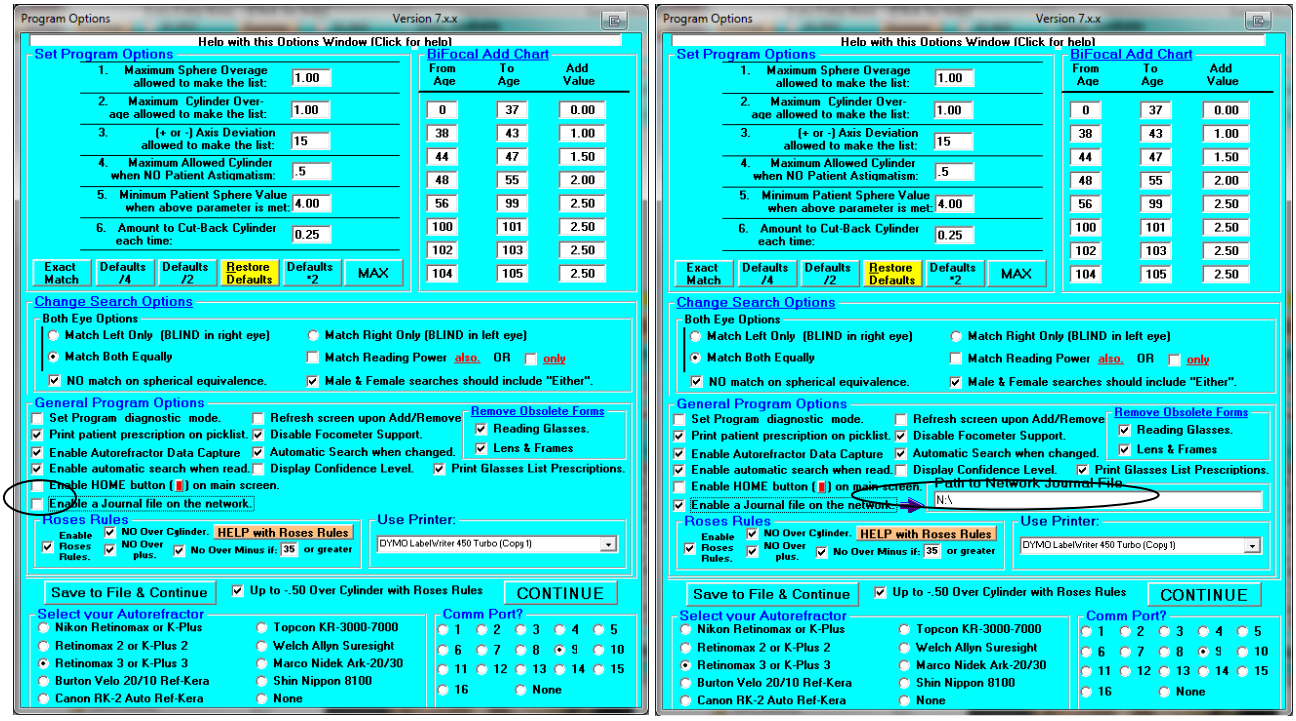
Below are the steps to setup the Glasses Inventory program on both the Primary and the Secondary PCs.

7.1 Primary and Secondary PCs Setup. ***(Not required for the Mexican Network)***

1. For the Primary PC only, put the following command procedure in the start-up group for the laptop:

```
@Echo off
SUBST N:  /D
SUBST N: C:\NetworkJournal
```

   This procedure will create a fake drive letter "N" and redirect it to folder **C:\NetworkJournal**. Use of this procedure means the Glasses Inventory program will be setup identically for both Primary and Secondary PCs with all PCs pointing to **N:** for their network drive.
2. Launch the Glasses Inventory program.
3. Click **Options** on the top of the window. You will see the graphic below.



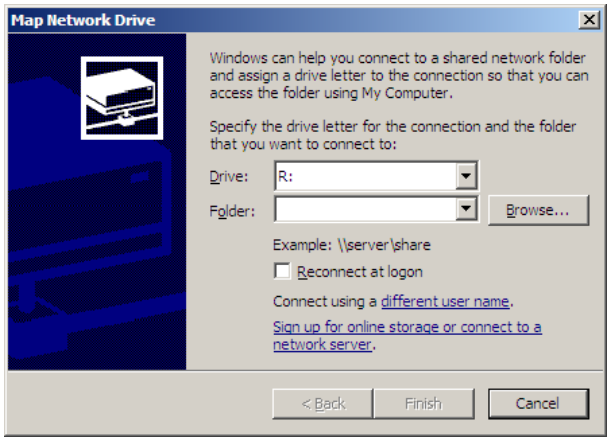
4. Click the circled item (**Enable a Journal file on the network**). You will see the graphic at the *right* above. Make sure it reads **N:**.
5. Click **Save to File & Continue**, click **EXIT,** and restart the Glasses Inventory program.

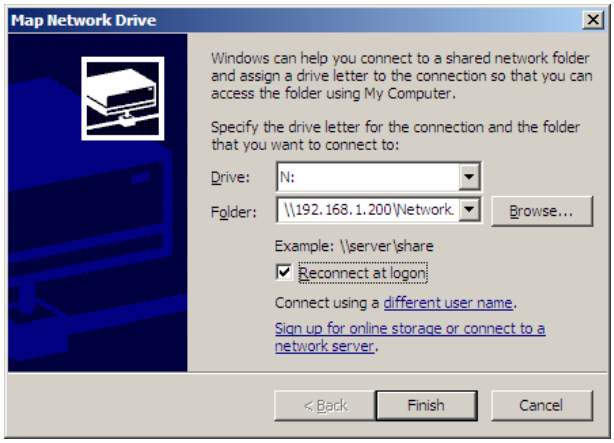
The Glasses Inventory program on the Primary PC is now ready. Repeat steps 2 thru 5 of this procedure for all Secondary PCs.

7.2 Secondary PC setup. ***(Not required for the Mexican network)***

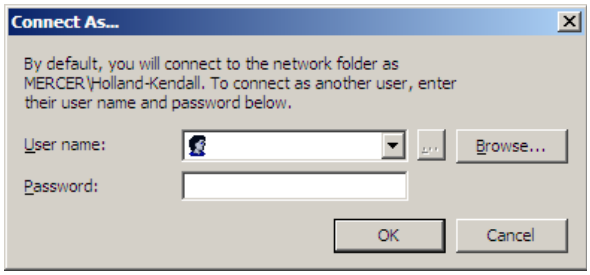
Before you can setup Glasses Inventory program on the Secondary PC, you have to map a drive to the **NetworkJournal** share on the Primary PC. Follow the below steps to accomplish this:

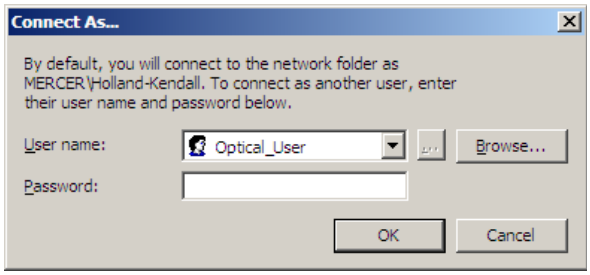
1. Left click on **START;** then right click on **Explore**.
2. Right click the **My Computer** icon; then left click **Map Network Drive.** You will see the below graphic to the *left.*
3. Select drive letter "N"; then enter \\192.168.1.200\NetworkJournal in the folder field as you can see in the *right* graphic below. Be sure to click **Reconnect at Logon**. "192.168.1.200" is the IP address of the Primary PC. Instead of the IP address, you can use the PC name (if known), for example: \\Laptop-B\NetworkJournal.





4. Click different user name. You will see the graphic on the *left* below.
5. Enter the username and password for the user on the Primary PC who has rights to this share. In this case, an account of **Optical_User** was entered with the global password.





6. Click **OK;** then click **FINISH** to complete the mapping of drive letter "N".

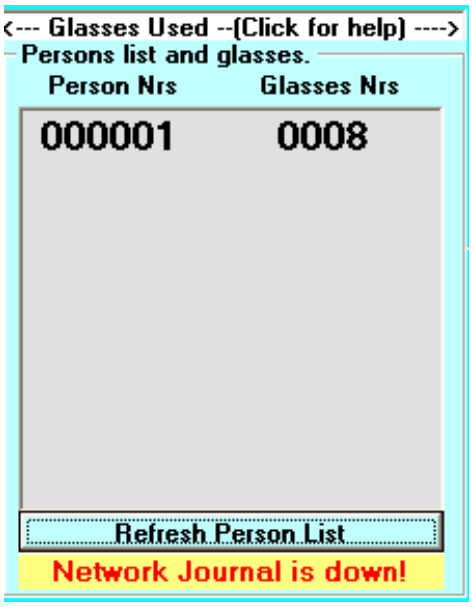
Drive letter mapping is now completed on the Secondary PC.

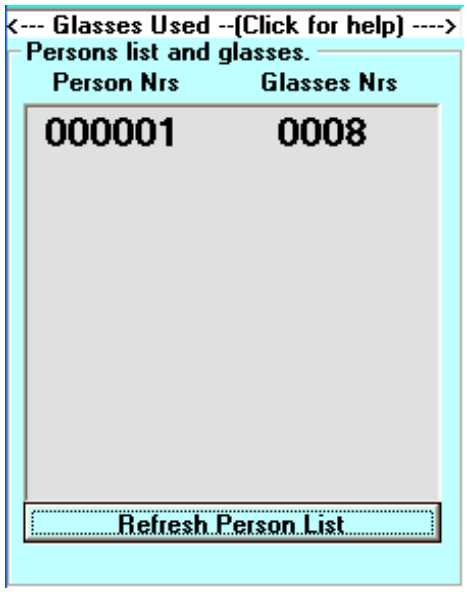
NOTICE

If you reboot the Secondary PC, you may have to go into Windows Explorer, double click on drive letter "N", and re-enter the password to connect to this drive. Clicking the "Reconnect at Login" checkmark in the *top right* graphic should prevent this issue.

7.3 Testing your work.

Start the Glasses Inventory program on a Secondary PC. If you see the below *left* message at the bottom left of the screen, you have either an improperly setup PC or a bad network connection. If you see the *right* graphic, you are communicating properly to the Primary PC.



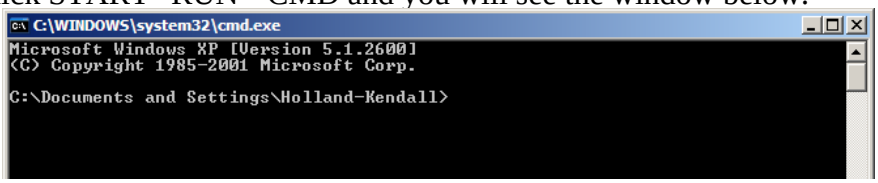


If you get the above error message, recheck your program setup and network connections. Click the **Refresh Person List** button several times to see if the yellow message disappears. See if you can use Windows Explorer to browse drive letter "N".

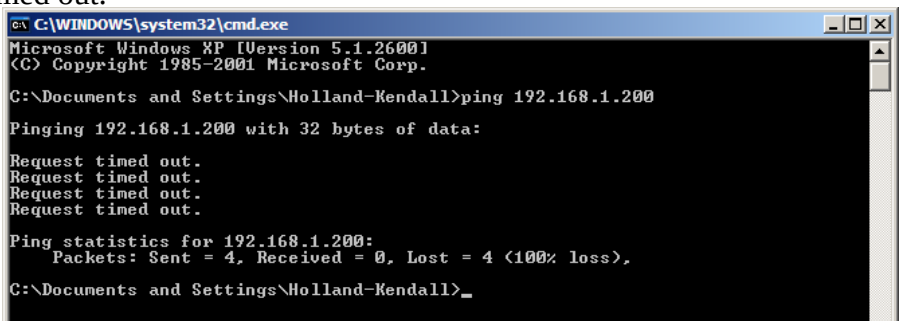
7.4 Network Cabling and setup tests.

To see if your network setup and your cablings are set up properly, do the following steps:

1. Click START RUN CMD and you will see the window below.



2. Enter "PING 192.168.1.200" (or PING <Primary PC Name>) in the window. You should get a response; if not, you will see the erroneous response below where the request has timed out.

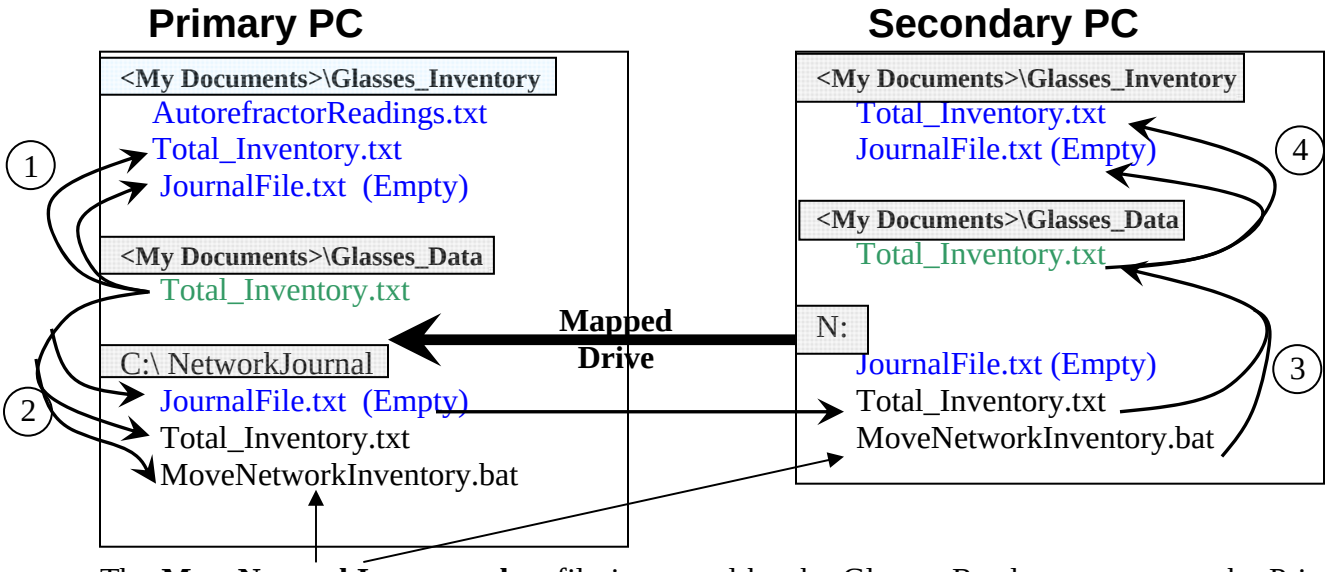


If the response is good and you still get the yellow error message above, check your Glasses Inventory program setup.

See Appendix A for further network tests.

8.0 The location of Necessary files.

The graphic below shows the location of the various files in a two PC configuration (Primary and Secondary). The files in blue are directly accessed by the Glasses Inventory program. The files in green are directly accessed by the Glasses Reader program. Directories and drive letters are shown in grey blocks. When you use the Glasses Reader program to do **File | Transfer Inventory to Glasses Inventory Program,** you execute circled Steps 1 and 2 below.



The **MoveNetworkInventory.bat** file is created by the Glasses Reader program on the Primary PC. When it is executed on drive "N" of the Secondary PC, the **Total_Inventory.txt** file inserted by the Primary PC Glasses Reader program is copied into **<My Documents>\Glasses_Data** for the Secondary PC at point number 3 above. The procedure then automatically runs Glasses Reader on the Secondary PC to transfer the inventory into place for Glasses Inventory. See point number 4 above.

Refer to the arrows above. They show the flow of the **Total_Inventory.txt** from the Primary PC to Glasses Inventory on the Primary PC to the network share to Glasses Reader on the Secondary PC to Glasses Inventory on the Secondary PC. Here are the steps that you perform:

Primary PC

1. Launch Glasses Reader, do inventory update and do **File | Transfer to the Glasses Inventory program.** The file copies at points 1 and 2 above happens. An Empty Journal File is created.

Secondary PC(s) *(see below footnote)*

2. Double click **MoveNetworkInventory.bat** file. The file copies at point 3 above happens.
3. The BAT file automatically launches Glasses Reader and does **File | Transfer to the Glasses Inventory Program.** The file copies at point 4 above happens. An Empty Journal File is created.

At this point, all PCs have the same inventory file and have null/empty journal files.

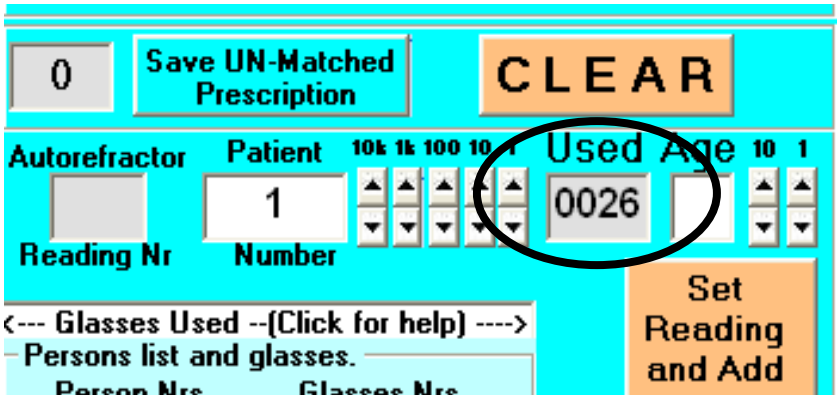
NOTICE

Before using a multiple PC system, you must be sure that all inventory files are the same and that the journal files are empty.

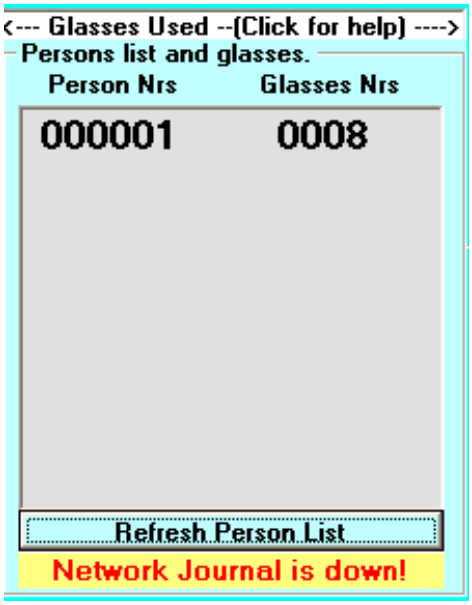
Footnote: Keep in mind that you can use the **Network Files Rebuild** transfer function to update all Secondary PCs. See Option 2 of Section 3.1 for information and Section10.1.

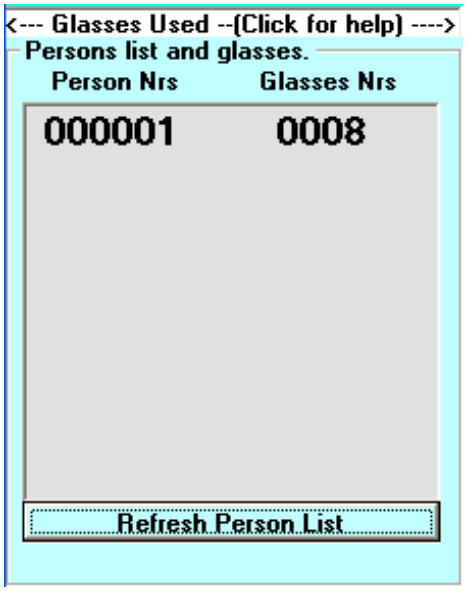
9.0 Operational Analysis.

The multiple computers running the Glasses Inventory program must show the same inventory. One indication that they are the same is the **USED** field as you see circled below. This number must be the same on all computers.



On the bottom left of the Glasses Inventory program window, you will see the below:





Every five minutes, each computer refreshes its memory from the network journal file. It does this by automatically depressing **Refresh Person List**. This means that all computers resynchronize themselves every five minutes. If you see the yellow message as shown on the *left* side above, the Secondary PC is not communicating with the network journal file on the network share. If you see this on the Primary PC, then the Glasses Inventory program is not configured to point to a valid directory.

This error indicator does not necessarily mean inventory changes have been lost, but it does indicate something must be done to fix it. After you resolve the issue, click **Refresh Person List** on both computers. The **USED** number should be the same; if so, then all is well.

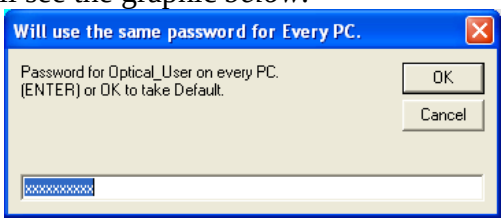
10.0 How to Recover from an outage.

10.1 Brief Network Outage.

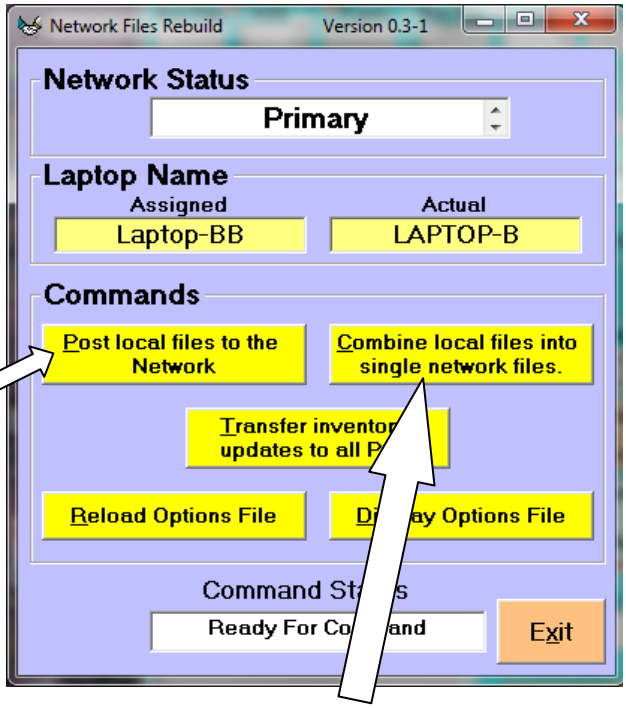
If the **USED** number is not the same on all computers, then the Network Journal file missed an entry from one computer or the other. Perhaps this happened during a Primary PC outage or network outage. If you are unsure whether you have a problem or not, click Refresh Person List on Glasses Inventory on all computers and compare the **USED** count to see if they differ.

If the **USED** count differs, first resolve the network problem. After this, you can resolve the **USED** count issue by following the steps below, which will combine the journal files in **<My Documents>\Glasses_Inventory** on all computers into a single journal file on the network share.

On all PCs in the network, launch the Network Files Rebuild program by clicking
START | All Programs | Network Files Rebuild.
You will see the graphic *below*.



If you plan to accept the default password for all network PCs, then click OK, and you will see the graphic to the *right*. Now follow these steps:



1. Click Post local files to the Network button and the bottom window should read:

2. Launch this program on all the PCs in the network and repeat Step 1 for each. Use VNC documented in Appendix F.
3. On just the last PC, click the Combine local files into single network files button and you will see:

The USED count on all PCs should now be equal. If and when this issue happens, please report the problem to Kendall Optometry Ministries, Inc.

PLEASE NOTICE.

Steps 1 and 2 above will not likely be needed for a configuration put together by KOM. This is because the system scheduler is running on every PC doing the Network Files Rebuild POST command automatically every 30 minutes. This is done in case a laptop goes down due to a hardware failure. The information you have from this laptop is current within 30 minutes. Please note Appendix E on how to setup the scheduler for this process.

10.2 Individual Component Failures.

Look at the network drawing in section 1.2. Below are a series of "What If" scenarios as to what should be done should any component fail.

Laptop A: If this laptop fails, any of the other laptops in the network can be used to remove glasses from the inventory system.

Laptop B: This is the Primary PC. Laptop A is its backup. To restore operation of the network, you must switch Laptop A to be the Primary PC. On Laptop A, follow these steps:

1) With Windows Explorer, right click the "N" drive and click **Disconnect**.
2) Put the command file to the *right* in the startup folder for this laptop. This redirects drive letter "N" to a local folder.

```
@Echo off
SUBST N:  /D
SUBST N: C:\NetworkJournal
```

3) On all remaining laptops, use Windows Explorer to disconnect drive letter "N" and remap drive letter "N" to the NetworkJournal share on Laptop A. Be sure you use the correct host name for Laptop A per the following table for the Mexican system:

Host Name	Function Name
KOM-KIT-14	LAPTOP A
E6400-W7-SPARE	LAPTOP B
D630-SPARE-PC2	LAPTOP C
OPTICAL-KIT2	LAPTOP D
KOM-KIT10	LAPTOP E
KOM-121-122	LAPTOP F

Note: You can handle this disconnect and reconnect by going to Windows Explorer and double clicking **Switch_to_Backup_Primary_PC.CMD** found in every **<My Documents>\If_Primary_Fails** folder on the Mexican system laptops.

When the Primary PC is repaired, you can run **Revert_Back_to_Primary_PC.CMD** file or you can have Laptop B perform the functions of Laptop A leaving Laptop A as the Primary PC.

Keep in mind that because of the regular backup of the journal files from Laptop B to Laptop A, Laptop A will be able to take the role of Primary with little or no loss of inventory removals. Choose to do an empty location inventory at the end of the day.

Remember—when Laptop A is Primary, you must disable the **CopyNetworkFiles** backup mentioned in Appendix E. Enable it only after Laptop B is back as the Primary PC. To disable the job, right click it under scheduler, click **Properties**, and unclick **Enabled** at the bottom of the window.

Laptop C-F: All of these laptops are performing autorefractor readings. They back each other up.

Wireless Router: There is a backup wireless router in the router travel case.

High Gain Antenna: There is a backup high gain antenna in the router travel case.

Appendix A – Changing the Hosts File.

Print out the **PingTest.cmd** and go to each non-responsive PC to confirm that the IP address is correct. If any are wrong, then you may need to change the Hosts file in each PC to match the new settings. To the *right* is the current copy of a **PingTest.cmd** file for the Mass Clinic planned for November 6-16, 2012 in Mexico. The Hosts file for this Mexican clinic is *below*:

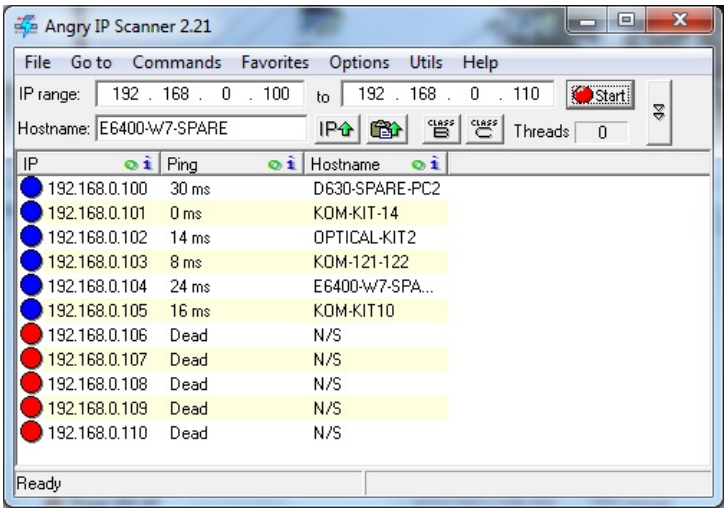
```
@Echo Off
ECHO ================
Echo Ping Laptop A:
ECHO ================
PING KOM-KIT-14
PAUSE
ECHO ================
Echo Ping Laptop B:
ECHO ================
PING E6400-W7-SPARE
PAUSE
ECHO ================
Echo Ping Laptop C:
ECHO ================
PING D630-SPARE-PC2
PAUSE
ECHO ================
Echo Ping Laptop D:
ECHO ================
PING OPTICAL-KIT2
PAUSE
ECHO ================
Echo Ping Laptop E:
ECHO ================
PING KOM-KIT10
PAUSE
ECHO ================
Echo Ping Laptop F:
ECHO ================
PING KOM-121-122
PAUSE
```

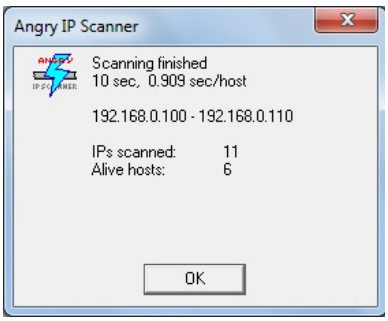
```
# Copyright (c) 1993-1999 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host

127.0.0.1       localhost
192.168.0.100  D630-SPARE-PC2 #Spare XP PC.        LAPTOP C
192.168.0.101  KOM-KIT-14     #Kit 127-128         LAPTOP A
192.168.0.105  KOM-KIT10      #Kit 119-120         LAPTOP E
192.168.0.104  E6400-W7-SPARE #PRIMARY PC -Win7    LAPTOP B
192.168.0.103  KOM-121-122    #Kit 121-122         LAPTOP F
192.168.0.102  OPTICAL-KIT2   #Kit 117-118         LAPTOP D
```

The Hosts file is placed in **C:\Windows\Systems32\Drivers\Etc**. and is named "Hosts", and not "Hosts.txt". It can be edited with notepad. A copy of this file is also kept in the network journal updates folder.

These IP addresses can also be verified by launching **Angry IP Scanner** located in the **<My Documents>\Software\IP-Scanner** directory of the Primary PC. You will also find it on the START menu of the Primary PC. Note that this program is identified as a risk by Nortons Antivirus, but in this case, it is a very useful tool to learn something quickly about the network. For the mass clinic, this tool has been identified to Nortons Antivirus as an exclusion to the rule. A sample run is *below*.





Compare the IP addresses in the scanner window to those in the Hosts file—they should be identical. Enter the IP range of 192.168.0.100 through 192.168.0.110 and click **Start**.

Appendix B – Installing the Wireless Router.

The physical installation of the wireless router is quite straight forward. The most important thing to remember is that the antennas radiate more to the sides of the antennas and less above and below the antennas. This means you should try to locate the routers on the same level as the wireless PCs and in a central location to receive the maximum signal strength.

NOTICE: Before applying power to either the router or the antennas, make all antenna connections. When everything is connected, then apply the power.

The router for the wireless network for the Mexican clinic has been fully configured. Details about their configuration will be explained in a later section. To the *right* is a picture of a basic configuration of the router. As you can see, it has three short antennas. This configuration will likely be enough power to support your area.

A second possibility is to replace the small right side antenna with a higher power amplifier antenna as shown in the picture to the *right.* The rear view of this connection is *below*.

A third possibility is to add a second antenna to the router replacing the small antenna on the left as you see *below*.

To the *left and right*, you see the front and rear of the router with the two high gain antennas attached.

NOTICE

Make all connections to the router with the power cables removed.

Appendix B – Installing the Wireless Router. (Cont'd)

One important aspect of the wireless router is for it to have DHCP. DHCP means the router will assign IP addresses to every PC on the network. To be certain that the Mexican router will always assign the same IP address to every PC on the network, DHCP reservations must be made. These reservations assign a computer name and MAC (machine) address to a particular IP address. Here are the reservations for the Mexican router:

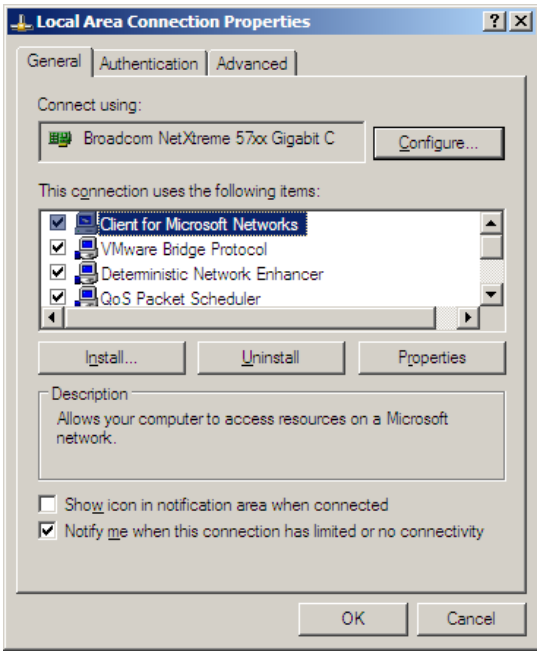
DHCP RESERVATIONS LIST :

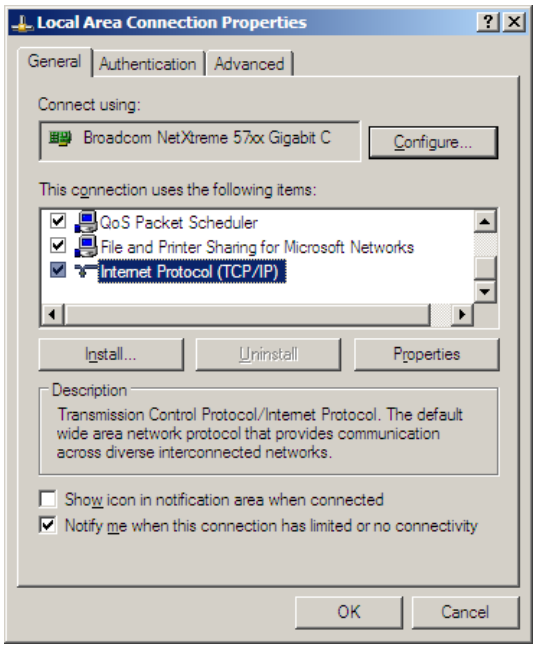
LAPTOP #	Enable	Host Name	MAC Address	IP Address
LAPTOP C →	☑	D630-SPARE-PC2	00:1b:77:80:3f:18	192.168.0.100
LAPTOP A →	☑	KOM-KIT-14	00:1f:3a:38:12:a7	192.168.0.101
LAPTOP D →	☑	OPTICAL-KIT2	00:90:96:b1:78:f7	192.168.0.102
LAPTOP F →	☑	KOM-121-122	00:14:a5:54:e1:a8	192.168.0.103
LAPTOP B →	☑	E6400-W7-SPARE	c4:17:fe:58:3c:d3	192.168.0.104
LAPTOP E →	☑	KOM-KIT10	00:14:a5:73:9c:7e	192.168.0.105

Appendix C – I.P. Setup of Primary PC.

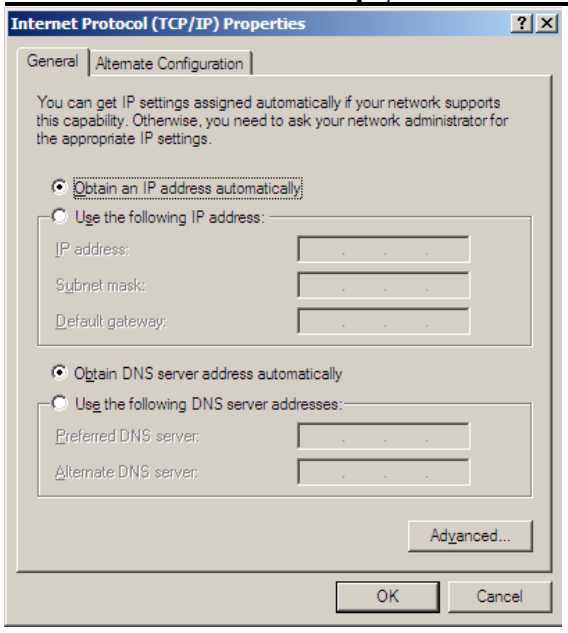
If you plan to directly connect the Primary PC to another PC, you need to manually establish an internet address for this PC. This is not required for the Mexican clinic. However, steps to accomplish this are as follows:

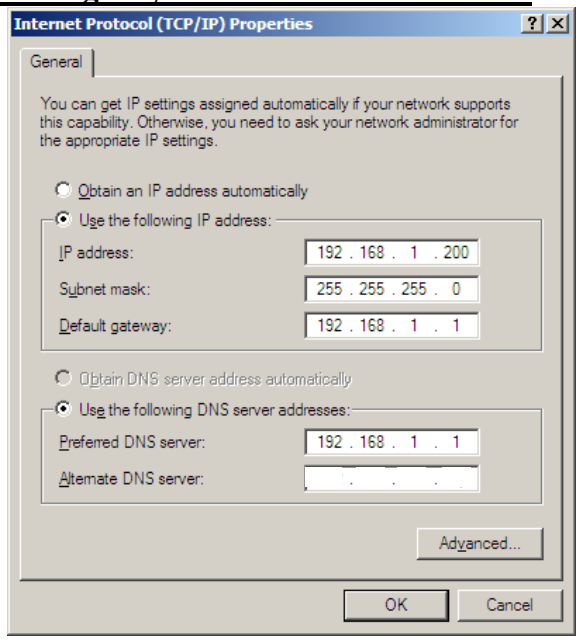
1. Click **START | CONTROL PANEL | NETWORK CONNECTIONS,** then right click the **Local Area Connections** icon, then click **Properties.** You will see something like the *left* graphic below.





2. Scroll down the window and you will see the *right* graphic *above*.
3. Highlight the **Internet Protocol (TCP/IP)** line as shown above and click the **Properties** button—you will see the *left* graphic *below*.
4. Change it to read like the *right* graphic and click **OK**. **<u>Remember how to change this back because this will keep your PC from working on your local at home network.</u>**

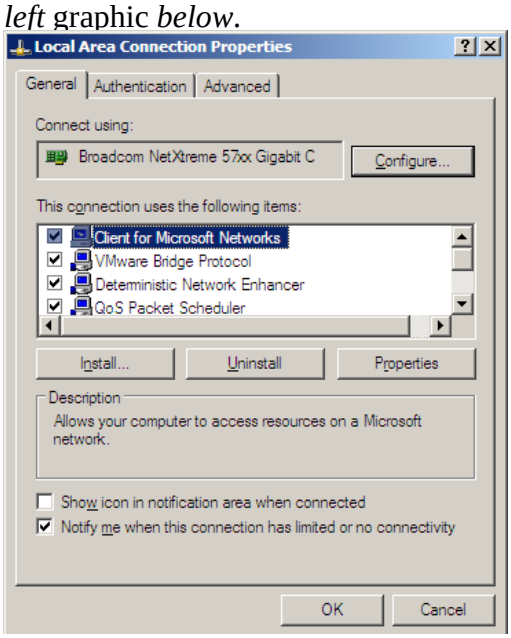


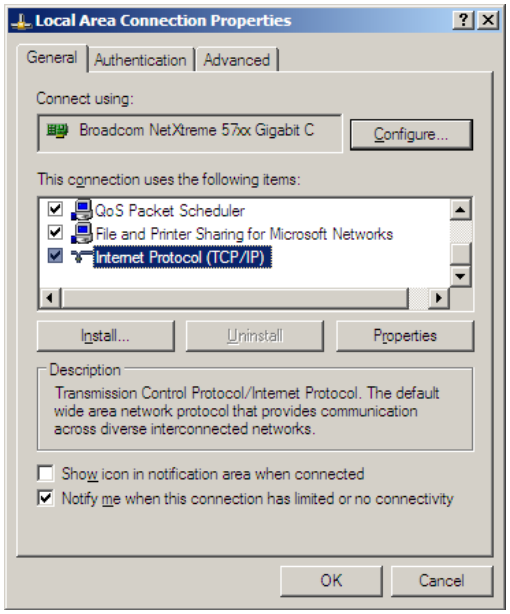


Appendix D – I.P. Setup of Secondary PCs.

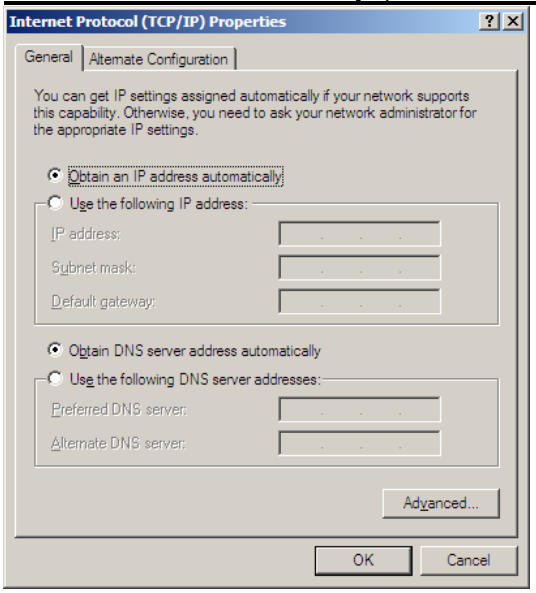
This Appendix D will not be required by the Mexican clinic. You should only have to do this for an environment without a router. Steps to accomplish this follow below:

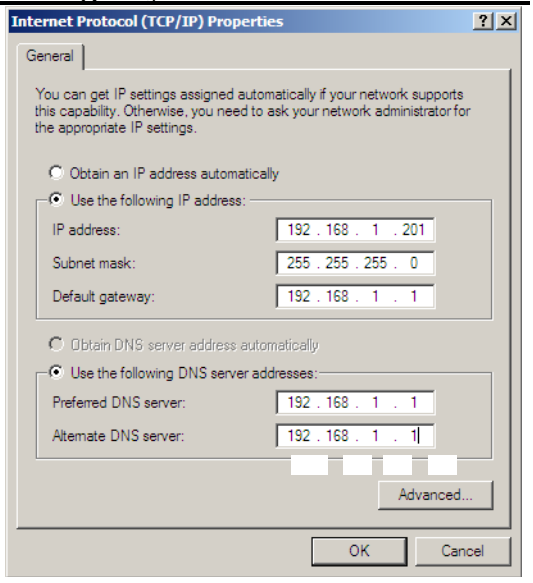
1. Click **START | CONTROL PANEL | NETWORK CONNECTIONS,** then right click the **Local Area Connections** icon, and click **Properties**. You will see something like the *left* graphic *below*.





2. Scroll down the window and you will see the *right* graphic *above*.
3. Highlight the **Internet Protocol (TCP/IP)** line as shown above and click the **Properties** button—you will see the *left* graphic *below*.
4. Change it to read like the *right* graphic and click **OK**. **Remember how to change this back because this will keep your PC from working on your local at home network.**



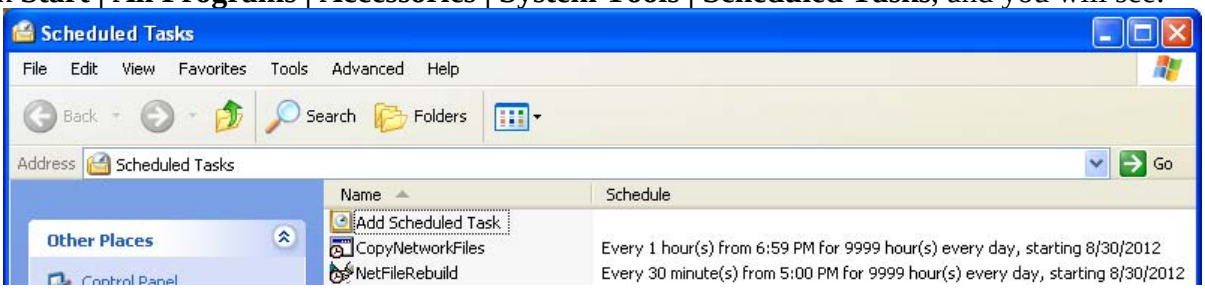


Your PC is now ready to be used as a Secondary PC. Additional PCs should be numbered to end with .202, .203, etc.

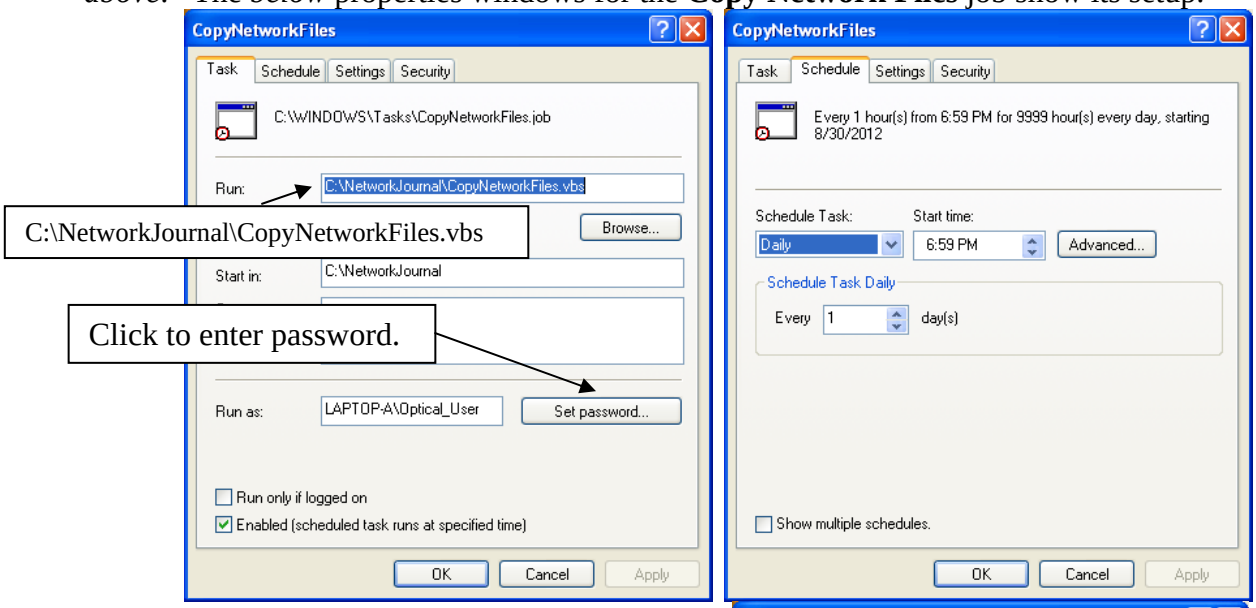
Appendix E – Scheduler Setup.

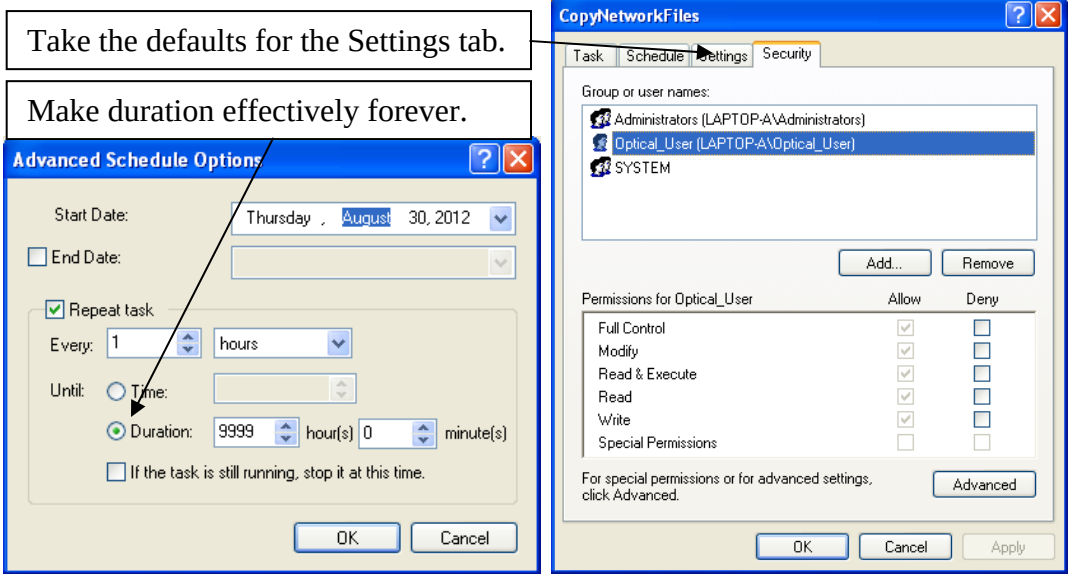
Two different scheduler jobs are running on the PCs which are part of the Mexico clinic. One job runs on the backup journal PC (Laptop A) and backs up the network journal files to a local C:\NetworkJournal folder which is also shared. If Laptop B fails, then all PCs will need to have their drive letter "N" remapped to a different share using the procedure in Section 10.2.

To setup scheduler for this backup, take these steps:
Click **Start | All Programs | Accessories | System Tools | Scheduled Tasks**, and you will see:



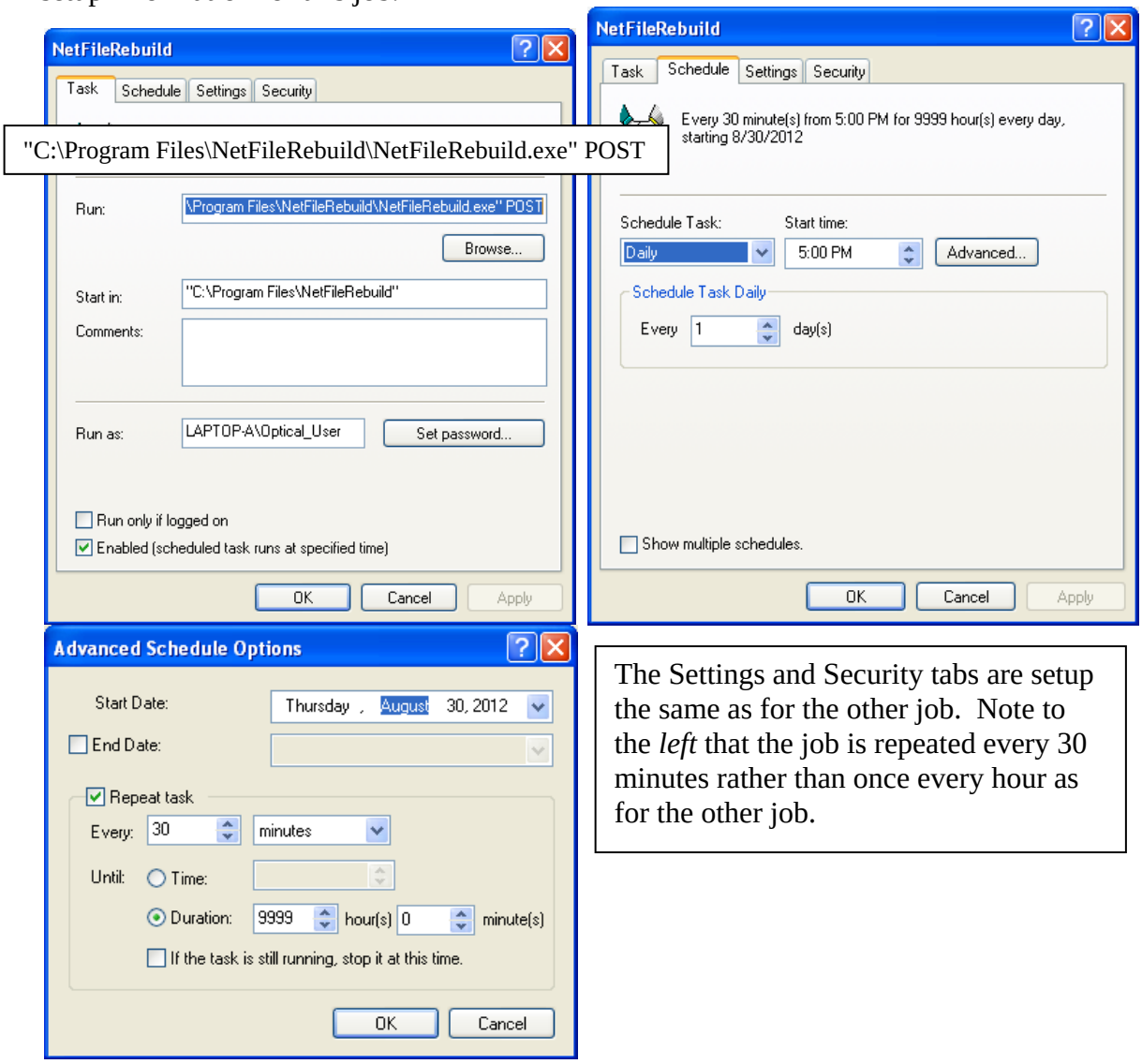
This is the finished results of the setup. Do the setup by clicking **Add Scheduled Task** as shown *above*. The *below* properties windows for the **Copy Network Files** job show its setup.





Appendix E – Scheduler Setup. (Cont'd)

As shown on the previous page, the second scheduler job automatically posts the local journal and autorefractor readings files to the control folder of the journal file. Below is the setup information for this job.



The Settings and Security tabs are setup the same as for the other job. Note to the *left* that the job is repeated every 30 minutes rather than once every hour as for the other job.

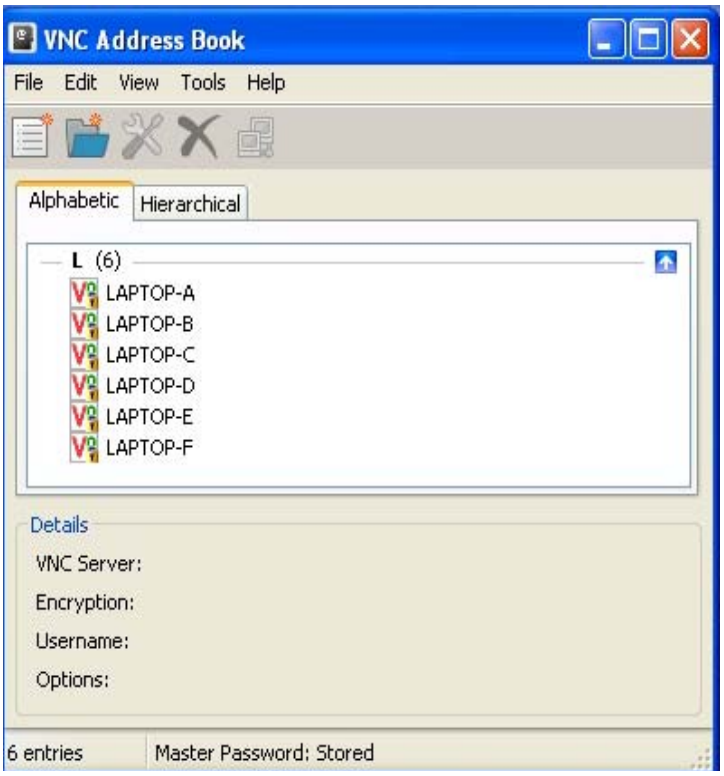
The Windows 7 setup is functionally the same, however, it is setup differently. Look to Windows 7 documentation for further information.

Appendix F – Remote Diagnostics.

Any system has a potential of failure. The Mexican glasses clinic system has an added feature to enable remote access to all PCs on the network to help diagnose issues with the system.

If the Ethernet port on any of the six PCs in the network is connected to the internet, KOM through http://www.Logmein.com can remote connect to any PC to work on issues with that particular PC, and through that PC, use VNC to access other PCs in the network. The use of VNC is also available to the Mexican optical team to allow any of the laptops to connect to any other of the laptops for remote control.

When you click the **START** button on any of the laptops, you will see the graphic to the *right*. Notice the icon **VNC Address Book**. Click on this icon and you will see the window below:



When you right click **LAPTOP-A**, for example, you will see the window to the *right*. Click **Connect** and you are now remote-controlling **LAPTOP-A**. The password login is automatic. Close the window to disconnect.

If you need to transfer files between the PCs, do it using the "N" drive Network Journal share that was setup in Section 7.2. This is a share which all the PCs can access.