

Sanako Lab 100 Multi MU

TECHNICAL GUIDE

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Sanako Corporation

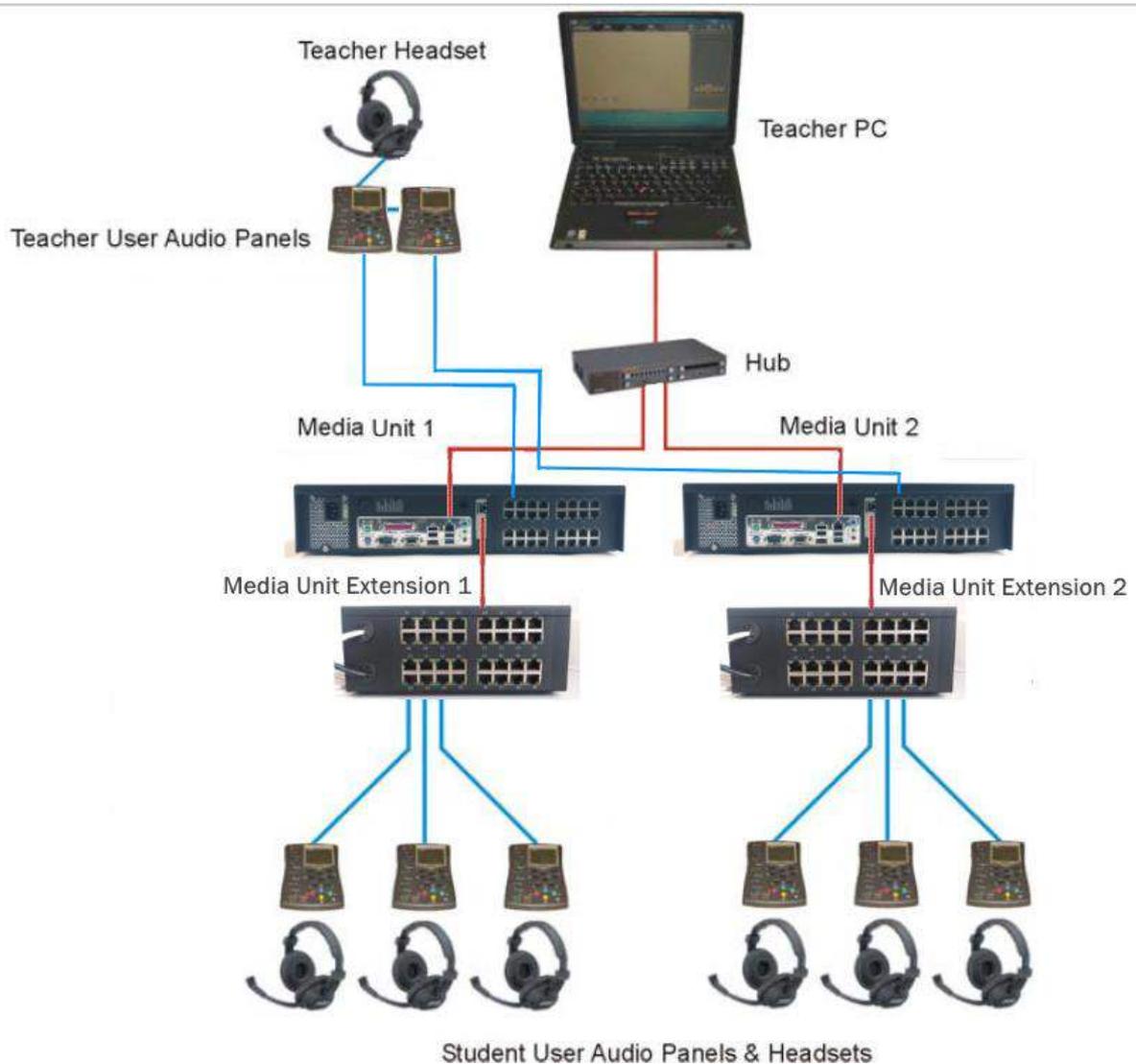
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SANAKO LAB 100 MULTI MU



OVERVIEW

From version 6.0 onwards, it has been possible to expand the number of students of a Lab 100 system by connecting two Lab 100 systems together. In Lab 100 v. 10.3 and later this is done by using two Lab 100 Media Units and Media Unit Extensions. The maximum number of supported students is 126. Notice that when using certain model student functions or external audio sources, the number of supported students may be limited due to the dual Media Units and Media Unit Extensions.

This technical guide is an addition to the standard Lab 100 User Guide and explains the multi Media Unit configuration for Lab 100 v. 10.3. Answers to standard Lab 100 usage and configuration questions can be found from the Lab 100 User Guide.

REQUIREMENTS

- 2 Lab 100 Media Units
- 2 Lab 100 Media Unit Extensions
- Lab 100 software (v. 10.3 or later)
- Teacher PC with Windows 7, Windows 8, or Windows 10 operating system
- Teacher monitor capable to resolution 1600 x 1200
- 2 Dual PSI + Cables if user wants to use students as a program source across the Media Units
- 2 Dual PSI+ Cables if user wants to use PC audio (other than audio files) or external Sources in teaching
- Standard UAPs and cables for student
- Standard Teacher UAP for Media Unit
- Special made Teacher UAP for first Media Unit with integrated microphone cable
- Attenuator to connect between Teacher UAPs
- 100 Mbps network switch
- Standard Straight CAT5 Ethernet cables for connecting Teacher PC and MUs to the network

LIMITATIONS

Due to the hardware of a Multi MU installation, certain limitations apply compared to the Lab 100 system

- Students located on different Media Units and their extensions can't be paired in pair or group discussions. The program automatically corrects the pairs that teacher tries to select across Media Units
- The Phone Conversation activity can only be performed between students inside the same Media Unit and its extension.

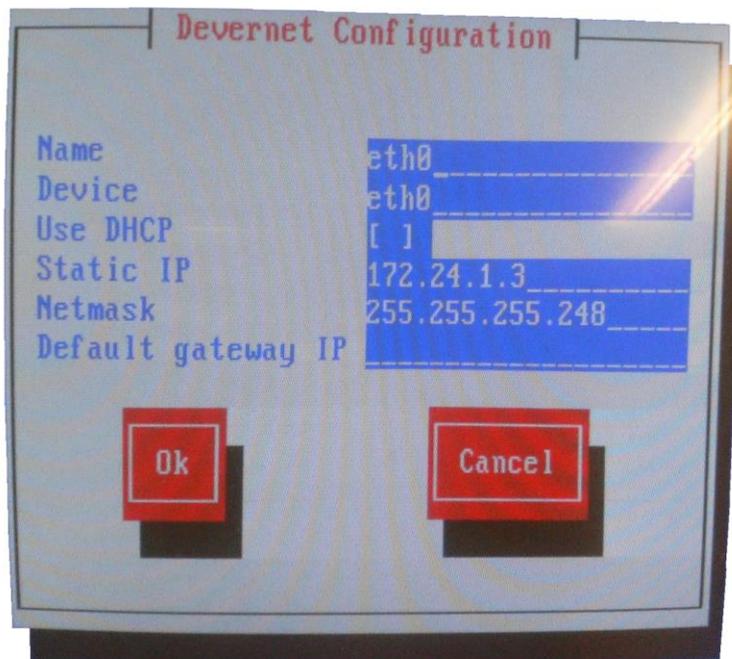
HARDWARE INSTALLATION

CONFIGURING THE SECOND MU

When setting up a system that has two MUs, only the configuration of the second MU needs to be edited in order for the MUs to work together.

CHANGING THE NETWORK ADDRESS

1. Connect a keyboard and a mouse to the second MU.
2. Login with the following account:
User Name: **root**
Password: **stairway**
3. Type **setup** and press Enter.
4. Select **Network Configuration** and press Enter.
5. Choose **eth0 (eth0)** and press Enter. The following screen should appear:



6. Select **Static IP** and press Enter.
7. Type in an IP address, **172.24.1.3** and press Enter.
8. Make sure that **255.255.255.248** is set as the **Subnet mask** and press Enter.

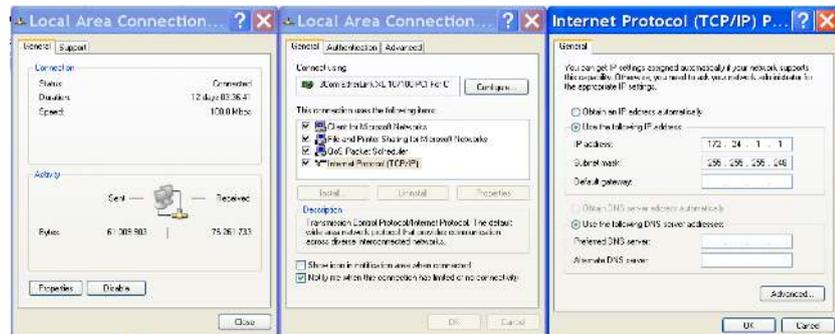
9. You can leave the **Default gateway IP** field and then press Enter.
10. Select **OK**.
11. Select **Quit**.
12. Select **Quit** again.
13. Reboot the MU.

CHANGING THE SAMBA NETWORK SHARE ADDRESS IN THE SECOND MU

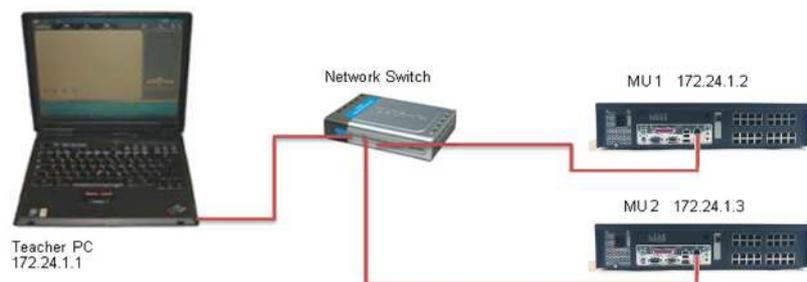
1. Log into the second MU with the following account:
User Name: **root**
Password: **stairway**
2. Type in `cd /etc/samba/` and then press Enter.
3. Type `sed s/MSU/MSU2/g smb.conf > smb.conf2` and press Enter. The 'MSU' is the old hostname and 'MSU2' is the new hostname. The hostnames are case sensitive, so remember to type MSU and MSU2 in capital letters.
4. Type `mv smb.conf2 smb.conf` and press Enter.
5. When the system asks whether you want to overwrite or not, type `y` and press Enter.
6. You can check that the hostname has been changed by typing `cat smb.conf | grep MSU` and pressing Enter. If all mentions of MSUs in the listing are 'MSU2' then the procedure was successful. If some other name, for example MSU22, appears on the list, you must repeat step 3 and replace 'MSU' with the name that appeared on the list.
7. Reboot the system.

CONNECTING THE MUS AND TEACHER PC TO THE NETWORK

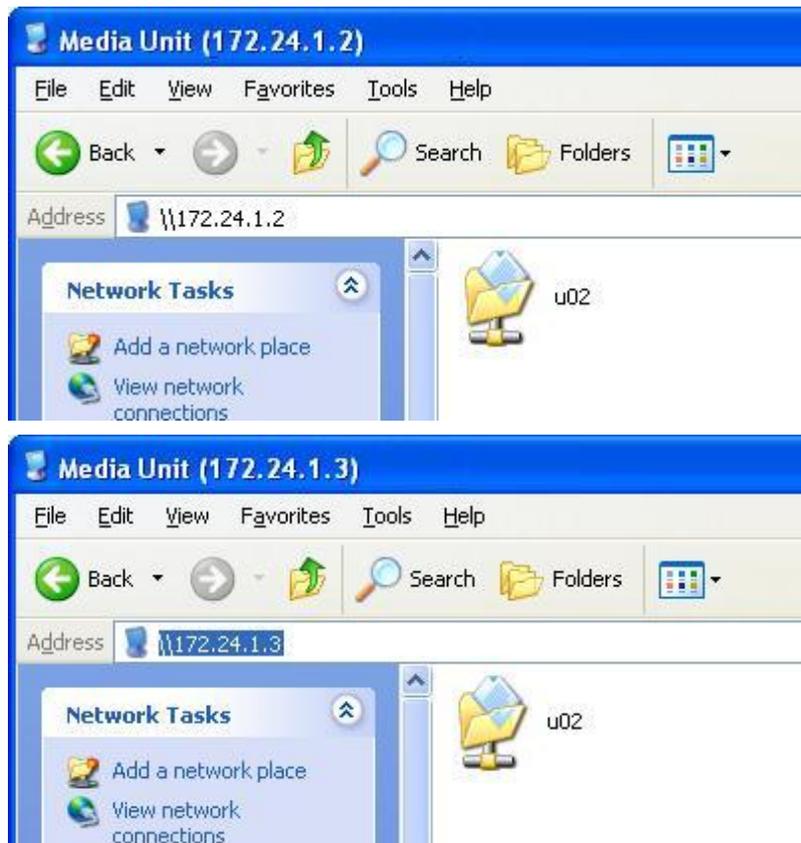
CHANGING THE NETMASK AND IP ADDRESS IN THE TEACHER COMPUTER



1. Go to the teacher computer's network properties and change the netmask to **255.255.255.248** and IP address to static **172.24.1.1**
2. Connect the Teacher PC and MU 1 and MU 2 to a standard 100 Mbps network switch or hub. There must be no other connections to this switch and there must be no firewall and DHCP services running at the Network Switch.



3. Open Windows explorer and check that you can connect to the MUs from the teacher PC by typing [\\172.24.1.2](http://172.24.1.2) and [\\172.24.1.3](http://172.24.1.3) to the address field.

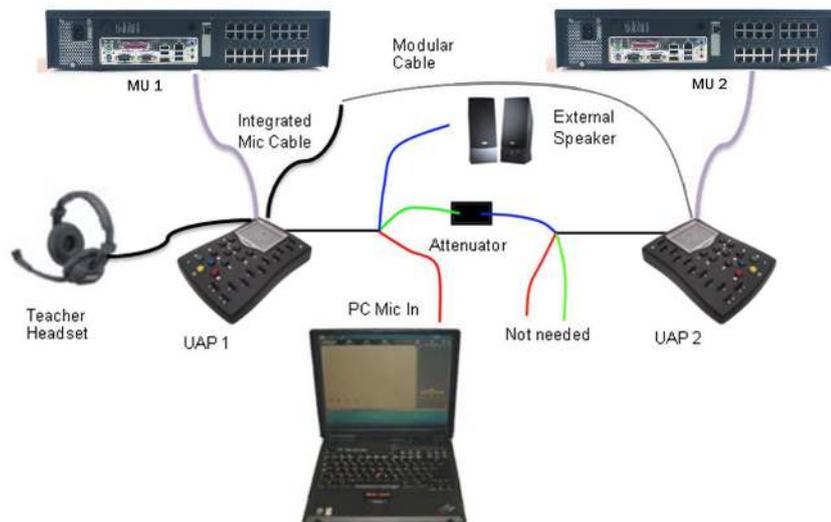


You should see the MU contents if everything works. If you can't connect to both MUs, check the network troubleshooting section at the end of this document.

CABLE INSTALLATION

You will find detailed cable schematics at the end of this document which you can use at the installation. In any case, the cabling process will be covered step by step in this guide.

In the Lab 100 Multi MU system, the teacher has master UAP connected to the teacher port (M) of the MU1 but another Standard Teacher UAP is needed for routing sounds from MU2 to the Teacher UAP. The gain attenuator is needed between the UAPs to correct the sound levels of the UAPs.



First connect the UAP 1 to the teacher port (M-port) of the MU1 and UAP 2 to the teacher port (M-port) of MU2 with standard Ethernet cabling. Connect the teacher headset to the UAP1

Connect Modular cable to UAP 2 and to the Integrated Mic cable from UAP 1

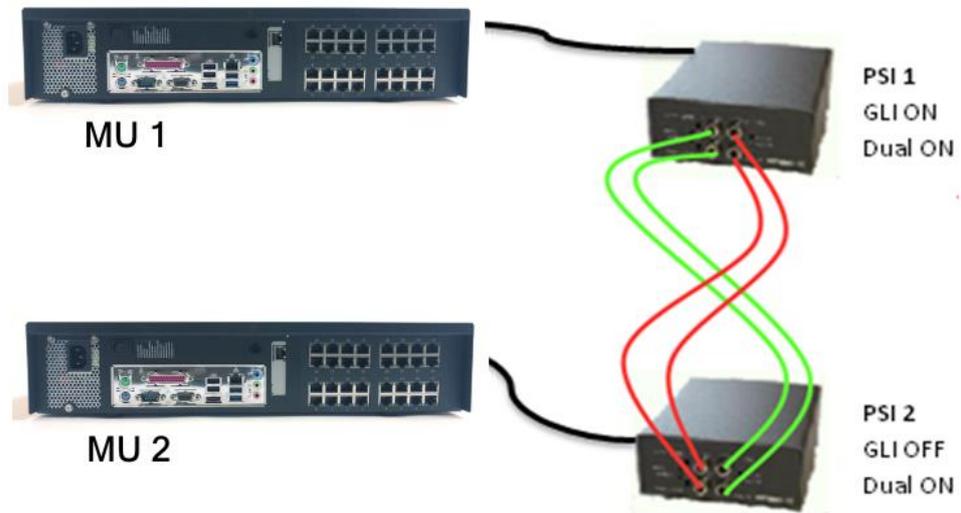
Connect the green audio cable from the UAP 1 to the attenuator and then the blue cable from UAP 2 according to the illustration. It does matter which way around the attenuator is installed. If the volume levels are too high when monitoring students at MU2, just switch the attenuator the other way around.

If you want to use External Speakers to broadcast the program track to the classroom connect them to the blue cable of UAP 1. The left (L) channel is the master track and the right (R) channel is the student track so you can select which material you want to broadcast. Alternatively the teacher can adjust the balance of the speakers according to need.

If you want to use the Teacher headset as a microphone for PC programs, connect the red cable in UAP 1 to the PC Mic in. The green and red cables of UAP2 are not connected.

INSTALLING PAIR OF DUAL PSI UNITS TO ENSURE COMMUNICATION IN MODEL STUDENT SITUATIONS

The communication of students between Media Units is limited in Multi MU setups, but Lab 100 can use a pair of Dual PSIs to establish communication so that a student, or a group, can be used as a source to a session running in another Media Unit.



CABLING Routes

PSI 1 Line Out L → *PSI 2 Line In L*
PSI 1 Line Out R → *PSI 2 Line In R*
PSI 1 Line In L → *PSI 2 Line Out L*
PSI 1 Line In R → *PSI 2 Line Out R*

First connect the PSIs with standard CAT5 Ethernet cabling to the Media Unit, the port must be the same in both Media Units.

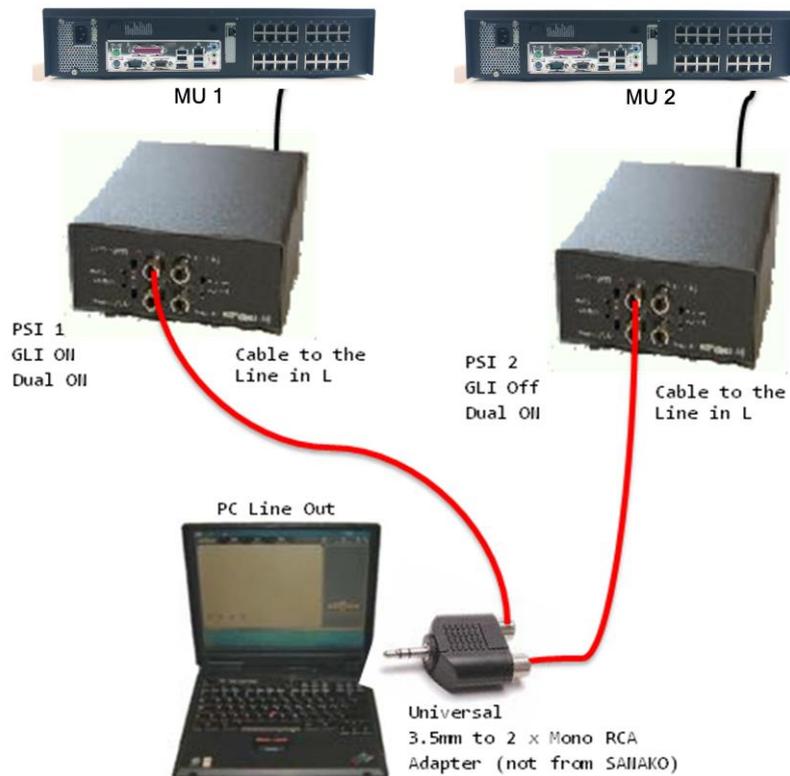
Then ensure that you have GLI setting **on** at PSI-1 and GLI setting **off** at PSI-2. The Dual setting has to be **on** at both PSIs. Then you must connect the RCA cables according to the picture and Cabling Route section.

This PSI Pair is later configured in the config program as a “Forwarding Port”.

CONNECTING EXTERNAL SOURCES

If you want to use external sources in teaching, like cassette recorders, you need to have a pair of Dual Program Source

Interfaces in the system. You can have two external sources per one pair of PSIs. Notice that unlike in a normal Lab 100, if teacher PC sounds are used in teaching, Teacher PC has to be connected through the PSI and it is handled like an external Source. If you need more external sources, you can increase the number of PSIs in the system, but remember that a pair of PSIs take two student positions from the system.



To connect the external sources, you need to split the signal in half to route the audio to both PSIs. Notice that the signal should be mono before entering the PSI so one example is to build a setup like in this illustration.

The signal from PC is first converted to mono and then split to 2 RCA connectors. Then the signal is routed to both PSIs so both Media Units receive all the PC Sounds. In this example we have a universal adapter which you will find from good hardware stores. As there are many types of connectors, you can use different kinds of adapters and cables to get the same final result.

Connect the PSIs with standard CAT5 Ethernet cabling to the SCU. The port must be the same in both Media Units. As the PSI pair in the previous took one pair of ports, you have to use a different port. Remember to set the GLI **on** in the first PSI and **off** in the second PSI.

The external sources are configured later with the *Lab 100 Config* program.

SOFTWARE INSTALLATION

LICENSES

The Sanako Lab 100 Multi MU system requires a separate license token. The Lab 100 Multi MU token is entered after installation in the *Lab 100 Config* application.

INSTALLATION

There are two parts to installing Lab 100 Multi MU software.

- Install Lab 100 with your Lab 100 software token
- Activate Lab 100 Multi MU in *Lab 100 Config* with your Lab 100 Multi MU token

For Lab 100 installation instructions and general configuration instructions, see the Lab 100 User Guide.

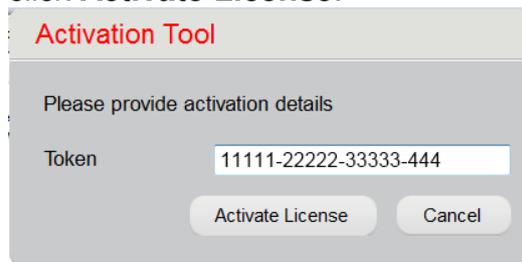
ACTIVATING THE LAB 100 MULTI MU SOFTWARE MODULE

After Lab 100 installation, you need to enter the Lab 100 Multi MU license token in the **Lab 100 Config** application in order to activate the Lab 100 Multi MU software module.

1. Start the **Lab 100 Config** application either through the Windows Start menu (*Start / Programs / Sanako / Lab 100 Config*), or by double-clicking the Lab 100 Config icon on your desktop
2. Click **Add License**



3. Enter your Lab 100 Multi MU token information and click **Activate License**.



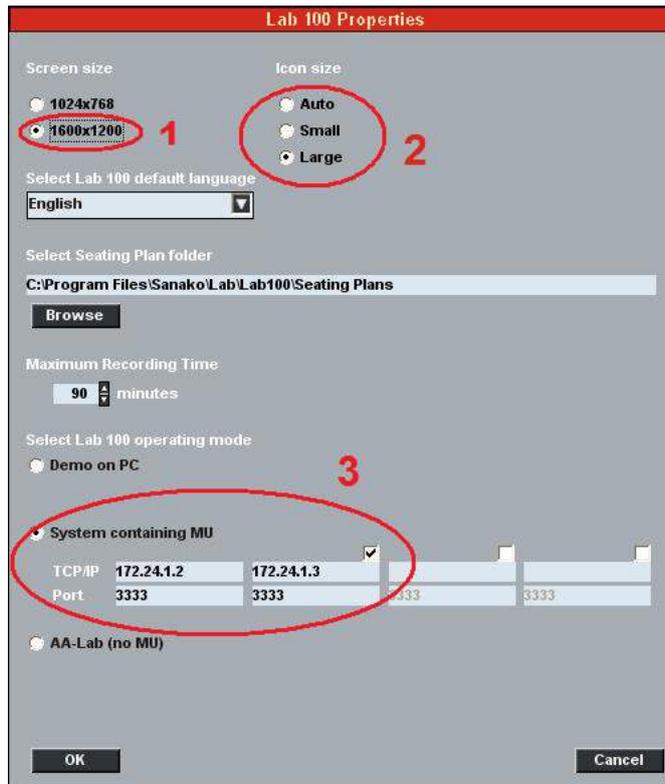
LAB 100 MULTI MU CONFIGURATION

Before the Lab 100 Multi MU system can be used in teaching, the system has to be configured properly.



SETTINGS

Open the configuration program and click **Set Default Settings**.



1. SCREEN SIZE

Here you can adjust the screen size of the Lab 100 application. If you have over 70 students, you have to use 1600 x 1200 setting. Notice that you must have a monitor capable to resolution 1600 x 1200 and you have set that resolution before changing the screen size from Lab 100.

2. ICON SIZE

You can adjust the student icon size according to your taste. The Auto-setting will use large icons as long as the icons will fit to the screen. After that it switches to small icon mode.

3. LAB 100 OPERATING MODE

Click on the checkbox and enter the IP address of the second MU.

FINDING WORKSTATIONS

After the default settings are made, click **Find Workstation** and the Student icons should appear on the screen. If the Lab 100 gives an error message, you can see an .XXXX.

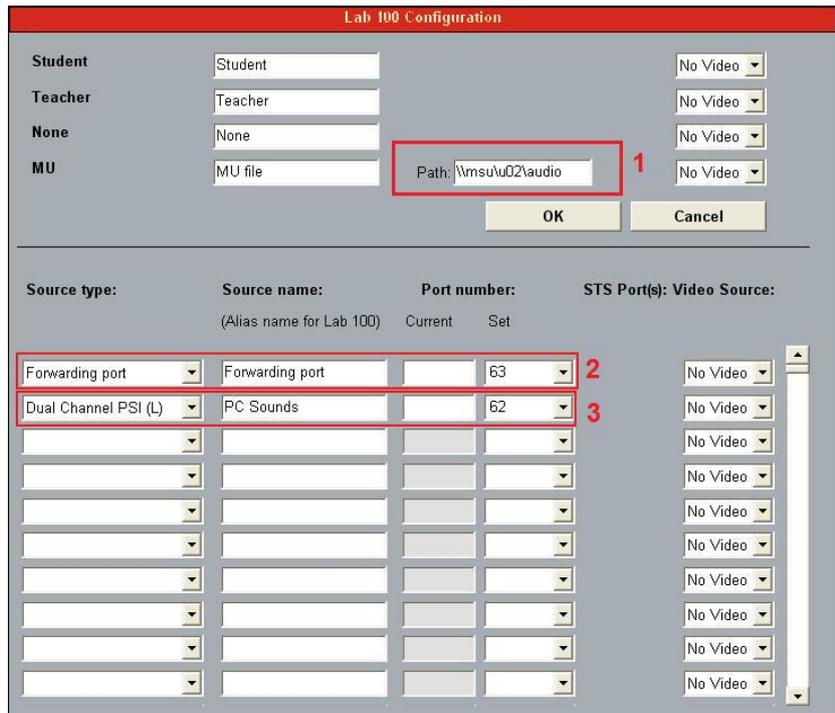


After the students have been found, you can arrange the icons according to the layout of the classroom.

SETTING AUDIO SOURCES

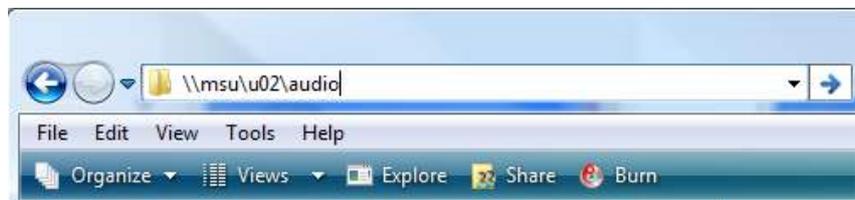
After student layout is finished, click **Set Audio Sources**.





MU PATH

First you must specify the path where audio files are located in the MU1, the default location is [\\msu\u02\audio](#) . The problem is that in some network / operating system configurations [\\msu\](#) can't be found in the network whereas [\\172.24.1.2\](#) works. This is probably because the network name is not shown due to security policies. To ensure the correct setting, use windows explorer to test which one works. If you are facing problems connecting to MU with windows explorer, check Network Troubleshooting section.



FORWARDING PORT

In the Source type section, one forwarding port must be specified. The forwarding port refers to the Dual PSI configuration which was set on page 8. This enables using student as a source from one MU to another.

At the port number section, write the port number where the forwarding port PSIs are connected in both MUs.

EXTERNAL SOURCES

This section refers to the external sources which were setup at the installation section. To set up external sources you Select Dual Channel PSI (L) or Dual Channel PSI (R) as a Source type. At the source name, you can write descriptive name for the source, e.g. "PC Sounds". In the port number section, write the port number where the PSIs are connected in both MUs.

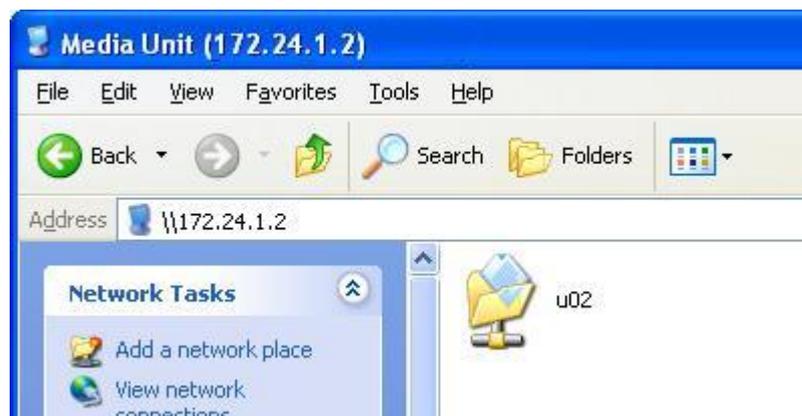
If you connect 2 analogue sources to one PSI pair, you have to use the same port setting in Dual Channel PSI (L) and in Dual Channel PSI (R), just name the Source names to describe the input.

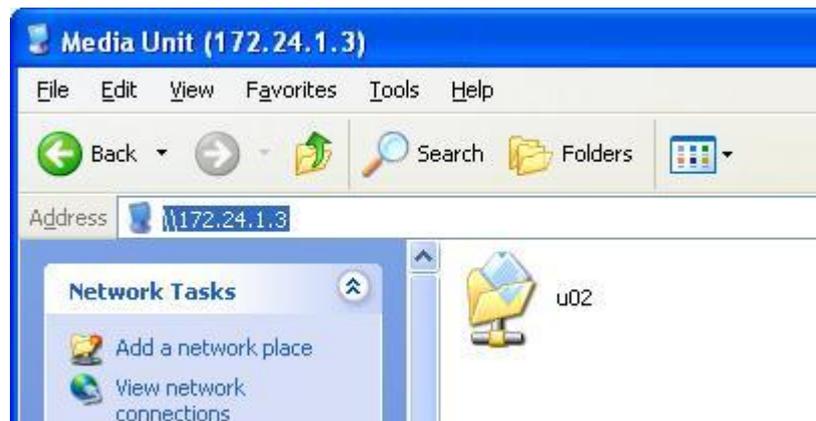
TESTING & TROUBLESHOOTING

Before putting the system to use, it is good to test the system.

NETWORK

To test the network, open Windows Explorer and check that you can access the MUs. You do this by typing [\\172.24.1.2](http://172.24.1.2) and [\\172.24.1.3](http://172.24.1.3) to the address line. If the network addresses are correctly set, you should see the contents of the MU.





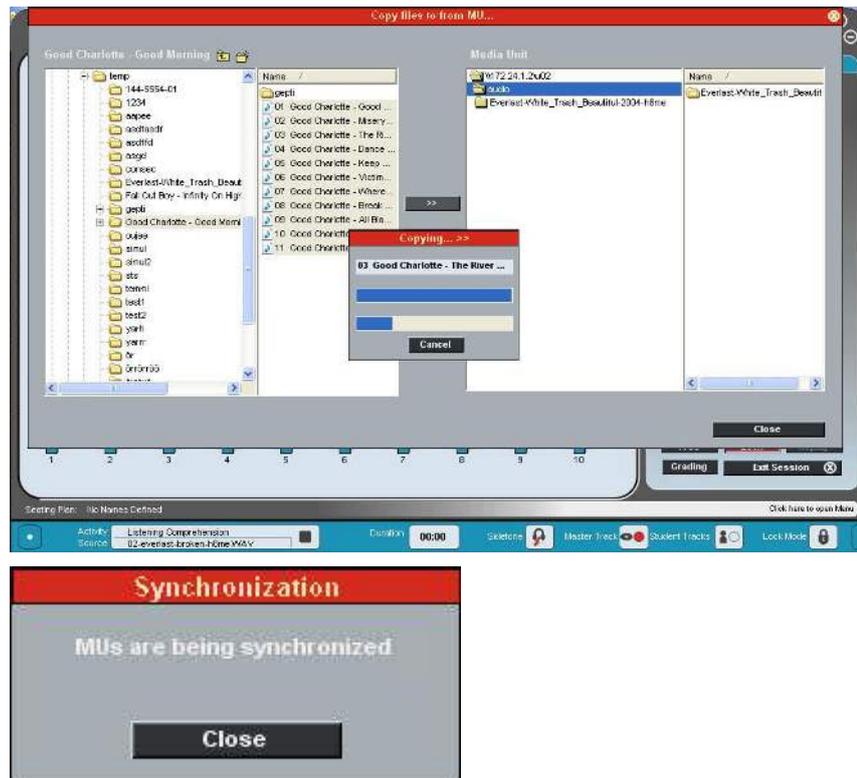
If you can't access the MU, check the following things:

- The teacher IP address and subnet mask is correctly set, refer to the network installation section
- Your local firewall settings allow network browsing, you can temporarily disable all firewalls and see if the problem lies there
- The network cables are properly installed, refer to the network installation section
- Check that the network switch has no firewall or DHCP services on.
- If you can't access MU2, check that the IP address is correctly set, refer to the second MU configuration section

REPLICATION

MU file usage is made in a way that MU1 contents are replicated to MU2 after file operations in Lab 100 so the contents of \\172.24.1.2\u02\audio should be identical to \\172.24.1.3\u02\audio

To test the replication, start Lab 100, open Menu / Copy files to/from MU and copy some files to MU.



After copying, click close. The Synchronization dialog should pop on the screen. You can then check that the contents are identical at [\\172.24.1.2\u02\audio](http://172.24.1.2\u02\audio) and [\\172.24.1.2\u02\audio](http://172.24.1.2\u02\audio) with Windows Explorer.

If the replication fails, the probable reason is that the MU software is not properly installed. In this case, you can try installing the MUs again from a USB key.

TESTING BASIC AUDIO COMMUNICATION

MONITORING

To test the basic audio communication, start Listening Comprehension, select MU File as a source and press Start. You should hear the file coming from the teacher headset. Now left click students from both MUs to monitor their audio, you should hear the MU file playing if everything works.

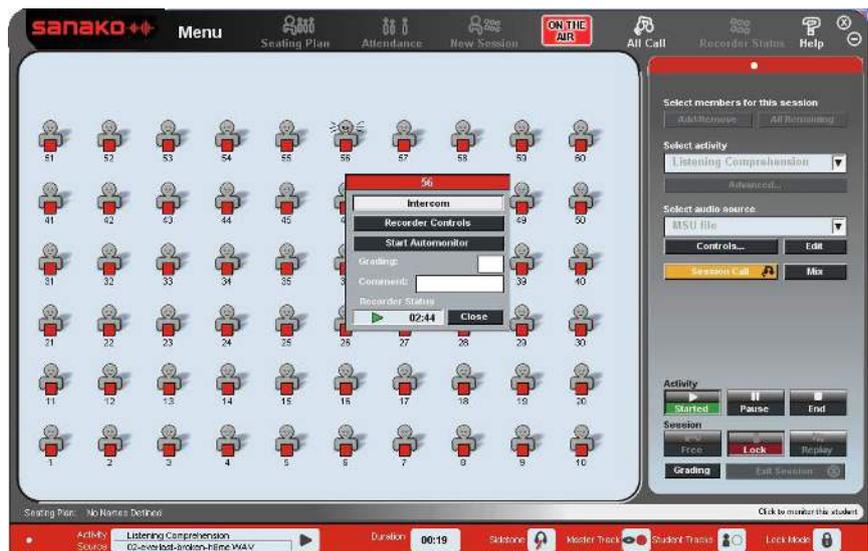
If the sound from MU2 is distorted or too loud, try to switch the attenuator the other way around. If you can't hear anything from MU2, you can connect the headset to Teacher UAP2. If you now hear sounds, the cabling (cables to

attenuator) between UAP1 and UAP2 is faulty. Refer to the teacher UAP cabling section to check the cabling.



INTERCOM

After monitoring Students work, you can proceed to testing the intercom.



As in the monitor test, left click students at both MUs, but now click Intercom after the control box pops on the screen. When Intercom is active, teacher should be able to discuss with the students.

If the student at MU2 can't hear the teacher, connect the teacher headset to teacher UAP2 and see if it works. If successful, the microphone cable between Teacher UAP1 and UAP2 is probably faulty. Refer to the teacher UAP cabling section for details.

MODEL STUDENT FROM ANOTHER MU

In Lab 100 Multi MU we can use a student as a source in a different MU.

To test this feature, select New Session, add students only from MU1, select Group Discussion as a activity. Select student as a source and select the student from another MU and click Start.



Now the students at MU1 should hear the model student's microphone.

If the communication fails, check that the PSIs cabling is correct and the Audio sources are configured properly. Refer to external source installation and configuration section for details.

