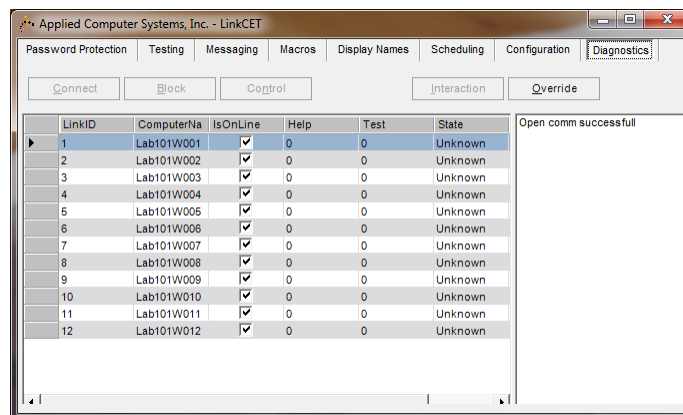


Composite LINK System Keyboard and Mouse Control Troubleshooting Guide

The Composite LINK System utilizes the LinkCÉT software to provide advanced features for the classroom management system. The LINK System provides the means for broadcasting all of the video to the trainee monitors, allowing for real-time broadcast of any video feed. The Composite LINK System is capable of providing the exact same framerate to the trainee monitors as the instructor’s computer is outputting. The LinkCÉT software provides the ability for keyboard and mouse control, instant surveys, digital testing, and an array of additional features.

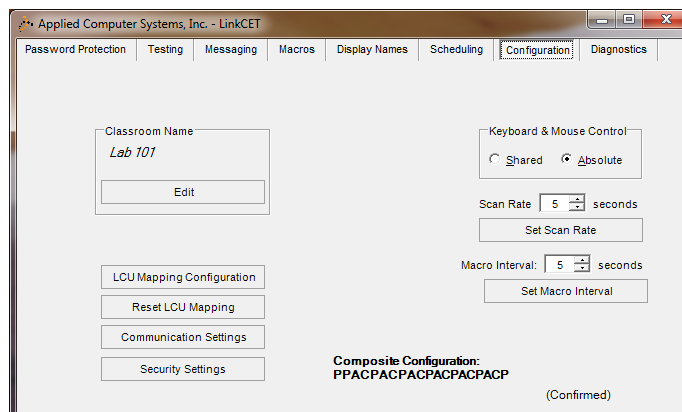
In order for the LinkCÉT software to function properly, communication must be established between the Composite LINK System and the instructor’s computer as well as between the instructor’s computer and the trainee computers. To diagnose communication issues, follow the steps below.

1. Open the LinkCÉT software on the instructor’s workstation and navigate to the Diagnostics tab. Check to see if the trainee computers have a check in the “IsOnline” column to indicate that the instructor is

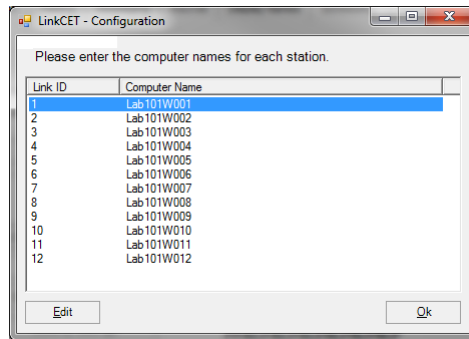


communicating with the trainee machines. Note: LinkCÉT runs as an application and not a service so it only runs on the trainee station after the station is logged in. If the trainees are online, skip to step 11, if not continue with step 2.

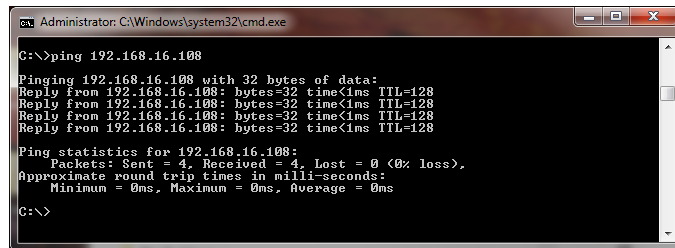
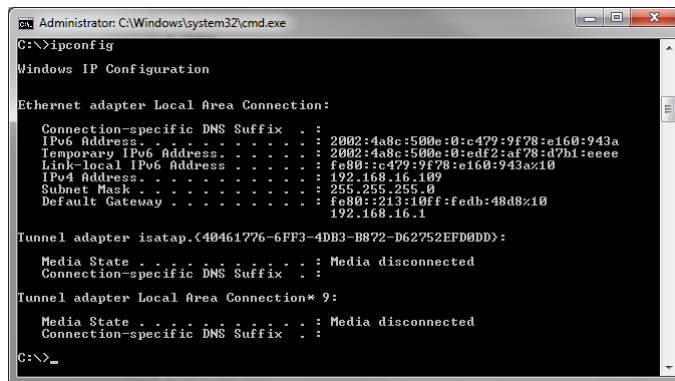
2. Since the trainees are not appearing to be online, first check the LCU Mapping. Navigate to the Configuration tab.



3. Select LCU Mapping Configuration



4. Please make sure the proper computer name is assigned to each LINKID. If they are not, edit each entry and enter the proper workstation names. Select OK when the names are correct.
5. Return to the Diagnostic's tab and see if the trainee workstations are now online. If they are not online, go to step 6. If they are online, use the LINK System to Receive a trainee's screen and attempt to control the trainee's keyboard and mouse. If you have gained keyboard and mouse control, you have resolved the issue. If not, skip to step 11.
6. If the trainee stations are still not online, open a command prompt at the instructor's workstation and a trainee workstation. Type in ipconfig at each and write down the IP address of the two workstations. At the instructor's workstation, type in ping and then the IP address of the trainee workstation. If there is a reply from the trainee's station, continue with the troubleshooting at step 6. If there is not, contact your IT Administrator. LinkCET requires ping requests to be enabled on the network.



- If the trainee workstations are still not connecting, there may be an issue with the DHCP name resolution. Open a command prompt on the instructor computer and a trainee computer that is not connecting. At the prompt type "ipconfig /all" and write down the Host Name and IP address of both workstations.

```

Administrator: C:\Windows\system32\cmd.exe
C:\>ipconfig /all

Windows IP Configuration

Host Name . . . . . : TODDBROCEUS-PC
Primary Dns Suffix . . . . . : acs-linksystems.local
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : acs-linksystems.local

Ethernet adapter Local Area Connection:

Connection-specific DNS Suffix . . : 
Description . . . . . : Intel(R) 82567U-2 Gigabit Network Connect
ion
Physical Address. . . . . : 70-71-BC-CA-0F-D3
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
IPv6 Address. . . . . : 2002:4a8c:500e:0:c479:9f78:e160:943a(Pref
erred)
Temporary IPv6 Address. . . . . : 2002:4a8c:500e:0:edf2:af78:d7b1:eeee(Pref
erred)
Link-local IPv6 Address . . . . . : fe80::c479:9f78:e160:943a%10(Preferred)
IPv4 Address. . . . . : 192.168.16.109(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Monday, December 22, 2014 8:36:20 AM
Lease Expires . . . . . : Tuesday, December 23, 2014 8:36:19 AM
Default Gateway . . . . . : fe80::213:10ff:fedb:48d8%10
                            192.168.16.1
DHCP Server . . . . . : 192.168.16.1
DNS Servers . . . . . : 192.168.16.2
                            12.127.17.71
NetBIOS over Tcpip. . . . . : Enabled

Tunnel adapter isatap.{40461776-6FF3-4DB3-B872-D62752EFD0DD}:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . : 
Description . . . . . : Microsoft ISATAP Adapter
Physical Address. . . . . : 00-00-00-00-00-00-E0
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes

Tunnel adapter Local Area Connection* 9:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . : 
Description . . . . . : Teredo Tunneling Pseudo-Interface
Physical Address. . . . . : 00-00-00-00-00-00-E0
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes

C:\>

```

- At the command prompt of the instructor's computer, type "nbtstat -a xxx.xxx.xxx.xxx" where the x's represent the trainee's IP address. Check to see if the Name returned matches the name of the workstation that you were expecting. If it does match, go to step 10. If it does not match the computer's name, proceed to 9.

```

Administrator: C:\Windows\system32\cmd.exe
C:\>nbtstat -a 192.168.16.113

Local Area Connection:
Node IpAddress: [192.168.16.109] Scope Id: []

NetBIOS Remote Machine Name Table

Name                Type                Status
-----
TESTPC-1013        <00> UNIQUE          Registered
WORKGROUP          <00> GROUP           Registered
TESTPC-1013        <20> UNIQUE          Registered
ConfigReserver    <1C> GROUP           Registered
testpc-1013        <2D> UNIQUE          Registered
WORKGROUP          <1E> GROUP           Registered

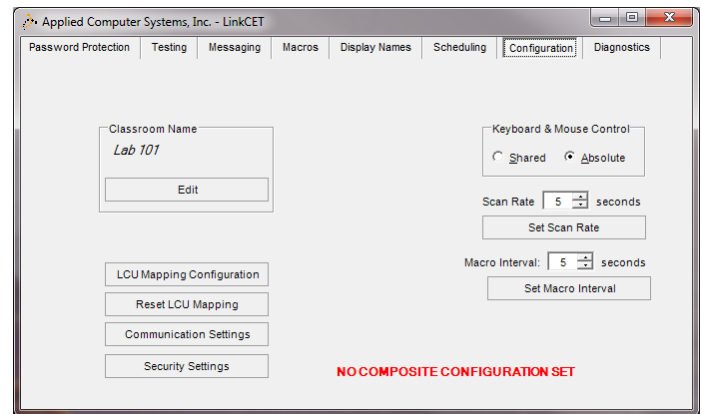
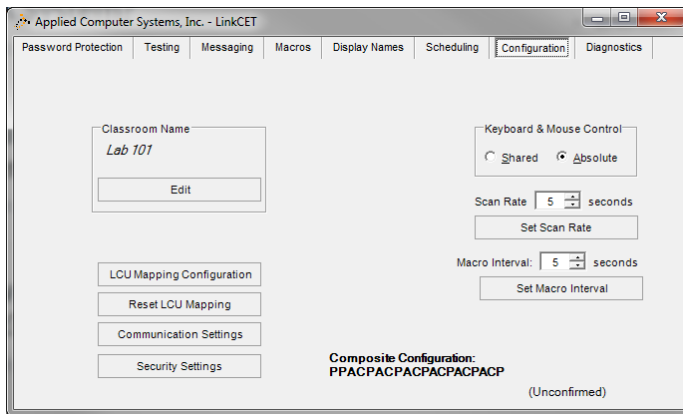
MAC Address = 00-0C-76-3A-0D-41

C:\>

```

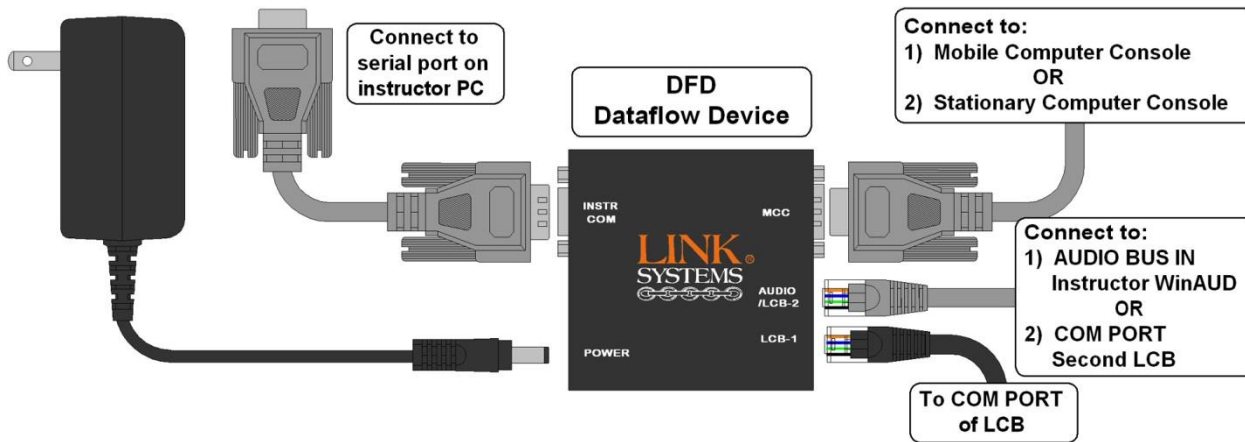
- At the command prompt of the instructor's computer, type "ipconfig /flushdns". Repeat step 8. If after repeating step 8 you still are getting the wrong computer name returned, contact your IT Administrator and tell them the DNS Server is not properly resolving your computers' names.
- Disable any firewalls currently running on one of the trainee workstations. Attempt to connect to the trainee workstations again. If they connect, use the LINK System to Receive a trainee's screen and attempt to control the trainee's keyboard and mouse. If after disabling the firewall you have gained keyboard and mouse control, you have resolved the issue. Contact your IT Administrator and ask them to add a LinkCÉT exclusion to the firewall. If the trainee stations connect but keyboard and mouse control is still not working, proceed to step 11. If you still are unable to connect to the trainee workstations, please contact Applied Computer Systems, Inc. for further assistance at 800-237-5465.

11. Navigate to the Configuration Tab. Your screen should match one of the images below. If you see a Composite Configuration entry consisting of a string of P's, A's, and C's, then the LINK System has been in communication with the instructor's computer and has provided it with a proper configuration, so continue onto step 17. If you see a red message stating "NO COMPOSITE CONFIGURATION SET" then communication has not occurred between the instructor's computer and the LINK System. Proceed to step 12.



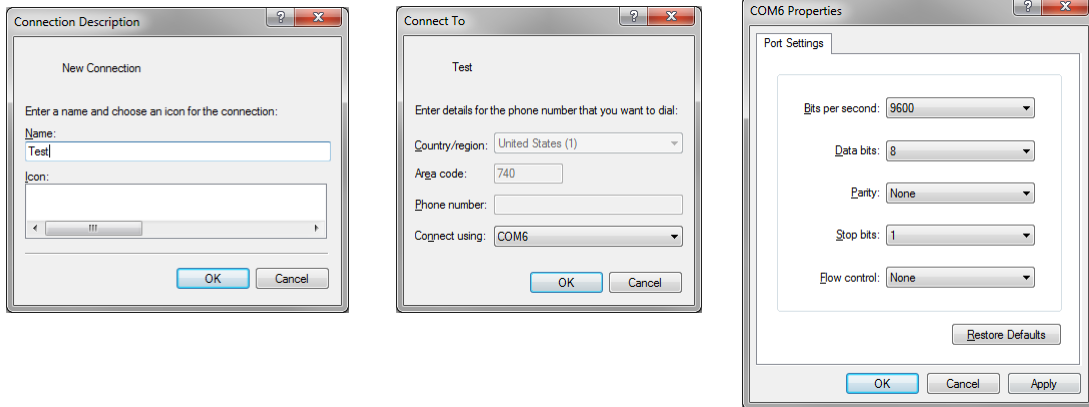
12. The Composite Configuration is sent to the instructor's computer during the boot-up of the LINK System touchscreen. Several things need to be identified prior to trying to establish communication. First, locate the Dataflow Device (DFD). Confirm the following:

- INSTR COM port connects to an available serial port (or USB to serial adapter) on the instructor's computer
- MCC port connects to Composite LINK System touchscreen
- LCB-1 connects to COM PORT on Logic Control Board (LCB)
- Power adapter is connected to an outlet and firmly connected to POWER port on DFD

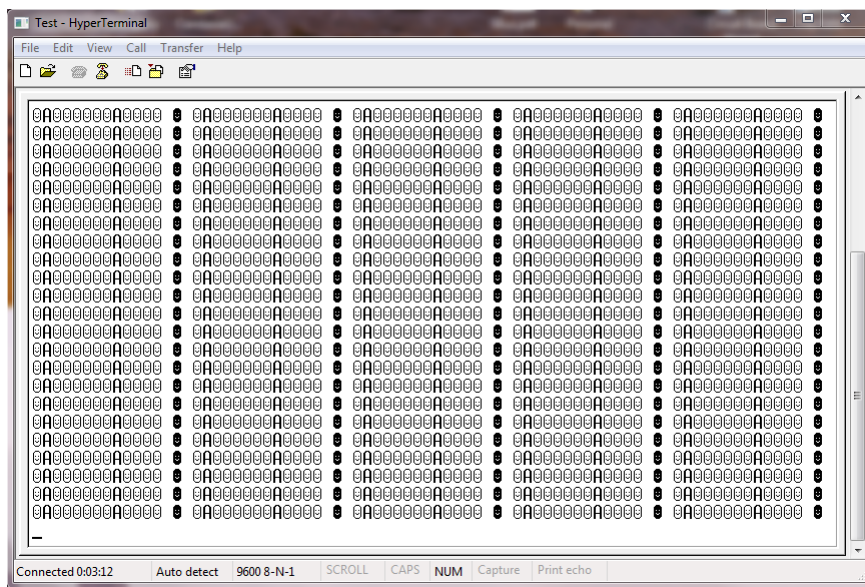


13. Leaving the instructor's workstation powered on and the LinkCÉT software running, power down the Composite LINK System touchscreen by selecting the green Setting tab and then selecting the Shutdown button. Once the touchscreen has powered down completely, select the power button and power it back up. You should hear a relay click during the process. During that time, the Composite Configuration will be sent to the touchscreen.
14. Navigate to the LinkCÉT's Configuration tab and confirm that the Composite Configuration has been set. If it has an entry, use the LINK System to Receive a trainee's screen and attempt to control the trainee's keyboard and mouse. If you have gained keyboard and mouse control, you have resolved the issue. If there still is not a Composite Configuration entry, proceed to step 15. If there is an entry but keyboard and mouse control still does not work, skip to step 17.

- Download HyperTerminal from www.acs-linksystems.com/download/hyperterminal.zip. Extract the files to any location on the instructor's computer (there is a single exe and dll). Close the LinkCÉT software. Run HyperTerminal by double-clicking on the exe. Enter a name for the connection and select OK. Next select the COM port that LinkCÉT is configured for. Select OK. On the Port Settings select 9600 Bits per second, 8 Data bits, None for Parity, 1 Stop Bit, and None for Flow Control.

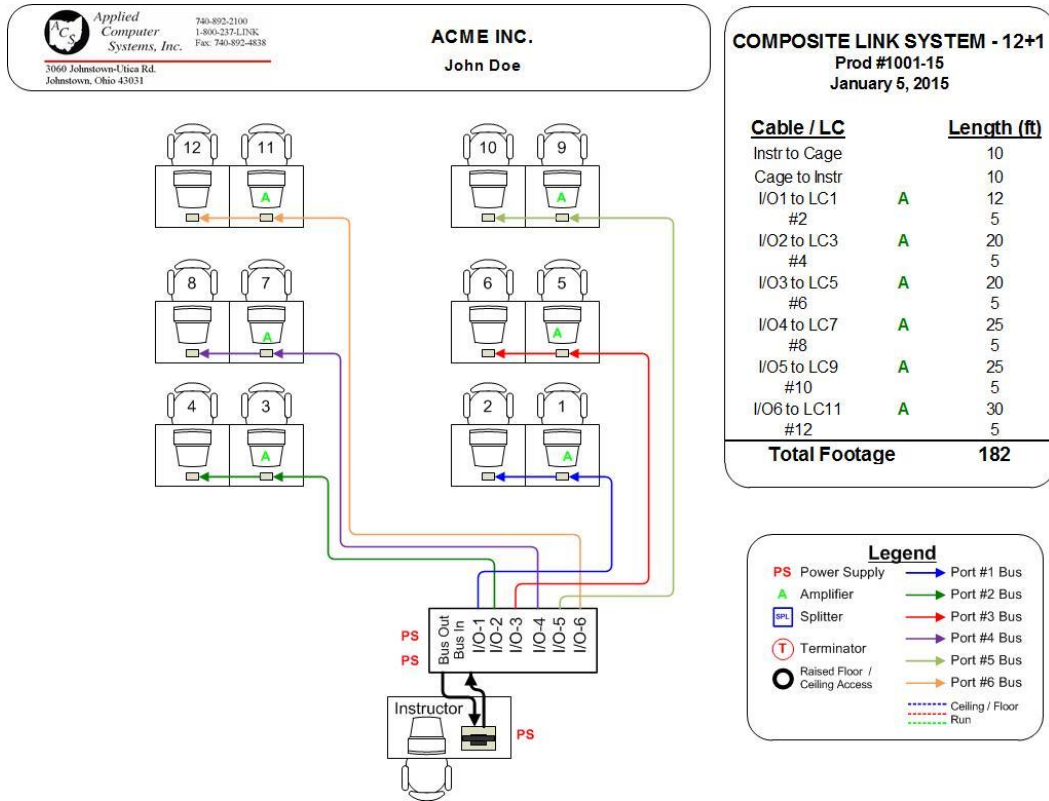


After selecting OK for the Port Settings, you should see the data that the LINK System touchscreen is sending to the instructor's Com Port. Note that the touchscreen must be powered up at this point. If it is not, please power it on now and as soon as you see the LINK System interface, communication is



occurring. If you are receiving data similar to above (a lot of smiley faces), then proceed to step 16. If you do not see data similar to this, either no data is being sent to that particular Com Port or you selected the improper Com Port. Repeat the process by either selecting a different Com Port during the setup or by changing the Com Port that the cable is connected to on the instructor's computer. Once you are receiving this data, please enter the same Com Port information into the LinkCÉT software and leave the cable plugged into the Com Port you are currently connected to.

16. Since the Composite Configuration is not getting set automatically, we will now enter the information manually. We recommend you contact Applied Computer Systems, Inc. (800-237-5465) to help you identify the proper information to enter during this step. When calling, please have the serial number for the LINK System you are troubleshooting as that information will be required by the technician. If you feel at ease determining the string yourself, proceed with the instructions. First, locate the classroom diagram for the existing classroom. It should look similar to the image below. The Composite Configuration consists of a string of characters. A “P” stands for an I/O card, an “A” stands



for a student unit as an amplifier, and a “C” stands for an unamplified student unit. We will use the above diagram to show how to determine the proper Composite Configuration string for your classroom. First, all Composite Cages have both an Input and Output I/O card, which are not represented on the diagram but must be accounted for. The Composite LINK System can be looked at as a huge loop and the Composite Configuration is determined using that viewpoint. First, data leaves the instructor’s unit and enters the Composite Cage by entering the Input I/O card. This will be the first “P” in your string. Next, the data flows out of the first numbered I/O card. (Note: I/O cards do not need to be installed in each slot, and some slots may be skipped, just proceed to the next occupied slot) This will be the second “P” in the string. Now the data travels to each of the student units connected to that I/O card. Look at the diagram and you will see that I/O 1 is connected to stations 1 through 2 and station 1 has an “A” on it. There is a single character to represent each student station. For these two stations, the string is “AC”, A standing for the amplified unit and C for the three unamplified units. At this point, the string it “PPAC “. Next there is I/O 2 with two more student stations connected to it. So this I/O card and student stations add “PAC” to the overall string. The “P” stands for I/O 2 and the “AC” stands for the two student stations. Continuing on to I/O 3, the next portion is “PAC”. Next, I/O 4 contributes “PAC”, I/O 5 adds “PAC”, and I/O 6 contributes “PAC”. The final piece to the string is the Output I/O card which adds a final “P” to the string. The combined string is:

PPACPACPACPACPAC

Notice there is a "P" for each I/O card, so this string consists of 8 "P"s. The string also should have a total of 12 "A"s and "C"s, representing the 12 student stations. After determining the Composite Configuration string, close LinkCÉT on the instructor's computer. Navigate to the following folder.

C:\Users\All Users\AppliedComputerSystems\LinkExpress

Right click on generalSettings.xml and select edit. The file should look similar to the file shown below.

```

<?xml version="1.0" encoding="utf-8"?>
<GeneralSettings xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <ScanRate>5</ScanRate>
  <MacroInterval>0</MacroInterval>
  <IsSharedControl>false</IsSharedControl>
  <LockdownAuthentication>COMMON_PASSWORD</LockdownAuthentication>
  <ClassroomName>Lab 101</ClassroomName>
  <PlexerConfiguration />
  <RandomizeTestQuestionsByDefault>false</RandomizeTestQuestionsByDefault>
  <ApplyTimeLimitToTestByDefault>false</ApplyTimeLimitToTestByDefault>
  <TestTimeLimitDefault>30</TestTimeLimitDefault>
  <TestTimeLimitUnitsDefault>1</TestTimeLimitUnitsDefault>
</GeneralSettings>
  
```

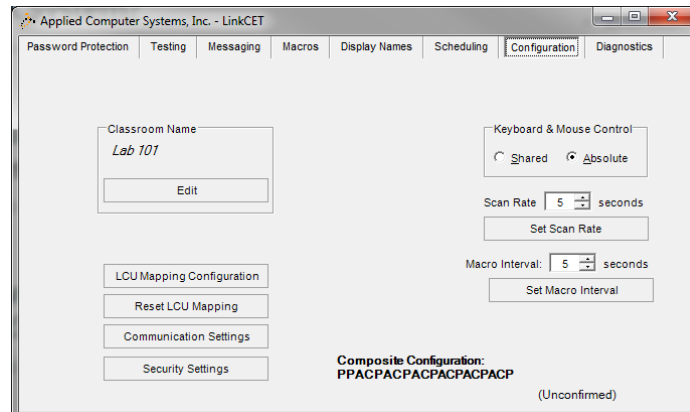
Notice the line <PlexerConfiguration />. This line needs to be edited to contain the Composite Configuration string found in the previous steps. Edit the line as shown below.

<PlexerConfiguration>PPACPACPACPACPACP</PlexerConfiguration>

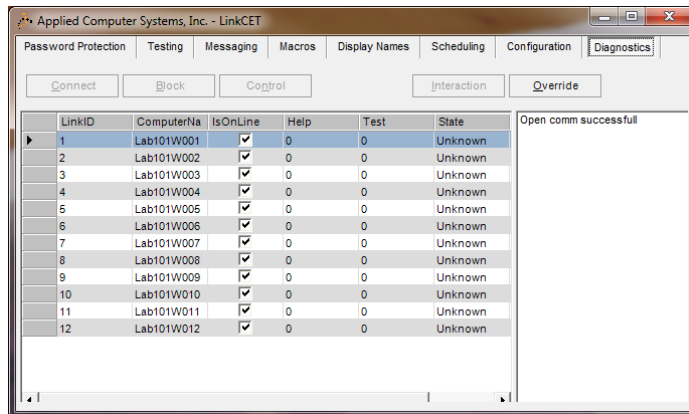
```

<?xml version="1.0" encoding="utf-8"?>
<GeneralSettings xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <ScanRate>5</ScanRate>
  <MacroInterval>0</MacroInterval>
  <IsSharedControl>false</IsSharedControl>
  <LockdownAuthentication>COMMON_PASSWORD</LockdownAuthentication>
  <ClassroomName>Lab 101</ClassroomName>
  <PlexerConfiguration>PPACPACPACPACPACP</PlexerConfiguration>
  <RandomizeTestQuestionsByDefault>false</RandomizeTestQuestionsByDefault>
  <ApplyTimeLimitToTestByDefault>false</ApplyTimeLimitToTestByDefault>
  <TestTimeLimitDefault>30</TestTimeLimitDefault>
  <TestTimeLimitUnitsDefault>1</TestTimeLimitUnitsDefault>
</GeneralSettings>
  
```

Save the file and restart LinkCÉT. Go to the Diagnostics tab and you should now see a Composite Configuration listed.



17. The Composite Configuration may be listed in LinkCÉT, but it must be the proper string to allow the keyboard and mouse control to function properly. If communication is occurring between the touchscreen and the instructor’s computer, the word “Confirmed” will appear in parenthesis below the Composite Configuration. If it is not occurring, the word “Unconfirmed” will appear. If it is labelled “Unconfirmed”, turn off your Composite LINK System touchscreen by selecting the green Setting tab and then selecting the Shutdown button. Once the touchscreen has powered down completely, select the power button and power it back up. You should hear a relay click during the process. During that time, the Composite Configuration should be confirmed. If it still is no confirmed, please call Applied Computer Systems, Inc. at 800-237-5465 to obtain further directions. If the Composite Configuration is confirmed and you are still unable to Receive a student station and control their keyboard and mouse continue to step 18.
18. We will now test the software by itself, eliminating the hardware from the mix. Open up the LinkCÉT software on the instructor’s computer and select the Diagnostics tab. Select the “Override” button.



Then select Connect. Click in the far left hand column of the table next to a student computer you can see from your desk. A triangle pointing to the right will appear. Now select the Control button. A blue cast will cover your screen and you should be moving the student’s mouse now. If it is moving, the software appears to be working but the communication between the hardware and software is not. Select the “X” in the lower right hand corner of the screen to reduce the size of the blue area, then select Disconnect, and then End Override to put LinkCÉT back into its normal operating condition. To test the hardware, complete step 15 if you have not already done so during this troubleshooting session.

19. If none of the previous steps have resolved the issue, call Applied Computer Systems, Inc. at 800-237-5465 and ask for technical assistance. Be sure to let the technician know which steps you have completed in this document.