



## Introducing PictureTel® LiveLAN™

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### Overview

This guide describes how to install the LiveLAN hardware, software and peripherals on a Pentium, Pentium Pro, or Pentium II- class single processor or equivalent PC running Windows 95 or 98. PictureTel LiveLAN is an H.323-compliant videoconferencing product that, using industry standard multimedia hardware running on Windows 95 PCs, provides integrated audio and full-color live videoconferencing capabilities, with T.120-compliant multipoint data collaboration.

The information is organized into the following categories. Click on the appropriate category for the information you are looking for.

- [What is LiveLAN](#)
  - [LiveLAN Documentation](#)
  - [System Requirements](#)
  - [Interoperability](#)
  - [How to install the LiveLAN hardware](#)
  - [How to install the LiveLAN software](#)
  - [System specifications](#)
  - [Power requirements](#)
  - [Troubleshooting](#)
  - [Contacting PictureTel Technical Support](#)
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### What is LiveLAN?

LiveLAN is an H.323-compliant videoconferencing client that uses industry standard multimedia hardware running on Windows 95 PCs to enable video, audio, and information sharing between users. LiveLAN includes PictureTel's award-winning, T.120-compliant, LiveShare Plus data collaborative technology, the core data collaboration technology used within Microsoft's NetMeeting® Internet collaborative tool.

LiveLAN supports point-to-point audio and video conferencing, and point-to-point and multipoint data collaboration compliant with the T.120 standard. Multipoint LiveLAN audio and video conferencing will be supported via PictureTel's H.323 Multipoint Control Unit (MCU) which is currently in development.

## LiveLAN Features

The following list identifies key features of the version 3.1 release of LiveLAN:

- Support for the new PictureTel LiveLAN Media Accelerator Board (up to 30 frames per second (FPS)) CIF video resolution
- Compliance with H.320/T.120 ITU-T standards
- Native ATM (Asynchronous Transfer Mode) support per the H.323 Annex C specification for FORE Systems Network Interface Cards (NICs)
- 32-bit ActiveMovie software architecture
- Full-duplex wideband audio
- Near/far-end video window scalable to full screen
- Call initiation, answer, and termination via on-screen menus
- Call transfer and call forwarding
- Manual and auto answer
- Phonebook with on-screen dial pad
- Plug and Play support
- H.320 multipoint calls through LiveGateway
- Interoperability with Microsoft's NetMeeting 2.0
- Runtime diagnostics
- Ability to place calls at 768 Kbps bandwidth
- Improved video performance with lower CPU utilization and better support for high-end DirectDraw hardware
- Full T.127 File Transfer capability
- Improved Interoperability with Multipoint Conferencing Units (MCUs) and other H.323 terminals

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## LiveLAN Documentation

The LiveLAN documentation is provided in two file formats: PDF and HTML. Use the Adobe PDF files if you want to view and/or print the documentation in a traditional book format. You need the Adobe Acrobat Reader to print/view the PDF files. This reader is included within the PDF subdirectory of the Docs directory on the CD-ROM.

The HTML (file extension: htm) files can be viewed from within any standard web browser such as Microsoft's Internet Explorer or Netscape's Communicator.

The following documents are contained on the LiveLAN CD-ROM:

- PictureTel LiveLAN Installation Guide

This guide describes how to install the LiveLAN hardware, software and peripherals on a Pentium-class PC running Windows 95

- PictureTel LiveLAN Product Guide

This document describes how to use LiveLAN to place and receive calls to/from other LiveLAN users, H.323 terminals, and H.320 users through LiveGateway.

## Related Documentation

If you are using other PictureTel products with LiveLAN such as LiveGateway, NetConference, or LiveManager please refer to the documentation that came with those products for more detailed information about them. If you are using another vendor's products with LiveLAN, refer to the vendor's documentation for more detailed information about these products.

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## System Requirements

Your PC must meet the following minimum LiveLAN requirements. It is recommended, but not required, that LiveLAN be used in conjunction with LiveManager 3.1.

- A Pentium, Pentium Pro, or Pentium II-class single processor or equivalent processor running at 133 Mhz or higher
- One available PCI bus slot for the PictureTel LiveLAN codec board
- 30 MB of available hard disk space for the LiveLAN Plug and Play drivers, the LiveLAN application software, and LiveShare Plus
- 32 MB (minimum) of RAM, 256 KB of cache
- If virtual memory is not enabled on your PC, you will not be able to install LiveLAN. To enable virtual memory, go to the Windows Control Panel and click the System icon. Choose the Performance tab and click the Virtual Memory button at the bottom of the tab window. Make sure that the *Let Windows manage my virtual memory settings* radio button on the Virtual Memory Dialog box is selected.
- Microsoft Windows 95 or Windows 98 operating system
- LiveLAN does not support Windows 3.X or Windows NT.
- An SVGA monitor
- A 32-bit PCI bus graphics board with 16-bit high color depth and a minimum of 2-MB video memory. Boards with 2D video acceleration and fast video memory (such as VRAM) are recommended.
- A network interface card (NIC) running the Microsoft TCP/IP stack
- A Winsock 1.1-compliant (or greater) TCP/IP protocol stack that supports Microsoft extensions. (This is the standard TCP/IP stack delivered with Windows 95.)

For power requirements for the LiveLAN Media Accelerator Board, refer to [Appendix B](#).

## Direct Draw Support

LiveLAN 3.1 for Windows 95 works best when using Direct Draw. The product should work with ANY DirectDraw compatible hardware and driver, but works better with certain types of hardware technology.

The following list of cards have been tested at this time. The best cards provide extremely high quality video with low CPU overhead and represent PictureTel's recommendation for use with LiveLAN.

ATI Video Xpression+	Best Overall Performance (low CPU utilization, High Quality)
ATI 3D Rage Pro	Best Overall Performance (low CPU utilization, High Quality)
ATI Xpert@Play	Best Overall Performance (low CPU utilization, High Quality)
ATI Xpert@Work	Best Overall Performance (low CPU utilization, High Quality)

Diamond Viper S330	Good Overall Performance (medium CPU utilization, High Quality)
Diamond 3D 2000	Fair Overall Performance (medium CPU utilization, Good Quality)
Diamond 3D 2000 Pro	Fair Overall Performance (medium CPU utilization, Good Quality)
Diamond 3D 3000	Fair Overall Performance (medium CPU utilization, Good Quality)
Hercules Dynamite 3D/GL	Good Overall Performance (medium CPU utilization, High Quality)
Number 9 Imagine 128	Good Overall Performance (medium CPU utilization, High Quality)

The cards listed in the preceding table support a DirectDraw mode using YUV instead of RGB for the video window. These cards produce a superior image that makes them a good choice for use with the LiveLAN application. In addition, the ATI cards, Diamond Viper S330, Hercules Dynamite 3D/GL, and Number 9 Imagine 128 support anti-aliasing scaling that allows the video windows to be expanded to full screen with a smooth appearance. The ATI cards perform this function with no performance penalty when running at full screen.

To enable DirectDraw, be certain that you are running in 16 bit display mode (32768 or 65536 colors). The LiveLAN application will automatically choose direct draw if it is available. Make certain that your machine has DirectDraw loaded. We recommend DirectDraw 6 or better.

In general, you should use the video manufacturer's latest drivers with LiveLAN. Please check the manufacturer's web page for the latest drivers:

- [ATI](#)
- [Diamond](#)
- [Hercules](#)
- [Matrox](#)
- [Number Nine](#)

If you have trouble with DirectDraw drivers, you can turn off direct draw by executing the registry file *ddraw\_off* installed in the LiveLAN directory selected during the installation process. To turn DirectDraw back on, choose the registry file *ddraw\_on*. LiveLAN installs with DirectDraw turned on by default.

## Native ATM Support

LiveLAN 3.1 can operate over a Native ATM network using Network Interface Cards (NICs) from FORE Systems. This implementation conforms to H.323 Version 2 Annex C.

The LiveLAN 3.1 software requires release 5.0 or greater of the FORE switch software and release 5.0 or greater of the FORE NIC drivers, including the Winsock 2 Native ATM service provider.

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# Interoperability

The following information describes LiveLAN's interoperability with the ITU-T H.323 Standards and Microsoft Windows 95.

## H.323 Standards

PictureTel LiveLAN for Windows 95 supports videoconferences with other desktop and room videoconferencing systems that comply with the ITU-T H.323V2 recommendation for "Packet Based Multimedia Communications Systems" and with systems that comply with the ITU-T H.320 (Px64) recommendation for "Narrow-band Visual Telephone Systems and Terminal Equipment." when communicating through an ITU-T H.323V2 compliant gateway.

LiveLAN also operates in conjunction with gatekeeper systems that comply with the ITU-T H.323V2 specification.

- General - H.323
- Audio - G.711, and G.722
- Video - H.261
- Data - T.120 including T.127 File transfer (interoperates with Microsoft NetMeeting 2.1 or greater)
- Communications - TCP/IP over WinSock 1.1 and WinSock 2.0

Various videoconferencing manufacturers might not include all of these choices in product designs, or they might add their own proprietary choices. If you experience video or audio problems while interoperating with an H.323 system not produced by PictureTel, verify that the other manufacturer's system is configured as recommended for H.323 operation.

PictureTel LiveLAN can operate with an H.323V2-compliant multipoint bridge or an H.243-compliant multipoint bridge through a gateway when configured in a voice-activated conference.

## Microsoft Windows 95

LiveLAN is compatible with all versions of Microsoft Windows 95. Although it will operate on systems without DirectDraw, DirectDraw version 6 is highly recommended.

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# Installing the LiveLAN Hardware

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This chapter provides instructions for installing the LiveLAN hardware on your PC. For instructions on installing the LiveLAN software, refer to [installing the LiveLAN software](#).

The procedures for installing the LiveLAN hardware on your PC are summarized as follows:

- Identify your network setup
  - Install the LiveLAN Media Accelerator Board
  - Install the video peripherals
  - Install the audio peripherals
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## Identifying Your Network Setup

If you have more than one network card in your system, make sure your selected protocol stack is bound to the network card you will use with LiveLAN. LiveLAN supports Winsock 1.1 (or greater) compliant TCP/IP stacks that support Microsoft-specific extensions.

To check your network interface card:

1. Click the Windows 95 Start button.
2. Choose Settings > Control Panel.
3. Double-click the Network icon.
4. Select the network card with which you will use LiveLAN 3.0 and click the Properties button.
5. Choose the Configuration tab. Check the bindings to make sure your TCP/IP protocol stack is bound to the card.
6. Verify that the TCP/IP protocol stack is running correctly by running the Ping TCP/IP utility in a DOS window.

At the DOS command line, type "**ping (your local IP Address)**." For example, if your local IP Address was 140.250.110.98, you would type, "**ping 140.250.110.98**" at the command line. The reply from local machine 140.250.110.98 to the ping command should be as follows:

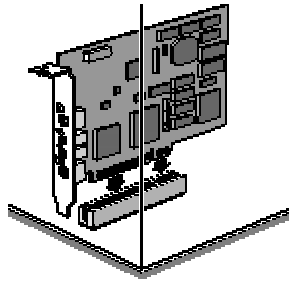
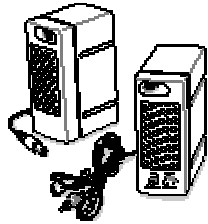
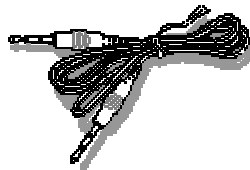
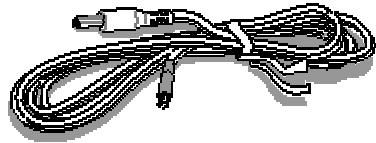
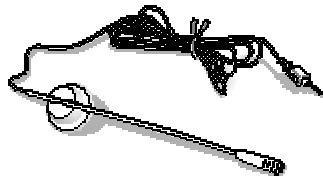
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Reply from 140.250.110.98: bytes=32 time<xxmy>TTL=32
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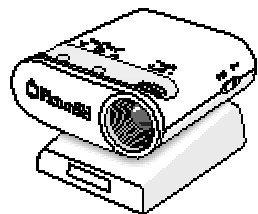
This response indicates that the TCP stack is operational. If you don't know your local IP Address, contact your system administrator.

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# Installing the LiveLAN Hardware

The PictureTel LiveLAN system includes the following hardware and peripherals:

Component	Description
 A PCI codec board with various connectors and components, shown in a perspective view.	<p>The LiveLAN Media Accelerator Board (the PCI codec board) receives and transmits audio and video signals. This board may also be identified as the LiveLAN codec board, or simply the LiveLAN board.</p>
 Two rectangular speakers, one slightly larger than the other, with cables attached.	<p>The speakers, which are connected to the LiveLAN Media Accelerator Board, allow you and your colleagues to listen to a call.</p>
 A cable with a multi-pin connector on one end and a standard audio jack on the other.	<p>This cable attaches to the LiveLAN Media Accelerator Board and to Speaker B and carries the audio signal.</p>
 A cable with a multi-pin connector on one end and a power plug on the other.	<p>This cable attaches to the LiveLAN Media Accelerator Board and Speaker B. It provides power to the speakers.</p>
 A handheld microphone with a base and a cord.	<p>See the instructions that came with your microphone for information that describes how to secure the microphone to the base, and where to install the microphone on your LiveLAN system.</p>



The camera is a color video camera for the desktop environment. It has focus and contrast controls, as well as a brightness control lock capability to let you optimize the camera performance under varying lighting conditions.

**Note:** There are several cameras that you can order with LiveLAN. Your camera may be different from the one shown here.



The video cable is packaged in the box with the camera. It connects the camera to the LiveLAN Media Accelerator board.

## Installing the LiveLAN Media Accelerator Board

The LiveLAN PCI board must be installed in a Bus Master enabled slot. For some PCs, this may require the use of the PC's BIOS configuration utility. If you are not sure if the slot being used is Bus Master enabled, contact your PC vendor.

It is important that the LiveLAN PCI board is installed on the main PCI bus in systems that support multiple PCI busses. Installing the board on a secondary bus will produce additional latency resulting in poor performance and possibly video freezes and system hangs. If you are unsure if the PC you are installing the system in supports multiple PCI busses with PCI slots on primary and secondary busses, contact the PC vendor.

In theory, many PCI devices can share one IRQ. However in practice, there are problems depending on how the other PCI devices behave and how the PC architecture is implemented. In practice, it is best to try and isolate the LiveLAN board on a single IRQ.

Follow these steps to install the LiveLAN Media Accelerator Board in your PC.

**Note:** You need a Phillips screwdriver to install the LiveLAN 3.0 Media Accelerator Board.

### Caution

Electrical current from power, telephone, and signal cables is potentially hazardous. When installing, moving, or opening your computer, disconnect power and signal cables in accordance with national and local laws. To prevent electrostatic damage to the board, do not disconnect the power cable from the computer.

Do not connect or disconnect LiveLAN components when your computer is on, as you might damage the LiveLAN hardware.

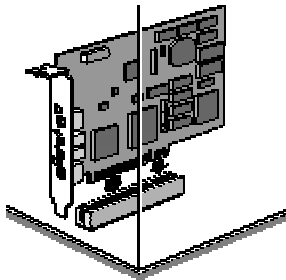
To install the LiveLAN Media Accelerator Board:

1. Power down your computer.
2. Open the computer chassis cover.
3. Using a Phillips screwdriver, remove the screw holding the back plate of an unused PCI expansion slot. Remove the back plate.

### Caution

The LiveLAN Media Accelerator board can be damaged by static discharge. To equalize static charge, ground yourself by touching the metal back panel of your computer, or wear a ground strap.

4. Remove the LiveLAN Media Accelerator Board from its plastic antistatic package.
5. Make sure the edge connectors are aligned with the PCI expansion slot connector, and then press the LiveLAN codec board into the white PCI expansion slot until it is firmly seated.



6. Secure the LiveLAN Media Accelerator Board by inserting and tightening the screw to hold the backplate against the frame.
7. Replace the chassis cover on the computer.
8. Reconnect any cables that you disconnected.

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## Installing the Video Equipment


This section explains how to connect and position the video camera.

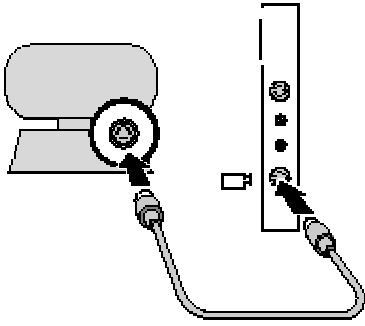
### Connecting the Video Camera

To connect the video camera:

1. Plug the 4-pin end of the video cable into the socket on the back of the camera.

**Note:** The video cable and four-pin connector are PictureTel proprietary equipment and are not compatible with any other manufacturer's cables or equipment.

2. Plug the other end of the video cable into the 8-pin socket labeled  on the LiveLAN Media Accelerator Board.



3. Power on the camera. The On/Off switch for the camera shown on is located on the right side of the camera body. If your camera is different from the one shown, power it up as described in the documentation that was provided with the camera.

In order for LiveLAN to correctly detect the type of camera connected to your system, please ensure that the camera is plugged into the LiveLAN Media Accelerator Board and powered on before you boot (start) your computer. In the unlikely event that you change to a camera of a different video standard (PAL vs. NTSC), you must reboot your computer for LiveLAN to operate properly.

### Positioning the Video Camera


Position the video camera on top of your computer monitor. The non-skid surface on the video camera base prevents the camera from sliding. Because the camera is not fastened, you can easily reposition it as needed. For information on camera operation and adjustments, refer to the [PictureTel LiveLAN Product Guide](#).

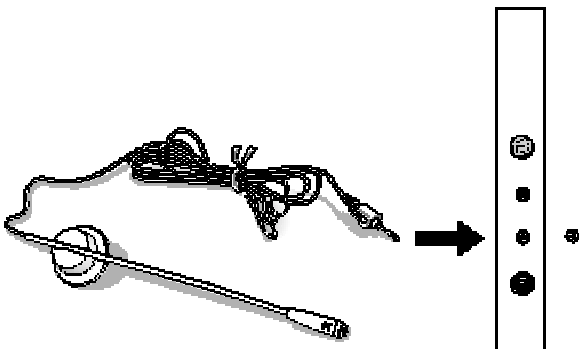
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## Installing the Audio Equipment

Follow these instructions to install a microphone and amplified speakers.

### Connecting a Microphone

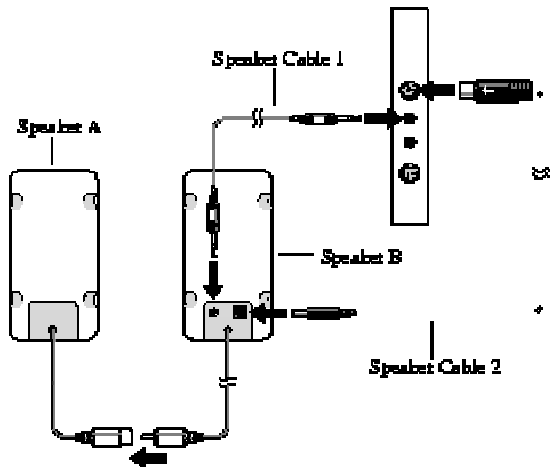
To connect your microphone to the LiveLAN Media Accelerator Board, plug the microphone into the socket labeled  on the LiveLAN Media Accelerator board.



## Connecting the Speakers

To connect the speakers to the LiveLAN Media Accelerator board:

1. Plug the cable attached to Speaker A to the cable attached to Speaker B.
2. Plug one end of speaker cable 1 into the left (round) hole in Speaker B.
3. Plug the other end of speaker cable 1 into the socket labeled **1** on the LiveLAN Media Accelerator Board.
4. Plug one end of speaker cable 2 to the right (square) hole in Speaker B.
5. Plug the other end of speaker cable 2 to the socket labeled **2** on the LiveLAN Media Accelerator Board.



6. Turn on power for the speakers. Click the On/Off switch located on the lower front side of Speaker B.

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## Using Your Existing Sound Card

If a sound card is installed in your PC, you can eliminate the need for two sets of speakers on your desktop (one for your sound system and one for LiveLAN) by connecting the audio cable (Speaker Cable 1) from the LiveLAN Media Accelerator Board directly to your sound card.

To connect the audio cable from the LiveLAN Media Accelerator Board to your sound card:

1. Connect one end of Speaker Cable 1, the audio cable provided with your LiveLAN hardware kit, to the line-out connector on the LiveLAN Media Accelerator Board.
  2. Connect the other end of Speaker Cable 1 to the line-in connector on your sound card.
  3. Make sure your sound card is configured as the Preferred Playback Device. This setting can be found in the Multimedia Control Panel. See the Windows 95 documentation for more information.
  4. Use your system's audio mixer to set the line level input to half volume. Try setting all inputs to approximately half volume. See the documentation for your mixing software for more information.
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# Where To Go From Here

If you're looking for more detailed information on how to install LiveLAN, select the appropriate category from the following list.

- [Installing the LiveLAN Software](#)
- [System Specifications](#)
- [Power Requirements](#)
- [Troubleshooting](#)

# Installing the LiveLAN Software

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## Overview

This section describes how to install the two components of the LiveLAN software:

- The Plug and Play hardware drivers
- The application software

The LiveLAN Media Accelerator Board and the other hardware components described in [installing the LiveLAN hardware](#), must be installed before you install the LiveLAN software. This guide assumes that you are familiar with installing Windows 95 applications. If you have any problems installing the software, review the [troubleshooting information](#).

The application software includes the user interface and control software necessary to place and receive videoconferencing calls, and the T.120 collaborative information sharing software, LiveShare Plus.

The information in this section is organized into the following categories. Click on the appropriate category for more information.

- [Installing the LiveLAN PCI Plug and Play Hardware Drivers](#)
- [Installing the LiveLAN Application Software](#)
- [Testing the LiveLAN Installation](#)
- [Deinstalling the LiveLAN Software](#)
- [Installing the PictureTel LiveLAN Media Accelerator II Board](#)
- [Upgrading from PictureTel LiveLAN 2.0](#)
- [Upgrading from PictureTel Live200](#)
- [Installing the PictureTel Live200 or Live200 Plus Hardware](#)

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## Installing the LiveLAN PCI Plug and Play Hardware Drivers

All of the LiveLAN PCI Plug and Play hardware drivers are contained in the “driver” directory on the LiveLAN CD ROM. To install the LiveLAN Plug and Play hardware drivers for the LiveLAN Media Accelerator board, perform the following procedure. It is assumed that you have installed the LiveLAN Media Accelerator board in your PC, installed the Microsoft TCP/IP stack, and connected all peripheral hardware as described in [installing the LiveLAN hardware](#).

Only Winsock 1.1 is supported by LiveLAN and Microsoft's `wssock32.dll` must be installed.

### Determine the version of Windows 95 installed on your PC

Version 4.00.950B of Windows 95 has some anomalies associated with the Microsoft Driver Installation Wizard that you should be aware of if you are using this version of Windows 95 on your PC.

To determine which version of Windows 95 is installed on your PC:

1. Click the Windows 95 Start button and select Settings -> Control Panel.
2. Double-click the System icon on the Control Panel. The version of Windows 95 you are using is displayed on the General tab of the System Properties window.

If Windows 95 version 4.00.950B is not installed on your PC, then proceed to [Plug and Play Driver Installation](#). If Windows 95 version 4.00.950B is installed on your PC, please review the following guidelines before installing the LiveLAN Plug and Play hardware drivers:

- There is a known bug associated with the Microsoft Driver Installation Wizard of this version of Windows 95. This bug, found only in version 4.00.950B, will manifest itself during the installation of the Plug and Play Drivers for the LiveLAN Media Accelerator Board by prompting you to locate the Plug and Play Drivers for the LiveLAN board multiple times.
- When prompted for the Windows 95 CD by the Update Device Driver Wizard during driver installation, use the browse function to re-navigate to the LiveLAN Multimedia Accelerator Board "**driver**" directory (`...\driver`) on the LiveLAN CD, and then click OK. If installing from diskettes, re-navigate to diskette #1.

**Important:** You must use the Browse or "Other Locations" functions to navigate to the LiveLAN Plug and Play "drivers" directory on the LiveLAN CD when prompted by the Driver Installation Wizard. Do not click the Finish or Cancel button until the Plug and Play "drivers" directory has been located. If you click Finish or Cancel, you will not be able to install the LiveLAN software, and will have to de-install the drivers and re-start the driver installation process.

- After the first file has been found and copied, the Driver Installation Wizard will prompt you again — a second time — for the Windows 95 CD. Use the browse function to re-navigate to the LiveLAN Multimedia Accelerator Board "**driver**" directory of the LiveLAN CD or re-navigate, and then click OK. Follow the instructions on your screen to continue the hardware driver installation process.

**Important:** You must use the Browse or "Other Locations" functions to navigate to the LiveLAN Plug and Play "drivers" directory on the LiveLAN CD when prompted by the Driver Installation Wizard. Do not click the Finish or Cancel button until the Plug and Play "drivers" directory has been located. If you click Finish or Cancel, you will not be able to install the LiveLAN software, and will have to de-install the drivers and re-start the driver installation process.

## Plug and Play Hardware Driver Installation

Perform the following procedure to install the Plug and Play hardware drivers.

1. Restart your computer after installing the LiveLAN Media Accelerator Board and connecting the peripheral equipment (cables, camera, and speakers). During startup, Windows 95 automatically detects the installation of the LiveLAN Media Accelerator Board.

If you are using Windows 95 version 4.00.950B, the Update Device Driver Wizard screen is displayed to help you complete the installation of the PCI Multimedia Device (the PictureTel LiveLAN Media Accelerator Board and its associated Plug and Play hardware drivers). Insert the LiveLAN 3.0 CD into the CD Drive, or Diskette #1 into your diskette drive if installing from diskettes, and review the [Windows 95 version 4.00.950B guidelines](#).

After you have reviewed the guidelines, click Next and follow the instructions on the Update Device Driver Wizard screen. These instructions will guide you through the installation of the Plug and Play hardware drivers.

If you are using a different version of Windows 95, the “New Hardware Found” screen is displayed. This screen informs you that it has detected a PCI Multimedia Device — the PictureTel LiveLAN Media Accelerator Board, and that Windows is locating the software for the device.

When the Install From Disk dialog box appears, insert the LiveLAN CD into the CD Drive. Follow the directions on the screen to continue with the installation of the Plug and Play hardware drivers.

2. Insert the LiveLAN CD into the CD drive. If Autorun is enabled on your system, you will see the main window for the PictureTel LiveLAN Setup.



3. If Autorun is disabled, open the CD-ROM via the Windows Explorer and double-click the autorun.exe file.
4. Review the Release Notes for any last minute changes. To select this option, select the Release Notes option on the PictureTel LiveLAN setup window.
5. To install the LiveLAN 3.1 drivers, select the Driver Software Install option on the PictureTel LiveLAN Setup window and follow the directions.

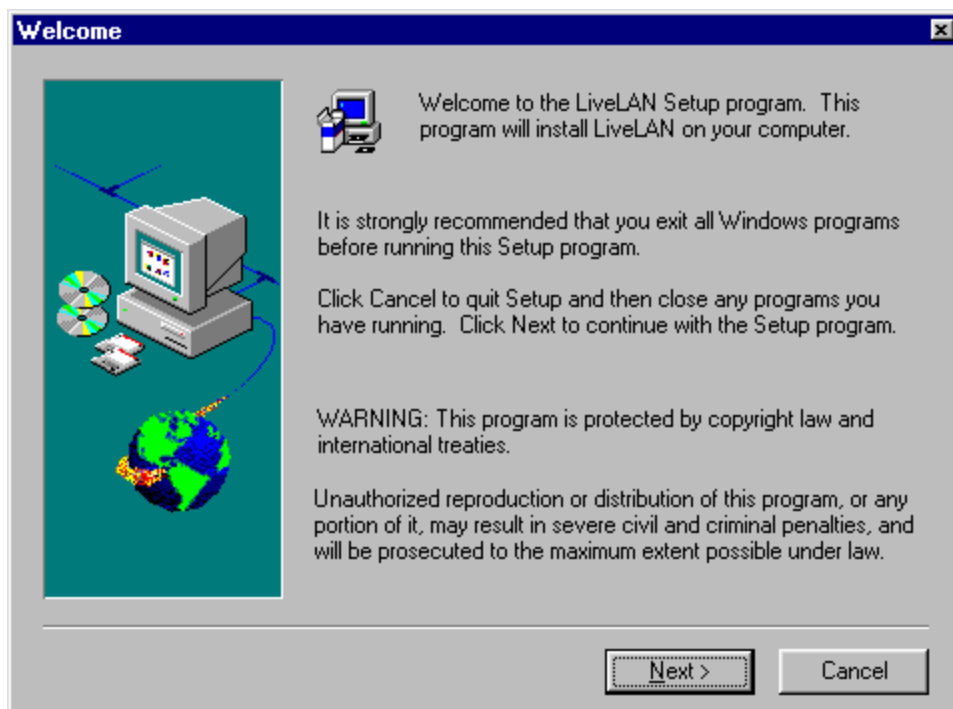
You will be returned to the PictureTel LiveLAN Setup window after the drivers are installed (the system will need to reboot twice).

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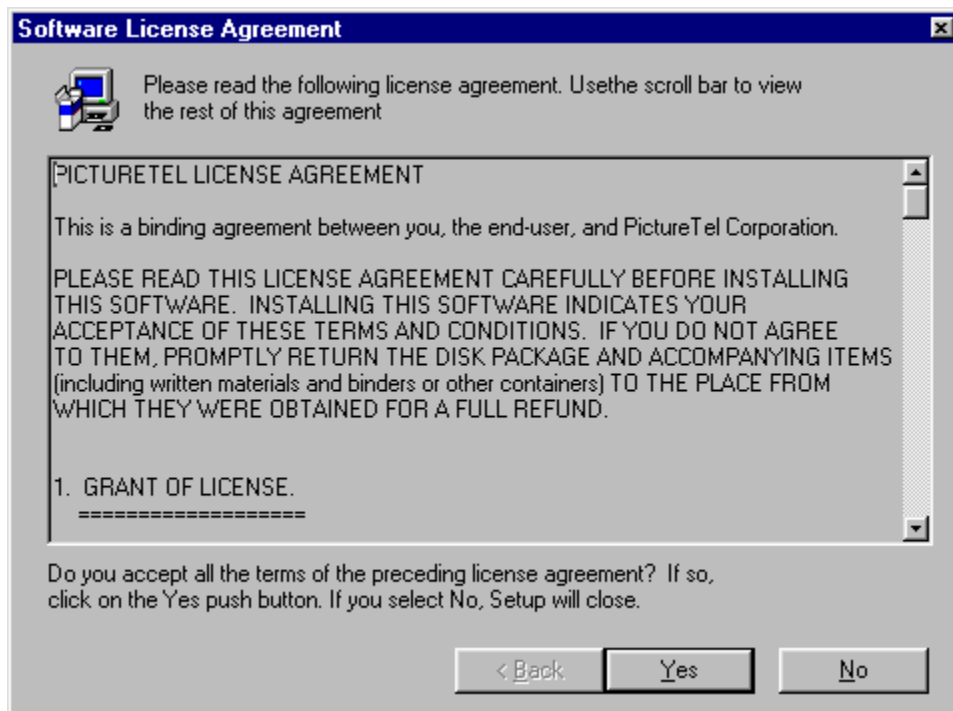
## Installing the LiveLAN Application Software

After you have installed the LiveLAN hardware drivers for the LiveLAN Media Accelerator Board, you can install the LiveLAN application software by performing the following procedure.

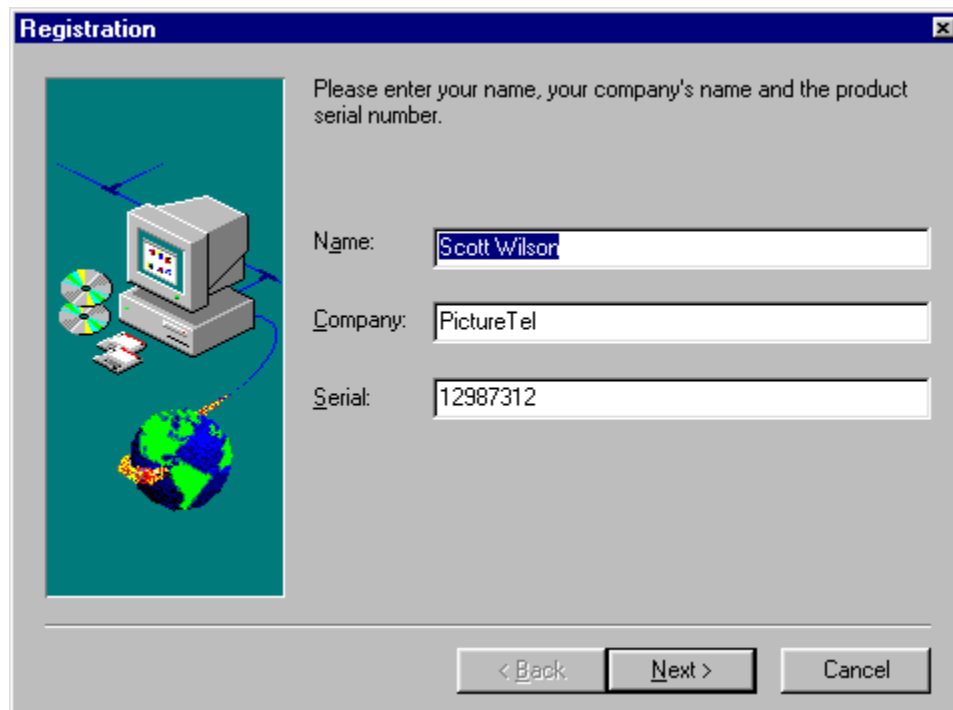
1. Insert the LiveLAN CD into the CD drive. If Autorun is enabled on your system, you will see the main window for the PictureTel LiveLAN Setup.
2. If Autorun is disabled, open the CD-ROM via the Windows Explorer and double-click the autorun.exe file.
3. To install the LiveLAN 3.1 application software, select the Driver Software Install option on the PictureTel LiveLAN Setup window and follow the directions.
4. The Welcome dialog box is displayed.



5. Click Next > to continue. The Software License Agreement is displayed.

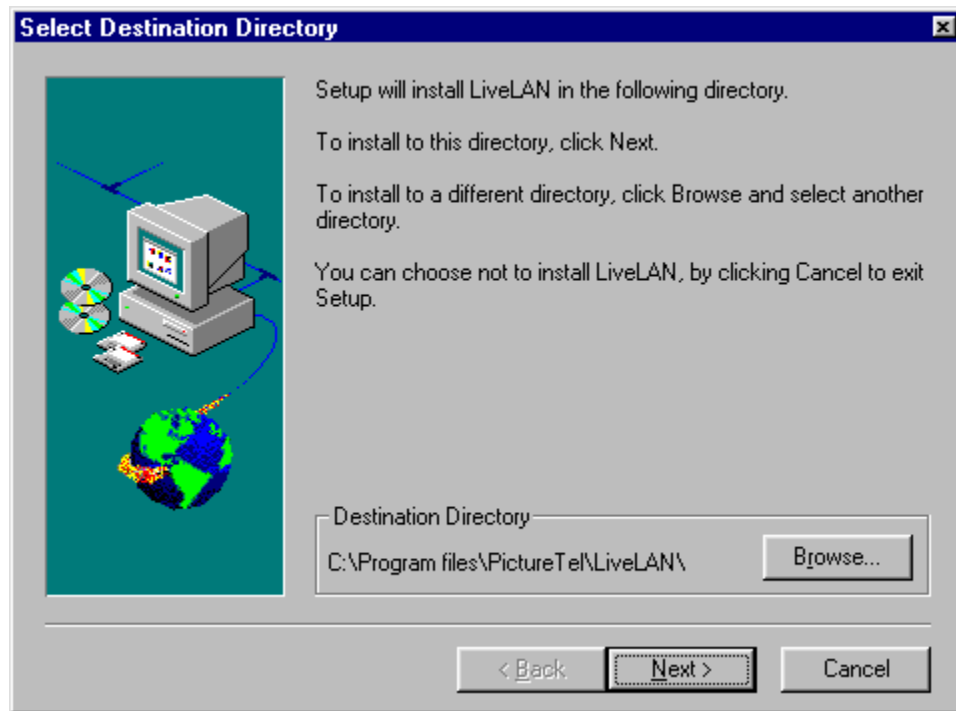


6. Please read the Software License Agreement carefully and then click Yes. The Registration dialog box is displayed.

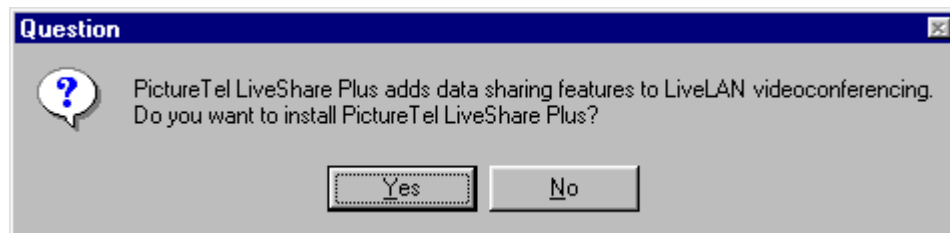


7. Enter your name, company name and LiveLAN serial number, and then click Next > to continue. Your LiveLAN serial number can be found on the warranty registration card. If you have received an upgrade kit, you will need the warranty registration card received with an earlier version of LiveLAN.

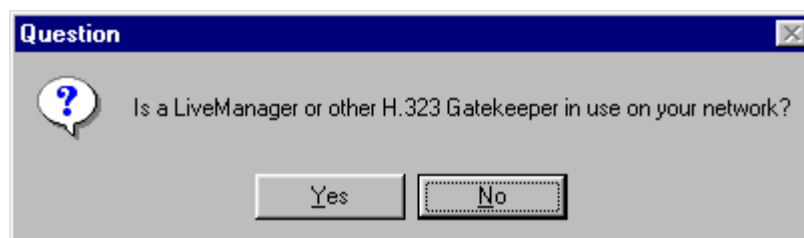
The Select Destination Directory dialog box is displayed.



8. Select the destination folder in which you want to install LiveLAN. The default folder is `c:\Program files\PictureTel\LiveLAN`. You can click Browse to choose a directory or type a path name. If the specified directory does not exist, the installation program will create it.
9. Click Next > to continue.
10. A dialog box is displayed asking if you want to install PictureTel LiveShare Plus with LiveLAN.



11. Click Yes to install LiveShare Plus. A Question box appears, asking if LiveManager (or another H.323 gatekeeper) is in use on your network. If you are using LiveManager, LiveLAN requires LiveManager version 3.0 or 3.1.

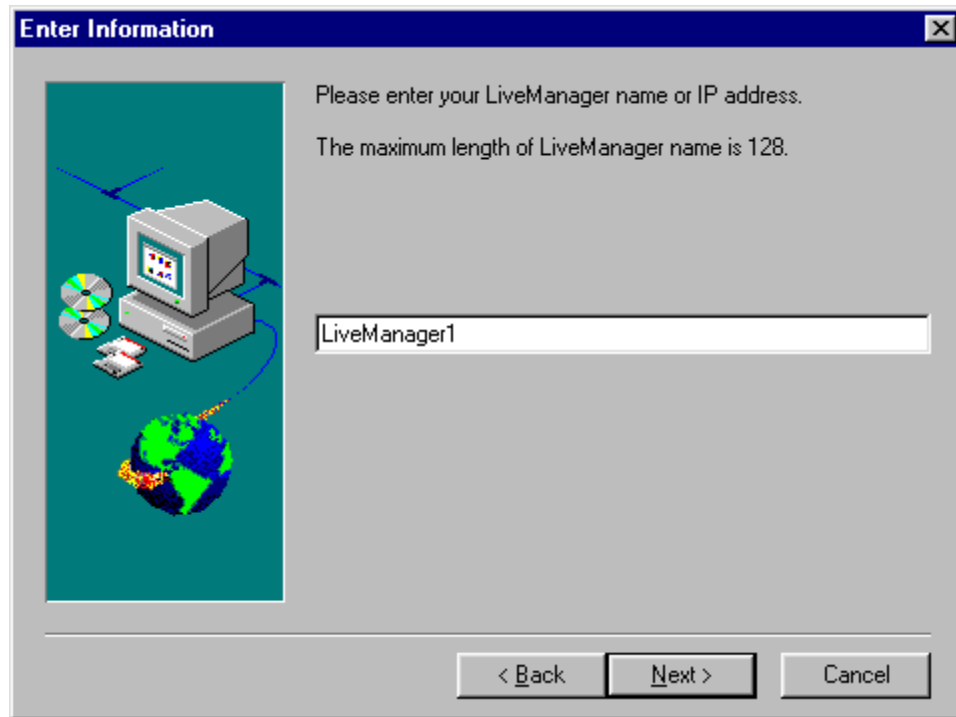


12. Click Yes or No. If you are not sure, see your System Administrator, or refer to the PictureTel LiveManager Product Guide.

If you click No, go to step 17. If you click Yes, the Enter Information dialog

box is displayed.

If LiveManager is configured for use with LiveLAN, then LiveManager must always be used.



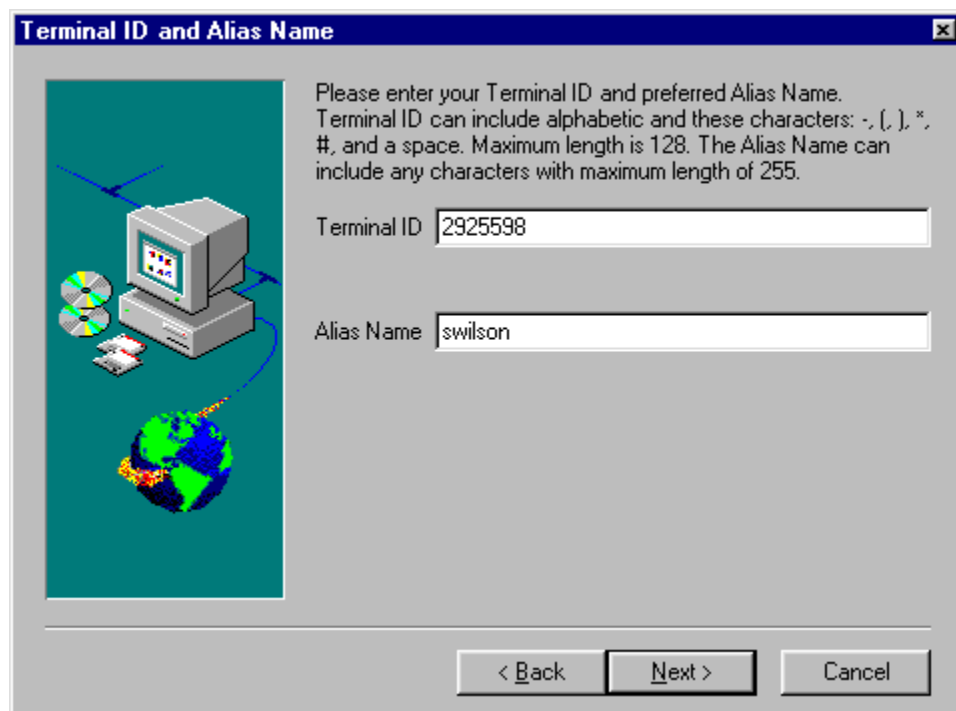
Enter Information

Please enter your LiveManager name or IP address.  
The maximum length of LiveManager name is 128.

LiveManager1

< Back   Next >   Cancel

13. Enter the name or IP address of your LiveManager server, and click Next >. The Terminal ID and Alias Name dialog box is displayed.



Terminal ID and Alias Name

Please enter your Terminal ID and preferred Alias Name.  
Terminal ID can include alphabetic and these characters: -, (, ), \*, #, and a space. Maximum length is 128. The Alias Name can include any characters with maximum length of 255.

Terminal ID 2925598

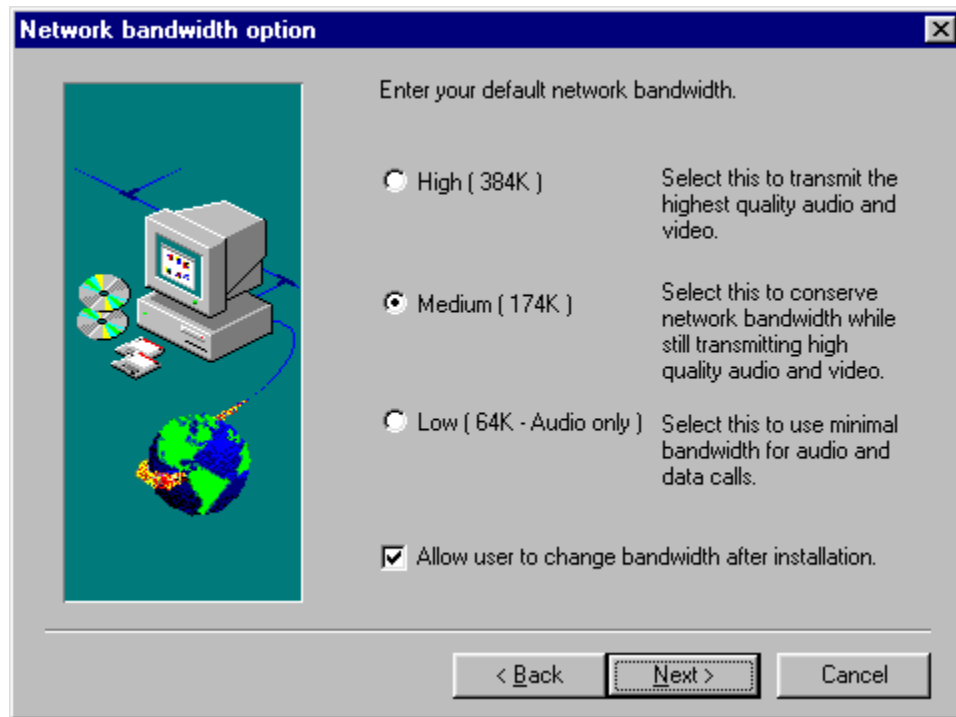
Alias Name swilson

< Back   Next >   Cancel

14. In the Terminal ID field, enter the number that you want other users to dial when calling this terminal. It is suggested that you use your telephone extension as your Terminal ID. The first digit of the Terminal ID must be different from the Gateway Prefix. Otherwise, LiveManager will not allow the LiveLAN terminal to register. For example, if the Gateway Prefix is 9, then you cannot use "9" as the first digit of the

Terminal ID.

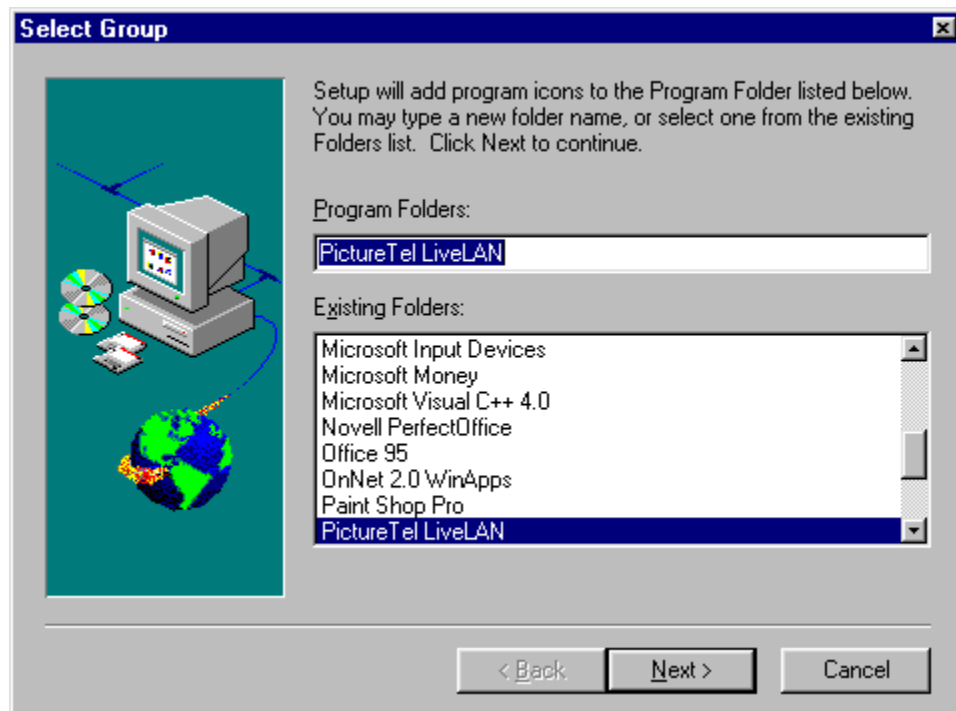
15. In the Alias Name field, enter your alphanumeric alias to be registered with LiveManager. It is suggested that you enter your email name.
16. Click Next >.
17. The Network Bandwidth dialog box is displayed. Select the default bandwidth, and specify whether users should be allowed to modify the default bandwidth after installation by toggling the checkbox on or off.



The bandwidth option lets you adjust the transmit bandwidth. You might want to increase the bandwidth to enhance the quality of your video image as received by the far end or decrease it to allow more calls on the network.

For more information on bandwidth settings, refer to [Optimizing Video Performance](#).

18. Click Next >. The Select Group dialog box is displayed.



19. Select the default folder (PictureTel LiveLAN), type a new name, or choose another folder from the list of existing folders.
20. Click Next >. The system installs the PictureTel LiveLAN videoconferencing application software. A Copying Program Files status window appears to indicate the status of the copy operation.
21. The Setup Complete dialog box is displayed when the installation is complete.



22. Click Finish. The system displays the ReadMe text file. If you don't want to view the ReadMe file, you must disable the system default (to display the ReadMe file) before you click the Finish button. To disable the default, click the "Yes, I want to view the

ReadMe file now” check box to remove the check mark. When the check mark is removed, the ReadMe file will not be displayed when the Finish button is displayed.

---

## Installing the PictureTel LiveLAN Software from Diskettes

If you are installing the LiveLAN software on a computer that is not connected to the Internet or a LAN and does not have a CD drive, you can create the driver and application diskettes on another computer from the CD.

To create diskettes from the CD, select the CD and choose Explore from the right mouse menu. Navigate to the DriverDisks folder and then copy the contents of disk1 through disk"n" onto diskettes and label them LiveLAN for 95 Drivers Disk<n>. Repeat this procedure for the disk images in the English\Livelan folder to create the LiveLAN for Windows 95 Application Disk<n> disks.

1. Insert the Drivers disk1 diskette into the drive on the target machine, open the diskette (typically a: or b:), and run ptrmdrv.exe. This will remove any old LiveLAN drivers. Restart your machine and then insert the driver disks as prompted by the Windows "Plug-and-Play" driver system. The system will reboot one more time before the drivers are enabled.
2. Insert the Application disk1 diskette into the drive on the target computer and run setup.exe. You will be prompted for each of the other Application diskettes in turn.

You can start the LiveLAN application and place calls as soon as the application software installation completes.

---

## Testing the Installation

This section describes how to test LiveLAN to ensure that it was installed properly. If you want to quickly and easily determine the operational status of LiveLAN, run the [Loopback Test](#), then verify that remote video is displayed in your LiveLAN window and that you can toggle between local and remote video. When you toggle between the local and remote video display, you should notice a slight difference in quality.

The Local Audio/Video Loopback Test is described in the following section.

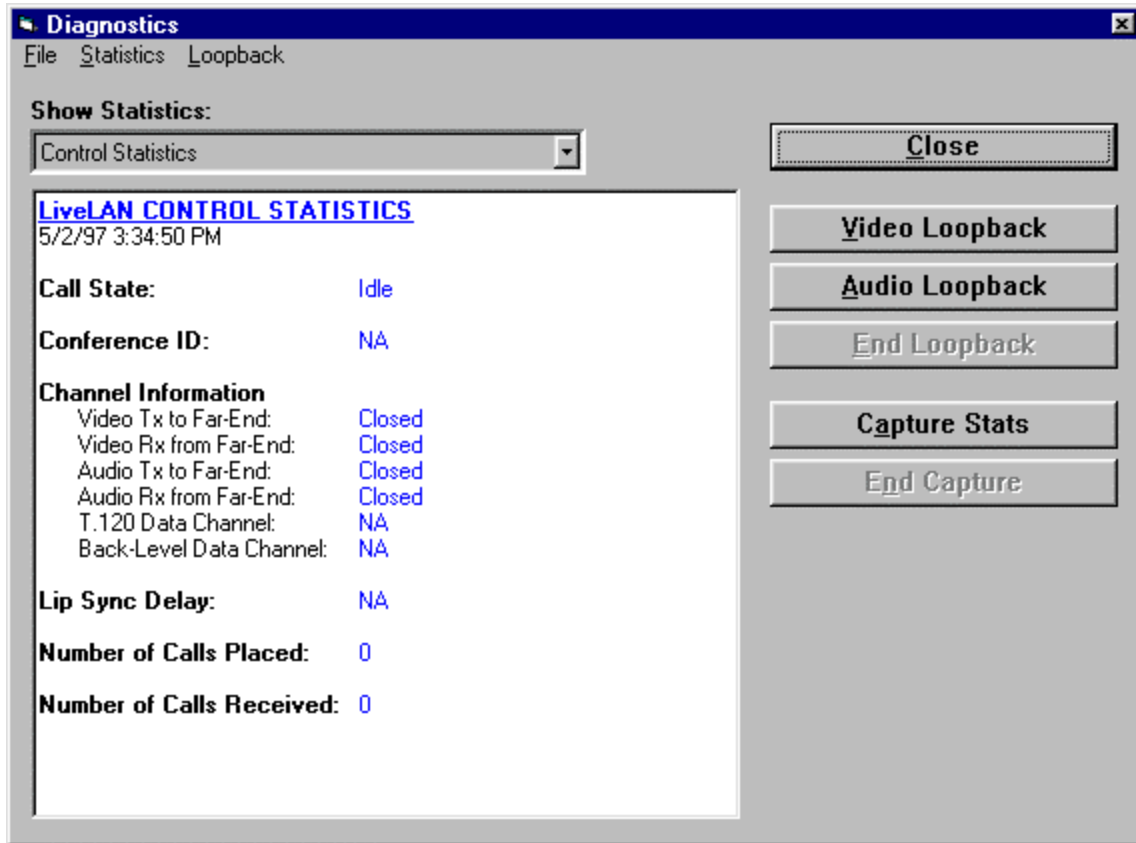
### Performing a Local Audio/Video Loopback Test

The Local Audio/Video Loopback test makes a video call to your computer. It generates video or audio signals which are looped back to your monitor and speakers. The test digitizes and compresses the signals before looping them back. If the test is completed successfully, your system is operating properly. If the test is not successful, close LiveLAN and all open applications, and restart the system. Sometimes restarting the system can clear the problem. If the system still fails, refer to [Troubleshooting](#) for more detailed information.

To perform the Local Audio/Video Loopback test:

1. Start LiveLAN.
2. Select Diagnostics from the LiveLAN Tools menu.

3. The Diagnostics window is displayed. Click Video Loopback to perform the Video Loopback Test. When performing the Video Loopback Test, audio should be echoed back through the speakers.



4. You should see the local video image being looped back to the LiveLAN window. Use the Display Local/Remote Video button on the main window to toggle between local and remote (looped back) video. You should also hear audio looping back from your microphone through your speakers. Click End Loopback to end the test.
5. To perform the Audio Loopback test alone, without also testing video, click Audio Loopback. You don't need to perform the Audio Loopback Test if you have performed the Video Loopback Test.
6. You should hear audio looping back from your microphone through your speakers. Click End Loopback to end the test.
7. Click Close when you are done performing the Video and Audio Loopback tests.

Refer to [Testing LiveLAN by Performing Loopback Tests](#) and [How to Retrieve, Capture and Analyze Statistics](#) for more detailed information on the Loopback Tests.

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## Deinstalling the LiveLAN Software

This section explains how to remove the PictureTel LiveLAN application software and the LiveLAN system software (hardware drivers) from your computer. To remove PictureTel LiveLAN completely, you must also remove the LiveLAN Media Accelerator Board from your computer's PCI slot.

You should copy your Whiteboard (.wht), message (.msg), or transferred files to the non-default folders if you want to keep them; otherwise, deinstall removes them from your hard disk.

If you are de-installing both the LiveLAN application software and the hardware drivers, you should remove the LiveLAN application software first.

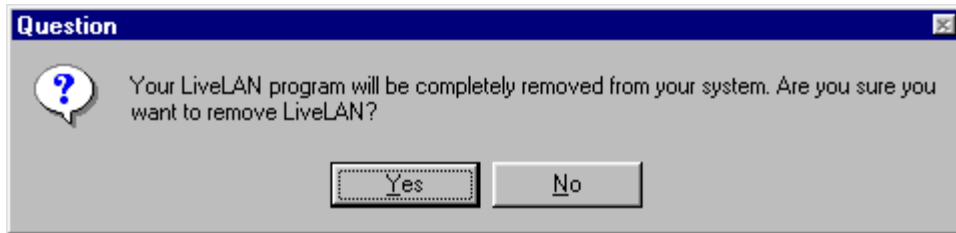
## Removing the LiveLAN Application Software

To deinstall the LiveLAN application software:

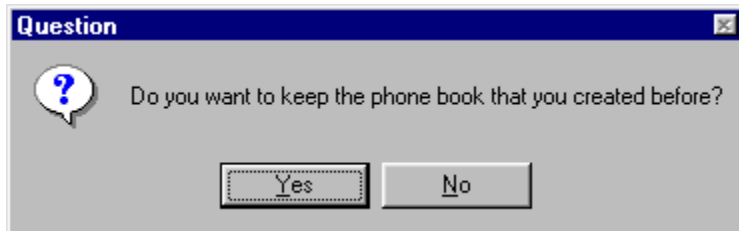
1. Click the Windows 95 Start button, and select Settings -> Control Panel.
2. In the Control Panel, double click the Add/Remove Programs icon. The Add/Remove Programs Properties sheet is displayed.



3. Select PictureTel LiveLAN 3.1 from the listbox.
4. Click the Add/Remove button. A dialog box appears asking you if you are sure you want to deinstall LiveLAN 3.1

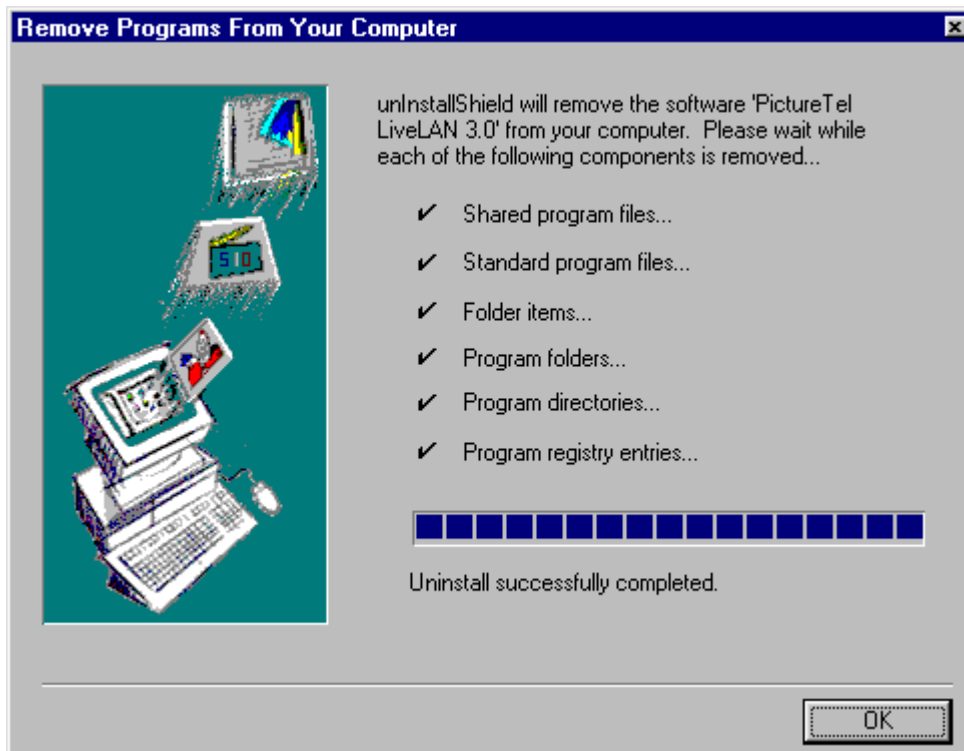


5. Click Yes. The following dialog box is displayed.



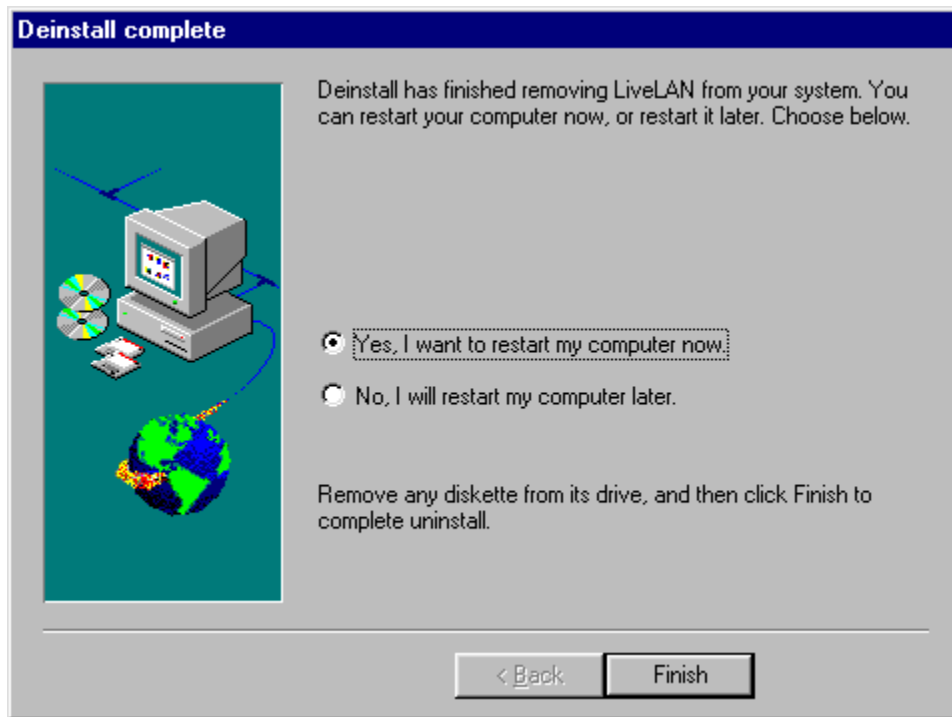
6. Click Yes or No. If you Click Yes, the phonebook files (\*.mdb) will remain in the LiveLAN install directory. If you click No, the phonebook files will be deleted.

7. Deinstallation begins. The following screen is displayed.



Checkmarks appear as the program components are deinstalled.

8. Click OK when the deinstallation is complete. The following screen is displayed.

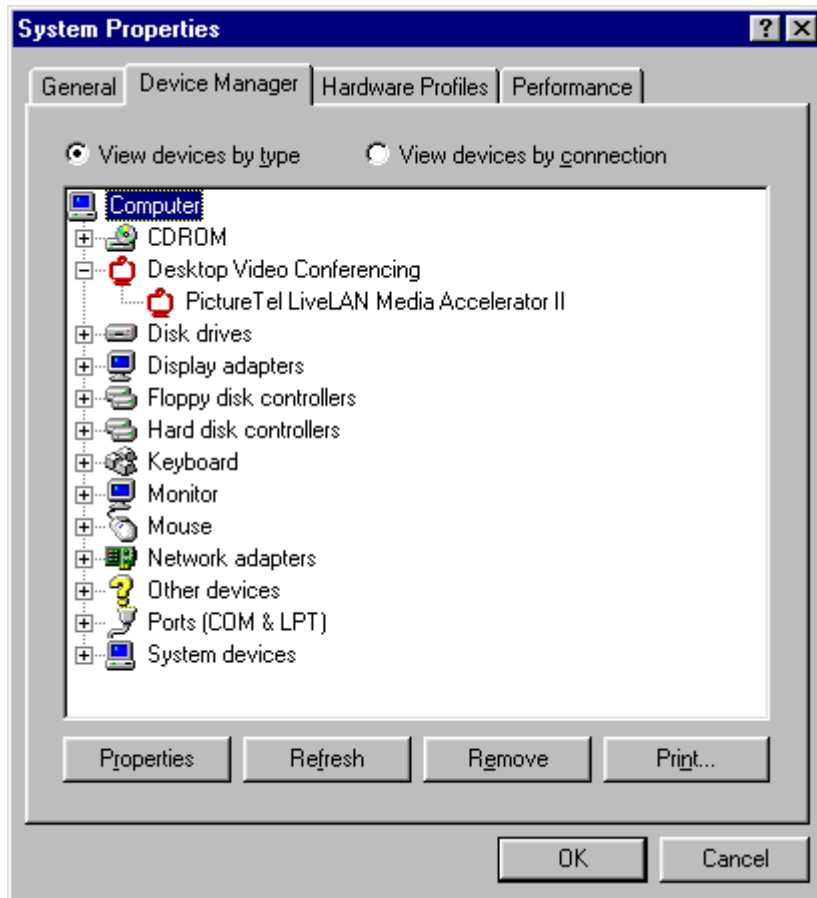


9. Click Finish to restart your computer. The default setting will automatically restart your computer when you click Finish. You don't need to restart your computer if you are going to immediately remove the LiveLAN Plug and Play hardware drivers.

## Removing the LiveLAN Plug and Play Hardware Drivers

To deinstall the LiveLAN Plug and Play hardware drivers:

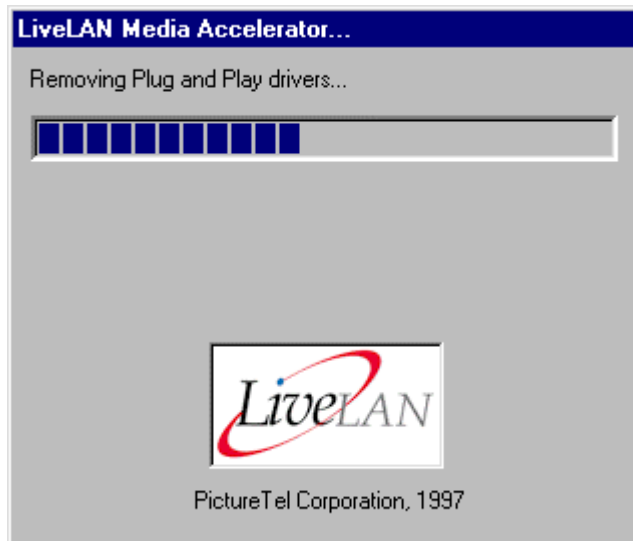
1. Click the Windows 95 Start button, and select Settings -> Control Panel.
2. In the Control Panel, double click the System icon.
3. Select the Device Manager tab in the System Properties dialog box. The following screen is displayed.



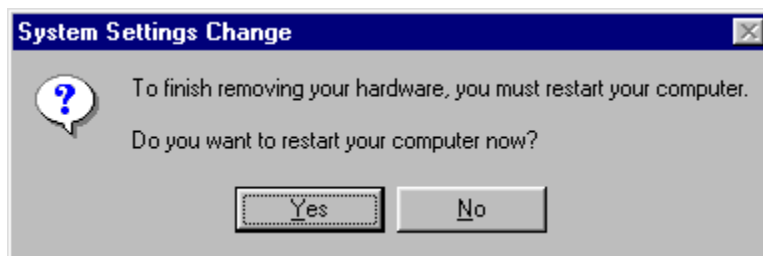
4. Find and select the PictureTel LiveLAN Media Accelerator II device. It should be listed under the Desktop Video Conferencing category in the Device Manager.
5. Click Remove. The following screen is displayed.



6. Click OK to confirm you want to remove the LiveLAN hardware drivers. The following screen is displayed to indicate the progress of the de-installation process.



When de-installation of the drivers is completed, the following screen is displayed.



7. Click Yes to restart your computer.

---

## Upgrading from LiveLAN 3.0

The LiveLAN 3.1 system can be installed over your existing LiveLAN 3.0 system without losing your personal settings. To complete the upgrade, follow the instructions below.

1. Place the LiveLAN CD-ROM in your CD drive.
2. If Autorun is enabled on your system, you will see the Installation main window. If Autorun is disabled, open the CD and double-click on autorun.exe.
3. Open the Release Notes and review any last minute changes.
4. Select Driver Software Install and follow the directions. You will be returned to the LiveLAN Installation Autorun Window after the drivers are installed (the system will need to reboot twice).
5. Select Application Software Install and follow the directions. The application software will install with the preferences indicated in your 3.0 installation as the defaults.
6. For more information about the LiveLAN product, click the On-Line Product Guide button.

You can start the LiveLAN application and place calls as soon as the application software installation completes.

---

## Installing the PictureTel LiveLAN Media Accelerator II Board

All new versions of PictureTel LiveLAN 3.1 include the new, 30 fps (frames per second) LiveLAN Media Accelerator II Board. If you are upgrading from LiveLAN 3.0 and you want the 30 fps capability of LiveLAN 3.1, you must perform the following tasks:

1. Remove the LiveLAN Plug and Play hardware drivers.
2. When removal of the drivers is completed, the system displays a dialog box prompting you to restart the system to finish removing the hardware. Do not restart the PC at this time.
3. Turn off your PC.
4. Remove the existing LiveLAN Media Accelerator Board from your PC.
5. Install the new LiveLAN Media Accelerator II Board in your PC.
6. Power on your PC. The Plug-and-Play feature of Windows 95 will recognize the new hardware when you reboot your PC.
7. Insert your LiveLAN CD. Windows will locate the appropriate drivers for installation. Once the drivers are installed, the new board shows as the PictureTel LiveLAN Media Accelerator II in the system control panel under Desktop Video Conferencing.

Refer to the Removing the LiveLAN Plug and Play Hardware Drivers section of the LiveLAN 3.1 Installation Guide for the detailed procedure.

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## Upgrading from PictureTel LiveLAN 2.0

If you are currently running LiveLAN 2.0, you must remove the old software and hardware completely, before installing LiveLAN on the system. A complete document (Llupgrd.pdf) on how to upgrade from LiveLAN 2.0 to LiveLAN 3.1 can be found in the `..\English\Docs\PDF\` directory on the LiveLAN CD-ROM.

For an HTML-formatted version of this document, navigate to the following path on the CD-ROM:  
`..\English\Docs\HTML\Llupgrd\readme.htm`.

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## Upgrading from PictureTel Live200

If you are currently running the PictureTel Live200 product on your PC, you can perform a software upgrade to run LiveLAN 3.1.

To upgrade your LiveLAN 200 system to LiveLAN 3.1, you must perform the following steps:

- Determine the version of Live200 installed on your PC
- Remove the Live200 application software
- Remove the Live200 Plug and Play drivers
- Install the LiveLAN 3.1 Plug and Play Drivers
- Install the LiveLAN 3.1 application software

These tasks are described in the Upgrading to LiveLAN 3.1 from Live200 document (L200.pdf) which can be found in the following directory on the LiveLAN CD-ROM: `..\English\Docs\PDF\`.

For an HTML-formatted version of this document, navigate to the following path on the CD-ROM:

*..\English\Docs\HTML\Live200\readme.htm.*

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## **Installing the PictureTel Live200 or Live200 Plus Hardware**

You may install the Live200p or Live200 Plus PCI card at any time. Since Windows 95 supports Plug-and-Play, you will be notified about the new hardware during system boot. Insert your LiveLAN CD and Windows will locate the appropriate drivers for installation. Once the drivers are installed, the Live200p card shows as the PictureTel LiveLAN Media Accelerator and the Live200 Plus card shows as the PictureTel LiveLAN Media Accelerator II in the system control panel under Desktop Video Conferencing.

# System Specifications

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## Overview

The following reference information identifies the LiveLAN system specifications and the LiveLAN Media Accelerator Board's connector specifications. Refer to this information when you want to interface LiveLAN with systems or devices that are not specifically described in the LiveLAN Installation and Product Guides.

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## System Specifications

### LiveLAN Codec Board

- Hardware audio and video codec PCI board

### Video Transmission

- ITU-T H.261 standard coding protocol
- ITU-T H.261 CIF at 15 frames per second and QCIF at 15 to 30 frames per second

### Audio Transmission

PictureTel's integrated:

- Dynamic Echo Cancellation (IDEC II)
- Noise Suppression (NS)
- Automatic Gain Control (AGC)
- 3.4 kHz telephone quality, G.711 (narrowband)
- 7.0 kHz high quality, G.722 (wideband)

### Network Transmission

- Winsock 1.1(or greater) compliant network stack, supporting Microsoft-specific extensions

### Data Transmission

- ITU-T H.225 standard link-layer protocol

### Conference Control

- End user videoconferencing application for MS Windows, H.323 conference control
- Collaborative computing:
  - Application Sharing
  - Whiteboard
  - File Transfer

- Message
- Shared Clipboard
- Control Remote Desktop
- T.120 Multipoint Data

## Compatibility

- Compatible with all PictureTel H.323 systems and any other H.323-compliant systems.
- H.320-compliant (via the PictureTel LiveGateway)

## Video and Audio Interfaces

- One composite video input
- Video display through the PC graphics subsystem via the Windows 95 GUI
- Monophonic, two-channel powered speaker output and single-channel microphone input

## Board Installation and Maintenance

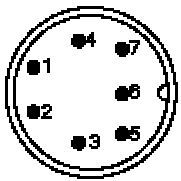
- Microsoft Plug and Play compliant
- Jumperless, software configured, and customer installed
- Board level diagnostics

# LiveLAN Media Accelerator Board Connector Specifications

This section provides specifications for the connectors used on the LiveLAN Media Accelerator Board (codec board).


## Optional Audio Connector

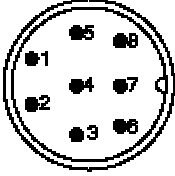
Optional audio equipment connects to the 7- pin DIN type socket labeled **4** on the LiveLAN board. The pinout specification for the optional audio socket on the LiveLAN Media Accelerator Board is shown in the following table.

	Pin Number	Signal
	1	IIC - SCL (Clock)
	2	IIC - SDA (Data)
	3	Digital GND
	4	Analog GND

	5	LINE LEVEL OUT
	6	+12 V
	7	LINE LEVEL IN

## Video Camera Connector

The video camera connects to the socket labeled  on the LiveLAN Media Accelerator Board via a video cable. The pinout specification for the 8-pin DIN type camera connector on the LiveLAN board is shown in the following table.

	Pin Number	Signal
	1	Unused
	2	Unused
	3	Digital GND
	4	+5 V
	5	Video GND
	6	Video in (composite or luma)
	7	+12 V
	8	Video in (composite or chroma)

## Microphone Connector

The PictureTel multimedia microphone's mini stereo jack connects to the socket labeled **1** on the LiveLAN board. The connection specification for the microphone socket on the LiveLAN board is shown in the following table.

<b>Connection</b>	<b>Signal</b>
Tip	MICROPHONE LEVEL INPUT
Ring	Unused
Sleeve	GND

## Speaker Connector

The mini stereo jack for the speakers connects to the socket labeled **2** on the LiveLAN Media Accelerator Board. The connection specification for the speaker socket on the LiveLAN board is shown in the following table.

<b>Connection</b>	<b>Signal</b>
Tip	LINE-LEVEL OUT, LEFT
Ring	LINE-LEVEL OUT, RIGHT
Sleeve	GND

# Power Requirements

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The LiveLAN Media Accelerator Board is designed for use with an IBM compatible PC. The board is powered from the host chassis. Each board has the power requirements outlined in this section.

Voltage	Current (max.)
+5V	4.5 A
+12V	500 ma

The power drawn from the host chassis together with that required for any other expansion boards and accessories must be within the power rating of the host chassis.

The LiveLAN Media Accelerator Board must be installed in such a way that the integrity of the network's protection from hazardous voltages used or generated internally by the host chassis is not impaired.

The clearance and creepage distances listed in the [Clearance and Creepage](#) table below must be maintained between the LiveLAN Media Accelerator Board and:

- the host chassis in which it is installed
- any adjacent expansion boards installed in the host chassis

The exception to this requirement is the edge connector, which is located in the host chassis power and data bus slots, where no minimum distance applies

Clearance and Creepage		
Clearance Xmm	Creepage Ymm	Voltage Used or Generated by Other Parts of the Host or Expansion Bus
2.0	2.4 (3.8)	Up to 50Vrms or Vdc

2.6	3.0 (4.8)	Up to 125Vrms or Vdc
4.0	5.0 (8.0)	Up to 250Vrms or Vdc
4.0	6.4 (10.0)	Up to 300Vrms or Vdc

The creepage distances shown apply in a normal office environment. Where the local environment within the host chassis is subject to conductive pollution or dry nonconductive pollution which could become conductive due to condensation, the creepage distances shown in parentheses will apply.

The clearance and creepage between adjacent points should be checked as follows:

- The clearance distance (X) is the shortest distance measured between two points through the air.
- The creepage distance (Y) is the shortest distance between two points measured across a surface.

The user should obtain advice from a competent telecommunications safety engineer if in doubt.

# Troubleshooting

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## Overview

Use the following information to troubleshoot and optimize the performance of your LiveLAN system. The troubleshooting procedures in this section will allow you to quickly determine the cause and possible solutions of the most common LiveLAN problems.

If the troubleshooting procedures do not help you resolve the problem, access the LiveLAN Technical Bulletins from the Support area of the PictureTel web site at **www.picturetel.com**. The Technical Bulletins can be accessed by clicking the Proactive Support link in the Support area of the PictureTel web site.

The Technical Bulletins are documents created by PictureTel Technical Support to supplement existing publications. Each Technical Bulletin describes a problem, the cause of the problem, and the solution. It is highly recommended that you visit this site if you encounter a problem. Many times the solution can be found quickly and easily.

If the information in these Technical Bulletins does not help resolve your problem, then please contact your PictureTel sales representative. If your sales representative does not provide support, you may contact PictureTel directly.

The following topics are described in this section. Click on a topic to obtain more information about it.

- [Resolving LiveLAN Installation and Operation Problems](#)
- [Resolving Audio Problems](#)
- [Resolving Video Problems](#)
- [Resolving Network Problems](#)
- [Testing LiveLAN by Performing Loopback Tests](#)
- [How to Use the LiveTest Application to Detect Hardware Problems](#)
- [How to Retrieve, Capture and Analyze Statistics](#)
- [Optimizing Video Performance](#)
- [List of Error Messages and Solutions](#)
- [Contacting Technical Support](#)

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## Resolving LiveLAN Installation and Operation Problems

The troubleshooting procedures for verifying the successful installation and operation of LiveLAN on your system are organized into the following categories:

- Verifying the successful installation of the LiveLAN Media Accelerator Board.
- Verifying the successful installation of the LiveLAN application software.
- Verifying the successful Local Operation of LiveLAN.
- Verifying the successful Point-to-Point Operation of LiveLAN.

The following procedures will help you isolate and resolve possible problems you may encounter. It is best to start from the first question for each category and work your way down until you find the solution to your problem. If none of these questions are applicable to your problem, then it is recommended that you access PictureTel's web site and search the Technical Bulletins database.

## **Verifying the Successful Installation of the LiveLAN Media Accelerator Board**

The troubleshooting procedures for verifying the successful installation of the LiveLAN Media Accelerator Board are organized into two areas:

- Did the installation of the plug and play drivers succeed?
- Did the LiveLAN Media Accelerator board pass the self-test (LiveTest)?

### **Make Sure That the LiveLAN Media Accelerator Board is Installed in a Bus Master Enabled PCI Slot**

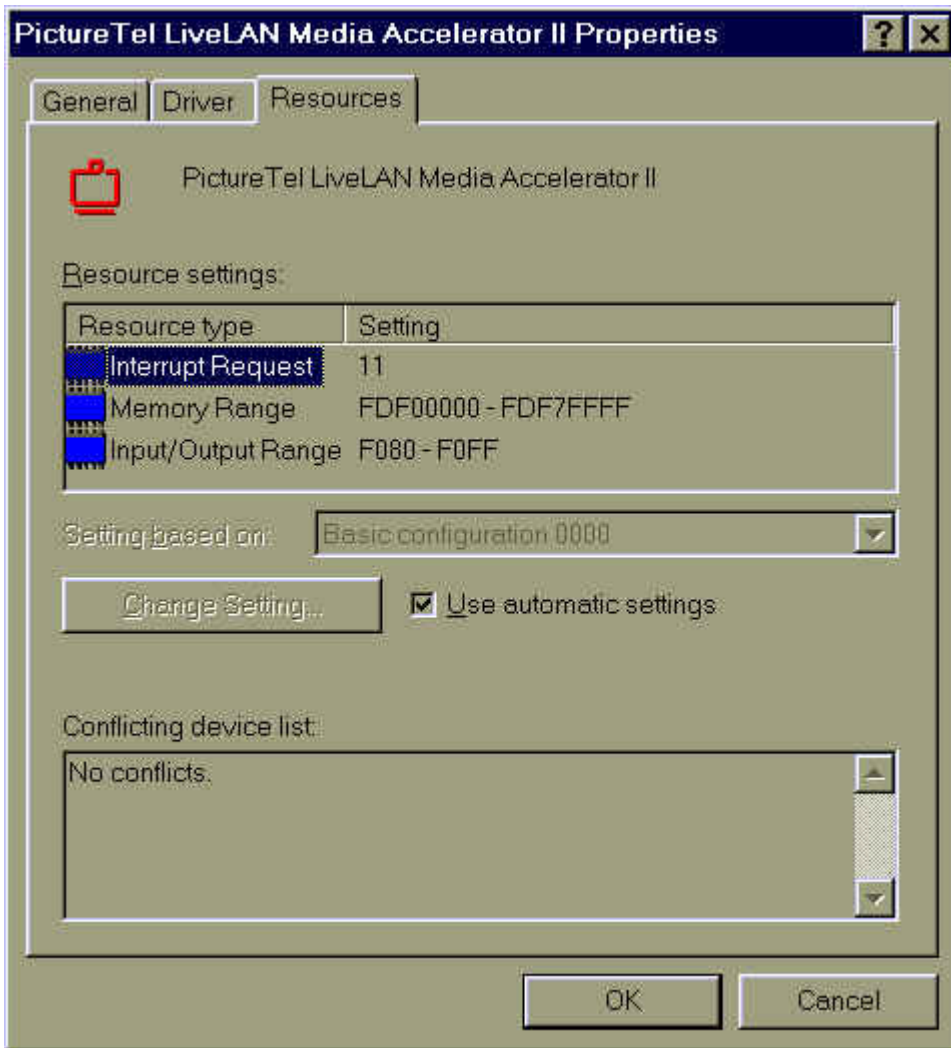
Before you begin troubleshooting the LiveLAN Media Accelerator board, make sure that it is installed in a Bus Master enabled slot. The LiveLAN PCI board must be installed in a Bus Master enabled slot for it to work. For some PCs, this may require the use of the PC's BIOS configuration utility. If you are not sure if the slot being used is Bus Master enabled, contact your PC vendor.

### **Make Sure That the LiveLAN Media Accelerator Board is Installed on the Main PCI Bus**

It is important that the LiveLAN PCI board is installed on **the main PCI bus** in systems that support multiple PCI busses. Installing LiveLAN on a secondary bus will produce additional latency resulting in poor performance and possibly system hangs. If you are unsure if the PC you are installing the system in supports multiple PCI busses with PCI slots on primary and secondary busses, contact the PC vendor.

Another clue that your system supports multiple PCI busses is to launch Windows and, from the Device Manager, search for a system component called the **PCI to PCI Bridge**. The presence of this bridge indicates that there are more than one PCI busses in the system. This does not mean that there are PCI slots on the secondary bus, sometimes only the embedded devices will reside on the secondary bus. The only way to ensure that you have installed the card in the primary bus is to look at the I/O resources in the Device Manager for the LiveLAN card and observe that the I/O range is not common to the same range as the PCI to PCI bridge.

If no other devices are seen in the Conflicting device list, then you are not on a secondary bus. The following example (screen capture) shows the LiveLAN board on a primary bus slot. Note that there will not be a Yellow exclamation point (!) on a device that has a "conflict" with the PCI to PCI bridge. The bridge information is shown in this list box as a means of indicating that the slot the device is in is on a secondary PCI bus. The screen capture is of a system that is installed on the Primary Bus.



### Did the installation of the plug and play drivers succeed?

1. After restarting your computer, did the New Hardware Found dialog box appear, and were you prompted to locate the drivers?

If no, it can mean that the PCI slot is not enabled. Run `ptdrvrmv.exe`, which is located in the driver directory on the LiveLAN CD-ROM, to clean up the registry. Shutdown the computer and switch the LiveLAN Media Accelerator board to a new slot if available. Restart your computer.

2. Did you select Driver from disk provided by hardware manufacturer?
3. Did you get the System Settings Change dialog box, and were you prompted with the following message: "Do you want to restart your computer now?"
4. Did you restart the computer at this point?
5. Are you installing the version of the drivers that is associated with the specific version of the application you plan to install? If you downloaded a new application off the web, are you using the drivers downloaded as part of that package?

6. In the Device Manager, do you see the newly created Desktop Video Conferencing device class with ONE entry (LiveLAN Media Accelerator II)? Is the PictureTel icon displayed for both the device class and the entry? Failed installations may have a diamond shaped icon.

If you answered “no” to any of these questions, then the Plug and Play driver installation may not have succeeded, and you will have to start the driver installation process again.

Before you can start again, you need to remove/uninstall the drivers by running the `ptdrvrmv.exe` program which is located in the driver directory on the LiveLAN CD-ROM. Click on “Uninstall Current Drivers” and then reboot the PC. The Driver wizard should come up after the reboot. You can then start the driver installation process again.

**For Windows 95 version 4.00.950B users only.** You will be prompted twice for the location of the plug and play drivers during the Driver Installation Wizard. This is a reported issue by Microsoft, and one that is only found in version 4.00.950B. If you did not enter the driver location twice, then the Plug and Play driver installation probably was not successful.

You need to run `ptdrvrmv.exe` which is located in the driver directory on the LiveLAN CD-ROM. Click on “Uninstall Current Drivers” and then reboot the PC. The Driver wizard should come up after the reboot, and allow you to start the driver installation process again.

### **Did the LiveLAN Media Accelerator Board pass the self-test (LiveTest)?**

By default, the LiveTest program is located in the following directory:

**`\PictureTel\LiveLAN\Diagnostics`**

Otherwise, it is located under “Diagnostics” in the user-selected LiveLAN directory. Refer to [How To Use LiveTest To Detect Hardware Problems](#) for more information on LiveTest.

If most of these tests failed, then the problem is probably caused by an Interrupt Conflict. Refer to the following section for a description of what an Interrupt Conflict is and how to resolve it.

If only a few tests failed, then refer to [Resolving Audio Problems](#) and/or [Resolving Video Problems](#).

### **What is an Interrupt Conflict**

The LiveLAN Media Accelerator board is a plug and play device, which means that the board is configured by the PC's BIOS. The BIOS determines the Interrupt Request (IRQ) assignments. If a PC contains boards, such as sound and network boards, that are not plug and play compatible and use IRQ lines, the BIOS will not know that these IRQ lines are in use.

In these cases, the BIOS sometimes assigns an IRQ line to a device that is already in use, causing an interrupt conflict. This often occurs with legacy ISA cards that are not recognized by the Windows Device Manager. The Device Manager may try to automatically assign an IRQ line to a PCI card that it believes to be unused, when the IRQ line is actually being used by an unrecognized legacy card.

The following paragraphs discuss the symptoms of an interrupt conflict, tools you can use to diagnose the problem, and how to resolve the problem.

### **Symptoms of Interrupt Conflicts**

The following symptoms may indicate an interrupt conflict problem. If you recognize any of these symptoms, follow the procedures in the following sections.

- The LiveLAN software application hangs when the system is started.
- The system continuously tries to restart.
- After you restart your system, you can no longer connect to the network or your sound board stops working. This indicates a conflict with the network or sound board.
- You are able to make calls but there is no video window. Some PC manufacturers make systems with “slave only” slots. This conflicts with the way the LiveLAN Media Accelerator board transfers video data. If you suspect this is the problem, try moving the LiveLAN Media Accelerator board to another PCI slot in the PC. You must de-install the drivers before changing slots.

### **Identifying Interrupt Lines**

If you think you have an interrupt conflict, you need to identify the IRQ line where the conflict is and resolve it. Use the ptecfg program tool to identify the IRQ line being used. This program can be accessed from the Plug and Play drivers section of the LiveLAN CD-ROM.

1. Run ptecfg by inserting the LiveLAN CD-ROM in the drive and typing d:\ptecfg at the DOS prompt, where “D” indicates your CD-ROM drive path.

Information similar to the following appears on a screen:

```
Interrupt Line: 11
I/O Address: 0x1080 (Enabled)
Memory Address: 0x41000000 (Enabled)
Bus master: Enabled
Latency timer: 0x60
PCI Interface: Pitbull 2
Revision: 2
Subsystem ID: 0x001C
```

**Note:**

Please note the number that appears after the Interrupt Line category on the screen; this is the IRQ assigned to the LiveLAN Media Accelerator board.

## Identifying the Conflict

If you think you have an interrupt conflict, follow these steps to identify the problem:

1. Hold down the Alt key and double-click My Computer from the Windows 95 desktop.
2. Click the Device Manager tab. If a yellow exclamation point appears next to PictureTel LiveLAN Media Accelerator II, it means that Windows could not initialize the LiveLAN Media Accelerator.
3. Double-click Computer, and select the Interrupt Request (IRQ) radio button. All of the IRQs in use appear in the window. Check the list to see if any devices are missing. For example, check to see if your sound or network board is listed. If there are devices missing, run the configuration program for that board to find out what IRQ it is using. This often occurs with legacy ISA cards that are not recognized by the Windows Device Manager. The Device Manager does not display cards that are not recognized.
4. Check to see if all of the IRQ lines are in use. If this is the case, you need to free up an IRQ line for the LiveLAN Media Accelerator board by following the procedures for [Resolving the Interrupt Conflict](#).
  - Make a note of all of the IRQ lines that are in use.
  - If LiveLAN (PictureTel LiveLAN Media Accelerator II) appears in the list, make a note of the IRQ line. If LiveLAN does not appear in the list, get the IRQ line by running the `ptelcfg` program.
  - Once you know the IRQ line for the LiveLAN Media Accelerator board, check to see if any other devices are using the same number.
  - Proceed to [Resolving the Interrupt Conflict](#).

### Note:

The LiveLAN Media Accelerator II board can share an IRQ with another PCI device. When two or more boards share an IRQ, the devices are chained together in such a way that the Interrupts are passed to the first device in the chain. If the Interrupt is not for the first device, it is passed on to the second device in the chain.

However, some older boards are associated with drivers that do not support sharing. This means that the first device will not send the Interrupt to the next device in the chain thereby starving the remaining devices of Interrupts and causing a failure. The LiveLAN Media Accelerator board does support sharing.

In theory, many PCI devices can share one IRQ. However, in practice, there are problems depending on how the other PCI devices behave and how the PC architecture is implemented. In practice, it is best to try and isolate the LiveLAN board on a single IRQ. The following example is of a system that has allocated all of the PCI devices to one IRQ.

\*\*\*\*\* SYSTEM SUMMARY \*\*\*\*\*

Windows version: 4.00.950

Computer Name: Compaq

Processor Type: Pentium Pro

System BUS Type: ISA

BIOS Name: Compaq

BIOS Date: 09/28/97

BIOS Version: Unknown

Machine Type: IBM PC/AT

Math Co-processor: Not Present

Registered Owner: Coral Energy

Registered Company: Coral Energy

\*\*\*\*\* IRQ SUMMARY \*\*\*\*\*

IRQ Usage Summary:

- 00 - System timer
- 01 - Standard 101/102-Key or Microsoft Natural Keyboard
- 02 - Programmable interrupt controller
- 03 - Communications Port (COM2)
- 04 - Communications Port (COM1)
- 05 - ES1869 Plug and Play AudioDrive
- 06 - Standard Floppy Disk Controller
- 07 - ECP Printer Port (LPT1)
- 08 - System CMOS/real time clock
- 11 - PictureTel LiveLAN Media Accelerator
- 11 - VIA Tech PCI Universal Serial Bus
- 11 - Matrox Millennium II AGP PowerDesk
- 11 - Compaq Netelligent 10/100 TX Embedded UTP Controller
- 11 - Adaptec AIC-7860 PCI SCSI Controller
- 11 - IRQ Holder for PCI Steering
- 12 - Standard PS/2 Port Mouse
- 13 - Numeric data processor
- 14 - Primary IDE controller (dual fifo)
- 14 - Intel 82371AB/EB PCI Bus Master IDE Controller
- 15 - Secondary IDE controller (dual fifo)
- 15 - Intel 82371AB/EB PCI Bus Master IDE Controller

## Resolving the Interrupt Conflict

Follow these steps to resolve the interrupt conflict:

1. Write down a list of used IRQs. Double-click Computer, and select the Interrupt Request (IRQ) radio button. All of the IRQs in use appear in the window that are associated with boards that are recognized by the Device Manager. Check the list to see if any devices are missing. For example, check to see if your sound or network board is listed. If there are devices missing, run the configuration program for that board to find out what IRQ it is using.
2. If the LiveLAN Media Accelerator II board is conflicting with a board that is NOT recognized by the Device Manager, then the IRQ line of either device needs to be changed to an unused IRQ line.
3. Try moving the LiveLAN Media Accelerator II board to another slot. Some PCs have hard-wired IRQ assignments to PCI slots. By moving the board to a different slot, you change the IRQ to which it is assigned. To check that the IRQ has changed, run the `ptelcfg` program and see if the interrupt line number has changed.

You should remove the Plug and Play drivers for the LiveLAN Media Accelerator II board before you change slots to clean up the registry. Run the `ptdrvrmv.exe` program which is located in the driver directory on the LiveLAN CD-ROM.

4. If you are still having problems, then try to change the IRQ line of the unsupported card to an unused IRQ line by running the configuration program for that board.
5. Some PCs allow you to change your PC's Interrupt routing. Access your PC's BIOS Setup. Check the documentation that came with your PC to find out how to access the BIOS. You usually press a key, such as **Del** or **F2**, when the system is starting.
6. If the BIOS allows it, change the interrupt routing. There might be a section of the BIOS that lists all of the interrupts and lets you assign certain interrupts to PCI boards. If so, change the interrupt assignment so that the unused IRQs are assigned to the PCI boards. When you exit from the BIOS, the system restarts. If you cannot change the IRQ this way, proceed to the next step.
7. If the BIOS allows it, reserve the IRQ lines for non-plug and play devices. If you can reserve the appropriate IRQ lines, then you can make sure that the PCI boards get assigned to the free ones. When you exit from the BIOS, the system restarts. If you cannot change the IRQ this way, proceed to the next step.
8. If you have a BIOS that does not allow you to change IRQ routing, try changing the IRQ of the conflicting board. Most newer boards have a configuration program that lets you do this. If you have an older board, you might have to change the jumpers or DIP switch settings. If the conflict is with a motherboard device, such as a serial port, you might be able to disable some unnecessary functions. For example, you might be able to disable some extra serial ports or extended parallel ports to free up an IRQ line.

## Verifying the Successful Installation of the LiveLAN Software Application

Perform the following steps to verify the successful installation of the LiveLAN application.

1. Did the installation of the LiveLAN application succeed? If it succeeded, the Setup Complete dialog box should have been displayed when LiveLAN installation was completed.

2. Were any errors reported during LiveLAN application installation? Check the **INSTALL.LOG** file located in the LiveLAN directory. If errors were reported in this log, deinstall LiveLAN and remove the LiveLAN Media Accelerator drivers using the **ptdrvrmv.exe** tool which is located in the driver directory on the LiveLAN CD-ROM. Click on “Uninstall Current Drivers” and then reboot the PC. The Driver wizard should come up after the reboot, and allow you to restart the driver installation process. Re-install the drivers and the LiveLAN application.
3. Are you installing consistent versions of the LiveLAN application and the Plug and Play drivers? If no, obtain the appropriate versions of the LiveLAN Plug and Play drivers and try to re-install. If you have been downloading the LiveLAN Plug and Play hardware drivers and application software files from the PictureTel web site, make sure that you remove prior versions of the application software and hardware drivers from your PC before installing the newer version.

## Verifying Successful LiveLAN Local Operation

Use the following guidelines to verify successful LiveLAN Local Operation.

1. Did a network error message box get displayed when LiveLAN was started? If yes, then confirm that all your network settings are correct by verifying the Network Properties in the Control Panel and by running the “ping” utility program on your system.

To run the “ping” program, at the DOS prompt, type:

```
“ping 127.0.0.1”
```

If your network is configured properly, you will see the following response:

```
“Reply from 127.0.0.1” response
```

2. Do you get local video on startup of the application? If no, refer to [Resolving Video Problems](#).
3. Do you get loopback audio during the audio loopback diagnostic test? If no, refer to [Resolving Audio Problems](#).

## Verifying Successful LiveLAN Point-to-Point Operation

Use the following guidelines to verify successful LiveLAN Point-to-Point Operation.

1. Do you get a blue phone on startup of the LiveLAN application? If no, check the PictureTel web site for related Technical Bulletins.

A blue phone indicates successful application load and startup. If running with a Gatekeeper, such as PictureTel LiveManager, the blue phone confirms successful communication between LiveLAN and the Gatekeeper.

2. Is a call that is placed to a second LiveLAN terminal received at that terminal?

Reception of this call verifies the protocol between the LiveLAN terminals is functioning properly and

that the Gatekeeper is operational.

3. Is audio working in both directions?

If no, analyze the statistics to isolate which Video Conferencing Client is causing the problem. Refer to [Retrieving, Capturing and Analyzing Statistics](#) for more information on viewing and analyzing statistics.

4. Is video working in both directions?

If no, analyze the statistics to isolate which Video Conferencing Client is causing the problem. Refer to [Retrieving, Capturing and Analyzing Statistics](#) for more information on viewing and analyzing statistics.

5. Is application sharing working in both directions?

If no, then check the PictureTel web site for related Technical Bulletins.

6. After hanging up the call, do both sides return to a ready state with a blue phone icon?

If no, then check the PictureTel web site for related Technical Bulletins.

---

## Resolving Audio Problems

The information in this section identifies the most common audio problems, and explains how to resolve them.

### **Problem: There is no sound when you perform the local loopback test.**

#### **Cause:**

The audio equipment might not be connected correctly or the audio equipment may not be turned on.

#### **Solution:**

Verify that the speaker and microphone are connected securely to the proper sockets on the LiveLAN Media Accelerator board and/or verify that the power light for the speakers is on.

### **Problem: The system doesn't ring when receiving an incoming call.**

#### **Cause:**

The audio settings might be incorrect or the .WAV driver may not be installed.

#### **Solution:**

1. Make sure the speaker volume is powered on and that the volume is set to an audible level.
2. Make sure the Ringer Off option on the Call menu is not checked.
3. From the Audio section of the Preferences window, increase the Ringer Volume, and be sure the Audio Peripherals setting is correct (Speakers and Microphone).

**Problem: The audio quality is poor.**

**Cause:**

The audio settings might be incorrect.

**Solution:**

1. Increase the volume from the LiveLAN tool bar.
2. Make sure that the microphone is plugged in.
3. Make sure the microphone is turned on. If there is a red circle on the microphone button on the Main toolbar, the microphone is turned off - muted. Click this button to remove muting.

**Problem: No sound comes from the speakers, but the screen displays a video image.**

**Cause:**

Muted microphone(s); volume control setting for speakers set at low or no volume.

**Solution:**

1. Make sure you and the other party have not muted your microphones.
2. Adjust the volume using the speaker controls (if present) and the volume control in the PictureTel LiveLAN main window.

**Problem: You hear echo distortion or audio artifacts during a call.**

**Cause:**

This usually indicates that the problem is at the destination or that the far end is not a PictureTel System or has incorrect Audio Preferences settings.

**Solution:**

1. PictureTel systems are equipped with an advanced echo cancellation technology which will eliminate echo. If the far end is not a PictureTel system, your audio may loop back from the far end speaker through the far end microphone. In this case, nothing can be done to correct for the non-PictureTel system deficient echo cancellation. If both ends of the call are PictureTel systems, make sure you and the other party have not muted your microphones.
  2. Make sure that you and the other party correctly selected either the Speaker and Microphone setting or the Headset setting in Audio Preferences.
-

# Resolving Video Problems

The information in this section identifies the most common video problems, and explains how to resolve them.

**Problem: There is no Local Video or Remote Video image when performing a local loopback test.**

**Cause:**

Your camera might not be connected properly.

**Solution:**

1. Make sure the camera cable is plugged securely into the camera and into the LiveLAN Media Accelerator board.
2. If you are using the WorldCam, make sure the camera is turned on and that the privacy shutter on the front of the camera is opened.

**Problem: The image in the Local Video Window is distorted and the video quality is poor, or there is no video image.**

**Cause:**

Your video settings might be incorrect.

**Solution:**

1. Make sure Windows 95 is set to run in High Color (16 bit) mode or 32 bit mode.
2. Adjust the brightness and contrast of the camera from the Video section of the Preferences window.
3. Check the Image Preference setting in the Video section of the Preferences window. See [Optimizing Video Performance](#) for more information.
4. Make sure the LiveLAN Media Accelerator board is configured to the same format as the graphics board. (See the next problem description, "The video display rate is very slow.")

**Problem: The video display rate is very slow.**

**Cause:**

The LiveLAN Media Accelerator board might not be configured to the same format as the graphics board.

**Solution:**

1. Exit from the LiveLAN application.
2. Open the registry by running regedit and change the key `"HKEY_LOCAL_MACHINE\Software\PictureTel\LiveLAN\3.1\System\FORCE16"` from "0" to "555" or "565".

---

## Resolving Network Problems

The information in this section identifies the most common networking problems, and explains how to resolve them. Symptoms of network or communications failure vary according to the type of network.

The following list identifies the most common types of network problems you may encounter while installing or using LiveLAN:

**Problem: You received the following error message: “LiveLAN has failed to initialize due to: TCP/IP drivers cannot be found. See your system administrator for more information. Click OK to exit LiveLAN.”**

### Cause:

The TCP/IP network drivers could not be found on the system.

### Solution:

1. Confirm that TCP/IP is installed and that your network Properties in the Control Panel are set up properly.
2. Confirm that your network configuration is correct by "pinging" your computer. You can "ping" your computer by going to the DOS prompt and entering the following information at the prompt:

```
“ping 127.0.0.1”
```

If your network drivers are loaded and your system is configured properly, you will see the following response:

```
“Reply from 127.0.0.1”
```

**Problem: You received the following error message: “LiveLAN failed to initialize due to: The TCP/IP version loaded is not compatible with LiveLAN 3.1. Click OK to exit LiveLAN. Consult your User’s guide to correct this error.”**

### Cause:

LiveLAN requires a Winsock 1.1 (or greater) compliant TCP/IP stack that supports Microsoft-specific extensions.

### Solution:

You need to upgrade your TCP/IP protocol stack to one that supports Microsoft-specific extensions. Contact your system administrator for assistance.

**Problem: You received the following error message: “LiveLAN has failed to initialize due to: Network initialization failed. Click OK to exit LiveLAN. Consult your User’s Guide to correct this error.”**

**Cause:**

LiveLAN couldn't initialize because of an incorrect network configuration.

**Solution:**

Confirm that your network configuration is correct.

1. Verify that your computer connections to the network are correct.
2. Verify that your Network Properties in the Control Panel are correct.
3. Try to "ping" your computer by going to the DOS prompt and typing the following:

```
“ping 127.0.0.1”
```

If your network is configured properly, you will see the following response:

```
“Reply from 127.0.0.1”
```

4. Try "pinging" another machine on your network.
5. Try to access files via the LAN using normal computer file access. If you cannot access the LAN, the problem is probably with the network. Contact your network administrator.

---

## Testing LiveLAN By Performing Loopback Tests

The Local Audio/Video loopback test verifies the proper operation of your LiveLAN system by making a video call to your computer. It generates video or audio signals which are looped back to your monitor and speakers. The test digitizes and compresses the signals before looping them back. If the test is completed successfully, your system is operating properly. If the test is not successful, then something occurred during installation that needs correction.

Check the `install.log` file located in the LiveLAN directory for errors. If there are any errors present, then de-install LiveLAN, remove the plug and play drivers and try to install them again.

To perform the Local Audio/Video Loopback Test:

1. Start LiveLAN.
2. Select Diagnostics from the LiveLAN Tools menu. The Diagnostics window is displayed.
3. Click Video Loopback to perform the Video Loopback Test. At this point you should see your video and hear your audio.

---

## How To Use LiveTest To Detect Hardware Problems

The LiveLAN Hardware Diagnostic is a Windows 95 application that lets you test major circuit elements of the LiveLAN Media Accelerator board. All data paths and board components are tested by addressing, reading, and writing registers and memory locations. The physical and functional integrity of the PCI bus interface is also tested.

### Note:

The LiveLAN Hardware Diagnostic application does not test the PictureTel LiveLAN software or device drivers.

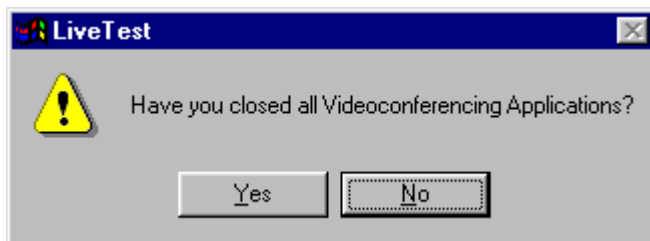
The LiveLAN Hardware Diagnostic performs a pass or fail test of the LiveLAN Media Accelerator board. While it runs, it records all messages in an error log file. If your LiveLAN Media Accelerator board needs to be repaired, you might be asked to print out the log file (**errlog.txt**) for your service provider.

To run the LiveLAN Diagnostic application:

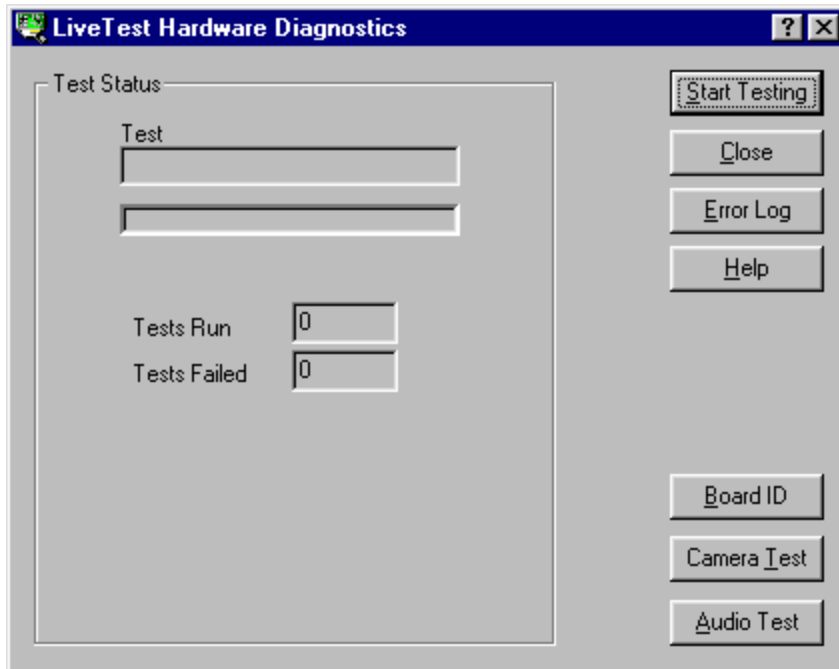
1. Click the Windows 95 Start button, and select Run.... The Run dialog box is displayed.
2. In the Open field, type the path where LiveLAN is installed and add `\livetest.exe`. If you installed LiveLAN in the default directory then type the following (including the quotes):

`"c:\Program Files\PictureTel\LiveLAN\Diagnostics\livetest.exe"`

3. Click OK. The following dialog box is displayed. Make sure that you close all video conferencing applications before running the LiveTest Hardware Diagnostics program.

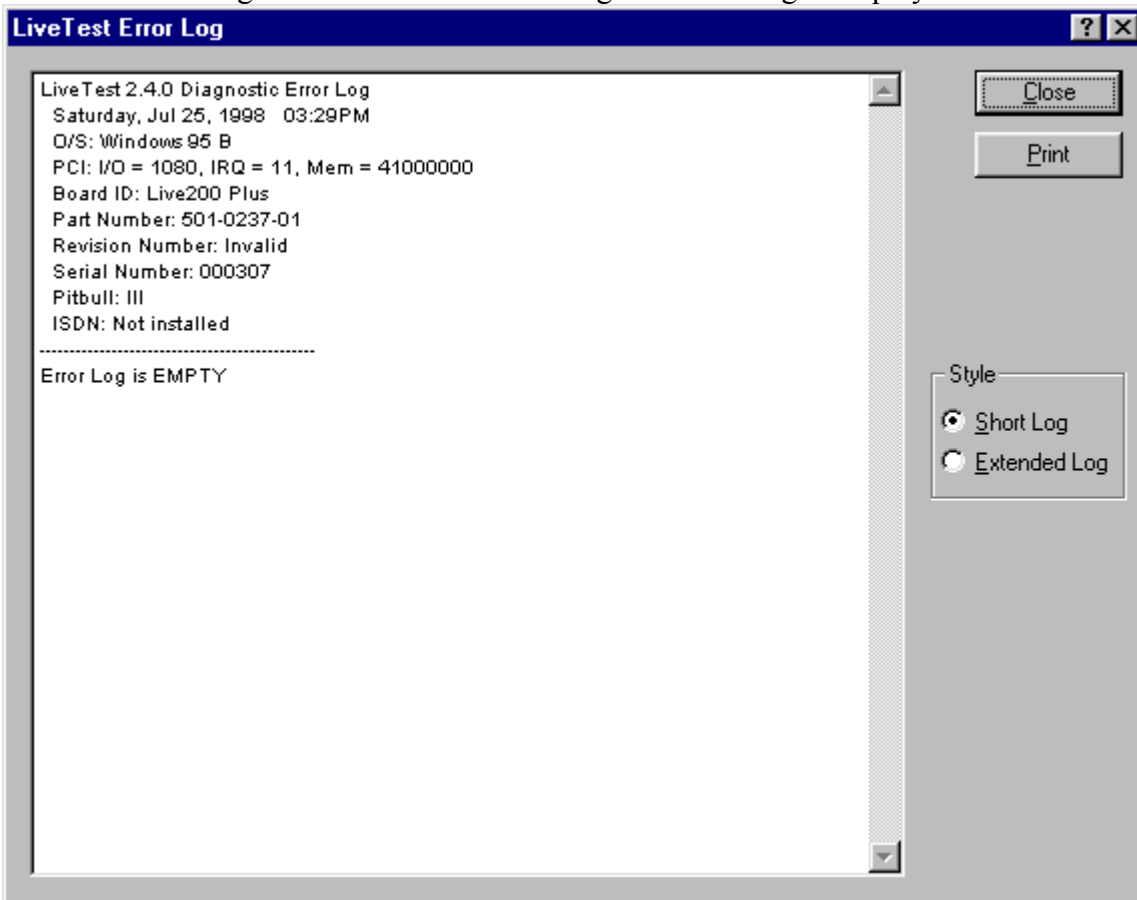


4. Click Yes. The LiveTest Hardware Diagnostics dialog box is displayed.



5. Click the Start Testing button. The diagnostic application tests the major circuit elements of the system, such as the LiveLAN Media Accelerator board. The Test Status box lists the name of the current test, and the time indicator bar displays the approximate progress of the test. You can stop the test at any time by clicking the Stop button.
6. Click the Board ID button to get information on the board, such as the revision number, serial and part numbers, and last failure. This information is useful to the service provider when you are reporting a problem.
7. Click the Camera Test button to see the video image from the camera. A camera test window appears which lets you visually check the video image the camera is transmitting. Close the window to end the test. If the image is black, check the camera cable connections.
8. Click the Audio Test button to test your microphone and speakers. Follow the instructions on the Audio Test dialog window to run the Microphone Test and the Speaker Test.

9. Click the Error Log button to view the error log. The error log is displayed.

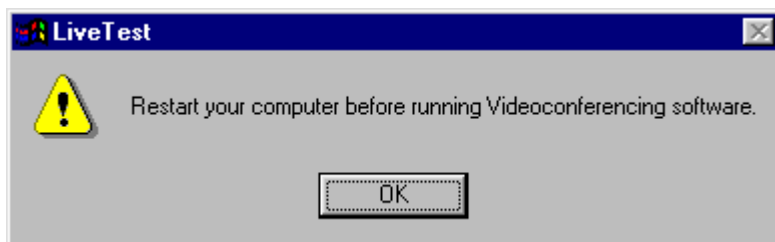


The log contains a sequential listing for each test that fails, including the test name and the status of each test. If there is a failure, print out the `errorlog.txt` file.

**Note:**

If almost all of the tests failed, then the problem is probably due to an Interrupt Conflict. Refer to Resolving the Interrupt Conflict.

10. Click Close when the Diagnostics are complete.  
11. Click OK when the following screen is displayed



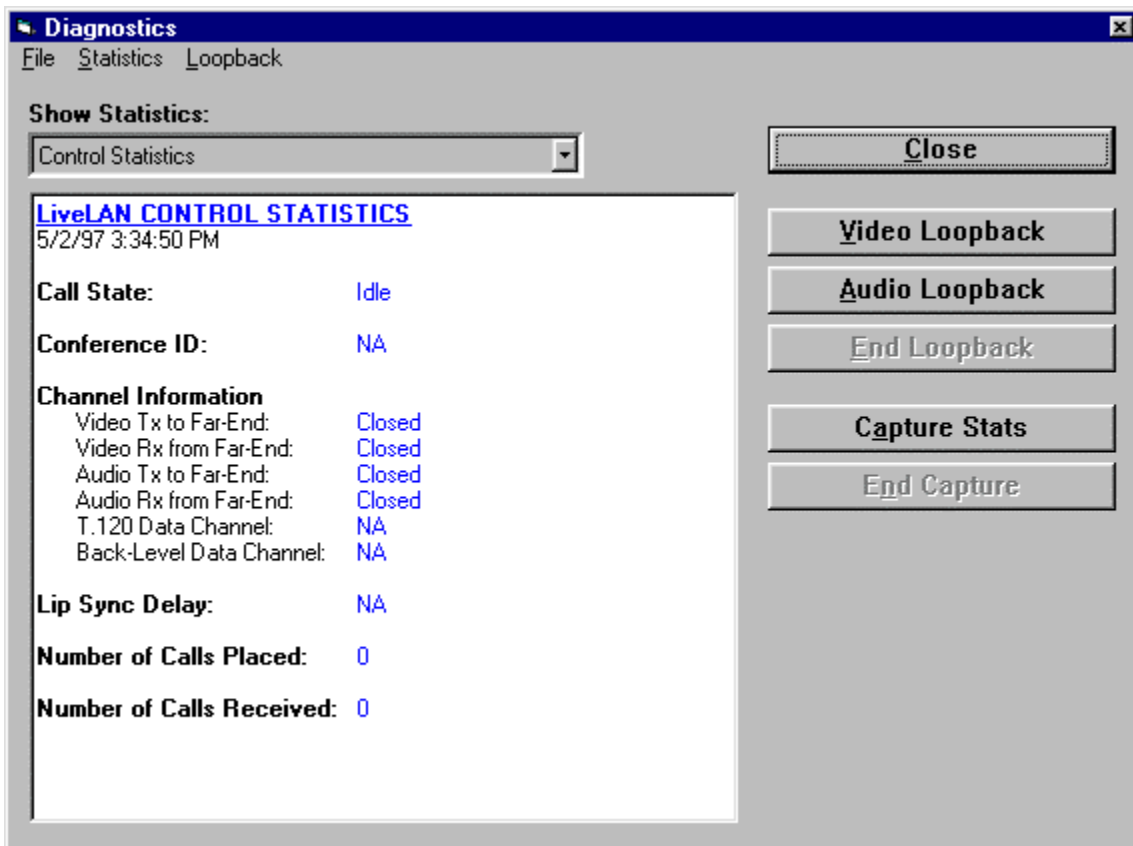
**Note:** You must restart your PC before you run LiveLAN.

---

# Retrieving, Capturing and Analyzing Statistics

The LiveLAN diagnostics screen, which is shown below, is divided into six views where each view displays a group of related statistics:

1. Control Statistics View
2. Video Statistics View
3. Audio Statistics View
4. Data Statistics View
5. Channel Statistics View
6. Network Statistics View



These statistics are very useful when viewing the performance of your system or troubleshooting LiveLAN problems. The statistics can be viewed and/or written to a file while you are in a call, or you can instruct LiveLAN to write the statistics to a file for later analysis.

To enable the statistic capturing function:

1. Click the "Capture Stats" button on the Diagnostics screen. LiveLAN will start to write out the statistics to a file specified on the Statistics capture Configuration screen.
2. Select Configuration on the Statistics menu on the Diagnostics screen to open the Statistics capture Configuration screen.

You will use this screen to set options that allow you to customize how the diagnostics information is captured, such as when and how often LiveLAN writes the statistics. The statistics are written to a text file in a tab delimited format so that the file can be imported and analyzed in Excel or another spreadsheet application.

The following sections identify and describe the statistics associated with each view, and how they can be used to help troubleshoot LiveLAN problems.

## **Control Statistics View**

The following control statistics are displayed:

### **Call State**

LiveLAN can be in one of the following states:

- Idle
- Placing Call
- Answering Call
- In Call
- Disconnecting Call
- Loopback

This statistic should be consistent with the last action taken by the user. For example, after initiating a call, this state should transition from the Idle state to the In Call state, passing through the Placing Call state.

### **Conference ID**

A unique, non-zero value assigned for the duration of the current call. This ID will be useful in troubleshooting multipoint conferencing problems.

### **Lip Sync Delay**

For future use.

### **Number of Calls Placed**

Number of calls placed since the LiveLAN application was initialized.

### **Number of Calls Answered**

Number of calls answered since the LiveLAN application was initialized.

## **Channel Information**

The Channel Information statistics provide a good method for confirming that the appropriate channels have been successfully opened during a call. While not in a call, all of these channels should be closed. While in loopback, all of these channels should be closed.

Each channel is opened after negotiating between the capabilities of the near-end and far-end terminals. These statistics are helpful in establishing whether the failure to receive data is a near-end receive problem or a far-end transmit problem.

### **Video Tx to Far-End**

Video Transmitter Channel open/closed.

### **Video Rx from Far-End**

Video Receive Channel open/closed.

### **Audio Tx to Far-End**

Audio Transmitter Channel open/closed.

### **Audio Rx from Far-End**

Audio Receive Channel open/closed.

### **T120 Data Channel**

T.120 bi-directional data channel open/closed. This channel is expected to be opened if T.120 data sharing is operational at both terminals, otherwise it is expected to be closed.

### **Back-Level Data Channel**

Back-Level bi-directional data channel open/closed. This channel is expected to be opened when the terminal is calling an H.320 system via the LiveGateway which does not support T.120 data sharing, but supports LiveShare back-level data. In any other configuration, this channel should be closed.

## **Video Statistics View**

The Video Statistics can be used to help isolate problems within the video subsystem. While not in a call, all of these statistics should not be available (NA). While in loopback or in a call, all of these statistics should be active.

## Video Buffers Received

The Video Buffers Received statistics can be used to determine if the LiveLAN client is receiving video. Continuously increasing counts in all of the following statistics are expected while in a call or running loopback.

- **From Mux:** Number of buffers received from Mux, containing data to be decoded. This represents the number of video buffers received over the LAN.
- **To Decoder:** Number of Buffers sent to video driver for decoding. This represents the number of video buffers received over the LAN within the jitter delay time-out. Buffers received “in-time” are processed and included in this count. Buffers received “too-late” are discarded.
- **For Far-End:** Number of far end buffers.
- **Decoded:** Number of buffers returned from video driver, containing decoded data. This represents the number of decoded buffers received from the Media Accelerator board.
- **To Renderer:** Number of buffers sent to video render filter, containing remote video frames. A continuously increasing count in this field represents the ability of the LiveLAN application to render far-end video frames.

## Video Buffers Transmitted

The Video Buffers Transmitted statistics can be used to determine if the LiveLAN client is sending video. Continuously increasing counts in all of the following statistics are expected while in a call or running loopback.

- **Captured:** Number of buffers received from the video driver containing local capture video frames.
- **Encoded:** Number of Buffers received from the video driver containing encoded data to be assembled for transmission to the far-end terminal.
- **To Mux:** Number of assembled encoded buffers sent to the Mux for transmission to the far-end terminal. A continuously increasing count in this field represents the ability of the LiveLAN application to generate and transmit encoded video frames to the far-end terminal.

## Video Buffers Rendered

The Video Buffers Rendered statistics can be used to determine if the LiveLAN client is rendering video. Continuously increasing counts in all of the following statistics are expected while in a call or running loopback.

- **Received Local:** Number of local buffers received from the video driver containing local video frames for rendering.
- **Rendered Local:** Number of buffers rendered by local video render filter.
- **Received Remote:** Number of buffers received from the video driver containing far-end video frames for rendering of remote video.

- **Rendered Remote:** Number of buffers rendered by remote video render filter.

## Frame Rates

The Frame Rates statistics can be used to determine the current frame rates.

- **Local Capture:** Actual Local Capture Frame Rate. While in a call or running loopback, this frame rate should track the Actual Encode frame rate. Otherwise, a value near 20 frames per second is expected. Slower values while not in a call can indicate a poorly performing video graphics sub-system.
- **Local Render:** Actual Local Render Frame Rate. This frame rate should track the Local Capture frame rate.
- **Remote Render:** Actual Remote (Render) Frame Rate. This frame rate should track the Actual Encode frame rate of the far-end terminal.
- **Target Encode:** Encoded Frame Rate Target as sent from LiveLAN application. In FCIF, should be 15 frames per second. In QCIF, should be 30 frames per second.
- **Actual Encode:** Actual Encoder Frame Rate. This frame rate should track the Target Frame Rate. Large discrepancies between the two can indicate CPU saturation.

## Discarded Frames

The Discarded Frames statistics can be used to determine the quantity of dropped or lost frames.

- **Encoder Sub-Frames:** Dropped/Lost Encoder Frames. The hardware accelerated Media Accelerator board will routinely drop frames during the course of a call. This statistic records the number of frames dropped (sub-framed). Numbers on the order of 1 or 2 per second are not cause for alarm. Significantly higher counts may be an indication that the video driver is unable to process interrupts at the required rate. This can be caused by competition for CPU cycles with concurrently running applications.
- **Render Sub-Frames:** Dropped/Lost Decoder Frames. If the video renderer is not finished rendering the previous frame, the current frame will be discarded. This statistic counts the number of times this happens. The ability to render decoded frames is limited by the video graphics sub-system. Numbers on the order of 1 or 2 per second are not cause for alarm. Significantly higher counts may be an indication that the video graphics sub-system is not able to handle the required rate. DirectDraw video graphics drivers can help this situation. The latest graphics driver for the user's machine can be obtained from the manufacturer on the web.

## Modes

The Modes statistics can be used to determine the current video Encoder and Decoder modes and their associated channel rates.

- **Encoder Mode:** Video Encoder Mode. Only H.261 is supported in LiveLAN.
- **Encoder Channel Rate:** Video Encoder Channel Rate. Depending on the user network bandwidth selection, expect either 112K or 320K.

- **Decoder Mode:** Video Decoder Mode. Only H.261 is supported in LiveLAN.
- **Decoder Channel Rate:** Video Decoder Channel Rate. This statistic reports the expected decoder bit rate based on capabilities exchange. This rate is not recalculated during the call.
- **Direct Draw Enabled:** Direct Draw Enabled/Disabled. This is the recommended method for determining if direct draw is enabled or disabled.
- **Encoder Resolution:** QCIF/FCIF Indication. This statistic indicates which video resolution was chosen for the current call. This decision is influenced by the user's preferred video image preference. Smoother Motion maps to a preference of QCIF, while Sharper Image maps to a preference of FCIF. The capabilities and preferences of the far-end will influence what is actually sent.

If the far-end can receive FCIF and the near-end preferences do not preclude choosing FCIF, FCIF will be sent. Otherwise, QCIF will be sent.

**Note:** Setting the LiveLAN user preference to QCIF (Smoother motion) will force both receive and transmit resolutions to QCIF.

## Audio Statistics View

The Audio Statistics can be used to help isolate problems within the audio subsystem. While not in a call, all of these statistics should not be available. While in loopback or in a call, all of these statistics should be active.

## Modes

The Modes statistics can be used to determine the current audio Encoder and Decoder modes, and their associated channel rates.

- **Encoder Mode:** Current Encoder mode. LiveLAN supports the following modes: G.711, G.722, and wideband G.711. Audio modes used on the ISDN channel during a call via the LiveGateway will not show up here.
- **Encoder Rate:** Encoder Channel Rate. This statistic indicates the number of bits per second allocated to transmission of audio on the network.
- **Decoder Mode:** Current Decoder Mode. LiveLAN supports the following modes: G.711, G.722, and wideband G.711. (**Note:** Audio modes used on the ISDN channel during a call via the LiveGateway will not show up here.)
- **Decoder Rate:** Decoder Channel Rate. This statistic indicates the number of bits per second allocated to reception of audio on the network.
- **Duplex:** Half/Full Duplex. LiveLAN should always report full duplex audio.

## Audio Sent

The Audio Sent group of statistics can be used to determine if the LiveLAN client is sending audio.

- **Packets Captured:** Number of packets received from audio capture driver.

- **Packets in Capture Queue:** Number of packets in Capture Queue after received from driver.
- **Packets Sent to Mux:** Number of assembled encoded packets transmitted to Mux for transmission to the far-end terminal. A continuously increasing count in this field represents the ability of the LiveLAN application to generate and transmit encoded audio frames to the far-end terminal.
- **Silent Packets Sent To Mux:** Number of silence packets for transmit. Since LiveLAN does not perform silence detection, this statistic should always be zero.

## Audio Received

The Audio Received statistics can be used to determine if the LiveLAN client is receiving audio.

- **Packets Received from DeMux:** Number of packets received from Mux, containing data to be decoded. This represents the number of audio buffers received over the LAN.
- **Packets in Render Queue:** Number of packets in Render Queue before sending to render driver.
- **Packets Rendered:** Number of packets sent to audio render driver for decoding. This represents the number of audio packets received over the LAN within the jitter delay time-out. Buffers received “in-time” are processed and included in this count. Buffers received “too-late” are discarded. A continuously increasing count in this field represents the ability of the LiveLAN application to render far-end audio frames.
- **Silent Packets Inserted:** Number of receive fill packets due to lost or late packets (silence insertion).
- **Packets Dropped:** Number of packets dropped due to Render Queue becoming overfilled (render driver falling behind).

## Data Statistics View

The Data Statistics can be used to help isolate problems within the data subsystem. While not in a call or in loopback, all of these statistics should not be available. While in a call, all of these statistics should be active.

## Data Transmitted

- **Transmitted Packets:** Total number of data packets transmitted during the course of the current call.
- **Transmitted Bytes:** Total number of bytes transmitted during the course of the current call.
- **Transmitted Blocks:** Total number of packets that contain data only transmitted during the course of the current call.

## Data Received

- **Received Packets:** Total number of data packets received during the course of the current call.

- **Received Bytes:** Total number of data packets received during the course of the current call.
- **Received Blocks:** Total number of packets that contain data only received during the course of the current call.

## Errors

- **Packets Retried:** Number of packets retried due to errors in transmission. This information is only available when running back-level data.
- **Blocks Discarded:** Total number of packets that contain data only that have been discarded.

## Channel Statistics View

The Channel Statistics provide the following types of data for analysis: jitter delay, time delta values, audio/video and back-level data.

- **Jitter Delay:** Jitter delay in milliseconds. This is the amount of time allocated to jitter on the network. Any packet jitter which exceeds this threshold will cause the associated packet to be discarded.
- **Time Delta:** Time delta in milliseconds. This statistic reports the difference between the near-end and far-end system clocks. This information is not helpful to the end-user, but might prove important in analyzing problems with respect to lip sync and end-to-end delay.

## Audio/Video and Back-level data statistics

The Audio/Video and Back-level statistics category is an excellent summary screen for verification of transmission and reception of all data types (audio, video and data). While not in a call, all of these statistics should not be available. While in a call or loopback, all of these statistics should be active. A quick review of these statistics will indicate whether the LiveLAN terminal is receiving and transmitting each of the media types.

- **Audio Packets Sent:** Number of Audio packets transmitted. During a call, this statistic should show continuously increasing counts.
- **Video Packets Sent:** Number of Video packets transmitted. During a call, this statistic should show continuously increasing counts.
- **Control/Data Packets Sent:** Number of Control/Data packets transmitted. This statistic should increase as the level of data sharing of other LiveShare Plus applets increases.
- **Audio Bytes Sent:** Number of Audio Bytes transmitted. During a call, this statistic should show continuously increasing counts.
- **Video Bytes Sent:** Number of Video Bytes transmitted. During a call, this statistic should show continuously increasing counts.
- **Control/Data Bytes Sent:** Number of Control/Data Bytes transmitted. This statistic should increase as the level of data sharing of other LiveShare Plus applets increases.

- **Audio Packets Received:** Number of Audio packets received. During a call, this statistic should show continuously increasing counts.
- **Video Packets Received:** Number of Video packets received. During a call, this statistic should show continuously increasing counts.
- **Control/Data Packets Received:** Number of Control/Data packets received. This statistic should increase as the level of data sharing of other LiveShare Plus applets increases.
- **Audio Bytes Received:** Number of Audio Bytes received. During a call, this statistic should show continuously increasing counts.
- **Video Bytes Received:** Number of Video Bytes received. During a call, this statistic should show continuously increasing counts.
- **Control/Data Bytes Received:** Number of Control/Data Bytes received. This statistic should increase as the level of data sharing of other LiveShare Plus applets increases.
- **Audio Packets Lost:** Number of Audio packets lost. This statistic is incremented if a packet was never received. This statistic is adjusted when a packet comes in late.
- **Video Packets Lost:** Number of Video packets lost. This statistic is incremented if a packet was never received. This statistic is adjusted when a packet comes in late.
- **Control/Data Packets Lost:** Number of Control/Data packets lost. This statistic always displays as not available (NA) since the Control/Data packets are delivered on a reliable channel.
- **Audio Packets Out of Order:** Number of Audio packets received out-of-order. This statistic can be an indication of a saturated network.
- **Video Packets Out of Order:** Number of Video packets received out-of-order. This statistic can be an indication of a saturated network.
- **Control/Data Packets Out of Order:** Number of Control/Data packets received out-of-order. This statistic is valid only when running Back-Level data.

## Network Statistics View

The Network statistics can be used by a network administrator to diagnose the state of the network and network performance.

## Frame Delivery

The Frame Delivery statistics are provided in three increments: current (now), near term (1 minute), and long term (10 minutes).

- **Dropped:** Late Frames dropped
  - Now - Frames dropped during the last poll period.
  - 1 minute - Frames dropped during the last minute.
  - 10 minutes - Frames dropped during the last 10 minutes.

- **Out-of-Order:** Frames out-of-order  
Now - Out of order frames during the last poll period.  
1 minute - Out of order frames during the last minute.  
10 minutes - Out of order frames during the last 10 minutes.
- **Frame Jitter:** Frame jitter is calculated for each packet during a call, and is represented here as a percentage of packets arriving within 150 ms, between 150-300 ms, and in excess of 300 ms.
- **Late Frames:** Number of late frames for audio and video and the total number of late frames.
- **Round Trip Latency:** Round-trip latency is calculated periodically during a call. The results of this calculation are presented here as a minimum, average, and maximum.

## Optimizing Video Performance

If you are experiencing video problems, you can change configuration settings to enhance the video quality of your system. Do not make changes to your settings until you have reviewed the procedures in this section and verified that your system is configured correctly.

### Video Graphics Boards

LiveLAN relies on the PC's video graphics subsystem to display the local and remote video. As part of the video display, the graphics subsystem moves the video data to the graphics board and performs any necessary scaling.

The following factors affect the graphics subsystem performance:

- **Hardware assistance** - Many PCI graphics boards provide assistance for the transfer of video information and the scaling of video images through hardware accelerators.
- **Software support** - Your system must have updated Windows 95 video display drivers that are properly configured and can utilize the hardware accelerators.

### DirectDraw Support

LiveLAN 3.1 for Windows 95 works best using Direct Draw and any DirectDraw compatible hardware and driver. The product should work with ANY DirectDraw compatible hardware and driver, but works better with certain types of hardware technology. The following list of cards have been evaluated at this time. The best cards provide extremely high quality video with low CPU overhead when used with LiveLAN.

ATI Video Xpression+	Best Overall Performance (low CPU utilization, High Quality)
ATI 3D Rage Pro	Best Overall Performance (low CPU utilization, High Quality)
ATI Xpert@Play	Best Overall Performance (low CPU utilization, High Quality)
ATI Xpert@Work	Best Overall Performance (low CPU utilization, High Quality)

Diamond Viper S330	Good Overall Performance (medium CPU utilization, High Quality)
Diamond 3D 2000	Fair Overall Performance (medium CPU utilization, Good Quality)
Diamond 3D 2000 Pro	Fair Overall Performance (medium CPU utilization, Good Quality)
Diamond 3D 3000	Fair Overall Performance (medium CPU utilization, Good Quality)
Hercules Dynamite 3D/GL	Good Overall Performance (medium CPU utilization, High Quality)
Number 9 Imagine 128	Good Overall Performance (medium CPU utilization, High Quality)

The cards listed in the preceding table support a DirectDraw mode using YUV instead of RGB for the video window. These cards produce a superior image that makes them a good choice for use with the LiveLAN application. In addition, the ATI cards, Diamond Viper S330, Hercules Dynamite 3D/GL, and Number 9 Imagine 128 support anti-aliasing scaling that allows the video windows to be expanded to full screen with a smooth appearance. The ATI cards perform this function with no performance penalty when running at full screen.

To enable DirectDraw, be certain that you are running in 16 bit display mode (32768 or 65536 colors). The LiveLAN application will automatically choose direct draw if it is available. Make certain that your machine has DirectDraw loaded. We recommend DirectDraw 6 or better.

In general, you should use the video manufacturer's latest drivers with LiveLAN. Please check the manufacturer's web page for the latest drivers:

- [ATI](#)
- [Diamond](#)
- [Hercules](#)
- [Matrox](#)
- [Number Nine](#)

If you have trouble with DirectDraw drivers, you can turn off direct draw by executing the registry file *ddraw\_off* installed in the LiveLAN directory selected during the installation process. To turn DirectDraw back on, choose the registry file *ddraw\_on*. LiveLAN installs with DirectDraw turned on by default.

## Image Preference Settings

You can select the video compression quality used for your video calls through the Video tab in the Preferences window. The settings for Image Preference determine the video quality that you transmit. This control does **not** affect the video quality that you receive.

- Selecting Smoother Motion increases the smoothness of the frame transmission rate for the video.
- Selecting Sharper Picture increases the detail in a single video frame, which sharpens the video resolution (recommended).

## **Optimizing Your Video Quality**

Video quality is affected by the size of the video image being displayed. If you are displaying video at full screen size, choosing 640x480 will yield better results than choosing 1024x768. The 1024x768 configuration requires that three times as much video data be copied for no gain in image quality. DirectDraw can improve this by doing the scaling on the video display card. Not all cards provide this feature on Windows 95, however, and selecting DirectDraw on some cards can reduce video quality. A list of supported cards is identified in Section 1.0 (DirectDraw).

If you are not using the local video window, either close the window, minimize it (iconify it), or reduce its size.

When using direct draw, setting your video display to 32768 or 65536 colors per pixel produces the optimal video quality and performance. This mode is sometimes referred to as "High-color". The designation "True color", 16 million, or "24 bits/pixel" all refer to a very high quality mode that does NOT produce better results, but does cause an extra step in the video display to take place and will reduce performance for no improvement in quality.

## **Sluggish Video**

Verify that the display is set to either 32768 or 65536 (high-color) and not 256 or 16 million color mode. The render times will be much longer due to the conversion needed to render in 256 or 16 million color formats.

## **Video Driver Problems**

LiveLAN places a heavy demand on video display hardware. The video display in the LiveLAN application is fairly typical of the kind of video display used by many multimedia applications with the exception that it may be running at 30 frames per second with rapid screen updates. These requirements are actually quite basic but can aggravate some display cards.

If you have video related trouble please verify that you have the latest drivers from your card's manufacturer.

## **Blocky or Poor Quality Video and Audio**

Blocky or Poor Quality Video and Audio are usually caused by network or system performance issues. Some of the causes can include:

- Poor NIC card throughput from:
  - a) a low performance non-DMA NIC card,
  - b) general overload of your host CPU, or
  - c) too much network traffic through your system.
- Network Congestion from:
  - a) too much traffic on the network, or
  - b) an overloaded network hub, switch, or router.

You may be able to mitigate the problem by choosing a lower bandwidth for your calls. For example, 768Kbps calls on 10Mbps non-switched ethernet networks or machines less than 200Mhz tend to have more video and

audio performance problems. Reduce your bandwidth settings to 368Kbps or 174Kbps and see if quality improves.

If lower bandwidth calls show blockyness, consult your network administrator who may be able to characterize your network performance or improve your network access.

Network hits (lost or late packets) WILL cause video blockyness. If your overall network performance is good, these problems will clear up in 15-30 seconds. If you are running other network intensive operations on your PC while in a video conference, blockyness will NOT clean up until that operation is complete. This may include file transfers using LiveShare Plus.

Blockyness CAN occur even in video loopback calls. If your system is slow or has other network traffic, packets will be lost in video loopback calls. This is a characteristic of the overall real-time IP network protocol used for video in H.323 systems.

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## List of Error Messages and Solutions

The following list identifies the error messages that may be displayed by the system while running LiveLAN. The possible solution for resolving the cause of each error message is also provided.

### Message:

“The selected LiveManager or GateKeeper is not active on your network. Please enter the name or IP address of an active LiveManager or contact your system administrator for assistance. You must enter a valid LiveManager to place or receive calls.”

### Solution:

Either the LiveManager Server specified in the network settings is not running, could not be found, or the LiveManager name (or the IP Address) is incorrect. Another possible cause could be that the LiveLAN client is not connected to the network.

### Message:

“Requested LiveManager change failed due to duplicate Terminal ID or Alias. Please enter an active LiveManager to place or receive calls.”

### Solution:

You need to choose a different Terminal ID/Alias. Usually your Terminal ID/Alias is assigned by your System Administrator.

You can set or change your Terminal ID when you are not in a call, by using the following procedure:

1. Choose Tools->Preferences.

2. Select the Address Tab.
3. Type your new Terminal ID in the Terminal ID field. The Terminal ID can contain up to 128 characters. Valid characters are: 0-9, \*, #, (, ), -, a comma, and a space.
4. Click OK.

**Message:**

“Requested LiveManager change failed due to rejected registration. LiveManager “LiveManager’s Name” has failed to respond. Please enter an active LiveManager to place or receive calls.”

**Solution:**

Confirm that the LiveManager specified in the Network settings tab of the Preferences screen is running and is connected to the network.

**Message:**

“LiveLAN has failed to initialize due to: TCP/IP drivers cannot be found. See your system administrator for more information. Click OK to exit LiveLAN. Consult your User’s Guide to correct this error.

**Solution:**

1. Confirm that your Network Properties in the Control Panel are set correctly.
2. The TCP/IP network drivers could not be found on the system. Confirm that your network configuration is correct by "pinging" your computer. You can "ping" your computer by going to the DOS prompt and typing:

```
ping 127.0.0.1
```

You will see the “Reply from 127.0.0.1” response if your network drivers are loaded and your system is configured properly.

**Message:**

“LiveManager request failed due to invalid network address. Please ask your system administrator to verify that your network segment is mapped in the LiveManager topology file. Click OK to exit LiveLAN.

**Solution:**

Ask your system administrator to verify that your network segment is mapped in the LiveManager topology file.

**Message:** “Destination Not found.”

**Solution:**

The destination was not found. This message does not indicate that the destination is busy, or not answering.

1. Make sure that the other party’s computer is turned on and is running LiveLAN.
2. If you are using Bandwidth Control, confirm that the destination network segment is properly entered in the LiveManager topology file. Refer to the LiveManager documentation for information about the topology file.
3. Make sure that the Terminal ID, alias, IP address, or ISDN number you entered is a valid number.
4. Make sure you and the person you are calling don't have any network configuration problems.

**Message:**

“Gateway resources are unavailable. Contact your network administrator.”

**Solution:**

The most common cause for this message is the gateway card(s) are already in use.

**Message:**

“Far End is not registered with the Gatekeeper. Call cannot be completed.”

**Solution:**

Confirm that the client you are calling is registered with the Gatekeeper. You can also call the far end client using their IP address.

**Message:**

“LiveManager is not active on your network.”

**Solution:**

Either the LiveManager specified in the Network settings tab of the Preferences screen is not running or not connected to the network. Confirm that the LiveManager you specified is running.

**Message:**

“LiveLAN failed to initialize due to: The TCP/IP version loaded is not compatible with LiveLAN. Click OK to exit LiveLAN. Consult your User’s guide to correct this error.”

**Solution:**

LiveLAN requires a Winsock 1.1 (or greater) compliant TCP/IP stack that supports Microsoft-specific real time extensions. Contact your system administrator for assistance.

**Message:**

“LiveLAN failed to initialize due to: Error detected loading Call Manager. Click OK to exit LiveLAN.”

**Solution:**

Confirm that LiveLAN has been installed properly. You can determine if any errors occurred during installation by viewing the `install.log` file. If any errors are displayed in the file, then de-install and then re-install LiveLAN.

**Message:**

“LiveLAN has failed to initialize due to: Network initialization failed. Click OK to exit LiveLAN. Consult your User’s Guide to correct this error.”

**Solution:**

Confirm that your network configuration is correct.

1. Verify that your computer connections to the network are correct.
2. Try to "ping" your computer by going to the DOS prompt and typing:

```
ping 127.0.0.1
```

You will see the “`Reply from 127.0.0.1`” response if your network is configured properly.

3. Try to access files via the LAN using normal computer file access.
4. If you cannot access the LAN, the problem is probably with the network. Contact your network administrator.

If you still have a problem, please access PictureTel’s web site and search the database of Technical Bulletins.

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# Contacting Technical Support

For assistance of any kind, contact your PictureTel sales representative first. The sales representative is usually the distributor, reseller, or dealer from whom you purchased the equipment. If your sales representative does not provide support, you may contact PictureTel directly.

When you call PictureTel Customer Service, it is helpful if you have the following information available:

- The serial number of your system. You can find the serial number either on the warranty registration card or by selecting *About My LiveLAN System* from the LiveLAN application's Help menu.
- Version numbers of the board and files installed by PictureTel LiveLAN on your hard drive. (You can get board and file information by running the Live2Tst diagnostics program that is provided with LiveLAN. After starting the program, click the Board ID button to obtain board version information.)
- Information about your system's configuration and network.
- Any system error messages or error codes.
- Symptoms of the problem you are experiencing.
- Results of hardware diagnostic program.

## Web Page

PictureTel's Web page includes information about the PictureTel Corporation, products, and user groups, as well as Customer Support information. The Customer Support section of the Web site allows customers to access technical support information and worldwide support locations, download software files such as patches and updates, receive email support, and more. Point your browser to:

**<http://www.picturetel.com>**

## Ordering Components

To order replacement components, locate the part number, and contact your PictureTel distributor. If your distributor does not provide replacement service, you may contact the PictureTel World Wide Web site ([www.picturetel.com](http://www.picturetel.com)) to obtain technical support information, or call PictureTel Customer Service at 1-800-8PICTEL (800-874-2835).

## Returning Components

To return LiveLAN components:

1. It is important that you RETURN ALL COMPONENTS ACCORDING TO THE DISTRIBUTOR'S INSTRUCTIONS.

2. If returning components directly to PictureTel, you will require a Return Material Authorization (RMA) number. Contact Customer Service at 1-800-8PICTEL (800-874-2835) to obtain the RMA.
3. After receiving the RMA number, wrap the component in an antistatic bag, and pack the component in a shipping container, using bubble wrap if necessary. If possible, use the original PictureTel packaging.
4. If returning the component directly to PictureTel, ship the container to:

**Customer Service Logistics**

PictureTel Corporation  
100 Minuteman Road  
Andover, MA 01810  
U.S.A.



[Feedback@pictel.com](mailto:Feedback@pictel.com)

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