

Introduction to Software Tools

The Waverunner software tools allow you to develop your own application specific programs quickly and easily. These tools are *ActiveDSO™* and *ScopeExplorer™*. The files for all software described here are to be found on the CD-ROM.

ActiveDSO

Based on Microsoft's ActiveX control technology, *ActiveDSO* gives leverage to widely available Microsoft software tools, and makes programming within the Microsoft environment easier. *ActiveDSO* simplifies the computer's interface with the Waverunner and programming within Visual C++, Visual Basic, or any other ActiveX compatible applications. For example, Microsoft Excel can even be used to control and retrieve data directly from the Waverunner. This tool becomes part of the target application and provides seamless access to the full power of the Waverunner.

ScopeExplorer

This PC-based connectivity tool integrates LeCroy instruments with Windows 95 or Windows NT PCs. Connected to the PC through the Ethernet port and using *ScopeExplorer*, the Waverunner stores data and images in the computer. Because it is designed specifically for use with LeCroy instruments, *ScopeExplorer* allows these tasks to be completed with only a few keystrokes or mouse clicks.



Using *ActiveDSO*

ActiveDSO is highly suitable for fast program development in the Microsoft environment. This program is a control of ActiveX, the software technology developed by Microsoft as a subset of its COM model.

ActiveDSO facilitates programming with the Waverunner by providing a ready interface between the instrument and the host computer. Programs such as Visual C++, Visual Basic, or Visual Basic for Applications (VBA) can be used under remote control without concern for interfacing complications. *ActiveDSO* acts as the key design structure allowing effective integration of software from the different manufacturers supporting ActiveX containment.

Control Instantiation

This ActiveX component can be instantiated more than once by using the Visual Basic function **CreateObject**. Once the object is created, invoking the connection method will initialize it. *ActiveDSO* enables control of the Waverunner from a variety of PC desktop applications. The complexities of programming with Ethernet are fully encapsulated in this control. For example, with less than 10 lines of VBA code in an Excel macro the spreadsheet can recover pre-scaled waveform data from the Waverunner (see the on-line Excel example in *ActiveDSO*).

ActiveDSO control can be used in two fundamental ways:

1. As a visible object embedded in an OLE automation compatible client (PowerPoint, for example) showing a captured Waverunner display image. See the Embedded Control example below for more details.
2. As an invisible object accessed through a scripting language (VBA, for example) to remotely control the Waverunner. See VBA example below for more details.

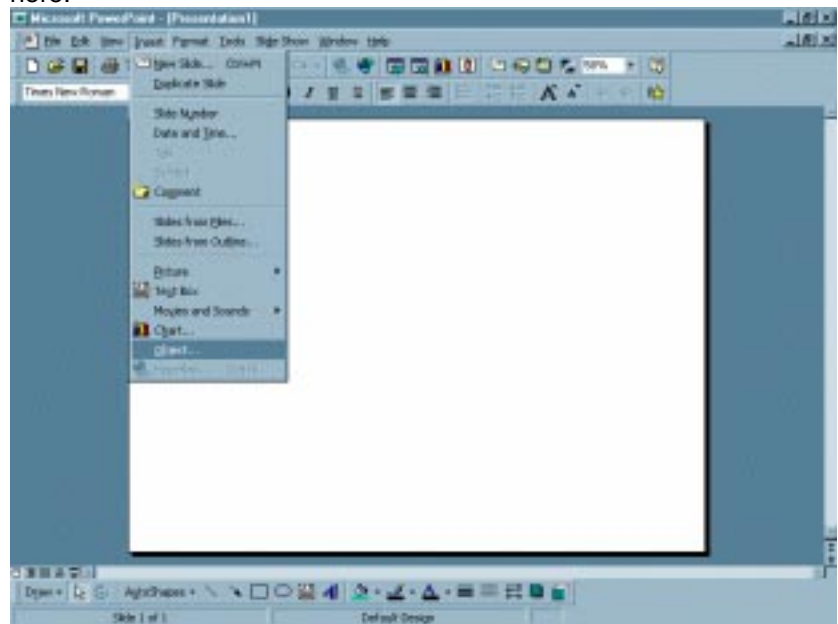
The *ActiveDSO* control may be embedded in any ActiveX containment-capable client, and may be used manually without need of any programming or scripting.

Example: PowerPoint

Note: This example assumes that PowerPoint 97 is being used. Earlier versions may not behave in the same manner.

This example shows the control being embedded in a Microsoft PowerPoint slide. The waveform captured by the Waverunner can be easily imported into PowerPoint with just a few mouse clicks:

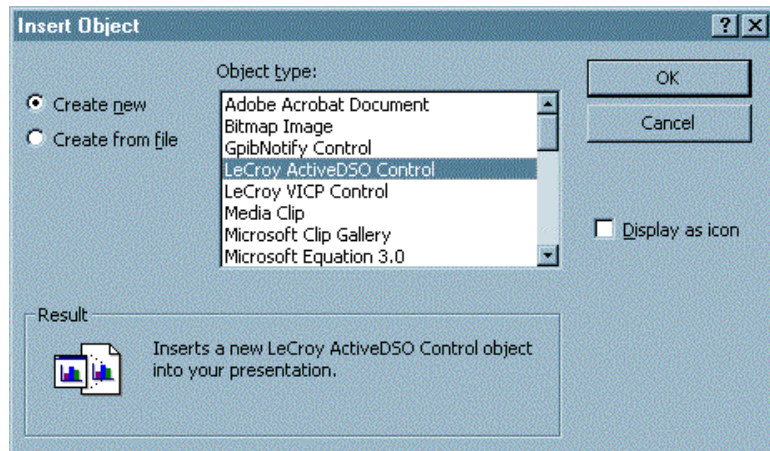
1. Ensure that the *ActiveDSO* files from the CD-ROM are installed on the PC.
2. Verify that the PC and Waverunner are properly connected to the Ethernet.
3. Open a new blank presentation in PowerPoint.
4. Select "Insert," then **Object**, as shown here:



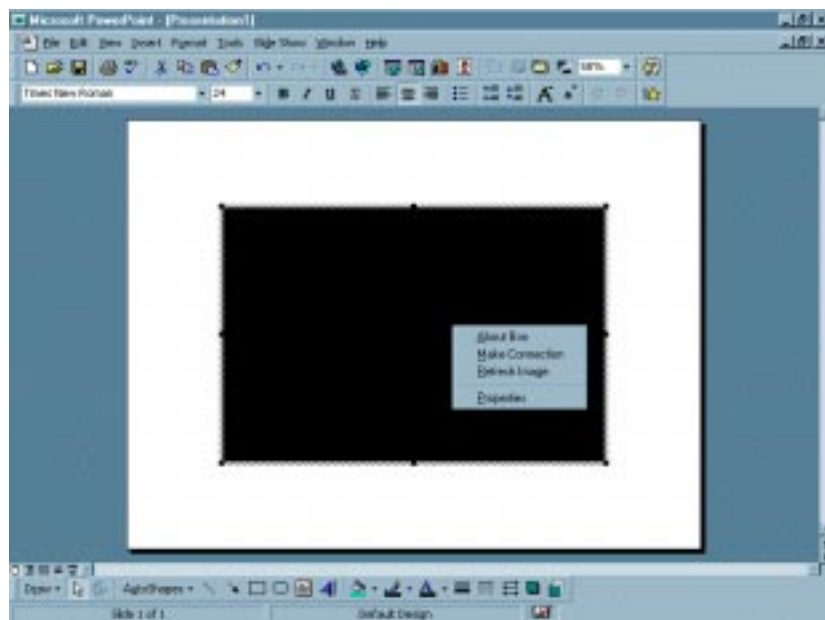


Waverunner Ethernet Option

- From the pop-up window, select LeCroy ActiveDSO object as shown here:

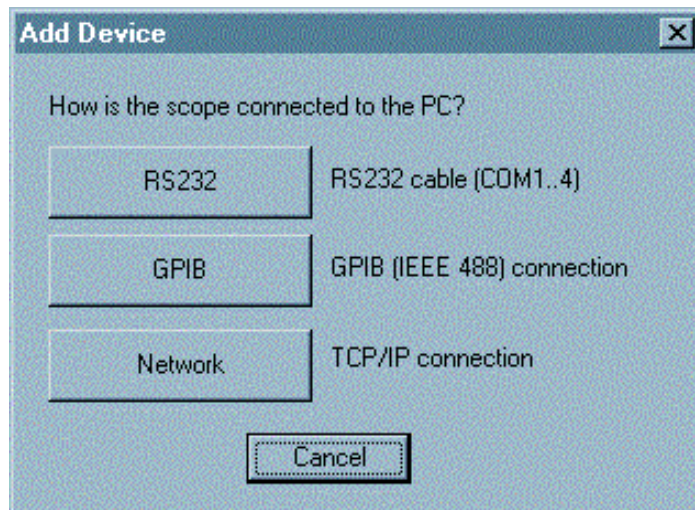


- Right-click the object and select "Make Connection."

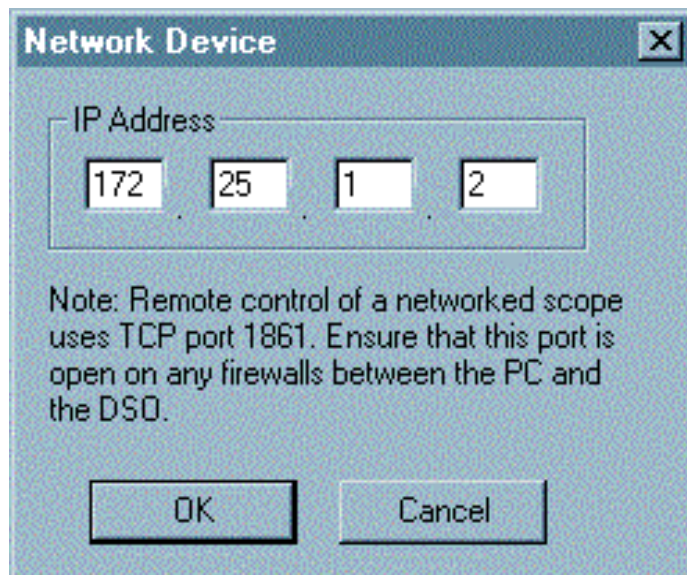


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7. Select "Network TCP/IP connection" as shown here ("scope" = Waverunner):



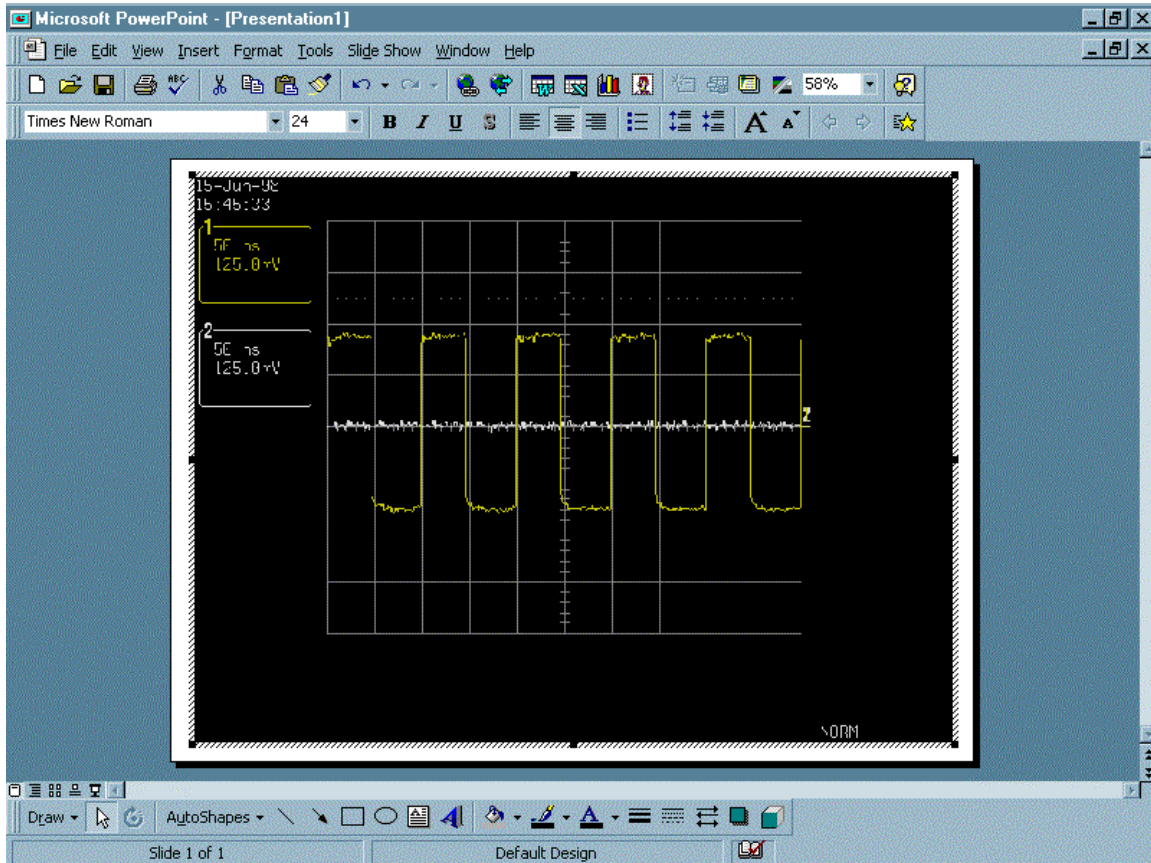
8. Enter the Waverunner's IP address and click "OK."





Waverunner Ethernet Option

9. Right-click the object again and select the **Refresh Image** menu item. A captured waveform will be displayed similar to the one shown here:



Waverunner's captured waveform imported into PowerPoint.

Once the *ActiveDSO™* object has been properly set within the application, a macro script can be created utilizing an object method such as `WriteString()` to send `DISP ON`, `C1:TRA ON`, `TRMD AUTO` (see the *Remote Control Manual*). Then `RefreshImage()` method can be used to update the screen.

Example: VBA

VBA is the programming language built in to many of the more recent Windows applications. It is a subset of Visual Basic that makes using OLE Automation Servers and ActiveX Controls very simple. The following VBA subroutine demonstrates how easy it is to connect to an Waverunner and send remote commands to it.

```
Sub LeCroyDSOTest()  
    Dim dso As Object  
  
    Set dso = CreateObject("LeCroy.ActiveDSO.1")  
  
    Call dso.AboutBox           Present           the  
control's About box  
    Call dso.MakeConnection("IP:172.25.1.2")  
    Connect to the unit  
    Call dso.WriteString("DISP ON", 1)  
    Enable the internal display routine  
    Call dso.WriteString("TRMD AUTO", 1)      Set  
the trigger mode to AUTO  
End Sub
```

To enter the VBA editor in members of the Microsoft Office suite:

1. Select Tools → Macro → Visual Basic Editor menu item.
2. When the VBA window appears, select the **Insert** → **Module** menu item.
3. Copy the above example into the editor window that appears.

To execute:

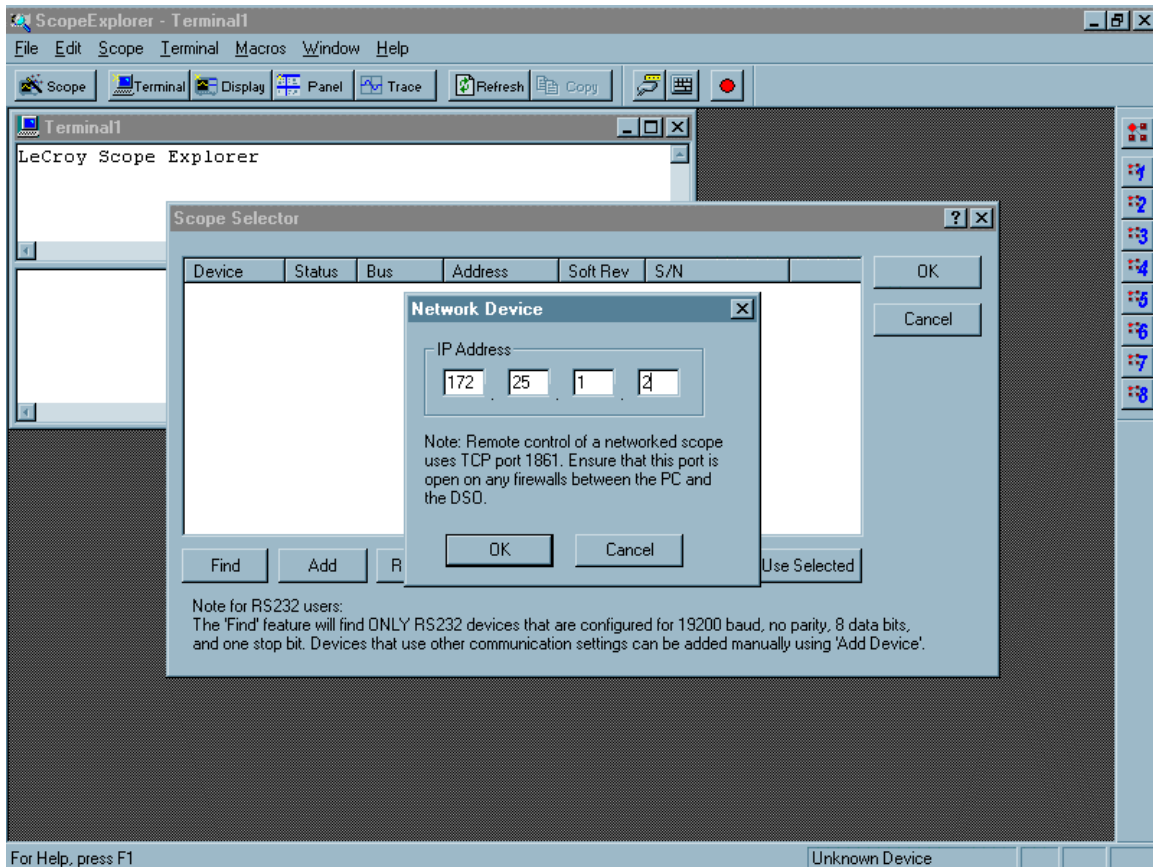
4. Position the text cursor within the subroutine.
5. Either select the Run → Run Sub/UserForm or press function key F5.

Note: For more information, see the *ActiveDSO on-line Help*. On-line Help contains VisualC++ example, explanations of ActiveDSO Methods and Properties.



Using *ScopeExplorer*

1. Start *ScopeExplorer*.
2. Click on **Scope** → **Scope Finder**.
3. In the “Scope Selector” window, click “OK,” as shown below.
4. When the ADD DEVICE window opens, select “Network.”
(If you don’t see a “Network” button, press “ALT + N” simultaneously.)
5. A “Network Device” window will appear, as shown here:



6. Enter the IP address of the Waverunner in the "NETWORK DEVICE" window.

ScopeExplorer features:

- *Terminal – Remote control commands can be sent and data can be retrieved using Terminal.*
- *Image capture – Internal scope-like "screen" representation of the acquired waveform can be viewed with the Display button. Use the Refresh button to refresh the "screen" dump image.*
- *IP address change – ScopeExplorer can be used to change the IP address of the Waverunner. See Chapter 2 for details.*

ScopeExplorer is supported for all LeCroy instruments. Additional information can found on the LeCroy web site: www.lecroy.com

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