

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Help Volume

© 1992-2002 Agilent Technologies. All rights reserved.

System: Agilent 16700A/B Logic Analysis System

- Making Measurements (see page 12) - Setting up a measurement, loading a config file, etc.
- Measurement Examples (see the *Measurement Examples* help volume) - Setting up common measurements.
- Using Measurement Tools (see page 18) - Instrument, Analysis, Display, Emulation and Utility tools.
- System Overview (see page 28) - Getting to know your logic analysis system.
- System Administration (see page 117) - Setting up and maintaining your logic analysis system.
- Connectivity (see the *PC Connectivity* help volume) - Netscape, Home Page, Remote Front Panel, and the RPI.
- Getting Help (see page 42) - Available help resources and searching for help.

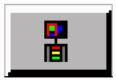
***The File Management Tools* (see page 44)**



Use the *File Manager* to perform the common tasks of loading or saving measurement configurations and data. The File Manager can access both the flexible disk and internal/external hard drives.

- Create, Delete, or Rename a Directory (see page 44)
- Load, Save, Copy, Delete, Move, Rename, or Compress a File (see page 44)
- Other File Manager Operations (see page 44)

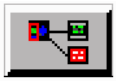
The Intermodule Window **(see page 65)**



The *Intermodule* window graphically depicts the internal arming sequence between measurement modules and any external trigger connections to a target system. With multiple instrument measurements, use the Intermodule window to adjust the order of trigger arming, and to compensate for timing skew between the modules.

- Example - Multiple Instrument Measurement (see page 83)
- Example - Multiple Analyzer Measurement (see page 92)
- Configure Arming Control Between Instrument Tools (see page 108)
- Configure Arming Control Between Analyzers (see page 110)
- Configure External Triggering with the Port In/Out Signal (see page 97)
- Adjusting Intermodule Skew (see page 101)
- Understanding the Run/Group Run Function (see page 113)

The Workspace Window **(see page 59)**



The *Workspace* window shows a graphical layout of your measurement configuration. Use the Workspace window to alter your measurement by adding or deleting tools, or by changing the data flow connections between tools.

- Adding Tools to a Measurement Configuration (see page 61)
- Deleting Tools from a Measurement Configuration (see page 61)
- Changing the Connections between Tools (see page 62)

The System Administration Tools (see page 117)



Use the *System Administration* tools to set up system defaults, configure network connections, and perform maintenance on the operating system file set.

- Network Setup, File System Connectivity, and Network Utilities (see page 117)
- Product Licensing, Printer Setup, Time/Date, and Self-Test (see page 117)
- User Accounts and Changing Passwords (see page 118)
- Installing, Listing, and Removing Software (see page 118)
- Saving and Reloading System Settings (see page 153)

The Setup Assistant (see the *Setup Assistant* help volume)



The *Setup Assistant* is an automated tool for connecting and configuring your logic analyzer for processor measurements. This menu-driven tool helps you connect and configure an analysis probe, an emulation probe, or a source viewer.

See Also

- Using the Help System (see the *Help On Help* help volume)
- Online Help Information on the World Wide Web (see page 42)
- Japanese Help Volumes (see page 23)
- Glossary of Terms (see page 203)

Contents

Agilent Technologies 16700A/B-Series Logic Analysis System

1 Agilent Technologies 16700A/B-Series Logic Analysis System

Making Measurements 12

Overview - Starting a New Measurement 13

Automatic Measurement Configuration 14

Using the Target Control Port 15

Using the Agilent 16701A/B Expansion Frame 17

Master List of All Tool Help Volumes 18

Japanese Help Volumes 23

System Overview 28
Frame Specifications and Characteristics 28
What is a Specification 29
What is a Characteristic 29
What is a Calibration Procedure 29
What is a Function Test 30
How the Help System is Accessed 30

Product Description 32

The User Interface - Icons, Tabs, and Navigation 34
Using the 16702B Knobs and Buttons 36
Using the 16702B Touchscreen 37

Navigation with Tabs 39

Navigation with the Icon Bar 40

Contents

Available Help Resources 42
Information on the Web 42

System Terminology 43

File Management Tools 44
To load configuration files 45
To save configuration files 47
To automatically load a file at startup 49
To copy files 49
To delete files 49
To move files 50
To rename files 50
To compress/uncompress files - PKZIP/PKUNZIP 51
To create directories 52
To delete directories 53
To rename directories 53
To format floppy disks 53
To refresh the File Manager 54
To mount an external hard drive 54
File Types 56
Default Directory Descriptions 57

The System Window 58

The Workspace Window 59
Workspace Options 59

Adding and Deleting Tools 61

Connecting Tools Together 62

Repositioning Tools in the Workspace 63

Clearing the Workspace 64

Contents

The Intermodule Window 65

Overview - Multiple Instrument Configuration 67

Overview - Multiple Analyzer Configuration 69

Overview - Multiple Frames Configuration 71
One frame; Two analyzers; Group Run OR Trigger 76
One frame; Three analyzers; Group Run OR Trigger 76
Two frames; Two analyzers; Group Run OR Trigger 76
Two frames; Three analyzers; Group Run OR Trigger 77
Three frames; Three analyzers; Group Run and Group Run OR Trigger 78
Three frames; Three analyzers; Group Run OR Trigger 78
Two frames; Two analyzers; Group Run 79
Multi-frame Error and Warning Messages 79
Multi-frame Installation 80
Clear Multi-frame Run 82

Using a Timing Analyzer and an Oscilloscope 83
Configure the Oscilloscope 84
Configure the Logic Analyzer 85
Configure the Group Run Arming Tree 87
Importing Signals into the Display 88

Using the Mixed Signal Tab 90

Using the Correlation Dialog 91

Using Both Analyzers 92
Configure the Timing Analyzer 93
Configure the State Analyzer 94
Configure the Arming Tree 95

Starting Measurements from External Triggers 97

Contents

Adjusting Intermodule Skew 101
Configure the Timing Analyzer 102
Configure the Oscilloscope 103
Configure the Group Run Arming Tree 104
Configure the Waveform Display 105
Placing Markers for an Interval Reading. 106
Adjust the Skew 106

Group Run Arming Tree 108

Arming Second Analyzer 110

Count Field 112

Run/Group Run Function 113
Checking Run Status 114
Demand Driven Data 115

The Run Status Window 116

Contents

The System Administration Tools 117
Setting Up on a Network 118
Setting Up Emulation Probes/Modules on a Network 125
Mapping Windows Network Drives 126
Sharing Logic Analysis System Directories 131
Mounting an NFS File System 135
Mounting a ClearCase View 138
Using FTP (File Transfer Protocol) 140
Using Ping 142
Using Telnet 142
Troubleshooting the 100BaseT Lan Connection 143
Licensing Policy for the Logic Analysis System 144
Printing Windows - Configurations 145
Printer Setup 146
Print Options 149
Configuring the System Clock 150
Running the Self Tests 150
Saving and Reloading System Settings 153
Setting Up User Accounts 158
Change Password 165
Web Server Security 166
Shared Console (VNC) Security 166
Remote Programming Interface Security 166
pcnfsd (For PC NFS) Security 167
Install Software 167
Auto Install of Software 168
Remove Installed Software 170
List Installed Software 170

The User Environment and Session Control 172
About File Permissions 174
Starting a Session 175

Analyzer Probing Overview 177

Using the Analysis Tab 180

Contents

Accessing Display Tools 181

Editing Colors 182

Using Symbols 183
To load object file symbols 184
To adjust symbol values for relocated code 185
To create user-defined symbols 186
To enter symbolic label values 187
To create an ASCII symbol file 188
To create a readers.ini file 188

The Symbols Tab 192
Symbols Selector Dialog 194
Symbol File Formats 196
General-Purpose ASCII (GPA) Symbol File Format 197

Glossary

Index

1

Agilent Technologies 16700A/B-Series Logic Analysis System

Making Measurements

- Overview - Starting a New Measurement (see page 13)
- Loading Configuration Files (see page 45)
- Changing a Configuration (see page 59)
- Saving Configuration Files (see page 47)
- Multiple Instrument Measurements (see page 65)
- The Setup Assistant (see the *Setup Assistant* help volume)
- Using Markers in the Display Tools (see the *Markers* help volume)
- “Using the Target Control Port” on page 15
- Using an Expansion Frame (see page 17)

Overview - Starting a New Measurement

This overview shows how the graphical interface is used to configure the logic analysis system for simple measurements.

1. Connect the appropriate probing (see page 177) to your target system.
2. From the *System* window, (see page 14) select the desired Instrument tool icon, then select *Setup*.

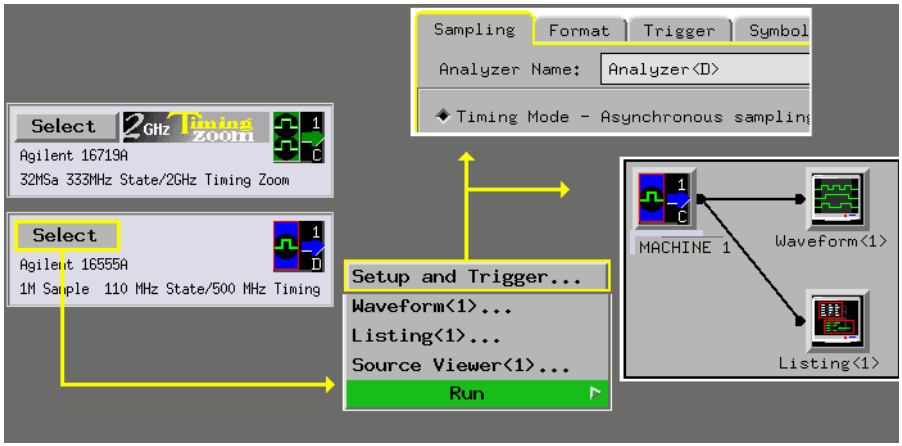
   When you select a tool icon and select *Setup*, two things occur. First, a set of tabbed setup windows for the selected Instrument tool appear. Next, the commonly required Display tools are automatically connected to the Instrument tool in the Workspace window. (see page 59)
3. From the Setup windows that appear, configure the appropriate parameters for the measurement you are performing.

   For example, a logic analyzer will require specific pod, clock, and channel assignments. Also, a trigger specification is required if you want the measurement to start at a specific point in the execution of the target system. See *"Setting up Instrument Tools"* below.
4. Select the *Navigate* field, and the Slot/Module used, then select the desired Display tool. The Display tool is used to show the captured *data set*. In addition to viewing captured data, use Display tools to place markers.
5. From any open window, select *Run*.

Setting up Instrument Tools

Depending on the Instrument tool used and the type of measurement being made, the setup varies. For more specific information on configuring Instrument tools, refer to the following list of tools (see page 18).

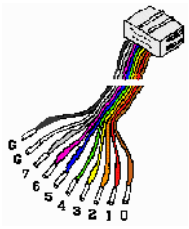
Automatic Measurement Configuration



Using the Target Control Port

The Target Control Port is an 8-bit, TTL port that you can use to send signals to your target system. It does not function like a pattern generator, but more like a remote control for the target's switches.

Connecting the Target Control



The target control cable is keyed, so it can be inserted only one way. Plug it into the target control port with the key up and the cable hanging down.

The lines are color-coded. Bit 0 is brown, bit 1 is red, bit 2 is orange, and so on up to bit 7 (grey). The black and white lines are both ground. Pins 0, 2, 4, and 6 are on the top of the connector and arranged in the same order as the lines.

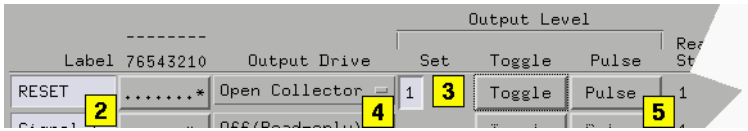
If you plan on using *Open Collector*, remember to install pull-up resistors. The minimum pull-up resistor is 350 Ω and the maximum sink current into the Target Control Port is 12 mA.

Resetting Your Target System

This example also applies to other types of signals you may want to send to your target system. The reset line in this case is active low. Open collector is specified so the line is only pulled low when you activate the signal.

1. Attach the target control cable to the reset line, using proper termination.
2. Set up a label, RESET.
3. Set the value to 1, for high impedance.

4. Set Output Drive to *Open Collector*.
5. When the target needs to be reset manually, select *Pulse*.



About *Open Collector* and *Active Drive*

Open Collector functions as a tri-state, with a logic "1" being high-impedance, and a logic "0" sinking a current of up to 12 milliamps.

Active Drive puts out a standard TTL signal with 1 high and 0 low.

Both of these signal types must be properly terminated to function properly. This is especially important for edge-sensitive circuitry.

About *Toggle* and *Pulse*

Toggle will flip the settings of the signal and leave them that way. For example, if your signal is set to 1 and you select *Toggle*, the setting changes to 0.

Pulse flips the settings for one clock cycle, at least 16 ms. The pulse may last longer. You cannot specify the duration of the pulse.

Using the Agilent 16701A/B Expansion Frame

The Agilent Technologies 16700A/B-series logic analysis systems can be expanded to a total of ten slots by connecting an 16701A/B expander frame. When connected, the two frames create a tightly coupled system fully controlled by the 16700A/B.

Expanded System Features

- Combined total of ten module slots.
- Module arming/triggering between all modules.
- 2-nanosecond time correlation between modules.
- External PORT IN and PORT OUT connectors on the 16700A/B frame.

Connecting the 16701A/B Expansion Frame

A 100-pin shielded flat cable connects the expansion frame to the main frame. Connect one end of the cable to the 16700A/B port marked "To 16701 Expansion Frame". Connect the other end of the cable to the 16701A/B port marked "16700/02".

System Power-Up

The 16701A/B expansion frame's power supply is controlled by the 16700A/B mainframe. Because the power is controlled by the mainframe, the expansion frame's power switch must be turned on before the mainframe is turned on, or the expansion frame will not be recognized as part of the system.

See Also

Overview of a Multi-frame Configuration (see page 71)

Master List of All Tool Help Volumes

All Instrument, Display, Utility, and Analysis tools, have their own specific help volume. The *Help* menu within each tool window accesses its own help volume. You can access specific *Tool Help Volumes* below, or, you can return to the *Main Help Volume*. (see page 2)

See Also: Online Help Information on the World Wide Web (see page 42)

The Instrument Tools

- 16517A High Speed Timing Analyzer (see the *Agilent Technologies 16517A 4GHz Timing/1GHz State Logic Analyzer* help volume)
- 16522A Pattern Generator (see the *Agilent Technologies 16522A 200M Vectors/s Pattern Generator* help volume)
- 16720A Pattern Generator (see the *Agilent Technologies 16720A 300M Vectors/s Pattern Generator* help volume)
- 16533/34A Oscilloscopes (see the *Agilent Technologies 16533/34A Digitizing Oscilloscope* help volume)
- 16550A Logic Analyzer (see the *Agilent Technologies 16550A Logic Analyzer* help volume)
- 16554A Logic Analyzer (see the *Agilent Technologies 16554A .5M Sample Logic Analyzer* help volume)
- 16555A/D Logic Analyzer (see the *Agilent Technologies 16555A/D 110MHz State/500 MHz Timing Logic Analyzer* help volume)
- 16556A/D Logic Analyzer (see the *Agilent Technologies 16556A/D 100 MHz State/400 MHz Timing Logic Analyzer* help volume)
- 16557D Logic Analyzer (see the *Agilent Technologies 16557D 140 MHz State/500 MHz Timing Logic Analyzer* help volume)
- 16710A Logic Analyzer (see the *Agilent Technologies 16710 8K sample Logic Analyzer* help volume)
- 16711A Logic Analyzer (see the *Agilent Technologies 16711 32K sample Logic Analyzer* help volume)

- 16712A Logic Analyzer (see the *Agilent Technologies 16712 128K sample Logic Analyzer* help volume)
- 16715A Logic Analyzer (see the *Agilent Technologies 16715A 167 MHz State/667 MHz Timing Logic Analyzer* help volume)
- 16716A Logic Analyzer (see the *Agilent Technologies 16716A 167 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16717A Logic Analyzer (see the *Agilent Technologies 16717A 333 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16718A Logic Analyzer (see the *Agilent Technologies 16718A 333 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16719A Logic Analyzer (see the *Agilent Technologies 16719A 333 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16740A Logic Analyzer (see the *Agilent Technologies 16740A 200 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16741A Logic Analyzer (see the *Agilent Technologies 16741A 200 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16742A Logic Analyzer (see the *Agilent Technologies 16742A 200 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16750A/B Logic Analyzer (see the *Agilent Technologies 16750A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16751A/B Logic Analyzer (see the *Agilent Technologies 16751A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16752A/B Logic Analyzer (see the *Agilent Technologies 16752A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer* help volume)
- 16753A Logic Analyzer (see the *Agilent Technologies 16753/4/5/6A 600 Mb/s State/4 GHz Timing Zoom Logic Analyzer* help volume)
- 16754A Logic Analyzer (see the *Agilent Technologies 16753/4/5/6A 600 Mb/s State/4 GHz Timing Zoom Logic Analyzer* help volume)
- 16755A Logic Analyzer (see the *Agilent Technologies 16753/4/5/6A 600 Mb/s State/4 GHz Timing Zoom Logic Analyzer* help volume)
- 16756A Logic Analyzer (see the *Agilent Technologies 16753/4/5/6A 600 Mb/s State/4 GHz Timing Zoom Logic Analyzer* help volume)

- 16760A Logic Analyzer (see the *Agilent Technologies 16760A 1500 Mb/s State/800 MHz Timing Logic Analyzer* help volume)

The Display Tools

- Listing Display (see the *Listing Display Tool* help volume)
- Waveform Display (see the *Waveform Display Tool* help volume)
- Chart Display (see the *Chart Display Tool* help volume)
- Distribution Display (see the *Distribution Display Tool* help volume)

See Also: Using Markers in the Display Tools (see the *Markers* help volume)

The Analysis Tools

- Compare Tool (see the *Compare Tool* help volume)
- InfiniBand Probe Tool (see the *InfiniBand Probe Tool* help volume)
- Memory Expansion Interface (see the *Agilent Technologies E2485A Memory Expansion Interface* help volume)
- Pattern Filter Analysis (see the *Pattern Filter Tool* help volume)

Add-on Toolsets

- DataComm Analysis (see the *DataComm Analysis Toolset* help volume)
- Gbit Ethernet Analysis (see the *Gbit Ethernet Toolset* help volume)
- InfiniBand Analysis (see the *InfiniBand Toolset* help volume)
- Infiniium Time Correlation Tool (see the *Agilent Technologies E5850A Time Correlation Fixture* help volume)
- MPEG Protocol Analysis (see the *MPEG Protocol Analysis Toolset* help volume)
- POS-PHY L4 Analysis (see the *POS-PHY L4 Toolset* help volume)
- RapioIO Analysis (see the *RapidIO Toolset* help volume)
- Serial Analysis (see the *Serial Analysis Tool* help volume)
- Source Viewer (see the *Listing Display Tool* help volume)

- System Performance Analysis - SPA (see the *System Performance Analyzer* help volume)

NOTE: If an add-on tool is not installed, you will see a message stating that the help volume could not be found. If you wish to purchase any of these add-on toolsets, call your local Agilent Technologies sales representative.

The Utility Tools

- File In Tool (see the *File In Tool* help volume)
- File Out Tool (see the *File Out Tool* help volume)

The Demonstration Tools

- E5820A Demo Board (see the *Agilent Technologies E5820A Demo Board* help volume)

The Emulation Control Interface Tools

NOTE: Help for each processor-specific emulation control interface is installed with the processor support package for the processor. If support for a processor is not installed, you will see a message stating that the help volume could not be found.

Additional processors may be supported. To see help for processors not listed here, start an Emulation Control Interface session then select *Help*.

- Setting Up and Starting Emulation Control (see the *Emulation: Setting Up* help volume)
- Emulation - ARM7/9 (see the *Emulation: ARM7* help volume)
- Emulation - M-CORE (see the *Emulation: M-CORE* help volume)
- Emulation - MPC8xx Embedded PowerPC (see the *Emulation: PowerPC 8xx* help volume)
- Emulation - MPC82xx (see the *Emulation: MPC82xx* help volume)
- Emulation - M683xx (see the *Emulation: Motorola 683xx* help volume)

- Emulation - Pentium® (see the *Emulation: Pentium and Pentium w/ MMX Technology* help volume)
- Emulation - Pentium® Pro (see the *Emulation: Pentium Pro and Pentium II Processor family* help volume)
- Emulation - PowerPC 4xx (see the *Emulation: PowerPC 4xx* help volume)
- Emulation - PowerPC 500 (see the *Emulation: PowerPC 5xx* help volume)
- Emulation - PowerPC 60x (see the *Emulation: PowerPC 603/604* help volume)
- Emulation - PowerPC 7xx (see the *Emulation: PowerPC 7xx* help volume)
- Emulation - MPC74xx (see the *Emulation: PowerPC 74xx* help volume)
- Emulation - SH7709/29 (see the *Emulation: Hitachi SH7709A/29* help volume)
- Emulation - SH7750 (see the *Emulation: Hitachi SH7750* help volume)
- Emulation - TX19/39 and TX3927 (see the *Emulation: Toshiba TX19/39* help volume)

PC Connectivity

- Agilent 16700A/B Series Connectivity (see the *PC Connectivity* help volume) - The Home Page and Remote Front Panel Control
- Remote Programming Interface Programmer's Guide (see the *Remote Programming Interface (RPI) Programmer's Guide* help volume)

Japanese Help Volumes

A portion of the online help system has been localized to Japanese.

- To view available Japanese help from a product window "Help" button, select "Select Help Language -> Japanese" from the "Help" pulldown in the workspace window. (If Japanese help is not available, English help will be displayed.)
- To always view English help from a product window "Help" button, select "Select Help Language -> English" from the "Help" pulldown in the workspace window.
- Within the help system, display English help by accessing "Main System Help" from any tool page, then selecting "Using Measurement Tools".
- Within the help system, display Japanese help by accessing "Main System Help" from any tool page, then selecting "Japanese Help Volumes".

To view the English and Japanese versions of a help volume at the same time:

1. Enter the English help system and navigate to the desired help page.
2. Select "Open Second Help Window (Japanese)" from the "Help" pulldown in the workspace window.
3. Navigate to the desired Japanese help page.

These help volumes have been localized to Japanese:

- 16700A Series Logic Analysis System Help (Japanese) (see the *Agilent Technologies 16600A/16700A Logic Analysis System (Japanese)* help volume)
- Measurement Examples (Japanese) (see the *Measurement Examples (Japanese)* help volume)
- The Setup Assistant (Japanese) (see the *Setup Assistant (Japanese)* help volume)
- PC Connectivity (Japanese) (see the *PC Connectivity (Japanese)* help volume)
- Using the Help System (Japanese) (see the *Help On Help (Japanese)*

help volume)

- Instruments:
  - 16517A/18A 4 GHz Timing/1 GHz State Logic Analyzer (Japanese) (see the *Agilent Technologies 16517A 4GHz Timing/1GHz State Logic Analyzer (Japanese)* help volume)
  - Using the 16522A Pattern Generator (Japanese) (see the *Agilent Technologies 16522A 200 MHz Pattern Generator (Japanese)* help volume)
  - 16533A/34A Digitizing Oscilloscope (Japanese) (see the *Agilent Technologies 16533/34A Digitizing Oscilloscope (Japanese)* help volume)
  - 16550A 100 MHz State/500 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16550A Logic Analyzer (Japanese)* help volume)
  - 16554A 70 MHz State/500 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16554A .5M Sample Logic Analyzer (Japanese)* help volume)
  - 16555A/D 110 MHz State/500 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16555A/D 110MHz State/500 MHz Timing Logic Analyzer (Japanese)* help volume)
  - 16556A/D 100 MHz State/400 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16556A/D 100 MHz State/400 MHz Timing Logic Analyzer (Japanese)* help volume)
  - 16557D 140 MHz State/500 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16557D 140 MHz State/500 MHz Timing Logic Analyzer (Japanese)* help volume)
  - 16600A-Series Built-In Logic Analyzer (Japanese) (see the *Agilent Technologies 16600A-Series 100 MHz State/250 MHz Timing Logic Analyzer (Japanese)* help volume)
  - 16710A 8K Sample Logic Analyzer (Japanese) (see the *Agilent Technologies 16710 8K sample Logic Analyzer (Japanese)* help volume)
  - 16711A 32K Sample Logic Analyzer (Japanese) (see the *Agilent Technologies 16711 32K sample Logic Analyzer (Japanese)* help

volume)

- 16712A 128K Sample Logic Analyzer (Japanese) (see the *Agilent Technologies 16712 128K sample Logic Analyzer (Japanese)* help volume)
- 16715A 167 MHz State/667 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16715A 167 MHz State/667 MHz Timing Logic Analyzer (Japanese)* help volume)
- 16716A 167 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16716A 167 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16717A 333 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16717A 333 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16740A 200 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16740A 200 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16741A 200 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16741A 200 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16742A 200 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16742A 200 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16750A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16750A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16751A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16751A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16752A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese) (see the *Agilent Technologies 16752A/B 400 MHz State/2 GHz Timing Zoom Logic Analyzer (Japanese)* help volume)
- 16760A 1500 Mb/s State/800 MHz Timing Logic Analyzer (Japanese) (see the *Agilent Technologies 16760A 1500 Mb/s State/800 MHz Timing Logic Analyzer (Japanese)* help volume)

- Display Tools:
  - Using the Listing Tool (Japanese) (see the *Listing Display Tool (Japanese)* help volume)
  - Using the Chart Tool (Japanese) (see the *Chart Display Tool (Japanese)* help volume)
  - Using the Distribution Tool (Japanese) (see the *Distribution Display Tool (Japanese)* help volume)
  - Using the Digital Waveform Tool (Japanese) (see the *Waveform Display Tool (Japanese)* help volume)
  - Working With Markers (Japanese) (see the *Markers (Japanese)* help volume)
- Analysis Tools:
  - Using the Compare Tool (Japanese) (see the *Compare Tool (Japanese)* help volume)
  - Using the Pattern Filter Tool (Japanese) (see the *Pattern Filter Tool (Japanese)* help volume)
- Toolsets:
  - Gbit Ethernet Toolset (Japanese) (see the *Gbit Ethernet Toolset (Japanese)* help volume)
  - POS-PHY L4 Toolset (Japanese) (see the *POS-PHY L4 Toolset (Japanese)* help volume)
  - RapidIO Toolset (Japanese) (see the *RapidIO Toolset (Japanese)* help volume)
  - DataComm Analysis Toolset (Japanese) (see the *DataComm Analysis Toolset (Japanese)* help volume)
  - Using the Serial Analysis Tool (Japanese) (see the *Serial Analysis Tool (Japanese)* help volume)
- Utility Tools:
  - Using the File In Tool (Japanese) (see the *File In Tool (Japanese)* help volume)
  - Using the File Out Tool (Japanese) (see the *File Out Tool (Japanese)*

help volume)

- Emulation:
  - Setting Up and Starting Emulation Control (Japanese) (see the *Emulation: Setting Up (Japanese)* help volume)
  - Using the SH7750 Emulation Control Interface (Japanese) (see the *Emulation: Hitachi SH7750 (Japanese)* help volume)
  - Using the TX19/39 Emulation Control Interface (Japanese) (see the *Emulation: Toshiba TX19/39 (Japanese)* help volume)

To return to the main English help system page:

16700A Series Logic Analysis System Help (English) (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume)

System Overview

- Product Description (see page 32)
- The User Interface - Icons, Tabs, and Navigation (see page 34)
- Session Control and the User Environment (see page 172)
- "Frame Specifications and Characteristics" on page 28
- "How the Help System is Accessed" on page 30

See Also

List of Tool Help Volumes (see page 18)

NOTE: For information on product Warranty and Safety Considerations, refer to the hardcopy *Installation Guide*.

Frame Specifications and Characteristics

The characteristics listed below apply to the 16700A/B-series frame. For specification or characteristic information on specific measurement cards that install into the frames, refer to the specific tool help volumes (see page 18) for each tool.

NOTE: Definition of Terms To understand the difference between specifications (see page 29) and characteristics (see page 29), and what gets a calibration procedure (see page 29) and what gets a function test (see page 30), select the appropriate links within this note.

```
Power Requirements
  ~Line 115 V / 230 V
  48 - 66 Hz
  610 W (16700A/B-series frames, except 16701A)
  545 W (16701A frame)
  CAT II; POLLUTION DEGREE 2

Operating Environment Characteristics
  - Indoor use only.
  - Temperature
    Instrument (except disk and media): 0 to 50 degrees C (+32
                                        to 122 degrees F)
    Disk and media:                     10 to 40 degrees C (+50 to
                                        104 degrees F)
    Probe lead sets and cables:         0 to 65 degrees C (+32 to
```

```
                                        149 degrees F)
- Humidity
  Instrument, probe lead sets, and cables: 8 to 80% relative humidity at
                                           40 degrees C (+104 degrees F)
- Altitude      To 3000 m (10,000 ft)
- Vibration
  Operating:    Random vibration 5-500 Hz, 10 minutes per axis,
                approximately 0.2 g rms
  Nonoperating: Random vibration 5 to 500 Hz, 10 minutes per axis,
                approximately 2.41 g rms; and swept sine resonant
                search, 5 to 500 Hz, 0.50 g (0-peak), 5-minute
                resonant dwell at 4 resonances per axis.
```

What is a Specification

A *Specification* is a numeric value, or range of values, that bounds the performance of a product parameter. The product warranty covers the performance of parameters described by specifications. Products shipped from the factory meet all specifications. Additionally, the products sent to Agilent Technologies Customer Service Centers for calibration and returned to the customer meet all specifications.

Specifications are verified by *Calibration Procedures*.

What is a Characteristic

Characteristics describe product performance that is useful in the application of the product, but that is not covered by the product warranty. Characteristics describe performance that is typical of the majority of a given product, but not subject to the same rigor associated with specifications.

Characteristics are verified by *Function Tests*.

What is a Calibration Procedure

Calibration procedures verify products or systems operate within the specifications. Parameters covered by specifications have a corresponding calibration procedure. Calibration procedures include both performance tests and system verification procedure. Calibration

procedures are traceable and must specify adequate calibration standards.

Calibration procedures verify products meet the specifications by comparing measured parameters against a pass-fail limit. The pass-fail limit is the specification less any required guardband.

The term "calibration" refers to the process of measuring parameters and referencing the measurement to a calibration standard rather than the process of adjusting products for optimal performance.

What is a Function Test

Function tests are quick tests designed to verify basic operation of a product. Function tests include operator's checks and operation verification procedures. An operator's check is normally a fast test used to verify basic operation of a product. An operation verification procedure verifies some, but not all, specifications, and often at a lower confidence level than a calibration procedure.

How the Help System is Accessed

The Agilent 16700A/B-series logic analysis systems are modular. Agilent offers a choice of hardware and software tools you may install. As you add new tools, you also add the tool's help volume into the system.

When *Help* is accessed from the menu bar in the main *System* window, you get the system help volume. If you access *Help* from any analyzer, oscilloscope, pattern generator, or display/analysis tool window, you get help for that specific tool.

The *System* window menu bar:

From *Help* in the menu bar you have access to the following topics:

On this Window

On the Main System

Open Second Help Window (English)

Open Second Help Window (Japanese)

Select Help Language

Tool Windows

From *Help* in the menu bar you have access to the following topics:

On this Window

On the Main System

Configuration Dialogs

Any *Help* field located at the bottom of a dialog, accesses help for that dialog only.

Help on Help

The *Help* field in any Help dialog, accesses help on using help.

Overview

Table of Contents

Tasks

Reference

Mouse and Keyboard

NOTE: Searching Across all Help Volumes For best results, when you don't know the specific help volume you are in, simply search the index. The keyword index search can search all installed help volumes. For more information on searching, refer to Using the Help System (see the *Help On Help* help volume).

See Also

Master list of all help volumes. (see page 18)

Using the Help System (see the *Help On Help* help volume)

Product Description

The Agilent Technologies 16700A/B-Series logic analysis systems are a scalable family of frames that allow you to time-correlate measurements across domains from analog signals to source code.

Included in the 16700A/B frames is an integrated Web server and Home Page. Use the Home Page as the starting point to upload PC connectivity software that enables remote front-panel control, graphical programming tools, and the ability to post-process within an Excel spreadsheet.

The graphical user interface provides easier measurement setup and product use. For microprocessor measurements, a *Setup Assistant* leads you through the setup process.

The Agilent 16700A-Series

The Agilent 16700A and 16702A frames have five slots for measurement modules, and two accessory slots for emulation modules. Both frames are expandable to ten measurement slots when connected to the 16701A expansion frame.

The Agilent 16700B-Series

The Agilent 16700B-series frames are the newest addition to the Agilent series of logic analysis systems. New features include a 100BaseT LAN connection, a larger internal hard drive, and an internal CD-ROM drive. They have five slots for measurement modules and one accessory slot for use by either an emulation module or a multi-frame expander module.

The multi-frame expander module allows you to connect up to eight 16700B or 16702B frames together as a tightly coupled system with centralized Run/Stop control, time correlated data displays, and cross-frame flag signaling and trigger arming.

The 16702B frame incorporates a new touch screen user interface. Also, some of the most common navigation and measurement control functionality has been duplicated on the front panel through shortcut

buttons and knobs.

The User Interface - Icons, Tabs, and Navigation

The user interface is designed to help you quickly configure measurements and navigate between windows. Depending on the model, your system will have either an integrated display (16702A & 16702B), or would require you to connect a remote display (16700A & 16700B). The user can interact with all systems with a mouse and keyboard.

In addition to the integrated displays on the 16702A and 16702B frames, these models also have front panel buttons and knobs for optional methods of navigation and text entry. Agilent's newest model, the 16702B, incorporates a touchscreen option and shortcut buttons for fast measurement configuration and navigation.

For more specific information on using the touchscreen and knobs/ buttons, refer to the following:

"Using the 16702B Knobs and Buttons" on page 36

"Using the 16702B Touchscreen" on page 37

Navigating the System and Tool Windows

The *System window* (see page 58) is used as a *home base* for making measurements. It graphically shows which measurement modules are installed in the frame and what run control capability is available. By selecting a measurement module icon, you not only gain access to all instrument *Setup* windows, but you automatically connect Display tools to the Instrument tool in the Workspace window.

System and measurement tool windows are typically opened as they are needed to configure, run, and display measurement results. In the 16702A and 16702B logic analysis systems, as windows are opened or accessed, they are stacked in the display with the window accessed last being displayed on top. In systems using the larger remote display, windows will appear with an offset.

The following areas in the interface are used to open new windows or access currently opened windows:

The Window Menu Pick

The *Window* pick appears in the menu bar at the top of all tool windows. Select *Window*, then select the desired category type. Your choices are System windows or measurement module windows.

The System Icon Bar

The *System Icon Bar* is located at the top of the main *System* window as well as all other tool windows. It is used to access the same System level windows as found under the *Window* menu bar pick.

The Start Bar

The *Start Bar* is located at the bottom of the display. It contains buttons for all open windows as well as an accessory list under the *Start* field. You can shift any open window to the top of the display by selecting its icon.

NOTE: The Start Bar does not appear in a PC remote session using the VNC browser.

Tabs

The use of *Tabs* (see page 39) throughout the interface helps you quickly navigate between the tool's setup windows and other functional areas within the tool. By default tabs are on, however, you have the option of turning tabs off for each tool.

Running Remote Sessions

When you view the logic analysis system locally, a window manager (Start bar) is available to place all minimized windows in. If you telnet to the logic analysis system remotely, you do not see this local window manager. However, because you are viewing the instrument from your remote computer, you will be using your remote computer's window manager.

If you telnet to a 16702B touchscreen logic analysis system, you will use the mouse and keyboard of your remote computer as the interface devices.

Using the 16702B Knobs and Buttons

The front panel knobs and buttons are used as quick shortcuts for the most commonly used interface operations.

Run/Stop buttons

The front panel Run/Stop buttons apply to the currently focused window. The currently focused window will always have the blue titlebar. The run mode is the same as what is designated by the run icons in the icon bar.

If the currently focused window DOES NOT have a blue titlebar, a *Run All/Stop All* is performed.

Assignable knob

When different areas in the interface are selected, they turn a blue color. When these fields are blue, you can use the large front panel knob (blue color coded) to increment or decrement values, select, or scroll the selected field.

Scope time/voltage knobs

Quickly change the time and voltage scale in the scope waveform display.

x-y scrolling knobs

Once a display tool window is active, use the x-y scrolling knobs to quickly scroll through the displayed data.

Select button

Use the *Select* button to select a current choice when multiple choices are presented, such as in a scroll list. The Select button will light up when it becomes active and available for use.

Touch Off button

The *Touch Off* button is used to disable the touchscreen.

Global marker knobs

Quickly change the position of the global G1 and G2 markers in the display tool windows.

Scope time/voltage knobs

Quickly change the time and voltage scale in the scope waveform display.

Navigation shortcut buttons

The Navigation Shortcut buttons are used to quickly access the following interface components:

Column One	Column Two
Main System Window	Digital Waveform Display
Analyzer Setup Window	State Listing Display
File Manager Window	Split Screen Waveform and Listing
Help on Active Window	Scope Waveform Display

Using the 16702B Touchscreen

The 16702B frame gives you an additional choice of using the new touchscreen interface and shortcut buttons for your local sessions. The logic analysis system will configure itself for a mouse if you have a mouse plugged into the rear connector when it powers up. If you DO NOT have a mouse plugged in when the system powers up, it configures itself as a touchscreen.

The touchscreen operates the same as a mouse. You touch a field instead of a left mouse click. The touchscreen lets you scroll, zoom, drag and drop, and resize. The main touch functions are described below.

Touching Fields

To select a field, touch the screen directly over the field.

Scrolling

When scroll bars are available, the scroll operation is the same as using

a mouse. Touch and drag the slider or touch the scroll arrows.

Accessing the Keypad

To enter a numeric value, or type text into a label or comments field, select the value entry field twice. At the first selection, the numeric value fields turn blue signifying that the assignable knob is active. On the second selection, the alphanumeric keypad appears.

NOTE: If you prefer to use the mouse and keyboard for extensive alphanumeric selection or entry, it should be noted that mouse activity will not exactly duplicate the typical Windows operation with the touchscreen activated. Disable the touchscreen from the front panel to prevent touchscreen popup keypads from appearing.

Zooming

The zoom operation is available in the data display area of waveform and chart display tools. To zoom, touch the upper-left corner and drag your finger to the lower-right corner, then lift your finger. The zoomed display area will be the box you draw. To undo a zoom, touch any open space in the data area, then select *Undo Scaling* from the shortcut selection list that appears. See *Touching Open Space - Accessing Shortcuts* Below.

Touching Open Space - Accessing Shortcuts

Many times, a shortcut selection list becomes available by touching open space within the data area of a display window.

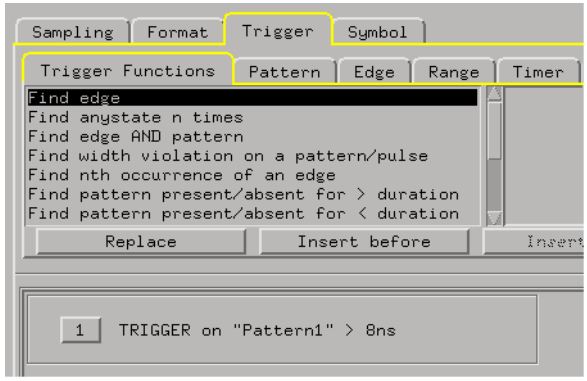
Drag and Drop

The drag and drop operation is a key part of several interface operations such as moving labels, resizing waveforms, and connecting tools in the Workspace window. To drag and drop, touch the field and slide your finger to the drop zone, then lift your finger up.

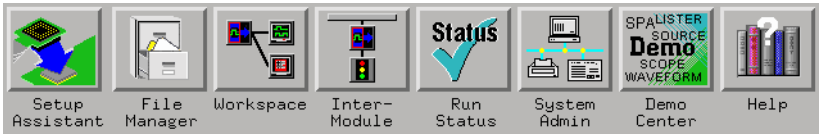
Resizing

Some interface fields can be resized such as a waveform's height or a label field's width. Touch the field's outer edge, then drag and drop the dashed box edge to expand its size.

Navigation with Tabs



Navigation with the Icon Bar



Setup Assistant

The *Setup Assistant* window is used to start the automated process of setting up a microprocessor analysis measurement.

File Manager

The *File Manager* window is used to perform the common tasks of loading or saving measurement configurations. The File Manager has all the standard functionality for performing operations on files and directories on both the flexible and hard disk drives.

Workspace

The *Workspace* shows a complete graphical representation of the tools and how they are connected for your measurement configuration. New tools are primarily added from within Display tool windows, however, for specific applications, the Workspace window may also be used.

For more specific configurations, or for modifications to an existing configuration, use the Workspace to add or delete tools, or to add, delete, or change the connection scheme between tools.

Intermodule

The *Intermodule* window shows a graphical representation of the internal arming sequence between measurement modules, and any external trigger connections to a target system or other instruments.

In measurements using multiple instruments or machines, the Intermodule window is used to modify the order that measurement modules are armed to trigger, and to compensate for any timing deviations (skew adjust) between module probing.

Run Status

The *Run Status* window is used to monitor the run function, and feed back information on the progress of elements such as pre-store, trigger status, and post-store.

System Administration

The *System Administration* window is used to setup system defaults, network configurations, and perform maintenance on the operating system file set. If you are working in a multi-user environment, you set up user accounts in this dialog.

Demo Center

The *Demo Center* is used to learn about the main features of your logic analysis system. By using the demo data files, you can view trace data as it would normally appear, without needing to connect to a target system.

Help

The *Help* icon in the System Icon Bar accesses the main help system for the frame and system level operations.

All Instrument, Display, Analysis, and Utility tools have their own specific help volumes.

Available Help Resources

- The 16700A/B Configuration Guide is a booklet which explains how to set up your Logic Analysis System.
- Making Basic Measurements is a tutorial booklet which guides you through the user interface and basic system tools.
- The Online Help System is a group of task-oriented help volumes that are displayed in a window on your screen. Online help is accessed from a pulldown menu in each system tool or from a "Help" button in many system dialogs.
  - Using the Online Help System (see the *Help On Help* help volume)
  - Searching for information (see the *Help On Help* help volume)
- Online Help information is also available on the World Wide Web (see page 42).
- A volume of Measurement Examples (see the *Measurement Examples* help volume) will guide you in performing meaningful measurements with your system. Many common data measurements are described, with instructions for setting up the analyzer.
- Glossary of System Terms (see page 203)
- Logic Analyzer Terminology (see page 43)

Information on the Web

Enter the following URL:

http://www.cos.agilent.com/manuals

This page contains logic analyzer microprocessor debug and emulation solution manuals and online help. To access the HTML version of this online help:

1. Under *Logic Analyzer Manuals*, select *Logic Analyzers*.
2. In the list of manuals that appears, select the desired information.

System Terminology

New Terms

Some of the terminology used in your logic analysis system has changed with the release of the Agilent Technologies 16600A/16700A series. If you are familiar with certain terminology, use this page to identify system components by their old and new name.

For a full list of current system terminology, see the Glossary of System Terms (see page 203).

- Old: preprocessor New: analysis probe
  This hardware device is connected between your target system and a logic analyzer to gather signals for analysis and display.
- Old: software analyzer New: source correlation tool set
  This software add-on allows you to correlate your trace data with the source code that was used to generate the running program. The window in which the decoded instructions are displayed is called the source viewer.
- Old: processor probe New: emulation module/emulation probe
  These devices connect between your target system and your logic analysis system for run/stop/break control of your target processor. An emulation module plugs into a card slot in your logic analysis system, while an emulation probe is an external device which can connect directly to your logic analysis system or to a local network.

Other Terms

- state measurements may be referred to in the industry as synchronous or periodic measurements.
- timing measurements may be referred to in the industry as asynchronous measurements.

File Management Tools



Use the *File Manager* window to perform the common tasks of loading or saving tool settings and trace data to *configuration files*.

You can open the File Manager window by selecting the toolbar button or by selecting *File->Load Configuration* or *File->Save Configuration* from the menu in any tool.

The File Manager has all the standard functionality for performing operations on files and directories on both the flexible and hard disk drives.

Files

- "To load configuration files" on page 45
- "To save configuration files" on page 47
- "To automatically load a file at startup" on page 49
- "To copy files" on page 49
- "To delete files" on page 49
- "To move files" on page 50
- "To rename files" on page 50
- "To compress/uncompress files - PKZIP/PKUNZIP" on page 51

Directories

- "To create directories" on page 52
- "To delete directories" on page 53
- "To rename directories" on page 53

Other Operations

- "To format floppy disks" on page 53
- "To refresh the File Manager" on page 54
- "To mount an external hard drive" on page 54

See Also

"File Types" on page 56

"Default Directory Descriptions" on page 57

To load configuration files

You can load settings and data for all tools configured when the configuration file was saved, or you can load just the setting and data for a particular instrument. Data saved in a configuration file is always loaded.

Load a configuration file by selecting *File->Load Configuration* in a tool window, or by selecting the *Load* tab in the File Manager.

1. From the *File Manager* window, select a file to load in the *Contents* frame of the dialog.

   You may need to navigate the local or mounted file system using the *Current Disk* field and the *Directories* frame to find the desired file. (Optionally, type the desired filepath and name in the "Filename" box.) Note that a mounted directory will have a different icon.

2. Choose a target that defines where the configuration file contents will be loaded.

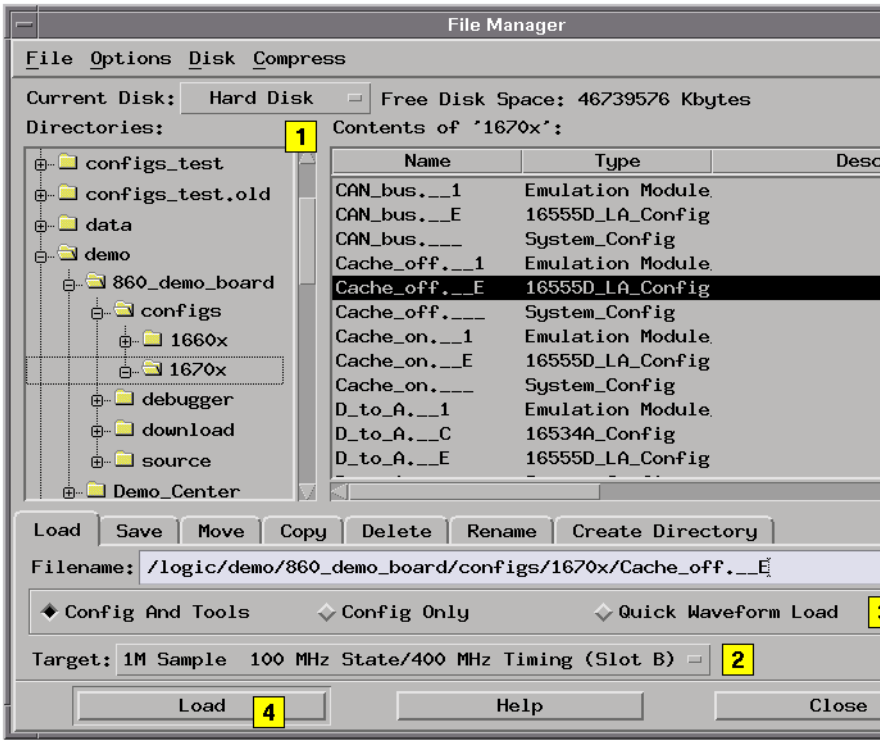
   - *All* will load all tools configured at the time of saving.
   - Selecting a specific instrument will narrow the loading to just that instrument.

3. Choose the appropriate options:

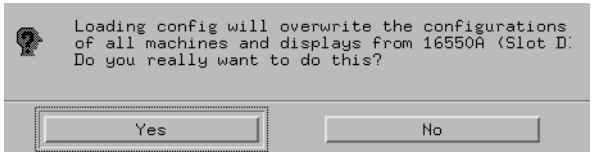
   - *Config and Tools* - loads the selected instrument and all tools connected to its output.
   - *Config Only* - loads only the selected instrument.
   - *Quick Waveform Load* - loads the configuration as specified except

that the *Seconds/div* or *Samples/div* settings for the Waveform display are overridden with *10 ns/div* or *1 sample/div*, respectively.

4. Select *Load*.



Loading a configuration file will overwrite the settings and data in the existing tools. This dialog will appear asking you to verify the loading of new data:



See Also

"What Gets Loaded" on page 47

"To save configuration files" on page 47

"File Types" on page 56

What Gets Loaded

When loading a configuration file, the target determines which of the files will be loaded into actual instruments. You only need to highlight one of the files created in a given *Save*, and the system software will load the correct data.

For example, given these files:

```
test_setup.__A     16556A_LA_Config
test_setup.___     System_Config
```

If the 16556A_LA_Config file is highlighted AND:

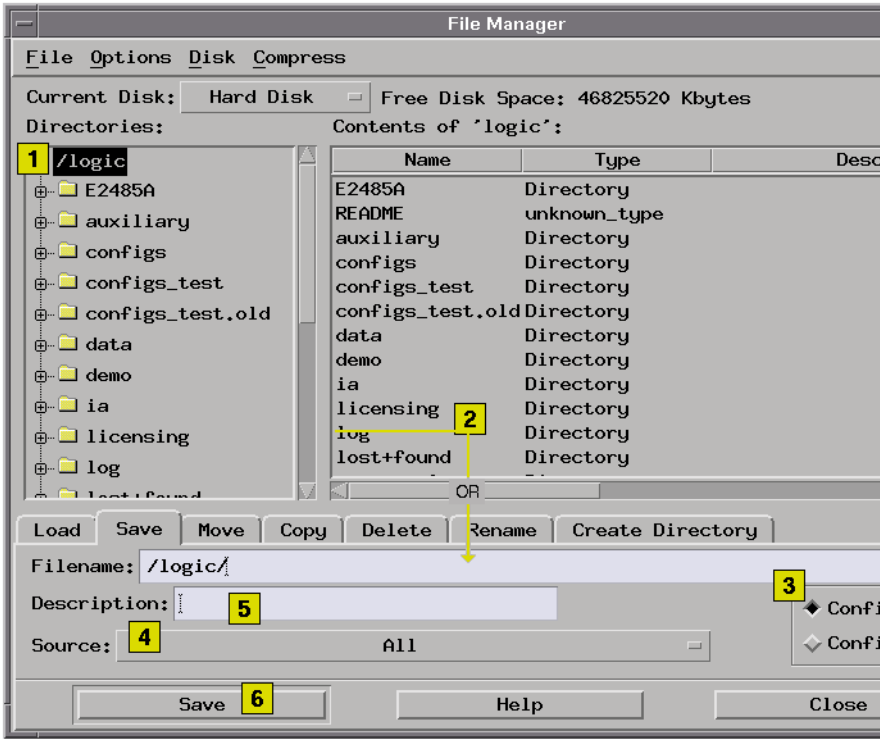
- *All* is selected as the target, the information in the System_Config file is also loaded. Also, the *Config Only* option is unavailable (as if you had highlighted the System_Config file in the first place).
- A specific analyzer is selected as the target, only the analyzer data is loaded (without the related system configuration information).

To save configuration files

Save a configuration file by selecting *File->Save Configuration* in a tool window, or by selecting the *Save* tab in the File Manager.

1. From the *File Manager* window, in the *Directories:* frame, build a path to the directory where you want to save the config file.
2. Type the name of the new config file, or select an existing file in the *Contents:* frame for overwriting.
3. Select:
   - *Config and Data* - saves settings and the current contents of acquisition memory. This option results in larger configuration files (whose size relates to the amount of acquisition memory).
   - *Config Only* - saves only the current tool settings. This option results in smaller configuration files, but after reloading the configuration file, you must rerun the measurement to acquire data.

4. Select a source (only the chosen *Source* will have the save operation performed on it):
   - *All* - Saves settings for all currently configured tools to a complete *System Configuration* file.
   - A specific instrument - only saves settings for the selected instrument.
5. Optionally, enter a description of the config which will appear in the File Manager *Contents:* frame. (32 chars max)
6. Select *Save*.



See Also

"To load configuration files" on page 45

"File Types" on page 56

File Out Tool (see the *File Out Tool* help volume)

To automatically load a file at startup

The following procedure designates a file to automatically load at session startup.

1. From the menu bar in the File Manager window, select *Options*, then *Autoload...*.
2. From the Autoload File dialog that appears, select the *Enable Autoload* field, then select the directory and filename you want loaded at startup.
3. Select *OK*.

To copy files

1. From the File Manager dialog, select the file you want to copy.
2. If necessary, set the *Current Disk*, and select directory names to build a path to the file you want to copy.
3. Select the *Copy* tab.
4. Select a *Destination:* for the file you are copying. Do this by either selecting the desired disk drive and typing a path and filename, or, *Browse...* a graphical file list to select a path and filename. You can also quickly copy the same path as the source file.
5. Select *Copy*.
6. To close the File Manager dialog, select *Close*.

To delete files

1. From the File Manager dialog, set the *Current Disk:* to the appropriate disk drive.
2. Select the file to delete. If necessary, select directory names to build a path to the file you want to delete.
3. Select the *Delete* tab.

4. Select *Delete*.
5. Select *Yes* to verify.
6. To close the File Manager dialog, select *Close*.

To move files

1. From the File Manager dialog, select the file you want to move.
2. If necessary, set the *Current Disk*, and select directory names to build a path to the file you want to move.
3. Select the *Move* tab.
4. Select a *Destination:* for the file you are moving. Do this by either selecting the desired disk drive and typing a path and filename, or, *Browse...* a graphical file list to select a path and filename. You can also quickly copy the same path as the source file.
5. Select *Move*.
6. To close the File Manager dialog, select *Close*.

To rename files

1. From the File Manager dialog, set the *Current Disk:* to the desired disk drive.
2. If necessary, select directory names to build a path to the directory you want to rename.
3. Select the file to rename, then select the *Rename* tab.
4. Type in the new name, then select *Rename*. Filenames can only include the following alphanumeric characters: 0-9, a-z, A-Z, (-), (+), (_), (.), and (:).
5. To close the File Manager dialog, select *Close*.

About File Extensions

When saving configuration files, file extensions (characters following a "." in the filename) will be ignored by the system. Instead, default file extensions (see page 56) are automatically appended. When saving data files from the File Out (see the *File Out Tool* help volume) tool, you can use file extensions. You can list all files by using a single asterisk (*) after the directory path.

To compress/uncompress files - PKZIP/ PKUNZIP

This operation compresses files. Use this operation prior to copying files to floppy disk for purpose of transfer.

To compress files - PKZIP

1. From the File Manager dialog, select directory names to build a path to the file you want to compress.
2. Select the file name you want to compress.
3. From the menu bar select *Compress*, then *PkZip*.
4. Type in a new (compressed) file name, then select *OK*. You can only use the following alphanumeric characters in a filename: 0-9, a-z, A-Z, (-), (+), (_), (.), and (:).
5. To close the File Manager dialog, select *File* in the menu bar, then select *Close*.

To uncompress files - PKUNZIP

1. From the File Manager dialog, select directory names to build a path to the file you want to uncompress.
2. Select the desired file you want to uncompress.
3. From the menu bar select *Compress*, then *PKunzip*.
4. To close the File Manager dialog, select *File* in the menu bar, then select *Close*.

See Also "More About PKZIP" on page 52

More About PKZIP

ASCENT SOLUTIONS, Inc. (ASi) provides compatible, open systems data compression solutions such as PKZIP, Multizip, and WinZip. ASI solutions are 100% cross-platform compatible, and support a variety of platforms, including Unix, MVS, AS/400, VM, VSE, VMS, Windows, Netware, Macintosh, DOS, and OS/2. Data compression options are available in both stand-alone and developer's versions.

ASCENT SOLUTIONS, Inc. (ASi)
9009 Springsboro Pike
Miamisburg, OH 45342

Contact:
Voice: (937) 847-2374
FAX: (937) 847-2375
Email: info@asizip.com

To create directories

1. From the File Manager dialog, set the *Current Disk:* to the desired disk drive.
2. If necessary, select directory names to build a path to the level where you want the new directory.
3. Select the *Create Directory* tab.
4. Type the new directory name. Directory names can only include the following alphanumeric characters: 0-9, a-z, A-Z, (-), (+), (_), (.), and (:).
5. Select *Create Directory*.
6. To close the File Manager dialog, select *Close*.

To delete directories

1. From the File Manager dialog, set the *Current Disk:* to the desired disk drive.
2. If necessary, select directory names to build a path to the directory you want to delete.
3. Select the directory to delete, then select the *Delete* tab.
4. Select *Delete*, then *Yes* to verify.
5. To close the File Manager dialog, select *Close*.

To rename directories

1. From the File Manager dialog, set the *Current Disk:* to the desired disk drive.
2. If necessary, select directory names to build a path to the directory you want to rename.
3. Select the directory to rename, then select the *Rename* tab.
4. Type in the new name, then select *Rename*. Directory names can only include the following alphanumeric characters: 0-9, a-z, A-Z, (-), (+), (_), (.), and (:).
5. To close the File Manager dialog, select *Close*.

To format floppy disks

This operation formats new floppy disks in DOS format.

1. Insert the new floppy disk into the disk drive of the logic analysis system.
2. From the menu bar in the *File Manager* dialog, select *Disk*, then select *Format*.
3. To close the File Manager dialog, select *File* in the menu bar, then select

Close.

To refresh the File Manager

If you add, delete, or rename a file while the File Manager window is open, the directory you are in will not show the latest changes until you refresh the directory by selecting *Disk*, then *Refresh Current Directory*.

To mount an external hard drive

The following installation guidelines show the important sequence of steps when connecting or disconnecting an external hard drive. For the complete procedure, refer to the *Logic Analysis Systems Installation Guide*.

To connect the external hard drive

CAUTION: It is very important to follow the sequence of steps exactly when connecting or disconnecting the external hard drive. The external hard drive should be the first device that receives power, and the last device to be shut down. If you do not follow the correct sequence of steps, data on the external hard drive may become corrupt, or the drive may become unreadable.

1. Power down the logic analysis system frame.
2. Connect the external hard drive.
3. Power up the external hard drive.
4. Power up the logic analysis system frame.
5. From the interface, mount the external hard drive. See the procedure *To mount the external hard drive* below.

To disconnect the external hard drive

The following guidelines must be followed before removing the external hard drive from its case, or disconnecting the drive from the

logic analysis system.

1. From the interface, unmount the external hard drive. See the procedure *To unmount the external hard drive* below.
2. Power down the logic analysis system frame.
3. Power down the external hard drive.
4. Disconnect the external hard drive.

To mount the external hard drive

CAUTION: If this is the first time mounting the external hard drive, or if the drive is corrupt, you will get a message asking if you want to format the disk. If you choose to format the drive, all data on that drive will be lost.

1. From the Icon bar in the main system window, select the *System Admin* icon, then from the System Administration Tools window that appears, select the *Admin* tab.
2. From the System Administration Tools window select *Mount External Disk...*.
3. In the Mount External Disk dialog, set a *SCSI Address* number. Select the same number that is displayed in the green LCD on the front panel of the external hard drive.
4. In the *Local Path:* field, type in the local directory name where the drive will be mounted. This should be either an existing empty directory, or, one that does not yet exist. If it does not exist, it will be created automatically for you.
5. Select *Mount* to mount the drive. The drive is now accessible through this directory.

To unmount the external hard drive

1. From the Icon bar in the main system window, select the *System Admin* icon, then from the System Administration Tools window that appears, select the *Admin* tab.
2. From the System Administration Tools window select *Mount External Disk...*.
3. In the Mount External Disk dialog, select the drive from the *Current*

Connections list, then select *Unmount*. This will not affect the files on the drive. They will just not be accessible until the drive is mounted again.

File Types

When saving tool configurations, one or more files will be created in the destination file system. For example:

```
test_setup.__A     16556A_LA_Config
test_setup.___     System Config
```

A file for each instrument tool involved in the *Save* process will be created. An additional file may be created to store additional system information.

- The same file name prefix is used for all of the files. (The name you specified)
- The file suffix indicates the card slot of the instrument whose parameters were saved, or 3 underscores for system information.
- The file type indicates the type of data contained in the file.

See Also

- "What Gets Loaded" on page 47
- "Other File Types" on page 56

Other File Types

- .x - Typically an OMF or executable file. These files are used by the symbol utility.
- .ns - Output of the symbol utility when linked to a label. These files are used by the symbol utility.
- .pcx - Formatted bit map file.
- .tif - Tagged Image File Format.
- .eps - Extended Postscript file.
- .txt - Output of the File Out tool. This is an ASCII data file.

Default Directory Descriptions

configs/

This directory is used to store user workspace configuration and data files.

etc/

This directory is for internal use only.

ia/

This directory is used to store inverse assembly files. It is read only and can only be modified through the installation and remove process for processor support packages.

log/

Error log files generated by system crashes and errors are automatically saved to this directory. Error log files, along with saved configuration files, can be used to recreate and fix system error conditions.

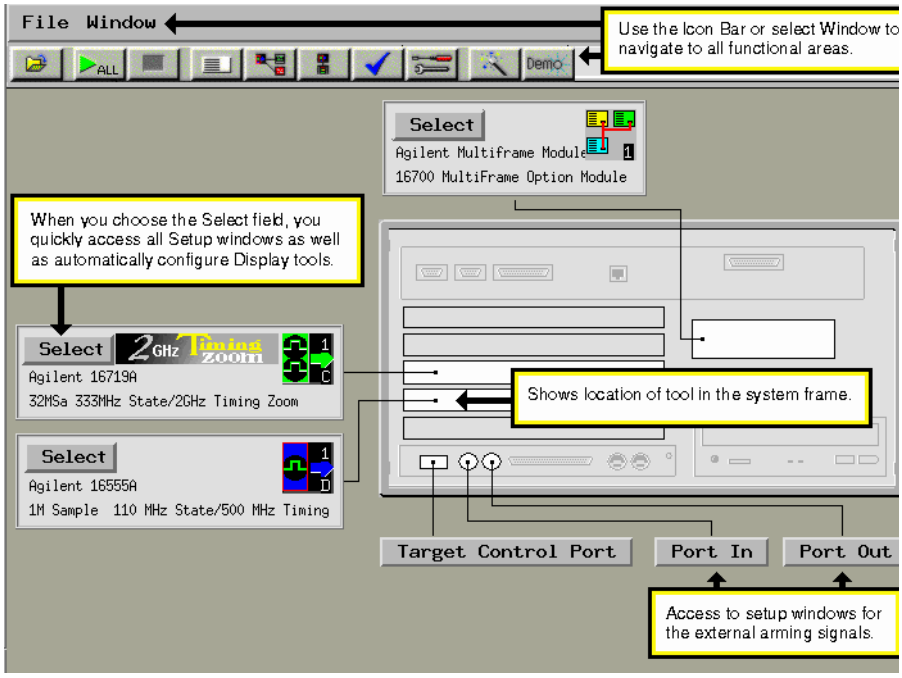
omfs/

This directory is used to store Object Management Files (OMF) or executable files that are used by the built-in symbol utility.

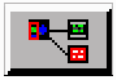
demo/

This directory is used to store product demonstration files. Several processor trace files use IA files stored in the *ia* directory. This directory and its files may be deleted if disk space is required.

The System Window



The Workspace Window



The *Workspace* window is a graphical layout of the measurement configuration. In the more complex measurements, the Workspace is used to change the configuration by adding or deleting tools, or by changing the data flow connection scheme between tools.

- Adding or Deleting Tools (see page 61)
- Connecting Tools Together (see page 62)
- Repositioning Tools in the Workspace (see page 63)
- Clearing the Workspace (see page 64)
- Loading Configuration Files (see page 45)
- Saving Configuration Files (see page 47)
- Printing Windows - Configurations (see page 145)

See Also

Print Options (see page 149)

Run All Function (see page 113)

“Workspace Options” on page 59

Workspace Options

The following options are available in the Workspace window.

Grid Mode

When *Snap Grid* is turned on, tool icons are always positioned (snapped) to a grid layout. When the *Snap Grid* is turned off, tool icons can be placed or moved anywhere on the workspace. To see the grid lines used with the Snap Grid, select *Toggle Grid Lines*.

Auto Arrange Icons

When *Auto Arrange Icons* is selected, all tool icons on the workspace are automatically placed on a grid layout.

Screen Saver

When the *Screen Saver* is used, the display goes dark after the selected time period. The display reappears after the mouse is moved, the screen is touched, or any key on the keyboard is pressed.

Adding and Deleting Tools

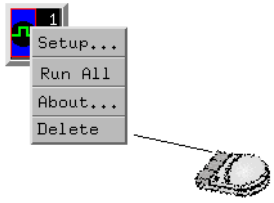
NOTE: The add operation is also done for you automatically when you select an Instrument Icon (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume) from the System window. For an overview on the automatic configuration of measurements, refer to Overview - Starting a New Measurement (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume).

To Add a Tool

1. *Point* to the new tool in the toolbox, then *drag and drop* the new tool on top of any current tool in the measurement setup.
   New tools that are dropped on top of a current tool are automatically connected to the measurement.

To Delete a Tool

1. Point to the tool you want to delete.
2. Select *Delete*.



See Also

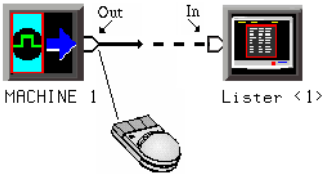
"Clearing the Workspace" on page 64

"Connecting Tools Together" on page 62

"Repositioning Tools in the Workspace" on page 63

Connecting Tools Together

If you *drag and drop* tools into open space in the workspace, you must create a data path between the tools by connecting their output and input ports.



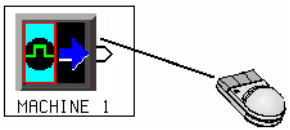
To Connect Output and Input Ports

1. *Point* to the tool output port.
2. Press and hold, then move the cursor over to a tool input port, then release.
   You should now have a line, representing a data path, drawn between tool data ports.

Repositioning Tools in the Workspace

Once tools are placed on the workspace (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume), you can reposition them to help you visualize your measurement, or to reveal their input and output ports for connection into the measurement.

To Reposition a Single Tool



1. *Point* to the tool to move.
2. *Drag and drop* the tool on its new location.

Clearing the Workspace

Use the *Clear Workspace* option to remove all Instrument, Display, Analysis, and Utility tools from the workspace.

1. In the main window menu bar, select *File*, then select *Clear Workspace*.

NOTE: The *Clear Workspace* option does not clear parameter settings within the tools. To clear the Workspace and reset all parameters within the tools back to the defaults, exit out of the system and start a new session.

The Intermodule Window



The *Intermodule* window shows a graphical representation of the internal arming sequence between measurement modules, any external trigger connections to a target system or other instruments. In measurements using multiple instruments tools, the Intermodule window is used to modify the order that measurement modules are armed to trigger, and to compensate for any timing deviations (skew adjust) between the modules probing.

The purpose of using multiple instruments or analyzers in the same measurement is generally for two reasons. The first is to capture different types of system data at the same point in time. The second reason is to trigger the measurement from one type of data while capturing a different type.

For example, you might have a timing analyzer trigger on a glitch, and at the same time, signal an oscilloscope to capture the glitch and a state analyzer to capture the program flow around the glitch.

Getting Started

- Overview of a Multiple Instrument Configuration (see page 67)
- Overview of a Multiple Analyzer Configuration (see page 69)
- Overview of a Multi-frame Configuration (see page 71)

Measurement Examples

- Using a Timing Analyzer and an Oscilloscope (see page 83)
- Using Both Analyzers (see page 92)
- Port In - Starting Measurements from External Triggers (see page 97)
- Port Out - Triggering External Instruments (see page 98)

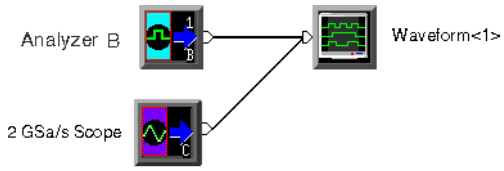
See Also

- Using the Correlation Dialog (see page 91)
- Run/Group Run Function (see page 113)

- Adjusting Intermodule Skew (see page 101)
- Group Run Arming Tree (see page 108)
- Arming Second Analyzer (see page 110)

Overview - Multiple Instrument Configuration

A multiple instrument configuration consists of more than one Instrument tool grouped together in a measurement. In this type of configuration, each instrument tool captures its own *data set*. All data sets are then typically viewed in the same Display tool.



Configuration Shown in the Workspace Window

Important elements of a multiple instrument configuration are the *arming signal*, the *time correlation* of the separate data sets, and the *skew adjustment* between instruments.

The Arming Signal

When using multiple instrument tools in a measurement, you must coordinate the run function of all instruments. This is done by the arming signal in the Group Run Arming Tree. (see page 108) When the measurement is run, the arming signal notifies each instrument in the arming tree when its their turn to run. Depending on the purpose of the measurement, all instruments could trigger immediately when the signal is received, or, each instrument could trigger according to its own trigger specification.

The arming signal can originate either when the measurement is run (see page 113) by selecting the *Group Run* field, or by an external source connected through a *Port In* connector.

Time Correlation of Data Sets

When multiple instrument tools have their run control coordinated to an arming signal, they typically are also *time-correlated*. That is, each instrument knows the time relationship between each others trigger,

and also that it knows each sample's time relationship to its own trigger.

A big benefit of time correlation is the ability to display multiple data sets in the same display window with all data time-stamped and aligned relative to each other.

Timing analyzers are always referenced to the time base of the measurement. However, if you are using a State analyzer, you must set its Count field (see page 112) to Time.

Skew Adjustment

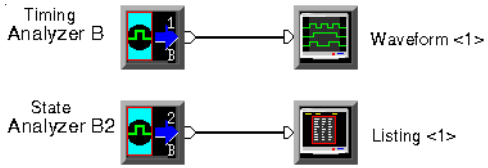
Skew is a small timing deviation between the different instruments configured in the same measurement. It is usually due to variances in internal probing delays from one instrument to another. You compensate for any variations using the Intermodule Skew (see page 101) adjustment.

See Also

For another example of a multiple instrument measurement, refer to Using a Timing Analyzer and an Oscilloscope. (see page 83)

Overview - Multiple Analyzer Configuration

A multiple analyzer configuration consists of both analyzers from the same logic analyzer instrument tool used together in a measurement. In this type of configuration, each analyzer captures its own *data set*. All data sets are then viewed in one or more display tools.



Configuration Shown in the Workspace Window

Important elements of a multiple analyzer configuration are the *arming control* and the *time correlation* of the separate data sets. There is no analyzer-to-analyzer skew adjustment.

The Arming Control

When using both analyzers in a measurement, you must coordinate the run function of both analyzers. This is done by the Arming Control in the analyzer's Trigger window. By configuring the Machine Arming Tree (see page 110), you route the arming signal through both analyzers.

When the measurement is run, the arming signal notifies each analyzer in the Arming Tree when it's their turn to run. Depending on the purpose of the measurement, all analyzers could trigger immediately when the arm signal is received, or, each analyzer could trigger according to its own trigger specification.

The arming signal can originate either when the measurement is run, (see page 113) or by an external source connected through a Port In connector.

Time Correlation of Data Sets

When multiple analyzers have their arming control coordinated to an

arming signal, they typically are also *time-correlated*. That is, each data set is acquired in reference to a common time base or time reference. A big benefit of time correlation is the ability to display multiple data sets in the same display window with all data time-stamped and aligned relative to each other.

Timing analyzers are always referenced to the time base of the measurement. However, if you are using a State analyzer, you must set its Count field (see page 112) to Time.

See Also

For an example of a multiple analyzer measurement, refer to Using Both Analyzers. (see page 92)

Overview - Multiple Frames Configuration

The Multi-frame module consists of a hardware module and a cable. It is used to expand the total number of measurement module slots for advanced measurements that may require the following:

- High channel count
- Centralized Run/Stop control
- Time correlated data displays
- Cross-frame flag signaling and trigger arming

Multi-frame modules are installed into slot 1 of the mainframe (B-series only). Up to eight 16700B/16702B mainframes can be connected together in a Multi-frame group. Each 16700B/16702B mainframe can in turn have one 16701B expansion frame connected to it, allowing for a total of up to 80 measurement module slots and 16 emulation module slots. One Multi-frame module is required for each frame connected into the Multi-frame group.

For more information on installing Multi-frame modules, see Multi-frame Installation (see page 80).

NOTE: As with any intermodule measurement involving multiple measurement modules, each module must be configured properly and be able to run on its own as a separate module. This will eliminate many problems when you run them together as a group.

For a typical Multi-frame configuration, setup the following three areas:

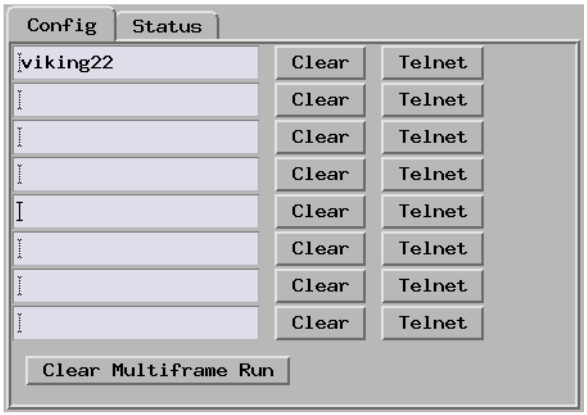
1. Multi-frame Configuration
2. Intermodule Configuration
3. Analyzer Trigger Configuration

1. Multi-frame Configuration

When a Multi-frame module is installed in the frame, a Multi-frame icon appears in the System window, positioned in the option slot of the rear panel graphic. Select this icon to access the Multi-frame Config dialog.

The Multi-frame configuration dialog is used to identify all frames included in the Multi-frame group. A Clear Multi-frame Run (see page 82) field is available if you need to stop and resynchronize all frames. A Telnet (see page 142) field is also available to quickly configure a Telnet connection to other instruments.

Enter the host names of all frames used in the Multi-frame configuration. If the frame has already been assigned a host name, it will appear in the main System window title bar. If a host name has not been assigned, ask your *System Administrator* to assign one.



NOTE: All frames that are cabled together by a Multi-frame cable must be entered into this table in order to guarantee proper operation of any of the frames. Disconnect the Multi-frame cable from any frames not listed in the host table.

2. Intermodule Configuration

The Intermodule window is accessed by selecting the *Intermodule Icon* from the Icon Bar at the top of the main System window. Use the Intermodule window to combine multiple measurement modules together to run as a group. They are configured in a *Group Run Arming Tree* to coordinate the order in which each module is armed to perform its part of the measurement. The benefit of a Multi-frame intermodule measurement is that you can capture multiple data sets from any frame, then view the data sets with time correlated global markers.

In all Intermodule measurements, as each tool is selected from an Independent status, you have the choice to arm this tool by other

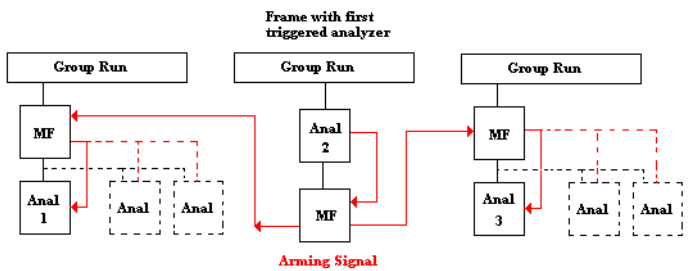
modules, or, you can qualify it's arming by a Port-In signal. Also, if the analyzer module is a 16715 and newer module, it can be combined in a Group OR Trigger.

To configure Multi-frame into the *Group Run Arming Tree*, select the Multi-frame Icon, then select the desired arming option from the list that appears. The following information describes how Multi-frame operates with the available arming options.

Group Run

The Multi-frame icon allows an analyzer in one frame to Arm analyzer modules in other frames. In the *Group Run Arming Tree* of the frame containing the analyzer that will trigger first, connect the Multi-frame icon to the analyzer module (middle frame shown below). Next, in the *Group Run Arming Tree* of all other frames, connect the Multi-frame icon to the "Group Run" field, then connect all other modules to the Multi-frame icon.

Arming between frames can only be done to one level as just described. That is, any one frame can only directly arm any number of other frames via the Multi-frame connection, but frames can not be daisy-chained in a sequential arming configuration. In the figure below, analyzer 2 triggers first and starts the arming signal flow.



Group Run armed by Port-In

A Group Run can be started by a signal coming in through the Port-In connector on the back panel of the frame. The Port-In control dialog can be found in both the System window and the Intermodule window.

For more information on Port-In and Port-Out, refer to External

Triggering with the Port In/Out Signal (see page 97)

Group Run with OR Trigger (16715 and newer analyzers only)

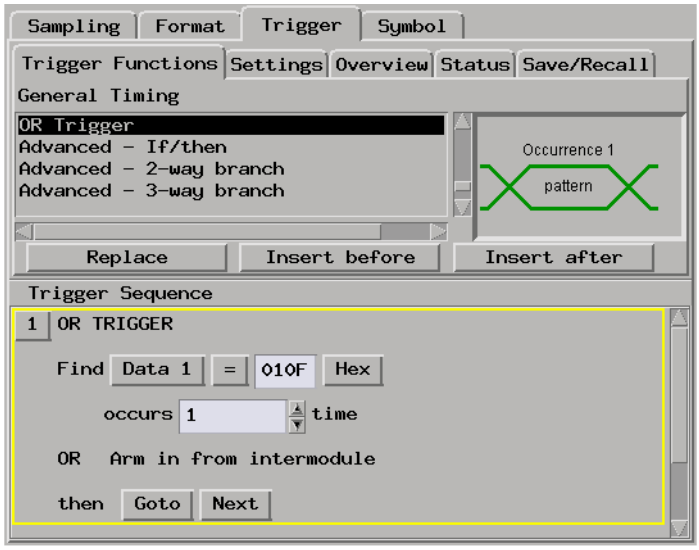
The "Group Run with OR Trigger" connects 16715 and newer logic analyzer modules together so when any one analyzer in the group finds its trigger, all analyzers in the group trigger. An example of this kind of a measurement is when you want to monitor multiple busses for a glitch or desired data pattern. If any one analyzer triggers, then all other analyzers in the group will trigger. You are left with a data set for each bus at the time the glitch or data pattern occurred.

The following examples show the different Group Run Arming Tree configurations:

- One frame; Two analyzers; Group Run OR Trigger (see page 76)
- One frame; Three analyzers; Group Run OR Trigger (see page 76)
- Two frames; Two analyzers; Group Run OR Trigger (see page 76)
- Two frames; Three analyzers; Group Run OR Trigger (see page 77)
- Three frames; Three analyzers; Group Run and Group Run OR Trigger (see page 78)
- Three frames; Three analyzers; Group Run OR Trigger (see page 78)
- Two frames; Two analyzers; Group Run (see page 79)

3. Analyzer Trigger Configuration

In each analyzer module, under the *Trigger* tab, under *Trigger Functions*, select the "OR Trigger" macro then select the *Replace* field. Configure the trigger macro as required by your measurement. The default OR Trigger macro is shown below.



Running a Multi-frame OR Trigger Measurement

When the Group Run (see page 113) Icon is selected, all analyzers configured in the Group Run Arming Tree (see page 108) start looking for their respective triggers. This includes analyzers in frames whose Group Run Arming Trees are connected together by the Multi-frame icon. The first analyzer to find its trigger will cause all analyzers in the group to trigger.

Displaying Data

From the logic analysis system, you cannot combine data sets from separate frames into a single display tool. However, you can view all data sets individually with time correlated Global Markers (see the *Markers* help volume).

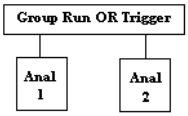
To combine multiple data sets into a single window, you can export each frame's individual display to a common site, or, telnet to them using the Telnet (see page 142) field from one of the frames in the Multi-frame group.

See Also

Multi-frame Error and Warning Messages (see page 79)

One frame; Two analyzers; Group Run OR Trigger

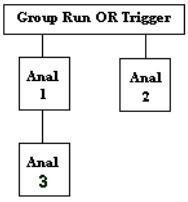
The first analyzer to trigger sends its arm signal to the other analyzer. In addition to the Group Run Arming Tree configuration shown below, configure the analyzers with the OR Trigger macro.



One frame; Three analyzers; Group Run OR Trigger

If Analyzer 1 triggers first, the arm signal is passed to Analyzer 2 and Analyzer 3. If Analyzer 2 triggers first, the arm signal is passed to Analyzer 1 and Analyzer 2.

In addition to the Group Run Arming Tree configuration shown below, configure analyzers 1 and 2 with the OR Trigger macro. Analyzer 3 does not require the OR Trigger macro.



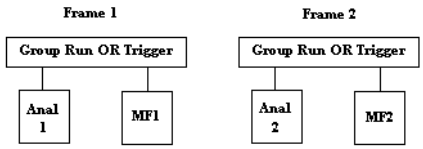
Two frames; Two analyzers; Group Run OR Trigger

In this Multi-frame example, if Analyzer 1 triggers first, it passes the

arm signal to Multi-frame 1 (MF1). Mf1 passes the arm signal to Mf2. Mf2 then passes the arm signal to any/all analyzers participating in the OR Trigger arrangement (Analyzer 2 in this example).

If Analyzer 2 triggers first, it passes the arm signal to Mf2. Mf2 then passes the arm signal to Mf1, which passes the arm signal to Analyzer 1.

In addition to the Group Run Arming Tree configuration shown below, configure analyzer 1 and 2 with the OR Trigger macro.

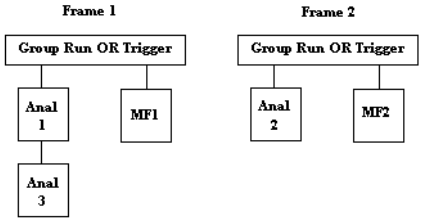


Two frames; Three analyzers; Group Run OR Trigger

In this Multi-frame example, if Analyzer 2 triggers first, it passes the arm signal to Multi-frame 2 (Mf2). Mf2 then passes the arm signal to Mf1, which in turn passes the arm signal to Analyzer 1. Analyzer 1 then passes the arm signal to Analyzer 3.

If Analyzer 1 triggers first, it passes the arm signal to Multi-frame 1 (Mf1) and Analyzer 3. Mf1 then passes the arm signal to Mf2, which in turn passes the arm signal to Analyzer 2.

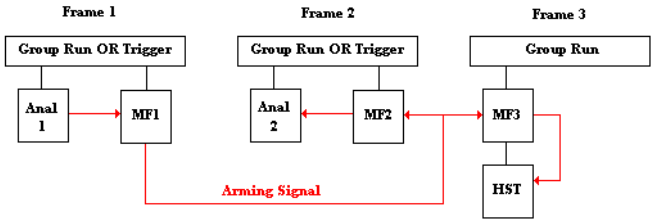
In addition to the Group Run Arming Tree configuration shown below, configure analyzers 1 and 2 with the OR Trigger macro.



Three frames; Three analyzers; Group Run and Group Run OR Trigger

In this Multi-frame example, Analyzer 1 triggers and passes the arm signal to Multi-frame 2 (Mf2) and Mf3. Mf2 then passes the arm signal to to Analyzer 2. Mf3 then passes the arm signal to the High Speed Timing Analyzer (HST).

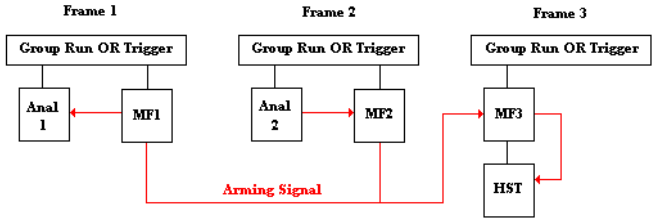
In addition to the Group Run Arming Tree configuration shown below, configure analyzers 1 and 2 with the OR Trigger macro.



Three frames; Three analyzers; Group Run OR Trigger

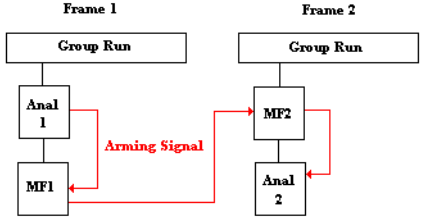
In this Multi-frame example, Analyzer 2 triggers and passes the arm signal to Multi-frame 2 (Mf2). Mf2 then passes the arm signal to Mf1 and Mf3. Mf1 then passes the arm signal to Analyzer 1. Mf3 then passes the arm signal to the High Speed Timing Analyzer (HST).

In addition to the Group Run Arming Tree configuration shown below, configure analyzers 1 and 2 with the OR Trigger macro.



Two frames; Two analyzers; Group Run

In this Multi-frame example, both frames are armed by the "Group Run" option. When Analyzer 1 triggers, it passes the arm signal to Multi-frame 1 (Mf1). Mf1 then passes the arm signal to Mf2, which in turn passes the arm signal to Analyzer 2.



Multi-frame Error and Warning Messages

Illegal cable connection

The Multi-frame module must be daisy chain cabled. For an N-Frame Multi-frame setup, there are N-1 cables.

In the pictured example there are 3 frames. Frame 1 is the master frame. The master frame has no input cable. There must always be one and only one master frame.

Frame 2 is an in-line frame. It has an input and output cable. The output cable always connects into the input connector of the downstream frame.

Frame 3 is the end frame. An end frame has no output cable. Each Multi-frame configuration must have one, and only one end frame. There is a picture associated with the above error that shows a daisy-chain 3-frame Multi-frame cable connection.

Error communicating on the network

This message will be accompanied with the specific host that is experiencing errors, with a messaged passed up from the low level network.

Multi-frame: Required Network not enabled

This message appears if no networking is enabled and Multi-frame is in the frame.

Multi-frame Network has not been validated

This message is printed on powerup when the cables have never been tested.

Multi-frame Installation

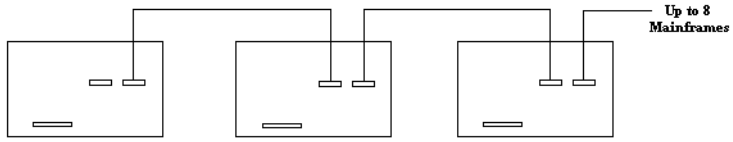
Because the frame MUST be turned off during module installation, this help system will not be available. Please refer to the Installation Guide for the complete installation process when frame power is off. The following is an overview of Multi-frame installation.

Connecting Mainframes Together

The Multi-frame module is installed into slot 1 in the rear panel of a 16700B or 16702B mainframe. The Multi-frame cable connects the OUTPUT port of one Multi-frame module to the INPUT port of the Multi-frame module in the adjacent frame. Frames are connected OUTPUT to INPUT in a daisy chain until all frames are connected.

NOTE: Do not connect the frames in a loop configuration. A proper configuration will have the INPUT of the first frame unused, the OUTPUT of the last frame unused, and you should have one connector cable left unused.

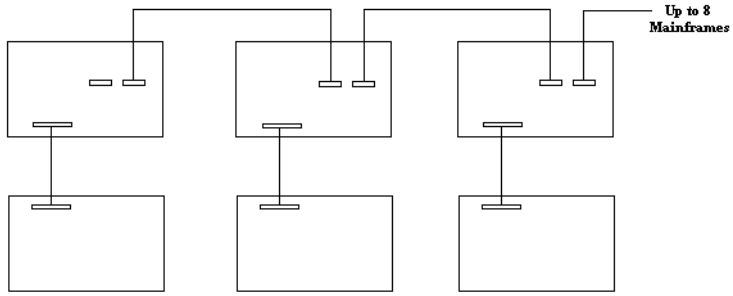
16700B and 16702B frames can be mixed and connected in any order in a Multi-frame group.



Connecting Expansion Frames

Each mainframe in a Multi-frame group can have one expansion frame connected to it. Connect one end of the 100 pin flat cable to the connector on the mainframe labeled "To 16701B Expansion Frame". Connect the other end of the cable to the connector on the expansion frame labeled "To 16700/02".

NOTE: DO NOT install the Multi-frame module in slots 3 or 4 of the expansion frame. When connecting expansion frames to mainframes, USE THE 100 pin flat cable in the expansion frame connector.



Clear Multi-frame Run

The *Clear Multi-frame Run* field is used to recover from network outages which may have occurred during a Multi-frame run. Clearing a Multi-frame run ensures that all frames reture to a non-running idle state.

Using a Timing Analyzer and an Oscilloscope

In the following example we use an oscilloscope to trigger on a glitch and a timing analyzer to capture bus data after the glitch. Both the timing waveforms and the glitch are time-correlated and displayed in the same display.

NOTE: Before you begin configuring the measurement, connect the appropriate probing (see page 177) for your measurement.

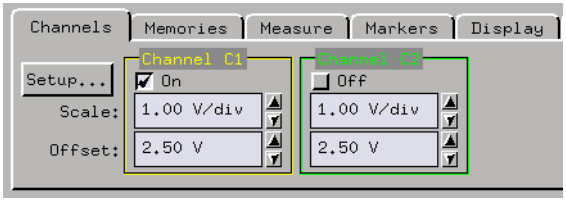
1. From the System window, select the oscilloscope icon, then select *Display...*.
2. From the oscilloscope window that appears, configure the oscilloscope (see page 84) to trigger on a glitch.
3. From the System window, select the logic analyzer icon, then select *Setup...*.
4. From the analyzer window, configure the analyzer (see page 85) to trigger on the first occurrence of data.
5. From the Icon Bar in the System window, select the Intermodule icon.
6. From the Intermodule window, configure the Group Run Arming Tree (see page 87) so the *Group Run* field arms the oscilloscope and the oscilloscope arms the logic analyzer.
7. From the Intermodule window, select the *Navigate* icon, then *Analyzer N* (N=the slot analyzer is in), then *Waveform...*.
8. From the Waveform display that appears, select the *Mixed Signal* tab.
9. From the Mixed Signal tab, import the oscilloscope signal (see page 88) into the Waveform display.
10. From the menu bar in the Waveform display, select *Options...*, then select *Reference trigger...*, then select the oscilloscope as the trigger reference.
11. Select the *Run Single* icon to run the measurement.

Configure the Oscilloscope

Depending on the kind of glitch you are triggering on, the type of probes used, and the speed of your system, your configuration could vary from the one shown. In this example, we are triggering on a positive glitch that is present for less that 20 ns.

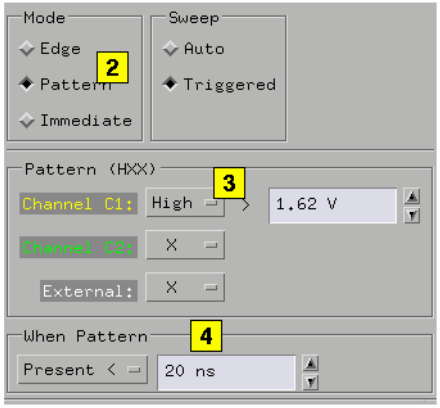
Channel Setup

1. From the *Channels* tab in the oscilloscope window, select *Setup...*.
2. From the Channels Setup dialog, configure channel 1 as shown below. Turn channel 2 off.



Trigger Setup

1. From the *Channels* tab in the oscilloscope window, select *Trigger...*.
2. Set the Mode field to *Pattern*.
3. Configure the pattern as a high pulse on channel 1.
4. Qualify the pattern to be present for less than 20 ns.
5. Select *Close*.



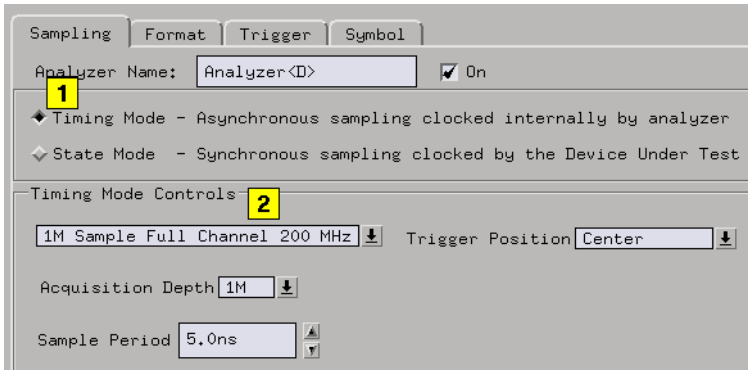
When the oscilloscope triggers on the glitch, the arm signal is sent to the next instrument tool.

NOTE: Remember, the arm signal does not automatically start the next instrument tool. The arm signal simply tells the next instrument that it can start evaluating its own trigger specification and run when trigger conditions are satisfied.

Configure the Logic Analyzer

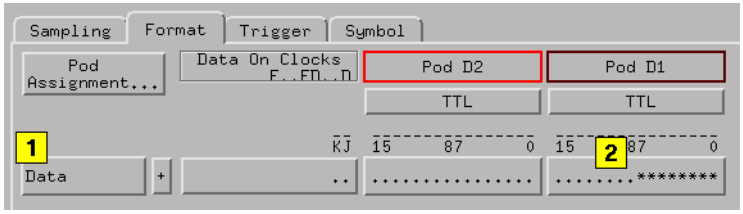
The Sampling Tab

1. Select the Sampling tab and set the analyzer to *Timing Mode*.
2. Set the Timing Mode Controls as shown below.



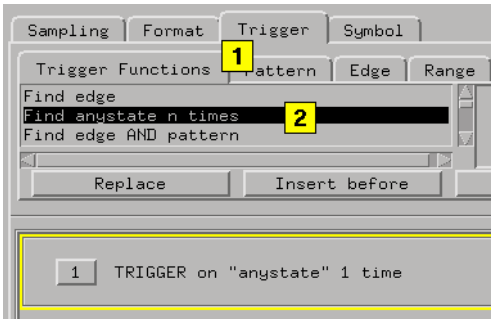
The Format Tab

1. Select the Format tab and rename one label to *Data*.
2. Assign the bits that map to the input probe signals.



The Trigger Tab

1. Select the Trigger tab, then select the Trigger Functions tab.
2. Select the function *Find anystate n times*, then select Replace.
   This will cause the Timing analyzer to trigger and begin running as soon as the arming signal is received from the oscilloscope.

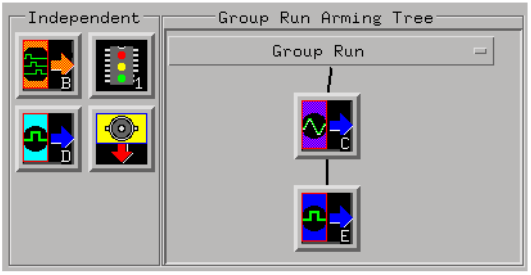


Configure the Group Run Arming Tree

How you configure the Group Run Arming Tree determines if an instrument tool runs as an independent tool or in a group. By default, all instrument tools are *Independent* and in *Single* acquisition mode.

NOTE: All multiple instrument configurations must be part of a Group Run to take advantage of time-correlation and intermodule arming.

- From the Intermodule window, select the oscilloscope icon and set it to be armed by Group Run. Select the Timing analyzer and set it to be armed by the oscilloscope.
  The result is an arming tree that has the scope armed when the Group Run field is selected. Then the timing analyzer is armed when the scope triggers on the glitch. The analyzer is configured to trigger on the first data it finds.



More about Independent and Group Run Configurations

Group Run allows all connected tools which are configured as Group Run, to run when any *Group Run* field is selected. If any connected tools are changed to Independent Run, they will not run with the group.

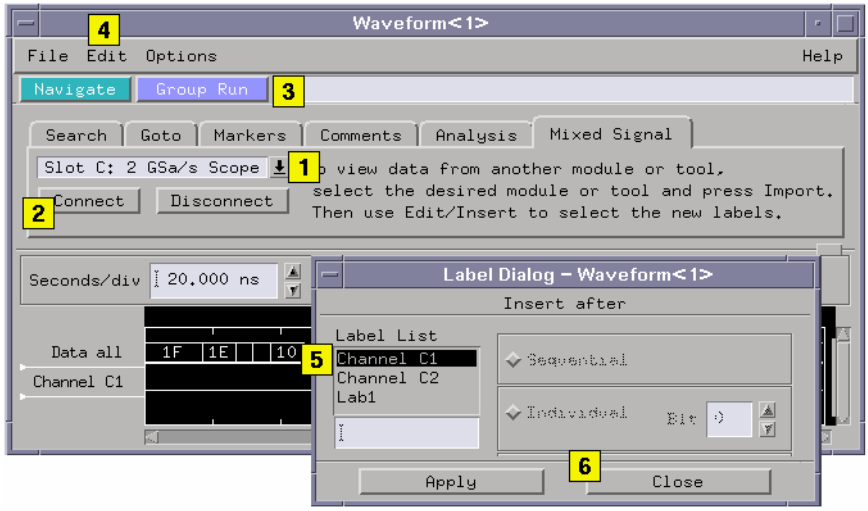
Independent Run allows specific tools to remain in a connected group, but run independently without affecting the run status of the other instrument tools. To independently run an Instrument tool, you must select *Run* from within one of that tool's windows.

If any of the connected instrument tools are changed to Group Run, the Run field for that particular tool, plus all tools connected to its output, will change to Group Run.

Run/Group Run Function (see page 113)

Importing Signals into the Display

1. Select the desired Instrument tool.
2. Select *Connect*.
3. Select *Group Run*. Running the measurement at this point makes the new imported signals available for insertion.
4. From the menu bar in the waveform display dialog, select *Edit*, then select *Insert*.
5. From the Label Dialog that appears, select the desired signal to import, then select *Apply*.
6. Select *Close*.


Waveform<1>
4
File
Edit
Options
Help
Navigate
Group Run
3
Search
Goto
Markers
Comments
Analysis
Mixed Signal
Slot C: 2 GSa/s Scope
1
o view data from another module or tool,
select the desired module or tool and press Import.
Then use Edit/Insert to select the new labels.
2
Connect
Disconnect
Seconds/div
20.000 ns
Data all
Channel C1
1F
1E
10
Label Dialog – Waveform<1>
Insert after
Label List
5
Channel C1
Channel C2
Lab1
Sequential
Individual
Bit
6
Apply
Close

Using the Mixed Signal Tab

A mixed signal measurement captures data and displays results from more than one instrument tool. All displayed signals are time-correlated and typically displayed in the same display tool. An example of a mixed signal application would be when Using a Timing Analyzer and an Oscilloscope (see page 83).

The *Mixed Signal* tab is used to import signals from other instruments into the display tool.

NOTE: Ideally, before you use the Mixed Signal tab to import a signal, the instrument tool from which the signal will come should be configured and able to successfully capture its own *data set*. If any required part of the configuration is not correct, such as Arming or Time Tags, a Correlation Dialog (see page 91) will appear to help correct the configuration.

1. Select the *Mixed Signal* tab.
2. Select the desired signal.
3. Select *Connect*.
4. Select *Group Run*. Running the measurement at this point makes the new imported signals available for insertion.
5. From the menu bar in the display window, select *Edit*, then select *Insert*.
6. From the Label Selection Dialog that appears, select the desired signal to import, then select *Apply*.
7. Select *OK*.

Using the Correlation Dialog

Two required elements of a multiple instrument configuration are the *Arming Signal* and the *Time Correlation of Data Sets*. The Correlation dialog is used to help you correct any configuration problems with these two elements. If you run a measurement and the Correlation dialog appears, reconfigure any inputs that show errors.

- Armed From – For each *Input Name*, set the *Armed From* field to either the Group Run or another instrument. This allows the arming signal to create an ordered triggering sequence between instruments. For more information, refer to "The Arming Signal", in the Overview - Multiple Instrument Configuration (see page 67).
- Time Tags – Each data set must be acquired in reference to a common time base or time reference. Timing analyzers are always referenced to the timebase of the measurement. However, if you are using a State analyzer, you must set its Count field to Time (time tags). For more information, refer to "Time Correlation of Data Sets", in the Overview - Multiple Instrument Configuration (see page 67).

Using Both Analyzers

In the following example we use a Timing analyzer to trigger on an address pattern, and a State analyzer to capture the data that appears after the address pattern. Both analyzers are from the same instrument tool, and both the timing and state data sets are time-correlated.

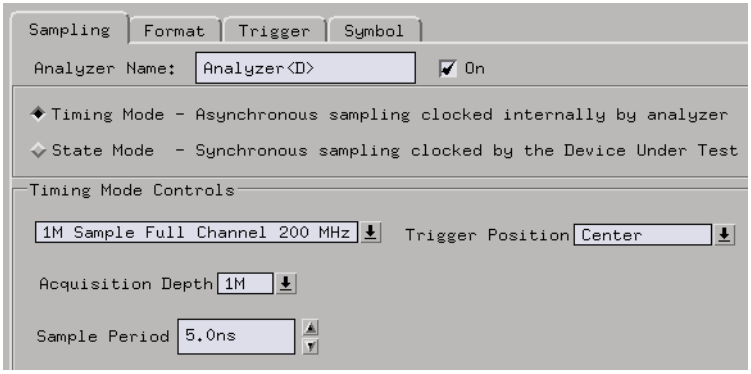
NOTE: Before you begin configuring the measurement, connect the appropriate probing (see page 177) for your measurement.

1. From the System window, select the logic analyzer icon, then select *Setup...*. The first analyzer window will appear.
2. From the first analyzer window, configure a Timing analyzer (see page 93) to trigger on the first occurrence of a desired edge and pattern.
3. From the analyzer window, select the *Navigate* icon, then *Activate Modules*, then select the second analyzer from the same slot. This analyzer is marked by an N2, where *N* is the slot the analyzer is installed in, and *2* designates the second analyzer.
   When you activate the second analyzer, a second analyzer window marked *N2* appears.
4. From the Settings tab of the first analyzer, configure the Arming Tree (see page 95) so the Timing analyzer (first analyzer) is armed by Run, and the State analyzer (second analyzer) is armed by the Timing analyzer.
5. From the second analyzer, configure a State analyzer (see page 94) to trigger on the first occurrence of any data.
6. From either analyzer window, select the *Navigate* icon, then Analyzer N, then select *Listing*.
7. From the Listing window, select the *Run Single* icon to execute the measurement and display the data.

Configure the Timing Analyzer

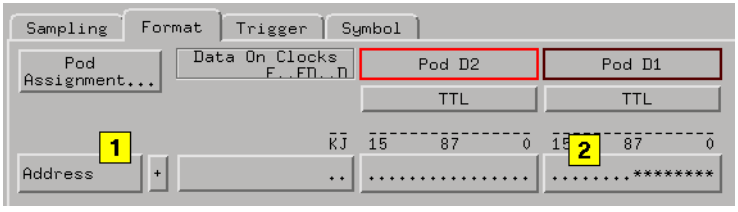
The Sampling Tab

From the Sampling tab, set the analyzer to *Timing Mode*, and configure the Timing Mode Controls as shown below.



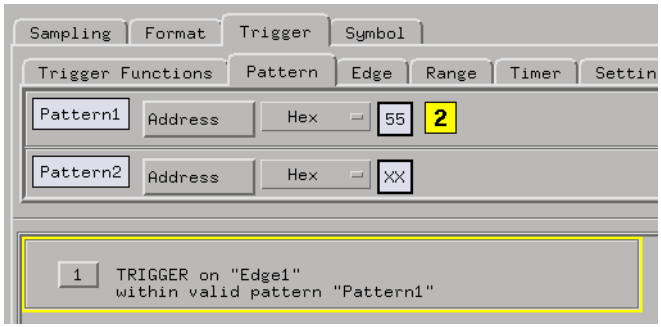
The Format Tab

1. Rename the label to *Address*.
2. Assign the bits that map to the input probe signals.



The Trigger Tab

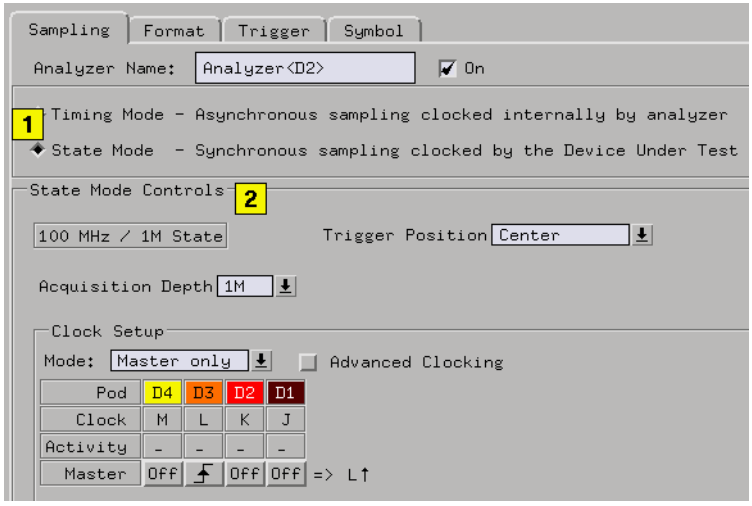
1. From the Trigger Functions tab, select *Find edge AND pattern*, then select *Replace*.
2. From the Pattern tab, assign Pattern1 the desired pattern you want to trigger on. In this example we use the pattern "55" Hex. By default, Edge1 is set to *don't care* which is OK for this example.



Configure the State Analyzer

The Sampling Tab

1. From the second analyzer window, select the Sampling tab, and set the analyzer to *State Mode*.
2. Configure the State Mode Controls as shown below.



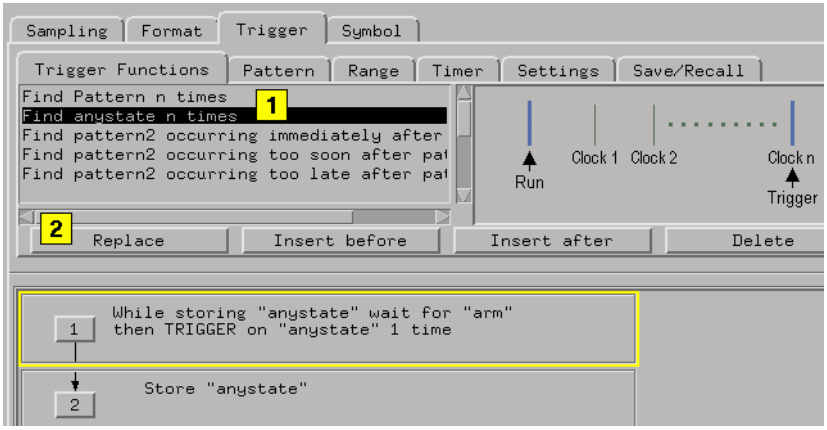
The Format Tab

1. From the Fomat tab, rename the label to *Data*.

2. Assign the bits that map to the input probe signals.

The Trigger Tab

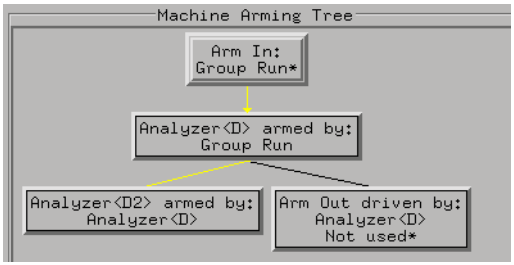
1. From the Trigger Function tab, select *Find anystate n times*.
2. Select *Replace*.
   This will cause the State analyzer to trigger and begin running as soon as the arming signal is received from the Timing analyzer.



Configure the Arming Tree

How you configure the Arming Tree determines which analyzer sends the arm signal to the other. By default both analyzers are armed by the Run field.

1. From the Settings tab, select *Arming Control*.
2. From the Arming Tree dialog that appears, set Analyzer N to be armed from Run, and Analyzer N2 to be armed from Analyzer N as shown below.


Machine Arming Tree
Arm In:
Group Run*
Analyzer<D> armed by:
Group Run
Analyzer<D2> armed by:
Analyzer<D>
Arm Out driven by:
Analyzer<D>
Not used*

Starting Measurements from External Triggers

Both the *Port In* and *Port Out* controls are accessed from either the main System window, or from the Intermodule window. The following examples access *Port In* and *Port Out* from the Intermodule window.

Using the Port In Signal

The logic analysis frame can automatically start a measurement using a signal from an external instrument or system. The arming pulse is connected to the PORT IN BNC on the rear panel of the logic analysis frame.

Port In Characteristics

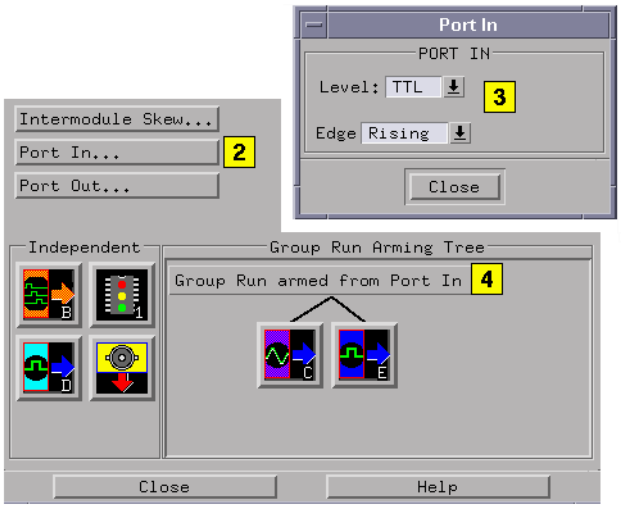
The signal from the external instrument must have the following characteristics.

```
Input Resistance = 4 kOhms
Levels = TTL, ECL, or User Defined from -4.0 V at 1.5 mA to +5 V at 1.6 mA
Input Voltage = -6 V at 1.5 mA to +6 V at 1.6 mA
```

Starting Measurements from External Triggers

1. Connect the arming pulse from the external instrument to the PORT IN BNC connector on the analysis frame.
2. From the Intermodule window, select *Port In*.
3. Set the Port In voltage level and edge to match the arm signal from the external instrument. You can set the analysis frame to match a TTL, ECL, or user-defined level.
4. Select the large *Group Run* button and choose *Group Run armed from Port In*.
5. Start the external instrument or system.

When the external instrument sends a pulse to the PORT IN BNC, the Instrument tool(s) that are directly beneath the Group Run are armed and begin searching for their respective trigger conditions.



Using the Port Out Signal

You can configure an Instrument tool in the Group Run Arming Tree to communicate its Trigger to the PORT OUT BNC connector on the rear panel of the analysis frame. This signal is used to start or stop an external instrument or system.

The Port Out Signal may be programmed through the User Interface to transmit the instrument tool Trigger directly (Feedthrough Mode) or transmit a pulse (Pulsed Mode) initiated by the instrument tool Trigger.

The Polarity of the Port Out Signal is selectable as either *Active High* or *Active Low*. Active High means that the Port Out Signal transitions from low to high when Trigger occurs in the instrument tool associated with Port Out. Active Low means that the Port Out Signal transitions from high to low when Trigger occurs in the instrument tool associated with Port Out.

Port Out may also be Disabled. When disabled, Port Out becomes a high impedance (Tri-State) output and will not transition high or low, regardless of the state of any associated instrument tool Trigger.

NOTE: When Port Out is disabled, the selectable fields associated with TYPE and POLARITY are also disabled and thus have no meaning.

The Port Out signal can be *Armed by* any measurement module in the logic analysis frame, or, by one of four *Flags*.

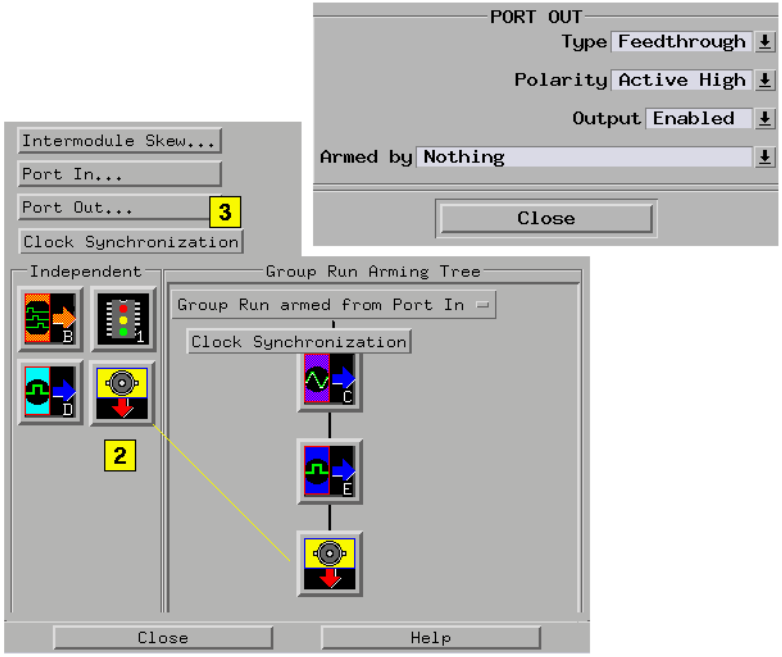
Port Out Signal Characteristics

The Port Out Signal is designed to drive a 50 Ohm Load. It is highly recommended that, for good signal quality, the Port Out Signal be terminated in 50 Ohms to Ground.

```
VOH (Output High Level)= >2.0 V into a 50 Ohm Load to Ground.
VOL (Output Low Level)=  <0.5 V into a 50 Ohm Load to Ground.
Pulse Width in Pulsed Mode= Approximately 60 nanoseconds to 140 nanoseconds.
```

Triggering External Instruments

1. Connect the PORT OUT BNC connector on the analysis frame to the arm or trigger input of the external instrument.
2. From the Intermodule window, select the *Port Out* field, then configure the Port Out parameters. Included in the these parameters is a selection to arm Port Out by any measurement module in the logic analysis frame, or, by one of four *Flags*.
   When configured, the Port Out *Armed by* selection is listed next to the Port Out field.


PORT OUT
Type Feedthrough
Polarity Active High
Output Enabled
Armed by Nothing
Close
Intermodule Skew...
Port In...
Port Out...
3
Clock Synchronization
Independent
Group Run Arming Tree
Group Run armed from Port In
Clock Synchronization
B
1
D
2
C
E
Close
Help

Adjusting Intermodule Skew

Skew is a small timing deviation between instruments configured in an intermodule measurement. It is usually due to variances in internal probing delays from one instrument to another. When desired, you should adjust skew after new acquisitions are displayed.

The purpose of adjusting skew is to visually align waveforms in the display so you can mark data or look for eye patterns within the context of all displayed data sets.

In the following example, a Timing analyzer (bit 0) and an oscilloscope (ch 1) are connected to the same glitch signal. Both waveforms are displayed in the same Waveform display.

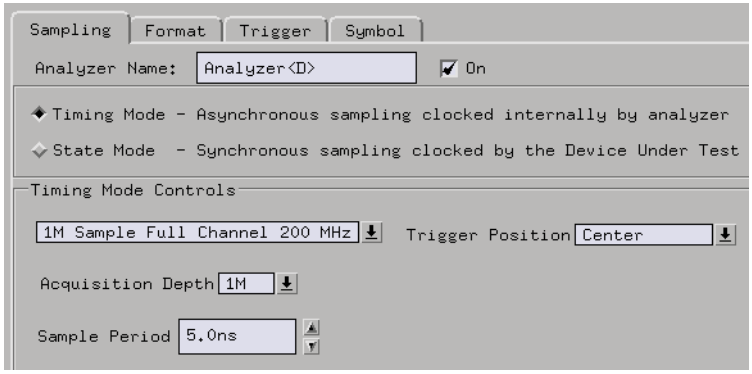
1. From the System window, choose the *Select* field in the desired logic analyzer icon, then select *Setup...*.
2. Configure a timing analyzer (see page 102) to trigger on the first occurrence of the glitch.
3. From the System window, choose the *Select* field in the oscilloscope icon, then select *Setup/Display*.
4. From the oscilloscope window, configure the oscilloscope (see page 103) to trigger immediately.
5. From the Icon Bar in the main System window, select the Intermodule icon.
6. From the Intermodule window, configure the Group Run Arming Tree (see page 104) so the *Group Run* field arms the timing analyzer and the timing analyzer arms the oscilloscope.
7. From the menu bar in the Intermodule window, select *Window*, then *Analyzer N* (your analyzer), then select *Waveform...*.
8. From the Waveform display, select the *Group Run* icon. This will update the display showing the glitch.
9. From the Waveform display, select the *Mixed Signal* tab.
10. From the Mixed Signal tab, import the oscilloscope signal (see page 105) into the Waveform display.

11. From the menu bar in the Waveform display, select *Options...*, then select *Reference trigger...*, then select the timing analyzer as the trigger reference.
12. Select the *Group Run* icon to update both data sets.
13. Place Markers (see page 106) on a common point and measure the interval.
14. From the Intermodule window, select *Intermodule Skew...*, then Adjust the skew (see page 106) to align displayed waveforms visually.

Configure the Timing Analyzer

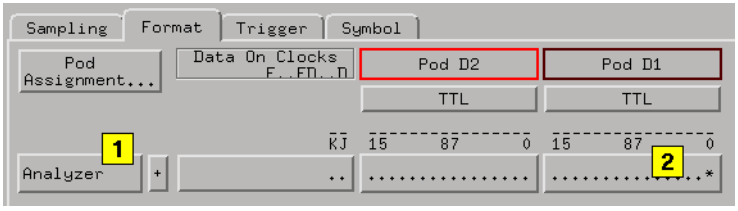
The Sampling Tab

Configure the Sampling tab as shown below.



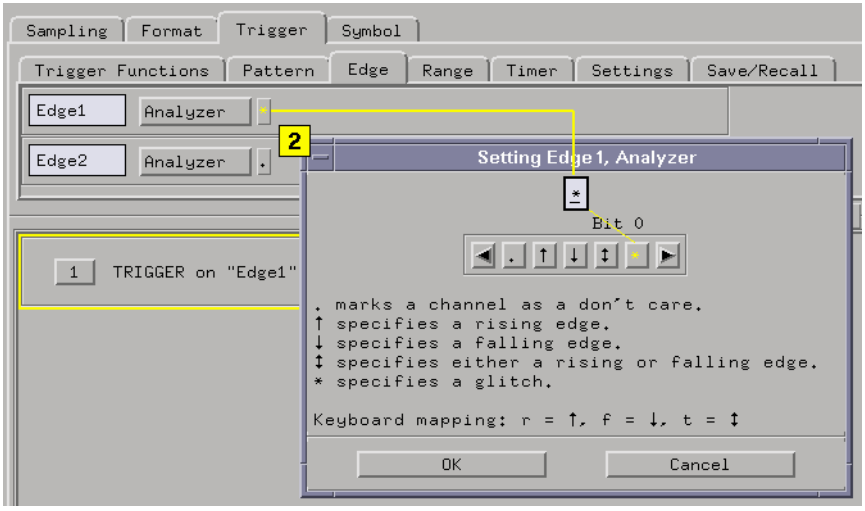
The Format Tab

1. Configure the Format tab with one label called *Analyzer*.
2. Assign the bit that maps to the input probe signal.



The Trigger Tab

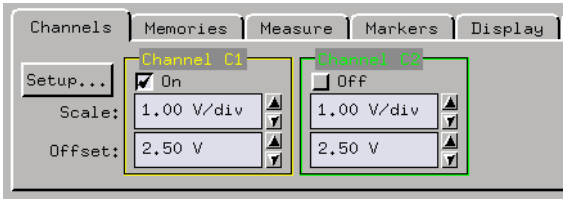
1. Under Trigger Functions, select *Find edge*, then select *Replace*.
2. Select the *Edge* tab and set the first *edge1* term to a *Glitch*.



Configure the Oscilloscope

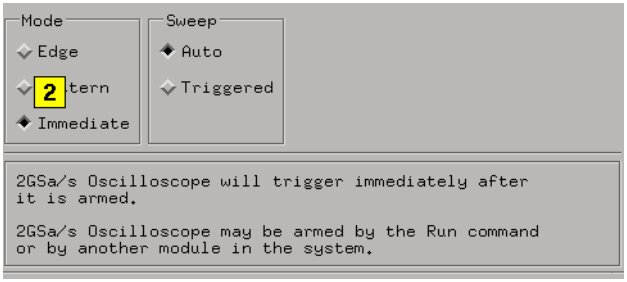
Channels Setup

1. Configure channel 1 as shown below. Turn channel 2 off.



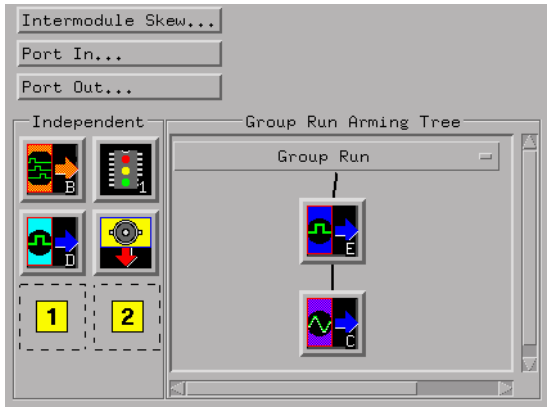
Trigger Setup

1. From the bottom of the oscilloscope window, select the *Trigger* field.
2. Set the Trigger Mode field to trigger *Immediate*.
   This will cause the oscilloscope to trigger and begin running as soon as the arming signal is received from the Timing analyzer.



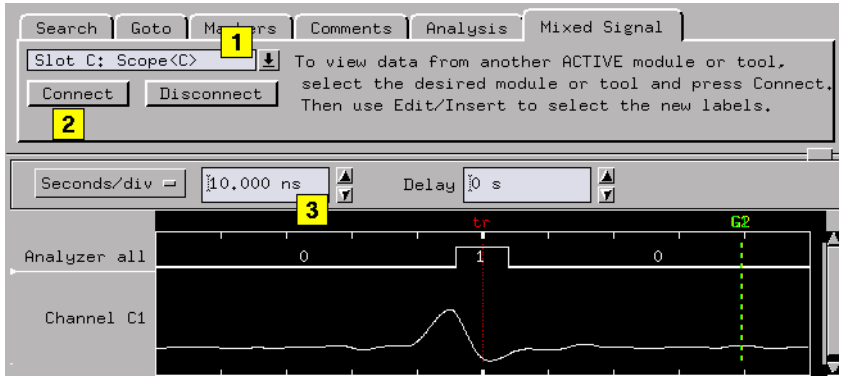
Configure the Group Run Arming Tree

1. From the Intermodule window, select the analyzer icon, then select *Group Run* as the arming device.
2. Select the oscilloscope icon, then select the analyzer as the arming device. The result is an arming tree that has the analyzer armed when the Group Run field is selected. Then the scope is armed, when the analyzer triggers on the glitch, and the scope is configured to trigger immediately.



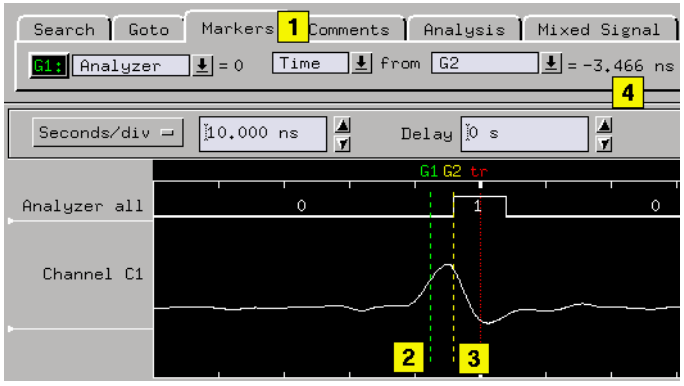
Configure the Waveform Display

1. Select the oscilloscope instrument.
2. Select *Connect*.
3. Expand the seconds per division and increase the height of the scope signal for a better view of the glitch.



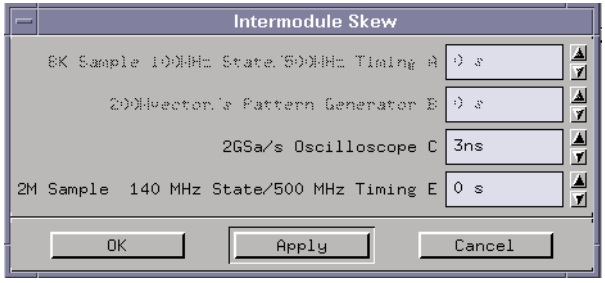
Placing Markers for an Interval Reading.

1. From the Waveform display, select the Markers tab.
2. Place one Time marker on the leading edge of the scope glitch.
3. Place a second Time marker on the leading edge of the analyzer glitch.
4. Read the difference between the two Time markers.



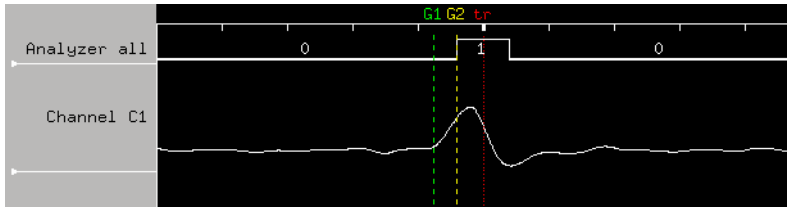
Adjust the Skew

Set the skew setting of the oscilloscope to the time difference you measured between the two Time marker, then select *Apply*.



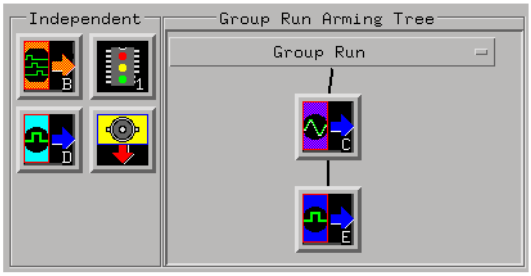
The result of the skew adjustment moves the oscilloscope signal over to the right (positive) so that it visually aligns itself with the analyzer

trigger signal.



Group Run Arming Tree

The Group Run Arming Tree is found in the Intermodule window. You access the Intermodule window by selecting the Intermodule icon in the Icon Bar of the System window.



Use the Group Run Arming Tree to configure Instrument tools into a group where all run functions are referenced to an arming signal. If Instrument tools are not included in a Group Run, they are configured as Independent and are not tied to an arming signal. By default, all instrument tools placed on the workspace are configured as Independent Run.

When you select the *Group Run* field, the following sequence of events occur:

1. When the run field is selected, all tools that are not directly armed from the run field or port in signal, begin to evaluate their trigger specification. They step through their trigger sequence until they get to the point where they are waiting for an arm signal.
2. The first tool in the tree begins evaluating its trigger specification and triggers when it is met. At the point of trigger, the arm signal is sent down to the next tool in the tree.
3. From this point, all subordinate tools are ready and waiting in their sequences for the arm signal. When the signal is received, they react immediately with a trigger, store, or what ever remains in their trigger sequence. As each tool triggers, the arm signal is sent down to the next tool.

For more information on the Run/Stop function, refer to Run/Stop (see

page 113).

For more information on using the Group Run in measurements, refer to the following examples:

"Using a Timing Analyzer and an Oscilloscope" on page 83

"Using Both Analyzers" on page 92

Arming Second Analyzer

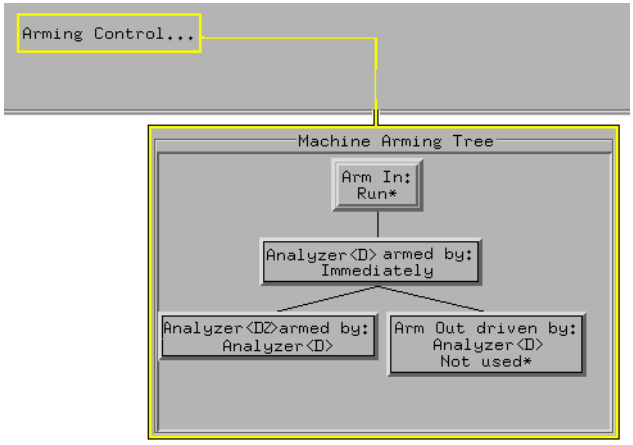
If you are using both analyzers on the same measurement module, you can have one analyzer arm the other analyzer. The functionality of this feature is handled in two different ways, depending on the analyzer model.

167xx - Arming Second Analyzer

If you are using a 16715 and newer analyzer, the arming of one analyzer by another is handled by the trigger function "Wait for second analyzer to trigger".

165xx - Arming Second Analyzer

If you are using a 165xx analyzer, the arming of one analyzer by another is handled by the "Machine Arming Tree" found under *Arming Control* in the logic analyzer's Trigger tab - Settings tab.



The order in which the analyzers appear in the Arming Tree determines the order they receive the arming signal. The arm signal does not automatically start the next analyzer. The arm signal simply tells the next analyzer that it can start evaluating its own trigger specification and run when its trigger conditions are satisfied.

If a trigger specification in an analyzer has multiple sequence levels,

you can specify which sequence level to send the arm signal to. This is useful when specifying cross-triggering within an analyzer module.

For more information on using two 165xx analyzers in a measurement, refer to the following example.

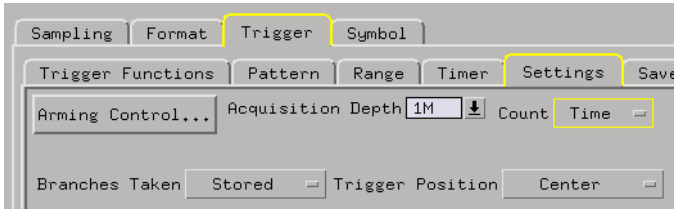
"Using Both Analyzers" on page 92

Count Field

Before the *data set* from a State analyzer can be viewed in reference to other data sets in the same measurement, the data must be acquired as time-correlated data.

To time-correlate the data of a State analyzer, set the Count field under the Settings tab *Time*.

A benefit of time-correlated data sets is that you can place global markers at data points in one data set and view data from another data set that occurred at the same time.



Run/Group Run Function

Using Run - Run All - Group Run

The Run/Stop functions are initiated by selecting icons in the icon bar at the top of the tool windows. All instrument, display, and analysis tool windows will have one of the Run icons shown below to initiate the run function.

When two or more instrument tools are configured, they can be run either independently or as a group. If run in a group, it is called an Intermodule measurement. Use the Intermodule Window (see the *Agilent Technologies 16700A/B-Series Logic Analysis System* help volume) to coordinate the arming in a "Group Run". A common "Group Run" configuration is to configure one instrument to trigger and then arm another instrument to start evaluation of its own trigger condition.

 The Run Single icon appears if you have a single instrument configured in your measurement and you want to run a single acquisition.



The Run All icon always appears in the System, Workspace and Run Status windows. Also appears in instrument and display windows when you are using multiple instruments in your measurement and these instruments ARE NOT configured in an intermodule measurement (Group Run). This choice runs a single acquisition on all instruments in the configuration.



The Group Run icon appears in all windows when you are using multiple instruments, and these instruments are configured into a Group Run. This choice runs a single acquisition on all instruments in the Group Run configuration.

 The Run Repetitive icon appears in all windows. It is used to run a *Run Single*, *Run All*, and a *Group Run* acquisition repetitively. The current run mode will continue to run until *Cancel* is selected.

Using Stop

 The Stop icon terminates all of the run functions shown above.

- Stops a single instrument running a measurement (perhaps waiting for a trigger condition).
- Stops all instruments running separate measurements (easily viewed from the Workspace window).
- Stops all instruments running in a Group Run configuration.

See Also

"Demand Driven Data" on page 115

"Checking Run Status" on page 114

Checking Run Status

The *Run Status* dialog provides status information about the currently configured instruments, and the status of the run with respect to the trigger specification.

To access the *Run Status* dialog, select the *Run Status* icon in the System Window, or, select *Window -> System -> Run Status*



Demand Driven Data

When an analyzer measurement occurs, acquisition memory is filled with data that is then transferred to the display memory of the analysis or display tools you are using, as needed by those tools. In normal use, this *demand driven data* approach saves time by not transferring unnecessary data.

Since acquisition memory is cleared at the beginning of a measurement, stopping a run may create a discrepancy between acquisition memory and the memory buffer of connected tools. Without a complete trace of acquisition memory, the display memory will appear to have 'holes' in it which appear as filtered data.

This situation will occur in these cases:

- If you stop a repetitive measurement after analyzer data has been cleared and before the measurement is complete.
- If a trigger is not found by the analyzer and the run must be stopped to regain control.

To make sure all of the data in a repetitive run is available for viewing:

- In the workspace, attach a Filter tool to the output of the analyzer.
- In the Filter, select "Pass Matching Data"
- In the filter terms, assure the default pattern of all "Don't Cares" (Xs).

This configuration will always transfer all data from acquisition memory. While this configuration will increase the time of each run, it will guarantee that repetitive run data is available regardless of when it is stopped.

The Run Status Window

The Run Status window monitors the run status of each measurement module in the frame.

The System Administration Tools



The *System Administration Tools* window is where you set up system defaults, network configurations, and perform maintenance on the operating system file set.

Networking

- "Setting Up on a Network" on page 118
- "Setting Up Emulation Probes/Modules on a Network" on page 125
- Connecting to Windows File Systems
  - "Mapping Windows Network Drives" on page 126
  - "Sharing Logic Analysis System Directories" on page 131
- Connecting to NFS File Systems
  - "Mounting an NFS File System" on page 135
  - "Mounting a ClearCase View" on page 138
- Using Network Utilities
  - "Using FTP (File Transfer Protocol)" on page 140
  - "Using Ping" on page 142
  - "Using Telnet" on page 142

Admin

- Licensing Products (see page 144)
- "Printer Setup" on page 146
- Other Printer Functionality
  - "Printing Windows - Configurations" on page 145

Printing to a File (see page 149)

"Print Options" on page 149

- "Configuring the System Clock" on page 150
- "Running the Self Tests" on page 150
- "Saving and Reloading System Settings" on page 153
- Colors (see page 182)

Security

- "Setting Up User Accounts" on page 158
- "Change Password" on page 165
- Network Services

"Web Server Security" on page 166

"Shared Console (VNC) Security" on page 166

"Remote Programming Interface Security" on page 166

"pcnfsd (For PC NFS) Security" on page 167

Software Install

- "List Installed Software" on page 170
- "Install Software" on page 167
- "Remove Installed Software" on page 170
- "Auto Install of Software" on page 168

Setting Up on a Network

NOTE: This operation may require *System Administration Privileges* (see page 161).

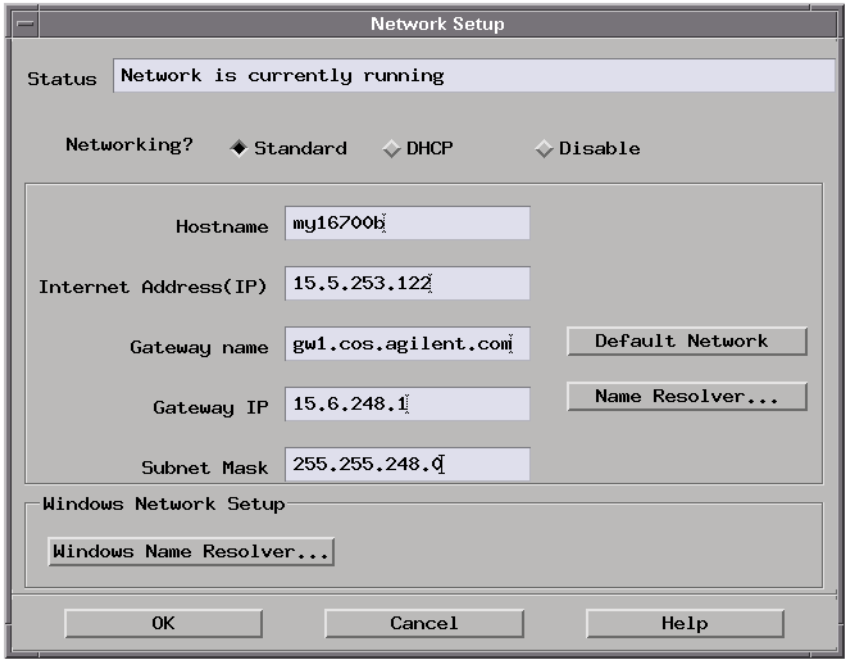
You can set the logic analysis system up on a network so that it will be able to communicate with other computers. For example, you can

control the logic analysis system from a remote computer using a web browser window, you can save captured data to a remote computer for post-processing, etc.

You can set up the logic analysis system on a network by entering the network settings, or you can get the network settings automatically from a DHCP server.

If the logic analysis system is not on a network, or should not be set up on a network, networking can be disabled.

- "To enter the network settings" on page 120
- "To get the network settings automatically from DHCP" on page 124
- "To disable networking" on page 125



See Also

"Setting Up Emulation Probes/Modules on a Network" on page 125

"Troubleshooting the 100BaseT Lan Connection" on page 143

To enter the network settings

1. Get the hostname, IP address, gateway name, gateway address, and subnet mask from your network *system administrator*.
2. From the Networking tab in the System Administration Tools window, select *Network Setup ...*.
3. In the Network Setup dialog, select the *Standard* networking option.
4. Enter the Hostname.

   The *Hostname* is the name of your local computer or logic analysis system. The name can contain only lower case letters, numbers, underscores(_), and dashes(-). It must start with a lowercase letter.
5. Enter the Internet (IP) Address.

   The *Internet Address (IP)* is a four-part code in integer dot notation. The assignment of an internet address uniquely identifies your computer among all those located on your network or any other network.
6. Enter the Gateway Name.

   The *Gateway name* is the name of the computer that routes traffic from one network to another. If you plan to communicate with a computer on a different network, you must specify the gateway computer name. No entry in this field will disable the gateway. The gateway name can contain only lowercase letters, numbers, underscores(_), and dashes(-). It must start with a lowercase letter.
7. Enter the Gateway IP.

   The *Gateway IP* is a four-part code in integer dot notation. The assignment of the gateway IP allows the logic analysis system to connect between other networks and subnetworks. The gateway IP must be set to the address of the gateway machine. No entry in this field will disable the gateway.
8. Enter the Subnet Mask.

   The *Subnet Mask* is an assigned group of bits that helps to quickly identify your subnetwork. If you have a gateway machine and your network is partitioned into subnetworks, you must specify a subnet mask. The subnet mask is a four-part code in integer dot notation. An example of an 18-bit subnet mask is shown below.

9. Select *OK*.

NOTE: To start the network setup from the factory default settings, select *Default Network* before performing the steps above.

See Also

"To resolve names using a name server" on page 121

"To resolve names using a host table" on page 122

"To resolve Windows names" on page 123

To resolve names using a name server. When the logic analysis system communicates with other computers on the network, it must be able to get the internet (IP) addresses associated with the names of those computers. It can get internet addresses either from a host table or a Domain Name System (DNS) name server.

To set up for name resolution using a name server:

1. From the Network Setup dialog, select *Name Resolver...*.
2. In the Name Resolution Dialog, select the *Name Server* option.
3. Enter the name by which the domain is known to the network. For example, for the fully qualified hostname *my16700b.cos.agilent.com*, the domain name is *cos.agilent.com*.
4. Enter the internet (IP) addresses of up to three name servers. Only one name server IP address is necessary; additional name server addresses are used if previous name servers are not available.
5. Select *OK*.

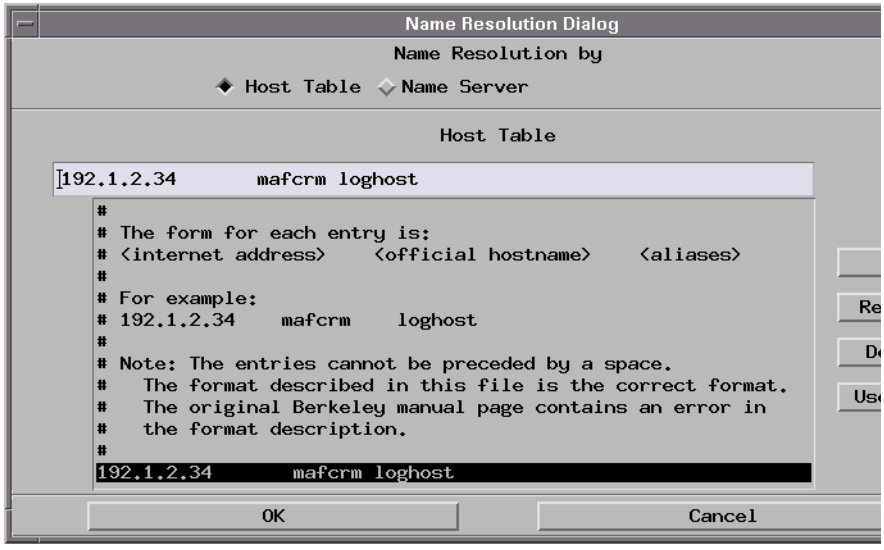


To resolve names using a host table. When the logic analysis system communicates with other computers on the network, it must be able to get the internet (IP) addresses associated with the names of those computers. It can get internet addresses either from a name server or from a host table.

To set up for name resolution using a host table:

1. From the Network Setup dialog, select *Name Resolver...*.
2. In the Name Resolution Dialog, select the *Host Table* option.
3. Use the text entry field, the host table display box, and the following buttons to edit the host table:
   - To add an entry, select the text field, enter the internet (IP) address, a space, the hostname, and optionally aliases preceded by spaces; then, select *Add*.
   - To replace an entry, select the entry in the host table and edit it in the text field; then select *Replace*.
   - To delete an entry, select the entry in the host table; then, select *Delete*.
   - To add entries from a file, select *Use File*; then select the file from the resulting dialog.

4. When you are done editing the host table, select *OK*.



To resolve Windows names. When the logic analysis system communicates with other computers on the network, it must be able to get the internet (IP) addresses associated with the names of those computers.

In situations where Windows computer names may not be mapped by Domain Name System (DNS) name servers, you can set up the logic analysis system to get internet addresses from a Windows Internet Naming Service (WINS) server or you can manually map computer names to their internet addresses.

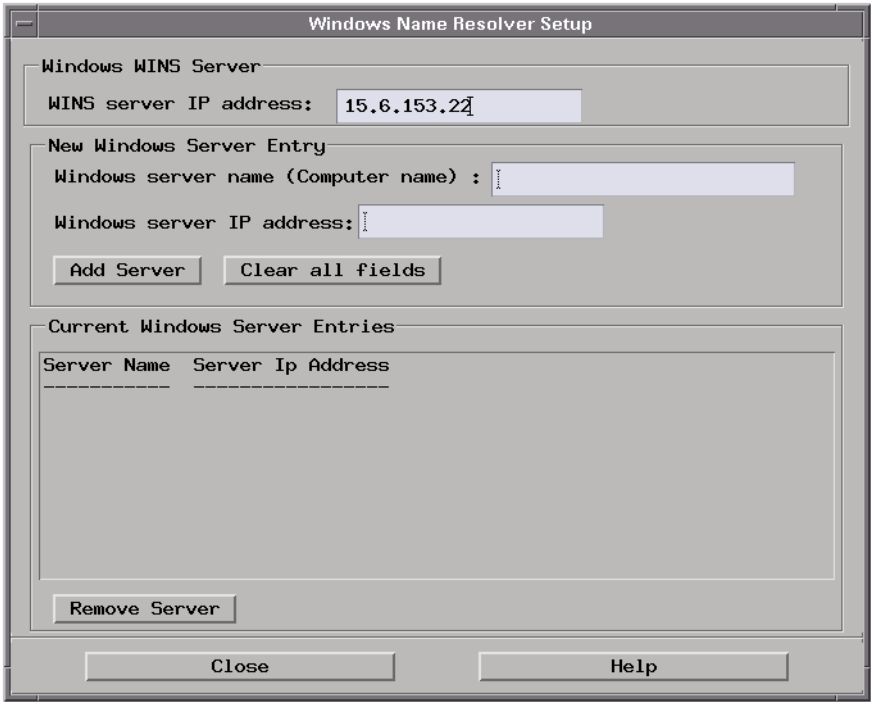
To set up for Windows name resolution:

1. Get the WINS server IP address from your network *system administrator*.
2. From the Network Setup dialog, select *Windows Name Resolver...*.
3. In the Windows Name Resolver Setup dialog:
   - If a WINS server is available, enter its internet address in the *WINS server IP address* field.
   - If no WINS server is available, you can manually enter a computer's

windows (netbios) name in the *Windows server name (Computer name)* field, its IP address in the *Windows server IP address* field, and then select *Add Server*.

To remove a computer's name to IP address mapping, select the name in the *Current Windows Server Entries* list; then, select *Remove Server*.

4. Select *Close*.



To get the network settings automatically from DHCP

NOTE: This operation may require *System Administration Privileges* (see page 161).

DHCP (Dynamic Host Configuration Protocol) is a network protocol that enables a DHCP server to automatically assign a dynamic IP address to the logic analysis system.

If the logic analysis system is configured to use DHCP network protocol, it is required that its hostname and gateway name be provided on the nameserver for each DHCP client address and gateway address so that it can be retrieved at boot time with nslookup.

If it is required that the logic analysis system have a consistent hostname, use static DHCP with permanent leases.

1. From the Networking tab in the System Administration Tools window, select *Network Setup ...*.
2. In the Network Setup dialog, select the *DHCP* networking option.
3. Select *OK*.

See Also

"To resolve Windows names" on page 123

To disable networking

If the logic analysis system is not on a network, or should not be set up on a network, networking can be disabled.

1. From the Networking tab in the System Administration Tools window, select *Network Setup ...*.
2. In the Network Setup dialog, select the *Disable* networking option.
3. Select *OK*.

Setting Up Emulation Probes/Modules on a Network

Emulation probes, both standalone and interconnected to an emulation module, need to be configured with LAN parameters.

The procedure for starting an connecting an emulation probe to the network depends on which kind of emulator you are using:

- Setting Up an E5900A Emulation Probe (see the *Emulation: Setting Up* help volume)
- Setting Up an E5900B Emulation Probe (see the *Emulation: Setting Up*

help volume)

- Setting Up an E5901B Emulation Module (see the *Emulation: Setting Up* help volume)

An easy way to configure an emulation probe is to use the *Setup Assistant*. Use the Setup Assistant if:

- You have a single E5900B emulation probe interconnected to an E5901B emulation module, or
- You have an emulation probe and NO emulation module is installed in your logic analysis system.

The Setup Assistant will not allow you to set up a standalone emulation probe if an emulation module is installed.

See Also

- Using an E5901A Emulation Module on Your LAN (see the *Emulation: Setting Up* help volume)
- To obtain LAN information (see the *Emulation: Setting Up* help volume)
- The Setup Assistant (see the *Setup Assistant* help volume)

Mapping Windows Network Drives

The *Map Windows Drive* dialog is used to connect to a Windows network shared drive so that you can access and perform file operations on the drive with the logic analysis system.

Once a Windows network drive has been mapped, you can re-map the drive using previously entered information.

- “To map a Windows network drive” on page 127
- “To re-map a previously mapped drive” on page 129
- “To disconnect a currently mapped drive” on page 130
- “To find a Windows computer's netbios name” on page 130
- “To find a Windows computer's share names” on page 131

To map a Windows network drive

1. In the Networking tab of the System Administration Tools dialog, select *Map Windows Network Drive...*.
2. In the Map Windows Drive dialog, enter the Network Path in \\computer_name\share_name form, where computer_name is the netbios name (see page 130) of the Windows computer and share_name is the share name (see page 131) that has been set up on that computer.

NOTE: In the *computer name* portion of the network path, domain qualifications (like *.cos.agilent.com*, for example) are not allowed. Neither are IP addresses allowed.

3. Enter the *Logic Analyzer Directory Path* where the mapped network drive will be located.

   The directory is located under the main directory */logic/*. The default name is the same as the share name in the Network Path.

NOTE: Characters that are not allowed in UNIX filenames (such as "$") are automatically converted to an underscore (_) character.

4. If you want the network drive to be automatically mapped at each new session startup, set the *Reconnect at Startup* option.

   When you set the *Reconnect at Startup* option, do not disconnect the mapping before exiting a session.

NOTE: For security reasons, you cannot reconnect to a Windows network drive that is password protected.

5. Set the *Read Only* option if necessary.

NOTE: When mapping shared CD-ROM drives, the *Read Only* option must be selected.

6. If the share is protected or is on an NT/2000 server (in other words, it is not a public share), enter the appropriate *Login information*:
   - *User Account Name* lets you enter your login account name when share protection is based on user accounts.

- *User Account/Share Password* lets you enter a password for your account or for a password protected share.

  The *Send unencrypted* option is for servers that do not handle encrypted passwords (and only handle plain text passwords), like for example, other logic analysis systems and Samba servers that aren't configured for encrypted passwords.

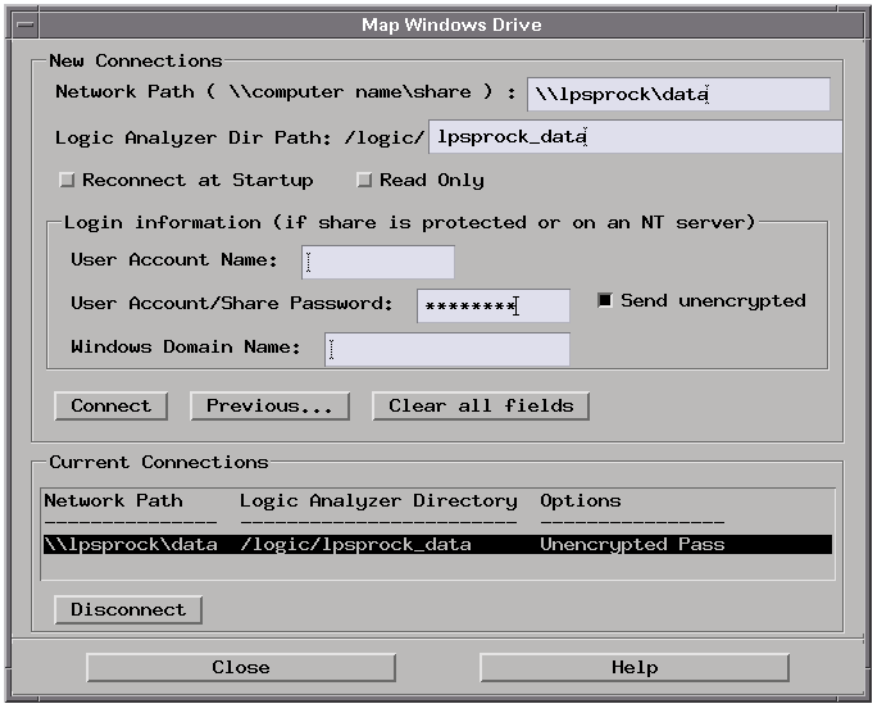
- *Windows Domain Name* lets you enter the domain name under which your user account is authenticated.

If the share is a Windows 95/98/Me share, with ONLY password protection, typically only the *User Account/Share Password* field is required.

If the share is a Windows share that is protected on a user account basis, the *User Account Name* and *User Account/Share Password* fields are both required.

If the share is protected on a user account basis with NT/2000 domain authentication, all fields are required.

7. Select *Connect*.



See Also

"To re-map a previously mapped drive" on page 129

"To disconnect a currently mapped drive" on page 130

To re-map a previously mapped drive

If a Windows network drive connection has been made in the past, the connection can be re-established using the previously specified options.

1. In the Networking tab of the System Administration Tools dialog, select *Map Windows Network Drive...*.
2. In the Map Windows Drive dialog, select *Previous...*.
3. In the PC Previous Connections dialog, select the desired connection from the list.
4. Select *Select*.

NOTE: For security reasons, password information is not saved when the Previous dialog is used. If password information was previously entered, it must be re-entered.

See Also

"To map a Windows network drive" on page 127

"To disconnect a currently mapped drive" on page 130

To disconnect a currently mapped drive

1. Terminate all file operations and interactions with the mapped Windows network drive.

CAUTION: If you *Disconnect* a share mapping when either a file is still open, or a file operation is in progress, the resulting file contention may cause long delays or an unstable system.

2. In the Networking tab of the System Administration Tools dialog, select *Map Windows Network Drive...*.

   In the Map Windows Drive dialog, the *Current Connections* list shows currently mapped drives.

3. Select the desired connection in the Current Connections list.
4. Select *Disconnect*.

See Also

"To map a Windows network drive" on page 127

"To re-map a previously mapped drive" on page 129

To find a Windows computer's netbios name

On Windows 95/98/Me/NT computers:

1. Right-click on *Network Neighborhood* under the Windows system.
2. Select *Properties* from the menu.
3. Locate the tab labeled *Identification*.

   The *Computer Name* is specified there.

On Windows 2000 computers:

1. Right-click on *My Computer*.
2. Select *Properties* from the menu.
3. Locate the tab labeled *Network Identification*.

   The *Computer Name* is the first part of the *Full computer name* (that is, without the domain part).

See Also "To find a Windows computer's share names" on page 131

To find a Windows computer's share names

1. Go to the drive where the share is located.
2. Right-click on the directory.
3. Select *Sharing...* from the menu.

   The share name is displayed in the dialog that appears.

See Also "To find a Windows computer's netbios name" on page 130

Sharing Logic Analysis System Directories

The *Share Logic Analyzer Directory* dialog is used to designate a directory in the logic analysis system to be available for file operation performed from a Windows computer.

NOTE: If you are configuring a Windows share for the first time, your *system administrator* may have to set up the appropriate permissions and security on the remote computer.

There are two ways to share a logic analysis directory to remote Windows systems. One way is to create a new share. The other way is to reconnect to a previous share.

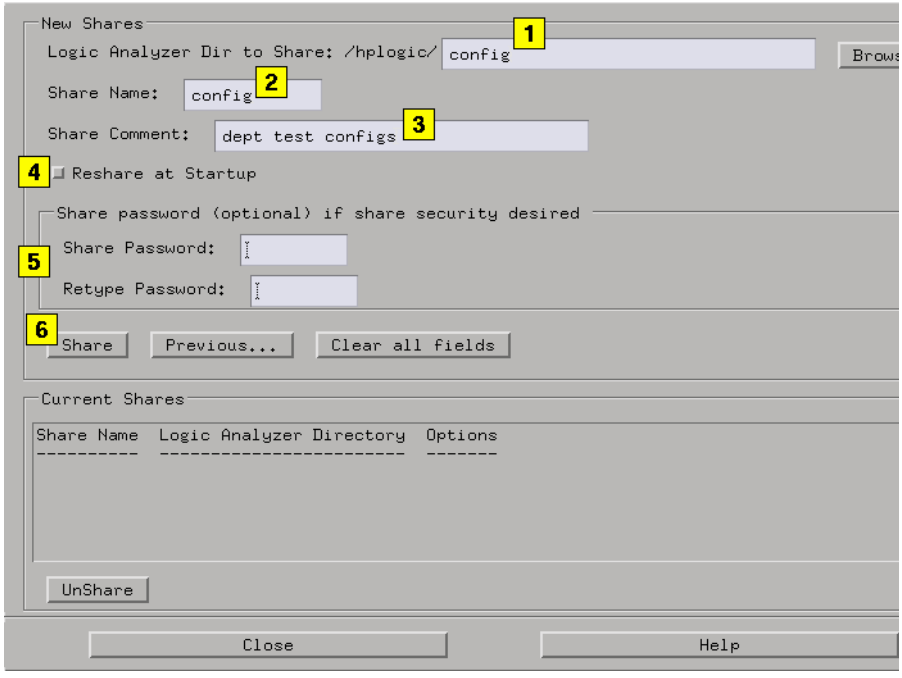
To share a logic analysis system directory

1. Type the directory name that you want accessible from a Windows

computer.

The directory you choose must be a sub-directory based off of */logic/*. You can also use the *Browse* field to access a graphical file manager to help in specifying a directory name.

2. Type in the Share Name (see page 133).
3. Optional - Type in a Share Comment (see page 134).
4. Set the *Reshare at Startup* as desired. When activated, this feature automatically re-establishes the share connectivity to the remote Windows computer at each new analyzer session startup. See the note below.
5. Optional - Type in a Share Password (see page 134), and then retype the password to verify it was typed correctly.
6. Select *Share*.



NOTE: If you plan to Reshare at each startup, make sure to enable the feature, and be sure to keep the share as a current active share. In other words, do not select the *UnShare* field at the bottom of the dialog when you exit a session.

To share a previously shared directory

If a connection has been made in the past, the connection and its options will appear in a dialog found by selecting the *Previous...* button. To re-establish a previous Share, do the following.

1. Select *Previous*.
2. Select the desired Share from the list of PC Previous Connections.
3. Select *Select*.

NOTE: For security reasons, password information is not saved when the Previous dialog is used. In this case, you are required to re-enter Share passwords.

To disconnect a currently shared directory

A list of *Current Shares* appears at the bottom of the dialog. This is a list of all remote file system connections that are sharing the file system of the logic analysis system. If you *UnShare* a share mapping when either a file is still open, or a file operation is in progress, the resulting file contention may cause long delays or an unstable system. Terminate all file operations and interaction with the remote file system before you disconnect the share mapping.

To disconnect a current share, select the desired connection in the Current Shares list, then select *UnShare*.

Share Name

The *Share Name* is simply a literal name for the share. By default, a name is assigned using the base name of the directory name. The base name is the text to the right of the front-slash (/) in the path name.

Example:
If the directory name path you choose is */logic/test_1*,
then the default Share Name would be *test_1*.

You can change the default name if you desire. Directory names can only include the following alphanumeric characters:
0-9, a-z, A-Z, (-), (+), (_), (.), (/), and (:).

Share Comment

Use the *Share Comments* field to tag a Share directory with a desired note. Any *Share Comment* you type, is displayed with the Share Name when browsing the logic analyzer directories from a remote Windows computer.

Using a Share Password

If a *Share Password* is used, the user of the Windows computer will be prompted to type in the password before being allowed to perform file operations in the logic analyzer directory.

NOTE: If no Share Password is used, the logic analyzer directory will have open access with no file security.

To change a share password

If a Share is set up to use a password, it will show up in the list of currently active shares as being password protected. To change the password on a currently active share, follow the procedure below.

To change an encrypted password, follow the procedure below.

1. Select the Share in the *Current Shares* list.
2. Select *UnShare*.
3. Select the *Previous...* field, and then select the Share from the list.
4. Type in a *Share Password*, and then retype the password to verify it was typed correctly.
5. Select *Share*.

Mounting an NFS File System

The *NFS Client Setup* (Network File System) dialog lets you create network connections to remote computers for the purpose of mounting their file systems to your local logic analysis system.

The benefit of a mounted file system is that you can interact with the remote directories/files using the File Manager in the logic analysis system. You also have the benefit of using the disk space in the remote computer rather than the disk space in the logic analysis system.

After an NFS connection is made, you will access the remote directories/files under the */logic* directory in the logic analysis system.

NOTE: If you are configuring an NFS mount for the first time, your *system administrator* may have to set up the appropriate permissions and security on the remote computer.

There are two ways to connect to a remote file system. One is to create a new connection. The other is to reconnect to a previous connection.

Creating a New Connection

1. From the Networking tab in the System Administration Tools window, select *Mount NFS Filesystem ...*.
2. From the NFS Client Setup dialog that appears, type in the *Remote host:* (see page 136) name. Optional - Use *Browse Hosts...* (see page 137) to select a remote host and a remote directory path from a predefined list.
3. Type in the *Remote dir path:* (see page 137).
4. Type the *Local dir path:* (see page 137). Optional - Use *Browse Local...* (see page 138) to select a directory path from a predefined list.
5. Choose the desired Options... (see page 137).
6. Select *Mount*.

Choose a Previous Connection

If a connection has been made in the past, the connection and its options will appear in the NFS Previous Connections dialog, obtained

by selecting the *Previous...* button.

1. From the System Administration Tools window, select *Mount NFS filesystem...*.
2. From the NFS Client Setup dialog that appears, select *Previous...*.
3. Select the desired connection from the *NFS Previous Connections* list.
4. Choose *Select*.
5. Select *Mount*.

By choosing from the *NFS Previous Connections* list, you automatically get the defined options (see page 137) of that previous connection.

Unmount a Current Connection

A list of *Current Connections* appears at the bottom of the NFS Client Setup dialog. This is a list of all connections to remote file systems that your logic analysis system is currently mounted to. If you try to disconnect a mount when either a file is still opened by you, or a file manager operation is still in progress, you will get a *Device busy* error. Terminate all of your interaction with the mounted file system before you disconnect the mount.

To unmount a current connection, select the desired connection in the Current Connections list, then select *Unmount*.

Delete a Previous Connection

1. Select the *Previous...* button.
2. Select the unwanted connection, then select *Delete*.

See Also

"Mounting a ClearCase View" on page 138

Remote Host

The *Remote host:* field designates the remote computer's name. It can take the form of a hostname, or a 4-part IP address integer. The remote host name, plus the remote directory path, becomes the *Network Path*

listed in the Current Connections or NFS Previous Connections lists.

Remote Directory Path

The *Remote dir path:* field designates a directory path on the remote computer. Type the remote directory path in the text field.

Example

```
/logic/test
```

Local Directory Path

The *Local Directory* field designates the local directory. If the local directory you entered does not exist, a one-level directory is created for you using the name you typed. Note that only one level will be created automatically for you.

Example

```
/logic/test - where /test was created for you.
```

Options

- The *Read/Write - Read only* option determines if you can read or write to the mounted file system.

  If the exported file system is *Read only*, then you cannot have a Read/Write option. It must be specified Read only.

- The *Hard - Soft* option determines if a request is continually repeated until success (Hard), or if a request is made four (4) times, then aborts (Soft).

- The *Reconnect at Startup* options reconnects to the file system every time the logic analysis system is turned on.

Using Browse Hosts

The *Browse Hosts...* field is used to access a predefined list of remote host computer names and the directories that are mountable.

1. Select *Browse Hosts...*

2. From the Browse NFS Hosts dialog, either select a host name from the upper list, or type in a host name in the text entry field.
3. Select *Show Directories*.
4. Select the desired directory, and then select *Select*.

Using Browse Local

The *Browse Local...* field accesses a *Local Directory Browser* similar to a file manager. Use this Local Directory Browser to build a directory path.

Mounting a ClearCase View

Using both the ability of Rational ClearCase to export views, and the logic analysis system to NFS mount external file systems, you are now able to access versioned source code to perform source correlation, use symbols, and view data in trace listings.

NOTE: If you are mounting a Rational ClearCase view for the first time, your *system administrator* may have to set up the appropriate permissions and security on the remote view server.

There are two ways to connect to a Rational ClearCase view. One is to create a new connection, the other is to reconnect to a previous connection.

To Mount a New ClearCase View

1. Enter the name of your Remote View Server (see page 140).
2. Optional - If not sure of the Remote View Server name, select Browse View Servers... (see page 139) and use the graphical interface to select the appropriate View Server and view.
3. Enter the ClearCase Remote View Name (see page 140).
4. Select the *Options...* button and set the desired Options (see page 137).
5. Select the *Mount* button.

To Mount a Previous ClearCase View

If a connection has been made in the past, the connection and its options will appear in the *Previous Connections* dialog.

1. Select the *Previous...* button.
2. From the list of previous connections that appear, select the desired view name.
3. Choose the *Select* button.
4. Select the *Mount* button.

By choosing a *Previous Connection*, you automatically get the defined Options (see page 137) of that previous connection.

Unmount a Current View

Current Views lists all currently mounted views. If you try to unmount a view when a file is still open, or a file manager operation is still in progress, you will get a *Device Busy* error. Terminate all interactions with the view before you unmount it.

To unmount a ClearCase connection, simply select the view name from the *Current Views* list, then select the *Unmount* button.

Delete a Previous View

1. Select the *Previous...* button.
2. Select the unwanted view, then select *Delete*.

See Also

"Overview of Source Correlation with Rational ClearCase" on page 140

"Rational ClearCase Copyright Information" on page 140

Using Browse View Servers

Use *Browse View Servers...* to access a predefined list of remote view server names and the views that are mountable.

1. Select *Browse View Servers...*

2. From the Browse View Servers dialog, either select a view server name from the upper list, or type in a view server name in the text entry field.
3. Select *Show Views*.
4. Select the desired view, then choose *Select*.

The Remote View Server Name

The *Remote view server* field designates the remote computer's name. The name can take the form of either a pre-defined hostname, or a 4-part IP address integer. The *Remote view server* name, plus the *Remote view name*, becomes the *Network Path* listed in the Current Connections or Previous Connections lists.

The Remote View Name

The *Remote view name* field designates the view tag, or name of the ClearCase view you created.

Overview of Source Correlation with Rational ClearCase

For a complete overview, refer to the file:

"Using16700withClearCase.pdf"

located at:

/logic/demo/SW_Cfg_Mgmt/ClearCase/

Rational ClearCase Copyright Information

Copyright 1992,1999 Rational Software Corporation, All rights reserved.

Using FTP (File Transfer Protocol)

Once you have established an FTP (file transfer protocol) connection, you can perform FTP commands on files in both the logic analysis system and a remote workstation. If you are in *Secure Mode*, you can only perform FTP commands from the logic analysis system.

The following example copies a password file to a remote system, and then copies it back to the logic analysis system.

1. From the Networking tab in the System Administration Tools window, select *FTP ...*.
2. In the FTP Site dialog that appears, type the hostname or IP address of the remote workstation, personal computer, or other logic analysis system, and select *OK*. See the note below.
3. In the FTP window that appears, type your *Login*, and press the Enter key.
4. Type in your *Password*, and press the Enter key.
5. From the ftp window that appears, copy the example file "password.example" to a directory in the remote system. For example: put /local_etc/password.example /"remote_dir_name"/.
6. Copy the file back to the logic analysis system. For example: get / "remote_dir_name"/"new_filename" /local_etc/.

To terminate the FTP session

To terminate your FTP connection, type "quit".

NOTE: Hostnames that are not located in */etc/host* on your remote computer may not be recognized by the logic analysis system. If this is the case, use the Internet IP address instead of the hostname.

To make an FTP connection from a PC to the logic analysis system

Use this procedure if you want to make an FTP connection from a remote PC or Workstation to the logic analysis system.

NOTE: An FTP connection from a remote PC or Workstation is not allowed when the logic analysis system is in *Secure Mode*.

1. From the command line of your remote computer, type: ftp "computer_name".
2. For the login name, use "anonymous".
3. For the password, use "nopass".

Using Ping

Ping is a utility to check LAN communication with remote hosts. To ping a remote host, simply type in the remote host computer name and select *OK*.

To stop the pinging, type control-C.

Using Telnet

The ability to Telnet (connect) to other workstations, PCs, or logic analysis systems lets you run and view programs resident to these remote computers. As an example, you can run multiple logic analysis systems from the same display.

When identifying a remote computer during a telnet login process, you can use either the internet (IP) address, or a predefined hostname. If you use a hostname, see the note below.

The following example shows how to Telnet to a remote logic analysis system and display its session on your local logic analysis system.

1. From the system window in your local logic analysis system, select the *System Administration* icon. Then from the Networking tab in the System Administration Tools window, select *Telnet* ....
2. Type the name of the remote logic analysis system, and select *OK*.
3. From the Telnet window that appears, type "logic", and press the *Enter* key.

NOTE: "logic" will not work if the remote logic analysis system is in *Secure Mode*. In this case, enter a login and password that is within the user accounts (see page 158) of the remote logic analysis system.

4. From the Session Manager dialog of the new remote session, select *Display Session on Another Display*.
5. From the Remote Setup dialog that appears, type the name of the local display, and select *Start*.

To terminate the telnet session

To terminate your remote session, select *Exit* in the remote System window. Then from the remote Session Manager window, select *Disconnect*. This will remove both the remote System window and Session Manager window from the local display.

NOTE: Hostnames that are not located in */etc/host* on your local computer may not be recognized by the logic analysis system. If this is the case, use the Internet IP address instead of the hostname.

Troubleshooting the 100BaseT Lan Connection

The following troubleshooting information is for the 100BaseT LAN connection to the logic analysis system.

Duplex Mode

Check the network switch duplex mode setting. The analyzers are set to AUTO_DETECT. The network switches should also be set to AUTO_DETECT. (AUTO_DETECT is also known as AUTO_Negotiate.)

If the network switch is not set to AUTO_DETECT, the analyzer will default to HALF_DUPLEX. This is in accordance with IEEE standards. Therefore, if the network switch is not set to AUTO_DETECT, it should be set to HALF_DUPLEX.

If the network switch is set to FULL_DUPLEX duplex mismatch will occur. The symptoms are a very slow data transfer in one direction and a relatively fast data transfer in the other direction. The network switch should be changed to AUTO_DETECT.

Network Configuration

Verify Cabling

Make sure UTP Category 5 is used, and that it is in good condition.

Verify that the RJ45 connector pins match the following:

Receive Signal: Pin 1 = White, Pin 2 = Orange Transmit Signal: Pin 3 = White, Pin 6 = Green

Make sure the cable length is not between 35 and 41 meters. If it is, then expand or reduce the length.

Symptoms when cable is between 35 and 41 meters:

No traffic, or high rate of packet loss.

Verify Punch-Down Blocks

Double check punch-down blocks in the networking environment. Punch-down blocks may make the problems seen with the 35-41 meter length appear at a different length.

Licensing Policy for the Logic Analysis System

License Policy:

Select logic analysis system product software is licensed for single use only. Licenses are nodelocked and are valid for the life of the product. Software updates do not affect the license.

Nodelock Mode:

Product licenses are shipped or first installed in nodelock mode. Nodelock mode allows use of the product license only on the node (HP 1670xA/B-Series logic analyzer) on which it is installed. Products ordered with a logic analysis system will be installed and ready to run. Products purchased aftermarket will require customers to access Agilent's password redemption Web site to obtain the appropriate passwords. The Web site URL and alternate contact instructions are provided on the Entitlement Certificate shipped with the licensed product.

Temporary Licenses:

In most instances, a single temporary (demo) license is available for any product not previously licensed on a node. The temporary license is valid for the number of calendar days specified in the *Demo Time* column. The demo time starts from first entry of the password in the license management window. The temporary password for any node on any tool set is "demo".

License Management:

Licenses are managed from the License Management window, obtained by selecting *Licensing...* under the Admin tab in the System Administration Tools window. License management does not require Unix expertise. Licenses are reserved at the start of a measurement session. They remain in use (reserved) until the measurement session is terminated.

Password Backup:

Passwords can be backed up to floppy disk by selecting *Save...* under the Admin tab in the System Administration Tools window. Passwords can only be restored on the logic analysis system where they were initially installed in nodelock mode.

Printing Windows - Configurations

The print windows operation lets you print either the current window, all currently open windows, or just a selected window. Also if you are in the Listing Display window, you can print data to a file.

NOTE: When printing windows to a printer, only the currently displayed viewing area of the window or computer screen is printed. If any data or configuration fields appear off-screen, scroll the desired data or configuration fields into the window's viewing area before printing.

Print this window

Print this window prints the current window.

Print all windows

Print all windows prints all open windows. This option is only available in the Workspace window.

Print any window

Print any window prints any open window that you select to make active.

Print to file

Print to file prints data from the Display tool to a file. This option is only available in the Listing Display window.

See Also

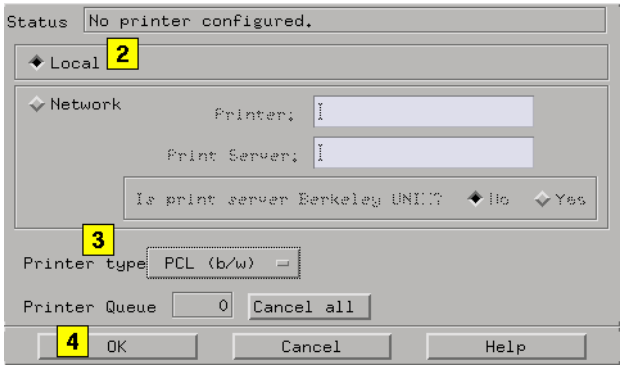
Setting Print Options (see page 149)

Setup the Printer (see page 146)

Printer Setup

Local Printer Setup

1. From the Admin tab in the System Administration Tools window, select *Printers ...*.
2. From the Printer Setup dialog that appears, select *Local*.
3. In the *Printer type* pulldown, select the printer type you are connecting.
4. Select *OK*.

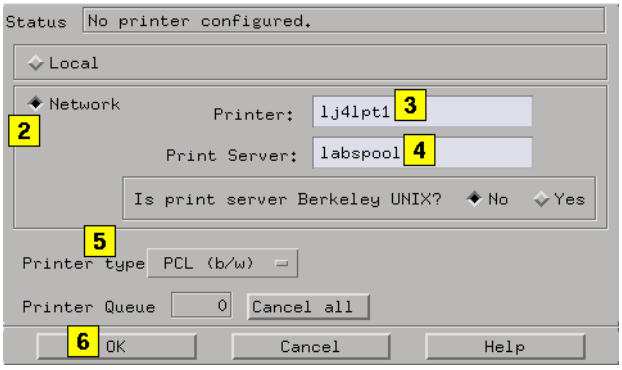


Network Printer Setup

Use this procedure if you are using a Unix print server. If you are using a Windows NT print server, select this link. (see page 147)

1. From the Admin tab in the System Administration Tools window, select *Printers ...*.

2. From the Printer Setup dialog that appears, select *Network*.
3. Type in the recognized *Printer* name. See the note below.
4. Type in the recognized *Print Server* name. In addition to being listed in a network host table, the print server network name must be resolvable in the logic analysis system.
5. In the *Printer type* pulldown, select the printer type you are connecting.
6. Select *OK*.



NOTE: Consult your *system administrator* for the required printer name and print server name. These names should be located in the network's host table or name server. The print server network name must also be resolvable in the logic analysis system.

Windows NT Server Configuration

From the Windows Interface:

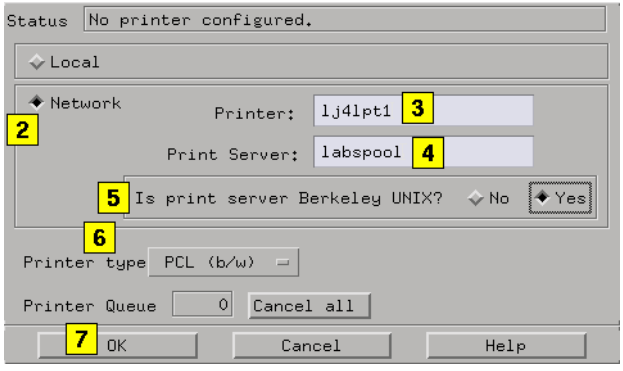
1. From the Main file group, select *Control Panel*, then *Network*.
2. Select the *Services* tab.
3. Select *Add...*, select *TCP/IP Printing*, then select *OK*. At this point, NT will automatically install the Berkeley Unix LPD print server.
4. From the Control Panel, select *Services*.
5. From the Services control panel, select *TCP/IP Print Server*, then select *Startup...*.

6. Change Startup Type to *Automatic*.
7. Configure your printers on the NT machine as you normally would.

From the System Administration Tools Window:

NOTE: Do not put white space in the printer name.

1. From the Admin tab in the System Administration Tools window, select *Printers ...*.
2. Select *Network*.
3. Type in the recognized *Printer* name. See the note below.
4. Type in the recognized *Print Server* hostname. In addition to being listed in a network host table, the print server network name must be resolvable in the logic analysis system.
5. Select *Yes* to Berkeley UNIX server.
6. In the *Printer type* pulldown, select the printer type you are connecting.
7. Select *OK*.

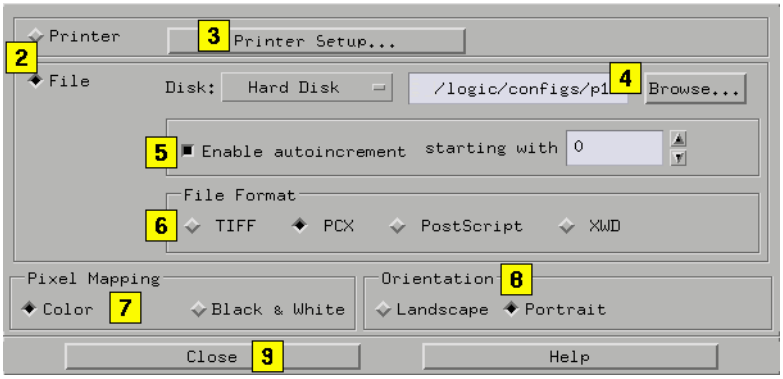


NOTE: Consult your *system administrator* for the required printer name and print server name. These names should be located in the network's host table or name server. The print server network name must also be resolvable in the logic analysis system.

Print Options

The *Print Window Options* dialog lets you set print destination, file format type, filename autoincrement, and color/b&w; pixel mapping.

1. In the tool window menu bar, select *File*, then *Print options*.
2. From the Print Window Options dialog, select the destination as either *Printer* or *File*.
3. If *Printer* is selected, configure the Printer Setup (see page 146) dialog.
4. If *File* is selected, type in the path and filename. You can also select *Browse* and use the File Manager dialog to browse for a path and filename.
5. Optional - If *File* is selected, autoincrement (see page 150) the filename.
6. Optional - If *File* is selected, select the file format type.
7. Set the Pixel Mapping (see page 150) to *Color* or *Black & White*.
8. Set the Orientation to *Landscape* or *Portrait*.
9. Select *Close*.



See Also

"Printing Windows - Configurations" on page 145

"Printer Setup" on page 146

"Windows NT Server Configuration" on page 147

Autoincrement filenames

Use the Autoincrement feature when you are saving multiple files, and you don't want to type in a new filename for each new file. As files are saved, the base filename remains the same with only the extension being incremented.

Example

filename.0
filename.1
filename.2
filename.3

Pixel mapping

Use the pixel mapping feature when you want to print a faxable black and white hardcopy.

Configuring the System Clock

NOTE: This operation may require *System Administration Privileges*. (see page 161)

1. From the System Administration Tools window, select *Time/Date...*.
2. Select in the desired value field, and backspace or delete the current numbers.
3. Type the new values, and select *OK*. At this point, you are asked to reboot the logic analysis system.

Running the Self Tests

The Self Test function of the logic analysis system performs functional tests on both the System and any installed modules.

1. From the Admin tab in the System Administration Tools window, select

Self-Test....

2. Read the Question dialog and select *Yes* if you wish to run the self tests.
3. From the Self Test window, select the desired area to test by selecting the appropriate tab. Your choices are either the *System* boards, modules in the *Master Frame*, or modules in the optional *Expander Frame*.
4. Run the tests in one of the following ways:
   - Test All – To test all boards or modules under a tab, select *Test All* at the bottom of the Self Test window.
   - Test a single board or module – To test a single board or module under a tab, select the desired board or module, and then select either a single component or select *Test All* at the bottom of the board or module test dialog.
5. When you are finished running self tests, select *Quit*. Then restart your session from the Session Manager window.

NOTE: For complete information on self tests, test options, troubleshooting, and service procedures, refer to the optional service guides available for the system or the desired modules.

See Also "More on Self Tests" on page 151

More on Self Tests

Self Test lets you get confidence that the hardware is configured and operating correctly, and enables the HP factory to test the product.

Self Tests and Session Management

When Self Test is entered, the current measurement session is exited. You are warned of this prior to entering Self Test so you can save any important data and configurations. The closure of the measurement session is necessary because Self Test leaves the hardware in an unknown state when it is finished. Restarting the measurement session is then required to properly initialize the hardware.

Testing Multi-Card Modules

Under each tab is a list of boards or measurement modules. When

selected, each individual board or module lists a set of its own individual tests. Some measurement modules are composed of multiple cards where one card is called the master and the others are called expanders. Self tests for a multiple card set are always tested through the master card. Test results for the expander cards will track results for the master card. In some cases, the self tests can identify a problem to either an expander or master card. In this case, the failure counts shown on an expander card may differ from those shown for a master card.

Test Options

Test options are set from the *Options* pulldown in the menu bar. They are provided only as a convenience to the user. They are intended for factory use only.

User Action Required

When running "All Tests", some of the tests may have a test result of "Not executed". In some cases, this message is because the test does not apply to the current hardware configuration. In other cases, it indicates the test requires some type of user action. These tests should be individually selected, and when user action is required, a dialog will appear to direct the user. The tests that require user action are listed below.

CPU Board

- Floppy Drive Test: A DOS formatted floppy must be in the drive.
- External SCSI Test: A powered-up CD-ROM drive must be on the bus.

HP16517A Timing Module

- Skew Adjust: Not a test; used for calibration.

HP16522A Stimulus Module

- Output Stimulus Vectors: Not a test; provides continuous signal output.

HP16534A Scope Module

- ADC Test: There must be no stimulus on the scope inputs.

HP16550 State and Timing Module

- Show Activity: Not a test; provides continuous output of signal input levels.

HP16610A Emulator Module

- Internal PV Test: A loop back connector must be installed.

NOTE: For complete information on self tests, test options, troubleshooting, and service procedures, refer to the optional service guides available for the system or the desired modules.

Saving and Reloading System Settings

The *Save System Settings* and *Load System Settings* fields are located under the *Admin* tab of the System Administration Tools dialog. By saving your system settings to a flexible disk or a mounted directory, you create a backup file that can be used to quickly setup new systems, or restore a current system's settings after a re-ignite procedure (see page 154).

To save or reload your system settings, select the desired items, then select *Save to File*, or *Load Settings*. If an item is not valid, or was not initially saved to the file, the selection is greyed out in the interface. Also, a *.set* file extension is automatically added for you.

Flexible Disk Backup - Re-ignite

NOTE: Unless changed in the file browser, the flexible disk is the default drive when saving a backup file. If you are going to re-ignite your logic analysis system, you MUST save the settings to the flexible disk or a mounted directory. Files saved on the analyzer's hard disk will be lost during the re-ignite procedure (see page 154).

What System Settings are Saved

- Printer Settings (see page 154)
- Network Settings (see page 154)
- User Account Information (see page 156)

- License Information (see page 157)
- Custom Color Settings (see page 157)
- Web Settings (see page 158)
- Session Manager (see page 158)
- E-mail on Trigger (see page 158)

Re-ignite Procedure

The re-ignite procedure is a process used to restore the operating system to the hard disk. Since user configurations, data files, and license passwords are lost during this procedure, it is recommended that you save the system settings to a backup flexible disk or a mounted directory.

Printer Settings

Printer settings are located under the *Printers...* field on the Admin tab of the System Administration Tools dialog.

- Printer Local or Network
- Network - Printer Name
- Network - Server Name
- Is print server Berkeley UNIX - No/Yes
- Printer Type

NOTE: Information in the Printer Queue, and any Print Options (see page 149) are not saved.

Network Settings

Network settings are located on the Networking tab of the System Administration Tools dialog.

Network Setup...

- Networking - Enable/Disable

- Hostname
- Internet Address (IP)
- Gateway Name
- Gateway IP
- Subnet Mask
- All *Name Resolver...* information

Map Windows Network Drive...

NOTE: The following information is only saved if the *Reconnect at Startup* option is enabled.

- Network Path
- Logic Analyzer Dir Path
- Reconnect at Startup
- Read only
- All *Current Connections* information

Share Analyzer Drive...

NOTE: The following information is only saved if the *Reshare at Startup* option is enabled.

- Logic Analyzer Dir to Share
- Share Name
- Share Comment
- Reshare at Startup
- All *Share Password* information
- All *Current Shares* information

Mount NFS Filesystem...

NOTE: The following information is only saved if *Reconnect at Startup* under the *Options...* field is enabled.

- Remote Host
- Remote Dir Path
- Local Dir Path
- All NFS *Options* information
- All *Current Connections* information

Network Services

Even though *Network Services* is found under the Security tab of the System Administration Tools dialog, the following settings are saved under the *Network* settings selection.

- Web Server
- Shared Console (VNC)
- Remote Programming Interface
- pcnfsd (for PC NFS)

User Accounts

User Accounts settings are located on the Security tab of the System Administration Tools dialog. In addition to the user account directory structure, the following settings are saved:

NOTE: If you save user accounts while you are in secure mode, after you load this system settings file, you will be in secure mode. Because of this, it is very important that you know a sys user and his password before loading a secure saved user account file. Similarly, if you save user accounts while you are not in secure mode, after you load the system settings file, you will not be in secure mode.

User Accounts...

- Secure Mode - Disabled/Enabled

- All current accounts information
- User-specific custom colors
- User-specific Web bookmarks and Web preferences

NOTE: It should be noted that no specific user account data is saved.

Network Services

Even though *Network Services* is found under the Security tab of the System Administration Tools dialog, the following settings are saved under the *Network* settings selection.

- Web Server
- Shared Console (VNC)
- Remote Programming Interface
- pcnfsd (for PC NFS)

Licenses

License information can only be saved and reloaded on the same logic analysis system. If you are setting up new logic analysis systems using a backup system settings file, all settings can be loaded except the license information. However, if you are performing the re-ignite procedure (see page 154) to the same logic analysis system, all settings including the license information can be reloaded.

Custom Colors

The custom color settings saved are the system colors located in the Waveform and Listing Tool's menu bar *Edit - Set default attributes...*. In the Distribution and Chart tool, system colors are located under *Options - Color*.

Custom colors for users in Secure Mode are saved and restored with the *User Accounts* (see page 156) selection.

Web Settings

If you are using the logic analysis system in a stand-alone unsecured mode, the following settings are saved.

- Bookmarks
- Preferences

Bookmarks and Preferences for users in Secure Mode are saved and restored with the *User Accounts* (see page 156) selection.

Session Manager Settings

The following Session Manager settings are saved and restored with the *Network Setup* (see page 154) selection.

- Window size
- Exclusive or Shared session

E-mail on Trigger Settings

You configure the e-mail on trigger from within a Sequence level under the *Trigger Tab* in the analyzer tool. The only setting that is saved is the SMTP server name, and it is saved and restored with the *Network Setup* (see page 154) selection.

Setting Up User Accounts

When you power up the instrument for the first time, you are in an open-networked unsecured mode. Any user can access the logic analysis system and store data with no record of access. By definition, you are in the open-networked mode when *Secure Mode* is disabled.

User accounts are useful when large project teams share lab equipment. In this environment, one or more users are set up with a user account and given a login and password. User accounts add the security of restricted use, plus the ability to trace all network activity and file ownership. By definition, you are in the secured user accounts mode when your System Administrator enables the *Secure Mode* field.

For more information on the user environment, refer to The User Environment and Session Control (see page 172).

The default factory configuration is the open-networked unsecured mode. Use the following procedures to set up user accounts and add security to your system through the *Secure Mode*. You can set up user accounts either individually, or by importing a file.

NOTE: Any user can set up user accounts and become the system administrator the first time the User Accounts dialog is accessed. To modify user account after *Secure Mode* has been enabled, *System Administration Privileges*. (see page 161) are required.

Adding User Accounts Individually

1. From the Security tab in the System Administration Tools window, select *User Accounts...*
2. At the bottom on the window, select *Add...*.
3. From the Add-User Account dialog, type in the user's *Login Name*.
4. Type in the user's *Password* (see page 162), and then the user's *Password Again*.
5. Optional – Type in the user's *Encrypted Password*.
6. Optional - Type in a *Password Age* (see page 162).
7. Type in the *User Identity* and *Group Identity*.
8. Type in the user's *Real Name*.
9. Select the File Permissions (see page 174) field, and select the desired system default read/write permissions.
10. Optional – Check *Has Admin Privileges* if you want to give the new user System Administrator privileges.
11. Select *Add*. Repeat the above from step 3 for the next user account, or, select *Cancel* to exit the dialog.
12. Toggle the *Secure Mode* field to *Enabled*. Enabling this field will activate the use of user accounts and set the system to a secured team use environment.

13. Select *OK* to close the User Accounts dialog.
14. At this point, you will be asked to verify the reboot of the logic analysis system. A reboot is necessary to implement the system level change of the secured user accounts mode.

Adding User Accounts by Importing a File

If you have multiple users that require user accounts, it might be easier to simply import a password file. If you plan to import password files, the files must follow the specified format for a password file. An example of a password file with the specified format is located in "/local_etc/" in the File Manager window.

You can use the example password file to generate your own file. Copy the file to a word processor, edit the file, and then copy it back to the /local_etc/ directory under a new name. For an example of copying files to other systems, refer to FTP (file transfer protocol) (see page 140).

1. From the Security tab in the System Administration Tools window, select *User Accounts...*
2. Select *Import...*. Then from the Import Account Dialog that appears, select the Default File Permissions (see page 174) field and set the desired system default read/write permissions.
3. Select *Import File*. From the file browser that appears, select the file name to import, and select *OK*.
4. From the Import Account dialog, select *OK*.
5. From the User Accounts dialog, edit the desired accounts giving at least one user system administration privileges.
6. Toggle the *Secure Mode* field to *Enabled*. Enabling this field will activate the use of user accounts and set the system to a secured team use environment.
7. Select *OK*.
8. At this point, you will be asked to verify the reboot of the logic analysis system. A reboot is necessary to implement the system level change of the secured user accounts mode.

Enabling/Disabling User Accounts

Once you have a list of user accounts in the system, your System Administrator can enable or disable user accounts by toggling the *Secure Mode* field. When you change the working mode, you will be asked to power down the system, and then power it back up. This enables the network to identify the new working mode.

Editing the User Accounts List

To delete a user from the accounts list, select the desired User Account, and select *Delete*.

To modify user information in the accounts list, select the desired User Account, make the appropriate changes in the Account Information dialog, and then select *Modify*.

System Administration Privileges

Your System Administrator is the first person who accesses the *User Accounts* dialog and gives himself system administration privileges. From that point forward, the *User Accounts...* pick is unavailable for all users except the users with system administration privileges. There can be more than one System Administrator. However, the first administrator must initially give all other administrators privileges so they can gain access to the restricted areas when they login the first time. If User Accounts are not used, all users have system administration privileges.

At the time users login, the system software checks for system administration privileges and sets the appropriate access mask on all restricted areas of the system.

Only the System Administrator can perform the following system-level tasks:

- Configure the network.
- Enable or Disable the Secure Mode and the use of user accounts.
- Add and remove individual user accounts.
- Set the system-wide default file permissions (see page 174).

- Set user permissions for new file creation.
- Set the system time.
- Set NFS export permissions from the logic analysis system.

Legal Passwords

- Passwords must be at least 6 characters long.
- Passwords cannot be circular shift of your login ID.
- Old and new passwords must differ by at least 3 positions.

Passwd Man Page

The following man page documents the use of a password file.

```
NAME
      passwd - password file, pwd.h

 DESCRIPTION
      passwd contains the following information for each user:

           +  login name
           +  encrypted password
           +  numerical user ID
           +  numerical group ID
           +  reserved field, which can be used for identification
           +  initial working directory
           +  program to use as shell

      This is an ASCII file.  Each field within each user's entry is
      separated from the next by a colon.  Each user is separated from the
      next by a newline.  This file resides in the /etc directory.  It can
      and does have general read permission and can be used, for example, to
      map numerical user IDs to names.  If the password field is null and
      the system has not been converted to a trusted system, no password is
      demanded.

      If the shell field is null, /usr/bin/sh is used.

      The encrypted password consists of 13 characters chosen from a 64-
      character set of "digits" described below, except when the password is
      null, in which case the encrypted password is also null.  Login can be
      prevented by entering in the password field a character that is not
      part of the set of digits (such as *).

      The characters used to represent "digits" are . for 0, / for 1, 0
      through 9 for 2 through 11, A through Z for 12 through 37, and a
      through z for 38 through 63.

 PASSWORD AGE
      Password aging is put in effect for a particular user if his encrypted
      password in the password file is followed by a comma and a nonnull
      string of characters from the above alphabet.  (Such a string must be
      introduced in the first instance by a superuser.) This string defines
      the "age" needed to implement password aging.

      The first character of the age, M, denotes the maximum number of weeks
      for which a password is valid.  A user who attempts to login after his
      password has expired is forced to supply a new one.  The next
```

```
     character, m, denotes the minimum period in weeks that must expire
     before the password can be changed.  The remaining characters define
     the week (counted from the beginning of 1970) when the password was
     last changed (a null string is equivalent to zero).  M and m have
     numerical values in the range 0 through 63 that correspond to the 64-
     character set of "digits" shown above.  If m = M = 0 (derived from the
     string . or ..), the user is forced to change his password next time
     he logs in (and the "age" disappears from his entry in the password
     file).  If m > M (signified, for example, by the string ./), then only
     a superuser (not the user) can change the password. Not allowing the
     user to ever change the password is discouraged, especially on a
     trusted system.

     Trusted systems support password aging and password generation.  For
     more information on converting to trusted system and on password, see
     the HP-UX System Administration Tasks Manual and sam(1M).

     getpwent(3C) designates values to the fields in the following
     structure declared in <pwd.h>:

          struct passwd {
              char    *pw_name;
              char    *pw_passwd;
              uid_t   pw_uid;
              gid_t   pw_gid;
              char    *pw_age;
              char    *pw_comment;
              char    *pw_gecos;
              char    *pw_dir;
              char    *pw_shell;
              aid_t   pw_audid;
              int     pw_audflg;
          };

     It is suggested that the range 0-99 not be used for user and group IDs
     (pw_uid and pw_gid in the above structure) so that IDs that might be
     assigned for system software do not conflict.

     The user's full name, office location, extension, and home phone
     stored in the pw_gecos field of the passwd structure can be set by use
     of the chfn command (see chfn(1)) and is used by the finger(1)
     command.  These two commands assume the information in this field is
     in the order listed above.  A portion of the user's real name can be
     represented in the pw_gecos field by an & character, which some
     utilities (including finger) expand by substituting the login name for
     it and shifting the first letter of the login name to uppercase.

SECURITY FEATURES
     On trusted systems, the encrypted password for each user is stored in
     the file /tcb/files/auth/c/user_name (where c is the first letter in
     user_name).  Password information files are not accessible to the
     public.  The encrypted password can be longer than 13 characters .
     For example, the password file for user david is stored in
     /tcb/files/auth/d/david.  In addition to the password, the user
     profile in /tcb/files/auth/c/user_name also contains:

          +  numerical audit ID
          +  numerical audit flag

     Like /etc/passwd, this file is an ASCII file.  Fields within each
     user's entry are separated by colons.  Refer to authcap(4) and
     prpwd(4) for details.  The passwords contained in /tcb/files/auth/c/*
     take precedence over those contained in the encrypted password field
     of /etc/passwd.  User authentication is done using the encrypted
     passwords in this file .  The password aging mechanism described in
     passwd(1), under the section called SECURITY FEATURES, applies to this
     password .

NETWORKING FEATURES
   NFS
     The passwd file can have entries that begin with a plus (+) or minus
     (-) sign in the first column.  Such lines are used to access the
```

```
     Network Information System network database.  A line beginning with a
     plus (+) is used to incorporate entries from the Network Information
     System.  There are three styles of + entries:

          +           Insert the entire contents of the Network Information
                      System password file at that point;

          +name       Insert the entry (if any) for name from the Network
                      Information System at that point

          +@name      Insert the entries for all members of the network
                      group name at that point.

     If a + entry has a nonnull password, directory, gecos, or shell field,
     they override what is contained in the Network Information System.
     The numerical user ID and group ID fields cannot be overridden.

     The passwd file can also have lines beginning with a minus (-), which
     disallow entries from the Network Information System.  There are two
     styles of - entries:

          -name       Disallow any subsequent entries (if any) for name.

          -@name      Disallow any subsequent entries for all members of
                      the network group name.

WARNINGS
     User ID (uid) 17 is reserved for the Pascal Language operating system.
     User ID (uid) 18 is reserved for the BASIC Language operating system.
     These are operating systems for Series 300 and 400 computers that can
     coexist with HP-UX on the same disk.  Using these uids for other
     purposes may inhibit file transfer and sharing.

     The login shell for the root user (uid 0) must be /sbin/sh.  Other
     shells such as sh, ksh, and csh are all located under the /usr
     directory which may not be mounted during earlier stages of the bootup
     process. Changing the login shell of the root user to a value other
     than /sbin/sh may result in a non-functional system.

     The information kept in the pw_gecos field may conflict with
     unsupported or future uses of this field.  Use of the pw_gecos field
     for keeping user identification information has not been formalized
     within any of the industry standards.  The current use of this field
     is derived from its use within the Berkeley Software Distribution.
     Future standards may define this field for other purposes.

     The following fields have character limitations as noted:

          +  Login name field can be no longer than 8 characters;

          +  Initial working directory field can be no longer than 63
             characters;

          +  Program field can be no longer than 44 characters.

          +  Results are unpredictable if these fields are longer than the
             limits specified above.

     The following fields have numerical limitations as noted:

          +  The user ID is an integer value between -2 and UID_MAX
             inclusive.

          +  The group ID is an integer value between 0 and UID_MAX
             inclusive.

          +  If either of these values are out of range, the getpwent(3C)
             functions reset the ID value to (UID_MAX).

EXAMPLES
   NFS Example
     Here is a sample /etc/passwd file:
```

```
        root:3Km/o4Cyq84Xc:0:10:System Administrator:/:/sbin/sh
        joe:r4hRJr4GJ4CqE:100:50:Joe User,Post
        4A,12345:/home/joe:/usr/bin/ksh
        +john:
        -bob:
        +@documentation:no-login:
        -@marketing:
        +:::Guest

    In this example, there are specific entries for users root and joe, in
    case the Network Information System are out of order.

        +    User john's password entry in the Network Information System
             is incorporated without change.

        +    Any subsequent entries for user bob are ignored.

        +    The password field for anyone in the netgroup documentation
             is disabled.

        +    Users in netgroup marketing are not returned by getpwent(3C)
             and thus are not allowed to log in.

        +    Anyone else can log in with their usual password, shell, and
             home directory, but with a pw_gecos field of Guest.

  NFS Warnings
    The plus (+) and minus (-) features are NFS functionality; therefore,
    if NFS is not installed, they do not work.  Also, these features work
    only with /etc/passwd, but not with a system that has been converted
    to a trusted system.  When the system has been converted to a trusted
    system, the encrypted passwords can be accessed only from the
    protected password database, /tcb/files/auth/*/*.  Any user entry in
    the Network Information System database also must have an entry in the
    protected password database.

    The uid of -2 is reserved for remote root access by means of NFS.  The
    pw_name usually given to this uid is nobody.  Since uids are stored as
    signed values, the following define is included in <pwd.h> to match
    the user nobody.

        UID_NOBODY  (-2)

FILES
    /tcb/files/auth/*/*          Protected password database used when
                                 system is converted to trusted system.
    /etc/passwd                  Standard password file used by HP-UX.

SEE ALSO
    chfn(1), finger(1), login(1), passwd(1), a64l(3C), crypt(3C),
    getprpwent(3), getpwent(3C), authcap(4), limits(5).

STANDARDS CONFORMANCE
    passwd: SVID2, SVID3, XPG2
```

Change Password

You do not require system administration privileges to change your password.

1. From the Security tab in the System Administration Tools window, select *Change Password...*

2. If your account previously had a password, you will enter it in the *Old Password* field.
3. Enter your new password (see page 162) in the *New Password* field.
4. Enter it again in the *New Password Again* field.
5. Select *OK*.

Web Server Security

Use this selection to allow or prevent access to the web page of this logic analysis system from other workstations or personal computers.

- Select *On* if you wish to allow other workstations and personal computers to access the home page of this logic analysis system.
- Select *Off* to prevent other workstations and personal computers from accessing the home page of this logic analysis system.

Shared Console (VNC) Security

Use this selection to allow or prevent sharing of the graphical user interface by remote workstations or personal computers.

- Select *On* if you wish to allow the graphical user interface to be shared with remote workstations or personal computers.
- Select *Off* if you wish to prevent sharing of the graphical user interface by other workstations and personal computers.

NOTE: To prevent a current shared session from being terminated, changes to the VNC Security (turning off) will take effect after the current session is closed.

Remote Programming Interface Security

Use this selection to allow or prevent connection to the remote

programming port (Port 6500) by other workstations or personal computers connected on the same LAN.

- Select *On* if you wish to accept remote programming connections from other workstations and personal computers to the remote programming port of this logic analysis system.
- Select *Off* if you wish to reject all remote programming connections to the remote programming port of this logic analysis system.

pcnfsd (For PC NFS) Security

Use this selection to allow access and operation of the logic analysis system by PC NFS file system packages that require pcnfsd capabilities.

- Select *On* if you are using a PC NFS file system package to operate the logic analysis system, and your package requires pcnfsd capabilities in the logic analysis system.
- Select *Off* if you are not using a PC NFS file system package that requires pcnfsd capabilities in the logic analysis system.

Install Software

1. From the Software Install tab in the System Administration Tools window, select *Install...*.
2. In the Software Install dialog that appears, select the media type *File System*.
3. If you are loading software from a Hard Disk and NFS, type in the path to the files you are installing, or use the graphical *Browse*. Make sure the remote file system is mounted.
4. Select *Apply*.
5. From the list of files that appear, select the desired files to install, then select *Install...*.

See Also

List all Installed Software (see page 170)

Remove Software Files (see page 170)

Configuring the NFS (see page 135)

Auto Install of Software (see page 168)

Auto Install of Software

The capability exists to automatically perform software updates at system boot-up or when a session is started from the session manager. To configure the logic analysis system to do this, you must create a file called *AutoInstall*, and place it into the directory */logic/usr/swinstall* on your system. The presence of this file indicates to the system that there is software that is to be installed.

Creation of the AutoInstall file

The *AutoInstall* file must be named "AutoInstall" (it is case-sensitive) and it MUST be placed in the */logic/usr/swinstall* directory.

The syntax for the file is as follows:

```
[Force | force]
[(Mount | mount)  <mount-from-dir>  <local-dir-to-mount-to>]
<Absolute filename of product or patch to install>
<Absolute filename of product or patch to install>
<Absolute filename of product or patch to install>
:
:
```

Syntax Definitions:

```
    NOTE: Syntax keywords are not case-sensitive.

[Force | force]

    The presence of either "Force" or "force" is to force the installation
    without any user intervention.  This means the user is not given the
    opportunity to delay the installation.  If this keyword is on the
    first line in AutoInstall, then the installation WILL TAKE PLACE.
    The only thing that will stop the installation is an error of some
    kind (e.g. if a file mount error occurs or the software to install
    cannot be located, etc).

    The forced installation will stop if there is an error of some kind
    while setting up for the install (e.g if there is a syntax error in
    the AutoInstall file, a file mount error occurs, or the software to
    install cannot be located, etc).  If a product or patch begins
    installing but an error occurs in the actual install, this will be
```

```
    indicated in the smaller install dialog.  After this dialog is closed,
    the auto installation will continue by setting up to install the next
    product or patch in the AutoInstall list, if there is one.


[(Mount | mount)  <mount-from-dir>  <mount-to-dir>]

    The presence of this line allows an NFS directory to be mounted onto
    the user's machine for the duration of the install.  This allows
    software located on another host system to be installed.  At this
    time, only one mount may be done per AutoInstall file.

    The local directory that is mounted to must be located under the
    directory /logic.  If the local directory to mount to does not exist,
    the user will be asked if they want the directory created.  If they
    decline to have it created, the installation will stop.

    NOTE: if "Force" is present and the mounted directory does not exist,
          it will be automatically created and the mount will occur.

          There are two files created in /logic/usr/swinstall when an
          autoinstall mount is done.  These are &dquote;mount.err&dquote; and
          &dquote;mount.out&dquote;.  These files will contain any
          pertinent information about the most recent auto install mount.
          In most cases,  these files will be empty.

<Absolute filename of product or patch to install>

   Each of these lines (there can be many of them) indicates a product
   or patch to install.  The absolute file name for the product or path
   must be specified (one per line).
```

NOTE: No additional spaces, blank lines or comments are to be included in the AutoInstall file.

Auto-Install Characteristics

```
Force option:
    If "Force" (or "force") is included in the AutoInstall file and the
    AutoInstall file is put into /logic/usr/swinstall while an analysis
    session is still running, the installation will occur when the user
    requests that a new analysis session begin (i.e. it will occur after
    the previous session has been exited and a new session is requested).

User Chooses to Delay the Install:
    If a user chooses to delay the installation (through the installation
    dialog), the AutoInstall file is renamed to AutoInstall.delay.  The
    analysis session will then start normally.   The next time the user
    starts a new analysis session, they will again be asked if they want
    to install the software that is available.  Again, they can choose to
    do the install or delay it.

User Chooses to Nerver do the Install:
    If the user chooses to never do the install (through the installation
    dialog), the AutoInstall file is renamed to AutoInstall.never .  The
    analysis session will then start normally after this choice.  The user
    will not be notified again about the newer software that is available.
    The next time the user starts a new analysis session, they will go
    directly to the analysis session.

Results of Installation:
    The results of the installation can be reviewed in the file
    /logic/log/install.log.

When Installation is Complete:
    When the installation completes successfully, the AutoInstall file
    will be renamed "AutoInstall.done" (and will remain in
```

```
    /logic/usr/swinstall). When a product or patch line begins to be
    processed by the auto installation software (whether or not it
    successfully completes), it will have a "#" character put in the
    first column before the product name.  Therefore, all product or
    patch filenames that are preceded with this character in the
    AutoInstall.done file were being processed by auto installation.

Error in Installation:
    If there is an error in the installation, the error will be displayed
    within the installation dialog and the installation session can be
    closed.  In the case of an error, the AutoInstall file will be renamed
    AutoInstall.err (and will remain in /logic/usr/swinstall).
```

AutoInstall Caveats

```
Delay file:
    The AutoInstall.delay file (which is created when a user selects to
    delay the installation) delay the installation) SHOULD NOT include
    the "Force" (or "force") option. The only way this might occur is
    if the file is manually altered.  It is not intended that the
    "Force" (or "force") option be in an AutoInstall.delay file.

"#" Character at Beginning of Line:
    The "#" character is inserted at the beginning of product name or
    patch names that were being processed by the auto installation
    software (as can be seen in the AutoInstall.done file).  The "#"
    character is not intended to be placed before the "force" or
    "mount..." lines.
```

Remove Installed Software

1. From the Software Install tab in the System Administration Tools window, select *Remove...*.
2. From the Software Remove dialog, select the file to remove, and select *Remove...*.
3. Select *Continue* to remove the selected file.

See Also

Install Software (see page 167)

List all Installed Software (see page 170)

List Installed Software

Use the Software *List...* field to view all system files currently installed on the hard disk. In addition, specific file information such as file size or version is shown. To get detailed information on any specific file,

select the file, and select the *Details...* field.

To list installed software, access the System Administration Tools window, select the *Software Install* tab, and then select the *List...* button.

See Also

Install Software (see page 167)

Remove Software Files (see page 170)

The User Environment and Session Control

This overview describes the user environment of the logic analysis system. Specifically, it defines the difference between how the typical user interacts with the product compared to the *system administrator*. You also get a description of the two working use models: an "open-networked" system, and a "Secure Mode" environment where user accounts and passwords are assigned.

For the most part, the differences encountered while working in either use model occur during initial product configuration, or when you first start a measurement session. In addition, if the secured environment of *Secure Mode* is not enabled, there is no distinction between typical users and a System Administrator.

For more information on using the security of user accounts and its effects on the user environment, refer to Setting Up User Accounts (see page 158).

Ordinary Users vs System Administrator

If *Secure Mode* is enabled, the typical user can only perform the following system-level tasks:

- Change your own password.
- NFS-mount file systems to the instrument.
- Telnet and FTP to other networked systems.

If *Secure Mode* is enabled, only the System Administrator can perform the following system-level tasks:

- Configure the network.
- Enable the use of User Accounts.
- Add and remove individual User Accounts.
- Set the system-wide default file permissions (see page 174). Defaults at initial power-up are –rw–r—r— for files and –rwxr–xr–x for directories.
- Set user permissions for new file creation.

- Set the system time.
- Set NFS export permissions from the instrument.

Identifying your System Administrator

Your System Administrator is the first person who accesses the *User Accounts* dialog and assigns himself system administration privileges. From that point forward, the *User Accounts...* pick is unavailable for all users except the identified System Administrators. At the time a user logs in, the system software checks for system administration privileges and sets the appropriate access mask on the *User Accounts...* dialog as well as other restricted areas of the system.

For more information on System Administrator Privileges, refer to System Administration Privileges (see page 161).

Use Models - Open-Networked Compared to User Accounts

When you power up the instrument for the first time, you are in an open-networked unsecured mode. Any user can access the instrument and stored data with no record of access. By definition, you are in the open-networked mode when *Secure Mode* is not enabled.

The *User Accounts* mode is often used where large project teams share lab equipment. In this environment, one or more users are set up with a user account and given a login and password. User accounts add the security of restricted use, plus the ability to trace all network activity and file ownership. By definition, you are in *User Accounts* mode when your System Administrator enables the *Secure Mode*.

Switching between Open Network and User Accounts

Your System Administrator can switch between the open networked mode and the secured User Accounts mode at any time.

1. From the System Administration Tools window, select *User Accounts...*.
2. Toggle the Secure Mode field to either *Enabled* or *Disabled*.
3. Select *OK*.
4. At this point, you will be asked to verify the reboot of the logic analysis system. A reboot is necessary to implement the system level change of the

secured user accounts mode.

See Also

For more information on the Session Control windows used in starting a session, refer to Starting a Session (see page 175).

For more information on setting up the network, user accounts, and other system tasks, refer to System Administration Tools (see page 117).

About File Permissions

The *System Default File Permissions* specify a default value for accounts created either during the import process or during *Add*.

File permissions specify read/write access at three different levels. This maps directly to the UNIX(tm) definitions of user, group, and world access: the first two characters define permissions of the user, the second two are for groups, and the last two are for anyone, regardless of user or group identity.

rw———

The most restrictive permissions. No one other than the creator of the file is allowed to read or write it.

rwr——

Users who belong to the same group (the GID field in the account dialog) will be able to read the user's files, but cannot write to them.

rwrw—

The group can both read and write this user's files.

rwr–r–

All users can read these files, but only the creator can write to them.

rwrwr–

All users can read these files, and the group can both read and write to them.

rwrwrw

All users can read and write all files owned by this user.

Starting a Session

The *Session Manager* dialog is used to start a new exclusive session, start a shared session, or, if another user has already started a shared session, you can select to join the current shared session.

Session Startup

Exclusive session - Use this selection to start a session on the logic analysis system local display (Console), or, if you have telneted to the logic analysis system from a remote computer (RemoteX). With this type of session, you are the only user allowed access to the session.

Shared session - Use this selection to start a shared session on the logic analysis system. With this type of session, you are allowing other users to connect and share the front panel.

If the *Shared session* selection has changed to *Join the current shared session*, this indicates that a remote user has already started a shared session. Select *Join the current shared session* to join the session and display the analyzer on the local display.

Start Session

Select *Start Session* to display the logic analysis system main window from the session startup mode chosen in *Session Startup* described above.

Shutdown

Select *Shutdown* to terminate the current session.

Powerdown - This is a complete shutdown, and is used prior to turning the power off.

Restart - This is a reboot to a new session.

Close (Remote sessions only)

If you have a remote session running, a *Close* button is available. This terminates your remote session leaving the logic analysis system available for a new session.

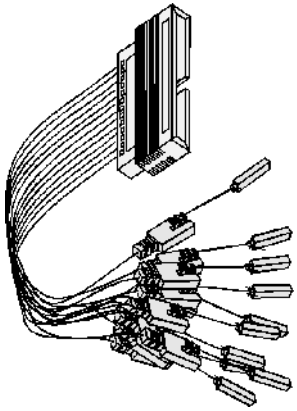
CAUTION: Data and configurations ARE NOT restored after an *Exit*, a *Shutdown*, or remote session *Close*. Make sure to save your configuration.

Analyzer Probing Overview

The figures below shows a variety of simple probing connections. The specific probe type, number of probes, and location on the target circuit depends on your particular measurement.

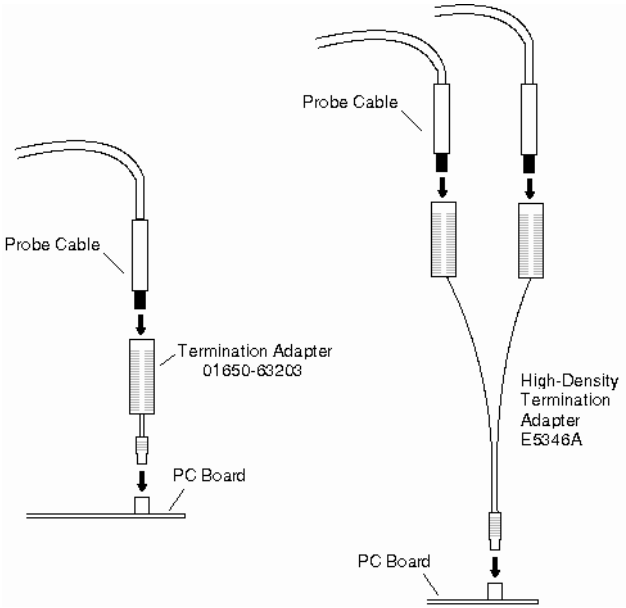
For equivalent circuit diagrams and pinouts, see the description of the probe type in the *Logic Analysis System and Measurement Modules Installation Guide*. If you have misplaced the *Logic Analysis System and Measurement Modules Installation Guide*, you can download the latest version from the Web at <URL: http://www.agilent.com/find/LogicAnalyzer-Manuals/ >

Probe Lead-to-Board Connection



The standard lead set plugs directly into any .1-inch grid with 0.026 to 0.033-inch diameter round pins or 0.025-inch square pins. All probe tips work with the Agilent Technologies 5059-4356 surface mount grabbers and the Agilent Technologies 5959-0288 through-hole grabbers.

Adapter-to-Board Connection



Both the 01650-63203 and the E5346A adapters include termination for the logic analyzer. The 01650-63203 termination adapter plugs into a 2 x 10 pin header with 0.1 inch spacing. The E5346A high-density adapter connects to an AMP "Mictor 38" connector. If possible, use support shrouds around the Mictor connector to relieve strain and improve connections.

Direct Pod-to-Board Connection

If you provide proper termination as part of the target board, you can plug the pod directly into the ©3M 2520-series, or similar alternative connector. Suggested termination is shown in the *Logic Analysis System and Measurement Modules Installation Guide*.

Also use this termination with the Agilent Technologies E5351A high-density, non-terminated adapter.

Pod-to-Analysis Probe Connection

Analysis probes (formerly called preprocessors) are microprocessor-specific interfaces that make it easier to probe buses. Generally,

analysis probes consist of a circuit board that attaches to the microprocessor (possibly through an adapter) and a configuration file. The configuration file sets up the logic analyzer's clocks and labels correctly, and may include an inverse assembler. The circuit board provides access to logical groups of pins through headers designed to connect directly to the logic analyzer.

The easiest way to set up a measurement with an analysis probe is the Setup Assistant. (see the *Setup Assistant* help volume) The Setup Assistant asks you questions about your measurement and then shows you just the information you need to set up the probe correctly. It also loads the proper configuration files.

Using the Analysis Tab

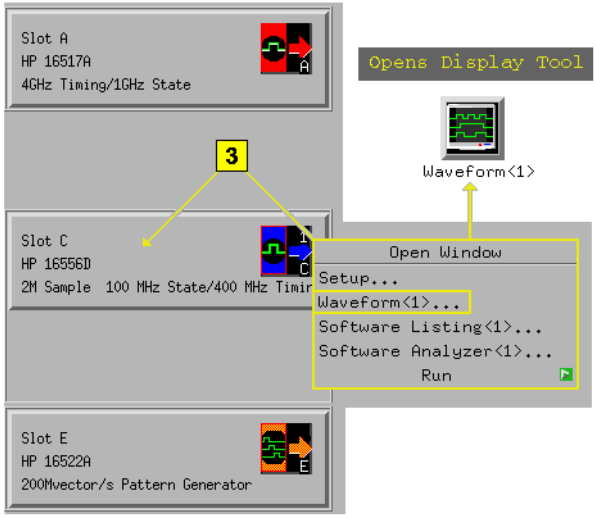
The logic analysis system allows you to use a variety of tools to filter, compare, and display the measurement data. Depending on where in the configuration you place these tools, you can generate multiple views of only the data you are interested in seeing.

The *Analysis* tab is used to insert tools into your configuration from the current display.

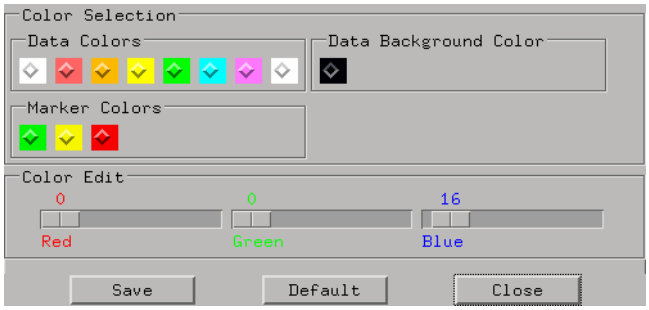
NOTE: Using the Analysis tab to insert tools is a convenient way to expand a basic configuration. However, if your measurement requires a more complex reconfiguration, the system will notify you to perform the reconfiguration from the Workspace window.

1. From the current display window, select the *Analysis* tab.
2. Highlight the desired tool to create within the configuration.
3. Select *Create*. If desired, you can verify the placement of the new tool from the Workspace window.

Accessing Display Tools



Editing Colors



To edit a color

1. Select a color to change.
2. Move the *Color Edit* sliders to obtain the desired colors.
   The colors change in the display to show the result of your modifications.
3. Select *Save* to accept and use the new colors, and save them as the powerup default colors.
   Optional - Select *Default* to restore the original colors and save them as the powerup default colors.
4. Select *Close*.

Using Symbols

You can use symbol names in place of data values when:

- Setting up triggers
- Displaying captured data
- Searching for patterns in Listing displays
- Setting up pattern filters
- Setting up ranges in the System Performance Analyzer

Symbol names can be: variable names, procedure names, function names, source file line numbers, etc.

You can load symbol name definitions into the logic analyzer from a program's object file or from a general-purpose ASCII format symbol file, or you can define symbol names in the logic analyzer.

- "To load object file symbols" on page 184
- "To adjust symbol values for relocated code" on page 185
- "To create user-defined symbols" on page 186
- "To enter symbolic label values" on page 187
- "To create an ASCII symbol file" on page 188
- "To create a readers.ini file" on page 188

See Also

To go to a pattern in the Listing (see the *Listing Display Tool* help volume)

To modify the Source Viewer trace setup (see the *Listing Display Tool* help volume)

To define System Performance Analyzer state interval ranges (see the *System Performance Analyzer* help volume)

To load object file symbols

Object files are created by your compiler/linker or other software development tools.

1. Generate an object file with symbolic information using your software development tools.
2. If your language tools cannot generate object file formats that are supported by the logic analyzer, create an ASCII symbol file (see page 188).
3. Select the *Symbol* tab and then the *Object File* tab.
4. Select the label name you want to load object file symbols for.

   In most cases you will select the label representing the address bus of the processor you are analyzing.
5. Specify the directory to contain the symbol database file (*.ns*) in the field under, *Create Symbol File (.ns) in This Directory*. Select *Browse...* if you wish to find an existing directory name.
6. In the *Load This Object/Symbol File For Label* field, enter the object file name containing the symbols. Select *Browse...* to find the object file and select *Load* in the Browser dialog.

   If your logic analyzer is NFS mounted to a network, you can select object files from other servers.
7. If your program relocates code, see "To adjust symbol values for relocated code" on page 185.

The name of the current object file is saved when a configuration file is saved. The object file will be reloaded when the configuration is loaded.

To reload object file symbols

1. Select the object file/symbol file to reload from the *Object Files with Symbols Loaded For Label* field.
2. Select the *Reload* button.

The values of the object file symbols being used in the trigger sequence or in SPA state-interval ranges will be updated automatically each time

the object file symbols are reloaded.

To delete object file symbol files

1. Select the *Symbol* tab, and then the *Object File* tab.
2. Select the file name you want to delete in the text box labeled, *Object Files with Symbols Loaded For Label*.
3. Select *Unload*.

See Also

"Symbol File Formats" on page 196

To adjust symbol values for relocated code

Use this option to add offset values to the symbols in an object file. You will need this if some of the sections or segments of your code are relocated in memory at run-time. This can occur if your system dynamically loads parts of your code so that the memory addresses that the code is loaded into are not fixed.

To adjust symbol values for a single section of code

1. Select the *Symbol* tab and then the *Object File* tab.
2. In the *Object Files with Symbols Loaded For Label* list, select the file whose symbols you wish to relocate.
3. Select the *Relocate Sections...* button.
4. In the *Section Relocation* dialog, select the field you wish to edit in the section list.
5. Enter the new value for that field and press Enter on your keyboard.
6. Repeat steps 4 through 6 above for any other sections to be relocated.
7. Select *Close*.

To adjust all symbol values

1. Select the *Symbol* tab and then the *Object File* tab.
2. In the *Object Files with Symbols Loaded For Label* list, select the file

whose symbols you wish to relocate.

3. Select the *Relocate Sections...* button.
4. Enter the desired offset in the *Offset all sections by* field. The offset is applied from the linked address or segment.
5. Select *Apply Offset*.
6. Select *Close*.

To create user-defined symbols

1. Under the *Symbol* tab, select the *User Defined* tab.
2. Select the label name you want to define symbols for.
3. At the bottom of the *User Defined* tab, enter a symbol name in the entry field.
4. Select a numeric base.
5. Select *Pattern* or *Range* type for the symbol.
6. Enter values for the pattern or range the symbol will represent.
7. Select *Add*.
8. Repeat steps 3 through 7 for additional symbols.
9. You can edit your list of symbols by replacing or deleting them, if desired.

To replace user-defined symbols

1. Under the *Symbol* tab, select the *User Defined* tab.
2. Select the label you want to replace symbols for.
3. Select the symbol to replace.
4. At the bottom of the *User Defined* tab, modify the symbol name, numeric base, Pattern/Range type, and value, as desired.
5. Select the *Replace* button.
6. Repeat steps 3 through 5 to replace other symbols, if desired.

To delete user-defined symbols

1. Under the *Symbol* tab, select the *User Defined* tab.
2. Select the label you want to delete symbols from.
3. Select the symbol to delete.
4. Select the *Delete* button.
5. Repeat steps 3 and 4 to delete other symbols, if desired.

To load user-defined symbols

If you have already saved a configuration file, and the configuration included user-defined symbols, load the file with its symbols, as follows:

1. In the menu bar of your analyzer window, select *File* and then *Load Configuration...*.
2. In the Load Configuration dialog, select the directory and filename to be loaded.
3. Select the target of the load operation.
4. Select *Load*.

   User-defined symbols that were resident in the logic analyzer when the configuration was saved are now loaded and ready to use.

To enter symbolic label values

When entering label values in the Pattern or Range subtabs of the Trigger tab:

1. Choose the *Symbols* or *Line #s* number base.
2. Select the *Absolute XXXX* button.
3. In the *Symbol Selector* dialog, select the symbol you want to use. All of your symbols for the current label, regardless of type, will be available in the dialog.

   - Use the Search Pattern (see page 195) field to filter the list of symbols

by name. You can use the Recall button to recall a desired Search Pattern.

- Use the Find Symbols of Type selections to filter the symbols by type.

4. Select the symbol you want to use from the list of *Matching Symbols*.
5. If you are using object file symbols, you may need to:
   - Set *Offset By* (see page 195) to compensate for microprocessor prefetches.
   - Set Align to x Byte (see page 196) to trigger on odd-byte boundaries.
6. Select the Beginning, End, or Range of the symbol.
7. Select the *OK* button.

   The name of your symbol now appears as the value of the label.
8. Select the *Cancel* button to exit the *Symbol Selector* dialog without selecting a symbol.

See Also "Symbols Selector Dialog" on page 194

To create an ASCII symbol file

General-purpose ASCII symbol files are created with text editing/processing tools.

See Also "General-Purpose ASCII (GPA) Symbol File Format" on page 197

To create a readers.ini file

You can change how an ELF/Stabs, Ticoff or Coff/Stabs symbol file is processed by creating a reader.ini file.

1. Create the reader.ini file on your workstation or PC.
2. Copy the file to /logic/symbols/readers.ini on the logic analysis system.

Reader options

C++Demangle

```
1= Turn on C++ Demangling (Default)
0= Turn off C++ Demangling
```

C++DemOptions

```
803= Standard Demangling
203= GNU Demangling      (Default Elf/Stabs)
403= Lucid Demangling
800= Standard Demangling without function parameters
200= GNU Demangling without function parameters
400= Lucid Demangling without function parameters
```

MaxSymbolWidth

```
80= Column width max of a function or variable symbol
    Wider symbols names will be truncated.
    (Default 80 columns)
```

OutSectionSymbolValid

```
0= Symbols whose addresses aren't within the
    defined sections are invalid (Default)
1= Symbols whose addresses aren't within the
    defined sections are valid
```

This option must be specified in the Nsr section of the Readers.ini file:

```
[Nsr]
OutSectionSymbolValid=1
```

ReadElfSection

```
2= Process all globals from ELF section (Default)
   Get size information of local variables
1= Get size information of global and local variables
   Symbols for functions will not be read, and
   only supplemental information for those symbols in
   the Dwarf or stabs section will be read.
0= Do not read the Elf Section
```

If a file only has an ELF section this will have no effect and the ELF section will be read completely. This can occur if the file was created without a "generate debugger information" flag (usually -g). Using the -g will create a Dwarf or Stabs debug section in addition to the ELF section.

StabsType

```
 StabsType=0  Reader will determine stabs type (Default)
 StabsType=1  Older style stabs
              (Older style stabs have individual symbol
              tables for each file that was linked into
              the target executable, the indexes of each
```

```
              symbol table restart at 0 for each file.)
 StabsType=2  Newer style stabs
              (New style stabs have a single symbol table
              where all symbols are merged into a large
              symbol array).
```

ReadOnlyTicoffPage

ReadOnlyTicoffPage tells the ticoff reader to read only the symbols associated with the specified page (as an example 'ReadOnlyTicoffPage=0' reads only page 0 symbols). A value of -1 tells the ticoff readers to read symbols associated with all pages.

```
ReadOnlyTicoffPage=-1 Read all symbols associated will all
                      ticoff pages (Default)
ReadOnlyTicoffPage=p  Read only symbols associated with
                      page 'p' (where p is any integer
                      between 0 and n the last page of
                      the object file).
```

AppendTicoffPage

AppendTicoffPage tells the ticoff reader to append the page number to the symbol value. This assumes that the symbol value is 16-bits wide and that that page number is a low positive number which can be ORed into the upper 16 bits of an address to create a new 32-bit symbol address. For example, if the page is 10 decimal and the symbol address is 0xF100 then the new symbol address will be 0xAF100.

```
AppendTicoffPage=1  Append the ticoff page to the symbol
                    address
AppendTicoffPage=0  Do not append the ticoff page to the
                    symbol address (Default)
```

Examples

Example for Elf/Stabs

```
[ReadersElf]
C
C
MaxSymbolWidth=60
StabsType=2
```

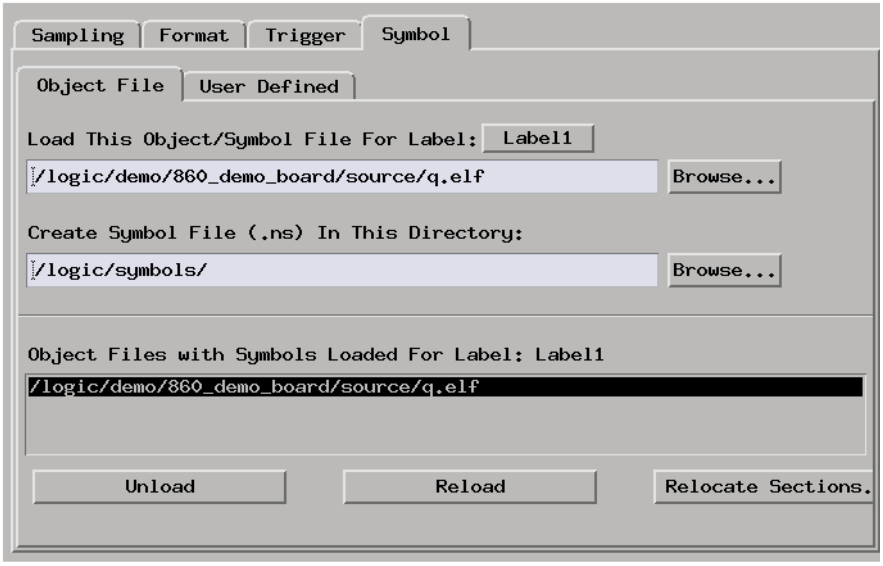
Example for Coff/Stabs (using Ticoff reader)

```
[ReadersTicoff]
C
C
MaxSymbolWidth=60
StabsType=2
```

Example for Ticoff

```
[ReadersTicoff]
C
C
MaxSymbolWidth=60
ReadOnlyTicoffPage=4
AppendTicoffPage=1
```

The Symbols Tab



The Symbols tab lets you load symbol files or define your own symbols. Symbols are names for particular data values on a label.

Two kinds of symbols are available:

- Object File Symbols. These are symbols from your source code and symbols generated by your compiler.
- User-Defined Symbols. These are symbols you create.
- “Symbols Selector Dialog” on page 194
- “Symbol File Formats” on page 196
- “General-Purpose ASCII (GPA) Symbol File Format” on page 197

Multiple files

You can load the same symbol file into several different analyzers, and you can load multiple symbol files into one analyzer. Symbols from all the files you load will appear together in the object file symbol selector that you use to set up resource terms.

Object file versions

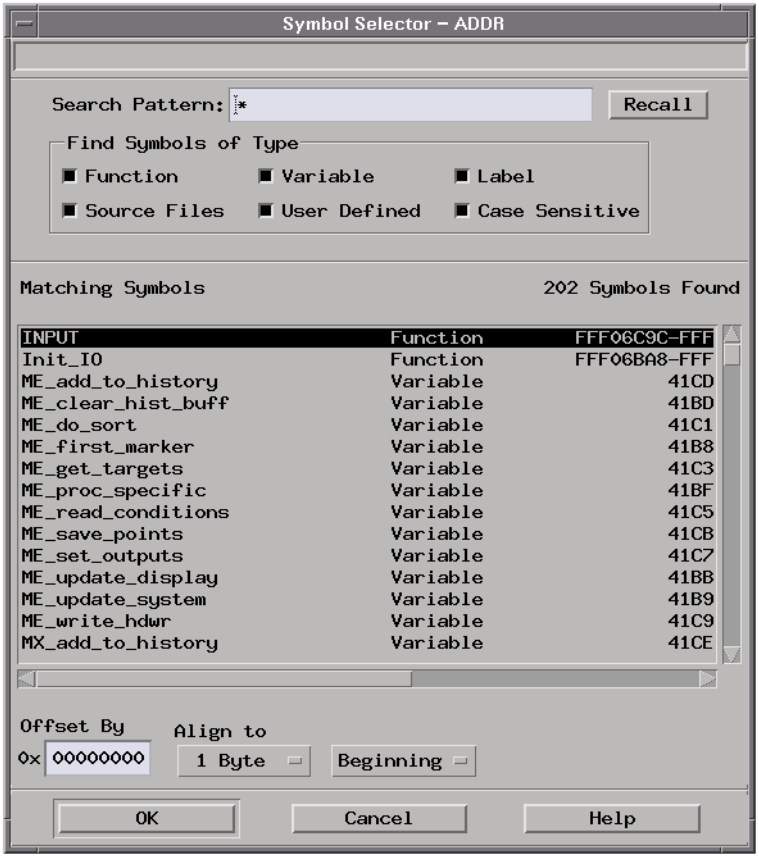
During the load process, a symbol database file with a *.ns* extension will be created by the system. One *.ns* database file will be created for each symbol file you load. Once the *.ns* file is created, the Symbol Utility will use this file as its working symbol database. The next time you need to load symbols into the system, you can load the *.ns* file explicitly, by placing the *.ns* file name in the *Load This Object/Symbol File For Label* field.

If you load an object file that has been loaded previously, the system will compare the time stamps on the *.ns* file and the object file. If the object file is newer, the *.ns* file will be created. If the object file has not been updated since it was last loaded, the existing *.ns* file will be used.

See Also

"Using Symbols" on page 183

Symbols Selector Dialog



Search Pattern: Lets you enter partial symbol names and the asterisk wildcard character (*) to limit the symbols to choose from (see “Search Pattern” on page 195). Use the Recall button to select from previous search patterns.

Find Symbols of Type Lets you limit the types of symbols to choose from.

Matching Symbols Lists the symbols that match the search pattern. You choose a symbol from this list.

Offset By Lets you add an offset value to the starting point of a symbol. This can be useful when compensating for microprocessor prefetches (see "Offset By Option" on page 195).

Align to Lets you mask the lower order bits of a symbol's value. This can be useful for triggering on odd byte boundaries (see "Align to x Byte Option" on page 196).

Beginning/End/ Range When a symbol represents a range of addresses, you can choose the beginning address of the range, the end address of the range, or the whole range.

See Also "To enter symbolic label values" on page 187

Search Pattern

Use this field to locate particular symbols in the symbol databases. To use this field, enter the name of a file or symbol. The system searches the symbol database for symbols that match this name. Symbols that match appear in the list of *Matching Symbols*. You can also use wildcard characters to find symbols.

Asterisk wildcard (*) The asterisk wildcard represents "any characters." When you perform a search on the symbol database using just the asterisk, you will see a list of all symbols contained in the database. The asterisk can also be added to a search word to find all symbols that begin or end with the same letters. For example, to find all of the symbols that begin with the letters "st", select the Search Pattern field and enter "st*".

Offset By Option

The Offset By option allows you to add an offset value to the starting point of the symbol that you want to use. You might do this in order to trigger on a point in a function that is beyond the preamble of the function, or to trigger on a point that is past the prefetch depth of the processor. Setting an offset helps to avoid false triggers in these situations. The offset specified in the Offset By field is applied before the address masking is done by the "Align to x Byte" option.

Example An 80386 processor has a prefetch depth of 16 bytes. Assume functions

func1 and *func2* are adjacent to each other in physical memory, with *func2* following *func1*. In order to trigger on *func2* without getting a false trigger from a prefetch beyond the end of *func1*, you need to add an offset value to your label value. The offset value must be equal to or greater than the prefetch depth of the processor. In this case, you would add an offset of 16 bytes to your label value. You would set the value of the "Offset By" field to 10 hex. Now, when you specify *func2* as your label value, the logic analyzer will trigger on address *func2+10*.

Align to x Byte Option

Most processors do not fetch instructions from memory on byte boundaries. In order to trigger a logic analyzer on a symbol at an odd-numbered address, the address must be masked off. The "Align to x Byte" option allows you to mask off an address.

Example

Assume the symbol "main" occurs at address 100F. The processor being probed is a 68040, which fetches instructions on long-word (4-byte) boundaries. In order to trigger on address 100F, the Align to x Byte option sets the two least-significant address bits to "don't cares". This qualifies any address from 100C through 100F.

Symbol File Formats

The logic analysis system can read symbol files in the following formats:

- OMF96
- OMFx86
- IEEE-695
- ELF/DWARF
- ELF/stabs
- TI COFF

For ELF/DWARF1, ELF/stabs, and ELF/stabs/Mdebug files, C++ symbols are demangled so that they can be displayed in the original

C++ notation. To improve performance for these ELF symbol files, type information is not associated with variables. Hence, some variables (typically a few local static variables) may not have the proper size associated with them. They may show a size of 1 byte and not the correct size of 4 bytes or even more. All other information function ranges, line numbers, global variables and filenames will be accurate. These behaviors may be changed by creating a readers.ini (see page 188) file.

See Also

"To load object file symbols" on page 184

"To create an ASCII symbol file" on page 188

"To create a readers.ini file" on page 188

General-Purpose ASCII (GPA) Symbol File Format

General-purpose ASCII (GPA) format files are loaded into a logic analyzer just like other object files.

If your compiler does not produce object files in a supported format, or if you want to define symbols that are not included in the object file, you can create an ASCII format symbol file.

Typically, ASCII format symbol files are created using text processing tools that convert the symbol table information from a compiler or linker map output file.

Different types of symbols are defined in different records in the GPA file. Record headers are enclosed in square brackets, for example, [VARIABLES]. For a summary of GPA file records and associated symbol definition syntax, refer to the "GPA Record Format Summary" on page 198 that follows.

Each entry in the symbol file must consist of a symbol name followed by an address or address range.

While symbol names can be longer, the logic analyzer only uses the first 16 characters.

The address or address range must be a hexadecimal number. It must appear on the same line as the symbol name, and it must be separated from the symbol name by one or more blank spaces or tabs. Address ranges must be in the following format:

```
beginning address..ending address
```

The following example defines two symbols that correspond to address ranges and one symbol that corresponds to a single address.

```
main     00001000..00001009
test     00001010..0000101F
var1     00001E22     #this is a variable
```

For more detailed descriptions of GPA file records and associated symbol definition syntax, refer to the following topics:

- “SECTIONS” on page 199
- “FUNCTIONS” on page 200
- “VARIABLES” on page 201
- “SOURCE LINES” on page 201
- “START ADDRESS” on page 202
- “Comments” on page 202

GPA Record Format Summary

Format

```
[SECTIONS]
section_name  start..end  attribute

[FUNCTIONS]
func_name  start..end

[VARIABLES]
var_name   start [size]
var_name   start..end

[SOURCE LINES]
File: file_name
line#  address
```

```
[START ADDRESS]
address

#comment text
```

Lines without a preceding header are assumed to be symbol definitions in one of the [VARIABLES] formats.

Example

This is an example GPA file that contains several different kinds of records.

```
[SECTIONS]
prog      00001000..0000101F
data      40002000..40009FFF
common    FFFF0000..FFFF1000

[FUNCTIONS]
main      00001000..00001009
test      00001010..0000101F

[VARIABLES]
total     40002000  4
value     40008000  4

[SOURCE LINES]
File: main.c
10        00001000
11        00001002
14        0000100A
22        0000101E

File: test.c
 5        00001010
 7        00001012
11        0000101A
```

SECTIONS

Use SECTIONS to define symbols for regions of memory, such as sections, segments, or classes.

NOTE: To enable section relocation, section definitions must appear before any other definitions in the file.

NOTE: If you use section definitions in a GPA symbol file, any subsequent function or variable definitions must be within the address ranges of one of the defined sections. Functions and variables that are not within the range are ignored.

Format

```
[SECTIONS]
section_name  start..end  attribute
```

section_name A symbol representing the name of the section.

start The first address of the section, in hexadecimal.

end The last address of the section, in hexadecimal.

attribute (optional) Attribute may be one of the following:

NORMAL (default) - The section is a normal, relocatable section, such as code or data.

NONRELOC - The section contains variables or code that cannot be relocated. In other words, this is an absolute segment.

Example

```
[SECTIONS]
prog           00001000..00001FFF
data           00002000..00003FFF
display_io     00008000..0000801F  NONRELOC
```

FUNCTIONS

Use FUNCTIONS to define symbols for program functions, procedures or subroutines.

Format

```
[FUNCTIONS]
func_name  start..end
```

func_name A symbol representing the function name.

start The first address of the function, in hexadecimal.

end The last address of the function, in hexadecimal.

Example

```
[FUNCTIONS]
main     00001000..00001009
test     00001010..0000101F
```

VARIABLES

You can specify symbols for variables using:

- The address of the variable.
- The address and the size of the variable.
- The range of addresses occupied by the variable.

If you specify only the address of a variable, the size is assumed to be 1 byte.

Format

```
[VARIABLES]
var_name   start [size]
var_name   start..end
```

var_name A symbol representing the variable name.

start The first address of the variable, in hexadecimal.

end The last address of the variable, in hexadecimal.

size (optional) The size of the variable, in bytes, in decimal.

Example

```
[VARIABLES]
subtotal     40002000   4
total        40002004   4
data_array   40003000..4000302F
status_char  40002345
```

SOURCE LINES

Use SOURCE LINES to associate addresses with lines in your source files.

Format

```
[SOURCE LINES]
File: file_name
line#  address
```

file_name The name of a file.

line# The number of a line in the file, in decimal.

address The address of the source line, in hexadecimal.

Example

```
[SOURCE LINES]
File: main.c
10        00001000
11        00001002
14        0000100A
22        0000101E
```

See Also Using the Source Viewer (see the *Listing Display Tool* help volume)

START ADDRESS

Format

```
[START ADDRESS]
address
```

address The address of the program entry point, in hexadecimal.

Example

```
[START ADDRESS]
00001000
```

Comments

Use the # character to include comments in a file. Any text following the # character is ignored. You can put comments on a line alone or on the same line following s symbol entry.

Format

```
#comment text
```

Example

```
#This is a comment
```

8B/10B encoding A block coding scheme that maps 8-bit data values to 10-bit data values which have 3-8 transitions between 1's and 0's and a balanced number of 1's and 0's. A *running disparity* is calculated to keep track of the balance. One 10-bit value is used when there is *positive disparity*, and a different 10-bit value if there is *neutral* or *negative disparity*. The 8B/10B block code was designed by IBM in the mid-1980's and is used in FibreChannel, InfiniBand, and Gigabit Ethernet.

absolute Denotes the time period or count of states between a captured state and the trigger state. An absolute count of -10 indicates the state was captured ten states before the trigger state was captured.

acquisition Denotes one complete cycle of data gathering by a measurement module. For example, if you are using an analyzer with 128K memory depth, one complete acquisition will capture and store 128K states in acquisition memory.

analysis probe A probe connected to a microprocessor or standard bus in the device under test. An analysis probe provides an interface between the signals of the microprocessor or standard bus and the inputs of the logic analyzer. Also called a *preprocessor*.

analyzer 1 In a logic analyzer with two *machines*, refers to the machine that is on by default. The default name is *Analyzer<N>*, where N is the slot letter.

analyzer 2 In a logic analyzer with two *machines*, refers to the machine that is off by default. The default name is *Analyzer<N2>*, where N is the slot letter.

arming An instrument tool must be armed before it can search for its trigger condition. Typically, instruments are armed immediately when *Run* or *Group Run* is selected. You can set up one instrument to arm another using the *Intermodule Window*. In these setups, the second instrument cannot search for its trigger condition until it receives the arming signal from the first instrument. In some analyzer instruments, you can set up one analyzer *machine* to arm the other analyzer machine in the *Trigger Window*.

asterisk (*) See *edge terms*, *glitch*, and *labels*.

bits Bits represent the physical logic analyzer channels. A bit is a *channel* that has or can be assigned to a *label*.

A bit is also a position in a label.

card This refers to a single instrument intended for use in the Agilent Technologies 16700A/B-series mainframes. One card fills one slot in the mainframe. A module may comprise a single card or multiple cards cabled together.

cell The basic unit of transmission in an ATM network. It is a fixed-size *packet* of 53 bytes, made up of 5 header bytes and 48 payload bytes.

channel The entire signal path from the probe tip, through the cable and module, up to the label grouping.

click When using a mouse as the pointing device, to click an item, position the cursor over the item. Then quickly press and release the *left mouse button*.

clock channel A logic analyzer *channel* that can be used to carry the clock signal. When it is not needed for clock signals, it can be used as a *data channel*, except in the Agilent Technologies 16517A.

context record A context record is a small segment of analyzer memory that stores an event of interest along with the states that immediately preceded it and the states that immediately followed it.

context store If your analyzer can perform context store measurements, you will see a button labeled *Context Store* under the Trigger tab. Typical context store measurements are used to capture writes to a variable or calls to a subroutine, along with the activity preceding and following the events. A context store measurement divides analyzer memory into a series of context records. If you have a 64K analyzer memory and select a 16-state context, the analyzer memory is divided into 4K 16-state context records. If you have a 64K analyzer memory and select a 64-state context, the analyzer memory will be divided into 1K 64-state records.

count The count function records periods of time or numbers of state transactions between states stored in memory. You can set up the analyzer count function to count occurrences of a selected event during the trace, such as counting how many times a variable is read between each of the writes to the variable. The analyzer can also be set up to count elapsed time, such as counting the time spent executing within a particular function during a run of your target program.

CRC (Cyclic Redundancy Check)

A common technique for detecting data transmission errors.

cross triggering Using intermodule capabilities to have measurement modules trigger each other. For example, you can have an external instrument arm a logic analyzer, which subsequently triggers an oscilloscope when it finds the trigger state.

data channel A *channel* that carries data. Data channels cannot be used to clock logic analyzers.

data field A data field in the pattern generator is the data value associated with a single label within a particular data vector.

data set A data set is made up of all labels and data stored in memory of any single analyzer machine or instrument tool. Multiple data sets can be displayed together when sourced into a single display tool. The Filter tool is used to pass on partial data sets to analysis or display tools.

debug mode See *monitor*.

delay The delay function sets the horizontal position of the waveform on the screen for the oscilloscope and timing analyzer. Delay time is measured from the trigger point in seconds or states.

demo mode An emulation control session which is not connected to a real target system. All windows can be viewed, but the data displayed is simulated. To start demo mode, select *Start User Session* from the Emulation Control Interface and enter the demo name in the *Processor Probe LAN Name* field. Select the *Help* button in the *Start User Session* window for details.

deskewing To cancel or nullify the effects of differences between two different internal delay paths for a signal. Deskewing is normally done by routing a single test signal to the inputs of two different modules, then adjusting the Intermodule Skew so that both modules recognize the signal at the same time.

device under test The system under test, which contains the circuitry you are probing. Also known as a *target system*.

disparity A calculation of the balance of 1's and 0's in a transmitted data stream. Disparity is used in *8B/10B encoding* to determine which of two possible 10-bit values should be used to represent a particular 8-bit

value.

don't care For *terms*, a "don't care" means that the state of the signal (high or low) is not relevant to the measurement. The analyzer ignores the state of this signal when determining whether a match occurs on an input label. "Don't care" signals are still sampled and their values can be displayed with the rest of the data. Don't cares are represented by the *X* character in numeric values and the dot (.) in timing edge specifications.

dot (.) See *edge terms*, *glitch*, *labels*, and *don't care*.

double-click When using a mouse as the pointing device, to double-click an item, position the cursor over the item, and then quickly press and release the *left mouse button* twice.

drag and drop Using a Mouse:
Position the cursor over the item, and then press and hold the *left mouse button*. While holding the left mouse button down, move the mouse to drag the item to a new location. When the item is positioned where you want it, release the mouse button.

Using the Touchscreen:
Position your finger over the item, then press and hold finger to the screen. While holding the finger down, slide the finger along the screen dragging the item to a new location. When the item is positioned where you want it, release your finger.

edge mode In an oscilloscope, this is the trigger mode that causes a trigger based on a single channel edge, either rising or falling.

edge terms Logic analyzer trigger resources that allow detection of transitions on a signal. An edge term can be set to detect a rising edge, falling edge, or either edge. Some logic analyzers can also detect no edge or a *glitch* on an input signal. Edges are specified by selecting arrows. The dot (.) ignores the bit. The asterisk (*) specifies a glitch on the bit.

emulation module A module within the logic analysis system mainframe that provides an emulation connection to the debug port of a microprocessor. An E5901A emulation module is used with a target interface module (TIM) or an analysis probe. An E5901B emulation module is used with an E5900A emulation probe.

emulation probe The stand-alone

equivalent of an *emulation module*. Most of the tasks which can be performed using an emulation module can also be performed using an emulation probe connected to your logic analysis system via a LAN.

emulator An *emulation module* or an *emulation probe*.

Ethernet address See *link-level address*.

events Events are the things you are looking for in your target system. In the logic analyzer interface, they take a single line. Examples of events are *Label1 = XX* and *Timer 1 > 400 ns*.

filter expression The filter expression is the logical *OR* combination of all of the filter terms. States in your data that match the filter expression can be filtered out or passed through the Pattern Filter.

filter term A variable that you define in order to specify which states to filter out or pass through. Filter terms are logically OR'ed together to create the filter expression.

Format The selections under the logic analyzer *Format* tab tell the logic analyzer what data you want to collect, such as which channels represent buses (labels) and what logic threshold your signals use.

frame The Agilent Technologies or 16700A/B-series logic analysis system mainframe. See also *logic analysis system*.

gateway address An IP address entered in integer dot notation. The default gateway address is 0.0.0.0, which allows all connections on the local network or subnet. If connections are to be made across networks or subnets, this address must be set to the address of the gateway machine.

glitch A glitch occurs when two or more transitions cross the logic threshold between consecutive timing analyzer samples. You can specify glitch detection by choosing the asterisk (*) for *edge terms* under the timing analyzer Trigger tab.

grouped event A grouped event is a list of *events* that you have grouped, and optionally named. It can be reused in other trigger sequence levels. Only available in Agilent Technologies 16715A or higher logic analyzers.

held value A value that is held until the next sample. A held value can

exist in multiple data sets.

immediate mode In an oscilloscope, the trigger mode that does not require a specific trigger condition such as an edge or a pattern. Use immediate mode when the oscilloscope is armed by another instrument.

interconnect cable Short name for *module/probe interconnect cable*.

intermodule bus The intermodule bus (IMB) is a bus in the frame that allows the measurement modules to communicate with each other. Using the IMB, you can set up one instrument to *arm* another. Data acquired by instruments using the IMB is time-correlated.

intermodule Intermodule is a term used when multiple instrument tools are connected together for the purpose of one instrument arming another. In such a configuration, an arming tree is developed and the group run function is designated to start all instrument tools. Multiple instrument configurations are done in the Intermodule window.

internet address Also called Internet Protocol address or IP address. A 32-bit network address. It is usually represented as decimal numbers separated by periods; for example, 192.35.12.6. Ask your LAN administrator if you need an internet address.

labels Labels are used to group and identify logic analyzer channels. A label consists of a name and an associated bit or group of bits. Labels are created in the Format tab.

line numbers A line number (Line #s) is a special use of *symbols*. Line numbers represent lines in your source file, typically lines that have no unique symbols defined to represent them.

link-level address Also referred to as the Ethernet address, this is the unique address of the LAN interface. This value is set at the factory and cannot be changed. The link-level address of a particular piece of equipment is often printed on a label above the LAN connector. An example of a link-level address in hexadecimal: 0800090012AB.

local session A local session is when you run the logic analysis system using the local display connected to the product hardware.

logic analysis system The Agilent Technologies 16700A/B-series mainframes, and all tools designed to

work with it. Usually used to mean the specific system and tools you are working with right now.

MAC layer The Medium Access Control layer is one of two layers that make up the Data Link Layer of the *OSI Reference Model*. The MAC layer is responsible for moving data packets to and from one Network Intercafe Card (NIC) to another across a shared channel.

machine Some logic analyzers allow you to set up two measurements at the same time. Each measurement is handled by a different machine. This is represented in the Workspace window by two icons, differentiated by a *1* and a *2* in the upper right-hand corner of the icon. Logic analyzer resources such as pods and trigger terms cannot be shared by the machines.

markers Markers are the green and yellow lines in the display that are labeled *x*, *o*, *G1*, and *G2*. Use them to measure time intervals or sample intervals. Markers are assigned to patterns in order to find patterns or track sequences of states in the data. The x and o markers are local to the immediate display, while G1 and G2 are global between time correlated displays.

master card In a module, the master card controls the data acquisition or output. The logic analysis system references the module by the slot in which the master card is plugged. For example, a 5-card Agilent Technologies 16555D would be referred to as *Slot C: machine* because the master card is in slot C of the mainframe. The other cards of the module are called *expansion cards*.

menu bar The menu bar is located at the top of all windows. Use it to select *File* operations, tool or system *Options*, and tool or system level *Help*.

message bar The message bar displays mouse button functions for the window area or field directly beneath the mouse cursor. Use the mouse and message bar together to prompt yourself to functions and shortcuts.

module/probe interconnect cable

The module/probe interconnect cable connects an E5901B emulation module to an E5900B emulation probe. It provides power and a serial connection. A LAN connection is also required to use the emulation probe.

module An instrument that uses a

single timebase in its operation. Modules can have from one to five cards functioning as a single instrument. When a module has more than one card, system window will show the instrument icon in the slot of the *master card*.

monitor When using the Emulation Control Interface, running the monitor means the processor is in debug mode (that is, executing the debug exception) instead of executing the user program.

OSI Reference Model The Open System Interconnection Reference Model is an ISO standard for worldwide communications that defines a networking framework for implementing protocols in seven layers. Control is passed from one layer to the next, starting at the application layer in one station, proceeding to the bottom (physical) layer, over the channel to the next station, and back up the hierarchy. Logic analyzers typically capture data at the *physical layer* or *MAC layer*.

packet A piece of a message transmitted over a packet-switching network, switch fabric, or multiplexed with other packets (like in an MPEG-2 transport stream). A packet has a *header* which identifies the packet and a *payload* which contains the actual data. Packets are also sometimes called *cells*.

packetized data Data that has been broken down into smaller pieces for transmission over a packet-switching network or switch fabric, or for multiplexing with other data streams (like in an MPEG-2 transport stream).

panning The action of moving the waveform along the timebase by varying the delay value in the Delay field. This action allows you to control the portion of acquisition memory that will be displayed on the screen.

pattern mode In an oscilloscope, the trigger mode that allows you to set the oscilloscope to trigger on a specified combination of input signal levels.

pattern terms Logic analyzer resources that represent single states to be found on labeled sets of bits; for example, an address on the address bus or a status on the status lines.

period (.) See *edge terms*, *glitch*, *labels*, and *don't care*.

physical layer The first layer of the *OSI Reference Model* which manages placing data on and taking data off

the transmission medium. In reference to protocol definitions, physical layer describes a *protocol* that is used at the bottom of the *protocol stack* on a data bus.

pod pair A group of two pods containing 16 channels each, used to physically connect data and clock signals from the unit under test to the analyzer. Pods are assigned by pairs in the analyzer interface. The number of pod pairs available is determined by the channel width of the instrument.

pod See *pod pair*

point To point to an item, move the mouse cursor over the item, or position your finger over the item.

preprocessor See *analysis probe*.

primary branch The primary branch is indicated in the *Trigger sequence step* dialog box as either the *Then find* or *Trigger on* selection. The destination of the primary branch is always the next state in the sequence, except for the Agilent Technologies 16517A. The primary branch has an optional occurrence count field that can be used to count a number of occurrences of the branch condition. See also *secondary branch*.

probe A device to connect the various instruments of the logic analysis system to the target system. There are many types of probes and the one you should use depends on the instrument and your data requirements. As a verb, "to probe" means to attach a probe to the target system.

processor probe See *emulation probe*.

protocol stack A set of protocol layers that work together. The *OSI Reference Model* that defines seven protocol layers is often called a stack, as is the set of TCP/IP protocols that define communications over the internet.

protocol An agreed-upon format for transmitting data between two devices. The protocol determines: the type of error checking, data compression, encoding, how sending devices indicate they have finished sending a message, and how receiving devices indicate they have received a messaage.

range terms Logic analyzer resources that represent ranges of values to be found on labeled sets of bits. For example, range terms could identify a range of addresses to be found on the address bus or a range

of data values to be found on the data bus. In the trigger sequence, range terms are considered to be true when any value within the range occurs.

relative Denotes time period or count of states between the current state and the previous state.

remote display A remote display is a display other than the one connected to the product hardware. Remote displays must be identified to the network through an address location.

remote session A remote session is when you run the logic analyzer using a display that is located away from the product hardware.

right-click When using a mouse for a pointing device, to right-click an item, position the cursor over the item, and then quickly press and release the *right mouse button*.

sample A data sample is a portion of a *data set*, sometimes just one point. When an instrument samples the target system, it is taking a single measurement as part of its data acquisition cycle.

Sampling Use the selections under the logic analyzer Sampling tab to tell the logic analyzer how you want to make measurements, such as State vs. Timing.

secondary branch The secondary branch is indicated in the *Trigger sequence step* dialog box as the *Else on* selection. The destination of the secondary branch can be specified as any other active sequence state. See also *primary branch*.

session A session begins when you start a *local session* or *remote session* from the session manager, and ends when you select *Exit* from the main window. Exiting a session returns all tools to their initial configurations.

skew Skew is the difference in channel delays between measurement channels. Typically, skew between modules is caused by differences in designs of measurement channels, and differences in characteristics of the electronic components within those channels. You should adjust measurement modules to eliminate as much skew as possible so that it does not affect the accuracy of your measurements.

state measurement In a state measurement, the logic analyzer is clocked by a signal from the system under test. Each time the clock signal

becomes valid, the analyzer samples data from the system under test. Since the analyzer is clocked by the system, state measurements are *synchronous* with the test system.

store qualification Store qualification is only available in a *state measurement*, not *timing measurements*. Store qualification allows you to specify the type of information (all samples, no samples, or selected states) to be stored in memory. Use store qualification to prevent memory from being filled with unwanted activity such as no-ops or wait-loops. To set up store qualification, use the *While storing* field in a logic analyzer trigger sequence dialog.

subnet mask A subnet mask blocks out part of an IP address so that the networking software can determine whether the destination host is on a local or remote network. It is usually represented as decimal numbers separated by periods; for example, 255.255.255.0. Ask your LAN administrator if you need a the subnet mask for your network.

symbols Symbols represent patterns and ranges of values found on labeled sets of bits. Two kinds of symbols are available:

- Object file symbols - Symbols from your source code, and symbols generated by your compiler. Object file symbols may represent global variables, functions, labels, and source line numbers.
- User-defined symbols - Symbols you create.

Symbols can be used as *pattern* and *range* terms for:

- Searches in the listing display.
- Triggering in logic analyzers and in the source correlation trigger setup.
- Qualifying data in the filter tool and system performance analysis tool set.

system administrator The system administrator is a person who manages your system, taking care of such tasks as adding peripheral devices, adding new users, and doing system backup. In general, the system administrator is the person you go to with questions about implementing your software.

target system The system under test, which contains the microprocessor you are probing.

terms Terms are variables that can

be used in trigger sequences. A term can be a single value on a label or set of labels, any value within a range of values on a label or set of labels, or a glitch or edge transition on bits within a label or set of labels.

TIM A TIM (Target Interface Module) makes connections between the cable from the emulation module or emulation probe and the cable to the debug port on the system under test.

time-correlated Time correlated measurements are measurements involving more than one instrument in which all instruments have a common time or trigger reference.

timer terms Logic analyzer resources that are used to measure the time the trigger sequence remains within one sequence step, or a set of sequence steps. Timers can be used to detect when a condition lasts too long or not long enough. They can be used to measure pulse duration, or duration of a wait loop. A single timer term can be used to delay trigger until a period of time after detection of a significant event.

timing measurement In a timing measurement, the logic analyzer samples data at regular intervals according to a clock signal internal to the timing analyzer. Since the analyzer is clocked by a signal that is not related to the system under test, timing measurements capture traces of electrical activity over time. These measurements are *asynchronous* with the test system.

tool icon Tool icons that appear in the workspace are representations of the hardware and software tools selected from the toolbox. If they are placed directly over a current measurement, the tools automatically connect to that measurement. If they are placed on an open area of the main window, you must connect them to a measurement using the mouse.

toolbox The Toolbox is located on the left side of the main window. It is used to display the available hardware and software tools. As you add new tools to your system, their icons will appear in the Toolbox.

tools A tool is a stand-alone piece of functionality. A tool can be an instrument that acquires data, a display for viewing data, or a post-processing analysis helper. Tools are represented as icons in the main window of the interface.

trace See *acquisition*.

trigger sequence A trigger

sequence is a sequence of events that you specify. The logic analyzer compares this sequence with the samples it is collecting to determine when to *trigger*.

trigger specification A trigger specification is a set of conditions that must be true before the instrument triggers.

trigger Trigger is an event that occurs immediately after the instrument recognizes a match between the incoming data and the trigger specification. Once trigger occurs, the instrument completes its *acquisition*, including any store qualification that may be specified.

workspace The workspace is the large area under the message bar and to the right of the toolbox. The workspace is where you place the different instrument, display, and analysis tools. Once in the workspace, the tool icons graphically represent a complete picture of the measurements.

zooming In the oscilloscope or timing analyzer, to expand and contract the waveform along the time base by varying the value in the s/Div field. This action allows you to select specific portions of a particular waveform in acquisition memory that will be displayed on the screen. You can view any portion of the waveform record in acquisition memory.

Index

Numerics

16517A logic analyzer, 18
16518A logic analyzer, 18
16522A pattern generator, 18
16533A oscilloscope, 18
16534A oscilloscope, 18
16550A logic analyzer, 18
16554A logic analyzer, 18
16555A logic analyzer, 18
16555D logic analyzer, 18
16556A logic analyzer, 18
16556D logic analyzer, 18
16557D logic analyzer, 18
16710A logic analyzer, 18
16711A logic analyzer, 18
16712A logic analyzer, 18
16715A logic analyzer, 18
16716A logic analyzer, 18
16717A logic analyzer, 18
16718A logic analyzer, 18
16719A logic analyzer, 18
16720A pattern generator, 18
16740A logic analyzer, 18
16741A logic analyzer, 18
16742A logic analyzer, 18
16750A/B logic analyzer, 18
16751A/B logic analyzer, 18
16752A/B logic analyzer, 18
16753A logic analyzer, 18
16754A logic analyzer, 18
16755A logic analyzer, 18
16756A logic analyzer, 18
16760A logic analyzer, 18

A

account, 158
accounts, 117
active drive, 15
add, 61
adjust skew, 101
alias, network IP addresses, 122
Align to x Byte option, 196
Align to x Byte option for symbols, 196
altitude, 29
analysis, tab, 180
analyzer example, 92
analyzer probes, general-purpose, 177
analyzer probes, termination adapter, 177
arming, second analyzer, 110
ASCII format symbols, 199, 200, 201, 202
ASCII symbol file, 201
auto, 168
auto arrange icons, 59
auto install, software, 117
autoload, 49

B

browse hosts, 137, 139
browse local, 138
browsing, 195
browsing the symbol database, 195
buttons, 34

C

calibration, 29
cancel, 113
characteristic, 29
characteristics, 28
chart, 18
clearcase, 138
clearing the workspace, 64
clock, set time date, 117
code, assigning address offsets, 185
COFF symbol reader options, 190
color, editing in waveforms, 182
comments, 202
compare tool, 18
compress, file, 51
computer name, 127
config, option, 47
connecting tool input and output ports, 62
connector, 97
copy, file, 49
correlation, 90
customer comments, 42

D

data communications analysis, 18
data files, 56
data, option, 47
date, setting, 150
default, 57
definition, 29, 30
delete, 61
delete, directory, 53
delete, file, 49
demand driven data, 115
demo board, 18
demonstration board, 18
description, 34
deskew, 101
DHCP, 124
directories, 57
directories, delete, 53
directories, make, 52
directories, rename, 53
directory, 57
disable networking, 118, 125
disable/enable run status window, 114
disk, format, 53
distribution, 18
DNS, 121
documentation feedback, 42
domain name, 127
drives (Windows network), mapping, 126

E

ELF symbol reader options, 189
ELF/DWARF file format, 196

Index

ELF/stabs file format, 196
emulation probe, network setup, 125
enable networking, 118
environmental, 29
example, 92, 195, 196
example measurements, 67, 69
expand, 17
expansion, 17
external hard drive, 54
external, trigger, 97

F

faxable prints, 150
file, 45, 49
file extensions, 56
file in, 18
file manager, 44, 54
file operations, 44
file out, 18
file permissions, default, 172
file system, NFS mount, 135
file transfer protocol, 140
file types, 56
file versions, 184
files, 184
filesystems, 117
finding the symbol you want, 195
flexible, 53
floppy, 53
frame, 17
ftp, 140
function test, 30
functions, 200

G

gateway address, 120
gateway IP address, 120
gateway name, 120
grid lines, 59
group run, 71, 113
group run with OR trigger, 71

H

hard drive, 54
help, 18, 30
help on world wide web, 42
help resources, 42
help, characteristics, 29
help, localized versions, 18
help, specifications, 29
help, symbols, 192
host table, 122
hostname, 120
hostname resolution via a host table, 122
hostname resolution via a name server, 121
hostnames, 121, 122
humidity, 29

I

IEEE-695 file format, 196
IMB, 97, 101
IMB, machine arming, 110
import, user accounts file, 158
in ASCII format, 199, 200, 201, 202
in symbol browser, 195
increment filenames, 150
independent run, 113
Infiniium oscilloscope time correlation, 18
install, 167, 168
install, software, 117
instrument, 18
interface, 34
intermodule, 67, 69, 71, 83, 92, 101
internet (IP) address, 120
internet (IP) addresses, 121, 122
IP address, 120

J

Japanese localized help, 23
Japanese translated help, 23

K

knobs, 34

L

label values, symbolic, 187
license, 144
licensing, 117
licensing, policy, 144
line numbers, 201
list, 170
list, software, 117
listing, 18
load configuration files, 45
load, system settings, 153
loading, 184
loading files including symbols, 184
loading object file symbols, 184
loading user-defined symbols, 187
local, 146
logic analyzer path field, 127
logic analyzer probes, 177
login, 140, 142
login information fields, 127

M

machine, 92
make, directory, 52
mapping Windows network drives, 126
masking off addresses of symbols, 196
measurement, 67, 69
measurement, probing options, 177
measurement, run options, 113
measurements, start, 13
mixed signal, 90
mount, 54, 138
mount, clearcase, 117
mount, directory, 117
move, file, 50
moving tools around the workspace, 63

multi-frame, 71
multiple frames, 71

N

name resolver, network, 121, 122
name server, 121
names, network, 121, 122
netbios, 123
netbios name, 127, 130
network, 124, 146
network drives (Windows), mapping, 126
network path, 127
network setup, 117
network, printer setup, 147
networking, to enable, 118
NFS, 117, 135
nodelock mode, 144
NT, server, 147

O

object file symbol files, 184
object file symbols, 195
odd-numbered addresses, 196
odd-numbered addresses represented by symbols, 196
offset addresses, assigning, 185
Offset By option of the symbol browser, 195
OMF96 file format, 196
OMFx86 file format, 196
open collector, 15
operating characteristics, 28
operating environment, 29
option, save, 47
options, print destination, 149
options, run, 113
oscilloscope example, 83
overview, 32, 34, 67, 71

P

passwd, 162
password, 117, 165
password, age, 162
password, form, 162
passwords, unencrypted (plain text), 127
path, network, 127
Pattern field, 195
pattern filter, 18
pc connectivity, 18
pentium, 18
performance verification, 150, 151
ping, 117, 142
pixel mapping, faxable prints, 150
pk, 51
pkunzip, 51, 52
pkzip, 51, 52
plain text passwords, 127
port in, 97
port out, 97
prefetch, triggering beyond, 195
preprocessor, see analysis probe, 43
print, 146, 147, 150
print, to file, 149
print, windows and configurations, 145
printer, 145, 149
printer, setup, 146
printers, setup, 117
printing, 145
privileges, 161
probe leads, 177
probes, individual signal, 177
probing, overview, 177
processor probe, see emulation probe, 43
product, 32
proxy, 161
pv, 150, 151

Q

quick waveform load, 45

R

readers.ini file, 188
reboot, 153
reconnect at startup, 127
recover, system settings, 153
refresh, 54
registration, 144
re-ignite, 153
relocating sections of code, 185
remote, 140
remote drives, 131
remove, 170
remove, software, 117
rename, directory, 53
rename, file, 50
repetitive, 113
repetitive data display, 115
repositioning tools, 63
results, 195
root, 161
run, 113
run control, 18
run options, 114
run status, checking, 114
run status, disable window, 114

S

save window prints, autoincrement, 150
save, system settings, 153
saving configuration files, 47
screen saver, 59
Search Pattern field, 195
searching the symbol database, 195
sections, 199
secure mode, 158, 172
security, 117
self test, 150, 151
self tests, 117
serial analysis, 18
session control, 172
session manager, 175

Index

session, close, 175
session, remote, 142
session, shutdown, 175
session, start, 175
setting default file permissions, 172
share, 131
share comment, 134
share name, 127, 131, 133
share password, 127, 134
share, directory, 117
single, 113
snap, 59
software, 117, 167, 168, 170
software analyzer, 18
source line numbers, 201
spa, 18
specification, 29
specifications, 28
Stabs symbol reader options, 190
start address, 202
state analyzer, 18
status, 114
stimulus, 18
stimulus board, 18
stop, 113
subnet mask, 120
swa, 18
symbol demangling, 188
symbol file formats, 196
symbol file versions, 184
symbol selector dialog, 194
symbolic label values, 187
symbols, 195
symbols, loading object file symbols, 184
symbols, loading user-defined, 187
symbols, outside defined sections, 189
symbols, types and use, 192
symbols, user-defined, 186
symbols, using, 183
system administration, 117
system administrator, 161, 172
system clock, 150
system default file permissions, 174
system overview, 28
system performance analysis, 18
system settings, load, 153
system settings, save, 153
system terminology, 43
system terms, 43

T

tab, analysis, 180
tab, mixed signal, 90
tab, symbols, 192
target control port, 15
target control, pinout, 15
target, resetting, 15
tasks, system administration, 117
telnet, 117, 142
temperature, 29
TI COFF file format, 196
time, setting, 150
timing analyzer, 18
timing analyzer example, 83
tool sets, 144
tools, 144
tools, adding and deleting, 61
tools, connecting, 62
tools, repositioning, 63
touchscreen, 34
trademark, 52
trigger, external, 97
triggering on a symbol, 195, 196
triggering on a symbol beyond prefetch depth, 195

U

uncompress, file, 51
unencrypted passwords, 127
update, 167
update, software, 117
user account name, 127
user accounts, 161, 172
user environment, description, 172
user interface, 34
user-defined symbols, 186
user-defined symbols, loading, 187

V

variables, 201
versions, 184
versions of symbol files, 184
vibration, 29
view, 138

W

waveform, 18
web help information, 42
wildcard characters, 195
windows, 117, 131, 147
Windows domain name, 127
Windows name resolution, 123
Windows network drives, mapping, 126
WINS server, 123
work files, 56
workspace, 59
workspace, clearing the, 64

Z

zip, 51, 52

Publication Number: 5988-9058EN
January 1, 2003



Agilent Technologies

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP