



# TimeAnalyzer 7100

## IEEE 1588 (PTP) Measurement and Analysis Test System

Release 1.0

### KEY FEATURES

- Packet Jitter (Packet Delay Variation) measurement and analysis
- Packet synchronization masks for intuitive PASS/FAIL result
- Raw PDV/TIE display, histogram/PDF/ statistics, MinTDEV, and MATIE/MAFE
- Easy-to-use GUI with real-time display and file export
- Precise timing measurement at physical layer with nanosecond accuracy
- PDV analysis with a set of packet synchronization masks

### KEY BENEFITS

- Portable IEEE 1588 (PTP) field and lab test system
- Active IEEE 1588 client capability
- Comprehensive IEEE 1588 synchronization performance measurement and analysis for Packet networks
- Network suitability measurement and qualification system

Symmetricom's TimeAnalyzer 7100 is a comprehensive test and measurement instrument for collecting and analyzing IEEE 1588 packet-timing data. This powerful test tool can help you meet the PTP packet sync performance requirements in every stage of your project: engineering, network planning, packet-timing deployment and troubleshooting. With its easy-to-carry portable enclosure, TimeAnalyzer 7100 is designed for use in the field as well as in the lab.

IEEE 1588 packets may traverse a broad range of networks – such as Ethernet, Digital Subscriber Line (xDSL), Gigabit Passive Optical Network (GPON), and Microwave – under a variety of traffic conditions. By measuring Packet Delay Variation (PDV), users can characterize a network and determine its suitability for delivering sync packets. This type of measurement and analysis is essential to ensure reliable synchronization over packet networks.

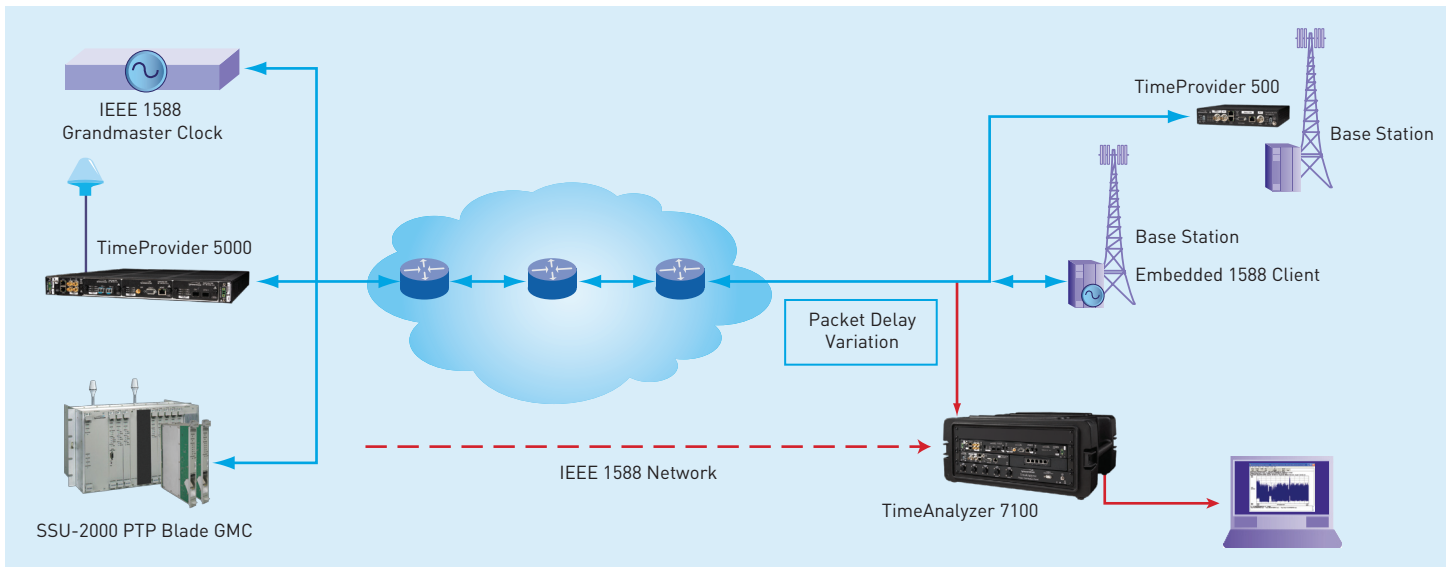
Using a hardware time-stamp processor that delivers nanosecond caliber-

timing accuracy, and a comprehensive computation engine, TimeAnalyzer 7100 collects and analyzes PTP data in real-time and provides graphical displays off-line. Measurements include Packet Delay Variation (PDV), Minimum Time Deviation (MinTDEV), band TDEV, percentile TDEV, MATIE, MAFE, and Min Time Dispersion. TimeAnalyzer 7100 also features a set of masks in the packet domain that correspond to the masks in the synchronization domain, as defined by Telecommunication standards. These masks help determine if the PTP packet flow delivered over the network meets the synchronization criteria for the application and allows TimeAnalyzer 7100 to present a very intuitive and user-friendly PASS/FAIL result. The packet synchronization masks include:

- packetTDEV sync mask
- packet TDEV traffic mask
- packetZTIE sync mask
- packetZTIE traffic mask
- packetZTIE\_wireless\_1ppb mask
- packetZTIE\_wireless\_15ppb mask



TimeAnalyzer 7100  
Measurement and Analysis Test System



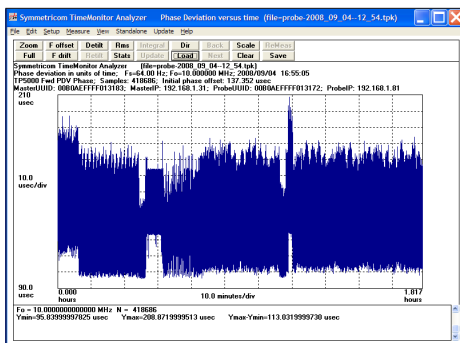
With an easy-to-use GUI for initiating measurements and analyses, TimeAnalyzer 7100 software enables users to quickly configure a test system and collect PTP timestamp data for PDV analysis. Users can collect data using a wide range of sampling rates (1Hz to 64Hz) to allow for pattern and trending analysis. The timestamp data can also be saved into a file and exported to a network emulator system for traffic simulation and playback. This export function provides a complete integration path to test the PTP network using traffic simulation and verification for R&D development, network planning, and network troubleshooting.

## APPLICATIONS

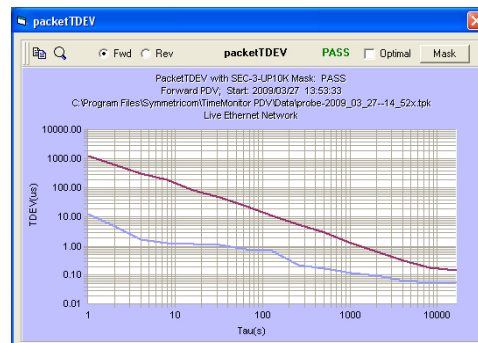
With a combination of various components in the TimeAnalyzer 7100 platform, it supports applications for synchronization measurement such as:

- R&D engineering lab for development test and verification
- Network characterization, qualification, and planning
- Packet synchronization deployment and verification

## GRAPHICAL USER INTERFACE DISPLAYS OF MEASUREMENTS AND ANALYSES



PDV measurement



PacketTDEV Measurement with Pass Indication

## SPECIFICATIONS

### MEASUREMENT INTERFACES

- Packet Timing
  - 2 x 100/1000 Ethernet (IEEE 1588) on Electrical or Optical

### REFERENCE CLOCK INPUT

- GPS
- E1

### OUTPUT

- 1 x 10MHz
- 1 x 1PPS
- 2 x E1 [2.048 MHz] mini BNC - G. 703-13

### LEDs

- GPS
- Power
- Alarms
- SYS

### MEASUREMENT ACCURACY

- Packet timing measurement
  - 10 ns
  - Internal sampling rate: ranges from 1 packet per second to 64 packets per second

### HARDWARE MODULE

- TP5000 – IMC, IOC (Rubidium Clock), I/O cards
- TP500
- 4-port Ethernet Switch

### SOFTWARE AND SPECIFICATION

- TimeMonitor Measurement & Analysis Software
- Runs on Microsoft Windows 95, 98, Me, NT, 2000, XP, and Vista
- Processor Pentium IV2.0 GHz or higher
- RAM 512 MB or higher
- Hard disk space 6GB or higher
- Display XGA (1024x768) minimum

### MANAGEMENT INTERFACE

- RS232
- RJ45 Ethernet

### POWER SUPPLY

- 110/220 VAC, 50/60 Hz

### ENVIRONMENTAL

- Operating temperature: -5°C to +45°C
- Storage temperature: -25°C to +60°C
- Operating humidity: 5% to 95% RH

### PHYSICAL SPECIFICATION

- Weight: 48 lbs
- 609 mm W x 609 mm D x 279 mm H (24 in W x 24 in D x 11 in H)

### SAFETY

- CE Mark
- RoHS
- EN61010
- EN61326
- CB Scheme