SPIRENT TESTCENTER

TIMING AND SYNCHRONIZATION BASE PACKAGE

IEEE 1588v2

The IEEE 1588v2 Timing and Synchronization Base Package provides support for the Precision Timing Protocol (PTP). The package allows Spirent TestCenter™ ports to act as master or slave clocks, run the best master clock algorithm or negotiated unicast procedures, and exchange PTP messages with attached devices. This enables functional, performance and accuracy testing of boundary, transparent, master and slave DUT clocks. The highly accurate timing inherent in Spirent TestCenter architecture ensures the accuracy required for time sensitive applications such as Ethernet mobile backhaul without the need for additional test equipment.

By combining Carrier Ethernet, MPLS and timing packages, the Spirent TestCenter system provides the industry's most complete solution for testing converged mobile backhaul networks and devices.

APPLICATIONS

- Testing of master, slave boundary and transparent clocks for performance, interoperability and compliance to Precision Timing Protocol and G.8265.1 Telecom Profile requirements
- Offering can be used by Network Equipment Manufacturers & Service Providers to ensure that mobile users won't suffer from dropped calls or corrupt data
- Ideal for Industrial Ethernet customers who want to test timing distribution across their manufacturing floors
- Combine with Spirent TestCenter Carrier Ethernet, Routing, MPLS and MPLS-TP base packages for end-to-end testing of service provider networks
- Combine with Calnex Paragon-X to generate and measure impairments such as wander and packet delay variation for exhaustive mobile backhaul testing
- PTP remote testing using GPS synchronization

FEATURES & BENEFITS

Enables scale testing of boundary and transparent clocks

- Emulates up to 400 slave clocks per port
- Supports E2E and P2P transparent clock procedures
- Supports 1-step and 2-step clocks

Supports scale testing of Telecom Profile Master and Slave clocks

- Supports unicast negotiation procedures per G.8265.1 Telecom profile requirements
- Message rates up to 128 messages per second

**Optional support for external BITS and GPS time sources**

- Support for test scenarios where absolute timing accuracy is needed
- Enables remote test scenarios where PTP accuracy needs to be validated across real network infrastructure

Spirent TestCenter ports can operate as master or slave clocks over Ethernet, IPv4, or IPv6 and emulate complex routing and MPLS topologies

- Enables users to test complex, real-world mobile backhaul scenarios with fewer DUTs

**Combine with Calnex Paragon-X for comprehensive mobile backhaul testing**

- Enables users to inject and measure physical and packet impairments and test master, slave, boundary and transparent clocks for compliance to G.8261 and G.8262 specifications
- Supports Time of Day and Phase accuracy testing needed to validate LTE deployments

IEEE 1588v2 TIMING AND SYNCHRONIZATION BASE PACKAGE
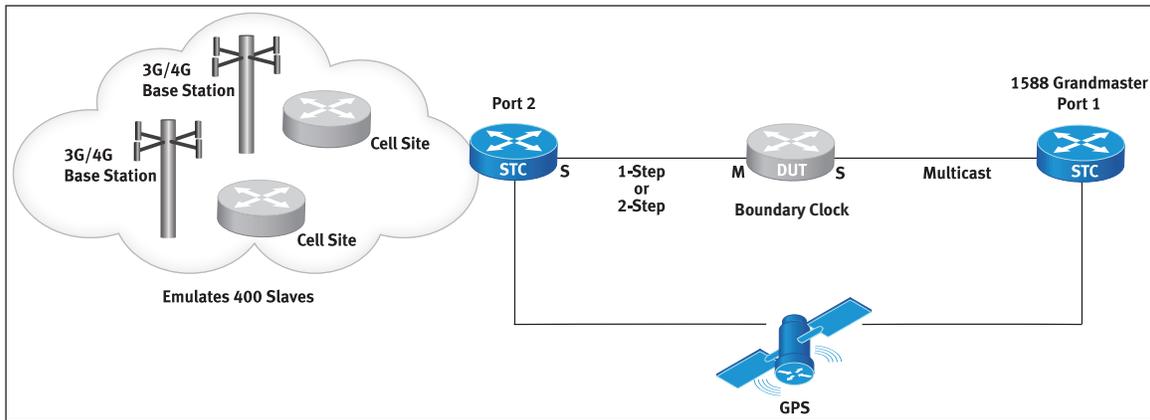
1588 Boundary Clock Testing
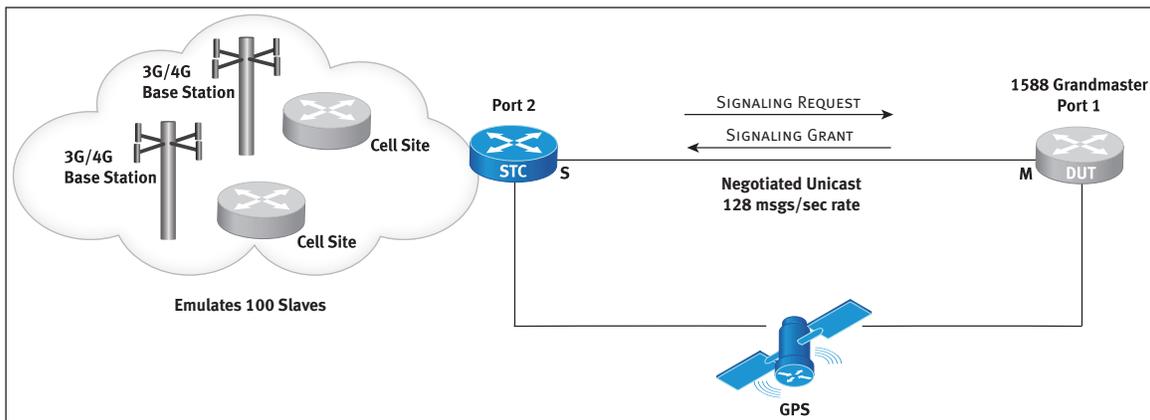
1588 Telecom Profile Testing
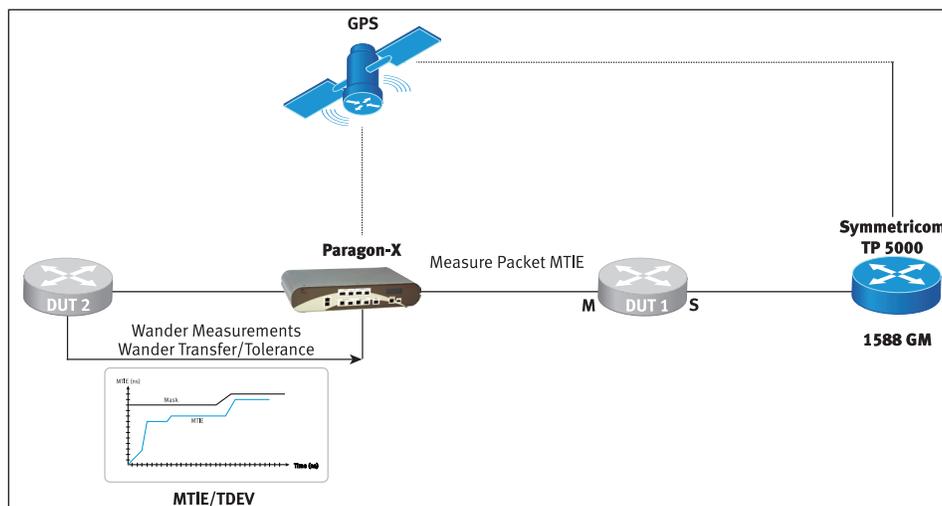
1588 PDV and G.8261 Testing

TECHNICAL SPECIFICATIONS

Clock Configuration Parameters

- Clock Identity
- Port Number
- Priority 1/Priority 2 values
- Domain Number
- Clock Class
- Slave only specification
- Time Source
- Encapsulation
- Announce Receipt Timeout
- Clock Accuracy
- Clock Step Mode
- Unicast Discovery
- Unicast Master Port Address List (IPv4, Ethernet, IPv6)
- Tx Delay Response Frame Dropped Percentage
- Tx Follow Up Frame Dropped Percentage
- Tx Frame CRC Error Percentage
- Tx Frame Time Stamp Error Percentage
- Log Announce Interval
- Log Sync Interval
- Log Minimum Delay Request Interval
- Sync Correction Field
- Follow Up Correction Field
- Delay Request Correction Field
- Delay Response Correction Field
- Unicast Enabled
  - Announce duration
  - Sync duration
  - Delay response duration
  - PDelay response duration
  - Sleep time
  - Request interval
  - Request retry count
  - Unicast request message type

Clock Results

- Clock State
- Tx/Rx Announce Count
- Tx/Rx Sync Count
- Tx/Rx Follow Up Count
- Tx/Rx Delay Request Count
- Tx/Rx Delay Response Count
- Current Offset
- Tx/Rx Peer Delay Request Count
- Tx/Rx Peer Delay Response Count
- Tx/Rx Peer Delay Followup Count
- Negative Offset Peak
- Positive Offset Peak

Clock Results (continued)

- Offset Deviation
- Offset Standard Deviation
- Current Mean Path Delay
- Minimum Mean Path Delay
- Maximum Mean Path Delay
- Average Mean Path Delay
- Average Offset Plus Deviation
- Average Offset Minus Deviation
- Log Minimum Delay Request Deviation
- Peer Mean Path Delay
- PDelay Response Correction Field
- PDelay Response Followup Correction Field

Parent Clock Results (per clock/port)

- Parent Port Number
- Parent Stats
- Observed Parent Offset Scaled Log Variance
- Grandmaster Identity
- Grandmaster Clock Class
- Grandmaster Clock Accuracy
- Grandmaster Clock Offset Scaled Log Variance
- Grandmaster Priority 1/Priority 2

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TECHNICAL SPECIFICATIONS (CONTINUED)

Foreign Master Clock Results (per clock/port)

- Clock Identity
- Port Number
- Announce Count
- Time Window
- Threshold

IEEE-1588 Log Entries (per clock/port)

- Clock State Transitions
- State Transition Events
- Faults
- Announce Frames
- Changes in Grandmaster Clock

SUPPORTED MODULES & PLATFORMS

- Supported on Series 1000, 2000, HyperMetrics and HyperMetrics neXt Ethernet test modules
- Supported on all Spirent TestCenter chassis

REQUIREMENTS

Minimum PC, UNIX, or Linux Requirements by System Size

- For Small Port System (2-25 ports)
  Minimum Requirement–2.4 GHz Intel™ Pentium 4 processor (or equivalent), 512 MB RAM and 10 GB of free disk space
  Recommended System – Intel Core™ 2 Duo E6300 processor (or equivalent), 2 GB of free RAM, and 10 GB of free disk space

- For Medium Port System (26-75 ports)
  Minimum Requirement–3 GHz Intel Pentium 4 processor (or equivalent), 2 GB of free RAM, 15 GB of free disk space
  Recommended System–Intel Core 2 Duo E6400 processor (or equivalent), 4GB free RAM, 100 GB of free disk space

- For Large System (76 ports and above)
  Minimum Requirement–Intel Core 2 Duo E6400 processor (or equivalent), 3 GB free RAM, 100 GB free space on hard drive
  Recommended System–Intel Core 2 Duo E6600 processor (or equivalent), 4 GB of RAM, 100 GB of free disk space

Spirent TestCenter Hardware Requirements

- Pentium® or greater PC running Windows® XP Professional SP2 with mouse/color monitor required for GUI operation (See Minimum PC Requirements section)

- One Ethernet cable and one 10/100/1000 Mbps Ethernet card installed in the PC, a SPT-2000A Spirent 2U Chassis and Controller, SPT-5000A Spirent 5U Chassis and Controller, SPT-9000A Spirent 9U Chassis and Controller or Hypermetrics neXt series SPT-11U Chassis and Controller

- Operating system languages supported: English, French, German, Italian, Japanese, Korean and Chinese (traditional and simplified)

- Operating systems supported: Windows XP SP2, Windows 2003 Server (32 bit), RedHat EL3 and EL5, Solaris 8.0 and 10.0

- At least one installed Spirent TestCenter Ethernet module

- BPK-1001A, Packet Generator and Analyzer Base Package

ORDERING INFORMATION	
Description	**Part Number**
IEEE-1588v2 Timing and Synchronization Base Package	BPK-1155A
ASSOCIATED ROUTING & MBH PACKAGES	
Ethernet Link OAM Emulation Base Package	BPK-1067A
Link Aggregation Control Protocol Base Package	BPK-1015A
802.1AG/Y.1731 EOAM Fault Management Base Package A/B	BPK-1059A/B
Unicast Routing Base Package A/B	BPK-1004A/B
MPLS/LDP/RSVP-TE Base Package A/B	BPK-1006A/B
Synchronous Ethernet Base Package	BPK-1180A
MPLS-TP Base Package	BPK-1160B
MPLS-TP Performance Monitoring Base Package	BPK-1092A
MPLS-TP Protection Switching Base Package	BPK-1191A
Y.1731 EOAM Performance Monitoring Base Package A	BPK-1150A

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