Spirent **TestCenter**™

IEEE 1588v2 Timing and Synchronization

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 main or subordinate clocks, run the best main clock algorithm or negotiated unicast procedures, and exchange PTP messages with attached devices. This enables functional, performance and accuracy testing of boundary, transparent, main and subordinate 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 main, subordinate 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 subordinate clocks per port
- Supports E2E and P2P transparent clock procedures
- Supports 1-step and 2-step clocks

Supports scale testing of Telecom Profile Main and Subordinate 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 main or subordinate 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 main, subordinate, 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

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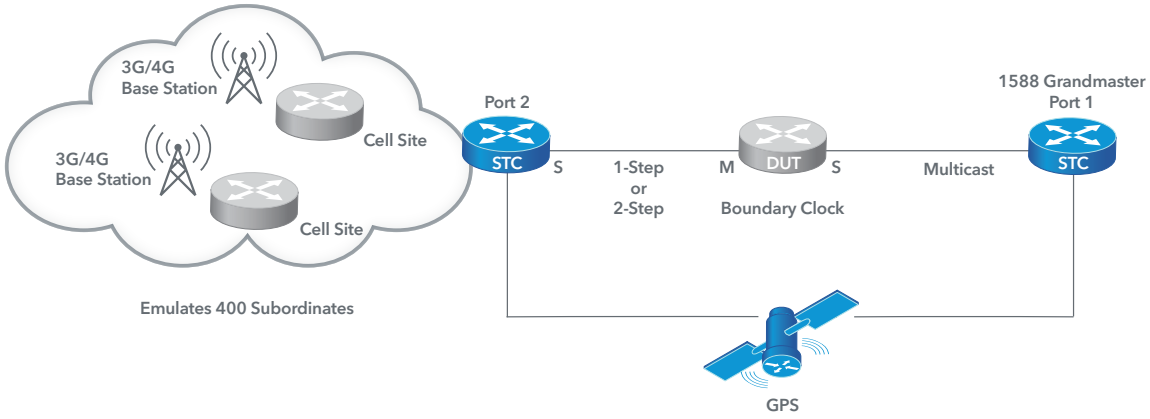
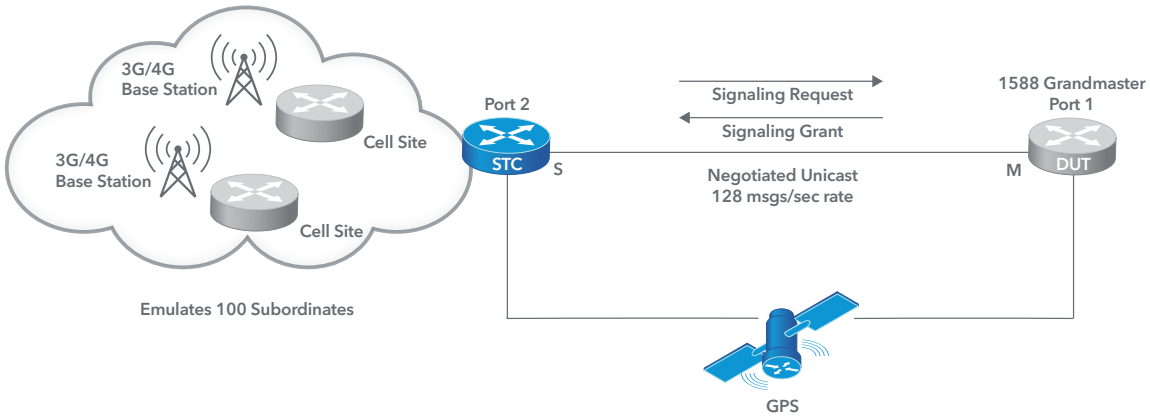
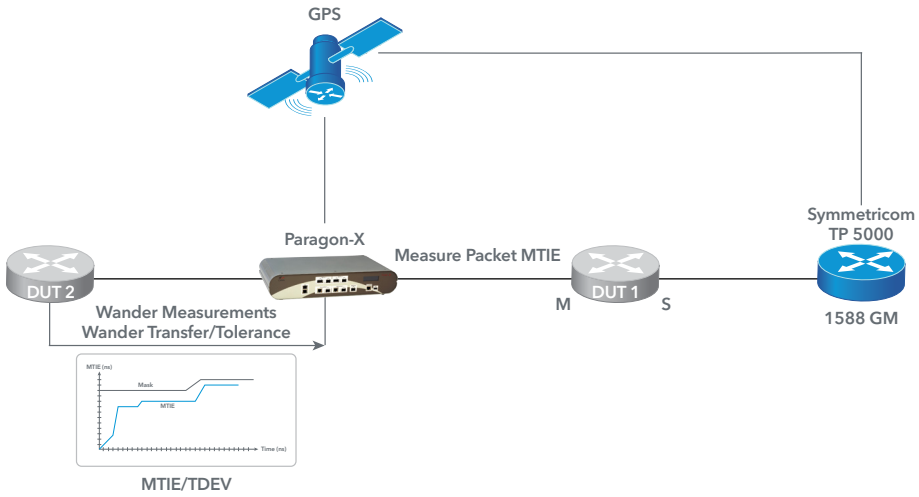
IEEE 1588v2 Timing and Synchronization



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
- Subordinate only specification
- Time Source
- Encapsulation
- Announce Receipt Timeout
- Clock Accuracy
- Clock Step Mode
- Unicast Discovery
- Unicast Main 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
- Grandmain Identity
- Grandmain Clock Class
- Grandmain Clock Accuracy
- Grandmain Clock Offset Scaled Log Variance
- Grandmain Priority 1/Priority 2

Foreign Main 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 Grandmain Clock

Supported Modules & Platforms

- BPK-1155A is supported on all Spirent TestCenter Ethernet modules.

About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges.

Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

For more information, visit: www.spirent.com

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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