Convergence is creating a new generation of integrated network devices and services that are much more complex than ever before. The resulting increased complexity, scarcity of testing skills and architectural shortcomings in current test systems are hurting the ability of manufacturers to ship products on time at escalating quality levels and slowing service providers’ ability to deploy networks that get Quality of Experience (QoE) right the first time.

INCREASE PRODUCTIVITY: GET THERE FASTER WITH SPIRENT TESTCENTER

- Multiple test suites can be run sequentially without user intervention. This key capability saves time by allowing the user to configure and then execute multiple test suites without any further interaction. The user can then move on to other tasks and analyze the data later in the day once all tests are completed.
- The user can automate all interaction with the device under test, eliminating the need for a user to actively monitor the test.
- A hierarchical view of pass, fail, or inconclusive results enables users to quickly find any issues when looking through hundreds or thousands of results.
- Multiple results views including pass/fail, packet decodes, ladder diagrams and raw hex views facilitate rapid identification and analysis of failure or inconclusive conditions.
- Easily compare the results from multiple test runs to facilitate bug-tracking metrics through regression cycles.
- User can rerun tests based on their conclusion in a previous test (e.g., pass, fail, or inconclusive). This unique ability allows users to quickly focus on problem areas during troubleshooting phases of the test cycle.

Spirent can help you address this challenge with Spirent TestCenter™ and its innovative Inspire Architecture™. Now you can create and execute more complex test cases in less time with the same resources—and scale tests higher while debugging problems faster. The results: Lower CAPEX and OPEX, faster time-to-market, greater market share and higher profitability.

The Conformance Application enables customers to lower development costs and improve product interoperability by identifying correct protocol operation earlier in the development cycle. Best effort is not enough.
CONFORMANCE APPLICATION

SPIRENT TESTCENTER

3-port Test Topology

Host X

Ring Node A

Device Under Test

Ring Node B

IUT
Sample ladder diagrams for Pass and Fail test cases with detailed result analysis
The data communications industry is evolving to meet the divergent needs of increasing functionality, lowering communications cost and addressing a very large deployment for an ever-increasing customer base. To add to the challenges, new products must work in the same network with existing products from the previous decade of growth.

Interoperability, time-to-market and reliability are critical to the success of any new product or service. The Spirent TestCenter Conformance Application is uniquely suited to help customers improve their testing process and ensure their success in each of the above areas.

APPLICATIONS

- Determine the level of compliance with the standards and specifications relating to a protocol or application
- Identify protocol failures earlier in the development and integration cycles to reduce project costs
- Isolate which non-interoperable products are not behaving

BENEFITS

- **Reduce time to test**: By using BPK-1024A, testers can dramatically decrease the time required to test their network devices and qualify their new network services.
  - User interaction with the test execution is completely eliminated. There is no need for the user to actively monitor the system to reconfigure the device under test or to manually start new tests.
  - Multiple test suites can be run simultaneously from a single Spirent TestCenter Conformance Application instance. This change enables chaining multiple test suites together for sequential execution or to run multiple test suites in parallel to reduce test execution time.
  - Each test case is fully documented in the application. The documentation includes the specification section reference, the actual text from the section, if the specification is in the public domain, an indication of the number of ports required for the test case, and a graphical depiction of the configuration being tested.
  - Multiple results views and execution options facilitate the rapid identification, comparison, troubleshooting and retesting of test cases
Industry-leading experience: BPK-1024A represents the next-generation of conformance testing from the established leader in test and measurement

- The Spirent TestCenter Conformance Application and test packages are developed by Spirent Communications and are not third-party products. The primary benefit to the customer and rapid execution of the conformance tests on Spirent TestCenter hardware and industry-leading technical support is seamless.

- Established expertise in numerous technologies including Ethernet, IPv6, routing, broadband access multicast, MPLS, Mobile backhaul, Data Center, and Security

Leverages the investment of a single platform to serve multiple needs: Spirent TestCenter has been designed from the ground up to serve the needs of the telecommunications industry for the next decade

- The Spirent TestCenter Conformance Application is supported on all Spirent TestCenter Layer 2-3 test modules

- Once conformance testing is complete, the system can be reused for functional and performance testing

An investment in Spirent TestCenter is protected by the long technological life of this product. Spirent will continue to develop and integrate more solutions into Spirent TestCenter to deliver both a broadened technology footprint and dramatically improved productivity.

SUPPORTED MODULES

The Spirent TestCenter Conformance Application is supported on all Spirent TestCenter Layer 2-3 test modules.

All conformance test suites currently support all Spirent TestCenter Layer 2-3 test modules and personality cards.

REQUIREMENTS

- Pentium or greater PC running Windows® with mouse/color monitor required for GUI operation. (See BPK-1001A data sheet for supported operating systems and minimum PC requirement)

- One Ethernet cable and one 10/100/1000 Mbps Ethernet card installed in the PC

- The Spirent TestCenter Conformance Application is supported on all Spirent TestCenter supported chassis

- BPK-1024A—Conformance Base Package license is required to be installed before any other Conformance Test Suite packages can be run

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<tr>
<td>Part Number</td>
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<td>BPK-1024A</td>
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Technology Test Solutions

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<th>Part Number</th>
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<tr>
<td>SPK-1055</td>
<td>CTS CARRIER ETHERNET TEST SOLUTION</td>
<td>CFM, LINK OAM, MEF 9/14/21 (TPK-0029, TPK-0034, TPK-1064, TPK-1006, TPK-1012, TPK-1049)</td>
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<tr>
<td>SPK-1056</td>
<td>CTS ADVANCED BRIDGING TEST SOLUTION</td>
<td>MSTP, VLAN, PB, PBB, MMRP, MVRP (TPK-1007, TPK-1008, TPK-1036, TPK-1037, TPK-1038, TPK-1047)</td>
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<tr>
<td>SPK-1057</td>
<td>CTS MPLS SERVICES TEST SOLUTION</td>
<td>PWE3, VPLS-LDP, PMTP-TE (TPK-0025, TPK-0028, TPK-1006)</td>
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<tr>
<td>SPK-1058</td>
<td>CTS HIGH AVAILABILITY TEST SOLUTION</td>
<td>LACP, VRRP, OSPPv2/v3 GR, BFD (TPK-1009, TPK-1028, TPK-1034, TPK-1035, TPK-1046)</td>
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<td>SPK-1060</td>
<td>CTS MULTICAST ROUTING TEST SOLUTION</td>
<td>PIM-SMv4/v6, PIM-BSRv4/v6, MSDP (TPK-0021, TPK-0022, TPK-0023, TPK-0024, TPK-1039)</td>
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<td>SPK-1061</td>
<td>CTS IPV6 BASE TEST SOLUTION</td>
<td>IPv4/IPv6 INTERWORKING AND EXTENSIONS, IPv6 (TPK-0019, TPK-0020, TPK-1013)</td>
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<tr>
<td>SPK-1062</td>
<td>CTS LAN SWITCHING TEST SOLUTION</td>
<td>IGMP SNOOPING, MLDv2 SNOOPING, LLDP, LLDP-MED (TPK-0031, TPK-1019, TPK-1027, TPK-1031)</td>
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<tr>
<td>SPK-1063</td>
<td>CTS IPV6 HOST TEST SOLUTION</td>
<td>DHCPv6 HOST, IPv6 HOST (TPK-0032, TPK-1016)</td>
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<td>SPK-1064</td>
<td>CTS MULTICAST GROUP MANAGEMENT TEST SOLUTION</td>
<td>IGMPv2/v3, MLDv1/v2 (TPK-0026, TPK-0030, TPK-1014, TPK-1040)</td>
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<tr>
<td>SPK-1089</td>
<td>CTS DATA CENTER TEST SOLUTION</td>
<td>DCBX, FIP(TPK-1052, TPK-1053)</td>
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<td>SPK-1087</td>
<td>CTS SECURITY TEST SOLUTION</td>
<td>IPSEC-IKE, IPSEC-ESP, IPSEC-AH (TPK-1043, TPK-1044, TPK-1045)</td>
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<tr>
<td>Part Number</td>
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| TPK-0017    | CTS BGP-4 IPv6 TEST PACKAGE | BGP-4 for IPv6  
• BGP/OSPF Interaction  
• BGP Communities Attribute  
• BGP Route Flap Damping  
• Route Refresh for BGP-4  
• AS Confederations  
• Multiprotocol Extensions for BGP-4  
• Use of Multiprotocol Extensions  
• BGP Support for Four-octet AS Number Space  
• Graceful Restart Mechanism for BGP  
• Cooperative Route Filtering Capability for BGP-4  
• BGP Extended Communities Attribute  
• Capabilities Advertisement with BGP-4  
• Address Prefix Based Outbound Route Filter for BGP-4 | RFC 4271  
RFC 1403  
RFC 2918  
RFC 4360  
RFC 3392  
RFC 2545  
Draft-ietf-idr-rfc3065bis-05  
draft-ietf-idr-rfc2796bis-02 (obsolete RFC 2796)  
draft-ietf-idr-rfc2858bis-08  
draft-ietf-idr-as4bytes-12  
draft-ietf-idr-restart-10  
draft-ietf-idr-route-filter-11  
draft-ietf-idr-bgp-prefix-orf-02 |
| TPK-0018    | CTS BGP-4 IPv4 TEST PACKAGE | BGP-4 for IPv4  
• BGP/OSPF Interaction  
• BGP Communities Attribute  
• BGP Route Flap Damping  
• Route Refresh for BGP-4  
• AS Confederations  
• Multiprotocol Extensions for BGP-4  
• BGP Support for Four-octet AS Number Space  
• Graceful Restart Mechanism for BGP  
• Cooperative Route Filtering Capability for BGP-4  
• BGP Extended Communities Attribute  
• Capabilities Advertisement with BGP-4  
• Address Prefix Based Outbound Route Filter for BGP-4 | RFC 4271  
RFC 1403  
RFC 2918  
RFC 4360  
RFC 3392  
RFC 2545  
Draft-ietf-idr-rfc3065bis-05  
draft-ietf-idr-rfc2796bis-02 (obsolete RFC 2796)  
draft-ietf-idr-rfc2858bis-08  
draft-ietf-idr-as4bytes-12  
draft-ietf-idr-restart-10  
draft-ietf-idr-route-filter-11  
draft-ietf-idr-bgp-prefix-orf-02 |
| TPK-0019    | CTS IPV4/V6 INTERWORKING TEST PACKAGE | Common tunneling transition mechanisms, including configured tunneling and automatic tunneling  
• NAT-PT TCP, UDP and ICMP checksum calculation and checking  
• NAT-PT FTP Application Level Gateway (ALG) functionality check  
• Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) verification  
• Stateless IP/ICMP protocol translation algorithm verification for both IPv4 to v6 and IPv6 to v4 protocol translation  
• Exercise IPv4 over an IPv6 tunnel in the dual stack transition mechanism  
• Verify generic packet tunneling including nested encapsulation, tunnel packet size and tunnel error process validation  
• Functionality verification of the connection of IPv4-IPv6 domains via IPv4 clouds | Draft-ietf-ngtrans-dstm-07  
RFC 2473  
RFC 2893  
RFC 3056 |
# ORDERING INFORMATION (CONTINUED)

## IP Routing (continued)

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| TPK-0020    | CTS IPv4v6 INTERWORKING EXTENSION TEST PACKAGE | • NAT-PT TCP, UDP and ICMP checksum calculation and checking  
• NAT-PT FTP Application Level Gateway (ALG) functionality check  
• Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) verification  
• Stateless IP/ICMP protocol translation algorithm verification for both IPv4 to v6 and IPv6 to v4 protocol translation | • RFC 2766  
• RFC 2765  
• RFC 4214 |
| TPK-1013    | CTS IPV6 TEST PACKAGE | • NDP  
• Stateless Autoconfiguration  
• Path MTU Discovery  
• IPv6 Jumbograms  
• ICMP  
• Connecting IPv6 Domains via IPv4 Clouds  
• Inverse Discovery for NDP | • draft-ietf-ipngwg-icmp-v3-02  
• RFC 1981  
• RFC 2374  
• RFC 2460  
• RFC 2461  
• RFC 2675  
• RFC 3056  
• RFC 3122  
• RFC 4443  
• RFC 2462 |
| TPK-1015    | CTS OSPFv3 TEST PACKAGE | • Adjacency establishment, maintenance, and deletion  
• Designated router election  
• Error handling  
• Preferred path hierarchical routing  
• Database exchange  
• Neighbor state verification  
• Support for virtual link  
• LSA operation and support for the various LSA fields Support for different types of routers—such as internal routers, area border routers, Backbone routers, and AS boundary routers  
• OSPFv3 header and IPv6 header format checking for OSPFv3 protocol packets  
• OSPFv3 packet format checking  
• Verification of OSPFv3 operation per-link basis  
• Verification of OSPFv3 multiple protocol instance operation over a single link  
• Support of multiple prefixes on a single interface  
• Point-to-point, NBMA (non-broadcast multi-access) and Ethernet network operation | • RFC 2328  
• RFC 2740 |
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<tr>
<th>Part Number</th>
<th>Test Package Name</th>
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| TPK-1016    | CTS IPV6 HOST TESTING TEST PACKAGE | • IPv6 tests  
• Extension headers  
• Neighbor Discovery tests  
• Router Prefix Discovery  
• Address Resolution & Neighbor Unreachability Detection  
• ICMPv6 tests  
• Processing rules  
• Error messages  
• Informational messages  
• IPv6 stateless address autoconfiguration | • RFC 2460  
• RFC 2461  
• RFC 4443  
• RFC 2462 |
| TPK-1017    | CTS OSPFV2 TEST PACKAGE          | • Adjacency establishment, maintenance, and deletion  
• Designated router election  
• Error Handling  
• Preferred path hierarchical routing  
• Database exchange  
• Neighbor state verification  
• Support for virtual link  
• LSA operation and support for the various LSA fields  
• Support for different types of routers, including internal routers, area border routers, backbone routers, and AS boundary routers  
• Point-to-point, non-broadcast Multi Access (NBMA) and broadcast operation | • RFC 1587  
• RFC 1765  
• RFC 1793  
• RFC 2328  
• RFC 2370 |
| TPK-1018    | CTS RIPV1V2 TEST PACKAGE         | • RIPv1 and RIPv2 interoperability  
• Request message processing  
• Response message processing  
• Packet forwarding via RIP learned routes  
• Split horizon  
• Timers  
• Text authentication | • RFC 2082  
• RFC 2453 |
| TPK-1028    | CTS VRRP TEST PACKAGE            | • VRRP protocol requirements and overview  
• VRRP packet format  
• Protocol state machines  
• Sending and receiving validation  
• Response to host ARP requests  
• Multiple Virtual Routers scenario | • RFC 3768 |
### ORDERING INFORMATION (CONTINUED)

#### IP Routing (continued)

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<tr>
<td>TPK-1029</td>
<td>CTS IS-ISv4 TEST PACKAGE</td>
<td>- Can be concurrently or separately run in IPv4, and OSI environments</td>
<td>- ISO/IEC 10589:1992</td>
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<tr>
<td></td>
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<td>- Level 1 and Level 2 adjacency operations, including establishment, maintenance, and</td>
<td>- ISO/IEC 10589:1992/Cor.1: 1993</td>
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<tr>
<td></td>
<td></td>
<td>deletion for point-to-point and broadcast operations</td>
<td>- ISO/IEC 10589:1992/Cor.2: 1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Level 1 and Level 2 adjacency independence for point-to-point and broadcast operations</td>
<td>- IETF RFC 1195</td>
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<tr>
<td></td>
<td></td>
<td>- Designated IS election and resignation</td>
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<td>- IS-IS Update process integrity for point-to-point and broadcast operations</td>
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<tr>
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<td></td>
<td>- IS-IS Decision process operation</td>
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<td></td>
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<td>- IPv4 extension summary address operation</td>
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<td>- Manual routing information propagation</td>
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<td>- Attach flag management</td>
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<td>- Address summarization</td>
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<td>- External link operation</td>
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<td></td>
<td>- Adjacency state table operation, including maintenance, establishment, and deletion</td>
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<td></td>
<td>OSI and IP authentication for link, area, and domain authentication</td>
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<td>- Level 1 and Level 2 routing</td>
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<td></td>
<td></td>
<td>- ESH PDU handling/soliciting ES configuration</td>
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<td></td>
<td>- Protocol error scenarios</td>
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<td>- PDU encoding errors</td>
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<td>- Timer jitter measurement</td>
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<tr>
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<th>Test Package Name</th>
<th>Supported Test Features</th>
<th>Relevant Specifications</th>
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</thead>
</table>
| TPK-1030    | CTS IS-ISv6 TEST PACKAGE           | - Can be concurrently or separately run in IPv6, and OSI environments  

- Level 1 and Level 2 adjacency operations, including establishment, maintenance, and deletion for point-to-point and broadcast operations  

- IPv6 extensions for adjacency establishment  

- Level 1 and Level 2 adjacency independence for point-to-point and broadcast operations  

- Designated IS election and resignation  

- IS-IS Update process integrity for point-to-point and broadcast operations  

- IS-IS Decision process operation  

- IPv6 extension summary address operation  

- Manual routing information propagation  

- Attach flag management  

- Address summarization  

- External link operation  

- Adjacency state table operation, including maintenance, establishment, and deletion OSI and IP authentication for link, area, and domain authentication  

- Level 1 and Level 2 routing  

- ESH PDU handling/soliciting ES configuration  

- Protocol error scenarios  

- PDU encoding errors  

- Timer jitter measurement  

- ISO/IEC 10589:1992  


- RFC 1195  

- Draft-ietf-isis-ipv6-05  

| TPK-1041    | CTS RIPNG TEST PACKAGE             | - Request Message Processing  

- Response Message Processing  

- Split Horizon  

- Timers  

- Forwarding  

- RFC 3623  

- RFC 2328  

| TPK-1034    | CTS OSPFV2 GRACEFUL RESTART TEST PACKAGE | - Message Format  

- Restarting Router  

- Helper Mode  

- RFC 3623  

- RFC 2328  

| TPK-1035    | CTS OSPFV3 GRACEFUL RESTART TEST PACKAGE | - Message Format  

- Restarting Router  

- Helper Mode  

- draft-ietf-ospf-ospfv3-graceful-restart-07.txt  

- RFC 3623  

- RFC 2328  

<p>|</p>
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<tr>
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<th>Test Package Name</th>
<th>Supported Test Features</th>
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</thead>
</table>
| TPK-0021    | CTS PIM-SM IPV6 TEST PACKAGE | **PIM-SM operation over IPV6**  
  - PIM-SM Finite state machines  
  - Hello message processing and Designated Router Election  
  - Register message processing  
  - Join/Prune message processing  
  - Assert message processing  
  - PIM-SM Timers  
  - PIM-SM packet format  
  - Optional Informational (these test cases verify optional requirements and provide helpful information regarding the support of such requirements on the IUT)  
  - SSM-Source Specific Multicast  
  - Interoperability of PIM-SM with the following host routing protocols: MLDv1 and MLDv2  
  - Support of RIP and BGP unicast routing protocol for creating the PIM-SM multicast routing table  
  - Support for the following Layer 2 types: Broadcast, NBMA and PPP | • Draft-ietf-pim-sm-v2-new-07  
Supplementary:  
• Draft-vida-mld-v2-07  
• RFC 2710  
• RFC 2715 |
| TPK-0022    | CTS PIM-SM IPV4 TEST PACKAGE | **PIM-SM operation over IPV6**  
  - PIM-SM Finite state machines  
  - Hello message processing and Designated Router Election  
  - Register message processing  
  - Join/Prune message processing  
  - Assert message processing  
  - PIM-SM Timers  
  - PIM-SM packet format  
  - Optional Informational (these test cases verify optional requirements and provide helpful information regarding the support of such requirements on the IUT)  
  - SSM-Source Specific Multicast  
  - Interoperability of PIM-SM with the following host routing protocols: MLDv1 and MLDv2  
  - Support of RIP and BGP unicast routing protocol for creating the PIM-SM multicast routing table  
  - Support for the following Layer 2 types: Broadcast, NBMA and PPP | • Draft-ietf-pim-sm-v2-new-07  
Supplementary:  
• Draft-vida-mld-v2-07  
• RFC 2710  
• RFC 2715 |
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<th>Supported Test Features</th>
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<tr>
<td>TPK-0023</td>
<td>CTS PIM-BSR IPV4 TEST PACKAGE</td>
<td>PIM-BSR IPv4 • State transitions for Candidate BSR • State transitions for Non-Candidate BSR • Admin-Scope and Non-Admin scope operation • Periodic Transmission • Updating the RP to group mapping • BSM validation • Bootstrap Message format • C-RP Adv message format</td>
<td>Draft-ietf-pim-sm-bsr-06</td>
</tr>
<tr>
<td>TPK-0024</td>
<td>CTS PIM-BSR IPV6 TEST PACKAGE</td>
<td>PIM-BSR IPv6 • State transitions for Candidate BSR • State transitions for Non-Candidate BSR • Admin-Scope and Non-Admin scope operation • Periodic Transmission • Updating the RP to group mapping • BSM validation • Bootstrap Message format • C-RP Adv message format</td>
<td>Draft-ietf-pim-sm-bsr-06</td>
</tr>
<tr>
<td>TPK-0026</td>
<td>CTS IGMPv3 TEST PACKAGE</td>
<td>• Format verification for IGMPv3 Query and IGMPv3 Report messages • Operation as an IGMPv3 Group Member • Operation as an IGMPv3-capable Multicast Router • Multicast data forwarding • Interoperability with IGMPv2</td>
<td>RFC 2236, RFC 3376</td>
</tr>
<tr>
<td>TPK-0030</td>
<td>CTS IGMPV2 TEST PACKAGE</td>
<td>• Format verification for IGMPv2 Query and IGMPv2 Report message • Operation as IGMPv2 Group Member • Operation as IGMPv2 capable Multicast Router • Interoperability with IGMPv1</td>
<td>RFC 2236</td>
</tr>
<tr>
<td>TPK-0031</td>
<td>CTS IGMP SNOOPING TEST PACKAGE</td>
<td>• IGMPv2 and IGMPv3 message forwarding • Multicast data forwarding • IGMP v2/v3 interoperability • IGMPv2 and IGMPv3 Snooping Querier</td>
<td>RFC 4541</td>
</tr>
<tr>
<td>TPK-1014</td>
<td>CTS MLDV2 TEST PACKAGE</td>
<td>• Format verification for MLDv2 Query and MLDv2 Report message • Operation as MLDv2 Listener • Operation as MLDv2 capable multicast router • Multicast data forwarding • Informational (these test cases are for optional specifications and provide information regarding the protocol implementation under test) • Interoperability with MLDv1</td>
<td>RFC 3810</td>
</tr>
<tr>
<td>TPK-1019</td>
<td>CTS MLD SNOOPING TEST PACKAGE</td>
<td>• MLDv1 and MLDv2 message forwarding • Multicast data forwarding • MLDv1/v2 Interoperability • MLDv1 and MLDv2 Snooping Querier</td>
<td>RFC 4541</td>
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<tr>
<td>Part Number</td>
<td>Test Package Name</td>
<td>Supported Test Features</td>
<td>Relevant Specifications</td>
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</table>
| TPK-1040    | CTS MLDV1 TEST PACKAGE | • IPv6 header options, source and destination addresses formatting  
• MLD messages formatting and contents validation  
• Reserved fields handling  
• Multicast group joining/leaving procedures  
• Startup procedures  
• Multicast group solicitation procedures  
• Querier and Non-Querier operations and transition procedures | • RFC 2464  
• RFC 2710  
• RFC 2711 |
| TPK-1039    | CTS MSDP TEST PACKAGE | • MSDP Protocol Operation  
• Caching SA-messages.  
• MSDP Peer-RPF forwarding.  
• MSDP mesh group operation.  
• Source-Active Filtering  
• MSDP Packet Format Verification  
• Source-Active Message processing  
• Source-Active TLV format verification  
• Packet Format Error processing  
• MSDP Timers | • RFC 3618 |
| TPK-0025    | CTS PWE3 ETHERNET ENCAP TEST PACKAGE | • Pseudowire signaling (using LDP) including tunnel establishment, tunnel deletion and tunnel error handling  
• Pseudowire signaling support for capability exchange for control word usage, FCS retention, Fragmentation, VCCV  
• Pseudowire status notification using either label withdraw, PW Status TLV or wildcard withdraw  
• Pseudowire signaling support for Generalized PWID FEC (129), including support for related TLVs (Group ID TLV and PW Interface Parameters TLV)  
• Layer 2 error handling  
• Sequence number processing  
• Virtual Circuit Connectivity Verification (VCCV) with LSP-Ping Encapsulation  
• Ethernet encapsulation FCS retention  
• Ethernet encapsulation fragmentation  
• RSVP-TE or LDP as core tunneling protocol | • draft-ietf-pwe3-control-protocol-17  
• draft-ietf-pwe3-ethernet-encap-11  
• RFC 4385  
• draft-ietf-pwe3-fcs-retention-04  
• draft-ietf-pwe3-fragementation-10  
• draft-ietf-pwe3-vccv-07 |
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#### VPN & MPLS (continued)

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| TPK-0028    | CTS VPLS TEST PACKAGE | • Supports different MPLS label distribution mechanisms (RSVP-TE, LDP) for tunnel label distribution within the MPLS core network  
• Supports the following layer 2 encapsulations  
  • Ethernet  
  • Ethernet VLAN  
  • Control Word usage  
• Verifies VC Tunnel Set Up  
  • VC tunnel establishment  
  • Control Word negotiation  
  • VC tunnel deletion  
• Verifies VPLS topological model  
  • Data flooding (proper operation w/ various multicast, broadcast and unknown addresses)  
  • Spanning tree protocol PDU handling  
• Verifies Control Plane functionality—MAC TLV handling in Address Withdraw message  
• Verifies data forwarding functionality—Support of qualified and unqualified learning for overlapping and unique customer MAC address space  
• Verifies Hierarchical Model support  
  • Interworking of the IUT with MTUs or PEs  
  • Exercises the redundant spoke connections  
• Functional Tests  
  • Checks for proper MAC address learning across user-specified range of MAC addresses and/or VLAN IDs from directly connected customer interfaces and from pseudo-wire connected interfaces.  
  • Checks for proper packet forwarding across user-specified range of MAC addresses and/or VLAN IDs from core to edge and from edge to core.  
  • Checks for proper packet forwarding with different ether type fields | • RFC 4762  
• RFC 4447  
• RFC 4448  
• RFC 4665  
• RFC 4385 |
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<td>TPK-1048</td>
<td>CTS POINT-TO-MULTIPOINT RSVP-TE TEST PACKAGE</td>
<td>This test suite includes coverage for the following areas:  - P2MP Mechanism  - P2MP Path Message  - Multiple sub LSPs in single Path  - Multiple Path messages  - P2MP Resv Message  - Resv Message Throttling  - ERO/SERO Processing  - RRO/SRRO Processing  - Path Tear Message  - Notify Messages  - ResvConf Messages  - P2MP State Management  - Error Processing: PathErr/ResvErr and Branch Failure Handling  - Compatibility with P2P  - LSP Remerge  - P2Mp Message Object encodings  - Invalid Packet handling</td>
<td>RFC 4875 Extensions to Resource Reservation Protocol—Traffic Engineering (RSVP-TE) for Point-to-Multipoint TE Label Switched Paths (LSPs)</td>
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<tr>
<td>BGP VPLS</td>
<td>TPK-1072 CTS BGP-VPLS TEST PACKAGE</td>
<td>Different MPLS label distribution mechanisms (RSVP-TE, LDP) for tunnel label distribution  - PE Auto-Discovery  - Signaling  - Multi-AS VPLS (Option B and Option C)  - Multi-homing and Path Selection  - Layer 2 Encapsulation  - Data Forwarding</td>
<td>RFC 4761 Virtual Private LAN Service (VPLS) Using BGP for Auto-Discovery and Signaling RFC 3748  RFC 4360 BGP Extended Communities Attribute RFC 3579  RFC 4760 Multiprotocol Extensions for BGP-4 RFC 1994  RFC 4448 Encapsulation Methods for Transport of Ethernet over MPLS Networks  RFC 4385 Pseudowire Emulation Edge-to-Edge (PWE3) Control Word for Use over an MPLS PSN</td>
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<tr>
<td>LDP &amp; RSVP</td>
<td>TPK-1070 CTS RSVP Test Package</td>
<td>The Resource Reservation Protocol—Traffic Engineering(RSVP) Conformance Test Suite(CTS) performs conformance testing for RSVP-TE implementations and verifies the following functions:  - Operation of Tunnels  - Reservation Styles  - Path MTU  - Message Format  - LSP Objects encoding and decoding rules</td>
<td>RFC 3209 RSVP-TE: Extensions to RSVP for LSP Tunnels</td>
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### Ordering Information (Continued)

#### LDP & RSVP (continued)

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<td>TPK-1071</td>
<td>CTS LDP Test Package</td>
<td>- Hello Extension&lt;br&gt;- LDP Discovery: This test group includes test cases related to LDP discovery mechanism, including the basic discovery mechanism and the extended discovery mechanism&lt;br&gt;- LDP Session Establish: This test group includes test cases related to LDP session establishment and transport connection establishment&lt;br&gt;- LDP Session Initialization: This test group includes test cases related to LDP session initialization, including Hello adjacencies maintenance and LDP sessions maintenance&lt;br&gt;- LDP Loop Detection: This test group includes test cases related to the LDP loop detection&lt;br&gt;- LDP Messages: This test group includes test cases related to the LDP messages, including the Label Request message, Label Mapping message, Initialization message, Notification message, Hello message, KeepAlive message, Address message, Address Withdraw message, Label Abort Request message, Label Withdraw message and Label Release message&lt;br&gt;- LDP Events: This test group includes test cases related to a Label Switch Router’s behavior under different LDP events, including recognizing new FECs, receiving label requests, receiving label mappings, detecting next hop changes, receiving label abort requests, receiving label releases, receiving label withdrawals and receiving notification messages</td>
<td>RFC 5036 LDP Specification</td>
</tr>
<tr>
<td>TPK-0027</td>
<td>CTS 802.1X TEST PACKAGE</td>
<td>- Verifies both the Authenticator and the Supplicant functionalities&lt;br&gt;- Authenticator verification supports the use of a third-party Authentication Server (for example FreeRadius) or Spirent’s own emulated RADIUS server&lt;br&gt;- Exercises the test scenarios between the Backend Authentication state machine and the RADIUS server&lt;br&gt;- Supports the use of either IPv4 or IPv6 for the RADIUS session&lt;br&gt;- Supports the use of either IPv4 data packets or IPv6 data packets for verifying data path connectivity</td>
<td>IEEE 802.1X-2004&lt;br&gt;Supplementary standards from the IETF:&lt;br&gt;- RFC 3748&lt;br&gt;- RFC 2865&lt;br&gt;- RFC 3579&lt;br&gt;- RFC 3850&lt;br&gt;- RFC 1994&lt;br&gt;- RFC 2246&lt;br&gt;- RFC 2716&lt;br&gt;- draft-josefsson-pppext-eap-tls-eap-06.txt</td>
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</table>
| TPK-1026    | CTS IEEE 802.1X ADVANCED WITH PEAP AND TLS TEST PACKAGE                            | • Verifies both the Authenticator and the Supplicant functionalities  
• Uses Spirent's own emulated RADIUS server — the RADIUS server is emulated within the test suite itself and exercises the test scenarios between the Backend Authentication state machine and the RADIUS server  
• Supports MD5, EAP-TLS and PEAP based authentication type PDUs  
• Supports the use of IPv4 for the RADIUS session  
• Supports the use of either IPv4 data packets or IPv6 data packets for verifying data path connectivity  
• IEEE 802.1X-2004  
Supplementary standards from the IETF:  
• RFC 3748  
• RFC 2865  
• RFC 3579  
• RFC 3850  
• RFC 1994  
• RFC 2246  
• RFC 2716  
• draft-josefsson-pppext-eap-tls-eap-06.txt |
| TPK-0029    | CTS ETHERNET CFM (802.1ag) TEST PACKAGE                                           | Verifies:  
• Connectivity Check Protocol  
• Linktrace Protocol  
• Loopback Protocol  
• MEP and MHF functions  
• Validation tests of CFM PDUs and TLVs  
• IEEE 802.1ag-D8 |
| TPK-0034    | CTS ETHERNET LINK OAM (802.3ah) TEST PACKAGE                                      | Verifies:  
• OAM sublayer for Active and Passive mode functionalities  
• OAMPDU Reception  
• OAMPDU Transmission  
• Verify the OAM discovery mechanism  
• Verify the OAM transmit state diagram  
• Verify the OAM sublayer multiplexer state diagram  
• Verify the OAM Parse state diagram  
• Verify the OAM functions for monitoring link operation such as remote loopback control.  
• Initiating OAM Remote Loopback  
• During OAM Remote Loopback  
• Exiting OAM Remote Loopback  
• Verify the OAM Event Notification for link operation  
• IEEE 802.3ah |
| TPK-1006    | CTS MEF9 TEST PACKAGE                                                             | • MEF 6—Ethernet Services Definition – Phase I  
• MEF 9—Abstract Test Suite For Ethernet  
• Services at the UNI  
• MEF 10 (obsoletes MEF 1 and MEF 5)—Ethernet Services Model, Phase 1  
• MEF 11—User Network Interface (UNI) Requirements and Framework  
• MEF 1  
• MEF 14 |
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| TPK-1007    | CTS MSTP TEST PACKAGE | • Verify BPDU handling and bridge operation  
• Verify that the bridge correctly updates the learned station location information  
• Verify the configuration of active topology into a single spanning tree for any given VLAN  
• Verify that an implementation is compatible with previous standard, and can coexist with RSTP and legacy bridges  
• Verify the operation of each bridge port that is represented by a set of state machines:  
  • Port timers state machine  
  • Port information state machine  
  • Port role selection state machine  
  • Port role transitions state machine  
  • Port state transition state machine  
  • Topology change state machine  
  • Port protocol migration state machine  
  • Port receive state machine  
  • Port transmit state machine  
• Verify general procedures such as:  
  • Packet format  
  • BPDUs validation  
  • Functional procedures  
  • Port variables  
  • Priority vector calculations  
• Verify the setting of the MSTP parameters | IEEE 802.1Q-2003  
IEEE 802.1s  
IEEE 802.1w-2001 |
| TPK-1012    | CTS MEF 14 TEST PACKAGE | • Allows user to use different EVC type (EPL, EVPL, and ELAN)  
• Performance Service Attributes  
  • Frame Delay Performance  
  • Frame Delay Variation Performance  
  • Frame Loss Ratio Performance  
• Bandwidth Profile Service Attributes  
  • Per Ingress UNI  
  • Per EVC  
  • Per Class of Service | MEF 10  
MEF 14 |
| TPK-1038    | CTS PROVIDER BRIDGES (802.1AD) TEST PACKAGE | • Customer VLAN aware component conformance  
• Service VLAN aware component conformance  
• Layer 2 Protocol message processing  
• Provider Bridge Network Operation | IEEE P802.1ad/D6.0  
IEEE P802.1ad/D2.0 |
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| TPK-1047   | CTS 802.1ah (PBB) | - **Customer Service Interfaces**—Three types of service interface defined for a Provider Backbone Bridge are tested for conformance: Port-based, S-tagged based and I-tagged based service interfaces. Also, the S-tagged service interface can be one of two types: One to one or bundled.  
- **Provider Instance Ports**—A Provider Backbone Bridge is made up of I-components and a B-component. The I-component is the customer facing service interface. It comprises an S-VLAN component with the EISS on each Customer Network Port supported by the use of a Service VLAN tag, and the EISS for each Virtual Instance Port configured on a Provider Instance Port supported by the use of both a Service VLAN tag and a Backbone Service Instance tag. This test group tests the EISS for each Virtual Instance Port configured on a Provider Instance Port.  
- **Customer Backbone Ports**—A Provider Backbone Bridge is made up of I-components and a B-component. A B-component comprises an S-VLAN component with the EISS on each Provider Network Port supported by the use of a Service VLAN tag, and the EISS on each Customer Backbone Port supported by the use of both a Service VLAN tag and a Backbone Service Instance tag. This test group tests the EISS on a Customer Backbone Port.  
- **Functional Tests**—A set of test cases which provide the functional testing for the three types of service interface: Port-based service interface, S-tag based service interface and I-tag based service interface.  
- **IEEE Std 802.1ah-2008**: Virtual Bridged Local Area Networks - Amendment 7: Provider Backbone Bridges  
- **IEEE Std 802.1Q-2005**: Virtual Bridged Local Area Networks  
- **IEEE Std 802.1ad-2005**: Virtual Bridged Local Area Networks—Amendment 4: Provider Bridges |                                                                                         |
| TPK-1049   | CTS MEF 21 TEST PACKAGE | - Abstract Test Cases for UNI-C Type 2 Link OAM  
  - OAM Functional Specifications  
  - OAM Event Notification Generation and Reception  
  - OAM PDU's  
  - OAM Local Information TLVs  
  - OAM Remote Information TLVs  
  - OAM Organization Specific Information TLVs  
  - Link Events TLVs  
  - Variable Descriptor & Containers  
  - OAM Additional Conformance Tests  
- Abstract Test Cases for UNI-N Type 2 Link OAM  
  - OAM Functional Specifications  
  - OAM Event Notification Generation and Reception  
  - OAM PDU's  
  - OAM Local Information TLVs  
  - OAM Remote Information TLVs  
  - OAM Organization Specific Information TLVs  
  - Link Events TLVs  
  - Variable Descriptor & Containers  
  - OAM Additional Conformance Tests | - **MEF 21 Abstract Test Suite** for UNI Type 2 Part 1: Link OAM  
- **MEF 20 UNI Type 2 Implementation Agreement**  
- **IEEE 802.3-2005** Clause 57 Operations, Administration, and Maintenance |
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| TPK-1064    | CTS Y.1731 TEST PACKAGE | • Continuity Check Protocol  
  • Linktrace Protocol  
  • Loopback protocol  
  • Multicast and Unicast  
  • Alarm Indication Signal  
  • Locked Signal  
  • Ethernet Test messaging  
  • Ethernet RDI  
  • Frame Loss Measurement  
  • Single-Ended  
  • Delay measurement  
  • One-Way  
  • Two-Way  
  • OAM PDU format and validation | • ITU-T.Y.1731 |
| TPK-1073    | CTS E-LMI TEST PACKAGE | • UNI-C  
  • E-LMI Framing Mechanism  
  • E-LMI Messages  
  • E-LMI Procedures  
  • E-LMI Impairments  
  • UNI-N  
  • E-LMI Framing Mechanism  
  • E-LMI Messages  
  • E-LMI Procedures  
  • E-LMI Impairments | • MEF 24 Abstract Test Suite for UNI Type 2 Part 1: E-LMI  
  • MEF20 UNI Type 2 Implementation Agreement  
  • MEF 16 Ethernet Local Management Interface (E-LMI) |
| TPK-1074    | CTS ETHERNET RING PROTECTION SWITCHING (G.8032) TEST PACKAGE | • Single ring topology  
  • Multi-ring/Ladder topology  
  • Revertive and Non Revertive Mode support  
  • Priority Logic verification  
  • R-APS State Machine  
  • Flush Logic verification  
  • Backward Compatibility Logic tests  
  • R-APS Message transmission  
  • R-APS Block Logic tests  
  • Protection Switching behavior  
  • Manual and Forced Switch support  
  • R-APS PDU Format | • ITU-T G.8032/Y.1344 (2010) |
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<td>Client Initiated Config Exchange</td>
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<td>Server Initiated Config Exchange</td>
<td>RFC 3736</td>
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<td>TPK-0033</td>
<td>Message Validation</td>
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<td>DHCP Server Solicitation</td>
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<td>GMRP (GARP Multicast Registration Protocol)</td>
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<td>TPK-1010</td>
<td>CTS STP TEST PACKAGE</td>
<td>• Communication of the bridge protocol entity with its peer entities</td>
<td>IEEE 802.1D-1998</td>
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<td>• Update of stored protocol variables and timers</td>
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<td>• State change of the Bridge ports</td>
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<td>• Verifies all the procedures associated with the Bridge Protocol entity such as:</td>
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<td>• Validation of Transmit Configuration Bridge Protocol Data Units (BPDUs)</td>
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<td>• Recording of configuration information and configuration timeout value</td>
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<td>• Reply to Configuration BPDUs</td>
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<td>• Response to Transmit Topology Change Notification BPDUs</td>
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<td>• Designated port selection</td>
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<td>• Topology change detection and acknowledgement</td>
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<td>• Verifies Processing of frames received from individual MAC entities associated with</td>
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<td>the port, the submission of frames to the MAC entity for transmission, and the</td>
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<td>possible inclusion of the port in the active topology of the bridged LAN.</td>
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<td>• Verifies the basic functions of a bridge when it is selected to play roles such as a</td>
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<td>Root, Designated Bridge, or an Alternate Bridge.</td>
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<td>• Verifies the structures and encoding of the BPDUs that are exchanged between the</td>
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<tr>
<td>TPK-1011</td>
<td>CTS RSTP TEST PACKAGE</td>
<td>• Verifies proper Bridge Port behavior</td>
<td>IEEE 802.1D-2004</td>
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<td>• Verifies the information contained in the BPDU may be used by a Bridge in calculating</td>
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<td>its own BPDU to transmit, and may stimulate that transmission.</td>
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<td>• Verifies the bridge updating the learned station location information correctly.</td>
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<td>• Verifies the operation of each Bridge Port that is represented by a set of state</td>
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<td></td>
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<td>machines:</td>
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<td></td>
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<td>• Port Timers state machine</td>
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<td></td>
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<td>• Port Information state machine</td>
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<td>• Port Role Selection state machine</td>
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<td>• Port Role Transitions state machine</td>
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<td>• Port State Transition state machine</td>
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<td>• Topology Change state machine</td>
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<td></td>
<td></td>
<td>• Port Protocol Migration state machine</td>
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<td>• Port Transmit state machine</td>
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<td>• Verifies the general procedures such as:</td>
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<td>• Packet format</td>
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<td></td>
<td>• BPDUs Validation</td>
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<td></td>
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<td>• Functional procedures</td>
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<td>• Verifies the setting of the RSTP parameters</td>
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<tr>
<td>Part Number</td>
<td>Test Package Name</td>
<td>Supported Test Features</td>
<td>Relevant Specifications</td>
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<tr>
<td>TPK-1027</td>
<td>CTS LLDP (802.1AB) TEST PACKAGE</td>
<td><strong>LLDP Transmit</strong></td>
<td>• IEEE Std. 802.1AB-2005</td>
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<tr>
<td></td>
<td></td>
<td>• Protocol initialization</td>
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<td>• Frame transmission</td>
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<td>• Transmission</td>
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<td>• LLDP DU construction</td>
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<td>• LLDP frame formatting transmission</td>
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<td><strong>LLDP Receive</strong></td>
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<td>• Protocol initialization</td>
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<td>• Frame reception</td>
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<td>• Frame recognition</td>
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<td>• LLDP DU Validation</td>
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<td>• LLDP remote MIB update</td>
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<td>• Statistical counter</td>
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<tr>
<td>TPK-1031</td>
<td>CTS LLDP-MED (ANSI/TIA-1057) TEST PACKAGE</td>
<td><strong>LLDP-MED initialization</strong></td>
<td>• ANSI/TIA-1057-2006</td>
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<td><strong>LLDP-MED Capabilities TLV</strong></td>
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<td><strong>Network Policy TLV</strong></td>
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<td><strong>Location Identification TLV</strong></td>
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<td><strong>Extended Power Via MDI TLV</strong></td>
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<td><strong>Inventory Management TLV Set</strong></td>
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<td><strong>LLDP TLV update</strong></td>
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<td><strong>LLDP-MED transmission</strong></td>
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<td><strong>LLDP-MED reception</strong></td>
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<td><strong>Remote MIB TTL expiration</strong></td>
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<td><strong>Frame Validation</strong></td>
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<tr>
<td>TPK-1036</td>
<td>CTS MMRP (802.1AK) TEST PACKAGE</td>
<td><strong>Multiple MAC Registration Protocol</strong></td>
<td>• IEEE 802.1ak/D8</td>
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<td><strong>MRP State Transitions</strong></td>
<td>• IEEE P802.1ak/D8 Corrigendum 1</td>
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<td><strong>MRP Timers</strong></td>
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<td><strong>Forwarding and Filtering Rules for Data traffic</strong></td>
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<td><strong>Validation of PDUs</strong></td>
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<th>Relevant Specifications</th>
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<tr>
<td>TPK-1052</td>
<td>CTS DCBX TEST PACKAGE</td>
<td>• DCBX&lt;br&gt;• Test the DCBX specific requirements beyond LLDP&lt;br&gt;• DCBX_Control_State_Machine&lt;br&gt;• DCBX_Feature_State_Machine&lt;br&gt;• Priority_Group_Feature&lt;br&gt;• Priority_Based_Flow_Control_Feature&lt;br&gt;• FCoE_Application_Feature&lt;br&gt;• Other_Feature_TLVs (BCN TLV and Logical Link Status TLV)</td>
<td>• DCB Capability Exchange Protocol Base Specification Rev 1.03&lt;br&gt;• DCB Capability Exchange Protocol Base Specification Rev 1.0</td>
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<tr>
<td>TPK-1053</td>
<td>CTS FIP TEST PACKAGE</td>
<td>• Discovery Protocol: This test group verifies the FIP FCF Discovery between E-Node and FCF, and FCF-FCF&lt;br&gt;• Virtual Link Instantiation: This test group verifies the FLOGI procedure used by E-Nodes to login/logout into the fabric and the creation of VN ports and creation of VE ports for FCF&lt;br&gt;• Virtual Link Maintenance: Verifies the IUT's implementation of virtual link maintenance using FIP  Keep Alive and periodic Discovery Advertisement messages&lt;br&gt;• VLAN Discovery: Verifies the procedure used by E-Node or FCF to get the VLANs supported by other FCFs for FIP operation&lt;br&gt;• FIP Frame Format: Verifies the format of the various FIP messages and descriptor formats used in FIP</td>
<td>• INCITS xxx-200x Fibre Channel Backbone-5 Rev 1.05 March 30, 2009: Fibre Channel—Fibre Channel Backbone-5</td>
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<tr>
<td>TPK-1075</td>
<td>CTS FIP SNOOPING</td>
<td>• Premiere ACLs (Access Lists)&lt;br&gt;• Reconfigure Auto ACLs (Access Lists)</td>
<td>• INCITS xxx-200x Link Services Rev 2.11</td>
</tr>
<tr>
<td>TPK-1076</td>
<td>CTS SYNCHRONOUS ETHERNET TEST PACKAGE</td>
<td>• Verifies the ESMC PDU format and QL TLV format.&lt;br&gt;• Verifies the protocol behavior of ESMC message.&lt;br&gt;• QL generation&lt;br&gt;• QL reception&lt;br&gt;• Verifies the synchronization principles in the clock selection processes&lt;br&gt;• Synchronization source signal/interfaces not supporting SSM transport&lt;br&gt;• Synchronization source selection algorithm&lt;br&gt;• Signal fail activated&lt;br&gt;• External commands&lt;br&gt;• Preventing timing loop&lt;br&gt;• Delay times for NEs with SEC</td>
<td>• ITU-T G.8264&lt;br&gt;• ITU-T G.781</td>
</tr>
<tr>
<td>Part Number</td>
<td>Test Package Name</td>
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</table>
| TPK-1077    | CTS IEEE 1588v2 PTP TEST PACKAGE | • Ordinary and Boundary Clocks  
• State Protocol (SM and Events)  
• Best master Clock algorithm  
• Grandmaster Clock  
• Message Processing  
• Transparent Clocks  
• End to End  
• Peer to Peer  
• Corrections  
• Clock Offset  
• Delay Request-Response  
• Peer Delay  
• Residence time for Transparent clocks  
• Asymmetry corrections  
• PTP Message Format  
• Management node  
• Unicast negotiation  
• Path Trace Optional tests  
• Compatibility (Version1 and Version 2 translations)  
• Telecom profile  
• Profile specifications  
• Message Rates  
• Unicast Negotiation  
• PTP over UDPv4  
• Alternate Best master Clock Algorithm  
• Attributes and Unicast message | • IEEE 1588—2008 Precision Clock Synchronization protocol  
• ITU-T G.8265 PTP Telecom Profile for Frequency Synchronization |
| TPK-1078    | CTS MPLS-TP OAM TEST PACKAGE | • Fault OAM  
• AIS, LKR, LDI  
• Clearing of errors  
• Refresh interval  
• TLVs  
• PW Status  
• Status messages  
• Acknowledgement  
• Clearing of errors  
• Refresh interval  
• S-PE Bypass  
• SP-PE TLV | • Draft-ietf-mpls-tp-fault-xx  
• Draft-ietf-pwe3-static-pw-status-xx  
• Additional MPLS-TP OAM are planned for future release |
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<tr>
<th>Security</th>
<th>Part Number</th>
<th>Test Package Name</th>
<th>Supported Test Features</th>
<th>Relevant Specifications</th>
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<tbody>
<tr>
<td></td>
<td>TPK- 1043</td>
<td>CTS IPSEC TEST PACKAGE</td>
<td>IPv4 and IPv6 data protection</td>
<td>RFC 4301</td>
</tr>
<tr>
<td></td>
<td>TPK- 1044</td>
<td>IPSEC - IKE</td>
<td>ESP, AH, and ESP and AH protection:</td>
<td>RFC 4302</td>
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<td>TPK- 1045</td>
<td>IPSEC –ESP</td>
<td>ESP Supports the following encryption/decryption algorithms: data encryption</td>
<td>RFC 4303</td>
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<td>IPSEC -AH</td>
<td>Standard (DES), 3DES, advanced encryption standard (AES), NULL (uses ESP without encryption/decryption)</td>
<td>RFC 2409</td>
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<td>Supports the following authentication algorithms: Hash-function message</td>
<td>RFC 2408</td>
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<td>Authentication codes (HMAC)-Message Digest version 5 (MD5), HMACsecure</td>
<td>RFC 2403</td>
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<td>Hash algorithm (SHA), NULL (uses ESP without authentication)</td>
<td>RFC 2404</td>
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<td>AH Supports the following authentication algorithms: HMAC-MD5, HMAC-SHA</td>
<td>RFC 2405</td>
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<td>Five (5) different Phase 1 authentication modes:</td>
<td>RFC 2407</td>
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<td>Supports the use or non-use of Perfect Forward Secrecy (PFS)</td>
<td>RFC 2410</td>
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<td>Tunnel Mode and Transport Mode</td>
<td>RFC 2451</td>
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<td>Main Mode and Aggressive Mode for Phase 1 negotiations</td>
<td>RFC 3602</td>
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<td>Quick Mode for Phase 2 negotiations</td>
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<td>New Group Mode</td>
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<td>Supports Extended Sequence Number</td>
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OTHER SPIRENT TEST CENTER SOFTWARE

In addition to the Spirent TestCenter Conformance Application, users should purchase each protocol test package. The table on the previous pages can be used to identify which protocols and features are covered by each conformance test package. For additional details of the contents please contact your Spirent sales representative.

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