APPENDIX A

Online Diagnostic Tests

This appendix describes the online diagnostic tests and provides recommendations for how to use them.

The online diagnostic tests are included in these categories:

For information about configuring online diagnostic tests refer to Chapter 51, "Configuring Online Diagnostics."

Global Health-Monitoring Tests

These are the global health monitoring tests:

TestSPRPInbandPing

The TestSPRPIinbandPing test detects most runtime software driver and hardware problems on supervisor engines by running diagnostic packet tests using the Layer 2 forwarding engine, the Layer 3 and 4 forwarding engine, and the replication engine on the path from the switch processor to the route

processor. Packets are sent at 15-second intervals. Ten consecutive failures of the test results in failover to the redundant supervisor engine (default) or reload of the supervisor engine if a redundant supervisor engine is not installed.

Table A-1 TestSPRPInbandPing Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Do not disable. Test is automatically disabled during CPU-usage spikes in order to maintain accuracy.
Default	On.
Release	12.2(18)ZY.
Corrective action	Reset the active supervisor engine.
Hardware support	Active and standby supervisor engine.

TestSPNPInbandPing

The TestSPNPIinbandPing test verifies the data path between the switch processor (SP) and the network processor (NP). This test sends a Layer 2 frame from the SP inband port and to the NP and the NP loops it back to the SP inband port. This test runs every 15 seconds. 10 consecutive test failures cause the NP to reset. After three consecutive NP resets, 10 consecutive test failures results in a supervisor engine switchover, or in a reload if a redundant supervisor engine is not installed.

Table A-2 TestSPNPInbandPing Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Do not disable. Test is automatically disabled during CPU-usage spikes in order to maintain accuracy.
Default	On.
Release	12.2(18)ZY2.
Corrective action	Reset the active supervisor engine.
Hardware support	Active and standby supervisor engine.

TestScratchRegister

The TestScratchRegister test monitors the health of application-specific integrated circuits (ASICs) by writing values into registers and reading back the values from these registers. The test runs every 30 seconds. Five consecutive failures causes a supervisor engine to switchover (or reset), if you are testing the supervisor engine, or in the module powering down when testing a module.

Table A-3 TestScratchRegister Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Do not disable.
Default	On.
Release	12.2(18)ZY.
Corrective action	Reset the malfunctioning supervisor engine or power down the module.
Hardware support	Supervisor Engine 32, WS-X6148-FE-SFP, WS-X6148A-GE-TX, and WS-X6148A-RJ-45 .

Per-Port Tests

The per-port tests consist of the following tests:

- TestNonDisruptiveLoopback, page A-3
- TestLoopback, page A-4
- TestActiveToStandbyLoopback, page A-4
- TestTransceiverIntegrity, page A-5
- TestNetflowInlineRewrite, page A-5

TestNonDisruptiveLoopback

The TestNonDisruptiveLoopback test verifies the data path between the supervisor engine and the network ports of a module. In this test, a Layer2 packet is flooded onto VLAN that contains a group of test ports. The test port group consists of one port per port ASIC channel. Each port in the test port group nondisruptively loops back the packet and directs it back to the supervisor engine's inband port. The ports in the test port group are tested in parallel.

Table A-4 TestNonDisruptiveLoopback Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Do not disable.
Default	On.

Table A-4 TestNonDisruptiveLoopback Test Attributes (continued)

Release	12.2(18)ZY.
Corrective action	Error disable a port after 10 consecutive failures. Error disable a channel if all of its ports failed the test in one test cycle. Reset the module after a failure of all channels.
Hardware support	WS-X6148-FE-SFP, WS-X6148A-GE-TX and WS-X6148A-RJ-45.

TestLoopback

The TestLoopback test verifies the data path between the supervisor engine and the network ports of a module. In this test, a Layer 2 packet is flooded onto a VLAN that consists of only the test port and the supervisor engine's inband port. The packet loops back in the port and returns to the supervisor engine on that same VLAN.

Table A-5 TestLoopback Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of looped-back port (for example, Spanning Tree Protocol).
Recommendation	Schedule during downtime.
Default	Runs at bootup or after online insertion and removal (OIR).
Release	12.2(18)ZY.
Corrective action	Error disable a port if the loopback test fails on the port. Reset the module if all of the ports fail.
Hardware support	All modules including supervisor engines.

TestActiveToStandbyLoopback

The TestActiveToStandbyLoopback test verifies the data path between the active supervisor engine and the network ports of the standby supervisor engine. In this test, a Layer 2 packet is flooded onto a VLAN that consists of only the test port and the supervisor engine's inband port. The test packets are looped back in the targeted port and are flooded back onto the bus with only the active supervisor engines's inband port listening in on the flooded VLAN.

Table A-6 TestActiveToStandbyLoopback Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of loopback port (for example, Spanning Tree Protocol.).

Table A-6 TestActiveToStandbyLoopback Test Attributes (continued)

Recommendation	Schedule during downtime.
Default	Runs at bootup or after OIR.
Release	12.2(18)ZY.
Corrective action	Error disable a port if the loopback test fails on the port. Reset the supervisor engine if all of the ports fail.
Hardware support	Standby supervisor engine only.

TestTransceiverIntegrity

The TestTransceiverIntegrity test is a security test performed on the transceiver during transceiver online insertion and removal (OIR) or module bootup to make sure that the transceiver is supported.

Table A-7 TestTransceiverIntegrity Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Not applicable.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	Error disable the port.
Hardware support	All modules with transceivers.

TestNetflowInlineRewrite

The TestNetflowInlineRewrite test verifies the NetFlow lookup operation, the ACL permit and deny functionality, and the inline rewrite capabilities of the port ASIC. The test packet will undergo a NetFlow table lookup to obtain the rewrite information. The VLAN and the source and destination MAC addresses are rewritten when the packet reaches the targeted port.

Table A-8 TestNetflowInlineRewrite Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on configuration of loopback port (for example, Spanning Tree Protocol).
Recommendation	Schedule during downtime. Run this test during bootup only.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	All modules including supervisor engines.

PFC Layer 2 Forwarding Engine Tests

The PFC Layer 2 Forwarding Engine tests consist of the following tests:

TestNewIndexLearn

The TestNewIndexLearn test verifies the Layer 2 source MAC address learning functionality and the Index Learn feature of the Layer 2 forwarding engine and ensures that existing MAC address table entries can be updated. A diagnostic packet is sent from the supervisor engine inband port to verify that the Layer 2 forwarding engine is learning the new source MAC address from the diagnostic packet. The Layer 2 learning functionality is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Table A-9 TestNewIndexLearn Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	If you experience problems with the Layer 2 forwarding engine learning capability, run this test on-demand to verify the Layer 2 learning functionality. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines only.

TestDontConditionalLearn

The TestDontConditionalLearn test is a combination of the TestDontLearn and the TestConditionalLearn tests.

The TestDontLearn test verifies that new source MAC addresses are not populated in the MAC address table when they should not be learned. This test verifies that the “don't learn” feature of the Layer 2 forwarding engine is working properly. The “don't learn” feature is verified during diagnostic packet lookup by the Layer 2 forwarding engine.

The TestConditionalLearn test verifies the ability to learn a Layer 2 source MAC address under specific conditions. When running the test on the supervisor engine, the diagnostic packet is sent from the supervisor engine’s inband port and performs a packet lookup using the supervisor engine Layer 2 forwarding engine. The Conditional Learn feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Table A-10 TestDontConditionalLearn Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	If you experience problems with the Layer 2 forwarding engine learning capability, run this test on-demand to verify the Layer 2 learning functionality. This test can also be used as a health monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines only.

TestBadBpduTrap

The TestBadBpduTrap test is a combination of the TestTrap and the TestBadBpdu tests.

The TestTrap test verifies the ability to trap or redirect packets to the switch processor. This test verifies that the Trap feature of the Layer 2 forwarding engine is working properly. When running the test on the supervisor engine, the diagnostic packet is sent from the supervisor engine’s inband port and performs a packet lookup using the supervisor engine’s Layer 2 forwarding engine. The Trap feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

The TestBadBpdu test verifies the ability to trap or redirect packets to the switch processor. This test verifies that the Trap feature of the Layer 2 forwarding engine is working properly. When running the test on the supervisor engine, the diagnostic packet is sent from the supervisor engine’s inband port and performs a packet lookup using the supervisor engine’s Layer 2 forwarding engine. The BPDU feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Table A-11 TestBadBpduTrap Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive.

Table A-11 TestBadBpduTrap Test Attributes (continued)

Recommendation	If you experience problems with the Layer 2 forwarding engine learning capability, run this test on-demand to verify the Layer 2 learning functionality. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines only.

TestMatchCapture

The TestMatchCapture test is a combination of the TestProtocolMatchChannel and the TestCapture tests.

The TestProtocolMatchChannel test verifies the ability to match specific Layer 2 protocols in the Layer 2 forwarding engine. When running the test on the supervisor engine, the diagnostic packet is sent from the supervisor engine's inband port and performs a packet lookup using the supervisor engine's Layer 2 forwarding engine. The Match feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

The TestCapture test verifies that the capture feature of Layer 2 forwarding engine is working properly. The capture functionality is used for multicast replication. When running the test on the supervisor engine, the diagnostic packet is sent from the supervisor engine's inband port and performs a packet lookup using the supervisor engine's Layer 2 forwarding engine. The Capture feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Table A-12 TestMatchCapture Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive.
Recommendation	If you experience problems with the Layer 2 forwarding engine learning capability, run this test on-demand to verify the Layer 2 learning functionality. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines only.

TestStaticEntry

The TestStaticEntry test verifies that static entries are populated in the Layer 2 MAC address table. This functionality is verified during diagnostic packet lookup by the Layer 2 forwarding engine.

Table A-13 TestStaticEntry Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of looped-back port (for example, Spanning Tree Protocol).
Recommendation	If you experience problems with the Layer 2 forwarding engine learning capability, run this test on-demand to verify the Layer 2 learning functionality. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines and DFC-enabled modules.

PFC Layer 3 Forwarding Engine Tests

These are the PFC Layer 3 Forwarding Engine tests:

TestFibDevices

The TestFibDevices test verifies whether the FIB TCAM and adjacency devices are functional. One FIB entry is installed on each FIB TCAM device. A diagnostic packet is sent to make sure that the diagnostic packet is switched by the FIB TCAM entry installed on the TCAM device. This is not an exhaustive TCAM device test; only one entry is installed on each TCAM device.

Note Compared to the IPv4FibShortcut and IPv6FibShortcut tests, this test tests all FIB and adjacency devices using IPv4 or IPv6 packets, depending on your configuration.

Table A-14 TestFibDevices Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Run this test on-demand to verify the Layer 3 forwarding functionality if you experience problems with the routing capability. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestIPv4FibShortcut

The TestIPv4FibShortcut test verifies the IPV4 FIB forwarding of the Layer 3 forwarding engine is working properly. One diagnostic IPV4 FIB and adjacency entry is installed and a diagnostic packet is sent to make sure that the diagnostic packet is forwarded according to rewritten MAC and VLAN information.

Table A-15 TestIPv4FibShortcut Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Run this test on-demand to verify the Layer 3 forwarding functionality if you experience problems with the routing capability. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestIPv6FibShortcut

The TestIPv6FibShortcut test verifies that the IPV6 FIB forwarding of the Layer 3 forwarding engine is working properly. One diagnostic IPV6 FIB and adjacency entry is installed and a diagnostic IPv6 packet is sent to make sure the diagnostic packet is forwarded according to rewritten MAC and VLAN information.

Table A-16 TestIPv6FibShortcut Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Run this test on-demand to verify the Layer 3 forwarding functionality if you experience problems with the routing capability. This test can also be used as a health-monitoring test.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestMPLSFibShortcut

The TestMPLSFibShortcut test verifies that the MPLS forwarding of the Layer 3 forwarding engine is working properly. One diagnostic MPLS FIB and adjacency entry is installed and a diagnostic MPLS packet is sent to make sure that the diagnostic packet is forwarded according to the MPLS label from the adjacency entry.

Table A-17 TestMPLSFibShortcut Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	This test can also be used as a health-monitoring test. Use as a health-monitoring test if you are routing MPLS traffic.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestNATFibShortcut

The TestNATFibShortcut test verifies the ability to rewrite a packet based on the NAT adjacency information (rewrite destination IP address). One diagnostic NAT FIB and adjacency entry is installed and the diagnostic packet is sent to make sure that the diagnostic packet is forwarded according to the rewritten IP address.

Table A-18 TestNATFibShortcut Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	This test can also be used as a health-monitoring test. Use as a health-monitoring test if the destination IP address is being rewritten (for example, if you are using NAT).
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestL3Capture2

The TestL3Capture2 test verifies that the Layer 3 capture (capture 2) feature of the Layer 3 forwarding engine is working properly. This capture feature is used for ACL logging and VACL logging. One diagnostic FIB and adjacency entry with a capture 2 bit set is installed and a diagnostic packet is sent to make sure that the diagnostic packet is forwarded according to the capture bit information.

Table A-19 TestL3Capture2 Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	This test can also be used as a health-monitoring test. Use as a health-monitoring test if you are using ACL or VACL logging.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestAclPermit

The TestAclPermit test verifies that the ACL permit functionality is working properly. An ACL entry permitting a specific diagnostics packet is installed in the ACL TCAM. The corresponding diagnostic packet is sent from the supervisor engine and looked up by the Layer 3 forwarding engine to make sure that it hits the ACL TCAM entry and gets permitted and forwarded appropriately.

Table A-20 TestACLPermit Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	This test can also be used as a health-monitoring test. Use as a health-monitoring test if you are using ACLs.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines.

TestAclDeny

The TestAclDeny test verifies that the ACL deny feature of the Layer 2 and Layer 3 forwarding engine is working properly. The test uses different ACL deny scenarios such as input, output, Layer 2 redirect, Layer 3 redirect, and Layer 3 bridges to determine whether or not the ACL deny feature is working properly.

Table A-21 TestACLDeny Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive.
Recommendation	Do not disable.
Default	On.
Release	12.2(18)ZY.
Corrective action	Automatic ASIC reset for recovery.
Hardware support	Supervisor engines.

TestNetflowShortcut

The TestNetflowShortcut test verifies that the NetFlow forwarding functionality of the Layer 3 forwarding engine is working properly. One diagnostic NetFlow entry and adjacency entry is installed, and a diagnostic packet is sent to make sure it is forwarded according to the rewritten MAC and VLAN information.

Table A-22 TestNetflowShortcut Test Attributes

Attributes	Description
Disruptive/Nondisruptive	Disruptive for looped back ports. The disruption is 500 ms.
Recommendation	Run this test on-demand if you suspect that NetFlow is not working properly.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines and DFC-enabled modules.

TestQoS

The TestQoS test verifies whether or not the QoS input and output TCAM is functional by programming the QoS input and output TCAM so that the ToS value of the diagnostic packet is changed to reflect either input or output.

Table A-23 TestQoS Test Attributes

Attributes	Description
Disruptive/Nondisruptive	Disruptive for looped back ports. The disruption is 500 ms.
Recommendation	Schedule during downtime.
Default	This test runs by default during bootup or after a reset or OIR
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines and DFC-enabled modules.

Replication Engine Tests

These are the Replication Engine tests:

- TestL3VlanMet, page A-15
- TestIngressSpan, page A-15
- TestEgressSpan, page A-16

TestL3VlanMet

The TestL3VlanMet test verifies that the multicast functionality of the replication engine is working properly. The replication engine is configured to perform multicast replication of a diagnostic packet onto two different VLANs. After the diagnostic packet is sent out from the supervisor engine's inband port, the test verifies that two packets are received back in the inband port on the two VLANs configured in the replication engine.

Table A-24 TestL3VlanMet Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive for supervisor engines. Disruptive for DFC-equipped modules. Disruption is typically less than one second on looped-back ports.
Recommendation	Run this test on-demand to test the multicast replication abilities of the replication engine.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines and WS-65xx, WS-67xx, and WS-68xx modules.

TestIngressSpan

The TestIngressSpan test ensures that the port ASIC is able to tag packets for ingress SPAN. This test also verifies that the ingress SPAN operation of the rewrite engine for both SPAN queues is working properly.

Table A-25 TestIngressSpan Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive for both SPAN sessions. Also disruptive for the loopback port on modules. Duration of the disruption depends on the configuration of the loopback port (for example, Spanning Tree Protocol).
Recommendation	Run this test on-demand.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines and WS-65xx and WS-67xx modules.

TestEgressSpan

The TestEgressSpan test verifies that the egress SPAN replication functionality of the rewrite engine for both SPAN queues is working properly.

Table A-26 TestEgressSpan Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive for both SPAN sessions. Disruption is typically less than one second.
Recommendation	Run this test on-demand.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	Supervisor engines and WS-65xx and WS-67xx modules.

Exhaustive Memory Tests

These are the exhaustive memory tests:

- TestFibTcamSSRAM, page A-16
- TestAsicMemory, page A-17
- TestAclQosTcam, page A-17
- TestNetflowTcam, page A-18
- TestQoSTcam, page A-18

Note Because the supervisor engine must be rebooted after running memory tests, run memory tests on the other modules before running them on the supervisor engine. For more information about running on-demand online diagnostic tests see the "Configuring On-Demand Online Diagnostics" section on page 51-3.

TestFibTcamSSRAM

The TestFibTcamSSRAM test checks the FIB TCAM and Layer 3 Adjacency SSRAM memory.

Table A-27 TestFibTcamSSRAM Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is several hours.

Table A-27 TestFibTcamSSRAM Test Attributes (continued)

Recommendation	Use this test only if you suspect a problem with the hardware or before putting the hardware into a live network. Do not run any traffic in the background on the module that you are testing. The supervisor engine must be rebooted after running this test.
Default	Off.
Release	12.2(18)ZY
Corrective action	Not applicable.
Hardware support	All modules including supervisor engines.

TestAsicMemory

The TestAsicMemory test uses an algorithm to test the memory on a module.

Table A-28 TestAsicMemory Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is approximately one hour.
Recommendation	Use this test only if you suspect a problem with the hardware or before putting the hardware into a live network. Do not run any traffic in the background on the module that you are testing. The supervisor engine must be rebooted after running this test.
Default	Off.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	All modules including supervisor engines.

TestAclQosTcam

The TestAclQosTcam test tests all the bits and checks the location of both ACL and QOS TCAMs on the PFC3B.

Table A-29 TestAclQosTcam Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is approximately one hour.
Recommendation	Use this test only if you suspect a problem with the hardware or before putting the hardware into a live network. Do not run any traffic in the background on the module that you are testing. The supervisor engine must be rebooted after running this test.

Table A-29 TestAclQosTcam Test Attributes (continued)

Default	Off.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	All modules including supervisor engines.

TestNetflowTcam

The TestNetflowTcam test tests all the bits and checks the location of the Netflow TCAM.

Table A-30 TestNetflowTcam Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is several minutes.
Recommendation	Use this test only if you suspect a problem with the hardware or before putting the hardware into a live network. Do not run any traffic in the background on the module that you are testing. The supervisor engine must be rebooted after running this test.
Default	Off.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	All modules including supervisor engines.

TestQoSTcam

The TestQoSTcam test performs exhaustive memory tests for QoS TCAM devices.

Table A-31 TestQoSTcam Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is several minutes.
Recommendation	Use this test only if you suspect a problem with the hardware or before putting the hardware into a live network. Do not run any traffic in the background on the module that you are testing. The supervisor engine must be rebooted after running this test.
Default	Off.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	All modules including supervisor engines.

IPSEC Services Modules Tests

These are the IPsec services modules tests:

TestIPSecClearPkt

The TestIPSecClearPkt test sends a packet through the switch fabric or bus from the supervisor engine inband port through to the crypto engine. The packet is sent back without encryption from the crypto engine to the supervisor engine in-band port. The packet is checked to verify that the encryption is not done and that the packet data fields are reserved. The Layer 2 lookup drives the packet between the supervisor in-band port and the crypto engine.

Table A-32 TestIPSecClearPkt Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	Run this test on-demand.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	VPN service module.

TestHapiEchoPkt

The TestHapiEchoPkt test sends a Hapi Echo packet to the crypto engine using the control path. After the Hapi Echo packet is sent to the crypto engine, it is echoed back from the crypto engine. The packet is sent from the supervisor engine inband port to the crypto engine using index-direct and is sent back using broadcast to a diagnostic VLAN.

Table A-33 TestHapiEchoPkt Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive.
Recommendation	Run this test on-demand. This test cannot be run from on-demand CLI.
Default	On.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	VPN service module.

TestIPSecEncryptDecryptPkt

The TestIPSecEncryptDecryptPkt test checks the encryption functionality by exchanging a packet between the supervisor engine in-band port and the crypto engine of the IPSec services modules (WS-SVC-IPSEC, SPA-IPSEC) using the switch fabric or bus (whichever is applicable). After several exchanges, the packet is checked to verify that the original data is preserved after the encryption and decryption process performed by the crypto engine. The Layer 2 lookup drives the packet between the supervisor in-band port and the crypto engine.

Table A-34 TestIPSecEncryptDecryptPkt Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive. Test runs every minute by default.
Recommendation	This test can only be run at bootup.
Default	This test runs by default during bootup or after a reset or OIR.
Release	12.2(18)ZY.
Corrective action	None. See the system message guide for more information.
Hardware support	VPN services module.

Stress Tests

These are the stress tests:

- TestTrafficStress, page A-20
- TestEobcStressPing, page A-21

TestTrafficStress

The TestTrafficStress test stress tests the switch and the installed modules by configuring all of the ports on the modules into pairs, which then pass packets between each other. After allowing the packets to pass through the switch for a predetermined period, the test verifies that the packets are not dropped.

Table A-35 TestTrafficStress Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is several minutes.
Recommendation	Use this test to qualify hardware before installing it in your network.
Default	Off.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	PFC3.

TestEobcStressPing

The TestEobcStressPing test stress tests a module's EOBC link with the supervisor engine. The test is started when the supervisor engine initiates a number of sweep-ping processes (the default is one). The sweep-ping process pings the module with 20,000 SCP-ping packets. The test passes if all 20,000 packets respond before each packet-ping timeout, which is two seconds. If unsuccessful, the test allows five retries to account for traffic bursts on the EOBC bus during the test.

Table A-36 TestEobcStressPing Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is several minutes.
Recommendation	Use this test to qualify hardware before installing it in your network.
Default	Off.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	PFC3.

Critical Recovery Test—TestL3HealthMonitoring

The TestL3HealthMonitoring test triggers a set of diagnostic tests involving IPv4 and IPv6 packet switching on a local DFC whenever the system tries to self-recover from a detected hardware fault. The tests shut down the front panel port (usually port 1) for testing purposes. If the diagnostic tests are not passing, it is an indication that the hardware fault cannot be fixed and a self-recovery sequence will be applied again

Table A-37 TestL3HealthMonitoring Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive. Disruption is typically less than one second. Duration of the disruption depends on the configuration of looped-back port (for example, Spanning Tree Protocol). Forwarding and port functions are disrupted during the test.
Recommendation	Do not disable.
Default	On.
Release	12.2(18)ZY.
Corrective action	Not applicable.
Hardware support	DFC-equipped modules

General Tests

These are the general tests:

ScheduleSwitchover

The ScheduleSwitchover test allows you to trigger a switchover at any time using the online diagnostics scheduling capability.

Table A-38 ScheduleSwitchover Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Disruptive.
Recommendation	Schedule this test during downtime to test the ability of the standby supervisor engine to take over after a switchover.
Default	Off.
Release	12.2(18)ZY
Corrective action	None
Hardware support	Supervisor engines only.

TestFirmwareDiagStatus

The TestFirmwareDiagStatus test displays the results of the power-on diagnostic tests run by the firmware during the module bootup.

Table A-39 TestFirmwareDiagStatus Test Attributes

Attribute	Description
Disruptive/Nondisruptive	Nondisruptive.
Recommendation	This test can only be run at bootup.
Default	This test runs by default during bootup or after a reset or OIR
Release	12.2(18)ZY
Corrective action	None. See the system message guide.
Hardware support	All modules, including supervisor engines.