1 Online Diagnostic Tests

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Note

- For information about configuring online diagnostic tests see Chapter 16, "Online Diagnostics."
- Before you enable any onlines diagnostics tests, enable console logging to see all warning messages.
- We recommend that when you are running disruptive tests that you only run the tests when connected through console. When disruptive tests are complete a warning message on the console recommends that you reload the system to return to normal operation: strictly follow this warning.
- While tests are running, all ports are shut down as a stress test is being performed with looping ports internally and external traffic might affect the test results. The switch must be rebooted to bring the switch to normal operation. When you issue the command to reload the switch, the system will ask you if the configuration should be saved.
- Do not save the configuration.
- If you are running the tests on other modules, after the test is initiated and complete, you must reset the module.

Tip For additional information about Cisco Catalyst 6500 Series Switches (including configuration examples and troubleshooting information), see the documents listed on this page:

http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html

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Global Health-Monitoring Tests

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TestAsicSync

This test periodically verifies the status of bus and port synchronization ASICs.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Reset the module. After the module has ten consecutive failures or three consecutive resets, it powers down.
Hardware support:	All modules.

TestEARLInternalTables

This test detects most PFC and DFC hardware table problems by running consistency checks on the PFC and DFC hardware tables. The test runs every 5 minutes.

A failure of the test for the PFC results in one of these actions:

- Failover to the redundant supervisor engine.
- If a redundant supervisor engine is not installed, shutdown of the supervisor engine.

A failure of the test for the DFC results in one of these actions:

- Up to two resets of the DFC-equipped switching module.
- Shutdown following a third failure.

A CallHome message is generated if CallHome is configured on the system.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Reset the affected module.
Hardware support:	PFC and DFCs.

TestErrorCounterMonitor

This test monitors the errors and interrupts that occur on each module in the system by periodically polling for the error counters maintained in the module. If the errors exceed a threshold value, a syslog message is displayed with detailed information including the error-counter identifier, port number, total failures, consecutive failures, and the severity of the error counter.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable. This test is automatically disabled during CPU-usage spikes to maintain accuracy.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Display a syslog message indicating the error-counters detected on that port.
Hardware support:	All modules including supervisor engines.

TestFexModeLoopback

This test verifies the data path between the inband port and ports that can support an IA client link. 802.1q packets are sent to the port being tested. After VNTag encapsulation and deencapsulation, the test packet is looped back on the test port to the inband port. This test skips ports with active IA parent-client links. The test typically disrupts traffic for less than one second.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	
Default:	Off. This test is run automatically on bootup. On-demand test also supported.
Intitial Release:	15.1(2)SY
Corrective action:	Displays the "%CONST_DIAG-3-BOOTUP_TEST_FAIL: Module *number*: TesFexModeLoopback failed on port(s) *range*" message.
Hardware support:	WS-X6904-40G-2T

TestIntPortLoopback

This test uses the switching module internal port to run a non-disruptive loopback test. It can be used to detect fabric channel failure and also port ASIC failure. This test is similar to TestFabricCh0Health. The test runs every 15 seconds.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not turn this test off. Use as a health-monitoring test.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	The module resets after 10 consecutive failures. Three consecutive resets powers down the module.
Hardware support:	WS-X6148E-GE-45AT, WS-X6148A-GE-TX, WS-X6148A-GE-45AF, WS-X6148-FE-SFP, WS-X6148A-RJ-45, WS-X6148A-45AF.

TestL3TcamMonitoring

This test verifies Layer 3 packet switching and monitors the health of both FIB and CL TCAM using the diagnostic lookup key. This test is nondisruptive and runs periodically every 15 seconds. Ten consecutive failures are treated as fatal, which cause the module to reload during runtime.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	After the module has ten consecutive failures, the module reloads during runtime.
Hardware support:	Supervisor engines.

TestLtlFpoeMemoryConsistency

This test verifies that the LTL and FPOE memories are working properly. The test runs every 15 seconds. Self-correction is applied if an error is detected. If self-correction fails, corrective action is triggered to reset the module. The module is powered-down on the third consecutive module reset. If self-correction passes, no action is taken. If too many self-corrections occur within a short period of time (more than three self-corrections in less than 300 seconds), the module is reset.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Failure of this test causes the module to reset and power down after two resets.
Hardware support:	All modules including supervisor engines.

TestMacNotification

This test verifies the data and control path between DFC-equipped modules and supervisor engines. This test also ensures Layer 2 MAC address consistency across Layer 2 MAC address tables. The test runs every six seconds. Ten consecutive failures causes the module to reset during bootup or runtime (default). After three consecutive resets, the module powers down. This test runs every 15 seconds.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Reset the module. After the module has ten consecutive failures or three consecutive resets, it powers down.
Hardware support:	DFC-equipped modules.

TestPortTxMonitoring

This test periodically polls the transmit counters on each port. The test displays a syslog message and error disables the port if no activity is seen for the configured time interval and failure threshold. You configure the time interval and threshold by entering the **diagnostic monitor interval** and **diagnostic monitor threshold** commands. The test does not source any packets, but leverages the CDP protocol that transmits packets periodically. If the CDP protocol is disabled, the polling for that port is not performed. The test runs every 75 seconds, and the failure threshold is set to five by default.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Display a syslog message indicating the port(s) that failed. Error disable the port(s) that failed.
Hardware support:	All modules including supervisor engines.

TestScratchRegister

This 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.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Reset the malfunctioning supervisor engine or power down the module.
Hardware support:	Active and standby supervisor engine, DFC-equipped modules, WS-X6148A-GE-TX, WS-X6148A-GE-45AF, WS-X6148-FE-SFP, WS-X6148A-RJ-45, WS-X6148A-45AF.

TestSnrMonitoring

This test monitors the SNR (signal-to-noise ratio) margin for a port, which varies between -12.7 dB to +12.7 dB. The test uses the following two threshold levels to compare SNR:

- Minor threshold at +1.0 dB
- Major threshold at 0.0 dB

When the SNR value drops below the minor threshold, the test logs a minor warning message. When the SNR value drops below the major threshold, the test logs a major warning message. Similarly, recovery messages are logged when SNR recovers the two threshold levels. The default interval for the test is 30 seconds and can be configured to as low as 10 seconds for faster monitoring. The TestSnrMonitoring is not a bootup test and cannot be run on demand.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	None.
Hardware support:	WS-X6816-10T-2T, WS-X6716-10T.

TestUnusedPortLoopback

This test periodically verifies the data path between the supervisor engine and the network ports of a module in the runtime. In this test, a Layer 2 packet is flooded onto the VLAN associated with the test port and the inband port of the supervisor engine. The packet loops back in the test port and returns to the supervisor engine on the same VLAN. This test is similar to TestLoopback but only runs on unused (admin down) network ports and on only one unused port per port ASIC. This test substitutes the lack of a nondisruptive loopback test in current ASICs. This test runs every 60 seconds.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable. This test is automatically disabled during CPU-usage spikes to maintain accuracy.
Default:	On.
Intitial Release:	
Corrective action:	Display a syslog message indicating the port(s) that failed. For modules other than the supervisor engines, if all port groups fail (for example, at least one port per port ASIC fails more than the failure threshold for all port ASICs), the default action is to reset the module and power down the module after two resets.
Hardware support:	All modules including the supervisor engines.

Per-Port Tests

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TestActiveToStandbyLoopback

This 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 active 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 engine's inband port listening in on the flooded VLAN.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the loopback port (for example, Spanning Tree Protocol).
Recommendation:	Schedule during downtime.
Default:	Runs at bootup or after OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	Error disable a port if the loopback test fails on the port. Reset the standby supervisor engine if all of the ports fail.
Hardware support:	Standby supervisor engine only.

TestCCPLoopback

This test checks the control plane data path. This test sends an online diagnostics packet from the supervisor engine to service or high availability port on the Wireless Services Module (WiSM2). The TestCCPLoopback checks whether the test packet loops back. If the test fails, a syslog message is displayed to indicate the error. This test also can be run as health monitoring, on-demand, and scheduled tests.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY1.
Corrective action:	A syslog message is displayed after five consecutive failures.
Hardware support:	WS-SVC-WISM2-K9.

TestDataPortLoopback

This test sends a packet from the inband port of the supervisor to the data port on the Firewall or NAM service module to verify the data packet path. The packet is looped back to the supervisor in hardware. If the packet does not return from the supervisor, hardware counters are polled to isolate the faulty path. This test runs every 45 seconds.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable. If the test fails for 10 consecutive times, themodule is reset. If the test fails persistently, the module is powered down.
Default:	On.
Intitial Release:	15.0(1)SY1.
Corrective action:	None.
Hardware support:	WS-SVC-ASA-SM1-K9 and WS-SVC-NAM3-6G-K9.

TestDCPLoopback

This test checks the data plane data path. This test sends an online diagnostics packet from the supervisor engine to data ports on the Wireless Services Module (WiSM2). This test checks whether the test packet loops back. If the test fails, a syslog message is displayed to indicate the error. This test also can be run as health monitoring, on-demand, and scheduled tests.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY1.
Corrective action:	A syslog message is displayed after five consecutive failures.
Hardware support:	WS-SVC-WISM2-K9.

TestL2CTSLoopback

This test provides encapsulation for Layer 2 Ethernet packets sent from the supervisor engine inband port to each port inside the Ganita ASIC. The test sends back the Layer 2 Ethernet packet to the supervisor engine inband port after decapsulation with its original content.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test is run automatically on bootup. On-demand test also supported.
Default:	Off. This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines.

TestL3CTSLoopback

This test provides encapsulation for Layer 3 IPv4 packets sent from the supervisor engine inband port to each port inside the Ganita ASIC and sends back the Layer 3 IPv4 packet to the supervisor engine inband port after decapsulation with its original content.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test is run automatically on bootup. On-demand test also supported.
Default:	Off. This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines.

TestLoopback

This 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.

Attribute	Description
Disruptive or 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).
Intitial Release:	15.0(1)SY.
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.

TestMediaLoopback

This test verifies the data path of MediaNet-like traffic. Index direct UDP packets are sent out to the MediaNet interface under test. The packets are looped back and forwarded to the inband port of the module.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Do not disable.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	WS-X6816-10T-2T, WS-X6716-10T, WS-X6816-10G-2T, WS-X6716-10GE, WS-X6848-SFP-2T, WS-X6748-SFP, WS-X6824-SFP-2T, WS-X6724-SFP, WS-X6848-TX-2T, WS-X6748-GE-TX.

TestMgmtPortsLoopback

This test sends a packet from the inband port of the supervisor to the Firewall or NAM service module to verify the health of the backplane ports. The packet is looped back to the supervisor in hardware. If the packet does not return from the supervisor, the service application is queried for the status of the packet and depending on the action suggested by the service module, a syslog message is displayed and the module is reset. This test runs every 30 seconds.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable. If the failure is isolated to the firewall module, then a syslog is printed indicating which port failed the test. If the test fails due to any other datapath issue for 10 consecutive times, the module is reset. If the test fails persistently, the module is powered down.
Default:	On.
Intitial Release:	15.0(1)SY1.
Corrective action:	None.
Hardware support:	WS-SVC-ASA-SM1-K9 and WS-SVC-NAM3-6G-K9.

TestNetflowInlineRewrite

This 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	All modules including supervisor engines.

TestNonDisruptiveLoopback

This 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 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.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
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, WS-X6148A-RJ-45.

TestNPLoopback

This test checks the data path of the ACE30 module for data path errors. This test runs at bootup, and the default configuration is a health-monitoring test that runs every 15 seconds. If TestNPLoopback fails, an SCP (Switch-module Configuration Protocol) message is sent to the ACE30 module indicating which network processors have failed. Upon receipt of the SCP message, ACE30 will take corrective action. If the TestNPLoopback test fails for ten consecutive times, the ACE30 module is reset.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY1.
Corrective action:	A syslog message is displayed to inform the ACE30 about the port(s) that failed the test on the failure code. Depending on the failure code, the ACE30 decides whether to take corrective action or not. The suggested action for ACE30 is to collect core dumps from all network processors and reset the ACE30 module.
Hardware support:	ACE30-MOD-K9.

TestTransceiverIntegrity

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

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Not applicable.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	Error disable the port.
Hardware support:	All modules with transceivers.

PFC Layer 2 Tests

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- TestDontConditionalLearn, page 1-16
- TestMatchCapture, page 1-16
- TestNewIndexLearn, page 1-17

TestBadBpduTrap

This test is a combination of the TestTrap and the TestBadBpdu tests, which are described in the "DFC Layer 2 Tests" section on page 1-17.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines only.

TestDontConditionalLearn

This test is a combination of the TestDontLearn and the TestConditionalLearn tests, which are described in the "DFC Layer 2 Tests" section on page 1-17.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestMatchCapture

This test is a combination of the TestProtocolMatchChannel and the TestCapture tests, which are described in the "DFC Layer 2 Tests" section on page 1-17.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines only.

TestNewIndexLearn

This test is a combination of the TestNewLearn and the TestIndexLearn tests, which are described in the "DFC Layer 2 Tests" section on page 1-17.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines only.

DFC Layer 2 Tests

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- TestStaticEntry, page 1-22
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TestBadBpdu

This 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. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The BPDU feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestCapture

This 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. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The Capture feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	Schedule during downtime.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestConditionalLearn

This 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. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The Conditional Learn feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestDontLearn

This 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. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine inband port through the switch fabric and looped back from one of the ports on the DFC-enabled module. The "don't learn" feature is verified during diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	Schedule during downtime.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestIndexLearn

This test ensures that existing MAC address table entries can be updated. This test verifies the Index Learn 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 Layer 2 forwarding engine. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The Index Learn feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestNewLearn

This test verifies the Layer 2 source MAC address learning functionality of the Layer 2 forwarding engine. For supervisor engines, 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. For DFC-equipped modules, a diagnostic packet is sent from the supervisor engine inband port through the switch fabric and looped backed from one of the ports on the DFC-enabled module. The Layer 2 learning functionality is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestPortSecurity

This test verifies the ability to redirect packets to the CPU if a secure MAC address is transmitting the packets from a different port. For the supervisor engine, a diagnostic packet is sent from the supervisor engine's inband port and the port security feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine. For DFC-equipped modules, a diagnostic packet is sent from the supervisor engine inband port through the fabric and is looped back in one of the ports on the DFC-equipped module. The port security feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	None.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engine and DFC-equipped modules.

TestProtocolMatchChannel

This 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. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The Match feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestStaticEntry

This test verifies the ability to populate static entries in the Layer 2 MAC address table. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The Static Entry feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestTrap

This 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. For DFC-equipped modules, the diagnostic packet is sent from the supervisor engine's inband port through the switch fabric and looped back from one of the DFC ports. The Trap feature is verified during the diagnostic packet lookup by the Layer 2 forwarding engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

PFC Layer 3 Tests

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- TestDQUP, page 1-24
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- TestRBAcl, page 1-28

TestAclDeny

This 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.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Run this test on-demand.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Automatic ASIC reset for recovery.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestAclPermit

This 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.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Run this test on-demand.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestAclRedirect

This test verifies the ACL redirect feature of the Layer 3 forwarding engine. This test verifies both ingress and egress Layer 3 redirect.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Run this test on-demand.
Default:	Off. This test runs by default during bootup or after a reset or OIR.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestDQUP

This test verifies whether the DQUP and PUP packets can be generated when diagnostic packets hit QoS entry. This test receives the DQUP and PUP packets and ensures that the information in DQUP and PUP is correct.

Attributes	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Run this test on-demand if you suspect that DQUP and PUP is not working properly.
Default:	This test runs by default during bootup or after a reset or OIR.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestInbandEdit

This test verifies the InbandEdit packets of the Layer 3 forwarding engine. One diagnostic InbandEdit packet is sent to create one diagnostic NetFlow entry and an adjacency entry, and one diagnostic packet is sent to ensure that the InbandEdit packet is forwarded according to the rewritten MAC and VLAN.

Attributes	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Test runs automatically on bootup. On-demand is also supported.
Default:	This test runs by default during bootup.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestIPv4FibShortcut

This test does the following:

- Verifies whether the IPv4 FIB forwarding of the Layer 3 forwarding engine is working properly. One diagnostic IPv4 FIB and an adjacency entry are installed, and a diagnostic packet is sent to make sure that the diagnostic packet is forwarded according to rewritten MAC and VLAN information.
- 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestIPv6FibShortcut

This test verifies that the IPV6 FIB forwarding of the Layer 3 forwarding engine is working properly. One diagnostic IPV6 FIB and an 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestL3Capture2

This 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 an 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestMPLSFibShortcut

This test does the following:

- Verifies that the MPLS forwarding of the Layer 3 forwarding engine is working properly. One diagnostic MPLS FIB and an 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.
- Verifies the EoMPLS forwarding of the Layer 3 forwarding engine. One diagnostic EoMPLS Layer 2 FIB and an adjacency entry are installed and a diagnostic Layer 2 packet is sent to the forwarding engine to make sure it is forwarded accordingly with the MPLS labels and the encapsulated Layer 2 packet.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestNATFibShortcut

This test verifies the ability to rewrite a packet based on the NAT adjacency information (rewrite destination IP address). One diagnostic NAT FIB and an 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestNetflowShortcut

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

Attributes	Description
Disruptive or 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.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestRBAcl

This test verifies the role based ACL (RBACL) feature of the Layer 3 forwarding engine. This test uses SGT and DGT instead of src_ip/dest_ip to get ACL lookup results.

Attributes	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Test runs automatically on bootup. On-demand and health-monitoring tests are also supported.
Default:	This test runs by default during bootup.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

DFC Layer 3 Tests

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- TestAclPermit, page 1-29
- TestAclRedirect, page 1-30
- TestInbandEdit, page 1-30
- TestIPv4FibShortcut, page 1-31
- TestIPv6FibShortcut, page 1-31
- TestL3Capture2, page 1-32
- TestMPLSFibShortcut, page 1-32
- TestNATFibShortcut, page 1-33

- TestNetflowShortcut, page 1-33
- TestRBAcl, page 1-34

TestAclDeny

This 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 and output Layer 2 redirect, Layer 3 redirect, and Layer 3 bridges.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	Schedule during downtime if you are using ACLs.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestAclPermit

This 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 is looked up by the Layer 3 forwarding engine to make sure it hits the ACL TCAM entry and gets permitted and forwarded correctly.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestAclRedirect

This test verifies the ACL redirect feature of the Layer 3 forwarding engine. This test verifies both ingress and egress Layer 3 redirect.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Run this test on-demand.
Default:	Off. This test runs by default during bootup or after a reset or OIR.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestInbandEdit

This test verifies the InbandEdit packets of the Layer 3 forwarding engine. One diagnostic InbandEdit packet is sent to create one diagnostic NetFlow entry and an adjacency entry, and one diagnostic packet is sent to ensure that the InbandEdit packet is forwarded accordingly with the rewritten MAC and VLAN.

Attributes	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Test runs automatically on bootup. On-demand is also supported.
Default:	Off.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

TestIPv4FibShortcut

These tests do the following:

- Verifies whether the IPv4 FIB forwarding of the Layer 3 forwarding engine is working properly. One diagnostic IPv4 FIB and an 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.
- 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.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestIPv6FibShortcut

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

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestL3Capture2

This 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 an 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 capture bit information.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestMPLSFibShortcut

This test does the following:

- Verifies that the MPLS forwarding of the Layer 3 forwarding engine is working properly. One diagnostic MPLS FIB and an 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.
- Verifies the EoMPLS forwarding of the Layer 3 forwarding engine. One diagnostic EoMPLS Layer 2 FIB and an adjacency entry are installed and a diagnostic Layer 2 packet is sent to the forwarding engine to make sure it is forwarded accordingly with the MPLS labels and the encapsulated Layer 2 packet.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestNATFibShortcut

This test verifies the ability to rewrite a packet based on NAT adjacency information, such as the rewrite destination IP address. One diagnostic NAT FIB and an adjacency entry is installed, and a diagnostic packet is sent to the forwarding engine to make sure the diagnostic packet is forwarded according to the rewritten IP address.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second. Duration of the disruption depends on the configuration of the looped-back port (for example, Spanning Tree Protocol).
Recommendation:	This test runs by default during bootup or after a reset or OIR.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestNetflowShortcut

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

Attribute	Description
Disruptive or Nondisruptive:	Disruptive for looped-back ports. Disruption is typically less than one second.
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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestRBAcl

This test verifies the role based ACL (RBACL) feature of the Layer 3 forwarding engine. This test uses SGT and DGT instead of src_ip/dest_ip to get ACL lookup results.

Attributes	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Test runs automatically on bootup. On-demand and health-monitoring tests are also supported.
Default:	Off.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	DFC-equipped modules.

Replication Engine Tests

- TestEgressSpan, page 1-34
- TestIngressSpan, page 1-35
- TestL3VlanMet, page 1-35

TestEgressSpan

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

Attribute	Description
Disruptive or 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.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines, DFC-equipped modules.

TestIngressSpan

This 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestL3VlanMet

This 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.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

Fabric Tests

- TestFabricCh0Health, page 1-36
- TestFabricCh1Health, page 1-36
- TestFabricExternalSnake, page 1-37
- TestFabricFlowControlStatus, page 1-37
- TestFabricInternalSnake, page 1-38

- TestFabricVlanLoopback, page 1-38
- TestFexFabricLinkStatus, page 1-39
- TestSynchedFabChannel, page 1-39

TestFabricCh0Health

This test constantly monitors the health of the ingress and egress data paths for fabric channel 0 on 10-gigabit modules. The test runs every five seconds. Ten consecutive failures are treated as fatal and the module resets; three consecutive reset cycles may result in a fabric switchover.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not turn this test off. Use as a health-monitoring test.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	The module resets after 10 consecutive failures. Three consecutive resets powers down the module.
Hardware support:	WS-X6704-10GE.

TestFabricCh1Health

This test constantly monitors the health of the ingress and egress data paths for fabric channel 1 on 10-gigabit modules. The test runs every five seconds. Ten consecutive failures are treated as fatal and the module resets; three consecutive reset cycles might result in a fabric switchover.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not turn this test off. Use as a health-monitoring test.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	The module resets after 10 consecutive failures. Three consecutive failures resets powers down the module.
Hardware support:	WS-X6704-10GE module.

TestFabricExternalSnake

This test is executed for the chassis-active supervisor engine only during regular OIR bootup diagnostic testing stage. This test generates the test packet through the inband port of the supervisor engine and the test data path involves the port ASIC, the rewrite engine ASIC inside the supervisor engine, and the fabric ASIC.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	After the supervisor engine is online, this test is supported to run by on-demand diagnostics for chassis-active supervisor engine but not for chassis-standby supervisor engine.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	If the test fails, the supervisor engine is power reset because it is a major diagnostic error.
Hardware support:	Active Supervisor engines.

TestFabricFlowControlStatus

This test reads the switch fabric ASIC registers to detect flow-control status for each fabric channel. Flow-control events are logged into the diagnostic events queue. By default, this test is disabled as a health-monitoring test, and when enabled, this test runs every 15 seconds. This test reports per-slot or per-channel rate reduction, current fabric channel utilization, peak fabric-channel utilization, and SP CPU utilization in both ingress and egress directions.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Use as a health-monitoring test. Use this test when you suspect a problem with the fabric channel.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	Flow control events are logged into the diagnostic event log.
Hardware support:	Supervisor engines.

TestFabricInternalSnake

This test is supported for a supervisor engine and module with a fabric switching ASIC. This test is executed by firmware INIT sequence code during bootup time when the firmware initializes the entire fabric ASIC.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	After the supervisor engine is online, this test is supported to run by on-demand diagnostics for chassis-standby supervisor engine but not for chassis-active supervisor engine. For modules with a fabric switching ASIC, this test is supported only for bootup diagnostic.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	If the test fails, firmware INIT sequence fails and the supervisor engine or module under test is power reset.
Hardware support:	Supervisor engines and fabric-enabled module.

TestFabricVlanLoopback

This test verifies the data path between the inband port of the module under test and the local fabric port responsible for switching traffic from and to the inband port through the per queue VLAN loopback feature provided by the hardware. When the test packet from the inband port arrives at the input queue of the local fabric port with matching VLAN to the pre-programmed VLAN loopback register, the test packet transverses the fabric, loopbacks to the output queue of the same fabric port, and forwards the test packet back to the inband port.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Test runs automatically on bootup. On-demand is also supported. Use this test to verify the data path between the local fabric channel and the inband port or use for debugging.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	Supervisor engines and DFC-equipped modules.

TestFexFabricLinkStatus

This test monitors the IA parent-client link and reports failure if the link port loses its connection to the associated IA client.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive health monitoring test.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.1(2)SY
Corrective action:	Displays the "%CONST_DIAG-6-RSL_LINK_DOWN: RSL link on module *number* port *number* is down syslog" message.
Hardware support:	WS-X6904-40G-2T

TestSynchedFabChannel

This test periodically checks the fabric synchronization status for both the module and the fabric. This test is available only for fabric-enabled modules. This test is not a packet-switching test so it does not involve the data path. This test sends an SCP control message to the module and fabric to query the synchronization status.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not turn this test off. Use as a health-monitoring test.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	The module resets after five consecutive failures. Three consecutive reset cycles results in the module powering down. A fabric switchover may be triggered, depending on the type of failure.
Hardware support:	All fabric-enabled modules.

Exhaustive Memory Tests

- TestAclQosTcam, page 1-40
- TestAsicMemory, page 1-40
- TestEarlMemOnBootup, page 1-41

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 16-4.

TestAclQosTcam

This test tests all the bits and checks the location of both ACL and QoS TCAMs on the PFC.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	All modules including supervisor engines.

TestAsicMemory

This test uses an algorithm to test the memory on a module.

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	All modules including supervisor engines.

TestEarlMemOnBootup

This test runs on bootup and tests all the bits and locations of EARL memories supported by the Generic Memory Testing Logic (GMTL). EARL memories are tested by drivers during bootup initialization. This test retrieves and displays the bootup test results from the drivers.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Not applicable.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Supervisor engines and DFC-equipped modules.

Service Module Tests

- TestPcLoopback, page 1-41
- TestPortASICLoopback, page 1-42

TestPcLoopback

This test verifies the longest datapath between the supervisor and the NAM service module. A packet is sent from the supervisor to the module and is looped back by the PC to the supervisor engine.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test runs automatically during bootup.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	WS-SVC-NAM-1, WS-SVC-NAM-2.

TestPortASICLoopback

This test verifies the health of the ASIC ports on the NAM service module. A packet is sent from the supervisor engine and looped back at the ASIC.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test runs automatically during bootup.
Default:	On.
Initial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	WS-SVC-NAM-1, WS-SVC-NAM-2.

Stress Tests

- TestEobcStressPing, page 1-42
- TestMicroburst, page 1-43
- TestNVRAMBatteryMonitor, page 1-43
- TestTrafficStress, page 1-44

TestEobcStressPing

This test stresses 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.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive. Disruption is several minutes.
Recommendation:	Use this test to qualify hardware before installing it in your network.
Default:	Off.
Initial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Supervisor engines.

TestMicroburst

This test monitors packet microbursts in the port ASICs and logs them to SEA unless consecutive failures reach the threshold.

Attribute	Description
Disruptive or Nondisruptive:	NonDisruptive.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Supervisor Engine 2T and DFC-equipped switching modules.

TestNVRAMBatteryMonitor

This test monitors the NVRAM battery status of the supervisor engine and logs every battery status change to OBFL. A syslog is printed if the battery voltage remains below a certain threshold for three consecutive days. Use the **show logging onboard** command and look for 'NVRAM battery power' to check change history of NVRAM battery status.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	This is an automatic health monitor test that runs every hour. It does not run at bootup and cannot be run on-demand.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	This test monitors the NVRAM battery status of the supervisor engine and logs battery status changes to on-board failure logging (OBFL). In the **show logging onboard** command output, the “NVRAM battery power” information is the NVRAM battery status history. After 72 consecutive test failures, a syslog advises module replacement.
Hardware support:	Supervisor Engine 2T.

TestTrafficStress

This 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.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive. Disruption is several minutes.
Recommendation:	Use this test to qualify hardware before installing it in your network.
Default:	Off.
Initial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Supervisor engines.

General Tests

- ScheduleSwitchover, page 1-44
- TestCFRW, page 1-45
- TestFirmwareDiagStatus, page 1-45
- TestOBFL, page 1-45
- TestRwEngineOverSubscription, page 1-46
- TestVDB, page 1-46

ScheduleSwitchover

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

Attribute	Description
Disruptive or 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.
Initial Release:	15.0(1)SY.
Corrective action:	None
Hardware support:	Supervisor engines.

TestCFRW

This test verifies the CompactFlash disk or disks on the supervisor engine. This test is performed during system boot-up or whenever a disk is inserted. A 128-byte temporary file is written to each disk present in the slot and read back. The content read back is checked and the temporary file is deleted. You can also execute this test from the CLI.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not disable. No traffic is affected.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Format or replace the failed CompactFlash.
Hardware support:	Removable CompactFlash devices.

TestFirmwareDiagStatus

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

Attribute	Description
Disruptive or 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.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide.
Hardware support:	All modules.

TestOBFL

This test verifies the on-board failure logging capabilities. During this test a diagnostic message is logged on the module.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	This test is run automatically during bootup and cannot be run on-demand.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Supervisor engines, DFC-equipped switching modules, WS-SVC-WISM2.

TestRwEngineOverSubscription

This is a health-monitoring test that is not enabled by default. This test runs on the module every one second and checks if the rewrite engine gets oversubscribed by retrieving drop counters and generates a syslog message if the drops exceed the set threshold.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	This test is run only as a health-monitoring test.
Default:	Off.
Initial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Supervisor engines, DFC-equipped modules.

TestVDB

This test is available on PoE-equipped modules. This test queries the result of diagnostic tests that run on the PoE daughter card.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	This test is run automatically during bootup.
Default:	Off.
Initial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	Modules with a PoE daughter card.

Critical Recovery Tests

- TestTxPathMonitoring, page 1-47

Note These tests are also considered critical recovery tests:

- TestFabricCh0Health, page 1-36
- TestFabricCh1Health, page 1-36
- TestSynchedFabChannel, page 1-39

TestTxPathMonitoring

This test sends index-directed packets periodically to each port on the supervisor engine and supported modules to verify ASIC synchronization and correct any related problems. The test runs every two seconds.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive.
Recommendation:	Do not change the default settings.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable (self-recovering).
Hardware support:	Supervisor engines and DFC-equipped modules.

ViSN Tests

- TestRslHm, page 1-47
- TestVSActiveToStandbyLoopback, page 1-48
- TestVslBridgeLink, page 1-48
- TestVslLocalLoopback, page 1-49
- TestVslStatus, page 1-49

TestRslHm

This test monitors the data and control links between the remote switch and core switches. A diagnostic packet is sent from the supervisor engine inband port on the remote switch to the supervisor engine inband port on the core switch and is pinged back along the reverse data path. This tests each RSL link between the remote switch and both active and standby core switches.

Attribute	Description
Disruptive or Nondisruptive:	Nondisruptive health monitoring test.
Recommendation:	Do not disable.
Default:	On.
Intitial Release:	15.0(1)SY.
Corrective action:	None. See the system message guide for more information.
Hardware support:	VSL-capable modules.

TestVSActiveToStandbyLoopback

This test is the only GOLD test that tests the full data path across the virtual switch links. This test selects an uplink port in the standby virtual switch supervisor engine as the loopback point and sends the VLAN flood packet from the active virtual switch supervisor engine inband port to the system. Due to the configuration of the FPOE and LTL VLAN flood region for all VSL modules and VSL interfaces in the active and standby virtual switch, the packet goes across VSL and arrives at the uplink port of the standby virtual switch supervisor engines, and loopbacks from there. The packet comes back to the inband port of the active supervisor engine due to the preconfiguration of FPOE and LTL in the standby and active virtual switches. In case of a test failure, the error check is executed for SP CPU, fabric flow control, and other errors in both active and standby virtual swtiches.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	Disable all health monitoring tests before executing this test. This test is run only for on-demand diagnostic testing.
Default:	Off.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	VSL-capable modules.

TestVslBridgeLink

This test provides diagnostic coverage for VSL-capable modules and the supervisor engine during module bootup. The data path of this test picks only one port corresponding to the local and remote bridge inband port as the loopback points. A diagnostic packet is sent from the inband port of the supervisor engine to the loopback points on the VSL module, and the packet traverses the bridge link between two fabric data path complexes to verify the hardware bridge link functionality.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test is run automatically during bootup.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	VSL-capable modules.

TestVslLocalLoopback

This test verifies the hardware functionality of each port on the VSL module before the VSL link interface is up. The data path of this test is constrained with the VSL module. A diagnostic packet is sent from the local inband port of the VSL module to each port to run a loopback test. This test is run only during module bootup.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test is run automatically during bootup and cannot be run on-demand.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	VSL-capable modules.

TestVslStatus

This test reports the status change detected by the VSLP protocol. When any link problem is detected by the VSLP protocol, the status of the link is changed and the result is updated accordingly. This test also triggers the loopback test to check the hardware status requested by the VSLP protocol.

Attribute	Description
Disruptive or Nondisruptive:	Disruptive.
Recommendation:	This test is effective once the VSL modules are online.
Default:	This test runs by default during bootup or after a reset or OIR.
Intitial Release:	15.0(1)SY.
Corrective action:	Not applicable.
Hardware support:	VSL-capable modules.

Tip For additional information about Cisco Catalyst 6500 Series Switches (including configuration examples and troubleshooting information), see the documents listed on this page:

http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html

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