Q&A

Generic Online Diagnostics

OVERVIEW

Q. What is Generic Online Diagnostics (GOLD)? Where is GOLD available?

A. GOLD is a platform-independent, distributed framework that provides common command-line interface (CLI) and scheduling for run-time diagnostics. GOLD is part of the run-time OS in various Cisco® platforms such as the Cisco Catalyst® 6500, Catalyst 4500, and Catalyst 3750 Series Switches; the Cisco 7600 Series Routers; and the Cisco CRS-1 Carrier Routing Systems. It is available in specific releases of Cisco IOS® Software, Cisco Catalyst OS, and Cisco IOS XR Software that support these platforms.

Q. How does GOLD work?

A. The diagnostic capabilities of GOLD can be categorized as follows:

- Boot-up diagnostics—Conducted during the boot-up or online insertion and removal (OIR) of a line card or module
- Health monitoring diagnostics—Conducted in the background while the system is in operation
- On-demand diagnostics—Providing the ability to conduct various tests on demand using CLI
- Scheduled diagnostics—Providing the ability to conduct various tests at a later scheduled date, time, and frequency using CLI

Q. What does GOLD provide?

A. GOLD can detect faults in hardware and provide the triggers to proactively engage high-availability features and actions such as switchover of modules or turning off modules or individual ports. The GOLD test suite also gives support personnel the tools to test the functioning of hardware modules and troubleshoot down to the field-replaceable unit (FRU) level.

Q. If GOLD is platform-independent, why are the tests not the same for all modules and line cards?

A. The GOLD framework is platform-independent to provide consistency in CLI and output displays. The test suite that uses this framework (the actual tests that are made available) is platform-dependent. Hence the tests will vary based on the individual capabilities of the modules and line cards and the test coverage for the specific platform.

Q. Can GOLD detect software problems too, or is it only meant to detect hardware problems?

A. GOLD is designed to detect hardware problems down to the FRU level. GOLD uses the same OS run-time drivers that are used by other OS features to access the hardware. Therefore, GOLD may be able to identify some inconsistencies in driver software and hence detect some software problems. However, that is not the primary function of GOLD.

Q. Does GOLD also have direct access to the hardware without using these OS run-time drivers?

A. Yes, for some tests that are very disruptive in nature (for example, memory tests), GOLD will access the hardware directly. In most of these scenarios, the module or line card will have to be reset before normal functioning continues.

Q. How does GOLD report the results and errors found?

A. GOLD logs the results in the local buffer (non-persistent), writes to syslog, Simple Network Management Protocol (SNMP), and also reports to the Cisco IOS Embedded Event Manager (EEM).

Q. How can I view the GOLD results?

A. The “show diagnostics result all” command will help you display the results of the diagnostics tests.

GOLD TESTS

Q. What is the difference between Power-On Self Test (POST) and GOLD boot-up tests?

A. The POST tests the CPU subsystem, some limited amount of system memory, and peripherals during early stage of system boot up. This is primarily to ensure that the system is functional enough to load the complete OS (boot-up process). The GOLD boot-up diagnostics, on the other hand, perform functional packet-switching tests and ASIC memory tests using run-time drivers. This, in effect, tests the data and control paths associated with the module before placing it online. Hence the boot-up tests give a more accurate picture of the functional health of the module before it is placed in service.

Q. How much time does it take to conduct the boot-up tests? Can I disable the boot-up tests?

A. It takes 5 to 7 seconds per module in "minimal" mode to conduct the boot-up tests. The time taken in "complete" mode is about 10 seconds per module. Though boot-up tests can be disabled, it is not advisable because this is a unique opportunity to ensure failing hardware is prevented from going into service.

Q. Are all Health Monitoring tests nondisruptive?

A. Yes, all Health Monitoring tests are nondisruptive because they are scheduled to run in the background while the system is switching packets of live traffic.

Q. How can I detect whether a test is disruptive or nondisruptive?

A. The "attribute" information using the show diagnostic content command will allow you to view whether the test is disruptive (D) or nondisruptive (N). Also, if you try to run a disruptive test, it will prompt you with a "yes/no" confirmation before running the test. This warning appears for all disruptive tests.

Q. How can I detect syslog messages that are specific to GOLD?

A. GOLD-related syslog messages will start with the string "DIAG" or "CONST_DIAG".

Q. What are the one or two most important commands I need to remember when using GOLD and interacting with the Cisco Technical Assistance Center (TAC)?

A. Cisco TAC engineers will usually request the following information from the following commands to help them troubleshoot better:

- Show diagnostics events all
- Show diagnostics results module all detail

Q. Where can I find more details on the individual tests that are included in GOLD?

A. For more details on these individual tests, please visit http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/122sx/swcg/diagtest.htm. Please note that some of these tests are specific to the Cisco Catalyst 6500 Series.

FOR MORE INFORMATION

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