

# COMPUTING

## ViewCheck™ on MaxCore™ PCIE Cards

User Guide

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**ARTESYN**<sup>™</sup>  
EMBEDDED TECHNOLOGIES

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# Contents

<b>About this Manual</b> .....	<b>9</b>
<b>1 Introduction</b> .....	<b>13</b>
1.1 Terminology .....	13
1.1.1 Test Identification .....	13
1.1.2 Monitor ID .....	15
1.1.3 Error ID .....	15
1.1.4 Notifications .....	16
1.1.5 Heartbeat .....	16
<b>2 ViewCheck Installation</b> .....	<b>17</b>
2.1 ViewCheck Deliverables .....	17
2.1.1 Installing ViewCheck .....	18
2.1.2 Uninstalling ViewCheck .....	20
2.2 Access and Execution of a Test Using CLI .....	20
2.3 Access and Execution of a Test Using XML .....	24
2.4 Access and Execution of a Test Using GUI .....	24
2.5 ViewCheck Service Log Information .....	25
2.6 ViewCheck TestLog Information .....	25
<b>3 Commands Execution</b> .....	<b>27</b>
3.1 Generic Commands .....	27
3.1.1 configure-error-strings .....	27
3.1.2 configure-log-path .....	28
3.1.3 deviceCategory .....	28
3.1.4 hw-inventory-list .....	28
3.1.5 list-all-tests .....	29
3.1.6 purge-all-log .....	29
3.1.7 set-log-level .....	29
3.1.8 show-all-monitors .....	30
3.1.9 show-all-test-status .....	30
3.1.10 show-diag-scan-result .....	30
3.1.11 show-log-content .....	30
3.1.12 show-heart-beat .....	31

3.1.13	show-log-info	31
3.1.14	show-log-level	31
3.1.15	show-running-mode	31
3.1.16	show-system-error-log	31
3.1.17	start-all-monitors	32
3.1.18	start-diag-scan	32
3.1.19	stop-all-monitors	33
3.1.20	stop-diag-scan	33
3.1.21	switch-mode	34
3.1.22	show-version	34
3.2	Test Management and Control Commands	34
3.2.1	start-test	34
3.2.2	show-test-help	35
3.2.3	list-tests	36
3.2.4	show-test-status	36
3.2.5	show-test-result	37
3.2.6	stop-test	37
3.3	Monitoring Commands	38
3.3.1	show-monitor-id	38
3.3.2	show-poll-interval	39
3.3.3	show-lower-threshold-info	39
3.3.4	show-upper-threshold-info	40
3.3.5	start-monitor	40
3.3.6	set-lower-threshold-info	41
3.3.7	set-upper-threshold-info	41
3.3.8	set-threshold-default	42
3.3.9	set-poll-interval	42
3.3.10	set-poll-interval-default	43
3.3.11	stop-monitor	44
3.3.12	set-rate	44
3.3.13	show-rate	45
3.3.14	show-network-counter-log	45
3.3.15	show-network-error-log	45
3.3.16	exit	46
3.4	In-service Monitoring Specifics	46
3.4.1	Monitoring Hardware Device Status	46

3.4.2	Monitoring Device Critical Errors .....	48
3.5	Out of Service Diagnostics Tests .....	48
3.5.1	CPU Tests .....	49
3.5.2	Memory Tests .....	49
3.5.3	OS Tests .....	50
3.5.4	Network Tests .....	50
3.5.5	Hard Disk Drive Tests .....	51
3.5.6	RTC Test .....	51
<b>A</b>	<b>Related Documentation .....</b>	<b>53</b>
A.1	Artesyn Embedded Technologies - Embedded Computing Documentation .....	53



# List of Tables

Table 2-1	List of ViewCheck and Dependent RPMs	18
Table 2-2	RPM Files	19
Table 2-3	ViewCheck Supported Commands	21
Table 2-4	DeviceCategory Supported Commands	22
Table 3-1	configure-error-strings Arguments	27
Table 3-2	configure-log-path Arguments	28
Table 3-3	set-log-level Values	29
Table 3-4	set-log-level Arguments	29
Table 3-5	show-log-content Arguments	30
Table 3-6	start-all-monitors Arguments	32
Table 3-7	start-diag-scan Arguments	32
Table 3-8	stop-all-monitors Arguments	33
Table 3-9	switch-mode Arguments	34
Table 3-10	start-test Arguments	35
Table 3-11	show-test-help Arguments	36
Table 3-12	show-test-status Arguments	36
Table 3-13	show-test-result Arguments	37
Table 3-14	stop-test Arguments	37
Table 3-15	show-poll-interval Arguments	39
Table 3-16	show-lower-threshold-info Arguments	39
Table 3-17	show-upper-threshold-info Arguments	40
Table 3-18	start-monitor Arguments	40
Table 3-19	set-lower-threshold-info Arguments	41
Table 3-20	set-upper-threshold-info Arguments	41
Table 3-21	set-threshold-default Arguments	42
Table 3-22	set-poll-interval Arguments	43
Table 3-23	set-poll-interval-default Arguments	43
Table 3-24	stop-monitor Arguments	44
Table 3-25	set-rate Arguments	44
Table 3-26	show-rate Arguments	45
Table 3-27	Monitors	47
Table A-1	Artesyn Embedded Technologies - Embedded Computing Publications	53





# About this Manual

## Overview of Contents

This manual provides detailed information about installation, configuration, and use of ViewCheck™ on Artesyn MaxCore PCIE cards that are installed in MaxCore Platform. This manual is divided into following chapters and appendices:

- [About this Manual](#) lists all conventions and abbreviations used in this manual and outlines the revision history.
- [Introduction](#) provides detailed overview and features of ViewCheck.
- [ViewCheck Installation](#) provides instructions about the installation of ViewCheck on Artesyn MaxCore PCIE cards.
- [Commands Execution](#) describes the various tests that can be executed on PCIE cards using ViewCheck.
- [Related Documentation](#) lists the relevant manuals and provides additional information.

## Abbreviations

The following table lists the abbreviations used throughout the document.

Abbreviation	Definition
BIST	Built-In Self Test
Client	The applications used to access ViewCheck via various Interfaces (CLI and XML).
INSM	In Service Monitoring. Functional module in ViewCheck framework handling the monitoring functionality of various critical parameters in the blade.
OOSD	Online Out of Service Diagnostics. Functional module in ViewCheck framework that manages Test Management requests related to Out of Service Diagnostics.
PCIE	Peripheral Component Interconnect Express
RTC	Real Time Clock
SSF	System Services Framework

## Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
<b>bold</b>	Used to emphasize a word
Screen	Used for on-screen output and code related elements or commands in body text
<b>Courier + Bold</b>	Used to characterize user input and to separate it from system output
<i>Reference</i>	Used for references and for table and figure descriptions
File > Exit	Notation for selecting a submenu.
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description
...	Repeated item for example node 1, node 2, ..., node 12
.	Omission of information from example/command that is not necessary at the time being
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
	Logical OR



## Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Date	Description
6806800T92E	November 2016	Updated <a href="#">Chapter 1, Introduction, on page 13</a> , <a href="#">Chapter 2, ViewCheck Installation, on page 17</a> and <a href="#">Chapter 3, Commands Execution, on page 27</a> .
6806800T92D	September 2016	Updated <a href="#">Chapter 1, Introduction, on page 13</a> and <a href="#">Chapter 2, ViewCheck Installation, on page 17</a> .
6806800T92C	May 2016	Added ViewCheck install, uninstall, and upgrade procedures in section <a href="#">ViewCheck Deliverables on page 17</a> . Updated <a href="#">Table "ViewCheck Supported Commands" on page 21</a> .
6806800T92B	April 2016	Updated sections <a href="#">Monitor ID on page 15</a> and <a href="#">CPU Tests on page 49</a> . Added PCIe-9205 card-specific information. Updated trademarks section and re-branded header image.
6806800T92A	January 2016	Initial version

ViewCheck™ is a comprehensive software service used to diagnose and monitor Artesyn MaxCore PCIE cards installed in MaxCore platform. The ViewCheck software helps in identifying, detecting, and locating issues of PCIE card. ViewCheck provides mechanism to monitor the status of CPU temperature, CPU core usage, Memory usage, Hard disk health status, Ethernet counters, Errors, User applications and so on.

ViewCheck also supports user-triggered test cases and event notification mechanisms.

In this manual, ViewCheck and Diagnostics are used interchangeably, because diagnostics is the core part of ViewCheck. Currently, ViewCheck is supported on SharpServer PCIE-7410, SharpSwitch PCIE-9205 and SharpStreamer Pro PCIE-7210 cards.

ViewCheck can be accessed using Command Line Interface (CLI), Graphical User Interface (GUI), and Extensible Markup Language (XML) interfaces provided via System Services Framework (SSF). ViewCheck runs in any of the following modes:

- **In-service Diagnostics**  
In this mode, the diagnostics service can run even while the PCIE card is instantiated with customer applications and is providing service. ViewCheck can monitor key hardware parameters like CPU temperature, network counters, and network errors. It can also be used for watching kernel critical errors logged by various hardware devices and device drivers.
- **Out-of-service Diagnostics**  
In this mode, ViewCheck can execute all Online Out-of-service Diagnostics (OOSD) tests along with In-service diagnostics activities. These tests can only be executed when the PCIE card is offline and not providing any service.

For more information about the commands supported for In-service and OOSD, see [Commands Execution on page 27](#).

## 1.1 Terminology

This section explains terminology and keywords used in ViewCheck services.

### 1.1.1 Test Identification

The tests performed by ViewCheck have a unique test identification that is based on the following triple key:

<Device Category, Test ID, Device Instance>

## Device Category

The Device Category is an enumerated value, reused from similar enumeration already defined in the HPI-B standard specification.

It is used to represent commonly used devices, such as storage, network, serial, CPU, and memory, available on all the PCIE cards, irrespective of their function and architecture. This category is used in commands as one of the key fields to uniquely identify a particular test.

Device Category allows you to:

- Group test cases, as per the category, for display and statistical purpose.
- Reuse test IDs across the device categories.

## Test ID

Test ID is an integer value that uniquely identifies the actual test that can be invoked or executed on a hardware device instance, which belongs to a specific device category available on the PCIE card. The following are the examples of tests that can be executed on the devices:

- Network connectivity test in case of network device category
- Bad blocks test in case of storage device category
- Temperature tests in case of CPU categories

Each of these tests would be associated with a unique test ID. These test IDs start with value '0' and increase linearly for various sub-tests in a device category.

Some tests may be applicable to all the device instances in a particular device category. The combination of <Device category, Test ID, Device Instance> would be unique and provides capability to control, execute, and manage the test on a device instance in a device category. With this mechanism, the same test can be simultaneously initiated or triggered on multiple device instances under that device category, thus providing parallel execution of tests.

## Device Instance

Hardware devices uniquely identified and recognized by the drivers and OS on the PCIE card are treated as device instances. A device instance can belong to a particular device category. Tests can be invoked and executed on this device instance. OS and driver support to access the device is assumed to be readily available.

For example, device instances enp35s0f0, enp35s0f1, enp35s0f2, enp35s0f3 are used to identify unique devices in the networking device category. Similarly, sda1, sda2, and so on can identify unique instances of devices in the storage category. Device instances use the standard nomenclature already defined by the OS (for instance Linux) on the PCIE card.

A diagnostics test identified with "`<Device Category, Test ID, device Instance>`" is executed on the specified device instance.

### 1.1.2 Monitor ID

ViewCheck service monitors pre-identified parameters for hardware devices. These parameters include CPU temperature, CPU core usage, memory usage, hard disk health status, Ethernet counters, and errors. To periodically poll and check these parameters, the ViewCheck service uses the configuration provided from the XML file. For each parameter of interest, a monitor ID is an enumerated constant that uniquely represents the monitoring entity. ViewCheck uses this value to control monitoring and to report events on these monitors.



**For CPU temperature monitoring, make sure the core temperature module is loaded into the kernel.**

**Hard disk health status is not available on PCIE-9205 card.**

### 1.1.3 Error ID

Error ID is to provide identification for pre-determined errors or warnings of hardware devices generated by the device driver or the kernel on the PCIE card. These critical error messages are indications of abnormal behavior on part of the kernel or the hardware device on the PCIE cards. ViewCheck functionality attempts to detect all such errors and provides suitable information to external high-level software intelligence to act upon.

The list of messages that constitute these errors is not standardized by the hardware device vendor nor the Linux kernel community. Error ID attempts to standardize all such messages on Artesyn products. These messages would be OS and driver specific. Mostly, the same Error ID would be associated with the same category of error across PCIE card and OS. For more information about commands, refer to [Commands Execution on page 27](#).

## 1.1.4 Notifications

ViewCheck sends asynchronous event notifications under the following specified instances:

- State changes of diagnostic test(s) under execution.
- Monitor exceeds the configured threshold value.
- Occurrence of any hardware device error or warning generated by the device driver or the kernel.
- In case of any User Applications failure.

## 1.1.5 Heartbeat

The heartbeat feature allows user applications or any other services running on the system to register for regular health check with ViewCheck core.

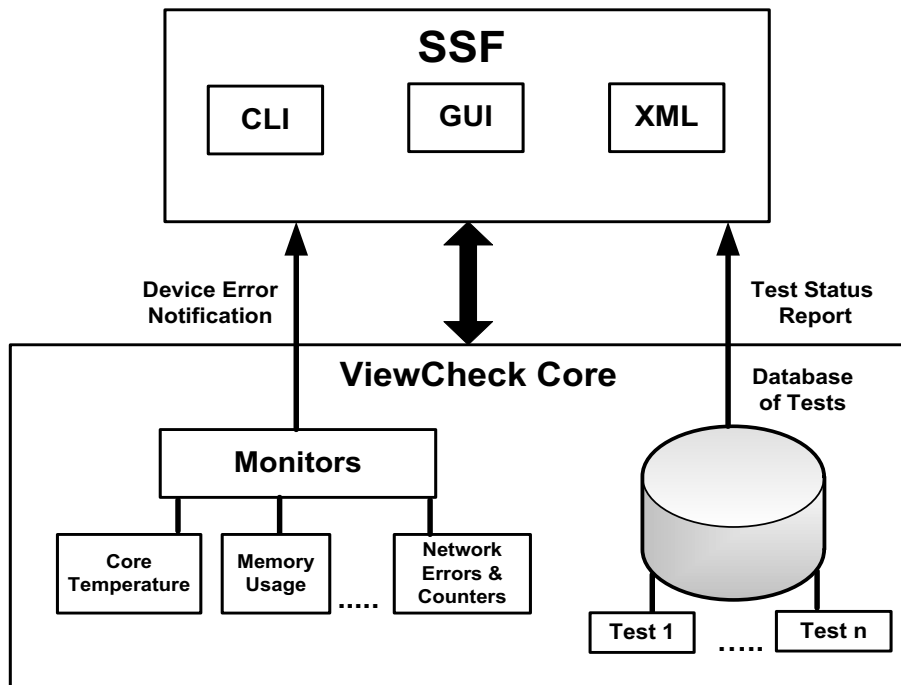


# ViewCheck Installation

This chapter explains the ViewCheck release modules and procedures to install and run ViewCheck service on Artesyn PCIe cards.

ViewCheck RPM provides the core diagnostics functionality where as SSF RPMs provide GUI, CLI, and XML interfaces to access the ViewCheck. Using these interfaces, you can run diagnostics tests and configure the monitoring parameters such as core temperature, hard disk health, network errors and counters.

Figure 2-1 ViewCheck Block Diagram



## 2.1 ViewCheck Deliverables

SSF software is delivered as a complete package, which includes SSF RPMs, dependent RPMs, Basic Blade Services (BBS), and an installation script. This package includes the ViewCheck RPM, ViewCheck version RPM, SSF ViewCheck Agent RPM, and a dependent RPM.

The following table contains the list of ViewCheck and dependent RPMs available in the release package.

*Table 2-1 List of ViewCheck and Dependent RPMs*

RPM	Description
<b>ViewCheck RPM</b>	
viewcheck_rel-<Card Number>-<version number>-el7.x86_64.rpm	<p>This RPM contains the ViewCheck service. The ViewCheck RPM image is functionally comprises of diagnostics framework, specific test cases, and test suites. The ViewCheck RPM always uses the same OS variant and compile time environment based on the BBS release of the target PCIE card.</p> <p>ViewCheck service RPM consists of:</p> <ul style="list-style-type: none"> <li>● ViewCheck Core -Daemon</li> <li>● Static Test Suite Configuration files for the specific card</li> <li>● Start/Stop/Restart /Status scripts for ViewCheck Core</li> </ul>
<b>SSF ViewCheck Agent RPM</b>	
ssf_maxcore_viewcheckTLS_rel-<Card Number>-<version number>-el7.x86_64	Provides binary and configuration files of the ViewCheck SSF Agent. This RPM is dependent on ViewCheck RPM.
<b>Dependent RPMs</b>	
psmisc-22.6-19.el6_5.x86_64.rpm	Dependent RPM for installing ViewCheck on PCIE-7410, PCIE-9205 and PCIE-7210 cards.
<b>Note:</b> CardNumber refers to either 7410, 9205, or 7210.	

## 2.1.1 Installing ViewCheck

For information on ViewCheck installation, refer *SSF for MaxCore™ MC3000 Platform Installation and Use*.

The following table describes the files that are available on the PCIe card, after ViewCheck RPM is installed.

*Table 2-2 RPM Files*

File Name	Path	Description
diagcored	/opt/diagnostics/bin/	ViewCheck Core -Daemon
diagconfig.xml diaguserconf.xml	/opt/diagnostics/etc/diag/	ViewCheck configuration file and user configuration file.
diagcore	/opt/diagnostics/etc/init.d/	Script to start/stop/restart/status diagnostics core.
libdiagintf.so	/lib64	Interface library between ViewCheck core daemon and SSF application.
<TestScripts>.sh	/opt/diagnostics/tools/diagtestscripts/	List of test scripts supported on the PCIe card.
EmrDiag_Debug.log	/opt/diagnostics/var/log/diag/service/	ViewCheck daemon service log.
diagLib_log, diagCore_log, diagResults_log, diagTestRaw_log, diagShowCmds_log	/etc/logrotate.d	Configuration files required for log rotation of service logs.
Testutilities	/opt/diagnostics/tools/diagtestutils/	Utilities and tools used by ViewCheck application.



**After installation, the ViewCheck service automatically gets started. In case, if you want to stop, start, restart, or check the status of service, use the following command.**

```
/opt/diagnostics/etc/init.d/diagcore
<start/stop/restart/reload/status>
```

## 2.1.2 Uninstalling ViewCheck

For information on ViewCheck uninstallation, refer *SSF for MaxCore™ MC3000 Platform Installation and Use*.

## 2.2 Access and Execution of a Test Using CLI

Using CLI, you can start, stop, and query the status of a particular diagnostic test. Also, you can configure the monitoring parameters. The ViewCheck CLI can be accessed via a console using Secure Shell (SSH).

You can access ViewCheck CLI using the following procedure:

1. Establish the secure shell using SSH or Putty.
2. Start the **Telnet** connection from an already established secure shell.  

```
[root@localhost ~]# telnet localhost 11001
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
Welcome to SSF CLI
```
3. Type *username* and *password*.  
Username: Admin  
Password:  
Access granted

```
>enable
#configure terminal
MaxCore(config)#system 1
MaxCore(system-1)#shelf 1
MaxCore(shelf-1-1)#PCIEslot 1
MaxCore(PCIEslot-1-1-1)#PCIECard 1
MaxCore(PCIECard-1-1-1-1)#CPU 1
MaxCore(CPU-1-1-1-1-1)#virExecEnv 0
MaxCore(virExecEnv-1-1-1-1-1-0)#diagnostic
```

```
MaxCore(diagnostic-1-1-1-1-1-0)#?
```

## NOTICE

**By default, the administrator username and password are "Admin".**

After logging into the ViewCheck CLI, you can list all supported commands by typing ' ? ' on the CLI console. The following line is an example.

```
MaxCore(diagnostic-1-1-1-1-1-0)#?
```

*Table 2-3 ViewCheck Supported Commands*

Command Name	Description
configure-error-strings	User configurable error strings, notified by ViewCheck when reported by the device.
configure-log-path	Configures the log path where the results are stored.
deviceCategory	Configure deviceCategory.
diag-service	Diagnostics operation (status/start/stop/restart).
exit	Exits from diagnostic configuration mode.
hw-inventory-list	Provides the Inventory of Hardware (Type, Vendor ID, Major Number, Minor Number and any associated Details) as detected by the Diagnostics Software.
list-all-tests	Displays all the supported tests on the card.
no	Negates a command or set its defaults.
purge-all-log	All log files are zipped and stored away.
purge-log	Purges specific log file.
pwl	Present working location.
set-log-level	Sets the Log Level of diagnostic application.
show-all-monitors	Displays all the supported Monitors on the card.
show-all-test-status	Displays the current execution status of all the available tests.
show-diag-scan-result	Displays the last run result of Diag scan.

Table 2-3 ViewCheck Supported Commands (continued)

Command Name	Description
show-heart-beat	Displays status of Heartbeat for all registered services.
show-log-content	Displays the content of log files related to Rawlogs and ResultsLog of ViewCheck.
show-log-info	List all Log files of diagnostics application.
show-log-level	Displays list of log level of diagnostics.
show-running-mode	Displays the current running mode of ViewCheck.
show-system-error-log	Shows system error log.
version	Displays version of diagnostics.
start-all-monitors	Starts all the supported Monitors available on the card or related to a device category.
start-diag-scan	Executes the diagnostics tests supported on the card.
stop-all-monitors	Stops all the supported monitors available on the card or related to a device category.
stop-diag-scan	Stops the diagnostics scan tests.
switch-mode	Allows to switch ViewCheck modes. There are two types of Diagnostics Running Mode. In-service and Out Of service.

You can enter into device category mode by executing the command `device-category` on CLI and view the list of commands supported only at device category level.

```
MaxCore(diagnostic-1-1-1-1-1-0)#deviceCategory processor
```

```
MaxCore(diagnostic-1-1-1-1-1-0-1)#?
```

Table 2-4 DeviceCategory Supported Commands

Command Name	Description
exit	Exits from deviceCategory configuration mode.
list-device-instances	Lists all the possible device instances in present deviceCategory.

Table 2-4 DeviceCategory Supported Commands (continued)

Command Name	Description
<code>list-tests</code>	User can use this command to get information on the available diagnostic tests with details like tests and sub tests associated, along with Test IDs.
<code>set-lower-threshold-info</code>	Allows to set the Lower Threshold value for the Monitor.
<code>set-poll-interval-default</code>	Allows to set Poll Interval to default value.
<code>set-poll-interval</code>	Allows to set the Poll Interval.
<code>set-rate</code>	Allows to set the rate of change value for network monitors.
<code>set-threshold-default</code>	Allows to set Threshold to default value.
<code>set-upper-threshold-info</code>	Allows to set the Upper Threshold value for the Monitor.
<code>show-lower-threshold-info</code>	Shows Lower Threshold info.
<code>show-monitor-id</code>	Lists all monitors for the deviceCategory.
<code>show-network-counter-log</code>	Shows network counters log.
<code>show-network-error-log</code>	Shows network errors log.
<code>show-poll-interval</code>	Shows Poll Interval.
<code>show-rate</code>	Shows the rate of change value for network monitors.
<code>show-test-help</code>	Displays brief help on the usage of the Specific Test referred by Test ID.
<code>show-test-result</code>	Shows test result.
<code>show-test-status</code>	Shows test status.
<code>show-upper-threshold-info</code>	Shows upper threshold information.
<code>start-monitor</code>	Starts a monitor.
<code>start-test</code>	Starts a test.
<code>stop-monitor</code>	Stops a monitor.
<code>stop-test</code>	Stops a test.

After logging into the CLI, you can start, stop, and query a test from the CLI. You can view the details of the test by executing `show-test-help` command.

To start a test, you can run `start-test` command with `testId`, `deviceInstance`, and (optional) arguments as input to the command.

After test execution, the results can be viewed by `show-test-result` command, which displays the test result and a raw log generated by that test.

Using CLI, you can list all the In-service diagnostics monitors in a device category. By default, all monitors start when ViewCheck application is initialized. You can start and stop any monitor using `start-monitor` and `stop-monitor` commands.

To exit from the ViewCheck on PCIE Card CLI:

```
MaxCore(diagnostic-1-1-1-1-1-0)#exit
```

## 2.3 Access and Execution of a Test Using XML

XML interface supports methods, classes, and event notification mechanisms. Using XML, you can start, stop, query, and configure the testing and monitoring related parameters. Similar to CLI, the XML interface can be accessed using SSF.

To understand how to execute ViewCheck tests using XML commands, refer to *System Services Framework for MaxCore™ Platform XML Interface Guide*.

## 2.4 Access and Execution of a Test Using GUI

ViewCheck is a web based in-service and out-of-service fault detection software for Artesyn PCIE cards. The ViewCheck helps in identifying, detecting, and locating failures on a PCIE card.

ViewCheck enables you to perform following actions through its GUI:

- Running ViewCheck test
- Health check configuration
- General configuration

For more details, see the *SSF for MaxCore GUI Online Help*.



## 2.5 ViewCheck Service Log Information

ViewCheck service logs are generated in `EmrDiag_Debug.log` file and is located at `/opt/diagnostics/var/log/diag/service/`

The test-result logs and raw logs generated by various tests are available at `/opt/diagnostics/var/log/diag/testlog/`

## 2.6 ViewCheck TestLog Information

ViewCheck internally retains data related to tests invoked by the user. If the number of tests invoked by the user exceed 1000, all this information is saved in the `Emr_TestResultsMib.txt` file and the internal storage is erased.



# Commands Execution

You can use CLI, XML, and GUI to perform activities such as start, stop, and query on ViewCheck. Using CLI, XML, and GUI you can also set the parameters for monitoring.

ViewCheck commands are classified into:

- Generic commands
- Test management and control commands
- Monitoring commands

## 3.1 Generic Commands

This section describes the generic commands of ViewCheck executed through CLI.

### 3.1.1 configure-error-strings

`configure-error-strings` command allows adding user-defined kernel error strings to the diagnostics database.

#### Syntax

```
configure-error-strings errorStrings <string>
```

The following table provides `configure-error-strings` command arguments.

*Table 3-1 configure-error-strings Arguments*

Argument	Data Type	Description
<code>string</code>	String	Kernel error string to be added to the diagnostics database.

### NOTICE

**Make sure that the string that you enter must be more than one word.**

### 3.1.2 configure-log-path

`configure-log-path` command allows you to configure the location of ViewCheck logs. You can also specify the maximum limit for log size. Once the log size reaches the user-defined limit, a trap is sent to the user. Specifying log size is optional and by default, its value is 1GB.

**Syntax**

```
configure-log-path logpath <PATH> logSize [size]
```

The following table provides `configure-log-path` command arguments.

*Table 3-2 configure-log-path Arguments*

Argument	Data Type	Description
logpath	String	Location at which log files are placed.
size	String	Optional parameter. By default, the size of the log file is 1GB. For example, 10M, 2G, 100K, 1048576.

### 3.1.3 deviceCategory

`deviceCategory` command allows to configure the available device categories.

**Syntax**

```
deviceCategory <Dev category>
```

<b>NOTICE</b>
<b>This command is valid only in CLI.</b>

### 3.1.4 hw-inventory-list

`hw-inventory-list` command provides detailed information of hardware components available on the PCIe card. The command displays the hardware type, vendor ID, major number, minor number and any other associated details that are identified by the ViewCheck.

**Syntax**

```
hw-inventory-list
```

### 3.1.5 list-all-tests

`list-all-tests` command lists all the tests available on the PCIE card.

#### Syntax

```
list-all-tests
```

### 3.1.6 purge-all-log

`purge-all-log` command allows to zip all log files.

#### Syntax

```
purge-all-log
```

### 3.1.7 set-log-level

`set-log-level` command sets the current log level of ViewCheck to value 'X'. This is an internal debug command, used mainly for generating detailed debug log information. The valid log level values are listed in the following table.

*Table 3-3 set-log-level Values*

Values	Description
1- Info	All logs are logged. Even functions like entry and exit are also logged.
2- Normal	Details of function flows are logged.
3- Critical	High level errors are logged.

#### Syntax

```
set-log-level logLevelValue <x>
```

The following table lists the `set-log-level` command argument.

*Table 3-4 set-log-level Arguments*

Argument	Data Type	Description
x	Integer	Possible values are 3, 2, 1 (3-Critical, 2-Normal, 1-Info).

## 3.1.8 show-all-monitors

`show-all-monitors` command lists all the monitors available on the PCIe card.

### Syntax

```
show-all-monitors
```

## 3.1.9 show-all-test-status

`show-all-test-status` command allows you to view the current status of all tests available on the PCIe card.

### Syntax

```
show-all-test-status
```

## 3.1.10 show-diag-scan-result

`show-diag-scan-result` command shows the result of the last run diag scan command.

### Syntax

```
show-diag-scan-result
```

## 3.1.11 show-log-content

`show-log-content` command displays the content of the mentioned log file.

### Syntax

```
show-log-content logfileName <logfile Name>
```

The following table provides `show-log-content` command arguments.

*Table 3-5 show-log-content Arguments*

Argument	Data Type	Description
logfile Name	String	Name of the log file to be displayed.

### 3.1.12 show-heart-beat

`show-heart-beat` command displays the status of heartbeat for all registered services and applications.

**Syntax**

```
show-heart-beat
```

### 3.1.13 show-log-info

`show-log-info` command provides details of the various log files.

**Syntax**

```
show-log-info
```

### 3.1.14 show-log-level

`show-log-level` command displays the current logging level of ViewCheck.

**Syntax**

```
show-log-level
```

### 3.1.15 show-running-mode

`show-running-mode` command displays the running mode of the ViewCheck (INSM or OOSD).

**Syntax**

```
show-running-mode
```

### 3.1.16 show-system-error-log

`show-system-error-log` command displays the kernel critical and error messages captured by ViewCheck.

**Syntax**

```
show-system-error-log
```

## 3.1.17 start-all-monitors

`start-all-monitors` command starts all the monitors of the mentioned device category.

### Syntax

```
start-all-monitors device-category <Dev category>
```

The following table provides `start-all-monitors` command arguments.

*Table 3-6 start-all-monitors Arguments*

Argument	Data Type	Description
Dev category	String	Name of the device category.

## 3.1.18 start-diag-scan

`start-diag-scan` command starts the diag scan on the specified device categories.

### Syntax

```
start-diag-scan deviceCategory <Dev category-1>, ..., <Dev category-N>
Iterations [Itr-num] haltOnError [halt-string] timeout [timeout-
val]
```

`Iterations`, `haltOnError`, and `timeout` are optional arguments.

The following table provides `start-diag-scan` command arguments.

*Table 3-7 start-diag-scan Arguments*

Argument	Data Type	Description
Dev category-N	String	Name of the device category. You can specify multiple device category using comma ',' in between.
Itr-num	Integer	Enter the number of times that diag-scan has to run. By default, value is "1". Maximum number of iterations that user can specify is 1000.



Table 3-7 start-diag-scan Arguments (continued)

Argument	Data Type	Description
halt-string	String	Type "Yes" or "No". haltOnError specifies whether to continue or stop with test case execution on the occurrence of any error. By default, value is "No".
timeout-val	Integer	Enter the maximum time period to be taken by each test to execute. <b>Note:</b> If the value is '0', it will overwrite the factory configured default time-out value of all tests that are invoked as part of diagnostics scan. If no value is specified, each test runs for default time-out value. The defined time-out value varies from test to test and also depends on hardware.

### 3.1.19 stop-all-monitors

stop-all-monitors command stops all the monitors of the mentioned device category.

**Syntax**

stop-all-monitors device-category <Dev category>

The following table provides stop-all-monitors command arguments.

Table 3-8 stop-all-monitors Arguments

Argument	Data Type	Description
Dev category	String	Name of the device category.

### 3.1.20 stop-diag-scan

stop-diag-scan stops the currently running diag-scan command.

**Syntax**

stop-diag-scan

## 3.1.21 switch-mode

`switch-mode` command allows to switch ViewCheck from OOS mode to In-service mode and vice versa.

### Syntax

```
switch-mode modeVal <x>
```

The following table lists the `switch-mode` command arguments.

*Table 3-9 switch-mode Arguments*

Argument	Data Type	Description
x	String	Possible values are <code>inism</code> and <code>oosd</code> . Parameter given for the command is case-insensitive.

## 3.1.22 show-version

`show-version` command displays the RPM versions of all the ViewCheck packages installed.

### Syntax

```
show-version
```

## 3.2 Test Management and Control Commands

This section describes the CLI commands used for test management and control of diagnostics tests.

### NOTICE

**Execute all test management and control commands only after entering a specific device category.**

### 3.2.1 start-test

`start-test` command allows you to start a particular diagnostics test.

### Syntax

```
start-test testId <Test ID> deviceInstance <Dev Instance> arguments
-t [timeout-val] -Iterations [Itr-num] -Halt-onerror [halt-string]
```

Iterations, haltOnError, and timeout are optional arguments.

The following table lists the `start-test` command arguments.

*Table 3-10 start-test Arguments*

Argument	Data Type	Description
Test ID	Integer	Type the unique ID of a particular test that you want to start.
Dev Instance	Enum	Run <code>show-test-help</code> command to get the list of device instances applicable for the test.
timeout-val	Integer	Time out value for the test. <b>Note:</b> If the value is '0', it will overwrite the factory configured default time-out value of the specified test ID. That means, the test runs until the test execution is complete. If no value is specified, each test runs for default time-out value. The defined time-out value varies from test to test and also depends on hardware.
Itr-num	Integer	Number of iterations of the test.
halt-string	String	"Yes" or "No" value. If "Yes", the test halts on error. If "No", the test does not halt.

## 3.2.2 show-test-help

`show-test-help` command provides brief information on how to use a particular test. This command provides information on how to start, stop, and query the specified test ID.

### Syntax

```
show-test-help testId <Test ID>
```

The following table lists the `show-test-help` command arguments.

*Table 3-11 show-test-help Arguments*

Argument	Data Type	Description
Test ID	Integer	Type the unique ID of a particular test to get the details of it.

### 3.2.3 list-tests

`list-tests` command provides a supported list of diagnostics tests on the PCIe card with associated test IDs.

#### Syntax

```
list-tests
```

### 3.2.4 show-test-status

`show-test-status` command allows you to view the status of a particular test. The status of a test can be In Progress, Test Execution Completed, Test Stopped, or Test Timed Out.

#### Syntax

```
show-test-status testId <Test ID> deviceInstance <Dev Instance>
```

The following table lists the `show-test-status` command arguments.

*Table 3-12 show-test-status Arguments*

Argument	Data Type	Description
Test ID	Integer	Type the unique ID of a particular test that you want to view the status.
Dev Instance	Enum	Use <code>show-test-help</code> CLI command to get the equivalent enumerated value of supported Device Instance.

### 3.2.5 show-test-result

`show-test-result` command allows you to view the latest result of a particular test. This command displays the start and end time of the test, the test status such as Passed, Failed, Aborted, and Timed Out, and additional test arguments.

#### Syntax

```
show-test-result testId <Test ID> deviceInstance <Dev Instance>
```

*Table 3-13 show-test-result Arguments*

Argument	Data Type	Description
Test ID	Integer	Type the unique ID of a particular test that you want to view the latest result.
Dev Instance	Enum	Use <code>show-test-help</code> command to get the equivalent enumerated value of supported device instance.

### 3.2.6 stop-test

`stop-test` command allows you to stop or cancel any running diagnostics test.

#### Syntax

```
stop-test testId <Test ID> deviceInstance <Dev Instance>
```

The following table provides `stop-test` command arguments.

*Table 3-14 stop-test Arguments*

Argument	Data Type	Description
Test ID	Integer	Type the unique ID of the Test that you want to stop
Dev Instance	Enum	Use <code>show-test-help</code> CLI command to get the equivalent enumerated value of supported Device Instance.

## 3.3 Monitoring Commands

ViewCheck provides an important feature called Monitoring. As part of this feature, ViewCheck continuously checks in the background, the status of the key hardware components available on the card.

In the monitoring process, if the current value of the device is not within the configured range or if the device status is deviated from the expected behavior, a event notification will be sent to SSF with complete details of the device. In this way the user is notified about the status of the device. ViewCheck supports the following list of monitors, CPU core temperature, core usage, memory usage, network interface status, health of HDD and so on.

The following list of commands are used for management of the monitoring functionality of ViewCheck executed through CLI.

### NOTICE

**Execute the all commands related to monitors only after entering the specific device category.**

### 3.3.1 show-monitor-id

`show-monitor-id` command displays the list of parameters that are monitored using the In-service diagnostic. This command displays default monitor ID values of the parameters also.

#### Syntax

```
show-monitor-id
```

### NOTICE

**This command displays a list of monitors, if supported, only in that particular device category.**

### 3.3.2 show-poll-interval

`show-poll-interval` command displays the list of default poll intervals that is associated with the monitors. The poll interval values are in seconds.

#### Syntax

```
show-poll-interval monitorId <Monitor ID> deviceInstance <Dev Instance>
```

The following table provides `show-poll-interval` command arguments.

*Table 3-15 show-poll-interval Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor of which you want to view its default Poll interval values, if any.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.

### 3.3.3 show-lower-threshold-info

`show-lower-threshold-info` command displays the lower threshold information that is applicable to a monitor.

#### Syntax

```
show-lower-threshold-info monitorId <Monitor ID> deviceInstance <Dev Instance>
```

The following table provides `show-lower-threshold-info` command arguments.

*Table 3-16 show-lower-threshold-info Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor of which you want to view its lower threshold value
Dev Instance	Enum	Use <code>list-all-monitors</code> CLI command to get the equivalent enumerated value of supported device instance.

## 3.3.4 show-upper-threshold-info

`show-upper-threshold-info` command displays upper threshold information that is applicable to a monitor.

### Syntax

```
show-upper-threshold-info monitorId <Monitor ID> deviceInstance <Dev Instance>
```

The following table provides `show-upper-threshold-info` command arguments.

*Table 3-17 show-upper-threshold-info Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor of which you want to view its upper threshold value.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.

## 3.3.5 start-monitor

`start-monitor` command allows you to trigger a specific monitor to start monitoring, if it is not already initiated by default.

### Syntax

```
start-monitor monitorId <Monitor ID> deviceInstance <Dev Instance>
```

The following table provides `start-monitor` command arguments.

*Table 3-18 start-monitor Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor that you want to start.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.



### 3.3.6 set-lower-threshold-info

`set-lower-threshold-info` command is used to set the lower threshold value for a particular monitor based on which the monitor performs.

#### Syntax

```
set-lower-threshold-info monitorId < Monitor ID> deviceInstance
<Dev Instance> lowerThreshold <Threshold Value>
```

The following table provides `set-lower-threshold-info` command arguments.

*Table 3-19 set-lower-threshold-info Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor for which you want to set the lower threshold value.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.
Threshold Value	Integer	Type a threshold value for the specified monitor ID.

### 3.3.7 set-upper-threshold-info

`set-upper-threshold-info` command is used to set the upper threshold value for a particular monitor based on which the monitor performs.

#### Syntax

```
set-upper-threshold-info monitorId < Monitor ID> deviceInstance
<Dev Instance> upperThreshold <Threshold Value>
```

The following table provides `set-upper-threshold-info` command arguments.

*Table 3-20 set-upper-threshold-info Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor for which you want to set the upper threshold value.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.

*Table 3-20 set-upper-threshold-info Arguments*

Argument	Data Type	Description
Threshold Value	Integer	Type a threshold value for the specified monitor ID.

## 3.3.8 set-threshold-default

`set-threshold-default` command is used to reset the threshold value to default value of a particular monitor.

### Syntax

```
set-threshold-default monitorId <Monitor ID> deviceInstance <Dev Instance>
```

The following table provides `set-threshold-default` command arguments.

*Table 3-21 set-threshold-default Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor for which you want to reset its threshold value to default value.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.

## 3.3.9 set-poll-interval

`set-poll-interval` command is used to set the Poll interval value for monitors.

### Syntax

```
set-poll-interval monitorId <Monitor ID> deviceInstance <Dev Instance> pollInterval <PollIntervalValue>
```

The following table provides `set-poll-interval` command arguments.

*Table 3-22 set-poll-interval Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor for which you want to set the Poll interval value.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.
Poll Interval Value	Integer	Type the Poll interval value for the specified monitor ID.

### 3.3.10 set-poll-interval-default

`set-poll-interval-default` command is used to reset the Poll interval value to default value of a particular monitor.

#### Syntax

```
set-poll-interval-default monitorId <Monitor ID> deviceInstance
<Dev Instance>
```

The following table provides `set-poll-interval-default` command arguments.

*Table 3-23 set-poll-interval-default Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor for which you want to reset the Poll interval value to default value.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.

## 3.3.11 stop-monitor

`stop-monitor` command allows you to trigger a specific monitor to stop monitoring, which is already in service.

### Syntax

```
stop-monitor monitorId <Monitor ID> deviceInstance <Dev Instance>
```

The following table provides `stop-monitor` command arguments.

*Table 3-24 stop-monitor Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor that you want to stop monitoring.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.

## 3.3.12 set-rate

`set-rate` command sets the rate of change value for network monitors.

### Syntax

```
set-rate monitorId <Monitor Id> deviceInstance <Dev Instance> rate <Rate>
```

The following table provides `set-rate` command arguments.

*Table 3-25 set-rate Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor for which rate of change value is to be set.
Dev Instance	Enum	Use <code>list-all-monitors</code> command to get the equivalent enumerated value of supported device instance.
Rate	Integer	Rate of change value.

### 3.3.13 show-rate

`show-rate` command shows the configured rate of change value of network monitors.

#### Syntax

```
show-rate monitorId <Monitor Id> deviceInstance <Dev Instance>
```

The following table provides `show-rate` command arguments.

*Table 3-26 show-rate Arguments*

Argument	Data Type	Description
Monitor ID	Integer	Type the unique ID of the monitor of which rate of change value is to be shown.
Dev Instance	Enum	Use <code>list-all-monitors</code> CLI command to get the equivalent enumerated value of supported Device Instance.

### 3.3.14 show-network-counter-log

`show-network-counter-log` command displays the list of network counters on devices that have crossed the maximum rate value. For more information about the `show-rate` command, see [show-rate on page 45](#).

#### Syntax

```
show-network-counter-log
```

### 3.3.15 show-network-error-log

`show-network-error-log` command displays the list of network errors on devices that have crossed the maximum rate value. For more information on `show-rate` command, refer to [show-rate on page 45](#).

#### Syntax

```
show-networkerror-log
```

### 3.3.16 exit

`exit` command allows you to exit from the ViewCheck CLI.

#### **Syntax**

```
exit
```

## 3.4 In-service Monitoring Specifics

The In-service monitoring of ViewCheck provides functionality to:

- Monitor hardware device status
- Monitor device critical errors
- Execute the non-service affecting test cases

### 3.4.1 Monitoring Hardware Device Status

In-service monitoring periodically polls for status of the following devices on the PCIE card:

- CPU core temperature status
- Network devices counter statistics
- Network devices error statistics
- Storage device HDD health status
- CPU and CPU core usage monitor
- Memory usage monitor
- Heartbeat
- PLX Switch Status

Each of the above is identified by a unique monitor ID. For more information about monitor ID, see [Monitor ID on page 15](#).

The default poll interval for monitoring each of the monitor ID is set to 10 seconds. Commands are provided to edit the default settings.

For more information on the commands provided for In-service monitoring, see [Monitoring Commands on page 38](#).

The following table provides list of monitor IDs for each of the monitors being monitored on the PCIE card.



**PLX Monitors in ViewCheck are only available for the PCIE-7410, which is configured as Shelf host in the MaxCore system.**

*Table 3-27 Monitors*

Monitor Description	Monitor ID	Remarks
CPU core temperature monitor	1000	Monitors Temperature of the two cores available on the PCIE card individually and reports if temperature crosses a set threshold value.
CPU core usage monitor	1001	Monitors CPU and its core usage.
HDD health status	1010	Monitors the health status of sda1 to sda8 partitions on the HDD and reports.
Network errors	1020	Monitors the various error counters for each of the network device instances and provides an error counter exceeds the rate of change.
Network counters	1021	Monitors the various counters for each of the network device instances.
Memory usage	1030	Monitors the memory usage.
Ethernet Link Status	1022	Monitors if the link is active for network interfaces.

Table 3-27 Monitors (continued)

Monitor Description	Monitor ID	Remarks
PLX Switch Status	1023	Monitors the PLX switch device registers for errors and provides a notification in case of unexpected behavior.
Heartbeat	NA	Monitors registered applications and services on system.



PLX Switch Status is not available on PCIE-9205 card.

### 3.4.2 Monitoring Device Critical Errors

Under Linux OS, the device drivers log abnormal behavior and potential errors occurring in the hardware device with `KERN_ERR` or `KERN_CRIT` category. These notifications are considered as potential errors as they could manifest into latent faults in the live system.

The In-service monitoring module of ViewCheck looks for the occurrence of these notifications and on detection sends an event notification to SSF.

The device errors are captured and are identified uniquely with their ERROR IDs. For definition of ERROR ID, see [Error ID on page 15](#).

### 3.5 Out of Service Diagnostics Tests

Out of Service Diagnostics (OOSD) tests are used to monitor and manage the performance of the hardware components of a PCIE card. You can execute these tests only when PCIE card is offline (card is not providing any customer's applications and service).



### 3.5.1 CPU Tests

The following is the list of CPU tests:

- **CpuTempTest:** Reads the processor core(s) temperature levels and ensures that all cores are operating in normal levels.
- **CpuBurnTest :** This test constantly cycles FPU intensive functions. The resultant calculations are constantly checked for data integrity. If the test detects erroneous data, the test fails.
- **CacheSizeTest:** Verifies L1, L2, and L3 Cache sizes of CPU(s) on the card.
- **CpuBenchMark:** Tests different arithmetic operations and gives the results.

### 3.5.2 Memory Tests

The following is the list of Memory tests:

- **MemCntlrTest:** Randomly writes to areas of memory, then reads the memory back to ensure the written values remain unchanged.
- **RandomMemoryTest:** Performs stress testing on the memory subsystem. This test is effective in finding intermittent and non-deterministic faults. The problems in other hardware areas such as overheating CPU, out-of-specification power supply, and so on can cause memory faults.
- **MemBandwidth:** Measures the ability to copy, read, and write data over a varying set of sizes.
- **MemLatency:** Measures the time taken by the memory to respond with the data for read-request.

### 3.5.3 OS Tests

The following is the list of OS tests:

- **MemSepTest:** Ensures that user space programs cannot read and write to areas of memory utilized by items such as Video RAM and kernel code.
- **SupervisorInstrTest:** Ensures that the enforcement of the property that privileged instructions should only be in supervisor mode is still in effect. The set of privileged instructions tested to confirm this is architecture dependent.
- **DmesgCheckTest:** Checks for user-given keywords in the kernel dmesg logs.

### 3.5.4 Network Tests

The following is the list of Network tests:

- **EthLinkTest:** Verifies Ethernet device (for example: link status (active/inactive) and also captures various statistics of Ethernet device.
- **FloodPingTest:** Uses the ICMP protocol's mandatory ECHO\_REQUEST datagram to elicit an ICMP\_ECHO\_RESPONSE from a host or gateway.
- **EthStatsTest:** Tests basic network packet consistency, that is, checks network Rx, Tx errors, generates a warning if errors are less than or equal to 100 and marks the test as fail if number of errors are more than 100.
- **NetworkCntlrTest:** Verifies random data transmitted and also the data received for each configured network device. It verifies only Ethernet and token ring devices that are configured and active. The asynchronous devices are not verified.
- **NetworkAdapterTest:** Executes adapter Built-In Self Test (BIST) on the specified Ethernet device.
- **NetworkThroughputServ:** Starts the server for network throughput testing.
- **NetworkThroughput:** Tests the network throughput.
- **NetworkTxBenchMark:** Checks the transmission rate of interface.

- **PLXTestDetails:** Tests the PLX switch status and reports the errors occurred.



PLX Tests in ViewCheck are only available for the PCIE-7410, which is configured as Shelf host in the MaxCore system.

### 3.5.5 Hard Disk Drive Tests

The following is the list of Hard Disk Drive (HDD) tests:

- **DiskBadBlksTest:** Searches for bad blocks on a device (usually a disk partition).
- **DiskCntlrTest:** Verifies the random data written on disks remains unchanged. It verifies only IDE and SCSI controllers that are associated with mounted file systems. Disk controllers associated with read-only mounted file systems are not verified.

### 3.5.6 RTC Test

**RTCTest:** RTC stands for Real Time Clock. It verifies the clock ticking with respect to the elapsed time to verify the RTC hardware.



# Related Documentation

## A.1 Artesyn Embedded Technologies - Embedded Computing Documentation

The publications listed below are referenced in this manual. You can obtain electronic copies of Artesyn Embedded Technologies - Embedded Computing publications by contacting your local Artesyn sales office. For released products, you can also visit our Web site for the latest copies of our product documentation.

1. Go to [www.artesyn.com/computing/support/product/technical-documentation.php](http://www.artesyn.com/computing/support/product/technical-documentation.php).
2. Under FILTER OPTIONS, click the Document types drop-down list box to select the type of document you are looking for.
3. In the **Search** text box, type the product or document name and click Filter.

*Table A-1 Artesyn Embedded Technologies - Embedded Computing Publications*

Document Title	Publication Number
SSF for MaxCore™ MC3000 Platform XML Interface Guide	6806800T71
SSF for MaxCore™ MC3000 Platform Installation and Use	6806800T81
MaxCore™ MC3000 Platform Installation and Use	6806800T88







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