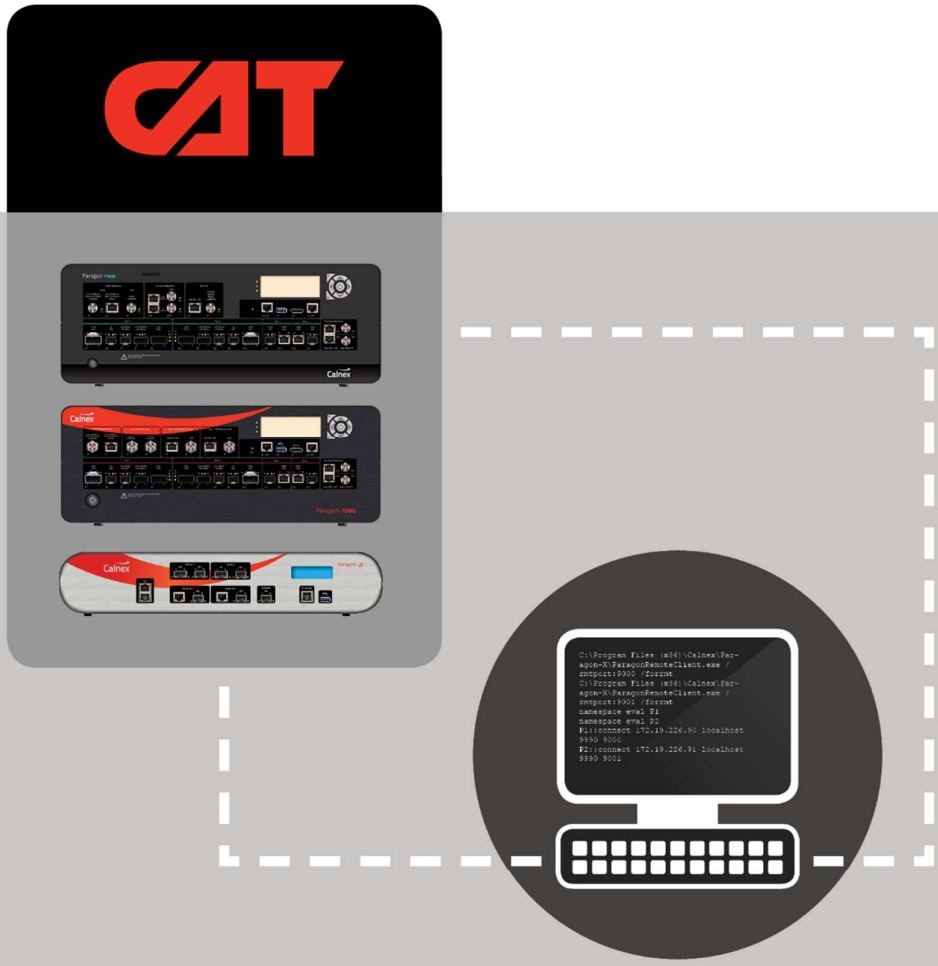
Calnex Analysis Tool (CAT)

Remote Control Guide



For Calnex Paragon Instruments

Version 9.0

Contents

Introduction

Calnex's family of Paragon instruments allow you to automate the testing of your devices. To support this, remote control functionality is built-in to the Paragon instruments as a standard feature. This document details the commands used to control the Calnex Analysis Tool (CAT) in conjunction with the Paragon instruments. The commands detailed here can be used with the Paragon-X, Paragon-t, Paragon-100G and Paragon-neo.

Note: The functionality available in the CAT is determined by the functionality of the instrument used; not all commands are available with all products.

There are additional remote control commands that can be used specifically with Paragon-100G and Paragon-neo (using the REST API) – these are not documented here, however, online documentation is available in the instrument.

Details regarding the setup required to use Paragon remote control can be found in the Paragon Remote Control Manual. Minimum PC requirements (including supported OS's) are listed in Application Note CX5006: *Paragon Remote Client Application Software - Minimum PC Requirements and PC Management Recommendations* document.

Overview

Paragon instruments (and associated remote control) consist of 3 main components:

- Hardware configuration and capture control
- Metrics analysis and visualization (using the CAT)
- PTP and ToD Message analysis (using Calnex's PTP Field Verifier, PFV)

The CAT allows for the in-depth analysis of captured data, both on previously captured data (which does not require access to hardware) and in real-time whilst running a live capture on an instrument.

This document describes how to use the remote-control functionality for the CAT. Remote control for hardware configuration and capture control, and for the PFV, is detailed in separate documents. These documents can be accessed from the Paragon-X GUI (**Help/Remote Control**) and from the Windows **Start** menu under **Calnex/Documentation**.

Tcl and Python are supported and the commands for each are provided.

Generating Remote Control Scripts from the Script Recorder

The Paragon-X, Paragon-100G and Paragon-neo can record user operations and convert these into scripted commands. This makes script creation very simple – record keypresses in the GUI and then use the recorded script as part of your test program. The script recorder logs commands for the CAT and PFV as well as for instrument control.

⚠ Note: The commands recorded by the Paragon-X can be used as the basis for scripts to control Paragon-100G and Paragon-neo but only a subset of these commands and associated parameters are supported since there are differences in the available functionality.

Paragon-X

To use the script recorder:

1. Start the Paragon-X GUI and select the **Script Recorder…** option from the **Tools** drop-down menu. A new dialog will appear as follows:

2. Select the scripting language that you are using and then click **Start**. A splash screen and recording window will then be displayed.
3. Configure the Paragon and perform the operations you would like scripted.
4. When you have completed your chosen operations, select **View Recorded Script** from the **Tools** drop-down menu.
5. You can now save the script and run it when required. Alternatively, cut and paste the script snippet into your test program.
6. From the **Tools** drop-down you can now de-select the **Script Recorder…** option to stop recording.

Using Remote Control from Tcl

A Tcl module is provided for remote control functionality. This module has been verified using ActiveState Tcl, version 8.5. It is recommended that this is the version you use.

The Tcl module provides a simple bridge between Tcl and the network interface protocol used to talk to the Paragon application.

Paragon-X: Location of the Tcl Module

The Paragon Tcl module (`paragon.tcl`) is located under the **My Documents** folder. In Windows 10 for instance, the location is typically:

```
C:\Users\<UserName>\Documents\Calnex\Paragon-X\RemoteControl\Tcl
```

For backward compatibility, the Tcl module is also located in the same directory as the Paragon-X software; this is normally one of:

```
C:\Program Files\Calnex\Paragon-X\
```

or

```
C:\Program Files (x86)\Calnex\Paragon-X\
```

Paragon-100G and Paragon-neo: Location of the Tcl Module

To use the commands listed in this document with Paragon-100G or Paragon-neo, you should use the `paragon.tcl` file distributed with Paragon-X (see above).

Using the Tcl Module

The Tcl library must be referenced using the Tcl *source* command to read this file prior to running Tcl commands or scripting e.g.

```
source c:/Program\ Files/Calnex/Paragon-X/paragon.tcl
```

Running Commands or Scripts

To run a Tcl command from the command line:

1. Start a Tcl shell e.g. `tclsh`
2. In the shell window, type: `source <path>/paragon.tcl`
   Where `<path>` is the path to the `paragon.tcl` file as detailed above.
3. Type your Tcl command e.g. `connect…` Note that you must connect to Paragon before executing other commands (see Connecting to the Instrument).

To run a Tcl script:

1. Start a Tcl shell e.g. `tclsh`
2. In the shell window, type: `source <path>/paragon.tcl`
   Where `<path>` is the path to the `paragon.tcl` file as detailed above.
   Alternatively, include the `source <path>/paragon.tcl` command in your script.
3. In the shell window, type `source` followed by the name of your script.

Using Remote Control from Python

A Python module is provided for remote control functionality. This module has been verified using Python 3.4. It is recommended that the Python interpreter installed is the same version or newer otherwise Python functionality may not work correctly. The Python module provides a simple bridge between Python and the network interface protocol used to talk to the Paragon application.

Paragon-X: Location of the Python Module

The Paragon Python module (`paragon.py`) is located under the **My Documents** folder. In Windows 10 for instance, the location is typically:

`C:\Users\<UserName>\Documents\Calnex\Paragon-X\RemoteControl\Python`

In this folder, you will also find two example test scripts (`test_simple.py` and `test_replay.py`) that use this module.

Paragon-100G and Paragon-neo: Location of the Python Module

To use the commands listed in this document with Paragon-100G or Paragon-neo, you should use the `paragon.py` file distributed with Paragon-X (see above).

Using the Python Module

The Python module must be imported before it can be used i.e.

```
import sys
sys.path.append(r'C:\Users\<UserName>\Documents\Calnex\Paragon-
X\RemoteControl\Python')
import paragon as p
```

The path may need to be adjusted depending on the location of the module.

Running Commands or Scripts

To run a Python command from the command line:

1. Start a Python shell: `Python`
2. In the shell window, type: `import sys`
3. Type the `sys.path.append` statement as detailed above.
4. Type import paragon as p
5. Type your python command e.g. `p.connect(…)`. Note that you must connect to Paragon before executing other commands (see Connecting to the Instrument).

To run a Python script:

1. Start a DOS command window.
2. If you have not previously configured your path, then type the `sys.path.append` statement as described above.
3. Type `import paragon as p`. Alternatively, you can include the `import` statement in your script.
4. At the prompt navigate to the directory where your script is stored e.g. `C:\Users\<UserName>\Documents\Calnex\RemoteControl\Python`
5. Type the name of the script including the .py filename extension e.g. `Test_simple.py`

Requirement for REQUESTS Module

Some of the functionality in CAT or PFV may not be available using Paragon-X style commands yet. To run these commands the information is retrieved from the application REST interface.

This interface requires installation of the Python `requests` library. This can be installed using the instructions in the section 'Extending Paragon-X Scripts to Control Paragon-100G and Paragon-neo'***Error! Reference source not found.***.

Using Remote Control from Perl

Perl is no longer supported.

Connecting to the Instrument

To control a Paragon remotely, you first must connect to it. For Paragon-X and Paragon-t, the Paragon GUI must be running on the controlling PC before any connection can be established. See the Paragon-X or Paragon-t Remote Control Manual for details.

For Paragon-X and Paragon-t, remote control for the CAT is also managed through the Paragon GUI. The GUI must be running on the controlling PC before any connection to the CAT can be established. For Paragon-100G and Paragon-neo, the instrument simply needs to be powered on.

Filename Specification within Scripts/Commands

Commands which take filenames must use a directory separator. The Windows directory separator '\' must be written as '/' and spaces must be written as '\' e.g .

```
recall "c:/Test\ Documents/sync-ethernet.cst".
```

Error Reporting

Errors are signalled using the usual 'error' call for the remote-control interface being used i.e. Tcl or Python.

Often a command will have a dependency on an accompanying configuration or parameter; this will be reported in the error message.

Firewall Settings

Remote control for Paragon-X and Paragon-t operates using a TCP socket connection to a specified port (the default is port 9000). Any firewall must therefore be configured to allow connections on the specified TCP port.

Extending Paragon-X Scripts to Control Paragon-100G and Paragon-neo

Some of the functionality in Paragon-100G and Paragon-neo may not be available using Paragon-X style commands. In this case, the RESTful API in Paragon-100G and Paragon-neo can be used in conjunction with the commands in this document.

For more details on the RESTful API go to the **Help** page on your Paragon-100G or Paragon-neo instrument.

⚠ Note: The use of the RESTful API may require you to install one or more additional packages for the script language you are using:

ActiveTcl: Requires the "REST" package. This can be installed using:

```
teacup update
```

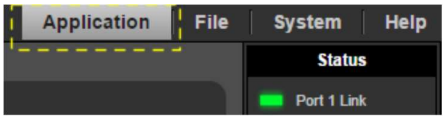
Python: Requires the "requests" package. This can be installed using:

```
<Python install directory>/Scripts/pip install requests
```

Paragon-100G and Paragon-neo Script Recorder

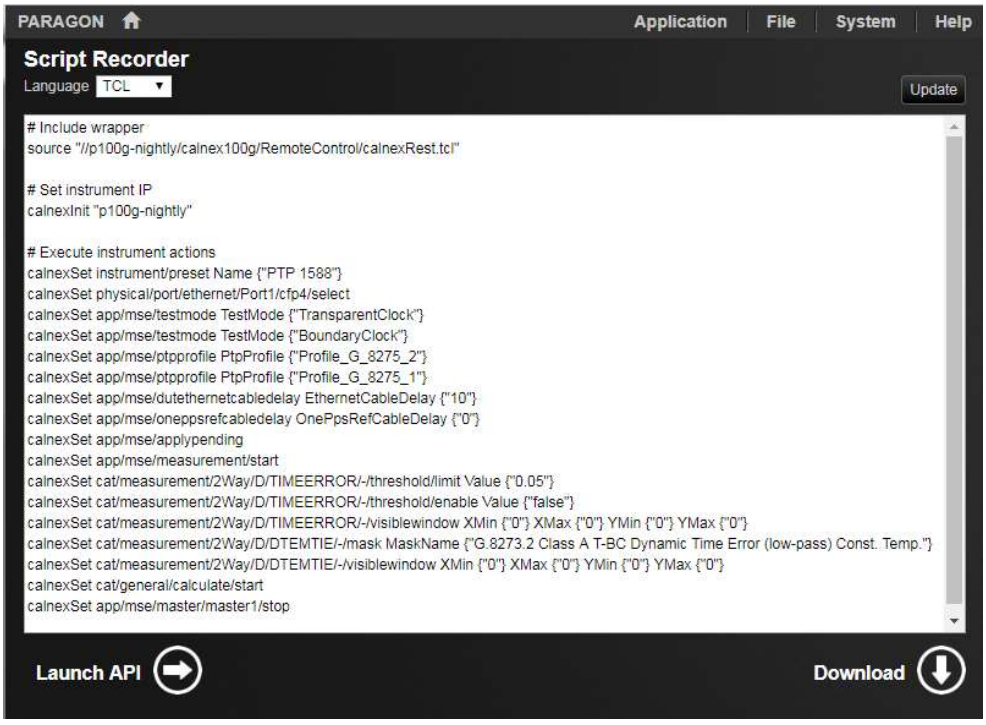
Paragon 100G and Paragon-neo are controlled via a web browser and can record user operations and convert these into scripted (RESTful) commands. This makes script creation very simple – record actions in the browser and then use the recorded script as part of your test program.

To use script recorder, open a web browser and enter the URL for your instrument. Then select **Application** from the menu bar:



To start recording operations, select **Start** from the **Script Recorder** panel in the bottom left-hand corner of the browser window:

Configure the Paragon and perform the operations you want scripted. When you have completed your chosen operations, click **Script**. You will now see a new page with your recorded script:



The default script language is Tcl. However, you can change this to Python from the **Language** pull-down. This is possible at any time even after the script has been recorded.

Clicking **Update** in the top-right hand corner of the recorded script window will update the script with any actions that have been recorded since the script window was last refreshed.

Click **Stop** on the main instrument page under **Script Recorder** to stop recording. The recorded script can be copied from the script window or downloaded to your local PC.

Using the RESTful API

To use the Paragon-100G or Paragon-neo RESTful API in conjunction with the commands in this document, the appropriate `calnexRest` wrapper for your script language must be referenced by your script. The wrappers provided are: `calnexRest.tcl` (Tcl) and `calnexRest.py` (Python).

The wrappers are located in `//<instrumentIpAddress>/calnex100G/RemoteControl/`. The wrapper must be referenced before it can be used. This is done in the same way as for the Paragon-X wrappers as described in *Using the Tcl Module* and *Using the Python Module* above. For example:

Tcl:

```
source
"//<instrumentIpAddress>/calnex100G/RemoteControl/calnexRest.tcl"
```

Python:

```
import sys
sys.path.append(r'//<instrumentIpAddress>/calnex100G/RemoteControl')
from calnexRest import calnexInit, calnexGet, calnexSet,
calnexCreate, calnexDel, calnexGetVal
```

The main functions provided by the wrappers are shown below. Any equivalent Paragon-X command is shown in brackets:

- `calnexInit`: must be called before any other function. The parameter is the IP address of the instrument.
- `calnexSet` (`paragonset`)
- `calnexGetVal` (`paragonget`): returns the value of a single specified setting.
- `calnexGet`: can return a single value or a set of values.

For more details on these commands, please consult the documentation on the **Help** page of your instrument.

⚠ Note: The wrapper functions and documentation for Paragon-100G and Paragon-neo have been revised. The information in this document is relevant only for Paragon-100G versions later than 06.03 and Paragon-neo versions later than 00.05.

Changes in CAT Versions

Version	Change
Version 22.00	FILTEREDTIMEERROR added as a metric type.
Version 23.00	PkPk added as a metric statistic.

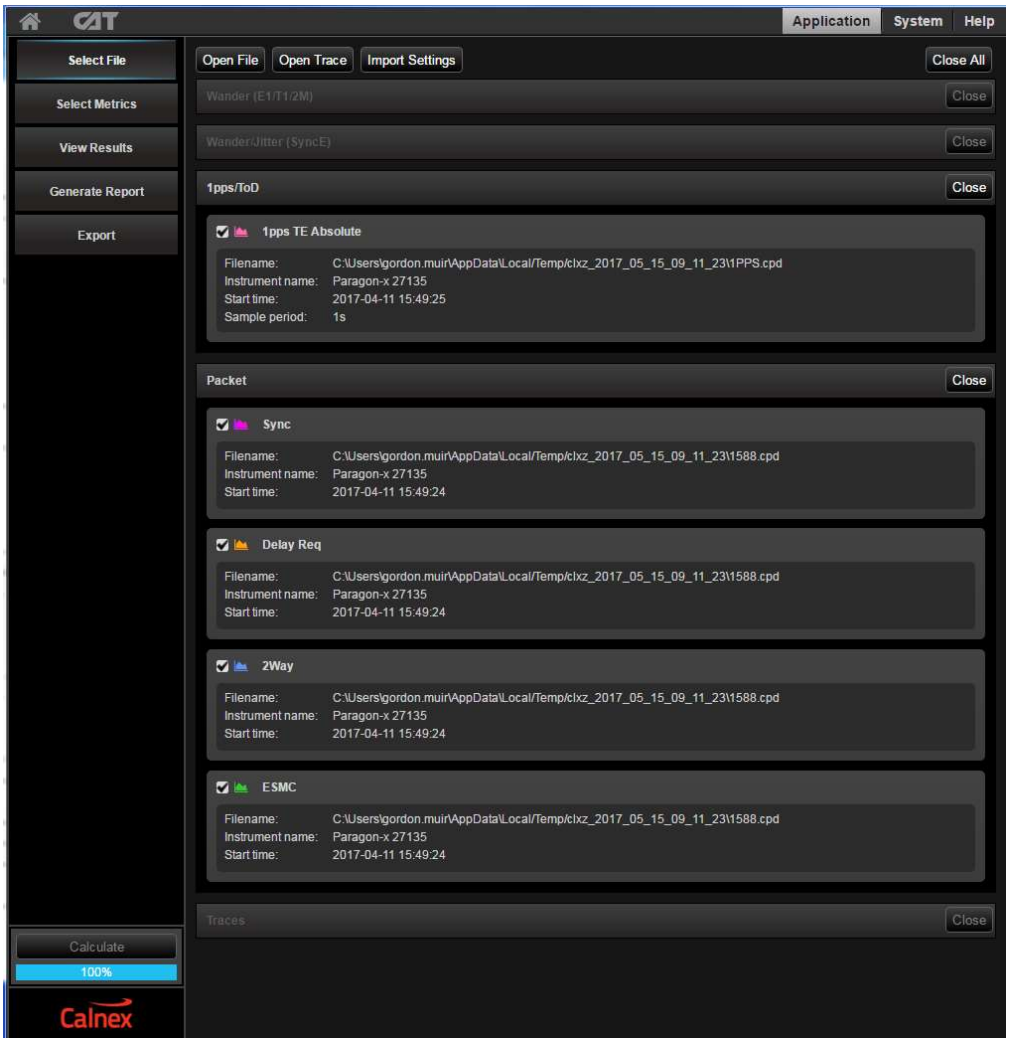
Command Reference Concepts

The following concepts are common themes throughout this Remote Control Guide. It is important to be aware of the level of control each command has, for example, modifying one parameter may affect multiple measurement parameters.

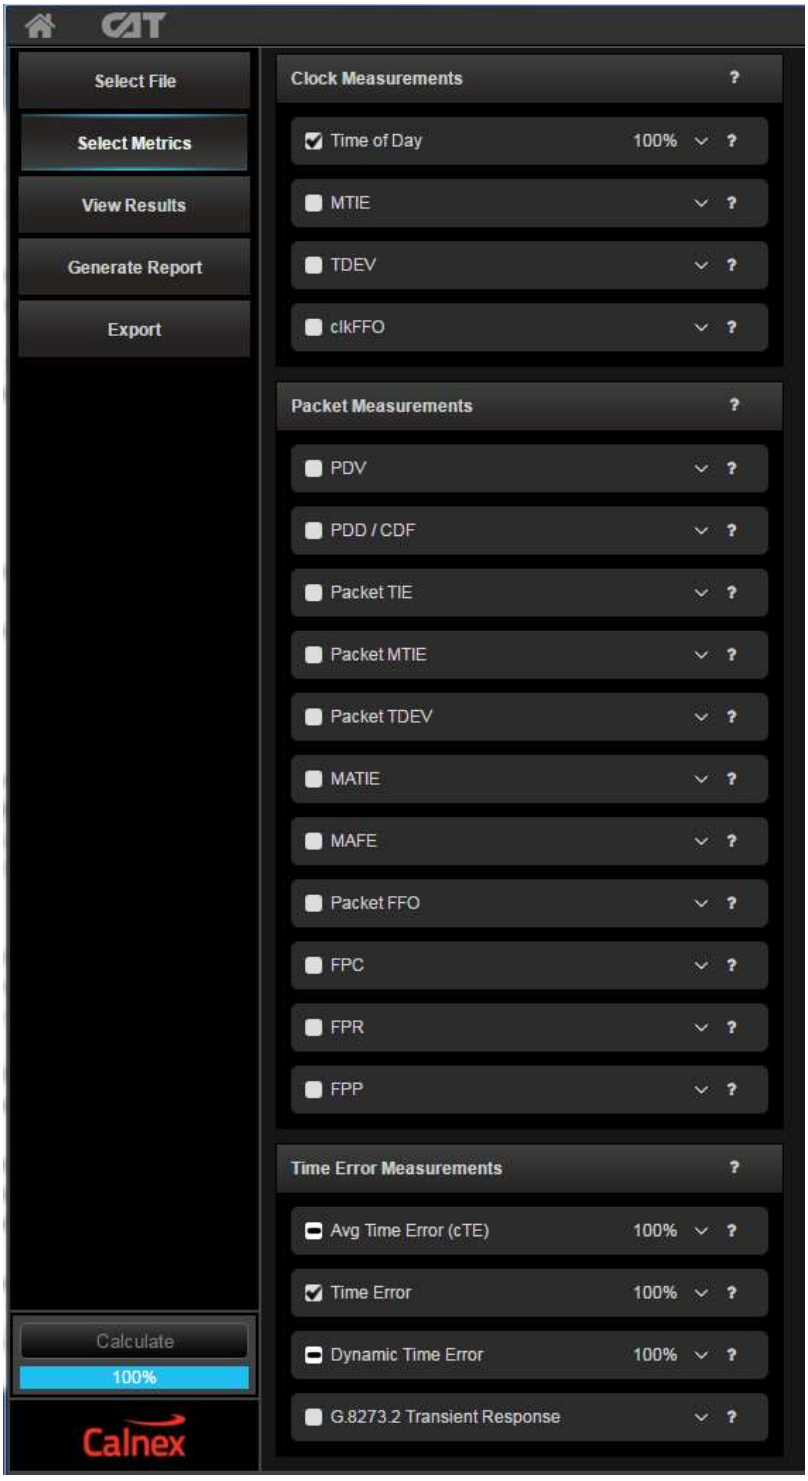
CAT Overview

The commands in this section describe the commands used to control the CAT settings and behaviour. The CAT is the main data analysis tool for Paragon products. It allows you to load a pre-recorded file and have the raw data analyzed immediately or it can be used as a capture is happening to obtain analysis in "real time".

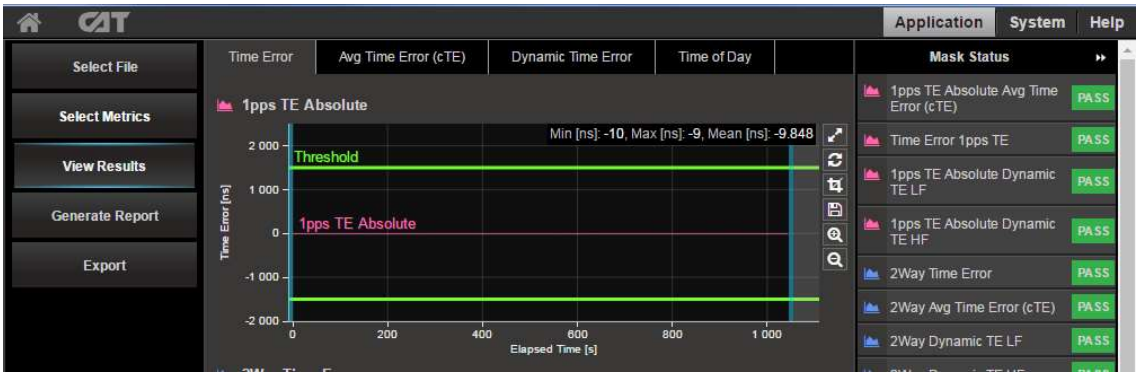
The following images show typical CAT displays indicating how the layout is organized.



In the **Select File** pane, the files loaded are indicated along with the *Measurement Slot* to which they have been allocated.



In the **Select Metrics** pane, the metrics available for the loaded files are displayed and can be selected or de-selected.



When a metric is selected, it appears in the **View Results** pane as a *Tab*.

Measurement Slot/Source

A slot contains the raw data to be analyzed. This data is loaded prior to processing. It is possible to have one data slot for each of the following data types:

Data Type	Slot Name
1pps Relative, 1pps Absolute / ToD	1pps
E1, T1, 2M, 10M Wander	E1, T1, 2M, 10M
SyncE Wander	SyncE
Jitter	Jitter
ESMC	ESMC
1588 packet data	2Way, Sync, Delay Req, Peer Delay, Rate Ratio, SClock12Way, SClock1Sync, SClock1DelayReq SClock22Way, SClock2Sync, SClock2DelayReq RTE2Way, 1PPSto2Way, 1PPStoSClock12Way, 1PPStoSClock22Way, RevSync, TT, TRRevSync, TTPeerDelay, TRPeerDelay, TTPtpData, TRPtpData ThruModeTRRevSync

Many of the CAT remote control commands operate on the currently selected slot. In other words, care must be taken to ensure that the correct slot is selected prior to issuing subsequent commands.

Metric/Measurement Analysis

Whenever a measurement has been performed then you select which metrics you want to be calculated and displayed. Only the metrics that are available for the currently loaded raw data sets can be selected.

For example, if a 1588 capture file is loaded then the PDV data can be displayed. Similarly, if a Wander file of any sort is loaded then MTIE, TDEV and clock offset can be calculated and displayed.

Controlling Settings

Individual settings may be set or queried using remote control commands. Most settings can be set and queried individually, but some may only be queried. The general syntax for commands is as follows:

To ***set*** a setting:

```
paragonset Cat <parameter name> <parameter value> [<parameter value>]
```

To ***query*** a setting:

```
paragonget Cat <parameter name>
```

Also, note that:

- A query will return one or more *<parameter value>*s.
- The parameters taken by these commands are described in more detail later in this document. *<parameter name>* is made up of a space separated list.
- The *<parameter value>* type depends on the command. It may be a number, a Boolean, a string or an enumerated value. String parameter values containing spaces must be quoted.
- Certain commands take an index as their parameter. Index parameters are shown as <index>.
- The index value should be suffixed with a '#' character. If the index is a string parameter containing spaces, it must be quoted, including the '#' suffix.

Command Reference Format

In the command reference below, most commands are detailed independently of the scripting language used. Each scripting language has a different calling mechanism, but the CAT commands are the same. In addition, most of the commands can be *set* (`paragonset`) or *get* (`paragonget`) commands. Where appropriate, the *set* and *get* functions are detailed separately in the command reference.

Examples of *set* and *get* functions in each supported scripting language are shown below:

Tcl

```
paragonset Cat AVERAGEDTE AveragingPeriod <value>
paragonset Cat PDD Above <value>
paragonget Cat MinRange
```

Note: Arguments that contain whitespace must be enclosed in double quotes when using Tcl for example:

```
paragonset Cat SelectSlotAndChannel "Delay Req" PX_D
```

Python

```
paragonset("Cat AVERAGEDTE AveragingPeriod", "<value>");
paragonset("Cat PDD Above","<value>");
paragonget("Cat MinRange");
```

Note: Arguments that contain whitespace must be enclosed in single quotes when using Python for example:

```
paragonset("Cat SelectSlotAndChannel 'Delay Req'", "PX_D");
```

Special Commands

Some commands do not use the `paragonset` and `paragonget` methods. These commands are listed in Control Commands below.

Example Tcl

The example code below assumes that the Paragon-X GUI is running and that a Time Error capture has been loaded into the CAT. The example loops through each applicable slot and metric and prints the metric result for each available statistic. An example of the output is also shown below.

```
set slots {"Sync" "Delay Req" "2Way" "1pps"}
set metrics\
        {TIMEERROR AVERAGEDTE DTELF DTEHF\
         DTEMTIE DTETDEV TransientResponse}

set stats\
        {Mean cTe Max Min Range Rate FwdRate RevRate\
         Messages FwdMessages RevMessages}

foreach slot $slots {
    # Print header
    puts -nonewline [format "%-20s" "Slot: $slot"]
    foreach s $stats {puts -nonewline [format "%-12s" $s]}
    puts ""

    # Select the slot
    paragonset Cat SelectSlot $slot
    foreach metric $metrics {
        # If there is a error,
        # assume that the metric/stat combination is not valid
        try {
            # Make sure the metric is enabled and
            # that it has been calculated
            paragonset Cat $metric Enable TRUE
            paragonset Cat Calculate

            puts -nonewline [format "%-20s" $metric]
            foreach stat $stats {
                # If there is an error, assume that
                # the stat is not valid for the metric
                try {
                    set result [paragonget Cat $metric $stat]
                    puts -nonewline [format "%-12s" $result]
                } on error { } {
                    puts -nonewline [format "%-12s" -]
                    }
            }
        } on error { } {
            puts -nonewline "$metric\t Not Available"
            }
        puts ""
    }
}
```

```
Slot: Sync          Mean        cTe         Max         Min         Range
TIMEERROR           -33.521     -           252         -60         312
AVERAGEDTE          -           -           -           -           -
DTELF               -286.039    -           -267.724    -298.398    30.675
DTEHF               -6.042      -           10.91       -297.519    308.429
DTEMTIE             -           -           30.656      0.191       30.466
DTETDEV             -           -           1.688       0.009       1.679
TransientResponse       Not Available
Slot: Delay Req     Mean        cTe         Max         Min         Range
TIMEERROR           11.106      -           31          -101        132
AVERAGEDTE          -           -           -           -           -
DTELF               15.507      -           32          -0.005      32.005
DTEHF               0.721       -           31.063      -98.585     129.648
DTEMTIE             -           -           32.005      0.349       31.655
DTETDEV             -           -           1.693       0.007       1.686
TransientResponse   -           -           -           -           -
Slot: 2Way          Mean        cTe         Max         Min         Range
TIMEERROR           -11.204     -           129.5       -30.5       160
AVERAGEDTE          -           -           -           -           -
DTELF               -135.252    -           -117.862    -149.141    31.28
DTEHF               -2.659      -           15.883      -135.679    151.563
DTEMTIE             -           -           31.272      0.14        31.132
DTETDEV             -           -           1.646       0.005       1.642
TransientResponse   -           -           -           -           -
```

Command Reference – Contents

Control Commands

The commands in this section control the basic operation of the Paragon/CAT. These commands are the baseline for further operations.

Note: Several commands in this section do not use the `paragonset` / `paragonget` mechanism. The command format for these commands is listed explicitly for each supported scripting language.

connect

Description	Makes a connection to the specified GUI and instrument.
Tcl	connect *<instrIpAddress> [<guiHostname> [<instrPort> [<rmtPort>]]]*
Python	p.connect("*<instrIpAddress> [<guiHostname> [<rmtPort> [<instrPort>]]]*")
Parameters	<*instrIpAddress*> **Paragon-X**: The IP address of the Paragon instrument. **Paragon-100G / Paragon-neo**: Must be "localhost". <*guiHostname*> **Paragon-X**: This is an optional parameter, which specifies the IP address of the PC that is hosting the GUI; if this parameter is not specified then a connection to the local machine is assumed. <*instrPort*> **Paragon-100G / Paragon-neo**: The IP address of the instrument. This is an optional parameter, which specifies the TCP Port on the Paragon instrument; if this parameter is not specified then port 9990 is assumed. <*rmtPort*> This is an optional parameter, which specifies the remote-control TCP Port used by the Paragon client application; if this parameter is not specified then port 9000 is assumed.
Result	The command will only report on failure if an error occurs. This operation will block until a connection is made.

disconnect

Description	Disconnects the currently connected GUI and instrument.
Tcl	disconnect
Python	p.disconnect()
Result	Return with text displaying status of connection.

waitforcat

Description	Wait for the completion of the current CAT operation. If a script is waiting for previous open operation or waiting for end of previous calculation, then this command should be always used. It is recommended to call this *after* the calls below otherwise there is possibility to get settings conflict error. • ImportData • Cat OpenFile • Cat Calculate • Any CAT operation which causes a file load or measurement load It is also required for this command to be called after performing a measurement selection e.g.: • paragonset Cat E1T1
Tcl	waitforcat
Python	p.waitforcat()
Prerequisites	Should be called after calls to **Cat OpenFile** and **Cat Calculate**.

CAT Commands

General Commands

Cat Version

Get	
Description	Returns the version number of the CAT.
Command	Cat Version
Result	Returns the version number of the CAT as a string.

Cat Show (Paragon-X only)

Set	
Description	Shows or hides the Graphical User Interface of the CAT. **Paragon-100G/Paragon-neo**: This command has no effect (the CAT user interface is browser-based and this cannot be controlled by the script).
Command	Cat Show <*visible*>
Parameters	<*visible*> TRUE to show the CAT, FALSE to hide it.

Cat Close (Paragon-X only)

Set	
Description	Closes the CAT. **Paragon-100G / Paragon-neo**: The CAT cannot be closed since it operates in a browser tab.
Command	Cat Close TRUE

Cat Show (Paragon-X only)

Set	
Description	Shows or hides the Graphical User Interface of the CAT. **Paragon-100G/Paragon-neo**: This command has no effect (the CAT user interface is browser-based, and this cannot be controlled by the script).
Command	Cat Show <*visible*>
Parameters	<*visible*> TRUE to show the CAT, FALSE to hide it.

Cat SelectSlotAndChannel

Set	
Description	Allows selection of Slots when there may be ambiguity in the Slot name. Channel names are prefixed with an instrument type specifier to make them unique. These are: • Sentry, Sentinel: S_ • Paragon-neo: PN_ • Paragon-X: PX_ • Paragon-t: PT_ While channels can be referenced without this prefix, if there is any ambiguity an error will occur, so it is recommended to always use the full channel name.
Command	Cat SelectSlotAndChannel <slot> <channel>
Parameters	*<slot>* A string: T1, E1, 2M, 10M, Sync-E, 1pps, Packet, Sync, Delay Req, Peer Delay, 2Way, Rate Ratio, Jitter, ESMC, SClock12Way, SClock1Sync, SClock1DelayReq SClock22Way, SClock2Sync, SClock2DelayReq RTE2Way, 1PPSto2Way, 1PPStoSClock12Way, 1PPStoSClock22Way, RevSync, TT, TRRevSync, TTPeerDelay, TRPeerDelay, TTPtpData, TRPtpData ThruModeTRRevSync Note: Specifying a slot using a letter and/or index is deprecated. *<channel>* Sentinel/Sentry: S_A,S_B, S_C, S_D, S_E,S_F, S_1, S_2, S_VP1, S_VP2, S_VP3, S_VP4, S_VP5… S_VP32 Paragon-neo: PN_A, PN_B, PN_C, PN_D, PN_E, PN_F Paragon-X: PX_A, PX_B, PX_C, PX_D Paragon-t: PT_A, PT_B, PT_C, PT_D
Get	
Description	Returns the Slot and Channel being processed.
Command	Cat SelectSlotAndChannel
Prerequisites	Please note that some <slot> identifiers contain whitespace; these must be passed enclosed in double quotes if using Tcl or single quotes if using Python. Examples are given in the Command Reference Format section of this document.
Result	The returned text will be a string which will be one of those listed above.

Cat SaveSettings

Set	
Description	Saves CAT settings to a .cps file.
Command	Cat SaveSettings <*file*>
Parameters	<*file*> The full file path and name (must have a .cps extension).
Prerequisites	User must have write privileges for the file storage location.

Cat LoadSettings

Set	
Description	Loads CAT settings from a .cps file.
Command	Cat LoadSettings <*file*>
Parameters	<*file*> The full file path and name (must have a .cps extension).
Prerequisites	User must have read privileges for the file storage location.

Cat TestStartTime

Get	
Description	Retrieves the start time of the test.
Command	Cat TestStartTime
Prerequisites	A valid data file must be open in CAT.
Result	Returns the time when the test was started.

Cat TestStopTime

Get	
Description	Retrieves the time when the test was stopped.
Command	Cat TestStopTime
Prerequisites	A valid data file must be open in CAT.
Result	Returns the time when the test was stopped.

Cat Autoreload Enable

Set	
Description	Enables or disables the Autoreload feature. It is recommended that Autoreload be disabled when using remote control. When enabled, new calculations may be started whilst others are in progress. This may cause other script operations to fail.
Command	Cat Autoreload Enable <*enable*>
Parameters	<*enable*> Turns on Autoreload (TRUE) or disables it (FALSE).
Prerequisites	Period of Autoreload is dependent on the **Cat Autoreload Time** command.
Get	
Description	Returns whether Autoreload is enabled or disabled.
Command	Cat Autoreload Enable
Result	TRUE if Autoreload is enabled or FALSE if disabled.

Cat Autoreload Time

Set	
Description	Sets the Autoreload period.
Command	Cat Autoreload Time <*value*>
Parameters	<*value*> The Autoreload period (s). An integer in the range is: 5 to 999
Get	
Description	Returns the current Autoreload period.
Command	Cat Autoreload Time
Result	The returned text will be an integer for the current Autoreload setting. This will be in the range listed above.

Cat Autoreload Force

Set	
Description	Manually reloads the file. If the Autoreload feature is enabled, it also resets the countdown to the next reload.
Command	Cat Autoreload Force
Result	The GUI will reload the file currently being processed.

Data Source Commands

These commands launch the CAT with a specified input file type that must match the capture being performed by the Paragon instrument. For Paragon-X, only one of these file types can be loaded at one time.

Cat 1PPS (Paragon-X only)

Set	
Description	Exports 1PPS file from main application and loads into the CAT.
Command	Cat 1PPS

Cat E1T1 (Paragon-X only)

Set	
Description	Exports E1/T1 file from main application and loads into the CAT.
Command	Cat E1T1

Cat 2M (Paragon-X only)

Set	
Description	Exports 2M file from main application and loads into the CAT.
Command	Cat 2M

Cat SyncE (Paragon-X only)

Set	
Description	Exports Sync-E file from main application and loads into the CAT.
Command	Cat SyncE

Cat Delta1588ModePacketRate (Paragon-X only)

Set	
Description	Determines the PTP packet rate for a PDV file in the CAT. Applies to the next file to be loaded.
Command	Cat Delta1588ModePacketRate *<rate>*
Parameters	*<rate>* The nominal PTP packet rate (pkts/sec) as an integer value in the range: 1 to 2000000
Get	
Description	Retrieves the PTP packet pate for a PDV file in the CAT.
Command	Cat Delta1588ModePacketRate
Result	Return text will be in the range listed above.

Cat 1588Sync (Paragon-X only)

Set	
Description	Exports 1588Sync file from main application and loads into the CAT.
Command	Cat 1588Sync
Prerequisites	Cat Delta1588ModePacketRate must already have been called if exported file doesn't contain packet timing data.

Cat 1588DelayReq (Paragon-X only)

Set	
Description	Exports 1588 Delay Req file from main application and loads into the CAT.
Command	Cat 1588DelayReq
Prerequisites	Cat Delta1588ModePacketRate must already have been called if exported file doesn't contain packet timing data.

Cat 1588TimeError (Paragon-X only)

Set	
Description	Loads current 1588 capture file into the CAT and displays Time Error measurement.
Command	Cat 1588TimeError

Cat 1588TCAccuracy (Paragon-X only)

Set	
Description	Loads current 1588 capture file into the CAT and displays Transparent Clock Accuracy measurement.
Command	Cat 1588TCAccuracy
Prerequisites	Cat Delta1588ModePacketRate must already have been called if exported file doesn't contain packet timing data.

Cat 1588PDV (Paragon-X only)

Set	
Description	Loads current 1588 capture file into the CAT and displays PDV measurements.
Command	Cat 1588PDV
Prerequisites	Cat Delta1588ModePacketRate must already have been called if exported file doesn't contain packet timing data.

Cat NtpClientPdv (Paragon-X only)

Set	
Description	Exports NTP Client PDV file from main application and loads into the CAT.
Command	Cat NtpClientPdv

Cat NtpServerPdv (Paragon-X only)

Set	
Description	Exports NTP Server PDV file from main application and loads into the CAT.
Command	Cat NtpServerPdv

Cat NtpRtd (Paragon-X only)

Set	
Description	Exports NTP RTD file from main application and loads into the CAT.
Command	Cat NtpRtd

Cat OpenFile

Set	
Description	Loads the given file into the CAT.
Command	Cat OpenFile <*file*>
Parameters	<*file*> **Paragon-X**: Path to existing file on the local PC. Both the name and extension must be specified. **Paragon-neo/100G**: Path to existing file on the instrument. Both the name and extension must be specified.

Cat OverrideMessageType

Set	
Description	Sets the message type for the next capture loaded that contains a single undefined message type. Issuing this command prior to opening a file containing an undefined message type applies the setting to the next file that is loaded, suppressing the dialog box.
Command	Cat OverrideMessageType <*message type*>
Parameters	<*message type*> SYNC to set message type to Sync, DELREQ to set the message type to Delay Request.
Get	
Description	Returns the last set message type setting.
Command	Cat OverrideMessageType
Result	SYNC if the message type is set to Sync, DELREQ if the message type is set to Delay Request.

Cat ParagonReplaySimulationMode

Set	
Description	Sets the CAT Paragon replay simulation mode for the next PDV capture that is loaded. This mode displays the time error that will be generated by the instrument if the file(s) are loaded as an impairment pattern into Paragon-X or Paragon-neo. For 2-Way Time Error simulation, two PDV files are required, one containing Sync messages and one containing Delay Request messages.
Command	Cat ParagonReplaySimulationMode <*message type*>
Parameters	<*enable*> is Boolean. TRUE will enable the mode FALSE will disable it.
Get	
Description	Returns the last set Paragon replay simulation mode.
Command	Cat ParagonReplaySimulationMode
Result	TRUE if the mode is enabled for the next file to be loaded, FALSE if the mode is disabled.

Cat SamplePeriod

Get	
Description	Returns the sample period used in the capture file.
Command	Cat SamplePeriod
Prerequisites	The relevant slot must have been selected using **Cat SelectSlotAndChannel**

Cat MaxRange

Set	
Description	Sets the upper bound of the data analysis range.
Command	Cat MaxRange <*maxRange*>
Parameters	<*maxRange*> The upper bound in s of the data anlysis range. An integer in the range 0 to the size of the capture
Prerequisites	MaxRange must be greater than MinRange
Get	
Description	Returns the upper bound of the data analysis range
Command	Cat MaxRange
Result	The current value for the upper bound of the data analysis range. It will be in the range listed above.

Cat MinRange

Set	
Description	Sets the lower bound of the data analysis range.
Command	Cat MinRange <*minRange*>
Parameters	<*minRange*> The lower bound in s of the data anlysis range. An integer in the range 0 to the size of the capture.
Prerequisites	MinRange must be less than MaxRange
Get	
Description	Returns the lower bound of the data analysis range.
Command	Cat MinRange
Result	The current value for the lower bound of the data analysis range. It will be in the range listed above.

Cat Remove

Set	
Description	Removes the file which was selected by command SelectPort.
Command	Cat Remove
Prerequisites	Slot must have been selected previously by the **SelectSlotAndChannel** command.

Cat RemoveAll

Set	
Description	Removes all the files which are currently loaded.
Command	Cat RemoveAll

Cat RemoveAllTraces

Set	
Description	Removes all the trace files which are currently loaded.
Command	Cat RemoveAllTraces

Metrics – General

The CAT can calculate and display a wide range of metrics. A specific metric is determined by a combination of Slot and Metric name e.g. 2Way Time Error is referenced using Slot="2Way";

MetricType="TIMEERROR":

```
paragonset Cat SelectSlotAndChannel "2Way" PX_D
paragonset Cat TIMEERROR Enable True
```

Note that for many of the CAT metric commands to operate correctly, a suitable slot must have been selected before issuing subsequent commands.

The available metrics and slots are shown in the table below:

File Type	Meas Type	Slot	Metrics
Clock	**Clock Wander**	E1, T1, 2M, 10M, SyncE, 1pps	TIE, MTIE, TDEV, CLKMAFE, CLKFFO ESMC (SyncE only)
	SyncE Jitter	Jitter	LongTermJitterRms, LongTermJitterPkPk, ShortTermJitterPkPk
	1PPS / ToD	1pps	ToD, PtpClockClassMeas, PtpClockClassRef
Packet	**Packet**	Sync, Delay Req	PDV, PKTTIE, PKTMTIE, PKTTDEV, MATIE, MAFE, PKTFFO, FPC, FPR, FPP, PDD, CDF FWD_CF (Sync), REV_CF (Delay Req)
	ESMC	ESMC	ESMC
	Peer Delay	Peer Delay	FWD_CF
Time Error	**Time Error**	Sync, Delay Req, 2Way, 1pps	TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV, DTE_UNFILTERED, DTEMTIE_UNFILTERED, DTETDEV_UNFILTERED TransientResponse (2Way and 1PPS only) FWD_CF_ACCURACY (Sync), FWD_LATENCY (Sync), FWD_CF_DELTA (Sync)
	Peer Delay	Peer Delay	PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, PEER_DELAY_TURNAROUND_TIME_DUT, MEASURED_LINK_DELAY (see notes)
	Relative Time Error	RTE2Way 1PPStoSClock12Way 1PPStoSClock22Way 1PPSto2Way	RELATIVETIMEERROR, RTECTE, RTEDTE, RTEDTEMTIE
	Reverse Sync	RevSync	SUBORDINATETIMEERROR
	802.1AS	Rate Ratio	NRR_Accuracy, NRR_Actual, NRR_DUT, CSRO_Delta
	PTP Data	PTPData	GMClockClass

Thru Mode End Station Reverse Sync Time Error	**Time Error**	ThruModeTRRevSync	THROUGHMODETIMEERROR, THROUGHCTE, THROUGHDTEUNFILTERED, THROUGHDTEMTIEUNFILTERED
		TTPeerDelay, TRPeerDelay	PEER_DELAY_TURNAROUND_TIME_DUT, PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, MEASURED_LINK_DELAY
		TTPtpData, TRPtpData	PtpGmClockClass
	Offset Relative	RevSync, TT	OFFSETRELATIVE

Notes:

1. The metric ‘DTE’ has been deprecated, this has been replaced by the ‘DTELF’ metric
2. SUBORDINATETIMEERROR is available from CAT v29.10 onwards.
3. The MEASURED_LINK_DELAY metric is only relevant to Peer Delay capture data using the Measured Link Delay feature. In capture files of this type the MEASURED_LINK_DELAY metric replaces the metrics PEER_DELAY_TURNAROUND_TIME_ACTUAL and PEER_DELAY_TURNAROUND_TIME_ACCURACY. Measured link delay captures are supported in CAT v25 onwards.
4. Thru Mode End Station Reverse Sync Time Error capture files are supported in CAT v31.50 onwards and are a new feature of PX release SUS 30X.

A number of commands take a metric name as a parameter. These commands are listed below. Note that, for ease of use, these commands are individually documented for each metric type in the sections below.

- Cat <MetricType> Enable
- Cat <FpxMetricType> Enable (for FPR, FPC, FPP)
- Cat <MetricType> Mask
- Cat <MetricType> MaskResult

Cat Calculate

Set	
Description	Requests the CAT perform a calculation immediately. An error message will be generated in the situation where metric properties have been set with conflicting values.
Command	Cat Calculate

Time Error Metrics

This section details the commands that are relevant for the following time error metrics:

Meas Type	Slot	Metrics
Time Error (BC)	Sync, Delay Req, 2Way, 1pps	TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV, DTE_UNFILTERED, DTEMTIE_UNFILTERED, DTETDEV_UNFILTERED, TransientResponse (2Way)
Time Error (TC)	Sync, Delay Req, 2Way, SClock12Way, SClock1Sync, SClock1DelayReq, SClock22Way, SClock2Sync, SClock2DelayReq	TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV, DTE_UNFILTERED, DTEMTIE_UNFILTERED, DTETDEV_UNFILTERED, FWD_LATENCY (Sync), REV_LATENCY (Delay Req) FWD_CF_DELTA (Sync), REV_CF_DELTA (Delay Req)
Time Error	PTPData	PtpGmClockClass
Time Error (1PPS)	1pps	TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV, DTE_UNFILTERED, DTEMTIE_UNFILTERED, DTETDEV_UNFILTERED, TransientResponse
Peer Delay	Sync, Peer Delay	Sync Only: TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV, DTE_UNFILTERED, DTEMTIE_UNFILTERED, DTETDEV_UNFILTERED, Peer Delay Only: PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, MEASURED_LINK_DELAY, PEER_DELAY_TURNAROUND_TIME_DUT
Relative Time Error	RTE2Way, 1PPSto2Way, 1PPStoSClock12Way, 1PPStoSClock22Way	RELATIVETIMEERROR, RTECTE, RTEDTE, RTEDTEMTIE
Reverse Sync	RevSync	SUBORDINATETIMEERROR
802.1AS	Sync, Peer Delay, Rate Ratio	Sync Only: FWD_CF_ACCURACY, FWD_CF_DELTA, FWD_LATENCY, AVERAGEDTE Peer Delay Only: PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, MEASURED_LINK_DELAY, PEER_DELAY_TURNAROUND_TIME_DUT Rate Ratio Only: NRR_Accuracy, NRR_Actual, NRR_DUT, CSRO_Delta
Thru Mode End Station Reverse Sync Time Error	ThruModeTRRevSync, TTPeerDelay,TRPeerDelay, TTPtpData, TRPtpData, RevSync, TT	ThruModeTRRevSync Only: THROUGHMODETIMEERROR, THROUGHCTE, THROUGHDTEUNFILTERED, THROUGHDTEMTIEUNFILTERED TTPeerDelay, TRPeerDelay Only:PEER_DELAY_TURNAROUND_TIME_DUT,

		PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, MEASURED_LINK_DELAY TTPtpData, TRPtpData Only: PtpGmClockClass RevSync, TT Only: OFFSETRELATIVE

Cat <metric> Enable

Set	
Description	Enables or disables a metric on the currently selected port/slot. **Cat Calculate** should be called after enabling a metric.
Command	Cat <*metric*> Enable <*enable*>
Parameters	*<metric>* The metric to enable/disable. It must be one of: TIMEERROR AVERAGEDTE FILTEREDTIMEERROR DTELF DTEHF DTEMTIE DTETDEV DTE_UNFILTERED DTEMTIE_UNFILTERED DTETDEV_UNFILTERED PtpGmClockClass RTE Only RELATIVETIMEERROR RTEDTE RTEDTEMTIE RTECTE Reverse Sync Only SUBORDINATETIMEERROR BC Only TransientResponse Noise Transfer Only NoiseTransferGain_PTPtoPTP NoiseTransferGain_PTPto1PPS NoiseTransferGain_SYNCEtoPTP NoiseTransferGain_SYNCEto1PPS TC Only FWD_LATENCY REV_LATENCY FWD_CF_DELTA REV_CF_DELTA P2P Only PEER_DELAY_TURNAROUND_TIME_ACTUAL PEER_DELAY_TURNAROUND_TIME_ACCURACY PEER_DELAY_TURNAROUND_TIME_DUT MEASURED_LINK_DELAY Thru Mode Time Error THROUGHMODETIMEERROR THROUGHCTE THROUGHDTEUNFILTERED THROUGHDTEMTIEUNFILTERED OFFSETRELATIVE *<enable>* is Boolean. TRUE will enable the metric, FALSE will disable it.
Prerequisites	The metrics available are dependent on the kind of data that has been loaded into the currently selected port/slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected port/slot.
Command	Cat <*metric*> Enable
Parameters	*<metric>* See above
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected port/slot, FALSE otherwise.

Cat TIMEERROR IncludeCorrectionField

Set	
Description	Enables or disables the inclusion of the correction field in Time Error calculations.
Command	Cat TIMEERROR IncludeCorrectionField <*value*>
Parameters	<*value*> TRUE will enable inclusion of the correction field, FALSE will disable it.
Get	
Description	Retrieves whether the correction field is enabled or disabled for the given metric.
Command	Cat TIMEERROR IncludeCorrectionField
Result	The returned text is Boolean to indicate whether the correction field is being is included (TRUE) or not (FALSE).

Cat AVERAGEDTE AveragingPeriod

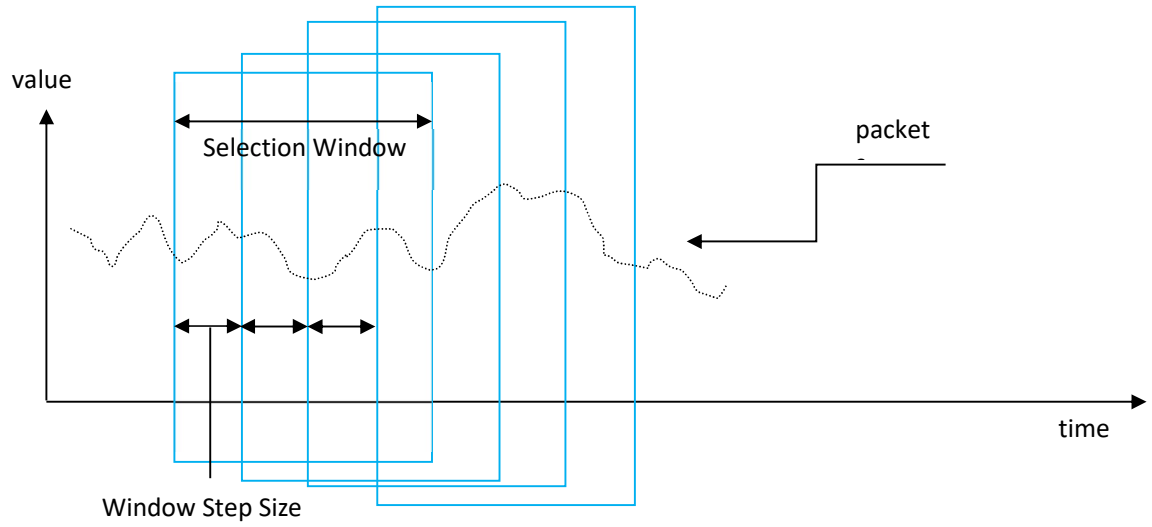
Set	
Description	Sets averaging period for Averaged Time Error metric.
Command	Cat AVERAGEDTE AveragingPeriod <*value*>
Parameters	<*value*> The averaging period (s) as an integer in the range 1 to 10000000
Get	
Description	Retrieves the averaging period for Averaged Time Error metric.
Command	Cat AVERAGEDTE AveragingPeriod
Result	The returned text is the current value for the averaging period for Averaged Time Error metric (in s).

Cat TIMEERROR PacketSelection Enable

Remote control for Packet Selection is supported in CAT v18.03 and later.

Set	
Description	Enables packet selection.
Command	Cat TIMEERROR PacketSelection Enable <*enable*>
Parameters	<*enable*> TRUE, FALSE
Get	
Description	Returns the state of packet selection.
Command	Cat TIMEERROR PacketSelection Enable
Result	TRUE (enabled), FALSE (disabled).

Cat TIMEERROR SelectionWindow



Set	
Description	Sets the packet selection window size in seconds. The diagram above shows the effect of windowing on the results.
Command	Cat TIMEERROR SelectionWindow <*value*>
Parameters	<*value*> The window size(s) from the diagram above and must be in the range: 1 to 1000 with a resolution of 1s
Prerequisites	This command is only applicable if **Cat TIMERROR PacketSelection Enable** is True.
Get	
Description	Returns the packet selection window size in seconds.
Command	Cat TIMEERROR SelectionWindow
Result	The returned value will be the window size(s). This will be in the range listed above.

Cat TIMEERROR WindowStepSize

Set	
Description	Sets the packet selection window step size in seconds. The diagram for PacketSelection SelectionWindow shows the effect of windowing on the results.
Command	Cat TIMEERROR WindowStepSize <*value*>
Parameters	<*value*> The window step size(s) in the range: 1 to **SelectionWindow** size with a resolution of 1s
Prerequisites	This command is only applicable if **Cat TIMERROR PacketSelection Enable** is True.
Get	
Description	Returns the window step size in seconds.
Command	Cat TIMEERROR WindowStepSize
Result	The returned value will be the window step size(s). This will be in the range listed above.

Cat TIMEERROR PacketSelection Algorithm

Set	
Description	Selects the algorithm to be used for packet selection.
Command	Cat TIMEERROR PacketSelection Algorithm *<algorithm>*
Parameters	*<algorithm>* N_MINIMUM, BAND_DELAY, BAND_PERCENTAGE, CLUSTER, CLUSTER_RANGE or NMinimum, BandDelay, BandPercentage, Cluster, ClusterRange
Pre-Requisistes	This command is only applicable if **Cat TIMERROR PacketSelection Enable** is True.
Get	
Description	Returns the selected packet selection algorithm.
Command	Cat TIMEERROR PacketSelection Algorithm
Result	One of the algorithms listed in the second list above.

Cat TIMEERROR PacketSelection NMinimum NSamples

Set	
Description	Sets the number of samples for the NMinimum algorithm.
Command	Cat TIMEERROR PacketSelection NMinimum NSamples <*value*>
Parameters	<*value*> The number of samples to be used when the packet selection algorithm is set to N_MINIMUM. It must be in the range: 1 to 100000
Prerequisites	This command is only applicable if **Cat TIMERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to N_MINIMUM.
Get	
Description	Returns the current setting of NSamples.
Command	Cat TIMERROR PacketSelection NMinimum NSamples
Result	The returned text will be the number of samples currently set.

Cat TIMEERROR BandDelayLower

Set	
Description	Sets the band delay lower bound for the Band Delay algorithm.
Command	Cat TIMEERROR BandDelayLower <*value*>
Parameters	<*value*> The lower bound of band delay to use (in ns) in one of the ranges below: 0 to 9990, resolution 10 10000 to 1000000, resolution 1000
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to BAND_DELAY.
Get	
Description	Returns the band delay lower bound.
Command	Cat TIMEERROR BandDelayLower
Result	The returned text will be the band delay lower threshold (in ns).

Cat TIMEERROR BandDelayUpper

Set	
Description	Sets the band delay upper bound for the Band Delay algorithm.
Command	Cat TIMEERROR BandDelayUpper <*value*>
Parameters	<*value*> The upper bound of band delay to use (in ns) in one of the ranges below: 0 to 9990, resolution 10 10000 to 1000000, resolution 1000
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to BAND_DELAY.
Get	
Description	Returns the band delay upper bound.
Command	Cat TIMEERROR BandDelayUpper
Result	The returned text will be the band delay upper threshold (in ns).

Cat TIMEERROR BandPercentageLower

Set	
Description	Sets the band percentage lower bound for the Band Percentage algorithm.
Command	Cat TIMEERROR BandPercentage Lower <*value*>
Parameters	<*value*> The lower bound of band percentage to use (in %) in the range: 0 to 100, resolution 0.1
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to BAND_PERCENTAGE.
Get	
Description	Returns the band percentage lower bound.
Command	Cat TIMEERROR BandPercentage Lower
Result	The returned text will be the band percentage lower threshold (in ns).

Cat TIMEERROR BandPercentageUpper

Set	
Description	Sets the band percentage upper bound for the Band Percentage algorithm.
Command	Cat TIMEERROR BandPercentageUpper <*value*>
Parameters	<*value*> The upper bound of band percentage to use (in %) in the range: 0 to 100, resolution 0.1
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to BAND_PERCENTAGE.
Get	
Description	Returns the band percentage upper bound.
Command	Cat TIMEERROR BandPercentageUpper
Result	The returned text will be the band percentage upper threshold (in ns).

Cat TIMEERROR ClusterAnchor

Set	
Description	Sets the cluster anchor when the Cluster or Cluster Range algorithm is selected.
Command	Cat TIMEERROR ClusterAnchor <*value*>
Parameters	<*value*> The cluster anchor to use (in ns). It must be in one of the ranges: 100 to 9990 with a resolution of 10ns 10000 to 5000000 with a resolution of 1000ns
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to CLUSTER or CLUSTER_RANGE.
Get	
Description	Returns the cluster anchor value.
Command	Cat TIMEERROR ClusterAnchor
Result	The returned text will be the cluster anchor (in ns).

Cat TIMEERROR ClusterWidth

Set	
Description	Sets the cluster width when the Cluster algorithm is selected.
Command	Cat TIMEERROR ClusterWidth <*value*>
Parameters	<*value*> The cluster width to use (in ns). It must be in one of the ranges: 10 to 9990 with a resolution of 10ns 1000 to 5000000 with a resolution of 1000ns
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to CLUSTER.
Get	
Description	Returns the cluster width.
Command	Cat TIMEERROR ClusterWidth
Result	The returned text will be the cluster width (in ns).

Cat TIMEERROR ClusterRange

Set	
Description	Sets the cluster range when the Cluster Range algorithm is selected.
Command	Cat TIMEERROR ClusterRange <*value*>
Parameters	<*value*> The cluster range to use (in ns). It must be in one of the ranges: 10 to 9990 with a resolution of 10ns 1000 to 5000000 with a resolution of 1000ns
Prerequisites	This command is only applicable if **Cat TIMEERROR PacketSelection** is enabled, and **Cat TIMEERROR PacketSelection Algorithm** is set to CLUSTER_RANGE.
Get	
Description	Returns the cluster range.
Command	Cat TIMEERROR ClusterRange
Result	The returned text will be the cluster range (in ns).

Cat <metric> UseNrrAdjustment

Set	
Description	Enables or disables the use of NRR Adjustment in the OFFSETRELATIVE metric calculations. Will also apply to other metrics which support this feature.
Command	Cat <metric> UseNrrAdjustment <*value*>
Parameters	<*metric*> Available for THROUGHMODETIMEERROR, OFFSETRELATIVE, MEASURED_LINK_DELAY, CF_ACCURACY, LATENCY, PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, OFFSETRELATIVE <*value*> TRUE will use the configured NRR Adjustment Period in the metric calculations, FALSE will not.
Get	
Description	Retrieves whether the NRR Adjustment feature is enabled or disabled for the OFFSETRELATIVE metrics.
Command	Cat <metric> UseNrrAdjustment
Result	The returned text is Boolean to indicate whether the NRR Adjustment is to be applied (TRUE) or not (FALSE) to the OFFSETRELATIVE metric calculations.

Cat <metric> NrrAdjustmentPeriod

Set	
Description	Sets the NRR Adjustment Period value used in the metric calculations when the UseNrrAdjustment metric parameter is TRUE. Will also apply to other metrics which support this feature.
Command	Cat <metric> NrrAdjustmentPeriod <*value*>
Parameters	<*metric*> Available for THROUGHMODETIMEERROR, OFFSETRELATIVE, MEASURED_LINK_DELAY, CF_ACCURACY, LATENCY, PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, OFFSETRELATIVE <*value*> The NrrAdjustmentPeriod value is an integer value in the range 1 to 100 (inclusive).
Prerequisites	The value configured by this command is only applicable to the metric calculations if the parameter **Cat <metric> UseNrrAdjustment** is enabled.
Get	
Description	Returns the configured NRR Adjustment Period.
Command	Cat <metric> NrrAdjustmentPeriod
Result	The returned text will be the current configured NRR Adjustment period value.

Cat <metric> Mask

Set	
Description	Selects a mask to be applied to a specific metric. Note that these masks can only be applied to 2Way DTE metrics.
Command	Cat <*metric*> Mask <*maskName*>
Parameters	<*metric*> The metric to which the mask is to be applied: DTEMTIE, DTETDEV, TransientResponse, NoiseTransferGain_PTPtoPTP, NoiseTransferGain_PTPto1PPS, NoiseTransferGain_SYNCEtoPTP, NoiseTransferGain_SYNCEto1PPS <*maskName*> The name of the mask. To disable a mask use "No Mask" as the mask name.
Get	
Description	Returns the mask name currently selected for the specified metric.
Command	Cat <*metric*> Mask
Parameters	<*metric*> Must be one of those listed above.
Result	The returned string is the name of the current mask.

Cat <metric> ThresholdLimitEnabled

Set	
Description	Enables a limit for the specified metric.
Command	Cat <*metric*> ThresholdLimitEnabled <enable>
Parameters	<metric> TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF <enable> True or False
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Set	
Description	Returns whether the limit for the specified metric is enabled.
Command	Cat <*metric*> ThresholdLimitEnabled
Parameters	<metric> See above.
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Result	True or False.

Cat <metric> ThresholdLimit

Set	
Description	Sets a limit for the specified metric.
Command	Cat <*metric*> ThresholdLimit <*limit*>
Parameters	<metric> TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF <limit> A double used to define the test limit (in µs). The range is 0.005 to 150 with a resolution of 0.005 µs
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Set	
Description	Returns the current limit for the specified metric in the selected slot.
Command	Cat <*metric*> ThresholdLimit
Parameters	<metric> See above.
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be the current limit (as a double). This will be in the range listed above.

Cat <metric> SupplementaryThresholdLimitEnabled <supplementary_threshold>

Set	
Description	Enables a supplementary limit for the specified metric.
Command	Cat <*metric*> SiupplementaryThresholdLimitEnabled <*supplementary_threshold*> <enable>
Parameters	Currently the only metric with a supplementary threshold is TIMEERROR for 2Way, where the PkPkLimit is a supplementary threshold. <metric> TIMEERROR <supplementary_threshold> PkPkLimit <enable> True or False
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Set	
Description	Returns whether the limit for the specified metric is enabled.
Command	Cat <*metric*> SupplementaryThresholdLimitEnabled <*supplementary_threshold*>
Parameters	<metric> See above. <supplementary_threshold> See above.
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Result	True or False.

Cat <metric> SupplementaryThresholdLimit <supplementary_threshold>

Set	
Description	Sets a supplementary limit value for the specified supplementary threshold on the specified metric.
Command	Cat <*metric*> SupplementaryThresholdLimit <*supplementary_threshold*> <*limit*>
Parameters	Currently the only metric with a supplementary threshold is TIMEERROR for 2Way, where the PkPkLimit is a supplementary threshold. <metric> TIMEERROR <supplementary_threshold> PkPkLimit <limit> A double used to define the test limit (in µs).
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Set	
Description	Returns the current limit for the specified supplementary threshold on the specified metric in the selected slot.
Command	Cat <*metric*> SupplementaryThresholdLimit <*supplementary_threshold*>
Parameters	<metric> See above. <supplementary_threshold> See above.
Prerequisites	A slot must already have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be the current limit (as a double).

Cat <metric> MaskResult

Get	
Description	Returns the result of a test of a given metric against a selected mask or limit
Command	Cat <*metric*> MaskResult
Parameters	<*metric*> TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV, TransientResponse, NoiseTransferGain_PTPtoPTP, NoiseTransferGain_PTPto1PPS, NoiseTransferGain_SYNCEtoPTP, NoiseTransferGain_SYNCEto1PPS, RELATIVETIMEERROR, DTE_UNFILTERED, DTEMTIE_UNFILTERED
Result	The state/result. This will be one of: 0 – failed mask 1 – passed the mask 2 – no mask present 3 - wait 4 - stopped 5 – error 6 – insufficient data Note: A returned string value of 'Pass' is now deprecated.

Cat <metric> <statistic>

Get		
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the specified metric.	
Command	Cat <*metric*> <*statistic*>	
Parameters	<*metric*>	TIMEERROR, FILTEREDTIMEERROR, AVERAGEDTE, DTELF, DTEHF, DTEMTIE, DTETDEV DTE_UNFILTERED, DTEMTIE_UNFILTERED, DTETDEV_UNFILTERED RTE Only: RELATIVETIMEERROR, RTECTE, RTEDTE, RTEDTEMTIE BC Only: TransientResponse TC Only: FWD_LATENCY, REV_LATENCY, FWD_CF_DELTA, REV_CF_DELTA P2P Only: PEER_DELAY_TURNAROUND_TIME_ACTUAL, PEER_DELAY_TURNAROUND_TIME_ACCURACY, MEASURED_LINK_DELAY, PEER_DELAY_TURNAROUND_TIME_DUT ReverseSync Only: SUBORDINATETIMEERROR Through Mode TE Only: THROUGHMODETIMEERROR OFFSETRELATIVE
	<*statistic*>	**Statistical Results** Mean, cTe, Max, Min, Range, PkPk, StdDev, Rate, FwdRate, RevRate, Messages, FwdMessages, RevMessages Note 1: Some statistics are not available for some metrics; see the tables below. Note 2: For the results listed below, if the metric has not observed the scenario (for example, has not seen any duplicated Sync messages and you query SyncDup), the query reports an error of "Statistic not currently present in this metric". If the scenario has been observed, a count of the number of occurrences is returned. **Missing / Duplicated Counts** SyncMiss, FupMiss, DReqMiss, DRespMiss, SyncPeerDelayGroupMiss SyncDup, FupDup, DReqDup, DRespDup **Error / Warning Notifications** Port1ToPort2Uncalibrated, Port2ToPort1Uncalibrated, SyncFupModified, FwdCfNotModified, DreqDrespModified, RevCfNotModified, PdelCdNotModified, PdelCfAndResponseNotModified, TwoStepFlagNotSetForPeerDelay, TimestampPlaneOffset **Informational Notifications** FwdTwoStepBc, FwdTwoStepTc, RevTwoStep, PeerDelayTwoStep, PeerDelayOneStep
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. For example, to retrieve the minimum 2Way Average Time Error: paragonset Cat SelectSlotAndChannel 2Way PX_D paragonget Cat AVERAGEDTE Min	
Result	The relevant statistic will be returned.	

Note: The PkPk metric is available from CAT version 23.00 and onwards.

The statistics available for each metric are shown in the tables below.

Slot: Sync (S) and Delay Req (DR)												
	Mean	cTe	Max	Min	Range	PkPk	Rate	FwdRate	RevRate	Messages	Fwd Messages	Rev Message
TIMERROR	✓		✓	✓	✓		✓			✓		
FILTEREDTIMEERROR	✓		✓	✓	✓		✓			✓		
AVERAGEDTE		✓	✓	✓	✓		✓			✓		
DTELF	✓		✓	✓	✓		✓			✓		
DTEHF	✓		✓	✓	✓		✓			✓		
DTEMTIE			✓	✓	✓							
DTETDEV			✓	✓	✓							
DTE_UNFILTERED	✓		✓	✓	✓		✓			✓		
DTEMTIE_UNFILTERED			✓	✓	✓							
DTETDEV_UNFILTERED			✓	✓	✓							
TransientResponse												
FWD_LATENCY	S		S	S	S		S			S		
REV_LATENCY	DR		DR	DR	DR		DR			DR		
FWD_CF_DELTA	S		S	S	S		S			S		
REV_CF_DELTA	DR		DR	DR	DR		DR			DR		
FWD_CF_ACCURACY	S		S	S	S		S			S		
PEER_DELAY_TURNAROUND_TIME_DUT												
PEER_DELAY_TURNAROUND_TIME_ACTUAL												
PEER_DELAY_TURNAROUND_TIME_ACCURACY												
MEASURED_LINK_DELAY												

Slot: 2Way												
	Mean	cTe	Max	Min	Range	PkPk	Rate	FwdRate	RevRate	Messages	Fwd Messages	Rev Message
TIMERROR	✓		✓	✓	✓	✓		✓	✓		✓	✓
FILTEREDTIMEERROR	✓		✓	✓	✓			✓	✓		✓	✓
AVERAGEDTE		✓	✓	✓	✓			✓	✓		✓	✓
DTELF	✓		✓	✓	✓			✓	✓		✓	✓
DTEHF	✓		✓	✓	✓	✓		✓	✓		✓	✓
DTEMTIE			✓	✓	✓							
DTETDEV			✓	✓	✓							
DTE_UNFILTERED	✓		✓	✓	✓			✓	✓		✓	✓
DTEMTIE_UNFILTERED			✓	✓	✓							
DTETDEV_UNFILTERED			✓	✓	✓							
TransientResponse	✓		✓	✓	✓							
FWD_LATENCY												
REV_LATENCY												
FWD_CF_DELTA												
REV_CF_DELTA												
FWD_CF_ACCURACY												
PEER_DELAY_TURNAROUND_TIME_DUT												
PEER_DELAY_TURNAROUND_TIME_ACTUAL												
PEER_DELAY_TURNAROUND_TIME_ACCURACY												
MEASURED_LINK_DELAY												

Slot: 1PPS												
	Mean	cTe	Max	Min	Range	PkPk	Rate	FwdRate	RevRate	Messages	Fwd Messages	Rev Message
TIMERROR	✓		✓	✓	✓							
FILTEREDTIMEERROR	✓		✓	✓	✓							
AVERAGEDTE		✓	✓	✓	✓							
DTELF	✓		✓	✓	✓							
DTEHF	✓		✓	✓	✓							
DTEMTIE			✓	✓	✓							
DTETDEV			✓	✓	✓							
DTE_UNFILTERED	✓		✓	✓	✓							
DTEMTIE_UNFILTERED			✓	✓	✓							
DTETDEV_UNFILTERED			✓	✓	✓							
TransientResponse	✓		✓	✓	✓							
FWD_LATENCY												
REV_LATENCY												
FWD_CF_DELTA												
REV_CF_DELTA												
FWD_CF_ACCURACY												
PEER_DELAY_TURNAROUND_TIME_DUT												
PEER_DELAY_TURNAROUND_TIME_ACTUAL												
PEER_DELAY_TURNAROUND_TIME_ACCURACY												
MEASURED_LINK_DELAY												

Slot: Peer Delay												
	Mean	cTe	Max	Min	Range	PkPk	Rate	FwdRate	RevRate	Messages	Fwd Messages	Rev Message
TIMERROR												
FILTEREDTIMEERROR												
AVERAGEDTE												
DTELF												
DTEHF												
DTEMTIE												
DTETDEV												
DTE_UNFILTERED												
DTEMTIE_UNFILTERED												
DTETDEV_UNFILTERED												
TransientResponse												
FWD_LATENCY												
REV_LATENCY												
FWD_CF_DELTA												
REV_CF_DELTA												
FWD_CF_ACCURACY												
PEER_DELAY_TURNAROUND_TIME_DUT	✓		✓	✓	✓		✓			✓		
PEER_DELAY_TURNAROUND_TIME_ACTUAL	✓		✓	✓	✓		✓			✓		
PEER_DELAY_TURNAROUND_TIME_ACCURACY	✓		✓	✓	✓		✓			✓		
MEASURED_LINK_DELAY	✓		✓	✓	✓		✓			✓		

Slot: RteTwoWay												
	Mean	cTe	Max	Min	Range	PkPk	Rate	FwdRate	RevRate	Messages	Fwd Messages	Rev Message
RELATIVETIMERROR	✓		✓	✓	✓							
RTECTE		✓	✓	✓	✓							
RTEDTE	✓		✓	✓	✓							
RTEDTEMTIE			✓	✓	✓							

Slot: ReverseSync												
	Mean	cTe	Max	Min	Range	PkPk	Rate	FwdRate	RevRate	Messages	Fwd Messages	Rev Message
SUBORDINATETIMEERROR	✓		✓	✓	✓		✓			✓		

Cat TIMEERROR OnePpsMiss

Get	
Description	Provides a count of the number of missing pulses in a 1PPS Time Error capture.
Command	Cat TIMEERROR OnePpsMiss
Result	The returned integer is the number of missing pulses.
Note	This command accesses the CAT RESTful API and therefore may require you to install one or more additional packages for the script language you are using. See section: "Extending Paragon-X Scripts to Control Paragon-100G and Paragon-neo" for more information.

Cat <metric> SamplesToWhichAnalysisWasTruncated

Get	
Description	Indicates whether analysis has been truncated for this metric.
Command	Cat <*metric*> SamplesToWhichAnalysisWasTruncated
Parameters	<*metric*> DTEMTIE, DTETDEV, DTEMTIE_UNFILTERED
Result	0: no truncation has taken place Non-zero: To maintain performance, this metric has restricted the number of samples it analyzes to the value returned. A sample is a single time error value, so the length of time for which analysis is performed varies depending on the message rate.
Note	Truncation only occurs when running CAT on a Paragon-neo instrument. It does not occur when analyzing files on a separate computer.

Rate Ratio Metrics

Rate ratio metrics are available when testing time aware (gPTP / 802.1AS) devices.
This section details the commands that are relevant for the following metrics:

Meas. Type	Slot	Metrics
gPTP (802.1AS)	Rate Ratio	NRR_Accuracy, NRR_Actual, NRR_DUT, CSRO_Delta

---

Cat <metric> Enable

Set	
Description	Enables or disables a metric on the currently selected port/slot. **Cat Calculate** should be called after enabling a metric.
Command	Cat <*metric*> Enable <*enable*>
Parameters	*<metric>* The metric to enable/disable. It must be one of: NRR_Accuracy NRR_Actual NRR_DUT CSRO_Delta *<enable>* is Boolean. TRUE will enable the metric, FALSE will disable it.
Prerequisites	The metrics available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected port/slot.
Command	Cat <*metric*> Enable
Parameters	*<metric>* See above.
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

Cat <metric> <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the specified metric.
Command	Cat *<metric> <statistic>*
Parameters	*<metric>* NRR_Accuracy, NRR_Actual, NRR_DUT, CSRO_Delta *<statistic>* Mean, Max, Min, Range, Rate, FwdRate, RevRate, Messages, FwdMessages, RevMessages Note: Some statistics are not available for some metrics; see the table below.
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. For example, to retrieve the minimum 2Way Average Time Error: paragonset Cat SelectSlotAndChannel 2Way PX_D paragonget Cat AVERAGEDTE Min
Result	The relevant statistic will be returned.

The statistics available for each metric are shown in the tables below.

Slot: Rate Ratio											
	Mean	**cTe**	**Max**	**Min**	**Range**	**Rate**	**FwdRate**	**RevRate**	**Messages**	**Fwd Messages**	**Rev Message**
NRR_Accuracy	✓		✓	✓	✓		✓	✓		✓	✓
NRR_Actual	✓		✓	✓	✓		✓	✓		✓	✓
NRR_DUT	✓		✓	✓	✓		✓	✓		✓	✓
CSRO_Delta	✓		✓	✓	✓	✓			✓		

Packet Metrics – PDV

This section details the commands that are relevant for the following metrics:

Measurement Type	Slot	Metrics
Packet	Sync, Delay Req	PDV

Cat PDV Enable

Set	
Description	Enables or disables metric by type on currently selected slot. **Cat Calculate** should be called after selecting the metrics.
Command	Cat PDV Enable <*enable*>
Parameters	<*enable*> TRUE will enable the metric, FALSE will disable it
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel** The metric types available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected slot
Command	Cat PDV Enable
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

Cat RemoveOffset

Set	
Description	Enable or disable frequency offset removal.
Command	Cat RemoveOffset <*enable*>
Parameters	<*enable*> TRUE will remove the offset, FALSE will retain it
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Get	
Description	Return whether the frequency offset is being removed for the selected slot
Command	Cat RemoveOffset
Result	The returned text indicates if frequency offset is being removed (TRUE) or it is being retained (FALSE).

Cat PDV IncludeCorrectionField

Set	
Description	Enables or disables the inclusion of the correction field in PDV calculations.
Command	Cat PDV IncludeCorrectionField <*value*>
Parameters	<*value*> TRUE will enables inclusion of the CF, FALSE will disables it.
Get	
Description	Retrieves whether the correction field is enabled or disabled for the given metric.
Command	Cat PDV IncludeCorrectionField
Result	The returned text is Boolean to indicate whether the correction field is being is included (TRUE) or not (FALSE).

Cat PDV LuckyPacketAdjustment

Set	
Description	Enables or disables the lucky packet adjustment. This option is only available in some files e.g. 1588. A packet that transitions the network in the least amount of time is known as the Floor Packet or Lucky Packet. Selecting Lucky Packet adjustment will cause all other packet results for the metric to be adjusted relative to this lucky packet.
Command	Cat PDV LuckyPacketAdjustment <*value*>
Parameters	<*value*> TRUE will enables lucky packet adjustment, FALSE will disable it.
Get	
Description	Returns whether the lucky packet adjustment is enabled or disabled.
Command	Cat PDV LuckyPacketAdjustment
Result	The returned text is Boolean to indicate the lucky packet adjustment is enabled (TRUE) or disabled (FALSE).

Cat PDV <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the PDV metric.
Command	Cat PDV <*statistic*>
Parameters	<*statistic*> Mean, Max, Min, Range, Rate, Messages
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. Only Sync and Dleay Req slots are valid for PDV. For example, to retrieve the minimum Sync PDV: paragonset Cat SelectSlotAndChannel Sync PX_D paragonget Cat PDV Min
Result	The relevant statistic will be returned.

Packet Metrics – Packet TIE

This section details the commands that are relevant for the following metrics:

Measurement Type	Slot	Metrics
Packet	Sync, Delay Req	PKTTIE

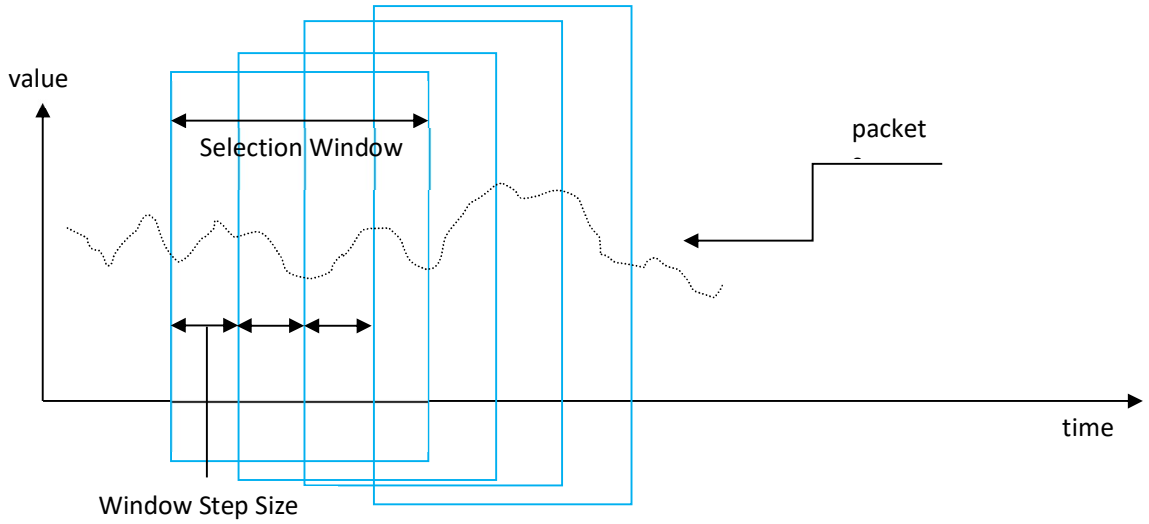
Cat PKTTIE Enable

Set	
Description	Enables or disables metric by type on currently selected slot. **Cat Calculate** should be called after selecting the metrics.
Command	Cat PKTTIE Enable <*enable*>
Parameters	<*enable*> TRUE will enable the metric, FALSE will disable it.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel** The metric types available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected slot.
Command	Cat PKTTIE Enable
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

Cat PKTTIE Filtering

Set	
Description	Determines the packet filtering method.
Command	Cat PKTTIE Filtering <*value*>
Parameters	<*value*> One of the pre-determined filtering methods: None, 0.1Hz_Filtering, Advanced

Cat PKTTIE SelectionWindow



Set	
Description	Sets the selection window size in seconds. The diagram above shows the effect of windowing on the results.
Command	Cat PKTTIE SelectionWindow <*value*>
Parameters	<*value*> The window size(s) from the diagram above and must be in the range: 1 to 1000 with a resolution of 1s
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED.
Get	
Description	Returns the selection window size to seconds.
Command	Cat PKTTIE SelectionWindow
Result	The returned value will be the window size(s). This will be in the range listed above.

Cat PKTTIE WindowStepSize

Set	
Description	Sets the window step size in seconds. The diagram for PKTTIE SelectionWindow shows the effect of windowing on the results.
Command	Cat PKTTIE WindowStepSize <*value*>
Parameters	<*value*> The window step size(s) in the range: 1 to **SelectionWindow** size with a resolution of 1s
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED.
Get	
Description	Returns the window step size in seconds.
Command	Cat PKTTIE WindowStepSize
Result	The returned value will be the window step size(s). This will be in the range listed above.

Cat PKTTIE Algorithm

Set	
Description	Sets the packet selection algorithm.
Command	Cat PKTTIE Algorithm <*algorithm*>
Parameters	<*algorithm*> The selection algorithm: N_MINIMUM: see **NSamples** BAND_DELAY: see **BandDelayLower** and **BandDelayUpper** BAND_PERCENTAGE: see **BandPercentageLower** and **BandPercentageUpper** CLUSTER: see **ClusterAnchor** and **ClusterWidth**
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED.
Get	
Description	Returns the packet selection algorithm.
Command	Cat PKTTIE Algorithm
Result	The returned text will be the algorithm currently set. This will be one of those defined above.

Cat PKTTIE NSamples

Set	
Description	Sets N Samples if N Minimum algorithm is selected.
Command	Cat PKTTIE NSamples <*value*>
Parameters	<*value*> The number of samples to be used when the packet selection algorithm is set to N_MINIMUM. It must be in the range: 1 to 100000
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to N_MINIMUM.
Get	
Description	Returns NSamples.
Command	Cat PKTTIE NSamples
Result	The returned text will be the number of samples currently set.

Cat PKTTIE BandDelayLower

Set	
Description	Sets band delay lower if Band Delay algorithm is selected.
Command	Cat PKTTIE BandDelayLower <*value*>
Parameters	<*value*> The lower bound of band delay to use (in ns) in one of the ranges below: 0 to 9990, resolution 10 10000 to 1000000, resolution 1000
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to BAND_DELAY.
Get	
Description	Returns the band delay lower threshold.
Command	Cat PKTTIE BandDelayLower
Result	The returned text will be the band delay lower threshold (in ns).

Cat PKTTIE BandDelayUpper

Set	
Description	Sets band delay upper if Band Delay algorithm is selected.
Command	Cat PKTTIE BandDelayUpper <*value*>
Parameters	<*value*> The upper bound of band delay to use (in ns) in one of the ranges below: 100 to 9990, resolution 10 10000 to 1000000, resolution 1000
Prerequisites	This command is only applicable if **Cat Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to BAND_DELAY
Get	
Description	Returns the band delay upper threshold.
Command	Cat PKTTIE BandDelayUpper
Result	The returned text will be the band delay upper threshold (in ns).

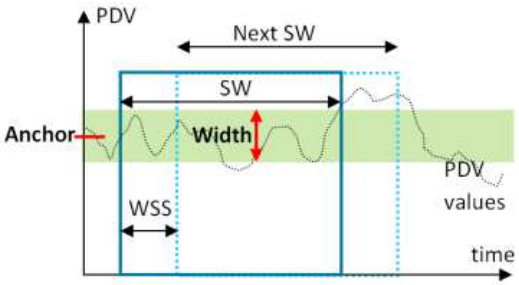
Cat PKTTIE BandPercentageLower

Set	
Description	Sets band percentage lower if Band Percentage algorithm is selected.
Command	Cat PKTTIE BandPercentageLower <*value*>
Parameters	<*value*> The lower bound of band delay to use (in %) in the range: 0 to 100, resolution 0.1
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to BAND_PERCENTAGE
Get	
Description	Returns the band percentage lower threshold.
Command	Cat PKTTIE BandPercentageLower
Result	The returned text will be the band percentage lower threshold (in %).

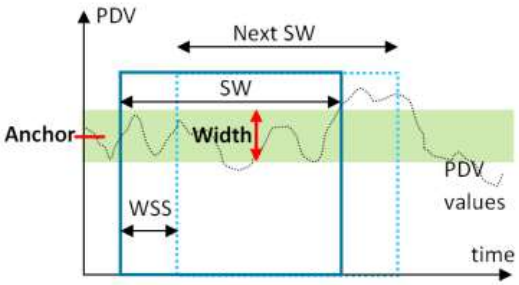
Cat PKTTIE BandPercentageUpper

Set	
Description	Sets band percentage upper if Band (%) algorithm is selected.
Command	Cat PKTTIE BandPercentageUpper <*value*>
Parameters	<*value*> The upper bound of band delay to use (in %) in the range: 0 to 100, resolution 0.1
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to BAND_PERCENTAGE
Get	
Description	Returns the band percentage upper threshold.
Command	Cat PKTTIE BandPercentageUpper
Result	The returned text will be the band percentage upper threshold (in %).

Cat PKTTIE ClusterAnchor

Set	
Description	Sets cluster anchor if Cluster algorithm is selected. Anchor and Width are interdependent. The difference between them cannot be less than zero. 
Command	Cat PKTTIE ClusterAnchor <*value*>
Parameters	<*value*> The cluster anchor to use (in ns). It must be in one of the ranges: 100 to 9990 with a resolution of 10ns 10000 to 5000000 with a resolution of 1000ns
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to CLUSTER.
Get	
Description	Returns the cluster anchor value.
Command	Cat PKTTIE ClusterAnchor
Result	The returned text will be the cluster anchor (in ns).

Cat PKTTIE ClusterWidth

Set	
Description	Sets cluster width if Cluster algorithm is selected. Anchor and Width are interdependent. The difference between them cannot be less than zero. 
Command	Cat PKTTIE ClusterWidth <*value*>
Parameters	<*value*> The cluster width to use (in ns). It must be in one of the ranges: 10 to 9990 with a resolution of 10ns 1000 to 5000000 with a resolution of 1000ns
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat PKTTIE Algorithm** is set to CLUSTER.
Get	
Description	Returns the cluster width.
Command	Cat PKTTIE ClusterWidth
Result	The returned text will be the cluster width (in ns).

Cat PacketSelection ScalingFactor

Set	
Description	All points on the Packet graph are multiplies by a scaling factor. This command specifies that scaling factor.
Command	Cat PacketSelection ScalingFactor <*value*>
Parameters	<*value*> The scaling factor. It must be a double in the range: 0.01 to 10, resolution 0.01
Get	
Description	Returns the Packet graph scaling factor.
Command	Cat PacketSelection ScalingFactor
Result	The returned text will be the scaling factor as a double. It will be in the range listed above.

Cat BandwidthFiltering Enable

Set	
Description	Enables or Disables bandwidth filtering.
Command	Cat BandwidthFiltering Enable <*enable*>
Parameters	<*enable*> TRUE enables the bandwidth filtering, FALSE disables it.
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED.
Get	
Description	Returns the bandwidth filtering enabled status.
Command	Cat BandwidthFiltering Enable
Result	The returned text will state if bandwidth filtering is enabled (TRUE), otherwise FALSE.

Cat BandwidthFiltering LPFilterWindow

Set	
Description	Sets LP Filter Window.
Command	Cat BandwidthFiltering LPFilterWindow <*value*>
Parameters	<*value*> The LP filter window size(s): 1 to 100000
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat BandwidthFiltering Enable** is set to TRUE. This value must be greater than or equal to the packet selection window step size.
Get	
Description	Returns the LP Filter Widow size.
Command	Cat BandwidthFiltering LPFilterWindow
Result	The returned text will be the LP Filter Window size(s). It will be in the range listed above.

Cat BandwidthFiltering WindowStepSize

Set	
Description	Sets LP Filter Window step size.
Command	Cat BandwidthFiltering WindowStepSize <*value*>
Parameters	<value> The LP filter window size(s): 1 to 100000
Prerequisites	This command is only applicable if **Cat PKTTIE Filtering** is set to ADVANCED and **Cat BandwidthFiltering Enable** is set to TRUE. This value must be less than or equal to the LP FilterWIndow size AND greater than or equal to the packet selection window step size.
Set	
Description	Returns the LP Filter Widow step size.
Command	Cat BandwidthFiltering WindowStepSize
Result	The returned text will be the Filter Window Step size(s). It will be in the range listed above.

Cat PKTTIE FreqOffset

Get	
Description	Returns the frequency offset in the PKTTIE results.
Command	Cat PKTTIE FreqOffset
Prerequisites	The relevant slot must be selected using Cat **SelectSlotAndChannel**. Only Sync and Delay Req slots are valid for PKTTIE.
Result	The returned string is the frequency offset.

Cat PKTTIE FreqOffsetInRange

Get	
Description	Returns the frequency offset in the PKTTIE results in the selected data analysis range.
Command	Cat PKTTIE FreqOffsetInRange
Prerequisites	The relevant slot must be selected using Cat **SelectSlotAndChannel**. Only Sync and Delay Req slots are valid for PKTTIE.
Result	The returned string is the frequency offset in the selected range.

Cat PKTTIE Mask

Set	
Description	Selects a mask to be applied to a specific metric.
Command	Cat PKTTIE Mask <*maskName*>
Parameters	<*maskName*> The name of the mask. To disable a mask use “No Mask” as the mask name.
Get	
Description	Returns the mask name currently selected for the specified metric.
Command	Cat PKTTIE Mask
Result	The returned string is the name of the current mask.

Cat PKTTIE MaskResult

Get	
Description	Returns the result of a test of a given metric against a selected mask.
Command	Cat PKTTIE MaskResult
Result	The state/result. This will be one of: 0 – failed mask 1 – passed the mask 2 – no mask present 3 - wait 4 - stopped 5 – error 6 – insufficient data

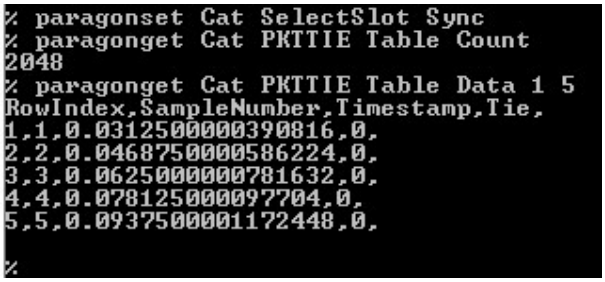
Cat PKTTIE <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the PKTTIE metric.
Command	Cat PKTTIE *<statistic>*
Parameters	*<statistic>* Mean, Max, Min, Range
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. Only Sync and Delay Req slots are valid for PKTTIE. For example, to retrieve the minimum packet TIE for the forward direction: paragonset Cat SelectSlotAndChannel Sync PX_D paragonget Cat PKTTIE Min
Result	The relevant statistic will be returned.

Cat PKTTIE Table Count

Get	
Description	Returns the number of rows in the packet TIE data table.
Command	Cat PKTTIE Table Count
Prerequisites	The appropriate slot must have been selected using **Cat SelectSlotAndChannel**
Result	The number of rows in the table.

Cat PKTTIE Table Data

Get	
Description	Returns the data from specified table rows.
Command	Cat PKTTIE Table Data *<rowOffset> <rowCount>*
Parameters	*<rowOffset>* Integer. Zero-based index of the first row to be returned. This must be less than the total number of rows in the table *<rowCount>* Integer. The number of rows to return.
Prerequisites	The appropriate slot must have been selected using **Cat SelectSlotAndChannel**
Result	Returns the specified rows from the table preceded by the table header in csv format. For example: 

```
% paragonset Cat SelectSlot Sync
% paragonget Cat PKTTIE Table Count
2048
% paragonget Cat PKTTIE Table Data 1 5
RowIndex,SampleNumber,Timestamp,Tie,
1,1,0.0312500000390816,0,
2,2,0.0468750000586224,0,
3,3,0.0625000000781632,0,
4,4,0.078125000097704,0,
5,5,0.0937500001172448,0,

%
```

Packet Metrics – Other

File Type	Meas. Type	Slot	Metrics
Packet	**Packet**	Sync, Delay Req	PKTMTIE, PKTTDEV, MATIE, MAFE, PKTFFO, FPC, FPR, FPP, PDD, CDF FWD_CF (Sync), REV_CF (Delay Req)

Cat <metric> Enable

Set	
Description	Enables or disables a metric on the currently selected port/slot. **Cat Calculate** should be called after enabling a metric.
Command	Cat <*metric*> Enable <*enable*>
Parameters	<*metric*> PKTMTIE, PKTTDEV, PDD, PKTFFO, CDF, FWD_CF (Sync), REV_CF (Delay Req) <*enable*> is Boolean. TRUE will enable the metric, FALSE will disable it.
Prerequisites	The metrics available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected slot.
Command	Cat <*metric*> Enable
Parameters	<*metric*> See above.
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

Cat PKTFFO AveragingTime

Set	
Description	Sets the Averaging time for the PKTFFO metric.
Command	Cat PKTFFO AveragingTime <*value*>
Parameters	<*value*> The averaging time (s). An integer in the range: 1 to 45000. Only for the Custom clock type.
Prerequisites	The 'Custom' clock type must be selected in a prior call to the 'Cat PKTFFO Clock' set command.
Get	
Description	Retrieve the Averaging time for the PKTFFO metric.
Command	Cat PKTFFO AveragingTime
Result	The returned text is the averaging time (s) and will be in the range defined above.

Cat PKTFFO Clock

Set	
Description	Sets the $N\tau_0$ for the PKTFFO metrics.
Command	Cat PKTFFO Clock <*value*>
Parameters	<*value*> The Clock Stratum used for the metric: Stratum2Clock, Stratum3EClock, Stratum3Clock, Custom
Get	
Description	Returns the $N\tau_0$ for the PKTFFO metrics.
Command	Cat PKTFFO Clock
Result	The returned text is the Clock Stratum used for the metric. It will be one of those listed above.

Cat <FpxMetricType> WindowSize

Description	Sets the window size for a floor packet metric.
Command	Cat <*FpxMetricType*> WindowSize <*value*>
Parameters	<*FpxMetricType*> FPC, FPR, FPP <*value*> The window size(s). An integer in the range: 1 to 10000000
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Get	
Description	Returns the window size for the given metric.
Command	Cat <*FpxMetricType*> WindowSize
Parameters	<*FpxMetricType*> See above.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be the window size(s) for the given metric. It will be in the range listed above.

Cat <FpxMetricType> WindowStepSize

Set	
Description	Sets the window step size for a floor packet metric. The minimum value of window step size depends on the nominal sample rate.
Command	Cat <*FpxMetricType*> WindowStepSize <*value*>
Parameters	<*FpxMetricType*> FPC, FPR, FPP <*value*> The window step size(s) in the range: 0.001 to 10000000, resolution 0.001
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Get	
Description	Returns the window step size for the given metric.
Command	Cat <*FpxMetricType*> WindowStepSize
Parameters	<*FpxMetricType*> See above.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be the window step size(s) for the given metric. It will be in the range listed above.

Cat <FpxMetricType> FloorDelta

Set	
Description	Sets floor delta for one of the floor packet metrics.
Command	Cat <*FpxMetricType*> FloorDelta <*value*>
Parameters	<*FpxMetricType*> FPC, FPR, FPP <*value*> The floor delta (in µs) in the range: 0 to 100000 For FPC, the resolution is 1 µs; for FPR and FPP, the resolution is 0.01µs
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Get	
Description	Returns the Floor Delta in one of the FP* metrics.
Command	Cat <*FpxMetricType*> FloorDelta
Parameters	<*FpxMetricType*> See above.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be the floor delta (in µs) for the given metric. It will be in the range listed above

Cat <FpxMetricType> EnableLimit

Set	
Description	Enables or disables metric limit on the given FP* metric. The metric limit applied will be the default value unless already specified.
Command	Cat <*FpxMetricType*> EnableLimit <*enable*>
Parameters	<*FpxMetricType*> FPC, FPR, FPP <*enable*> TRUE will enable the metric limit, FALSE will disable it.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Get	
Description	Returns whether the specified FP* metric limit is currently enabled.
Command	Cat <*FpxMetricType*> EnableLimit
Parameters	<*FpxMetricType*> See above.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Result	TRUE if the specified metric limit is enabled, FALSE otherwise.

Cat <FpxMetricType> Limit

Set	
Description	Sets the limit for an FPx metrics.
Command	Cat <*FpxMetricType*> Limit <value>
Parameters	<*FpxMetricType*> FPC, FPR, FPP <*value*> Dependent on the metric being configured. The possible ranges are: FPC and FPR: 0 to 100000 with a step size of 1 FPP: 0 to 100 with a step size of 1
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Get	
Description	Returns the current limit on the specified FPx metric.
Command	Cat <*FpxMetricType*> Limit
Parameters	<*FpxMetricType*> See above.
Prerequisites	A suitable slot must previously have been selected using **Cat SelectSlotAndChannel**
Result	The limit for the given metric in the ranges listed above.

Cat PDD CalculateRatioMethod

Set	
Description	Sets the calculate ratio method for PDD metric.
Command	Cat PDD CalculateRatioMethod <*value*>
Parameters	<*value*> is one of the pre-determined calculate ratio methods. It must be one of: • Range • Tolerance
Prerequisites	Range option requires PDD Min and PDD Max to be specified. Tolerance option requires PDD Nominal, PDD Above and PDD Below to be specified.
Result	No result is expected.
Get	
Description	Returns the calculation ratio method for the PDF Plotter.
Command	Cat PDD CalculateRatioMethod
Parameters	None.
Prerequisites	None.
Result	The returned text will be the method currently selected. It will be one of those listed above.

Cat PDD RangeMin

Set	
Description	Sets the minimum range limit for the PDD metric ratio calculation.
Command	Cat PDD RangeMin *<value>*
Parameters	*<value>* is the minimum value to use. It must be in the range: 0 to 2000000000 with a step size of 1
Prerequisites	None.
Result	No result is expected.
Get	
Description	Returns the minimum range limit for the PDD metric ratio calculation.
Command	Cat PDD RangeMin
Parameters	None.
Prerequisites	None.
Result	The returned text will be the value of the current minimum limit. This will be in the range listed above.

Cat PDD RangeMax

Set	
Description	Sets the maximum range limit for the PDD metric ratio calculation.
Command	Cat PDD RangeMax *<value>*
Parameters	*<value>* is the maximum value to use. It must be in the range: 0 to 2000000000 with a step size of 1
Prerequisites	None.
Result	No result is expected.
Get	
Description	Returns the maximum range limit for the PDD metric ratio calculation.
Command	Cat PDD RangeMax
Parameters	None.
Prerequisites	None.
Result	The returned text will be the value of the current maximum limit. This will be in the range listed above.

Cat PDD Nominal

Set	
Description	Sets the nominal tolerance value for the PDD metric ratio calculation.
Command	Cat PDD Nominal *<value>*
Parameters	*<value>* is the nominal value to use. It must be in the range: 0 to 2000000000 with a step size of 0.001
Prerequisites	None.
Result	No result is expected.
Get	
Description	Returns the nominal tolerance value for the PDD metric ratio calculation.
Command	Cat PDD Nominal
Parameters	None.
Prerequisites	None.
Result	The returned text will be the value of the current nominal tolerance value. This will be in the range listed above.

Cat PDD Above

Set	
Description	Sets the percentage above tolerance limit for the PDD metric ratio calculation.
Command	Cat PDD Above *<value>*
Parameters	*<value>* is the Above value to use (in %). It must be in the range: 0 to 100 with a step size of 1%.
Prerequisites	None.
Result	No result is expected.
Get	
Description	Retrieves the above tolerance limit for the PDD metric ratio calculation.
Command	Cat PDD Above
Parameters	None.
Prerequisites	None.
Result	The returned text will be the above tolerance (in %). This will be in the range listed above.

Cat PDD Below

Set	
Description	Sets the percentage below tolerance limit for the PDD metric ratio calculation.
Command	Cat PDD Below *<value>*
Parameters	*<value>* is the Below value to use (in %). It must be in the range: 0 to 100 with a step size of 1%
Prerequisites	None.
Result	No result is expected.
Get	
Description	Retrieves the below tolerance limit for the PDD metric ratio calculation.
Command	Cat PDD Below
Parameters	None.
Prerequisites	None.
Result	The returned text will be the Below tolerance to use (in %). This will be in the range listed above.

Cat PDD PassCriteria

Set	
Description	Sets the Pass/Fail threshold.
Command	Cat PDD PassCriteria *<value>*
Parameters	*<value>* is the limits to apply to obtain a pass/fail result (in %). It must be in the range: 0 to 100 with a step size of 0.1
Prerequisites	None.
Result	No result is expected.
Get	
Description	Retrieves the Pass/Fail threshold for the PDD metric ratio calculation.
Command	Cat PDD PassCriteria
Parameters	None.
Prerequisites	None.
Result	The returned text will be the pass/fail criteria (in %). This will be in the range listed above.

Cat PDD PercentResult

Set	
Description	Retrieves the percentage result for the PDD metric ratio calculation.
Command	Cat PDD PercentResult
Parameters	None.
Prerequisites	None.
Result	The returned text will be value (in %). If there is a valid result available, this will be in the range: Minimum Value: 0.0 Maximum Value: 100.0 If there's no valid result, the returned value will be -1.

Cat <metric> Mask

Set	
Description	Selects a mask to be applied to a specific metric.
Command	Cat <*metric*> Mask <*maskName*>
Parameters	<*metric*> The metric to which the mask is to be applied: PKTMTIE. PKTTDEV, MAFE <*maskName*> The name of the mask. To disable a mask use "No Mask" as the mask name.
Get	
Description	Returns the mask name currently selected for the specified metric.
Command	Cat <*metric*> Mask
Parameters	<*metric*> Must be one of those listed above.
Result	The returned string is the name of the current mask.

Cat <metric> MaskResult

Get	
Description	Returns the result of a test of a given metric against a selected mask or limit.
Command	Cat <*metric*> MaskResult
Parameters	<*metric*> PKTMTIE, PKTTDEV, MAFE, FPC, FPR, FPP
Result	The state/result. This will be one of: 0 – failed mask 1 – passed the mask 2 – no mask present 3 - wait 4 - stopped 5 – error 6 – insufficient data

Cat <metric> <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the specified metric
Command	Cat <*metric*> <*statistic*>
Parameters	<*metric*> PKTMTIE, PKTTDEV, PDD, PKTFFO, CDF, FWD_CF (Sync), REV_CF (Delay Req) <*statistic*> Mean, Max, Min, Range, Rate, Messages Note: Some statistics are not available for some metrics; see the table below.
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. Only Sync and Delay Req slots are valid. For example, to retrieve the minimum Sync PKTMTIE: paragonset Cat SelectSlotAndChannel Sync PX_D paragonget Cat PKTMTIE Min
Result	The relevant statistic will be returned.

Slot: Sync (S) and Delay Req (DR)							
	PKTMTIE	**PKTTDEV**	**PDD**	**CDF**	**PKTFFO**	**FWD_CF**	**REV_CF**
Mean			✓	✓	✓	S	DR
cTe							
Max	✓	✓	✓	✓	✓	S	DR
Min	✓	✓	✓	✓	✓	S	DR
Range	✓	✓	✓	✓	✓	S	DR
Rate						S	DR
FwdRate							
RevRate							
Messages						S	DR
FwdMessages							
RevMessages							

Clock Metrics

This section details the commands that are relevant for the following clock metrics:

Measurement Type	Slot	Metrics
Clock Wander	E1, T1, 2M, 10M, SyncE, 1pps	TIE, MTIE, TDEV, CLKMAFE, CLKFFO ESMC (SyncE only)

Cat <metric> Enable

Set	
Description	Enables or disables a metric on the currently selected port/slot. **Cat Calculate** should be called after enabling a metric.
Command	Cat <*metric*> Enable <*enable*>
Parameters	<*metric*> TIE, MTIE, TDEV, CLKMAFE, CLKFFO, ESMC (SyncE only) <*enable*> is Boolean. TRUE will enable the metric, FALSE will disable it.
Prerequisites	The metrics available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected slot.
Command	Cat <*metric*> Enable
Parameters	<*metric*> See above.
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

Cat RemoveOffset

Set	
Description	Enable or disable frequency offset removal.
Command	Cat RemoveOffset <*enable*>
Parameters	<*enable*> is a Boolean to remove the offset (TRUE) or retain the offset (FALSE).
Prerequisites	The relevant slot must have been selected using **Cat SelectSlotAndChannel** Applies only to Clock TIE.
Get	
Description	Return whether the frequency offset is being removed for the selected slot.
Command	Cat RemoveOffset
Result	The returned text indicates if frequency offset is being removed (TRUE) or it is being retained (FALSE).

Cat TIE FreqOffset

Get	
Description	Returns the frequency offset in TIE.
Command	Cat TIE FreqOffset
Prerequisites	The relevant slot must be selected using Cat SelectSlot
Result	The returned string is the frequency offset.

Cat TIE FreqOffsetInRange

Get	
Description	Returns the frequency offset in the TIE results in the selected data analysis range.
Command	Cat TIE FreqOffsetInRange
Prerequisites	The relevant slot must be selected using Cat **SelectSlotAndChannel**
Result	The returned string is the frequency offset in the selected range.

Cat CLKFFO AveragingTime

Set	
Description	Sets the Averaging time for the CLKFFO metric.
Command	Cat CLKFFO AveragingTime <*value*>
Parameters	<*value*> The averaging time (s). An integer in the range: 1 to 45000
Get	
Description	Retrieve the Averaging time for the CLKFFO metric.
Command	Cat CLKFFO AveragingTime
Result	The returned text is the averaging time (s) and will be in the range defined above.

Cat CLKFFO Clock

Set	
Description	Sets the $N\tau_0$ for the CLKFFO metrics.
Command	Cat CLKFFO Clock <*value*>
Parameters	<*value*> The Clock Stratum used for the metric: Stratum2Clock, Stratum3EClock, Stratum3Clock, Custom Custom allows a specific $N\tau_0$ value to be set using **Cat CLKFFO N**
Get	
Description	Returns the $N\tau_0$ for the CLKFFO metrics.
Command	Cat CLKFFO Clock
Result	The returned text is the Clock Stratum used for the metric. It will be one of those listed above.

Cat CLKFFO N

Set	
Description	Sets the custom $N\tau_0$ used for the CLKFFO metric calculation.
Command	Cat CLKFFO N <*value*>
Parameters	<*value*> The $N\tau_0$ used for the metric calculations. It must be an integer with a minimum setting of 2.
Prerequisites	**Cat CLKFFO Clock** must be set to Custom.
Get	
Description	Retrieve the custom $N\tau_0$ for the CLKFFO metric.
Command	Cat CLKFFO N
Prerequisites	**Cat CLKFFO Clock** must be set to Custom.
Result	The returned value is an integral $N\tau_0$ used for the metric calculations.

Cat <metric> Mask

Set	
Description	Selects a mask to be applied to a specific metric.
Command	Cat <*metric*> Mask <*maskName*>
Parameters	<*metric*> The metric to which the mask is to be applied. Must be one of: TIE, MTIE, TDEV, CLKMAFE <*maskName*> The name of the mask. To disable a mask use "No Mask" as the mask name.
Get	
Description	Returns the mask name currently selected for the specified metric.
Command	Cat <*metric*> Mask
Parameters	<*metric*> Must be one of those listed above.
Result	The returned string is the name of the current mask.

Cat <metric> MaskResult

Get	
Description	Returns the result of a test of a given metric against a selected mask.
Command	Cat <*metric*> MaskResult
Parameters	<*metric*> TIE, MTIE, TDEV, CLKMAFE
Result	The state/result. This will be one of: 0 – failed mask 1 – passed the mask 2 – no mask present 3 - wait 4 - stopped 5 – error 6 – insufficient data

Cat <metric> <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the specified metric.
Command	Cat <*metric*> <*statistic*>
Parameters	<*metric*> TIE, MTIE, TDEV, ESMC (SyncE only) <*statistic*> Mean, Max, Min, Range Note: Some statistics are not available for some metrics; see the table below.
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. For example, to retrieve the minimum T1 MTIE: paragonset Cat SelectSlotAndChannel T1 PX_A paragonget Cat MTIE Min
Result	The relevant statistic will be returned.

Slot: E1, T1, 2M, 10M, SyncE				
	TIE	**MTIE**	**TDEV**	**ESMC**
Mean	✓			SyncE only
Max	✓	✓	✓	SyncE only
Min	✓	✓	✓	SyncE only
Range	✓	✓	✓	SyncE only

Cat <metric> Table Count

Get	
Description	Returns the number of rows in the specified data table.
Command	Cat *<metric>* Table Count
Parameters	*<metric>* TIE, ESMC (SyncE only)
Prerequisites	The appropriate slot must have been selected using **Cat SelectSlotAndChannel**
Result	The number of rows in the table.

Cat <metric> Table Data

Get	
Description	Returns the data from specified table rows.
Command	Cat *<metric>* Table Data *<rowOffset> <rowCount>*
Parameters	*<metric>* TIE, ESMC (SyncE only) *<rowOffset>* Integer. Zero-based index of the first row to be returned. This must be less than the total number of rows in the table *<rowCount>* Integer. The number of rows to return.
Prerequisites	The appropriate slot must have been selected using **Cat SelectSlotAndChannel**
Result	Returns the specified rows from the table preceded by the table header in csv format.

Cat <metric> SamplesToWhichAnalysisWasTruncated

Get	
Description	Indicates whether analysis has been truncated for this metric.
Command	Cat *<metric>* SamplesToWhichAnalysisWasTruncated
Parameters	*<metric>* MTIE, TDEV, clkMAFE, clkFFO
Result	0: no truncation has taken place Non-zero: To maintain performance, this metric has restricted the number of samples it analyzes to the value returned. A sample is a single time error value, so the length of time for which analysis is performed varies depending on the sample rate.
Note	Truncation only occurs when running CAT on a Paragon-neo. It does not occur when analyzing files on a separate computer.

SyncE Jitter Metrics

This section details the commands that are relevant for the following clock metrics:

Measurement Type	Slot	Metrics
SyncE Jitter	Jitter	LongTermJitterRms, LongTermJitterPkPk, ShortTermJitterPkPk

Cat <metric> Enable

Set	
Description	Enables or disables a metric on the currently selected port/slot. **Cat Calculate** should be called after enabling a metric.
Command	Cat <*metric*> Enable <*enable*>
Parameters	<*metric*> LongTermJitterRms, LongTermJitterPkPk, ShortTermJitterPkPk <*enable*> is Boolean. TRUE will enable the metric, FALSE will disable it.
Prerequisites	The metrics available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected slot.
Command	Cat <*metric*> Enable
Parameters	<*metric*> See above.
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

Cat <metric> ThresholdLimitEnabled

Set	
Description	Enable the limit for the specified metric.
Command	Cat <*metric*> ThresholdLimitEnabled <*enabled*>
Parameters	<*metric*> LongTermJitterPkPk, ShortTermJitterPkPk <*enabled*> Boolean. TRUE enables the limit; FALSE disables it
Prerequisites	Jitter must already have been selected using **Cat SelectSlotAndChannel**
Set	
Description	Returns whether the current limit test for the specified metric in the selected slot is enabled.
Command	Cat <*metric*> ThresholdLimit
Parameters	<metric> See above.
Prerequisites	Jitter must already have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be TRUE or FALSE.

Cat <metric> ThresholdLimit

Set	
Description	Sets a limit for the specified metric.
Command	Cat <*metric*> ThresholdLimit <*limit*>
Parameters	<metric> LongTermJitterPkPk, ShortTermJitterPkPk <limit> A double used to define the test limit (in UI). The range is 0.01 to 150 with a resolution of 0.01 UI
Prerequisites	Jitter must already have been selected using **Cat SelectSlotAndChannel**
Set	
Description	Returns the current limit for the specified metric in the selected slot
Command	Cat <*metric*> ThresholdLimit
Parameters	<metric> See above.
Prerequisites	Jitter must already have been selected using **Cat SelectSlotAndChannel**
Result	The returned text will be the current limit (as a double). This will be in the range listed above.

Cat <metric> MaskResult

Get	
Description	Returns the result of a test of a given metric against a selected mask or limit
Command	Cat <*metric*> MaskResult
Parameters	<*metric*> LongTermJitterPkPk, ShortTermJitterPkPk
Result	The state/result. This will be one of: 0 – failed mask 1 – passed the mask 2 – no mask present 3 - wait 4 - stopped 5 – error 6 – insufficient data

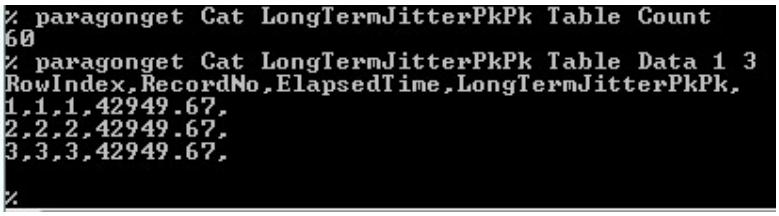
Cat <metric> <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the specified metric.
Command	Cat <*metric*> <*statistic*>
Parameters	<*metric*> LongTermJitterRms, LongTermJitterPkPk, ShortTermJitterPkPk <*statistic*> Mean, Max, Min, Range
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. For example, to retrieve the minimum ShortTermJitterPkPk: paragonset Cat SelectSlotAndChannel “Jitter” PN_A paragonget Cat ShortTermJitterPkPk Min
Result	The relevant statistic will be returned.

Cat <metric> Table Count

Get	
Description	Returns the number of rows in the specified data table.
Command	Cat *<metric>* Table Count
Parameters	*<metric>* LongTermJitterRms, LongTermJitterPkPk, ShortTermJitterPkPk
Prerequisites	The appropriate slot must have been selected using **Cat SelectSlotAndChannel**
Result	The number of rows in the table.

Cat <metric> Table Data

Get	
Description	Returns the data from specified table rows.
Command	Cat *<metric>* Table Data *<rowOffset> <rowCount>*
Parameters	*<metric>* LongTermJitterRms, LongTermJitterPkPk, ShortTermJitterPkPk *<rowOffset>* Integer. Zero-based index of the first row to be returned. This must be less than the total number of rows in the table. *<rowCount>* Integer. The number of rows to return.
Prerequisites	The Jitter slot must have been selected using **Cat SelectSlotAndChannel**
Result	Returns the specified rows from the table preceded by the table header in csv format. For example: 

ToD Metrics

This section details the commands that are relevant for the following clock metrics:

Measurement Type	Slot	Metrics
1PPS/ToD	1pps	TOD, PtpClockClassMeas, PtpClockClassRef, CcsaPpsStatusMeas, CcsaPpsStatusRef, MeasTodVsRefPtp, MeasTodVsRefTod

Note that the CCSA metrics are only available when CCSA has been generated / measured.

Cat <metric> Enable

Set	
Description	Enables or disables a metric on the currently selected port/slot. **Cat Calculate** should be called after enabling a metric.
Command	Cat <*metric*> Enable <*enable*>
Parameters	<*metric*> TOD, PtpClockClassMeas, PtpClockClassRef, CcsaPpsStatusMeas, CcsaPpsStatusRef, MeasTodVsRefPtp, MeasTodVsRefTod <*enable*> is Boolean. TRUE will enable the metric, FALSE will disable it.
Prerequisites	The metrics available are dependent on the kind of data that has been loaded into the currently selected slot.
Get	
Description	Queries whether a specified metric is currently enabled on the currently selected slot
Command	Cat <*metric*> Enable
Parameters	<*metric*> See above.
Result	The returned text will be the TRUE if the specified metric is enabled on the currently selected slot, FALSE otherwise.

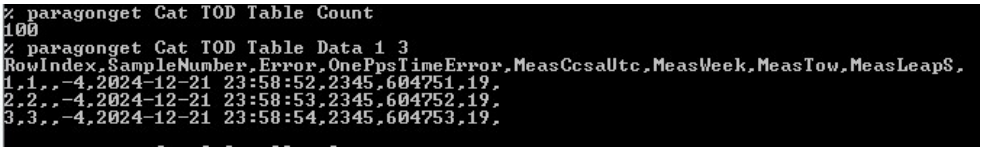
Cat <metric> <statistic>

Get	
Description	A number of statistics are calculated for specific metrics. This command returns the specific statistic from the specified metric.
Command	Cat <*metric*> <*statistic*>
Parameters	<*metric*> TOD, PtpClockClassMeas, PtpClockClassRef, CcsaPpsStatusMeas, CcsaPpsStatusRef, MeasTodVsRefPtp, MeasTodVsRefTod <*statistic*> Mean, Max, Min, Range
Prerequisites	The relevant slot must be selected using **Cat SelectSlotAndChannel** before using these commands. For example, to retrieve the minimum PtpClockClassMeas: paragonset Cat SelectSlotAndChannel “1pps” PX_C paragonget Cat PtpClockClassMeas Min
Result	The relevant statistic will be returned.

Cat TOD Table Count

Get	
Description	Returns the number of rows in the specified data table.
Command	Cat TOD Table Count
Prerequisites	The 1PPS slot must have been selected using **Cat SelectSlotAndChannel**
Result	The number of rows in the table.

Cat TOD Table Data

Get	
Description	Returns the data from specified table rows.
Command	Cat TOD Table Data *<rowOffset> <rowCount>*
Parameters	*<rowOffset>* Integer. Zero-based index of the first row to be returned. This must be less than the total number of rows in the table. *<rowCount>* Integer. The number of rows to return.
Prerequisites	The 1PPS slot must have been selected using **Cat SelectSlotAndChannel**
Result	Returns the specified rows from the table preceded by the table header in csv format. For example: 

```
% paragonget Cat TOD Table Count
100
% paragonget Cat TOD Table Data 1 3
RowIndex,SampleNumber,Error,OnePpsTimeError,MeasCcsaUtc,MeasWeek,MeasTow,MeasLeapS,
1,1,,-4,2024-12-21 23:58:52,2345,604751,19,
2,2,,-4,2024-12-21 23:58:53,2345,604752,19,
3,3,,-4,2024-12-21 23:58:54,2345,604753,19,
```

Presentation Commands

Cat Resolution

Set	
Description	Specify the resolution on the CAT.
Command	Cat Resolution <*resolution*>
Parameters	<*resolution*> Integer in the range of 1 (low) to 9 (high) -1 can be used to automatically set the maximum resolution.
Prerequisites	This command is only applicable for metric types: MTIE, TDEV, MATIE, MAFE, PKTMTIE, PKTTDEV, CLKMAFE

Data Export Commands

Cat <MetricType> Export

Set	
Description	Exports the given metric data to a .csv file.
Command	Cat <*MetricType*> Export <*file*>
Parameters	<*MetricType*>*:* The metric to use. It must be one of: TIE MTIE TDEV CLKMAFE FFO PDV PKTTIE PKTMTIE PKTTDEV MATIE MAFE PKTFFO FPC FPR FPP PDD TIMEERROR TWOWAY_TE T1_TE T4_TE NoiseTransferGain_PTPtoPTP NoiseTransferGain_PTPto1PPS NoiseTransferGain_SYNCEtoPTP NoiseTransferGain_SYNCEto1PPS AVERAGEDTE TWOWAY_ATE T1_ATE T4_ATE DTE DTETWOWAY(deprecated) DT1(deprecated) DT4(deprecated) DTEMTIE DTETDEV FWD_CF_ACCURACY FWD_LATENCY FWD_CF FWD_CF_DELTA REV_CF_ACCURACY REV_LATENCY REV_CF REV_CF_DELTA TWOWAY_CF_ACCURACY MEASURED_LINK_DELAY PEER_DELAY_TURNAROUND_TIME_ACTUAL PEER_DELAY_TURNAROUND_TIME_ACCURACY PEER_DELAY_TURNAROUND_TIME_DUT NRR_Accuracy NRR_Actual NRR_DUT CSRO_Delta TransientResponse MeasTodVsRefToD CcsaPpsStatusRef PtpClockClassRef MeasTodVsRefPtp CcsaPpsStatusMeas PtpClockClassMeas TOD <*file*> is the full file path and name (must have a .csv extension)
Prerequisites	User must have write privileges for the file storage location.

Cat <MetricType> ExportReducedCsv

Set	
Description	Exports the given metric trace reduced data to a .csv file.
Command	Cat <*MetricType*> ExportReducedCsv <*file*>
Parameters	<*MetricType*>: The metric to use. It must be one of: TIE MTIE TDEV CLKMAFE FFO PDV PKTTIE PKTMTIE PKTTDEV MATIE MAFE PKTFFO FPC FPR FPP PDD TIMEERROR TWOWAY_TE T1_TE T4_TE FILTEREDTIMEERROR NoiseTransferGain_PTPtoPTP NoiseTransferGain_PTPto1PPS NoiseTransferGain_SYNCEtoPTP NoiseTransferGain_SYNCEto1PPS AVERAGEDTE TWOWAY_ATE T1_ATE T4_ATE DTE DTETWOWAY(deprecated) DT1(deprecated) DT4(deprecated) DTEMTIE DTETDEV FWD_CF_ACCURACY FWD_LATENCY FWD_CF FWD_CF_DELTA REV_CF_ACCURACY REV_LATENCY REV_CF REV_CF_DELTA TWOWAY_CF_ACCURACY MEASURED_LINK_DELAY PEER_DELAY_TURNAROUND_TIME_ACTUAL PEER_DELAY_TURNAROUND_TIME_ACCURACY PEER_DELAY_TURNAROUND_TIME_DUT NRR_Accuracy NRR_Actual NRR_DUT CSRO_Delta TransientResponse MeasTodVsRefToD CcsaPpsStatusRef PtpClockClassRef MeasTodVsRefPtp CcsaPpsStatusMeas PtpClockClassMeas TOD LongTermJitterPkPk LongTermJitterRms ShortTermJitterPkPk WanderTransfer <*file*> is the full file path and name (must have a .csv extension)
Prerequisites	User must have write privileges for the file storage location.

Cat <MetricType> ExportReducedTxt

Set	
Description	Exports the given metric trace reduced data to a .txt file.
Command	Cat <*MetricType*> ExportReducedTxt <*file*>
Parameters	<*MetricType*> See **CAT ExportReducedCsv** <*file*> The full file path and name (must have a .txt extension).
Prerequisites	User must have write privileges for the file storage location.

Cat <MetricType> ExportFullCsv

Set	
Description	Exports the given metric trace full data to a .csv file.
Command	Cat <*MetricType*> ExportFullCsv <*file*>
Parameters	<*MetricType*>: The metric to use. It must be one of: TIE MTIE TDEV CLKMAFE FFO PDV PKTTIE PKTMTIE PKTTDEV MATIE MAFE PKTFFO FPC FPR FPP PDD TIMEERROR TWOWAY_TE T1_TE T4_TE NoiseTransferGain_PTPtoPTP NoiseTransferGain_PTPto1PPS NoiseTransferGain_SYNCEtoPTP NoiseTransferGain_SYNCEto1PPS FILTEREDTIMEERROR AVERAGEDTE TWOWAY_ATE T1_ATE T4_ATE DTE DTETWOWAY(deprecated) DT1(deprecated) DT4(deprecated) DTEMTIE DTETDEV FWD_CF_ACCURACY FWD_LATENCY FWD_CF FWD_CF_DELTA REV_CF_ACCURACY REV_LATENCY REV_CF REV_CF_DELTA TWOWAY_CF_ACCURACY MEASURED_LINK_DELAY PEER_DELAY_TURNAROUND_TIME_ACTUAL PEER_DELAY_TURNAROUND_TIME_ACCURACY PEER_DELAY_TURNAROUND_TIME_DUT NRR_Accuracy NRR_Actual NRR_DUT CSRO_Delta TransientResponse MeasTodVsRefToD CcsaPpsStatusRef PtpClockClassRef MeasTodVsRefPtp CcsaPpsStatusMeas PtpClockClassMeas TOD <*file*> is the full file path and name (must have a .csv extension).
Prerequisites	User must have write privileges for the file storage location.

Cat <MetricType> ExportFullTxt

Set	
Description	Exports the given metric trace full data to a .txt file.
Command	Cat <*MetricType*> ExportFullTxt <*file*>
Parameters	<*MetricType*> See **CAT ExportFullCsv** <*file*> The full file path and name (must have a .txt extension).
Prerequisites	User must have write privileges for the file storage location.

Cat <Type> Export

Set	
Description	Exports CAT data to a .csv or .cpw file.
Command	Cat <*type*> Export <*file*>
Parameters	<*type*> Determines the format of the exported data: • PDVBinary (option is not available when TIE data is loaded) • PDVCsv (option is not available when TIE data is loaded) • TIEBinary • TIECsv • ACTERNACsv • AGILENTCsv <*file*> is the full file path and name
Prerequisites	User must have write privileges for the file storage location.

Cat <MetricType> SingleView

Set	
Description	Sets the single view mode on the current metric from current selected port/slot.
Command	Cat <*MetricType*> SingleView
Parameters	<MetricType>*:* The metric being analysed. It must be one of: TIE MTIE TDEV CLKMAFE FFO PDV PKTTIE PKTMTIE PKTTDEV MATIE MAFE PKTFFO FPC FPR FPP PDD TIMEERROR TWOWAY_TE T1_TE T4_TE NoiseTransferGain_PTPtoPTP NoiseTransferGain_PTPto1PPS NoiseTransferGain_SYNCEtoPTP NoiseTransferGain_SYNCEto1PPS FILTEREDTIMEERROR RELATIVETIMEERROR AVERAGEDTE TWOWAY_ATE T1_ATE T4_ATE DTE DTETWOWAY(deprecated) DT1(deprecated) DT4(deprecated) DTEMTIE DTETDEV DTE_UNFILTERED DTEMTIE_UNFILTERED DTETDEV_UNFILTERED FWD_CF_ACCURACY FWD_LATENCY FWD_CF FWD_CF_DELTA REV_CF_ACCURACY REV_LATENCY REV_CF REV_CF_DELTA TWOWAY_CF_ACCURACY MEASURED_LINK_DELAY PEER_DELAY_TURNAROUND_TIME_ACTUAL PEER_DELAY_TURNAROUND_TIME_ACCURACY PEER_DELAY_TURNAROUND_TIME_DUT NRR_Accuracy NRR_Actual NRR_DUT CSRO_Delta TransientResponse MeasTodVsRefToD CcsaPpsStatusRef PtpClockClassRef MeasTodVsRefPtp CcsaPpsStatusMeas PtpClockClassMeas TOD LongTermJitterPkPk LongTermJitterRms ShortTermJitterPkPk WanderTransfer
Prerequisites	**Cat SelectSlotAndChannel** must already have been called. This command does not affect the display shown on the Graphical User Interface but changes the image that will be saved if you call **Cat SaveAsImage**

Cat CloseSingleView

This command is no longer supported.

Set	
Description	Closes Single View.
Command	Cat CloseSingleView TRUE
Prerequisites	Has no effect unless already in Single View. This command does not affect the display shown on the Graphical User Interface but changes the image that will be saved if you call **Cat SaveAsImage**

Cat ExportImageScale

Set	
Description	Sets the scale of the image saved using **Cat SaveAsImage**
Command	Cat ExportImageScale <*scale*>
Parameters	<*scale*> Small, Medium, Large
Get	
Description	Queries the scale setting.
Command	Cat ExportImageScale
Result	One of the scale values listed above.

Cat SaveAsImage

Set	
Description	Saves the current view as a .jpg or .png image.
Command	Cat SaveAsImage <*file*>
Parameters	<*file*> **Paragon-X**: The full file path and name (must have a .jpg or .png extension) on the local PC. **Paragon-neo, Paragon-100G**: The full file path and name (must have a .jpg or .png extension) on the instrument. Note that the user-writable storage is located at /home/Calnex/Calnex100G/ and so this must be included in the path.
Prerequisites	User must have write privileges for the file storage location. **Cat <MetricType> SelectSlotAndChannel** and **Cat <MetricType> SIngleView** must have been called prior to this command. **Cat ExportImageScale** can be used to set the resolution of the image.

Cat SaveAsPdf

Set	
Description	Saves the current view as a .pdf file.
Command	Cat SaveAsPdf <*file*>
Parameters	<*file*> **Paragon-X**: The full file path and name (must have a .pdf extension) on the local PC. **Paragon-neo, Paragon-100G**: The full file path and name (must have a .pdf extension) on the instrument. Note that the user-writable storage is located at /home/Calnex/Calnex100G/ and so this must be included in the path.
Prerequisites	User must have write privileges for the file storage location. **Cat <MetricType> SelectSlotAndChannel** and **Cat <MetricType> SIngleView** must have been called prior to this command.

Cat GenerateReport

Set		
Description	Generates a report from the current loaded data. The report can be generated with and without charts. The customizable fields in the report can be populated using the **Cat ReportField** command. The report will be saved to the directory specified.	
Command	Cat GenerateReport *<withCharts> <filePath>*	
Parameters	*<withCharts>*	Boolean. If TRUE, then the report will include charts; if FALSE, no charts will be included.
	<filePath>	The path where the generated report will be saved. Includes the filename of the report. For example, "*C:/Directory/report.pdf*". If *<filePath>* is not a full path (just the filename), then the location of the saved file depends on the instrument: **Paragon-X**: `C:\Users\<user>\Documents\Calnex\CAT\Reports` **Paragon-100G, Paragon-neo**: The current working directory You can include a page size as part of the filename when generating a pdf report. For example, "*C:/Directory/report.pdf (Letter)*" will generate a report named "report.pdf" with a 'Letter' page size of 215.9mm by 279.4mm. Sizes A4 and Letter are supported; A4 will be used if no size is specified.

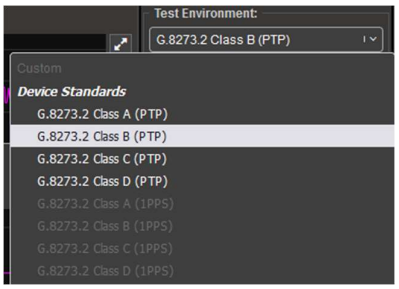
Cat ReportField

Set		
Description	Reports have several customisable fields. This command allows these fields to be populated.	
Command	Cat ReportField *<string>*	
Parameters	*<string>*	Formatted string that contains the field to be populated and the contents of that field. The format is "<fieldname[;<subFieldNumber>]:><fieldText>" For example: paragonset Cat ReportField "1588;1: Unicast" will set the second 1588 field to "Unicast" If a field has sub-fields, the field number must be specified. The field names and field numbers are: "Report Title" "Company" "Network Operator" "Report Description" "1588" (0,1,2) "User Name" "Frequency Reference Source" (0,1) "Test Location" "E1 or T1 Source" (0,1) "Device Under Test" (0,1) "Delay Req Description" "SyncE Source" (0,1) "Delay Req Physical Medium" "1pps Source" (0,1) "Delay Req Line Rate" "1588 Information" (0,1) "2Way Description" "Sync Description" "2Way Physical Medium" "Sync Line Rate" "2Way Line Rate" "Sync Physical Medium" For captures from a Paragon-neo or Sentinel instrument, the process for adding descriptions to Measurements is slightly different. For these instruments, the fieldname needs to be set as follows: “<Slot> Description;<MeasurementName>” An example command, to set the description for the Sync measurement from Paragon-neo, would be: paragonset Cat ReportField “PN_D Description;Sync:My description”

Test Environment Commands

When analyzing files, it is possible to load a Test Environment – that is, a set of analysis settings, limits and masks that correspond to the requirements of a specific standard. This section lists the commands to show what Test Environments are available, and how to set and query any active Test Environment.

This group of commands corresponds to the "Test Environment" selector on CAT:



Cat TestEnvironments

Get	
Description	Query a list of all available Test Environments, along with an indication of whether each Test Environment is usable at this time (i.e. In Context).
Command	Cat TestEnvironments
Result	A list of Test Environments will be returned. For each Test Environment, a set of three values is returned: • The category for this Test Environment • The name of this Test Environment • A Boolean (true/false) indicating whether this Test Environment can be selected just now (i.e. whether the Test Environment is *in context*) A Test Environment will be out of context if one or more types of capture file required for the Test Environment is not loaded. An example might be a Test Environment that requires a 1PPS capture, but you only have a PTP capture file loaded. In this case the Test Environment would have an InContext value of False.

Cat TestEnvironment

Set	
Description	Sets the Test Environment to use.
Command	Cat TestEnvironment <*value*>
Parameters	<*value*> The Test Environment to use.
Prerequisites	One or more capture files is loaded.
Get	
Description	Returns the currently active Test Environment
Command	Cat TestEnvironment
Result	The returned value will be either: • The name of the currently active Test Environment, *or* • "Custom" if there is no currently active Test Environment

Deprecated Commands

The following commands are not recommended for use with current versions of the CAT.

[Deprecated] Cat 1588Rtd

This command is no longer supported.

[Deprecated] Cat SelectPort

This command is no longer supported. Use **SelectSlotAndChannel**.

[Deprecated] Cat EnabledPort

This command is no longer supported.

[Deprecated] Cat SelectSlot

Use **SelectSlotAndChannel** command instead.

Set	
Description	Sets the slot for processing.
Command	Cat SelectSlot <*slot*>
Parameters	<*slot*> A string: T1, E1, 2M, 10M, Sync-E, 1PPS, Packet, Sync, Delay Req, Peer Delay, 2Way, , Rate Ratio, Jitter, ESMC, SClock12Way, SClock1Sync, SClock1DelayReq SClock22Way, SClock2Sync, SClock2DelayReq RTE2Way, 1PPSto2Way, 1PPStoSClock12Way, 1PPStoSClock22Way, RevSync It is not possible to load the same measurement type twice on the same slot. Note: Specifying a slot using a letter and/or index is deprecated.
Get	
Description	Returns the slot being processed.
Command	Cat SelectSlot
Prerequisites	Slot must have been previously set.
Result	The returned text will be a string which will be one of those listed above.

[Deprecated] Cat EnabledSlot

This command is no longer supported.

Set	
Description	Enables or disables the slot selected previously.
Command	Cat EnabledSlot <*enable*>
Parameters	<*enable*> is a Boolean which enables (TRUE) or disables (FALSE) the slot.
Prerequisites	Port must have been selected previously by the **SelectSlot** command.
Get	
Description	Returns whether a slot is enabled.
Command	Cat EnabledSlot
Result	The returned text will be a Boolean that indicates if a slot is enabled (TRUE) or disabled (FALSE).

[Deprecated] Cat <MetricType> SelectTab

This command is no longer supported.

Set				
Description	Sets the active tab on the CAT GUI.			
Command	Cat <*MetricType*> SelectTab			
Parameters	<*MetricType*>	The metric being analysed. This must be one of:		
		TIE	PKTTIE	
		MTIE	PKTMTIE	
		TDEV	PKTTDEV	
		MATIE	MAFE	CLKMAFE
		FFO	PKTFFO	
		FPC	FPR	FPP
		PDD		
		TIMEERROR	AVERAGEDTE	DTE
		RATERATIO	TransientResponse	
		Jitter	WanderTransfer	
Prerequisites	**Cat SelectSlot** and **Cat <Metric Type> Enable** or **Cat <Metric Type> AllEnable** must have been called prior to this command being issued.			

[Deprecated] Cat Stacked

This command is no longer supported.

Set	
Description	Enables or disables stacked mode.
Command	Cat Stacked <*enable*>
Parameters	<*enable*> is a Boolean which turns on stacked mode (TRUE) or disables it (FALSE).
Set	
Description	Returns whether stacked mode is enabled or disabled.
Command	Cat Stacked
Result	The returned text will be a Boolean that indicates if stacked mode is enabled (TRUE) or disabled (FALSE).

[Deprecated] Cat Fit

This command is no longer supported.

Set	
Description	Enables or disables the adjustment mode to fit charts into GUI window.
Command	Cat Fit <*enable*>
Parameters	<*enable*> is a Boolean which turns on fit mode (TRUE) or disables it (FALSE).
Prerequisites	Command is only available when the CAT is in Stacked mode.
Result	No result is expected.
Get	
Description	Returns whether Fit mode is enabled or disabled.
Command	Cat Fit
Prerequisites	Command is only available when the CAT is in Stacked mode.
Result	The returned text will be a Boolean that indicates if Fit mode is enabled (TRUE) or disabled (FALSE).

[Deprecated] Cat Coupled

This command is no longer supported.

Set	
Description	Couples the masks used in the CAT.
Command	Cat Coupled <*enable*>
Parameters	<*enable*> is a Boolean which turns on coupled mode (TRUE) or disables it (FALSE).
Prerequisites	Command is only available when the CAT is in Stacked mode.
Get	
Description	Returns whether Coupled mode is enabled or disabled.
Command	Cat Coupled
Prerequisites	Command is only available when the CAT is in Stacked mode.
Result	The returned text will be a Boolean that indicates if Coupled mode is enabled (TRUE) or disabled (FALSE).

[Deprecated] Cat AVERAGEDTE Filtering

This command is no longer supported.

Set	
Description	Sets the Time Error filtering method.
Command	Cat AVERAGEDTE Filtering <*value*>
Parameters	<*value*> NONE, 0.1HZ_FILTERING <*value*> is the filtering method. It must be one of: NONE or 0.1HZ_FILTERING
Get	
Description	Retrieves the Time Error filtering method.
Command	Cat AVERAGEDTE Filtering
Result	The returned text is the current filtering method. It will be one of the values listed above.

[Deprecated] Cat <MetricType> AllEnable

This command is no longer supported.

[Deprecated] Cat PKTFFO N

This command is no longer supported, the command **Cat PKTFFO AveragingTime** should be used instead.

Set	
Description	Sets the custom $N\tau_0$ used for the PKTFFO metric calculation. **(Obsolete, command will no longer be supported from version 31 onwards, please use the command 'Cat PKTFFO AveragingTime' instead)**
Command	Cat PKTFFO N <*value*>
Parameters	<*value*> The $N\tau_0$ used for the metric calculations. It must be an integer with a minimum setting of 2.
Prerequisites	**Cat PKTFFO Clock** must be set to Custom.
Get	
Description	Retrieve the custom $N\tau_0$ for the PKTFFO metric.
Command	Cat PKTFFO N
Prerequisites	**Cat PKTFFO Clock** must be set to Custom.
Result	The returned value is an integral $N\tau_0$ used for the metric calculations.

Set				
Description	Enables or disables all metric by type on all ports / slots			
Command	Cat <*MetricType*> AllEnable <*enable*>			
Parameters	<*MetricType*>	The metric to enable/disable. It must be one of:		
		TIE	PDV	REV_CF_ACCURACY
		PKTTIE	AVERAGEDTE	REV_LATENCY
		MTIE	TIMEERROR	REV_CF
		PKTMTIE	T1_TE	REV_CF_DELTA
		TDEV	T1_ATE	TWOWAY_TE
		PKTTDEV	FWD_CF_ACCURACY	TWOWAY_ATE
		MATIE	FWD_LATENCY	TWOWAY_CF_ACCURACY
		MAFE	FWD_CF	DT1(deprecated)
		CLKMAFE	PDD	DT4(deprecated)
		FFO	FWD_CF_DELTA	DTETWOWAY(deprecated)
		PKTFFO	T4_TE	DTE
		FPC	T4_ATE	DTEMTIE
		FPR	MEASURED_LINK_DELAY	DTETDEV
		FPP	TransientResponse	WanderTransfer
		PEER_DELAY_TURNAROUND_TIME_ACTUAL		
		PEER_DELAY_TURNAROUND_TIME_ACCURACY		
		PEER_DELAY_TURNAROUND_TIME_DUT		
	<*enable*>	is Boolean. TRUE will enable the metric, FALSE will disable it.		
Get				
Description	Returns whether a specified metric is currently enabled.			
Command	Cat <*MetricType*> AllEnable			
Result	The returned text will be the TRUE if the specified metric is enabled, FALSE otherwise.			

[Deprecated] Cat <*metric*> MaskResult

This command is no longer supported.

This query now returns '1' for a pass rather than 'Pass'. This change is for consistency with other return values.

[Deprecated] Cat PrintChart

This command is no longer supported.

Set	
Description	Prints the current chart to the default printer.
Command	Cat PrintChart

Command List Index

Click on a link to display information about a command.

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