Calnex Diagnostic Utility (CxDiag) Getting Started Guide

Diagnostic Utility for Paragon-neo and Paragon-100G

This Getting Started Guide describes how to use the Calnex Diagnostic Utility to gather useful diagnostic information from your Paragon-neo or Paragon-100G.

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1 Introduction

When issues arise in the the use of Paragon-neo or Paragon-100G, Calnex Application Experts often require further information in order to help diagnose the problem.

In addition, some issues arise in the use of various optical modules which can be difficult to investigate.

The *CxDiag* utility allows you to gather diagnostic information from your instrument that can then be provided to Calnex Application Experts when required.

CxDiag Overview

The features supported by *CxDiag* are:

- Downloads session (capture) files and log files from the instrument
- A pcap file can be generated from a downloaded PTP session
- Collects basic instrument information
- Implements a limited all-packet capture facility
- Reads and exports optical module register contents
- Monitors the performance of active ports and optical modules (e.g. RxPower, BIP errors)
- Allows for reading and writing of individual optical module registers

Note: *CxDiag* makes use of unpublished interfaces to the Paragon-neo and Paragon-100G. These interfaces are intended for use by Calnex (or by Calnex scripts) only. No part of the *CxDiag* script should be incorporated into another test script without the explicit, written consent of Calnex Solutions. Any attempt to use the unpublished interfaces may result in your instrument or optical module becoming inoperable.

System Requirements

CxDiag must be run on a Windows-based PC that can connect to your Paragon-neo or Paragon-100G.

Running *CxDiag* requires Tcl version 8.6 or higher, or Tcl 8.5.8.1 with OO extensions installed.

In addition, the *REST* Tcl library (version 1.0.1 or later) is required.

Installation

CxDiag and associated files are delivered as a zip file.The contents of the zip file should be extracted to a folder of your choice. No further installation is required.

2 Using *CxDiag*

Running *CxDiag*

From File Explorer

Navigate to the location where *CxDiag* has been installed. Double-click the `CxDiag.tcl` file.

Note: This will work only if the default file associations have not been changed since Tcl was installed. If this does not work, then run the script from the command line.

From the Command Line

Run ***cmd.exe*** to launch a shell. Change the working directory (*cd*) to the location where *CxDiag* has been installed.

CxDiag should now be run by launching a Tcl shell with `CxDiag.tcl` as an argument. An example is shown below:

```
tclsh CxDiag.tcl
```

File Locations and Data

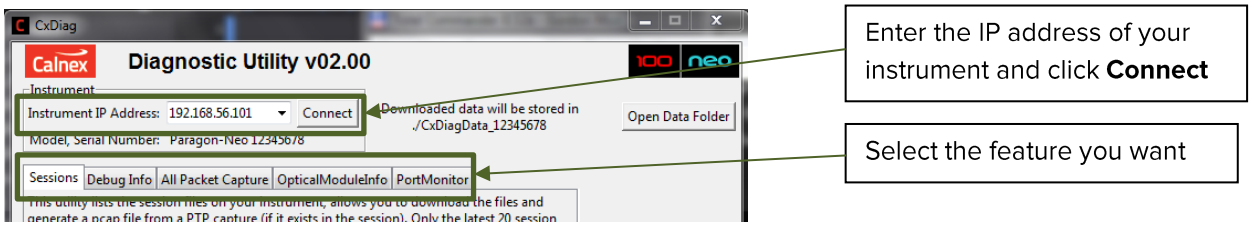
All diagnostic data will be stored in the *CxDiag* installation folder. The folder is named:

```
CxDiagData_<InstrumentSerialNumber>
```

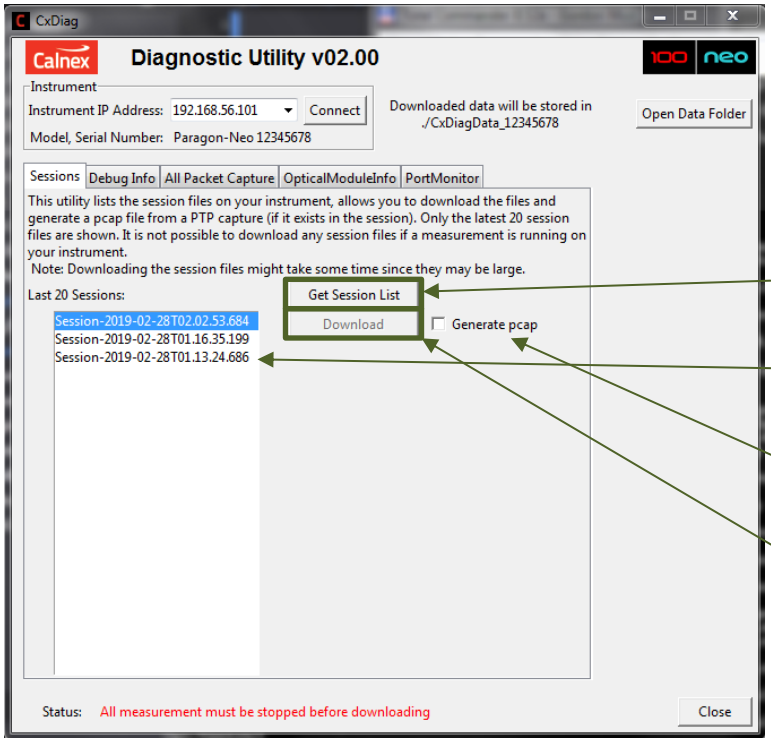
The entire folder should be zipped up and provided to Calnex Application Experts

The *CxDiag* UI

Each major feature has a separate tab on the UI.



Sessions



Click **Get Session List**

Select the Session folder you want to download

Select to generate a pcap file after downloading

Click **Download** to download the selected Session folder

The **Sessions** tab allows you to download a specific session folder from your instrument. Only the 20 most recent Sessions are available for download.

If measurements are currently running on your instrument, it is not possible to download; you must stop all measurements first.

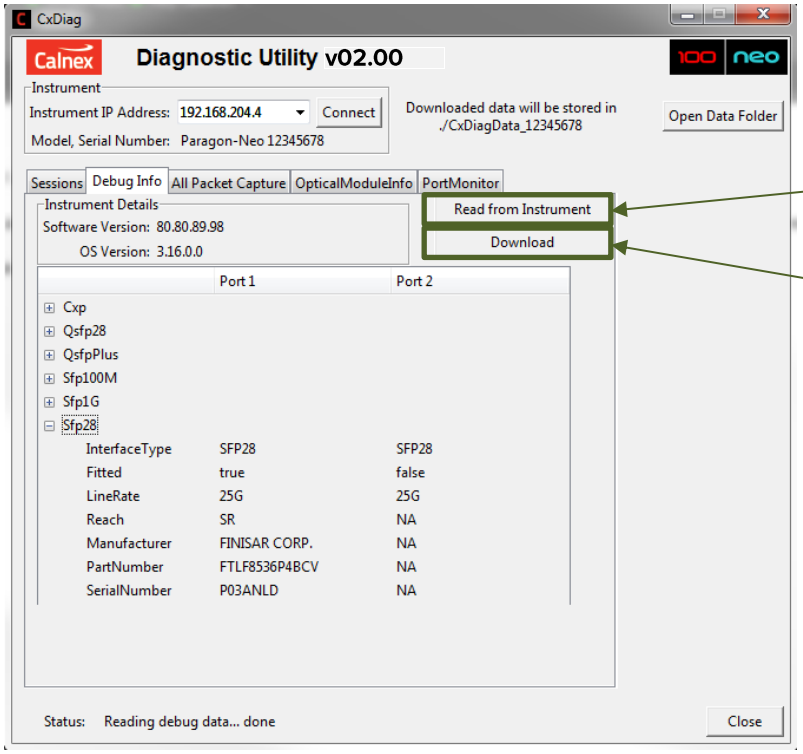
The instrument logs are also downloaded along with the selected Session.

If **Generate pcap** is selected, then a pcap file will be generated from any PTP capture in the downloaded Session.

Notes:

1. Reading the Session list and downloading the files from the instrument may take some time
2. Downloading session folders and logs is usually possible using File Explorer. This uses Samba to establish a connection with the instrument. In some situations, Samba may be blocked by IT policy. The *CxDiag* utility does not use Samba to download files but HTTP. This means that if you can connect to the instrument using your browser, *CxDiag* will be able to download session folders

Debug Info



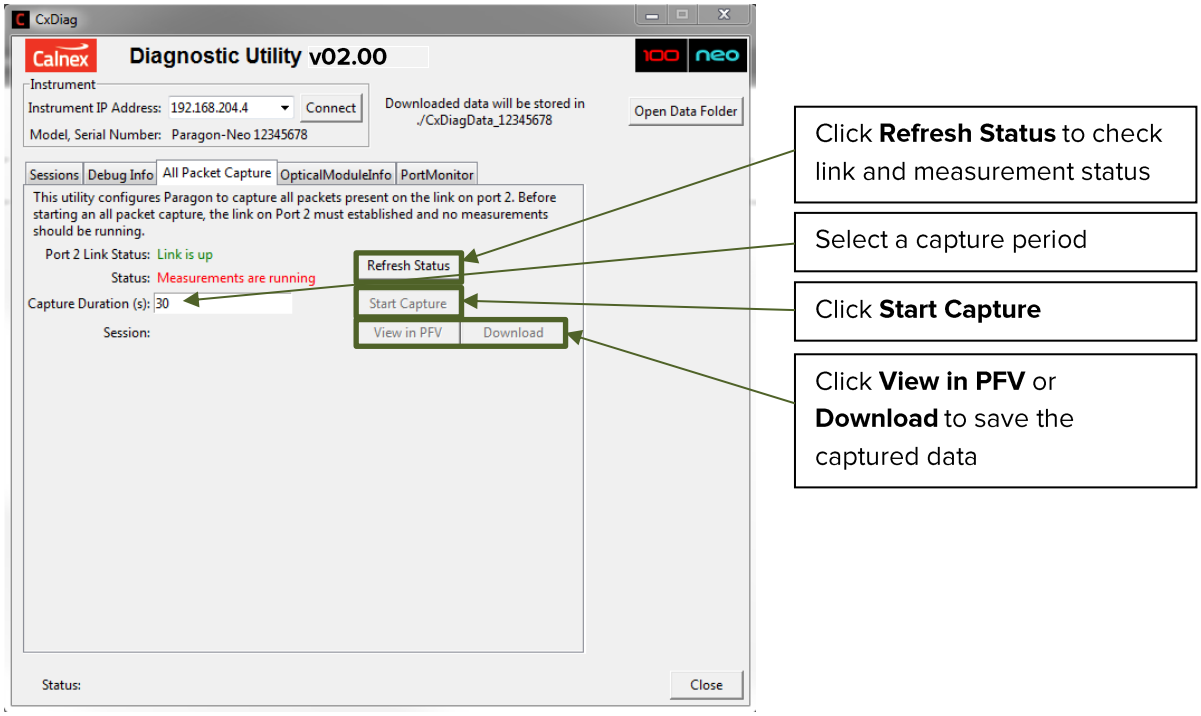
Click **Read from Instrument** to get the instrument details

Click **Download** to generate the Debug Info file

The **Debug Info** tab allows you to see the version numbers of the instrument as well as details of any optical modules inserted in either port of your instrument.

Clicking **Download** generates a text file (debugInfo_<date>.txt) containing debug information that is useful in diagnosing issues. This will also download the log files from the instrument (and this make take some time).

All Packet Capture

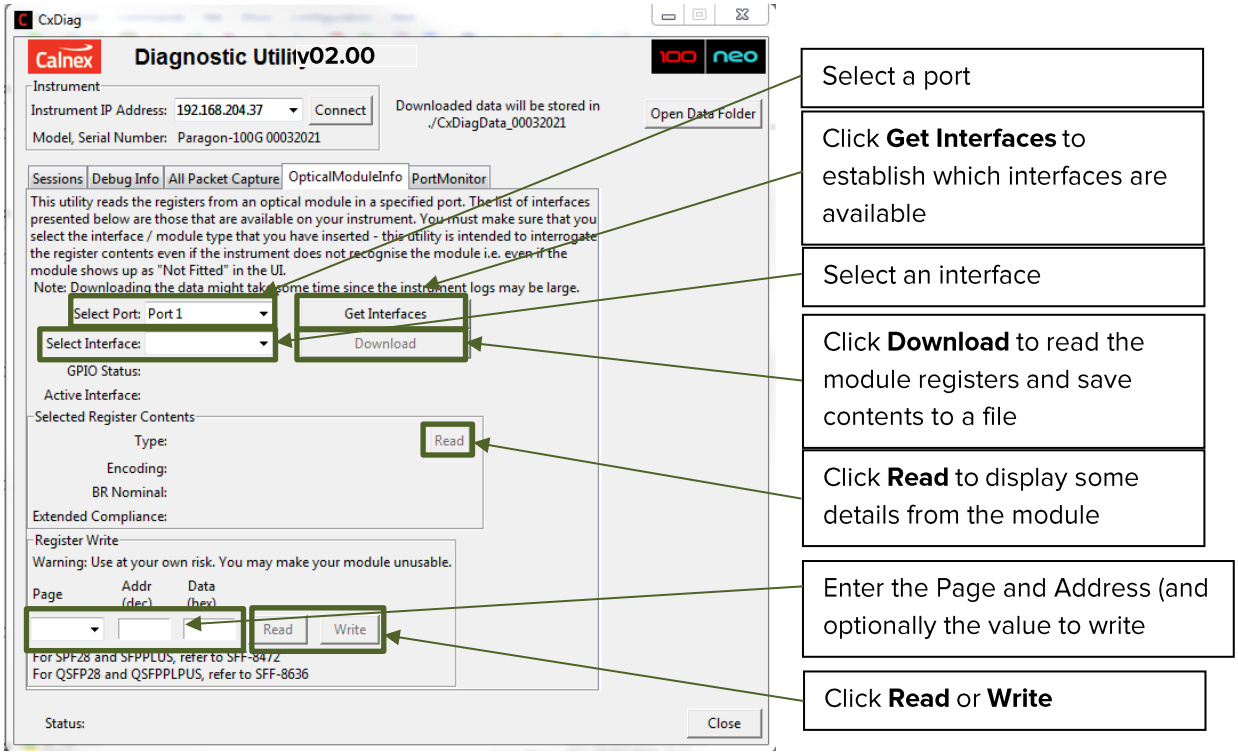


In normal use, Paragon-neo and Paragon-100G apply a filter to the packets being captured. In some circumstances, it is useful to see all the packets being received by the instrument. The **All Packet Capture** tab disables the instrument filter and then performs a capture for the specified duration. The resulting capture can then be viewed in PFV or the Session folder can be downloaded to the local PC for analysis using stand-alone versions of the CAT or PFV

Notes:

1. The instrument filter will be re-enabled when any subsequent measurements are performed.
2. All measurement must be stopped before an all packet capture can be started.
3. After performaing an all packet capture, the **Sessions** tab can be used to download the Session folder and also generate a pcap file.

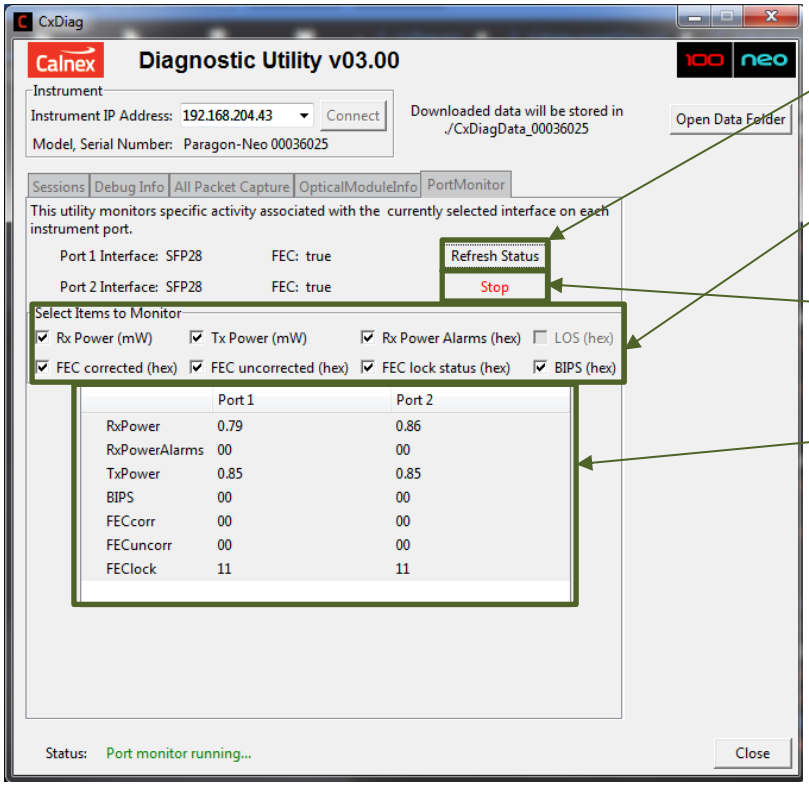
Optical Module Info



Notes:

1. Writing optical module registers may make them inoperable in Paragon. If any issues arise, then the optical module should be removed and re-inserted.
2. Register contents can only be read from some interfaces.

Port Monitor



Click **Refresh Status** to establish which interfaces are selected

Select the items to monitor

Click **Start** to begin moitoring; click **Stop** to stop monitoring

Values for the selected items are displayed and periodically updated.

The **Port Monitor** tab allows a number of items associated with the port / interface to be continuously monitored. The results are written to a file (portMonitor_<date>.csv).

Notes:

1. Some interfaces do not support all monitor items.
2. RxPowerAlarms is a bitfield with each bit indicating a low or high power alarm or warning. The contents of the field is defined by the appropriate SFF document. In general, the first reading of this field may be non-zero; thereafter, there should be no wanrings or alarms – in other words, if this field shows non-zero after the first reading, this would indicate a problem with Rx power.
3. The BIP counter is cleared on read. In other words, if this field consistently shows a non-zero value, it indicates a problem with the Rx on the associated port.
4. The FECcorr counter (errors corrected by the FEC) is continuous. If this counter increases over time, then this indicates that there are errors on the link but these are being corrected by the FEC. Note: this counter is only meaningful when FEC is enabled.
5. The FECuncorr counter (errors that could not be corrected by the FEC) is continuous. If this counter increases over time, it indicates a problem with the Rx on the associated port.
6. FEClock indicates whether FEC lock is being achieved. For 100G interfaces, the bottom four bits indicate whether lock has been achieved on each lane; for 25G interfaces, the bottom bit indicates lock.

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