

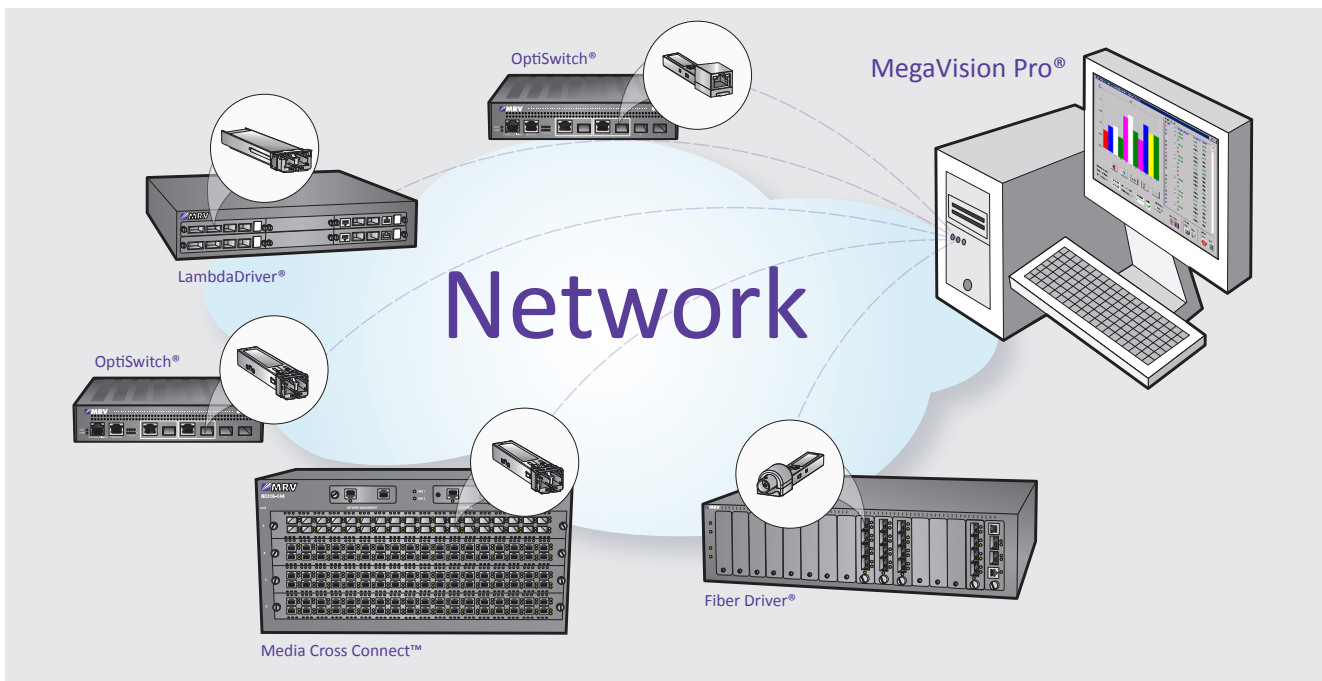
# Network-Wide Pluggable Management

## Introduction

MRV Optical Communications Systems carrier Ethernet and optical transport platforms support a wide range of pluggable optical interfaces (SFP, SFP+, XFP). MegaVision Pro™, MRV's feature-rich Network Management System (NMS) and Graphical User Interface (GUI), uses SNMP and other management protocols to manage the four product families: OptiSwitch®, LambdaDriver®, FiberDriver®, and Media Cross Connect™. This paper discusses network-wide management of pluggable transceivers in all MRV network devices.

The host system can read information from pluggable transceivers including vendor name, part number, serial number, wavelength, and optional digital diagnostic information such as transmit power, receive power, and temperature. Easily readable and searchable information about all pluggable interfaces in the network is important for the network manager to view for equipment inventory, network monitoring, and troubleshooting. Network-wide reporting supports efficient management of pluggable transceivers, even when the network includes hundreds or thousands of them.

## Network-Wide Pluggable Management



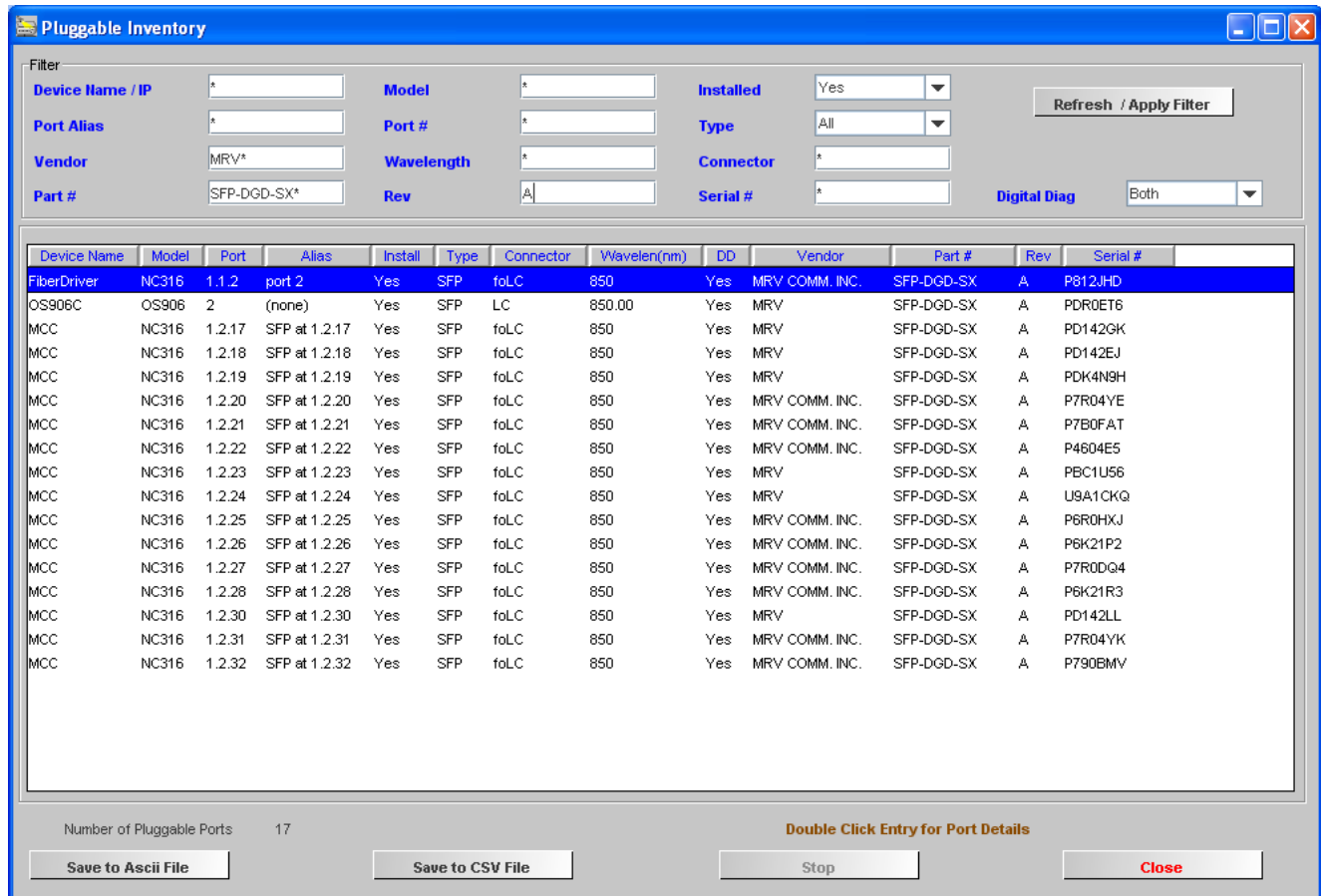
## Supported Devices

- OptiSwitch
- LambdaDriver
- FiberDriver
- Media Cross Connect

## Application Note

### Pluggable Inventory

MegaVision Pro’s Pluggable Inventory queries every MRV device that it manages, and it displays all pluggables in an easy to read table. It provides many filters to the user to quickly find a specific pluggable or group of pluggables. MegaVision Pro reports can display the location of the pluggables by device name or by port number, along with the unique serial number and other available information. For example, a user may want to list all pluggables in the network based on a part number and a revision. These reports can assist both network engineers and asset accountants.



**Pluggable Inventory**

Filter

Device Name / IP: \*    Model: \*    Installed: Yes

Port Alias: \*    Port #: \*    Type: All

Vendor: MRV\*    Wavelength: \*    Connector: \*

Part #: SFP-DGD-SX\*    Rev: A    Serial #: \*    Digital Diag: Both

Refresh / Apply Filter

Device Name	Model	Port	Alias	Install	Type	Connector	Wavelen(nm)	DD	Vendor	Part #	Rev	Serial #
FiberDriver	NC316	1.1.2	port 2	Yes	SFP	toLC	850.00	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P812JHD
OS906C	OS906	2	(none)	Yes	SFP	LC	850.00	Yes	MRV	SFP-DGD-SX	A	PDR0ET6
MCC	NC316	1.2.17	SFP at 1.2.17	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PD142GK
MCC	NC316	1.2.18	SFP at 1.2.18	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PD142EJ
MCC	NC316	1.2.19	SFP at 1.2.19	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PDK4N9H
MCC	NC316	1.2.20	SFP at 1.2.20	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7R04YE
MCC	NC316	1.2.21	SFP at 1.2.21	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7B0FAT
MCC	NC316	1.2.22	SFP at 1.2.22	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P4604E5
MCC	NC316	1.2.23	SFP at 1.2.23	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PEC1U56
MCC	NC316	1.2.24	SFP at 1.2.24	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	U9A1CKQ
MCC	NC316	1.2.25	SFP at 1.2.25	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P6R0HXJ
MCC	NC316	1.2.26	SFP at 1.2.26	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P6K21P2
MCC	NC316	1.2.27	SFP at 1.2.27	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7R0DQ4
MCC	NC316	1.2.28	SFP at 1.2.28	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P6K21R3
MCC	NC316	1.2.30	SFP at 1.2.30	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PD142LL
MCC	NC316	1.2.31	SFP at 1.2.31	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7R04YK
MCC	NC316	1.2.32	SFP at 1.2.32	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P790BMV

Number of Pluggable Ports: 17

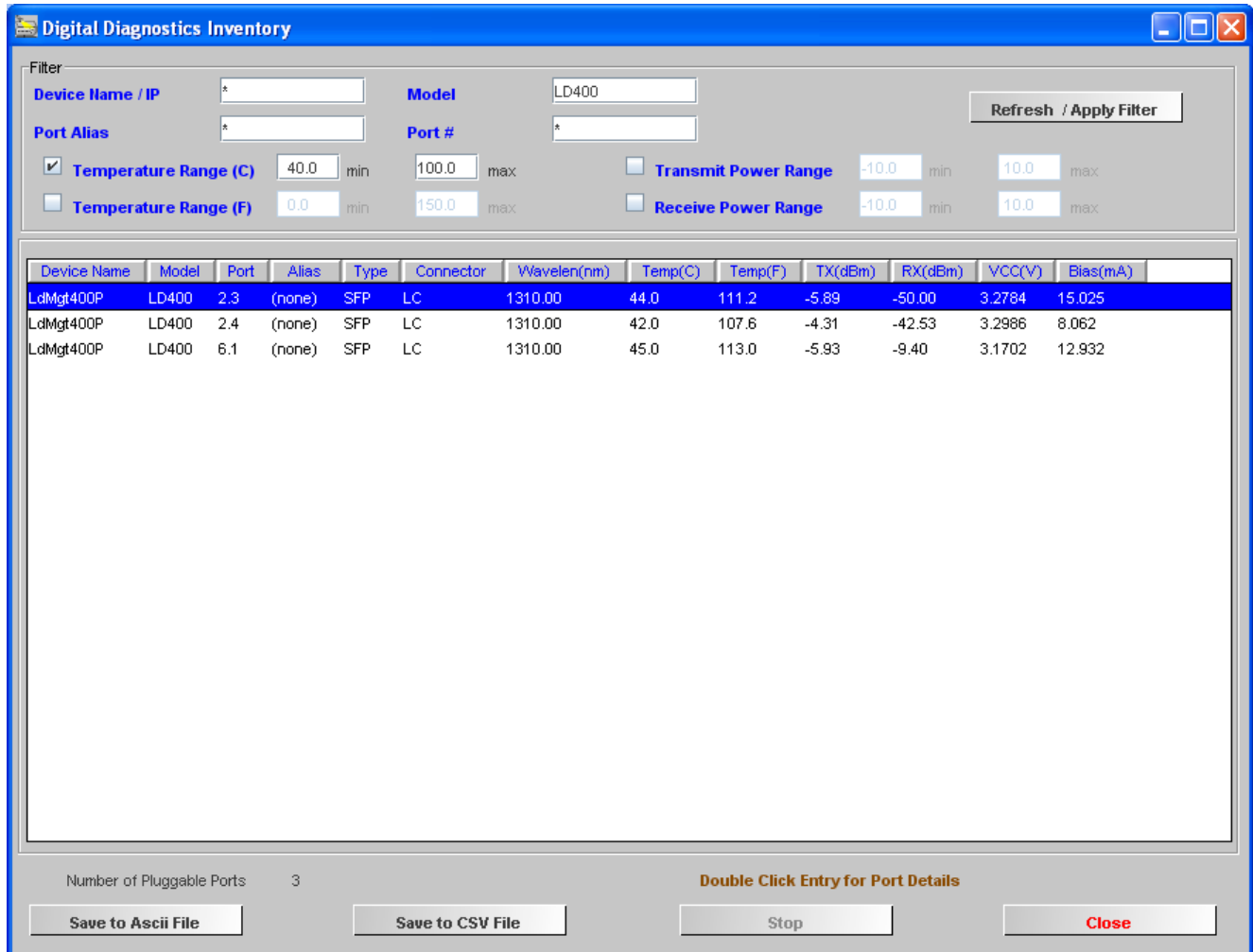
Double Click Entry for Port Details

Save to Ascii File    Save to CSV File    Stop    Close

## Application Note

### Digital Diagnostics Inventory

Digital Diagnostics data read from pluggables is valuable information for a network engineer when troubleshooting or anticipating problems in an optical network. MegaVision Pro's Digital Diagnostics Inventory solicits all pluggables to read the current diagnostic data for each port. The report can be filtered to find specific ports or groups of ports. Filtering can also be done based on ranges of transmit power, receive power, or temperature.



Filter

Device Name / IP: \*  
 Port Alias: \*  
 Model: LD400  
 Port #: \*

Temperature Range (C) 40.0 min 100.0 max  
 Temperature Range (F) 0.0 min 150.0 max  
 Transmit Power Range -10.0 min 10.0 max  
 Receive Power Range -10.0 min 10.0 max

Refresh / Apply Filter

Device Name	Model	Port	Alias	Type	Connector	Wavelen(nm)	Temp(C)	Temp(F)	TX(dBm)	RX(dBm)	VCC(V)	Bias(mA)
LdMgt400P	LD400	2.3	(none)	SFP	LC	1310.00	44.0	111.2	-5.89	-50.00	3.2784	15.025
LdMgt400P	LD400	2.4	(none)	SFP	LC	1310.00	42.0	107.6	-4.31	-42.53	3.2986	8.062
LdMgt400P	LD400	6.1	(none)	SFP	LC	1310.00	45.0	113.0	-5.93	-9.40	3.1702	12.932

Number of Pluggable Ports: 3

Double Click Entry for Port Details

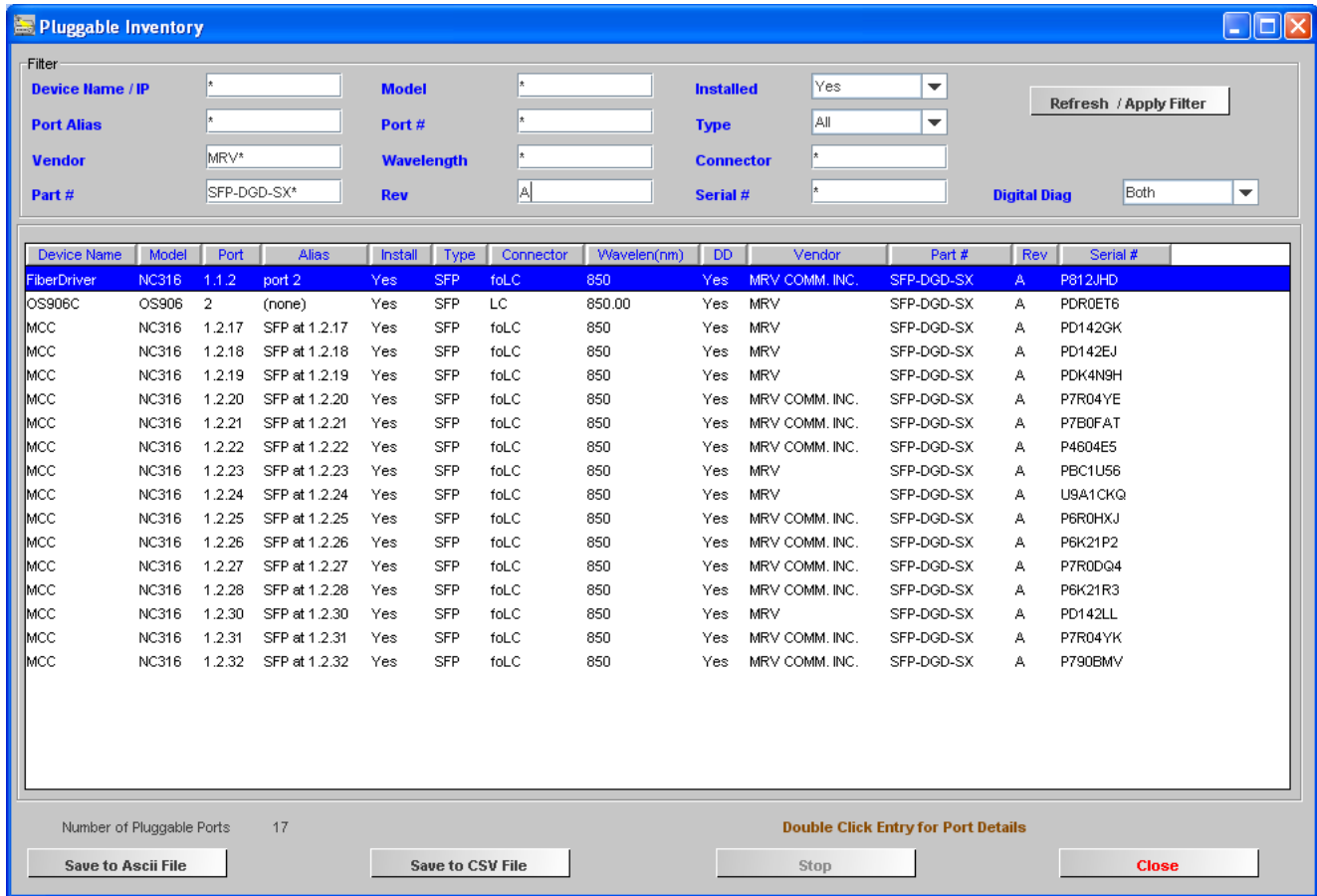
Save to Ascii File Save to CSV File Stop Close

## Application Note

### Monitoring and Alarm Thresholds

MegaVision Pro can be configured to periodically monitor digital diagnostic readings on all ports or groups of ports. It can check the readings against pre-configured thresholds or log them to an SQL database. MegaVision Pro can also send threshold messages through email for more administrative flexibility.

Alarm thresholds can be set for each port to alert a network manager of problematic conditions. For example, if receive power falls below -10.0 dBm, MegaVision Pro can log an alarm continually for each reading that falls below the threshold or only when it passes the threshold. It can also use the alarms correlation feature to clear the alarm condition when the receive power returns to above the threshold.



**Pluggable Inventory**

Filter:

Device Name / IP: \*    Model: \*    Installed: Yes    Refresh / Apply Filter

Port Alias: \*    Port #: \*    Type: All

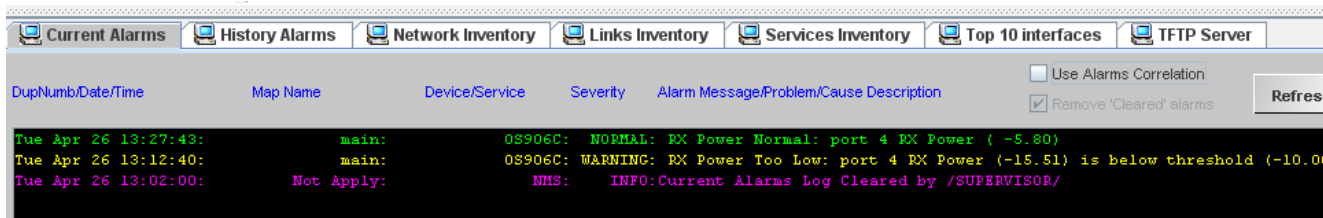
Vendor: MRV\*    Wavelength: \*    Connector: \*

Part #: SFP-DGD-SX\*    Rev: A    Serial #: \*    Digital Diag: Both

Device Name	Model	Port	Alias	Install	Type	Connector	Wavelen(nm)	DD	Vendor	Part #	Rev	Serial #
FiberDriver	NC316	1.1.2	port 2	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P812JHD
OS906C	OS906	2	(none)	Yes	SFP	LC	850.00	Yes	MRV	SFP-DGD-SX	A	PDR0ET6
MCC	NC316	1.2.17	SFP at 1.2.17	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PD142GK
MCC	NC316	1.2.18	SFP at 1.2.18	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PD142EJ
MCC	NC316	1.2.19	SFP at 1.2.19	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PK4N9H
MCC	NC316	1.2.20	SFP at 1.2.20	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7R04YE
MCC	NC316	1.2.21	SFP at 1.2.21	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7B0FAT
MCC	NC316	1.2.22	SFP at 1.2.22	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P4604E5
MCC	NC316	1.2.23	SFP at 1.2.23	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PEC1U56
MCC	NC316	1.2.24	SFP at 1.2.24	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	U8A1CKQ
MCC	NC316	1.2.25	SFP at 1.2.25	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P6R0HXJ
MCC	NC316	1.2.26	SFP at 1.2.26	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P6K21P2
MCC	NC316	1.2.27	SFP at 1.2.27	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7R0DQ4
MCC	NC316	1.2.28	SFP at 1.2.28	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P6K21R3
MCC	NC316	1.2.30	SFP at 1.2.30	Yes	SFP	toLC	850	Yes	MRV	SFP-DGD-SX	A	PD142LL
MCC	NC316	1.2.31	SFP at 1.2.31	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P7R04YK
MCC	NC316	1.2.32	SFP at 1.2.32	Yes	SFP	toLC	850	Yes	MRV COMM. INC.	SFP-DGD-SX	A	P790BMV

Number of Pluggable Ports: 17    Double Click Entry for Port Details

Buttons: Save to Ascii File, Save to CSV File, Stop, Close



**Current Alarms**    History Alarms    Network Inventory    Links Inventory    Services Inventory    Top 10 interfaces    TFTP Server

Use Alarms Correlation    Remove 'Cleared' alarms    Refresh

DupNumb/Date/Time	Map Name	Device/Service	Severity	Alarm Message/Problem/Cause Description
Tue Apr 26 13:27:43:	main:	OS906C:	NORMAL:	RX Power Normal: port 4 RX Power (-5.80)
Tue Apr 26 13:12:40:	main:	OS906C:	WARNING:	RX Power Too Low: port 4 RX Power (-15.51) is below threshold (-10.00)
Tue Apr 26 13:02:00:	Not Apply:	NMS:	INFO:	Current Alarms Log Cleared by /SUPERVISOR/

## Application Note

Saving diagnostic readings to a database allows MegaVision to use the information for later historical analysis (e.g. readings over the last 30 days). With the easy-to-use MegaVision Pro GUI, a network manager can search the database for a particular port and see diagnostic readings such as receive power for a time interval. MegaVision Pro displays results in either a table or in a graph. This data may be saved to CSV text files or archived with an optional FTP/SFTP upload for further use or electronic report processing.

**Digital Diagnostics Database Search**

Map / Device / Port

Refresh Ports

- main
  - LdMgt400P 192.168.8.180
  - FiberDriver 192.168.14.175
    - 1.1.2, port 2
      - 1.12.4, SFP at 1.12.4
      - 1.16.1, XFP at 1.16.1
      - 1.16.2, XFP at 1.16.2
  - OS906C 192.168.8.181
  - MCC 192.168.14.54

Pluggable

Refresh Pluggables

- MRV
  - MRV COMM. INC.
    - SFP-GD-LX
    - SFP-GD-ELX
    - SFP-GD-BX34
    - SFP-GDCWZX-61
    - unknown part type
    - SFP-GD-BX43
  - MRV COMM. INC.
    - SFP-DGD-SX

Search Filter

Time Range Last Day

Month Day Hour Minute Year

Start APRIL 25 18 27 2011

End APRIL 26 18 27 2011

Map: main

Device: FiberDriver

Port: 1.1.2  All Ports

Vendor: All  All Pluggables

Part Number: All

SQL

Database Type: MySQL

Database Size: 262.1 KBytes

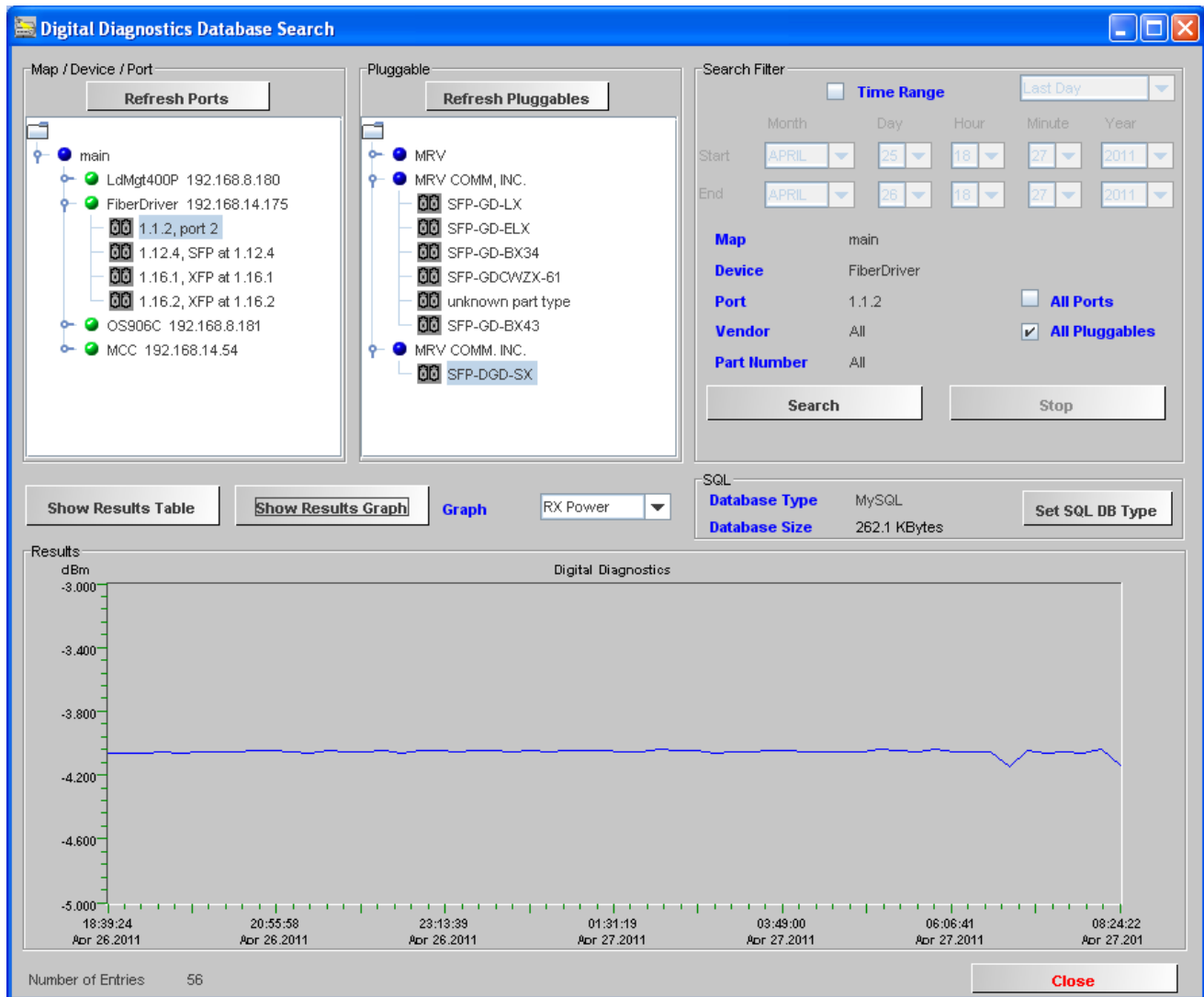
**Graph** RX Power

Results

Time	Device	Port	TX Power	RX Power	Temp	Wavelen	Vendor	Part Number	Serial Number
Tue Apr 26 18:39:24 2011	FiberDriver	1.1.2	-6.55	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 18:54:22 2011	FiberDriver	1.1.2	-6.55	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 19:09:22 2011	FiberDriver	1.1.2	-6.62	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 19:24:22 2011	FiberDriver	1.1.2	-6.63	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 19:39:22 2011	FiberDriver	1.1.2	-6.62	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 19:54:22 2011	FiberDriver	1.1.2	-6.63	-4.05	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 20:09:22 2011	FiberDriver	1.1.2	-6.62	-4.05	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 20:24:22 2011	FiberDriver	1.1.2	-6.62	-4.05	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 20:39:22 2011	FiberDriver	1.1.2	-6.64	-4.05	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 20:54:22 2011	FiberDriver	1.1.2	-6.62	-4.04	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 21:09:23 2011	FiberDriver	1.1.2	-6.63	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD
Tue Apr 26 21:24:23 2011	FiberDriver	1.1.2	-6.64	-4.06	49.0	850.000	MRV COMM. INC.	SFP-DGD-SX	P812JHD

Number of Entries: 56

## Application Note



MRV has more than 50 offices throughout the world. Addresses, phone numbers and fax numbers are listed at [www.mrv.com](http://www.mrv.com). Please e-mail us at [info@mrv.com](mailto:info@mrv.com) or call us for assistance.

MRV Los Angeles  
20415 Nordhoff Street  
Chatsworth, CA 91311  
800-338-5316  
818-773-0900

MRV Boston  
300 Apollo Drive  
Chelmsford, MA 01824  
800-338-5316  
978-674-6800

MRV International  
Business Park Moerfelden  
Waldeckerstrasse 13  
64546 Moerfelden-Walldorf  
Germany  
Tel. (49) 6105/2070  
Fax (49) 6105/207-100

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