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SFP Optical Transceiver Inventory and Monitoring using NC-SI

Abstract

iDRAC monitor SFP optical transceivers that are plugged into the SFP port of a network device. All SFP optical transceivers are hot pluggable and provide fiber connectivity to the network hardware. SFPs support high-speed connectivity and extended cable lengths.

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Revisions

Date	Description
January 20, 2020	Initial release

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Executive summary

iDRAC inventories and monitors SFP optical transceivers and delivers diagnostic information on the device to the user across iDRAC interfaces.

A transceiver plugs into the SFP (Small Form-factor Pluggable) port of a network device on one end and connects to Fiber Channel/Gigabit Ethernet (GbE) optical fiber cables on the other end. The SFF-8472 specification details the communication protocol between the network device and the optical transceiver using a 2-wire interface and diagnostic information from the SFP. iDRAC retrieves the diagnostic information from the network device using NC-SI commands.

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1 SFP optical transceiver inventory and monitoring using NC-SI

This document provides information on iDRAC inventory and monitoring of supported SFP optical transceivers that are already plugged into network device SFP ports. SFP transceiver data is shared across all iDRAC user interfaces.

SFF-8472 specification defines SFP transceiver diagnostic information which contains manufacture and sensor information.

1.1 Diagnostic information

The following information related to SFP transceivers is available on iDRAC user interfaces.

Table 1   Inventory data

Manufacturer information	Description
Vendor Name	SFP Vendor Name
Vendor Part Number	Part Number provided by the SFP vendor
Vendor Revision	Revision level for part number provided by vendor
Vendor Serial Number	Serial number provided by vendor
Device Identifier/Type Info	Type of transceiver Supported SFP device identifier types are SFP, SFP+, SFP28, SFP-DD, QSFP, QSFP+, QSFP28, QSFP-DD, and Base-T

Table 2   Monitor data

Data type	Description
Temp High Alarm Threshold	Set when internal temperature exceeds high alarm level
Temp High Warning Threshold	Set when internal temperature exceeds high warning level
Temperature Value	Internally measured module temperature
Vcc Voltage Value	Internally measured supply voltage in transceiver
TX Bias Current Value	Internally measured TX Bias Current
TX Output Power Value	Internally measured TX output power
RX Input Power Value	Internally measured RX input power

The SFP transceivers that support digital diagnostic monitoring (DDM) function and digital optical monitoring (DOM) function provide the above information.

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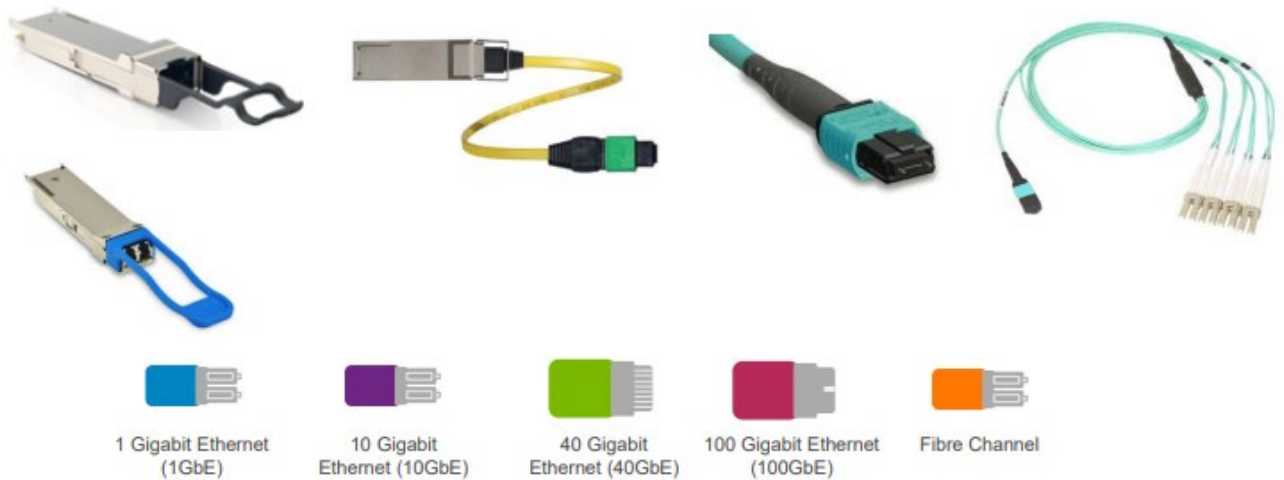Figure 1   Types of SFP transceivers

Figure 2   Types of media

1.2 Configuration and deployment

The following section provides validated configuration and deployment platform information.

1.2.1 Validated configurations:

- iDRAC release version 4.00.00.00 or higher
- Supported SFP transceiver part numbers:

WTRD1	60F4J	MT7R2	9X8JP	FN4FC
C5RNH	F8N24	K0T7R	3YWG7	6FMR5
N8TDR	68X15	W5G04	5CMT2	J7K20
RN84N	KFC5Y	P4YPY	RCVP5	N3K9W
0PJ94	9GCCD	TCPM2	X5DH4	WG8C4
XK1M7	693C5	JNPF8	26FN3	
8T47V	CDRRK	27GG5	YFNDD	
XTY28	T16JY	P8T4W	7R9N9	
PGYJT	3G84K	K585N	8R4VM	
P7D7R	C4D08	J564N	7VN5T	
HHHHC	5CN56	H603N	D9YM8	
M14MK	V250M	H606N	NWGTV	
0YR96	5CWK6	K591N	V492M	
W4GPP	53HVN	G849N	5NP8R	
7TCDN	358VV	1539W	4TC09	
2MJ5F	MV799	V239T	FC6KV	
4WGYD	YJF03	48V40	J90VN	
R8H2F	P9GND	2JVDD	P7C7N	
Y3KJN	T1KCN	D0R73	76V43	
XYD50	1DXKP	VXFJY	3CC35	

- Supported network device part numbers:

3DFV8	K7H46	XP0NY	YG4N3	8WWC9	7MJH5	424RR	V5XVT
XD56X	T280R	6M9NC	8F6NV	4KT53	F3VKG	XNPKX	U810N
VFVGR	FTKMT	942V6	2094N	XYT17	8DKFV	KF46X	XWKGY
P71JP	98493	99GTM	C63DV	HWWN0	C4D5P	FKHKC	4V7G2
8CF6D	R886R	CWKPJ	H092P	HM9JY	U676R	9NG48	G174P
1P8D1	V017G	9YD6K	K9CR1	T34F4	THGMP	X8DHT	0NWK2
R1XFC	9VKJ0	JM42W	J031P	U3867	68M95	DDJKY	5N7Y5
Y5M7N	Y348Y	DX69G	6VDPG	K5V44	08XJ7	64PJ8	CD2VM
T44PH	H9NTY	HN7J7	00M95	1WYFT	HD44M	ND4PT	K5DDV
WW2NX	VMFKR	50RV4	YJYK1	VF81P	MW9RC	0FCGN	557M9
KH08P	TMGR6	HY7RM	YGCV4	22TDT	FM487	7M8VP	4GMN7
3KHCF	61J1X	81V1W	9P1N8	CX94X	24GFD	GMW01	YR0VV
3TM39	NC5VD	9XY73	1224N	NWMNX	J4RN3	M064X	6XH9X
930PP	G9XC9	T6HR8	6JKXY	NHN45	JTK7F	M3Y03	H2DGR
D9VTT	YWVDK	Y1HPF	UD551	DC774	PF323	TXJH4	DH226
P23M2	6H20P	R1N53	W62DW	5VR2M	G444C	6T94G	MFP5T
VX60F	RW9KF	M393D	MPW51	W7KT8	YKR24	2H47D	4GDP5
0187V	TC40H	H28RN	TVD8H	4MNKF	XG6PK	9J1RG	7JKH4
H8T43	1RVGG	3PCN3	76RF3	906P0	W773M	18GJR	9Y65N
RX8GJ	464RD	JHD51	P11VC	PW4FJ	C852G	D90TX	FM9J6
JVFVR	55GHP	W1GCR	HN10N	N20KJ	Y40PH	Y36FR	G8RPD
MT09V	165T0	TKRK	JNK9N	XV66X	JC10M	XGRFF	G218C

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H914R	F169G	U671R	R519P	P736R	R519P	P736R	H093G
J471J	0JP7D	KJYD8	W601R	RK375	P735R	W807F	C583R
MW6JV	0NJFX	F6C79	XV3MV	P8PCK	YNFDG	P3T0T	T80X9
CK9H1	YCVFG	WVT0T	TCK3G	JV783	RHD9H	T3TK5	5H4YH
G620Y	PD8ND	51G0W	HJ3FX	0D1WT	5V6Y4	4KF8J	XVVY1
X1TD1	GT3C4	5252W	GY71W	807N9	VCXN5	5N0W3	41PNV
2J3X7	V5TMM	51GRM	R491V	415DX	0HY9T	33M0K	JKT42
NV5DW	3N76N	KH63X	8X8H6	42T22	RHVFN	NP0K8	GJJG2
47W4V	1YXTT	2DW9J	X320M	J676T	H813T	JJPC0	P3V42
R6D8Y	499CR	C10W7	KYKT7	HCJR0	196TN	6XKVM	YY3WM
YGW92	RFPC9	CG7YT	2PF2N	6FC2Y	P90KD	DDF4D	7NVY2
0MF05	NTF8N	D6T93	F6PCP	T800X	4X4RK	5VK2G	ND407
KN139	GM257	8Y71H	Y2YMW	4V0JT	8RJMK	C855M	N6YJ
7RC9T	N5R4R	W12YJ	XRNN5	61M2K	11H8D	Y97KM	73TM8
4G6WF	HD2MG	F3VJ6	6VK2R	R072D	WCRN1	C856M	R7WP7
91XY2	443N6	3T3T7	WT48R	XKVM4	MHFHK	01JFY	17N63
6CWM6	RXNT1	VGJ12	M5YMJ	65FDT	1VCRR	N64D3	6256K
31KFT	PD89Y	4VDY3	M9NW6	1T7NW	79DJ3	Y5WKX	XK4C4
W0RM9	Y3KKR	8KP6W	CDMG5	J05YT	NNJ2M	068F2	JJN39
K6V3V	8PTD1	P90JM	C8Y42	R3F0N	2T0WW	NHYP5	XR0K2
6W1HY	19RNV	YHTD6	0272F	HWTYK	VC496	6FKDT	WCHFY
R887V	MRT0D	20NJD	7TKND	1GK7G	CY7GD	TDNNT	V5DG9
71C1T	9FTMY	Y1T43	28F7F	4TRD3	M5WFW	Y86KY	WY7T5
HHX1W	WMKFM	7G0DW	XY21R	YTX2V	HCHXD	D64WK	TTKWY
R76FD	NPHCM	332MM	8HRW3				

- Speed and Connector Identifier of the Network device and SFP transceiver should match.
- Screen captures, GUI or CLI

1.2.2   RACADM behavior

```
racadm hwinventory networktransceiver <FQDD>
Example:
racadm hwinventory networktransceiver NIC.Integrated.1-1-1
Vendor Name        AVAGO
Part Number        AFER-7035SDZ-ELX
Serial Number      AD0914A01WK
Revision           G2.3
Identifier Type    SFP
racadm networktransceiverstatistics <FQDD>
Example:
racadm networktransceiverstatistics NIC.Integrated.1-1-1
TX Output Power                0.54 mW
TX Bias Current                6.62 mA
RX Input Power                 0.60 mW
Vcc Voltage Value              3.29 V
Temperature                    40.43 °C
TX Output Power Status         OK
TX Bias Current      Status    OK
RX Input Power   Status        OK
Vcc Voltage Value Status       OK
Temperature Status             OK
```
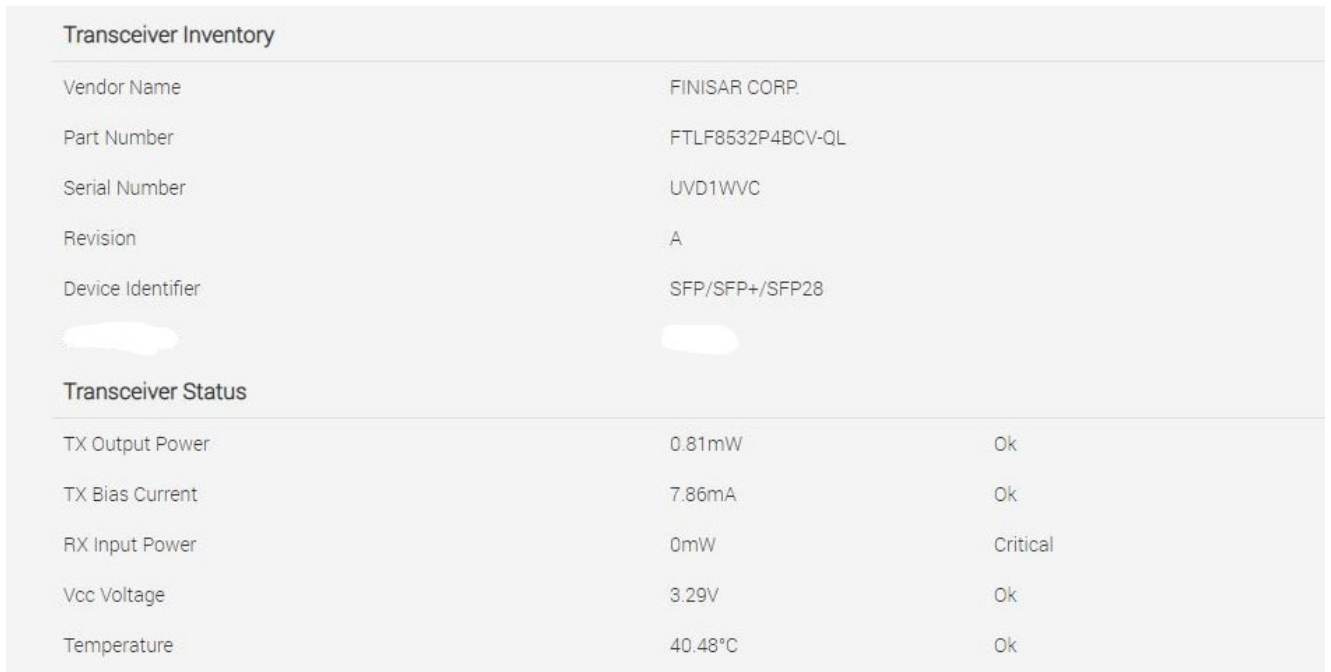
1.2.3   GUI behavior

Transceiver Inventory

Vendor Name	FINISAR CORP.
Part Number	FTLF8532P4BCV-QL
Serial Number	UVD1WVC
Revision	A
Device Identifier	SFP/SFP+/SFP28

Transceiver Status

TX Output Power	0.81mW	Ok
TX Bias Current	7.86mA	Ok
RX Input Power	0mW	Critical
Vcc Voltage	3.29V	Ok
Temperature	40.48°C	Ok

Figure 3   SFP inventory and sensor information

1.2.4   Use cases

Identify manufacture and sensor information of the SFP transceiver.

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2 Glossary

Acronym	Definition
AOC	Active Optical Cable
CNA	Converged Network Adapter
DAC	Direct Attach Copper
DMTF	Distributed Management Task Force
FC HBA	Fiber Channel Host Bus Adapter
iDRAC	Integrated Dell Remote Access Controller.
NCSI	Network Controller Sideband Interface
NDC	Network Daughter Controller
NIC	Network Interface Card
QSFP	Quad (4-channel) Small Form-factor Pluggable.
QSFP+	Quad (4-channel) Small Form-factor Pluggable Plus. It is a compact, hot-pluggable transceiver also used for data communications applications. QSFP+ evolved as the standard to support 10 Gb/s data rates per SFF-8436.
QSFP28	Quad (4-channel) Small Form-factor Pluggable. It supports four independent channels with data rates ranging from 25 Gb/s up to potentially 40 Gb/s.
QSFP-DD	Quad (4-channel) Small Form Factor Pluggable Double Density
RJ-45	Registered Jack 45 (RJ-45) is a standard type of physical connector for network cables. RJ-45 connectors are most commonly seen used with Ethernet cables and networks.
SFP	Small Form-factor Pluggable. SFP is a compact, hot-pluggable optical module transceiver used for both telecommunication and data communication applications.
SFP+	Small Form-factor Pluggable Plus. SFP+ is an enhanced version of the SFP that supports data rates up to 10 Gb/s.
SFP28	Small Form-factor Pluggable 28. SFP28 is the third generation of the SFP interconnect systems designed for 25 G performance as per the IEEE 802.3 specification (25 G BASE-CR).
SFP-DD	Small Form Factor Pluggable Double Density.

2.1 References

The following standards are relevant to many SFF specifications.

- INF-8074 SFP 1 Gb/s Transceiver
- SFF-8024 SFF Committee Cross Reference to Industry Products
- SFF-8053 GBIC (Gigabit Interface Converter)
- SFF-8079 SFP Rate and Application Selection
- SFF-8089 SFP Rate and Application Codes
- SFF-8431 SFP+ 10 Gb/s and Low Speed Electrical Interface
- SFF-8690 Tunable SFP+ Memory Map for ITU Frequencies

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