



2455 South Road  
 Poughkeepsie, New York 12601  
 October 22, 2014

**IBM® GDPS® and Server Time Protocol (STP) Application Qualification support for the Huawei OptiX OSN 8800 and the Huawei OptiX OSN 6800 Dense Wavelength Division Multiplexing (DWDM) Platforms running software Release 5.51.08.38**

International Business Machines Corporation and Huawei Technologies Co., Ltd. have successfully completed application qualification testing of the Huawei OptiX OSN 8800 and the Huawei OptiX OSN 6800 Dense Wavelength Division Multiplexing (DWDM) Platforms running Release 5.51.08.38 for the following IBM Parallel Sysplex® and Geographically Dispersed Parallel Sysplex™(GDPS) IBM zEnterprise EC12 (zEC12), IBM zEnterprise BC12 (zBC12), IBM zEnterprise 196 (z196), IBM zEnterprise 114 (z114), IBM zEnterprise BladeCenter Extension (zBX), and IBM System z10 (z10 EC, z10 BC) environments:

GDPS / Peer-to-Peer Remote Copy (PPRC) (Metro Mirror) using the following protocols:

- High Performance FICON for System z (zHPF) & FICON or ESCON<sup>1</sup> for Storage Access
- ESCON<sup>1</sup> or FCP for disk mirroring
- 1x InfiniBand (1x IFB) or ISC-3<sup>2</sup> peer mode for exchanging Server Time Protocol (STP) messages to provide synchronization of servers
- ISC-3<sup>2</sup> for coupling facility (CF) messaging

GDPS / Extended Remote Copy (XRC) (z/OS Global Mirror) using zHPF & FICON for asynchronous remote copy zBX intraensemble data network (IEDN) over 10 Gigabit Ethernet (10 GbE)

10GbE RoCE Express<sup>3</sup> feature (Remote Direct Memory Access over Converged Ethernet) using Shared Memory Communications – Remote Direct Memory Access (SMC-R)

Distances for the protocols supported for these GDPS applications are defined in the Qualification Results Summary below. Longer distances may be approved but require IBM RPQ – 8P2263 (z10 EC), 8P2340 (z10 BC, z196, z114), 8P2581 (zEC12), 8P2781 (zBC12). Additional testing may be required to approve the RPQ if the application exceeds the distance tested noted in the table below.

**Qualification Results Summary:**

The Huawei OptiX OSN 8800 and the OptiX OSN 6800 Dense Wavelength Division Multiplexing (DWDM) Platforms met IBM Qualification criteria for the protocols listed in the table below.

<b>Cards supported in both the Optix OSN 8800 Platform and Optix OSN 6800 Platform Running Release 5.51.08.38</b>				
<b>Transport Interface</b>	<b>Description</b>	<b>Part Number</b>	<b>Protocols Supported</b>	<b>Supported Distance</b>
11LOM Firmware: 3.50	8 Client Ports, 1 (10G) Line Port Maximum Ports Supported Per Protocol: 8:1 GbE 8:1 1G FC/FICON/ISL 4:1 2G FC/FICON/ISL 2:1 4G FC/FICON/ISL 8:1 ISC-3 <sup>2</sup> 1G Peer Mode 4:1 ISC-3 <sup>2</sup> 2G Peer Mode	TN11LOMA Ver. A  TN11LOM01M02 Ver. B  TN11LOMT03 Ver. B	1,2,4 Gbps FCP/FICON 1,2,4 Gbps ISL 1,2 Gbps ISC-3 <sup>2</sup> Peer Mode GbE	100Km
12LOM Firmware: 3.56	8 Client Ports, 1 (10G) Line Port Maximum Ports Supported Per Protocol: 8:1 GbE 8:1 1G FC/FICON/ISL 4:1 2G FC/FICON/ISL 2:1 4G FC/FICON/ISL 8:1 ISC-3 <sup>2</sup> 1G Peer Mode 4:1 ISC-3 <sup>2</sup> 2G Peer Mode	TN12LOMT01 Ver. B  TN1M2LOM01 Ver. B  TN12LOMT02 Ver. B	1,2,4 Gbps FCP/FICON 1,2,4 Gbps ISL 1,2 Gbps ISC-3 <sup>2</sup> Peer Mode GbE	100Km

11LOA <sup>R</sup> Firmware: 3.52	8 Client Ports, 1 (10G) Line Port Maximum Ports Supported Per Protocol: 8:1 ESCON <sup>1</sup> 8:1 GbE 8:1 1G FC/FICON/ISL 4:1 2G FC/FICON/ISL 2:1 4G FC/FICON/ISL 1:1 8G FC/FICON/ISL 1:1 10G ISL 1:1 10GbE 2:1 1x IFB 2.5G (SDR) 1:1 1x IFB 5G (DDR)	TN11LOA02 Ver. A	ESCON <sup>1</sup> 1,2,4,8 Gbps FCP/FICON 1,2,4,8,10 Gbps ISL GbE 10GbE 1X IFB 2.5G (SDR) 1X IFB 5G (DDR)	100Km
12LWXS Firmware: 3.49	1 Client Port, 1 Line Port Maximum Ports Supported Per Protocol: 1:1 ETR <sup>1</sup> 1:1 CLO <sup>1</sup>	TN1M3LWX01 Ver. B	ETR <sup>1</sup>	100Km
		TN12LWXS02 Ver. B	CLO <sup>1</sup>	40Km
12LSX Firmware: 3.52	1 Client Port, 1 Line Port Maximum Ports Supported Per Protocol: 1:1 10G ISL	TN12LSXT05 Ver. A	10 Gbps ISL	100Km
12OLP <sup>4</sup> Firmware: 1.11	Bi-Directional optical line protection switching module	TN12OLP01 Ver. D TN12OLP03 Ver. F	All protocols including 1x IFB/ ISC-3 <sup>2</sup>	100Km
DCM	Dispersion compensation module (based on fiber bragg grating)	DCM-CB-SN-100-H-I-LP DCM-CB-SN-80-H-I-LP	All protocols including 1x IFB/ ISC-3 <sup>2</sup>	N/A

**Cards supported only in the Optix ONS 6800 Platform Running Release 5.51.08.38**

Transport Interface	Description	Part Number	Protocols Supported	Supported Distance
11TQM Firmware: 3.49 11NS2 Firmware: 3.52 Client/Line card pair	4 Port client card (TQM), 1 Port 2G Line Card (NS2) - Maximum Ports Supported Per Protocol: 4:1 ESCON <sup>1</sup> 2:1 1G FC/FICON/ISL 1:1 2G FC/FICON/ISL	TN11TQM01 Ver. A Ver. B TN1M1TQM01 Ver. A TN11NS201M02 Ver. B TN11NS2T02 Ver. B TN11NS2T03 Ver. B	ESCON <sup>1</sup> 1,2 Gbps FCP/FICON 1,2 Gbps ISL	100Km

<sup>1</sup> ETR, CLO and ESCON are not supported on the zEC12 and zBC12 servers.

<sup>2</sup> The zEC12 and zBC12 are the last System z servers to support InterSystem Channel-3 (ISC-3).

<sup>3</sup> 10GbE RoCE Express is only supported on the zEC12 and zBC12 servers. DWDM client modules that support 10GbE RoCE Express are noted in the table above with <sup>R</sup>.

<sup>4</sup> All OLP trunk protected networks should be designed with two OLP modules in Bi-Directional mode and four site-to-site fibers carried over two diverse routes. Client level protection should be used with this double OLP protection design to ensure path connectivity is not lost between sites during a switchover on one of the OLP modules.

#### **GDPS Application Limitations:**

IBM GDPS support is limited to DWDM product applications which utilize point-to-point fixed dark fiber network interconnect between Parallel Sysplexes.

DWDM end-to-end networks, including DWDM components, transport elements and dark fiber links, must not exceed the equivalent of 900 meters differential delay between transmit and receive paths used for GDPS links for Server Time Protocol (STP) message passing (which includes ISC-3 and 1xIFB links).

Fiber-based dispersion compensation units that have not been qualified by IBM are not supported for STP applications.

Redundant DWDM platforms, utilizing two site-to-site fiber pairs over diverse routes, are recommended for fiber trunk protection of links used for STP message passing (ISC-3 and 1x IFB). STP links should connect using different trunk switching modules to ensure that a fiber trunk protection event does not interrupt all timing links simultaneously.

Results achieved were in a test environment under laboratory conditions. IBM does not make any representations or warranties regarding Huawei products. Huawei retains sole responsibility for its products, the performance of such products and all claims relating to such products, including without limitation its products' compliance with product specifications, industry standards and safety and other regulatory requirements.

The terms zEnterprise, ESCON, FICON, GDPS, Geographically Dispersed Parallel Sysplex, IBM, Parallel Sysplex, System z, System z10, zSeries, and z/OS are trademarks or registered trademarks of International Business Machines Corporation.

Tina L. Wile  
System z Connectivity Program Manager  
Systems & Technology Group  
International Business Machines Corporation

