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## IBM® GDPS® and Server Time Protocol (STP) Application Qualification support for Fibernet DUSAC 4800 Release 2.2b.

International Business Machines Corporation and Fibernet, S. L. have successfully completed application qualification testing of the Fibernet DUSAC 4800 Platform running software release level 2.2b, for the following 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), IBM System z10 (z10 EC, z10 BC), and IBM System z9 (z9 EC, z9 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 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)
- RoCE<sup>3</sup> (RDMA over Converged Enhanced Ethernet) using Shared Memory Communications – RDMA (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 (z9 EC, z9 BC, 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.

<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> RoCE is only supported on the zEC12 and zBC12 servers. DWDM client modules that support RoCE are noted in the table below with \*.

### Qualification Results Summary:

The Fibernet DUSAC 4800 Platform running software release 2.2b met IBM Qualification criteria for protocols listed in the table below.

<b>Fibernet DUSAC 4800 Platform running software release 2.2b</b>				
<b>GASC (Supervisor card) – running software release 2.2b</b>				
<b>Transport Interface</b>	<b>Description</b>	<b>Part Number</b>	<b>Protocols Supported</b>	<b>Supported Distance</b>
FTX-n* Hardware Ver. 1 Software Ver. 0.27 Firmware Ver. 1	Single port Transponder card for services up to 10 Gbps	19506	1x IFB 5 Gbps (DDR), ISC-3 Peer Mode, 1,2,4,8 Gbps FCP/FICON, 1,2,4,8,10 Gbps ISL, 1,10 GbE	100km

FTX-10C* Hardware Ver. 0 Software Ver. 0.20 Firmware Ver. 1	Single port Encryption Transponder card for 10 Gbps services	21349	10 GbE	100km
FTX-16S Hardware Ver. 0 / 1 Software Ver. 0.01 Firmware Ver. 0	Single port Transponder card for 16 Gbps services	22650	16 Gbps ISL	100km
FTX-6 Hardware Ver. 4 Software Ver. 2.05 Firmware Ver. (N/A)	Single port Transponder card for services up to 2.5 Gbps	8502	CLO <sup>1</sup>	40km
			ETR <sup>1</sup> , ESCON <sup>1</sup>	100km
OSW-3** Firmware Ver. 22	Optical Protection Switch Bi-directional transmission within a single fiber	22735	All Protocols including 1x IFB and ISC-3	100km
EDFA Pre-Amplifier Hardware Ver. 3 Software Ver. 0.00 Firmware Ver. 1	Erbium Doped Fiber Amplifier Optical Pre-Amplifier type	19141	All Protocols including 1x IFB and ISC-3	N/A
EDFA Booster Hardware Ver. 3 Software Ver. 0.00 Firmware Ver. 1	Erbium Doped Fiber Amplifier Optical Amplifier, Booster type	19139	All Protocols including 1x IFB and ISC-3	N/A
DCM_4800	Dispersion Compensation Module using Chirped Fiber Bragg Gratings (CFG)	23177	All Protocols including 1x IFB and ISC-3	N/A

**\*\*All networks utilizing a protection switch should be designed with two protection switch modules and four site-to-site fibers carried over two diverse routes. Client level protection should be used with this double protection switch design to ensure path connectivity is not lost between sites during a switchover on one of the protection switches.**

**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 1x IFB 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 Fibernet products. Fibernet 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 FICON, GDPS, Geographically Dispersed Parallel Sysplex, IBM, Parallel Sysplex, System z, System z9, System z10, zEnterprise, and z/OS are trademarks or registered trademarks of International Business Machines Corporation.

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