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IBM® GDPS® and Server Time Protocol (STP) Application Qualification support for the ADVA FSP3000* Dense Wavelength Division Multiplexer (DWDM) Platform running software release 11.2.3

International Business Machines Corporation and ADVA Optical Networking SE have successfully completed application qualification testing of the ADVA FSP3000* Dense Wavelength Division Multiplexer (DWDM) Platform running software release 11.2.3 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 for Storage Access
 - FCP for disk mirroring
 - 1x InfiniBand (1x IFB) or ISC-3** 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)

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.

** Note: The zEC12 and zBC12 are the last System z servers to support InterSystem Channel-3 (ISC-3).

Qualification Results Summary:

The ADVA FSP3000* Dense Wavelength Division Multiplexer (DWDM) Platform running software release 11.2.3 met IBM Qualification criteria for protocols listed in the table below.

ADVA FSP3000* Dense Wavelength Division Multiplexer (DWDM) Platform running software release 11.2.3				
Module	Description	Model	Protocols Supported	Supported Distance
5TCE ¹	5-port 10G TDM module: 2:1 5G InfiniBand (1x IFB DDR) 4:1 ISC-3 Peer Mode 3:1 4G FCP/ISL 1:1 8G FCP/ISL 1:1 10G ISL 1:1 10GbE	5TCE-PCTN-10GU+10G-xx#Dy	1x IFB 5 Gbps (DDR), ISC-3 Peer Mode, 4,8 Gbps FCP ¹ / ISL, 10 Gbps ISL, 10GbE	100km
5TCE-AES ¹	5-port 10G TDM module with AES 256 Encryption: 2:1 5G InfiniBand (1x IFB DDR) 4:1 ISC-3 Peer Mode 3:1 4G FCP/ISL 1:1 8G FCP/ISL 1:1 10G ISL 1:1 10GbE	5TCE-PCTN-10GU+AES10G-xx#Dy	1x IFB 5 Gbps (DDR), ISC-3 Peer Mode, 4,8 Gbps FCP ¹ / ISL, 10 Gbps ISL, 10GbE	100km
10TCE-100G ¹	10-port 100G TDM module: 10:4 8G FCP/ISL 10:4 10GbE	10TCE-PCN-10G+100G	8 Gbps FCP ¹ / ISL, 10GbE	100km

4TCA-PCN ¹	4-port 4G TDM module: 4:2 ISC-3 Peer Mode 2:2 4G FCP/ISL	4TCA-PCN-4GU+4G	ISC-3 Peer Mode, 4,8 Gbps FCP ¹ / ISL	100km
WCA-PC-10G ¹	10G Transponder Module: 1:1 5G InfiniBand (1x IFB DDR) 1:1 4G FCP/ISL 1:1 8G FCP/ISL 1:1 10G ISL 1:1 10GbE	WCA-PC-10G-V#Dxx	1x IFB 5 Gbps (DDR), 4,8 Gbps FCP ¹ / ISL, 10 Gbps ISL, 10GbE	100km
2WCA ¹	Dual 10G Transponder Module: 2:2 4G FCP/ISL 2:2 8G FCP/ISL 2:2 10G ISL 2:2 10GbE	2WCA-PCN-10G	4,8 Gbps FCP ¹ / ISL, 10 Gbps ISL, 10GbE	100km
4WCE ¹	Quad 16G Transponder Module: 4:4 8G FCP/ISL 4:4 16G ISL 4:4 10GbE	4WCE-PCN-16GFC	8 Gbps FCP ¹ / ISL, 16 Gbps ISL, 10GbE	100km
RSM ²	Fiber Protection Switch	RSM-OLM#1630	All Protocols (including 1x IFB and ISC-3)	80km
EDFA-C-D20	Erbium Doped Fiber Amplifier, Double Stage, 20dBm	EDFA-D20-VGC-DM EDFA-D20-VLGC-DM	All Protocols (including 1x IFB and ISC-3)	100km
DCG-M DCG50-M	Managed DCM using Chirped Fiber Bragg Gratings (CFG)	DCG-M/060/SSMF DCG-M/080/SSMF DCG- M/100/SSMF DCG50-M/020/SMFF DCG50-M/040/SMFF DCG50-M/060/SSMF DCG50-M/080/SSMF DCG50-M/100/SSMF	All Protocols (including 1x IFB and ISC-3)	N/A

¹The FSP3000 does not perform link data rate auto-negotiation. Therefore, use of this platform for FCP requires cascaded Directors/switches to set the link data rate.

²The RSM cannot be used alone; it must be used in conjunction with client layer protection to ensure cross site connectivity is not lost during a switchover.

***Note:** Fujitsu OEMs the ADVA FSP3000 under the name “Flashwave 7420”. The Fujitsu Flashwave 7420 branded platform has also been tested and qualified at release level 11.2.3 for all protocols and distances included in this qualification letter.

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 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).

Results achieved were in a test environment under laboratory conditions. IBM does not make any representations or warranties regarding ADVA products. ADVA 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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