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 September 27, 2012

IBM® GDPS® and Server Time Protocol (STP) Application Qualification support for Alcatel-Lucent 1830 PSS 16/32 Dense Wavelength Division Multiplexing (DWDM) Platforms

International Business Machines Corporation and Alcatel-Lucent (ALU), have successfully completed application qualification testing of the ALU1830 PSS 16/32 multi-reach Dense Wavelength Division Multiplexing (DWDM) Platforms for the following IBM Parallel Sysplex, Geographically Dispersed Parallel Sysplex™ (GDPS), 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 are supported.
 - FICON for Storage Access
 - FCP for mirroring
 - ISC-3 peer mode or 1x IFB for coupling facility (CF) and Server Time Protocol (STP) messaging to provide synchronization of servers.
- GDPS / Extended Remote Copy (XRC) (z/OS Global Mirror) using FICON for asynchronous remote copy.
- zBX intraensemble data network (IEDN) over 10 Gigabit Ethernet (10 GbE)

Distances for the protocols supported for the GDPS applications are defined in the Qualification Results Summary below, with the actual distance tested noted with *. Although some protocols have been successfully tested to a distance of 200km, IBM requires an RPQ (8P2263 or 8P2340) to assure applications at distances greater than 100km adhere to the bounds of our qualification.

Qualification Results Summary:

The ALU 1830 PSS 16/32 multi-reach Dense Wavelength Division Multiplexing (DWDM) Platforms met IBM Qualification criteria for the protocols listed in the table below.

1830 PSS 16/32				
Transport Interface	Description	Part Number	Protocols Supported	Supported Distance
ALU 1830 PSS Release level 5.1-0	A multi-reach DWDM Platform that covers long-haul to regional and metro DWDM applications			
11STMM10 Firmware: 2.1.1	10 Client Ports, 1 Line Port Maximum Ports Supported Per Protocol: 9:1 GbE 10:1 1G FC/FICON/ISL 4:1 2G FC/FICON/ISL 2:1 4G FC/FICON/ISL	8DG59251AAAC02	1,2,4 Gbps FCP/FICON ¹ 1,2,4 Gbps ISL GbE	100km *200km
11DPM12 Firmware: 1.5.1	12 Client Ports, 2 Line Ports Maximum Ports Supported Per Protocol: 12:2 GbE 12:2 1G FC/FICON/ISL 8:2 2G FC/FICON/ISL 4:2 4G FC/FICON/ISL 12:2 ISC-3 1G Peer/Compatibility Mode 8:2 ISC-3 2G Peer Mode	8DG59828AAAA01	1,2,4 Gbps FCP/FICON ¹ 1,2,4 Gbps ISL 1,2 Gbps ISC-3 Peer Mode GbE	100km *200km
11QPA4 Firmware: 1.5.1	4 Client Ports, 4 Line Ports Maximum Ports Supported Per Protocol: 4:4 8G FC/FICON/ISL 4:4 10G ISL 4:4 10GbE/ zBX IEDN 4:4 1x IFB 5G (DDR)	8DG60349AAAA01	8 Gbps FCP/FICON ¹ 8,10 Gbps ISL 10GbE zBX IEDN 10 GbE	100km *200km
			1x IFB 5Gbps (DDR)	100km *175km

11QPEN4 Firmware: 1.1.1	4 Client Ports, 4 Line Ports Maximum Ports Supported Per Protocol: 4:4 8G FC/FICON/ISL 4:4 10G ISL 4:4 10GbE/ zBX IEDN	8DG60996AA01	8 Gbps FCP/FICON ¹ 8,10 Gbps ISL 10GbE zBX IEDN 10 GbE	100km *200km
DMBSM030 DMBSM080 DMBSM100	Dispersion compensation module (based on fiber bragg grating)	8DG59425AE 01 8DG59430AE 01 8DG59432AE 01	N/A	N/A

¹The ALU 1830 PSS cannot perform link data rate auto-negotiation. Therefore, use of this platform for FCP/FICON requires cascaded Directors/switches to negotiate the link speed.

GDPS Application Limitations:

- IBM GDPS support is limited to DWDM product applications which utilize point-to-point fixed dark fiber network interconnect between sites.
- 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 ISC links transporting STP message passing.
- Redundant ALU 1830 PSS platforms, utilizing two site-to-site fiber pairs, are recommended for fiber trunk protection of ISC-3 peer mode or 1x IFB Server Time Protocol (STP) message passing protocol links.
- Fiber trunk protection schemes should be designed with two trunk switching modules and four site-to-site fiber pairs carried over at least two diverse routes. 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 ALU products. ALU 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.

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