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IBM® GDPS® and Server Time Protocol (STP) Application Qualification support for the Ciena® CN 4200™ Flex Select™ Advanced Services Platform DWDM (Dense Wavelength Division Multiplexing) System

International Business Machines Corporation and Ciena Corporation have successfully completed application qualification testing of the Ciena CN 4200 Release 4.3 Advanced Services Platform for the following IBM Parallel Sysplex® and Geographically Dispersed Parallel Sysplex™ (GDPS) IBM System z™ and System/390® environments:

- GDPS / "Peer-to-Peer Remote Copy" (PPRC) ("Metro Mirror") using ESCON® or Fibre Channel (FCP) for remote data copy and IBM 9037 Sysplex Timer® and ISC (InterSystem Channel) links for server synchronization.
- GDPS / "Peer-to-Peer Remote Copy" (PPRC) ("Metro Mirror") using ESCON® or Fibre Channel (FCP) for remote data copy and ISC-3 Peer Mode links with STP message passing for server synchronization.
- GDPS / "Extended Remote Copy" (XRC) ("zSeries Global Mirror") using FICON® for asynchronous remote copy. IBM protocol link distances supported for these GDPS applications are defined in the "Qualification Results Summary" below.

Specific Ciena CN 4200 FlexSelect product hardware features and software release levels used during the Qualification testing are listed in Attachment A, page 2.

Qualification Results Summary:

The Ciena CN 4200 FlexSelect DWDM platform met IBM Qualification criteria for support of the following IBM System z, zSeries and S/390 servers and GDPS Application Solution protocols:

- IBM System z™, zSeries® z990, z900, z890, z800 and System/390®.
- IBM 9037 Sysplex Timer® CLO links for distances up to 40 km.
- IBM 9037 Sysplex Timer® ETR links for distances up to 100 km.
- FICON® (1 Gbps), FICON Express2 (2 Gbps) and FICON Express4 (4 Gbps) for distances up to 100 km.
- ESCON® Multimode / Single mode fiber for distances up to 100 km.
- ISC-2 (1 Gbps.) Single mode fiber for distances up to 40 km.
- ISC-3 "Compatibility Mode" 1 Gbps (Single Mode fiber) for distances up to 40 km.
- ISC-3 "Peer Mode" 1 Gbps (requires IBM RPQ 8P2197) and 2 Gbps for distances up to 100 km.
- ISC-3 Peer mode protocol links for distances of up to 100km transporting both Coupling Facility and STP message passing.

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 ISC links of up to 100km transporting STP message passing.
- Redundant CN 4200 FlexSelect platforms, utilizing two site-to-site fiber pairs, are recommended for fiber trunk protection of ETR, CLO and ISC-3 STP message passing protocol links.
- ISC-3 Peer Mode links in excess of 90km require the use of 2.7Gbps. DWDM channel modules when used for STP message passing.

Results achieved were in a test environment under laboratory conditions. IBM does not make any representations or warranties regarding the Ciena products. Ciena 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 eServer, ESCON, FICON, GDPS, Geographically Dispersed Parallel Sysplex, IBM, Parallel Sysplex, System/390, Sysplex Timer, System z and zSeries are trademarks or registered trademarks of International Business Machines Corporation.

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Attachment A

GDPS Qualification Testing - Ciena CN 4200 Release 4.3 Product Features

Specific Ciena CN 4200 FlexSelect product hardware features and software release levels used during Qualification testing are as follows:

- Ciena FC4-T FC400 2G/4G 3 port Muxponder Module (PN B-720-0025-200) and FC400 SFP (PN B730-0008-003) for support of 4Gbps. FICON Express4 and 4G ISL (Intra Switch Links) protocols.
- Ciena F10A –TN Tunable 10Gbps. Muxponder Module (PN B-720-1087-301) for ESCON, 1/2Gbps. FICON, FCP100. FCP200, 1/2Gbps. ISL protocols.
- Ciena F10T –TN Tunable 10Gbps. Transponder Module (PN B-720-1086-301) and 10GFC optical XFP (PN 130-4900-900) for support of 10Gbps. ISL protocols.
- Ciena M6S 6 port Muxponder Module (PN B-966-0013-001) for support of ESCON, FCP100, FCP200, 1 and 2Gbps. FICON, 1 and 2Gbps. ISL and GbE protocols.
- Ciena G6S 6 port Muxponder Module (PN B-720-0013-003) for support of ISC-2, ISC-3 Compatibility and Peer modes and ISC-3 Peer Mode protocols used for both CF and STP Message passing.
- Ciena 2RS Module (PN B-720-0026-001) Transponder Card for support of ESCON and Sysplex Timer ETR and CLO protocols.
- Ciena CN 4200 FlexSelect including fixed gain Optical preamplifier (PN B-720-0042-001) and Dual Optical Protection Switch 1310 (PN B-720-0024-002) for extended distance applications.
- Ciena CN 4200 Software Release level 4.3.