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IBM® GDPS® and Server Time Protocol (STP) Application Qualification support for Ciena ActivSpan 5200 and 5100 Release 11.11 and 11.12 Dense Wavelength Division Multiplexing (DWDM) Platform. (This qualification letter supersedes the previous letter dated 11/5/2010 to include the optical switch protection)

International Business Machines Corporation and Ciena Communications Inc. have successfully completed application qualification testing of the Ciena ActivSpan 5200 and 5100 DWDM Platform running software release level 11.11 and 11.12, for the following IBM Parallel Sysplex and Geographically Dispersed Parallel Sysplex™ (GDPS) IBM zEnterprise 196 (z196), IBM System z10 (z10 EC, z10 BC), IBM System z9 (z9 EC, z9 BC) and IBM eServer zSeries 990 and 890 (z990, z890) environments:

- GDPS / Peer-to-Peer Remote Copy (PPRC) (Metro Mirror) using the following protocols:
 - ESCON or FICON for Storage Access
 - ESCON or FCP for mirroring
 - ISC-3 for coupling facility (CF) messaging
 - Sysplex timer links (External Time Reference – ETR and Control Link Oscillator – CLO) for synchronization of servers
 - ISC-3 Peer Mode or 1xIFB for exchanging Server Time Protocol (STP) messages to provide synchronization of servers

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 or 8P2340. Additional testing may be required to approve the RPQ.

Qualification Results Summary:

The Ciena ActivSpan 5200 and 5100 Release 11.11 and 11.12 Dense Wavelength Division Multiplexing (DWDM) Platform met IBM Qualification criteria for protocols identified above.

Transport Interface	Description	Part Number	Protocols Supported	Supported Distances
OCI 1.25 Gbit/s 1310 nm OCLD 2.5 Gbit/s Flex OCLD 2.5 Gbit/s Universal	Single channel transparent optical channel interface	NT0H10CB, NT0H03xx, NT0H04xx, NT0H05xx	ETR	100 km
			CLO	40km
OCI SRM ESCON	Transparently multiplexes up to 8 independent client interfaces	NT0H21JN	ESCON	100km
OCI ISC 1310 nm	Single channel transparent optical channel interface	NT0H20CH	1Gbps ISC-3 Compatibility mode	40km
OTR 2.5 Gbit/s Flex	Up to 2.5Gbit/s Flexible Optical TRansponder for transparent transport of client services	NT0H16xx NT0H17xx	FC 100/200, 1Gbps/2Gbps FICON, ISC-3 Peer with STP, 1xIFB SDR with STP	100km
OTR 2.5Gbit/s Universal	Up to 2.5Gbit/s Flexible Optical TRansponder for transparent transport of client services	NT0H06xx NT0H07xx	FC 100/200, 1Gbps/2Gbps FICON, ISC-3 Peer with STP 2.5Gbps, 1xIFB SDR with STP.	100km

OTR 4 Gbit/s FC	Up to 4Gbit/s Transparent Optical TRansponder	NT0H08AA	4Gbps FICON, 4Gbps ISL	100km
Muxponder 10 Gbit/s GbE/FC	Multiplexer Optical TRansponder aggregating up to 8 1G or 4 2G signals through contiguous concatenation (CCAT)	NT0H15AA-HD	FC 100/200, 1G/2G FICON, 1G/2G ISL	100km
Muxponder 10 Gbit/s GbE/FC VCAT	Multiplexer Optical TRansponder aggregating up to 10 1G or 5 2G signals through virtual concatenation (VCAT)	NT0H15AE-HH NT0H15AY/AZ	FC 100/200, 1G/2G FICON, 1G/2G ISL	100km
OTR 10 Gbit/s Quad	Dual client, dual line Optical TRansponder for transparent transport of 5G, 8G and 10G client services	NT0H25AA	1xIFB DDR, FC800, 8G FICON, 8G/10G ISL, 10GbE	100km
OTR 10 Gbit/s Ultra	Single client Optical TRansponder for transparent transport of 10G client services	NT0H14xx	10G ISL, 10GbE	100km
Photonic Trunk Switch (PTS)	Bi-directional optical splitter and switch module	NTUG75BAE5		
Enhanced Trunk Switch (ETS)	Optical splitter and switch module	NTUG90ANE5		

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 ISC-3 links transporting STP messages.
- Redundant Ciena ActivSpan 5200 and 5100 Advanced Services Platforms, utilizing two site-to-site fiber pairs are recommended for fiber trunk protection of ETR, Control Link Oscillator (CLO), ISC-3 and IFB links used to transport STP messages.
- 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 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.

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