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Report of Successful Completion of Qualification Testing

International Business Machines Corporation and Dell EMC, Inc have successfully completed compatibility and interoperability testing of Dell EMC PowerMax 8000 product at code level 5978.444.444 in the following IBM z13® IBM z14® environments:

IBM and Dell EMC hereby confirm that testing for the support of FICON® and FCP connectivity of the following has been successfully completed:

CPU	**IBM z13 Model 2964-N30 Driver level 27 bundle S84a**
	IBM z14 Model 3906-M02 Driver level 36 bundle S21a
OS&GDPS®	**z/OS® V2.3**
	GDPS Metro 4.2
Functions	**GDPS Metro HyperSwap® Manager** • **Freeze/run** • **Planned HyperSwap** • **Unplanned HyperSwap** • **HyperSwap Failover/Failback** • **Soft Fence**
	GDPS Metro (single leg) • **Freeze/run** • **Planned HyperSwap** • **Unplanned HyperSwap** • **HyperSwap Failover/Failback** • **FlashCopy® V2 and Remote Pair FlashCopy** • **Soft Fence**
Storage Devices	**Dell EMC PowerMax 8000** • **PPRC** • **FlashCopy V2**

More detailed testing results are available from IBM or Dell EMC on request.

Limitations: The following considerations and limitations apply to the tested GDPS Metro configuration:

- No testing was performed with Space Efficient FC.
- No GDPS Metro priced features were tested (including z/OS Proxy, MTMM Dual Leg, LCP Manager, KVM Proxy, and SSC Proxy).

IBM does not make any representations or warranties of any kind regarding the Dell EMC products and is not liable for such products or any claims made regarding such products. The fact that the listed Dell EMC products passed the enumerated IBM tests does not imply that the products will operate properly in any particular customer environment.

Dell EMC retains sole responsibility for its products, the performance of such products and all claims relating to such products, including without limitation its products' compliance to product specifications, safety requirements, regulatory agencies requirements and industry standards.

David B Petersen
IBM Distinguished Engineer
IBM Z
IBM Systems
International Business Machines Corporation

Attachment A -- Test Matrix

GDPS Metro HyperSwap Manager

Test Case Suite	Successfully Completed	Test Case Suite Description
• **Initial Tests**	✔	Basic remote copy operations using panels Basic Freeze tests (GO/STOP/COND)
• **Planned Actions**	✔	Remote copy operations using HYPERSW command Simulate Site maintenance (Site 1 and Site 2)
• **Unplanned Actions**	✔	GDPS reacts to a failure, depending on the FREEZE option (GO / STOP / COND / SWAP&GO / SWAP&STOP) Test failures were generated by PPRC links unplug, Chpid unplug, DASD Control Unit power off and elongated I/O response times
• **Disruptive Testing (aka Config Testing)**	✔	GDPS reacts to a failure, depending on the FREEZE policy. Failures were generated by Control Unit emergency power off and control unit internal failures
• **HyperSwap Stress test**	✔	Run a planned HyperSwap, with the application systems and the controlling system having CPU contention
• **Miscellaneous**	✔	HyperSwap extension (checking of secondary PPRC status – failure, QHA, Concurrent Copy, etc.)

Attachment A -- Test Matrix

GDPS Metro (single leg)

Test Case Suite	Successfully Completed	Test Case Suite Description
• **Initial Tests**	✔	Basic remote copy operations using panels Basic Freeze tests (GO/STOP/COND)
• **Planned Actions**	✔	Remote copy operations using scripts (START/STOP SECONDARY, Flashcopy, HyperSwap (Resync & Suspend), etc.) Simulate Site maintenance (Site 1 and Site 2)
• **Unplanned Actions**	✔	GDPS reacts to a failure, depending on the FREEZE option (GO / STOP / COND / SWAP&GO / SWAP&STOP) Failures were generated by PPRC links unplug, Chpid unplug, DASD Control Unit power off and elongated I/O response times
• **Disruptive Testing (aka Config Testing)**	✔	GDPS reacts to a failure, depending on the FREEZE policy. Failures were generated by Control Unit emergency power off and control unit internal failures
• **HyperSwap Stress test**	✔	Run a planned HyperSwap, with the application systems and the controlling system having CPU contention
• **Miscellaneous**	✔	HyperSwap extension (checking of secondary PPRC status – failure, QHA, Concurrent Copy, etc.)
• **FlashCopy**	✔	FlashCopy V2 and Remote Pair FlashCopy were verified. Note that the traditional FlashCopy testcases are executed as part of Planned Actions and Unplanned Actions.