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**Report of Successful Completion of Qualification Testing**

International Business Machines Corporation and Hitachi, Ltd. have successfully completed compatibility and interoperability testing of Hitachi TagmaStore®/SANRISE® series products at code level 50-06-14 in the following IBM [System z9® and zSeries®] environments:

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

<b>CPU</b>	<b>IBM System z9™ (z9-109) at D63J</b>
	<b>IBM eServer™ zSeries® 800, 900, and 990 (z800, z900, z990) at D55K</b>
	<b>9672 G5 and G6 at D26W</b>
<b>OS&amp;GDPS®</b>	<b>z/OS 1.6 and 1.7</b>
	<b>GDPS 3.2 and GDPS 3.3</b>
<b>Functions</b>	<b>GDPS/PPRC HyperSwap Manager</b> <ul style="list-style-type: none"> <li>• <b>Planned HyperSwap</b></li> <li>• <b>Unplanned HyperSwap</b></li> <li>• <b>HyperSwap Failover/Failback</b></li> <li>• <b>Unplanned HyperSwap IOS Timing Trigger</b></li> <li>• <b>FlashCopy</b></li> </ul>
	<b>GDPS/PPRC</b> <ul style="list-style-type: none"> <li>• <b>Planned HyperSwap</b></li> <li>• <b>Unplanned HyperSwap</b></li> <li>• <b>HyperSwap Failover/Failback</b></li> <li>• <b>Unplanned HyperSwap IOS Timing Trigger</b></li> <li>• <b>FlashCopy</b></li> <li>• <b>Enhanced Recovery</b></li> </ul>
	<b>GDPS/XRC</b> <ul style="list-style-type: none"> <li>• <b>FlashCopy</b></li> </ul>
<b>Storages</b>	<b>Hitachi TagmaStore series</b>
	<b>Hitachi SANRISE series</b>

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

**Limitations:**

The following considerations and limitations apply to the tested configurations:

- FlashCopy limitation (NOCOPY2COPY and Persistent/Incremental not supported at this time).
- Open LUN management is not supported at the testing time.

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

## Attachment A -- Test Matrix

<b><u>GDPS/PPRC</u></b> <b><u>HyperSwap Manager</u></b>		
<b>Test Case Suite</b>	<b>Successfully Completed</b>	<b>Test Case Suite Description</b>
<ul style="list-style-type: none"> <li>• <b>Initial Tests</b></li> </ul>	✓	Basic remote copy operations using panels Basic Freeze tests (GO/STOP/COND)
<ul style="list-style-type: none"> <li>• <b>Planned Actions</b></li> </ul>	✓	Remote copy operations using HYPERSW command Simulate Site maintenance (SITE1 and SITE2)
<ul style="list-style-type: none"> <li>• <b>Unplanned Actions</b></li> </ul>	✓	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 and DASD control Unit power off , on both sites
<ul style="list-style-type: none"> <li>• <b>Disruptive Testing (aka Config Testing)</b></li> </ul>	✓	GDPS reacts to a failure, depending on the FREEZE option (GO/STOP/COND/ SWAP&GO / SWAP & STOP) Failures were generated by Control Unit Emergency power off and control unit internal failures
<ul style="list-style-type: none"> <li>• <b>HyperSwap Stress test</b></li> </ul>	✓	Run a planned HyperSwap, with the Production system and the Controlling system having CPU contention
<ul style="list-style-type: none"> <li>• <b>I/O Timing Unplanned HyperSwap trigger</b></li> </ul>	✓	HyperSwap triggered by an 'insufficient' I/O response time
<ul style="list-style-type: none"> <li>• <b>Miscellaneous</b></li> </ul>	✓	New HyperSwap extension (checking of secondary PPRC status – failure, XRC session, Concurrent Copy, etc.)

## Attachment A -- Test Matrix

<b>GDPS/PPRC</b>		
<b>Test Case Suite</b>	<b>Successfully Completed</b>	<b>Test Case Suite Description</b>
<ul style="list-style-type: none"> <li>• <b>Initial Tests</b></li> </ul>	✓	Basic remote copy operations using panels Basic Freeze tests (GO/STOP/COND)
<ul style="list-style-type: none"> <li>• <b>Planned Actions</b></li> </ul>	✓	Remote copy operations using scripts (START/STOP SECONDARY, Flashcopy, HyperSwap (Resync & Suspend), etc.) Simulate Site maintenance (SITE1 and SITE2)
<ul style="list-style-type: none"> <li>• <b>Unplanned Actions</b></li> </ul>	✓	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 and DASD control Unit power off , on both sites
<ul style="list-style-type: none"> <li>• <b>Disruptive Testing (aka Config Testing)</b></li> </ul>	✓	GDPS reacts to a failure, depending on the FREEZE option (GO/STOP/COND/ SWAP&GO / SWAP & STOP) Failures were generated by Control Unit Emergency power off and control unit internal failures
<ul style="list-style-type: none"> <li>• <b>HyperSwap Stress test</b></li> </ul>	✓	Run a planned HyperSwap, with the Production system and the Controlling system having CPU contention
<ul style="list-style-type: none"> <li>• <b>I/O Timing Unplanned HyperSwap trigger</b></li> </ul>	✓	HyperSwap triggered by an 'insufficient' I/O response time
<ul style="list-style-type: none"> <li>• <b>Enhanced Recovery Support for CF Duplexing (aka CF Hint)</b></li> </ul>	✓	Test different sequence of failure in Site1 (CF links, CF partition, PPRC links, DASD power off etc..) with FREEZE=STOP and CF Hint
<ul style="list-style-type: none"> <li>• <b>Miscellaneous</b></li> </ul>	✓	New HyperSwap extension ( checking of secondary PPRC status – failure, XRC session, Concurrent Copy, etc.)

## Attachment A -- Test Matrix

<b><u>GDPS/XRC</u></b>		
<b>Test Case Suite</b>	<b>Successfully Completed</b>	<b>Test Case Suite Description</b>
<ul style="list-style-type: none"><li>• <b>Initial Tests</b></li></ul>	✓	Basic remote copy operations using panels. Tests using single SDM and coupled SDMs
<ul style="list-style-type: none"><li>• <b>Planned Actions</b></li></ul>	✓	Remote copy operations using scripts (START/STOP, SUSPEND session, etc.) Simulate Site maintenance (SITE1 and SITE2) Simulate SITE1 failure and restart Production in recovery site

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