

Configuring z/OS to Ensure Successful DASD Swap Using the CRITICALPAGING Function

During a DASD Swap, using Basic HyperSwap, GDPS HyperSwap Manager or other swap technologies, a system may require access to a page that is currently paged out. In order to resolve the page fault, I/O to a paging DASD device is required. If the page device is among the devices that are frozen/suspended during the DASD Swap, the page fault will not be immediately resolved. The page fault will be resolved when I/O to the device is resumed. If the page fault is not resolved in a timely fashion the DASD Swap may fail due to a timeout. Depending on the specific page that took the page fault, and on the impacted code path, a system may be removed from the sysplex during a DASD Swap.

This may result in a system being removed during a DASD Swap. Depending on the SFM policy, SFM may remove the system. Alternatively, in a GDPS HyperSwap Manager environment, GDPS may remove a system if it fails to respond to a phase of the HyperSwap.

While it may be most likely that a page fault occurs in XCFAS in this scenario, it is possible a similar result may occur for any address space critical to DASD Swap.

IBM strongly recommends enabling the CRITICALPAGING function to significantly reduce the possibility that address spaces critical to DASD Swap completion will require page fault resolution. The set of declared critical system address spaces for DASD Swap are: RASP (RSM), GRS, CONSOLE, XCFAS. Also, the address spaces associated with Basic HyperSwap in base (HSIB), Basic HyperSwap API (HSIBAPI), and GDPS HyperSwap Communication Task (often jobname GEOXCFST) are declared critical. The page fault avoidance is accomplished by RSM “hardening” the pages associated with declared critical address spaces. This is accomplished by making the pages in these address spaces least likely to be evicted from real memory and paged out to an auxiliary DASD device by z/OS’s page replacement algorithms. This includes storage for the critical address spaces, dataspace and scroll hiperspaces associated with critical address spaces, 31-bit common and PLPA storage.

By simply enabling the CRITICALPAGING function the IBM address spaces associated with Basic HyperSwap and GDPS HyperSwap Manager will automatically receive the benefit of CriticalPaging. For other swap technologies, you may need to create program properties table (PPT) entries for each of address spaces which need to be “hardened.”

For details pertaining to configuring systems and enabling CRITICALPAGING:

www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101800

When used correctly, enablement of the CRITICALPAGING function will significantly reduce the likelihood of experiencing DASD Swap hang or failure or system outages due to inaccessible paged-out storage during a DASD Swap.