VM/HPO 5 Active Wait spin loop fix (Level 519, PTF 8904)
August 21, 2020

Apply the fix to the MP nucleus (ipl address 1C1):

1. Mount the 'hpo_spin_fix.aws' tape and load the contents to MAINT's 191 disk. There are four
    files (DMKAPI AUXH50, DMKAPI A99999DK, DMKWAI AUXH50, DMKWAI A99999DK). Use
    VMFPLC2 to load the tape:

    ATT 480 * 181
    VMFPLC2 LOAD * * A

2. Edit DMKSYS ASSEMBLE. In DMKSYS you must adjust these: Change SYSRES=1C0 to
    SYSRES=1C1. Change SYSCOR MP=NO to MP=YES.
3. Reassemble this list of programs:

    VMFASM DMKSYS DMKH50M
    VMFASM DMKRIO DMKH50M
    VMFASM DMKAPI DMKH50M
    VMFASM DMKWAI DMKH50M

4. Purge the listings from the reader.

    CP PUR * R ALL

5. Build the CP load deck. Use H50APLOD for MP systems (as well as AP).

    VMFLOAD H50APLOD DMKH50M

6. Write the nucleus to the 1c1 volume:

    IPL 00C CLEAR

7. IPL CMS
8. When CMS is up, capture the CP nucleus map:

    READ CPNUC1C1 MAP

9. Shutdown the system. Be sure your Hercules configuration specifies 2 CPUs. Then IPL 1C1.

The spin loop fix is adjustable. By default after IPL, the spin loop fix uses a 150 timer unit interval for
the work queue scan by CP. With the system idle (every thing started up but no one doing
anything), note the mips used by Hercules and the rate of the instructions executed count, as well as
the host computer platform's overhead level, if any.

To adjust the spin loop scan rate, store the timer units value at location hex 824. Use the CP STCP
command to do this. Lower values increase the scan rate (more overhead but faster responses).
The lowest value is 0, and anything over 1000 or so would be essentially unusable. 25 is a good

recommendation if you are comfortable with the host system's overhead and busy-ness. Watch the mips rate, instruction counter, and host system monitors to determine your overhead levels.   Adjust the value like this:

CP STCP 824 25

This will store a hex 25 in location hex 824.   Location 824 is where the spin loop fix will obtain the timer unit value to use. The change is immediate.

Once satisfied with the units value of your choice, you can make this permanent after each ipl by placing the 'CP STCP 824 nnn' command into the PROFILE EXEC of the AUTOLOG1 machine. (in lieu of doing it this way, you could also edit the DMKWAI A99999DK file and change the AWINT value and reassemble and re-build the MP nucleus).

The CP STCP command must be issued by a Class A userid or operator. You can also query the current value like this:

CP DCP 824

Will show the value (for example):

cp dcp 824
000824   00000025
Ready; T=0.01/0.01 18:39:36