TSO LOGON with the Same Userid on Multiple LPARs in a Sysplex

by Thomas Conley

Job Entry Subsystem 2 (JES2) removed a restriction for Time Sharing Option (TSO) id's back in z/OS Version 1 Release 4 (V1R4) that prevented a user from logging on to multiple JES2 members in the same Multi-Access Spool (MAS) with the same userid ("multiple logon"). Before JES2 removed this restriction, a user had to use a different logon id to access another JES2 member in the same MAS. When users began to exploit multiple logon, a number of incompatibilities were discovered with TSO, Interactive System Productivity Facility (ISPF), Spool Display and Search Facility (SDSF), and even JES2 itself.

Back in early 2004, the ISPF SHARE committee (Tom Conley, Lionel Dyck, and Jim Narramore) met to discuss the new feature in JES2 permitting multiple logon. Based on that meeting, Lionel Dyck wrote an article in May of 2004 laying the groundwork for overcoming some of the difficulties with implementing multiple logon (See item 1 in the References). Since then, the requirements for implementing multiple logon have changed significantly. This article will review the original recommendations from May of 2004, discuss changes since then, and then describe current requirements for implementing multiple logon.

Dyck listed four steps to implement multiple logon support.

1. Ensure that the SYSIKJUA enqueue scope is SYSTEM, not SYSTEMS, and ensure the SYSIKJUA enqueue isn't specified in the exclude list for your serialization product.
2. Code and install ISPF exit 16 to ensure ISPF temporary datasets (TEMP, CNTL, LIST, LOG, etc.) have unique names for each Logical Partition (LPAR).
3. Choose among one of three ISPF profile dataset strategies, a non-shared profile dataset unique to each LPAR, a temporary profile dataset with primed members, or a shared profile dataset for all systems.
4. When choosing a shared profile dataset, change the SPFEDIT enqueue from SCOPE=SYSTEMS to SCOPE=SYSTEM for datasets matching the profile dataset name (e.g. *.ISPF.PROFILE).

In the shared profile environment listed in step 3, the last system to update the profile "wins"; any previous updates to the profile are discarded. The last update is reflected the next time the profile is opened. When using non-shared or temporary profile datasets, it was discovered in early 2005 that data loss is also a problem due to ISPF EDIT recovery.

ISPF saves EDIT recovery data in profile member ISREDRT. In a temporary profile environment, EDIT recovery changes are lost because ISREDRT is not saved across ISPF sessions. In a non-shared profile environment, a user logs on to SYSA, edits a dataset, gets called away, then times out, creating a pending recovery for the dataset on SYSA. A few hours later, the same user logs on to SYSB and edits the same dataset. Due to the non-shared profile, SYSB does not detect the pending recovery because the ISREDRT recovery member is in the non-shared profile dataset for SYSA. The user then saves the dataset on SYSB. The user later logs on to SYSA to edit a dataset, is presented with the ISPF edit recovery screen, recovers the dataset and saves it, causing the updates from the SYSB edit session to be lost. The data loss can be anything from a minor nuisance to a major problem, depending on the extent of the recovery. Because the results can vary greatly, it's difficult to detect. Some sites have taken months to detect this problem.

Due to the problems with non-shared or temporary profiles and ISPF EDIT recovery, a shared profile dataset is really the only option. Unfortunately, since the last system to update the profile always won, ISPF development needed to create a solution that was more flexible and addressed the enqueue issues from implementation step 4. In z/OS Version 1 Release 9 (V1R9), ISPF released shared profile support, which modifies the profile enqueue mechanism to allow multiple systems to safely share and update the profile dataset. Previously, and with non-shared profile support, ISPF issues an exclusive enqueue while the profile dataset is open. With z/OS V1R9 and shared profile support, ISPF uses a shared enqueue when reading a profile member into storage, and an

exclusive enqueue when updates are written back to the profile member. This new enqueue mechanism eliminates the need to modify the ISPF enqueues as specified in step 4.

ISPF shared profile support is enabled with the ISPF Configuration Dialog ISPCCONF. The usage of ISPCCONF is beyond the scope of this article, so please reference the SHARE presentation “Configuring ISPF for Fun and Profit” (See item 2 in the References). ISPF also provides the SHRPROF command to control shared profile support for individual sessions. Shared profile support must be enabled for SHRPROF to work.

To enable ISPF shared profile support, enter ISPCCONF and go to option 1.4 to modify ISPF Site-Wide Defaults in the ISPF Keyword File. Scroll down to the ISPF shared profile options section, as shown in Figure 1. Specify a unique identifier for “Temporary Data Sets - Additional Qualifier”. Use the &SYSNAME system symbol in this parameter, which will create ISPF temporary datasets unique to each LPAR. This eliminates the need for an ISPF installation exit as specified in step 2 above. The ability to use system symbols in this parameter was added in z/OS Version 1 Release 5 (V1R5). Specify “/" for “Multi-logon Profile Sharing” to enable ISPF profile sharing support. Specify "/" for “Prompt for Profile ENQ Lockout” if you want to be prompted when the profile cannot be updated by ISPF due to ENQ contention. For “ENQ Lock Wait” and “ENQ Lock Retry Count”, use the defaults of 1000 (1 second) and 1, respectively, unless you have an experience that would cause you to change them.

For profile conflicts, use the defaults of "Keep" for profile conflicts under TSO, which works as ISPF currently does (last update "wins"), and "Discard" for batch, to prevent batch updates from overriding TSO updates. “Discard” could also be used to make one system the "master", where the master system would specify "Keep" and all other systems would specify "Discard", but otherwise isn’t recommended. “Prompt” is probably too annoying to be of general use.

The last step in implementing shared profile support is to create a shared profile dataset for each user and modify TSO logon or ISPF invocation process to allocate the shared profile dataset. Once implemented, the SHRPROF command can be issued by users to tailor their own profile environment. Enter SHRPROF on any ISPF command line, and you will see the pop-up panel shown in Figure 2. The user can then specify their customized settings for profile sharing.

If you’re running z/OS V1R4 to Version 1 Release 8 (V1R8) with multiple logon, and you’re using non-shared or temporary profile datasets, STOP. Create shared profile datasets, use ISPF exit 16 (z/OS V1R4) or the ISPF temporary qualifier configuration setting (z/OS V1R5 or higher) to create unique dataset names for LOG, LIST, etc., and change the SPFEDIT ENQ from SCOPE=SYSTEMS to SCOPE=SYSTEM for datasets matching your ISPF profile dataset names. If your installation is at z/OS V1R9 or higher and running with non-shared or temporary profile datasets, STOP. Create shared profile datasets, and enable ISPF shared profile support.

The ISPF manuals lack complete documentation for shared profile support. There are a few screen shots of the ISPCCONF panels and the SHRPROF panel, but little else. A Reader Comment Form (RCF) has been submitted to IBM to flesh out this information and ISPF support is working to provide it. The RCF also calls for IBM to document and recommend the use of a shared profile dataset to avoid the problems related to ISPF edit recovery.

If your installation is at z/OS V1R9 or higher, these are the steps to implement multiple logon support:

1. Ensure that the SYSIKJUA enqueue scope is SYSTEM, not SYSTEMS, and ensure that the SYSIKJUA enqueue isn’t specified in the exclude list for your serialization product.
2. Use the ISPF Configuration Dialog, ISPCCONF, to specify unique temporary dataset names and enable shared profile support.
3. Allocate shared profile datasets and modify logon procedures to allocate them.

There are still issues with multiple logon support. JES2, Job Entry Subsystem 3 (JES3), SDSF, and TSO/E all have issues that require resolution. Some have been fixed, while others remain open, depending on your release of z/OS.

While z/OS V1R4 JES2 removed the restriction that prevented multiple logon, JES2 had another problem that wasn't addressed until z/OS Version 1 Release 12 (V1R12). If a user logged on to SYSA, then logged on and submitted a job on SYSB, the notify message for the job would be routed to the userid on SYSA. JES2 would always route the notify message to the system that logged on first. With z/OS V1R12, JES2 was modified to route the notify message to the userid and system that submitted it. While JES2 has addressed this shortcoming, JES3 hasn't yet addressed the notify issue.

SDSF also has an issue with multiple logon. A user logged on to SYSA goes into SDSF LOG/ULOG, then logs on to SYSB and enters SDSF LOG/ULOG. If the user issues a command on SYSB from SDSF, the command response won't appear in the SYSB LOG/ULOG, it appears in the SYSA ULOG. By default, SDSF sets Extended Multiple Console Support (EMCS) console id to userid, so all command output is routed to the system first establishing the console id. As a temporary workaround, you can issue SET CONSOLE with a unique id for each ISPF session. But since SDSF saves the console id in the ISPF profile, you must issue SET CONSOLE for subsequent SDSF sessions as well. A SHARE requirement was submitted circa 2005 and SDSF development is aware of this issue, but it remains unresolved. Please let SDSF development know if you're interested in this requirement.

z/OS V1R12 also corrected an issue with TSO SEND failures. Some sites using multiple logon received the following send failure message IKJ57022I USER(S) IBMUSER NOT LOGGED ON OR TERMINAL DISCONNECTED, MESSAGE CANCELLED. TSO/E required changes to fully support multiple logon, and delivered that support in TSO/E V1R12.

REFERENCES

1. http://www.lbdsoftware.com/Logging_OnTo_Multiple_LPARS.pdf
2. http://home.roadrunner.com/~pinncons/Configuring ISPF for Fun and Profit.pdf.

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Figure 1 – ISPCCONF option 1.4 panel showing settings for shared profile support

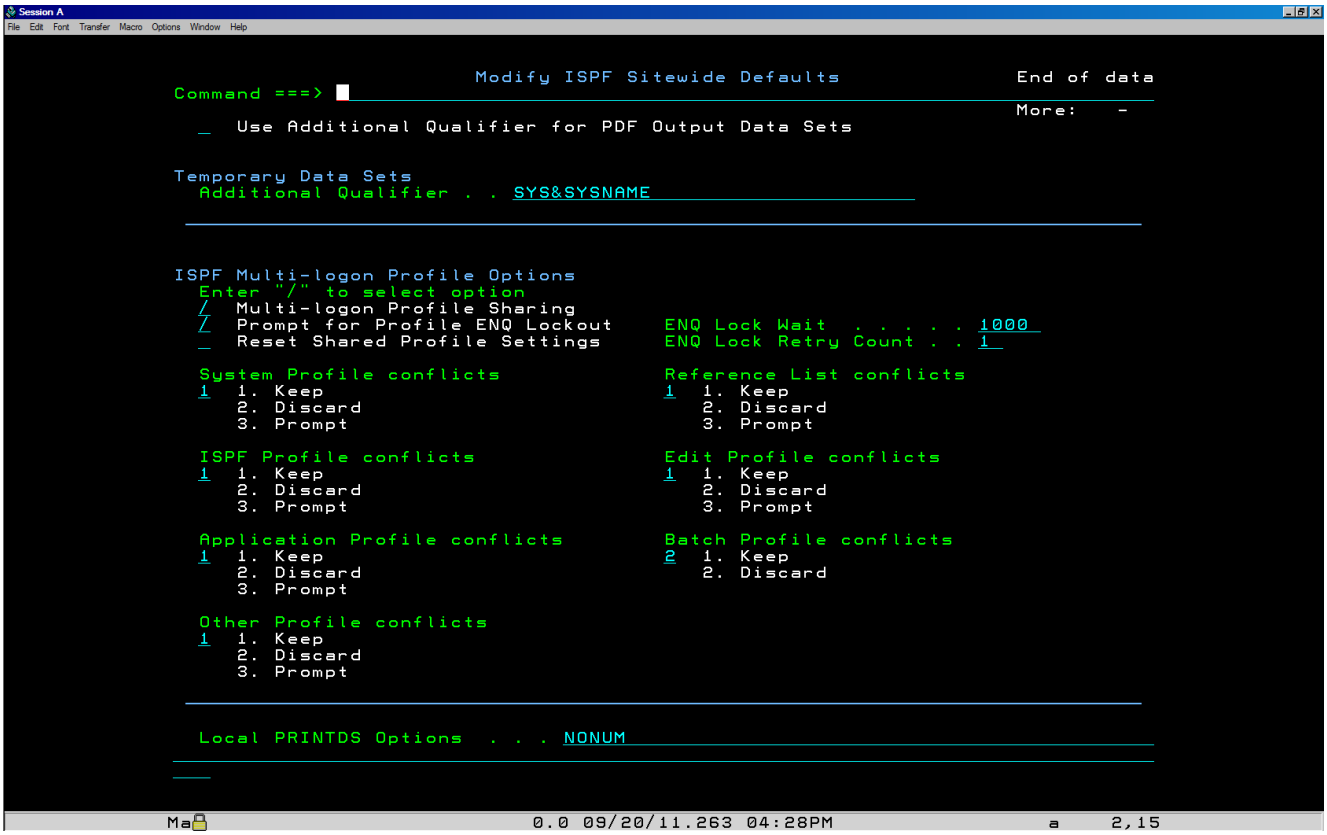

Figure 2 – SHRPROF pop-up panel for users to customize settings for their session