IBM Education Assistance for z/OS V2R1

Item: System Symbol Update
Element/Component: BCP

Agenda

- Trademarks
- Presentation Objectives
- Overview
- Usage & Invocation
- Appendix

Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.

Presentation Objectives

Describe changes with respect to system symbols

- New symbol &SYSOSLVL
- System symbol updates for local system

Overview

- Problems:
  - For data set naming, it can be nice to include the z/OS release, but that is not directly available as a symbol
  - There is no formal support for adding (or changing) system symbols without an IPL. The IEASYMUP tool is not formally supported and its updates are transient (i.e., will not be present if there is a re-IPL)
- Solution:
  - Provide symbol &SYSOSLVL
  - Provide for symbol updates using a parmlib definition or batch job
- Benefit / Value:
  - Improved flexibility and resiliency

&SYSOSLVL

- Automatically set to Z1vvrrmm, where
  - "Z1" indicates z/OS (not that there is any plan to create some other named operating system, but if that were to happen, the symbol would probably instead begin with "Z2").
  - "vv" is the version, and can be viewed in field ECVTPVER
  - "rr" is the release, and can be viewed in field ECVTPREL
  - "mm" is the modification level and can be viewed in field ECVTPMOD
- For z/OS 2.1 the value will be Z1020100

SETLOAD xx,IEASYM

- The SETLOAD command is extended with a new option IEASYM
- This identifies a LOADxx member. That member's IEASYM statement is used to identify the IEASYMxx parmlib member(s) to be used to build a new, complete static system symbol table (not a delta)
- Thus, on re-IPL, use of this same LOADxx will produce the same set of symbols.

SETLOAD (cont)

- Note that no updates are sent to remote systems, so JES and ARM processing on remote system(s) on behalf of this system may continue to use the symbol table that they received when this system IPLed.
- If the IEASYM statement does not contain a valid suffix list, the system processes as if member IEASYM?? had been specified, resulting in a message indicating that member IEASYM?? was not found.

ENF 73

- New ENF signal 73 is produced when SETLOAD xx,IEASYM processes successfully.
- The ENF signal indicates that the local system's symbol table has been updated. The address of the symbol table has been stored in ECVTSYMT.
- The ENF exit routine, running synchronously under the work unit that did the update, gets control with SYSTEM ENQ qname SYSZSYM rname ASASYMBL held exclusive.

Other ramifications

- Every update creates a new complete symbol table and the old one remains allocated. There is no safe time at which point the system can free that storage. Thus it is better to make fewer updates with more changes than more updates each with fewer changes.
- z/OS UNIX may cache system symbols. It listens for the ENF signal and flushes that data upon a symbol update
- Automated Restart Manager: When symbols are used with RESTART_METHOD, note that the symbols are resolved using the symbol table from the system where the job initially registered as an element of automatic restart management. The symbols that were in effect on that system when the job initially registered are used; symbols added or changed subsequently are not used.

Other ramifications (cont)

- JES3 updates the symbol table for a system every time that the system connects to the JES3 global. This includes the global connecting to itself. A connect can also be requested via the *S sysname,CONNECT JES3 command. If you have updated a system's symbols using the SETLOAD IEASYM command and you want JES3 to use those updated symbols for future conversions, you may request re-connection by using the S sysname,CONNECT command, where sysname is the name of the system where the symbol table was recently updated. This update will not affect jobs that have already undergone conversion.

IEF900I

- IEF900I SYSTEM SYMBOLS WERE UPDATED FROM memname
- Explanation: The SETLOAD IEASYM command was processed successfully. This system's system symbols have been updated.
- In the message text:
- memname: The name of the LOADxx member that contained the information about IEASYMxx members.
- System Action: Processing continues
- Operator Response: None
- SP Response: None
- Routing Codes: None
- Descriptor Codes: 5
- Component: Allocation

IEF901I

- IEF901I SYSTEM SYMBOLS WERE NOT UPDATED FROM memname. Text
- Explanation: The SETLOAD IEASYM command was not processed successfully.
- text is one of the following:
- INSUFFICIENT STORAGE
- The system could not obtain the necessary storage to process the request.
- IEFPRMLB RETURN CODE=retcode REASON=rsncode
- The IEFPRMLB service did not complete successfully. The return and reason code from the IEFPRMLB service are contained within the message text.

IEF901I (cont)

- CHECK PRECEDING MESSAGES
- Previous messages, such as IEA012E and IEA013E identified the problem(s).
- NO IEASYM STATEMENT WAS FOUND
- The LOADxx member did not contain an IEASYM statement.

- In the message text
- memname:
- The name of the LOADxx member that contained the information about IEASYMxx members

IEF901I (cont)

- System Action: Processing continues
- Operator Response: Notify the system programmer
- SP Response: Make sure that you identified a correct LOADxx member and that the referenced IEASYMxx members are correct
- Routine Codes: none
- Descriptor Codes: 5
- Component: Allocation

CHECK(IBMSUP,SUP_SYSTEM_SYMBOL_TABLE_SIZE)

- Checks to see whether the size of the static system symbol table has exceeded the threshold. The check is initially run once and is also run when the SETLOAD xx,IEASYM command is successfully processed.
- UPDATE statement for overriding defaults:

```
UPDATE,
CHECK(IBMSUP,SUP_SYSTEM_SYMBOL_TABLE_SIZE),
INTERVAL(ONETIME),
SEVERITY(LOW),
PARM('LIMIT(85%)'),
DATE('20100901'),
Reason('Your reason for making the update.')
```

CHECK(IBMSUP,SUP_SYSTEM_SYMBOL_TABLE_SIZE)

Parameters accepted:

- LIMIT({n | p%}) which defines a threshold value. “n” may be a decimal number in the range 1 to 32512. “p%” identifies a percentage p in the range 1 to 100 from which the threshold value is calculated based on the system maximum symbol table size of 32512 bytes.

CHECK(IBMSUP,SUP_SYSTEM_SYMBOL_TABLE_SIZE)

IEAVEH110I The system symbol table size is *cursize* bytes. This has not exceeded the *checkowner_or_installation-specified* threshold of *threshold* bytes. The system maximum is *sysmax* bytes.

- Explanation: CHECK(IBMSUP,SUP_SYSTEM_SYMBOL_TABLE_SIZE) determined that the size of the system symbol table has not exceeded the *checkowner_or_installation-specified* threshold.

IEAVEH111E The system symbol table size is *cursize* bytes. The *checkowner_or_installation-specified* threshold of *threshold* bytes has been exceeded. The system maximum is *sysmax* bytes.

- Explanation: CHECK(IBMSUP,SUP_SYSTEM_SYMBOL_TABLE_SIZE) determined that the system symbol table size has exceeded the *checkowner_or_installation-specified* threshold.

IEASYMU2

- SETLOAD xx,IEASYM (“starts fresh and is ready for next IPL”) : This indicates to process the IEASYM statement in LOADxx found in your parmlib concatenation.
  - There is a SETLOAD xx,IEASYM,DSNAME=dd,VOLUME=vv. if you want to point to a data set outside the parmlib concatenation.
- IEASYMU2 (“the accumulator”) replaces IEASYMUP. IEASYMU2 is similar to IEASYMUP, in that you can run a batch job to update the system symbols. The same FACILITY class profile (IEASYMUP.*) is used.
- However, IEASYMU2 changes (or a continued use of IEASYMUP, for that matter) will not be reflected when you do a subsequent SETLOAD xx,IEASYM .

Appendix

- Publications:
  - MVS Initialization and Tuning Guide SA23-1379-00
  - MVS System Commands SA38-0666-00
  - z/OS V2.1 Migration
    - Read this book to understand the considerations of using the old IEASYMUP/SYMUPDTE.