

IBM Education Assistance for z/OS V2R3

RMODE 64

Element/Component: CSV, SDUMP, SLIP, IPCS, GTF, RTM

Agenda

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Trademarks

- See url <http://www.ibm.com/legal/copytrade.shtml> for a list of trademarks.
- Additional Trademarks:
 - None.

Session Objectives

- **Describe the extent of RMODE 64 being provided in this release.**

Overview

- **Problem Statement / Need Addressed**
 - **Problem: Running out of room in the 2G address space**
- **Solution**
 - **Allow modules to be loaded by normal system mechanisms above 2G**
 - **Limitations: really only for assembler modules in this release. Some support for Java exception handling. Support for LE is not included.**
- **Benefit / Value**
 - **More room for data below 2G**

Usage & Invocation

- The binder may create a module that is RMODE 64
- It may be in a PDS or PDSE
- It is not clear if in this release ISPF member list processing will display RMODE 64 or not (we hope that that happens)
- New binder control statement RMODEX(64TRUE)
- Restriction: a program object may have CSECTs that are of the three RMODEs (24, 31, 64) but the resulting program object, even with RMODE=SPLIT, will have only two (the user can control which two)

Usage & Invocation

- **System services to bring a module into storage**
 - **LOAD**
 - **ATTACHX**
 - **LINKX**
 - **XCTLX**
- **System services that also deal with modules**
 - **SYNCH**
 - **IDENTIFY**
 - **CSVDYLPA**
- **System services to find out information about modules**
 - **CSVQUERY**
 - **CSVINFO**

Usage & Invocation

- **LOAD**
 - You already could use LOAD with ADDR64 (“directed load” to put a module above 2G)
 - New keyword: LOADPT64=ptr64
- **SYNCH**
 - You can indicate RMODE 64 (the x'08' bit of the 1st byte of the parameter list)
 - When RMODE 64, provide an 8-byte target address in reg 15
- **IDENTIFY**
 - New parameter ENTRY64= to provide 8-byte entry point address

Usage & Invocation

- **CSVDYLPA (dynamic LPA)**
 - **MODINFO64** keyword to provide and get 64-bit information
 - **DSECT LPMEA64** in **CSVLPRET** to provide and get 64-bit information
 - **OUTAREA64PTR** keyword to get 64-bit information
- **CSVQUERY**
 - Can query by a 64-bit address (**INADDR64**)
- **CSVINFO**
 - Provide 64-bit address information

Usage & Invocation

- **SVC Dump**
 - **As it dumps private-area and LPA modules below 2G, it will also dump module segments above 2G**
- **SLIP**
 - **As it can match on a private-area or LPA module below 2G, it can match on a module that is above 2G**
- **IPCS**
 - **WHERE can locate private-area and LPA modules above 2G**

But...

- **Just because you can get the system to put a module above 2G does not mean that it will work there**
- **If you have 4-byte address constants: no**
- **If you invoke any service that is entered by SVC or PC: maybe**
 - **We hope that you will help identify and prioritize services that would be most useful to support RMODE 64 callers**
 - **WAIT and Pause/Release do work**
- **If you're using z/OS recovery routines such as ESTAE, ARR, FRR: the routines themselves must be below 2G**
- **If you have an asynchronous exit (e.g., timer exit), the exit routine must be below 2G**
- **Judicious use of RMODE=SPLIT can be helpful**
- **If you see a module address of x'7FFFFBAD' it probably means that the display is not utilizing new fields that contain the full 64-bit address**

Interactions & Dependencies

- Software Dependencies
 - None
- Hardware Dependencies
 - None.
- Exploiters
 - Nothing explicit

Migration & Coexistence Considerations

- **Hand-building of contents directory entries (CDEs), while never supported, still works. But it is imperative that any such hand-built CDE not have the x'10' bit on at offset x'1A' because that indicates something new**
- **Any code that relies on the structure of the LPA directory (located by non-interface field CVTLPPDIR) must accommodate the fact that in this release the length of each entry has grown from x'28' to x'30' bytes.**

Installation

- No unique considerations

Session Summary

- **RMODE 64 is made more available to assembler applications**
- **Additional support forthcoming in future releases for Java and LE applications**

Appendix

Publications:

- z/OS MVS Assembler services reference
- z/OS MVS Data Areas
- z/OS MVS System Commands
- z/OS Initialization & Tuning Reference