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 CVTLPDIR) 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