IBM Education Assistance for z/OS V2R2

Item: SLIP ACTION=CMD
Element/Component: BCP Service Aids

Agenda

- Trademarks

- Presentation Objectives

- Overview

- Usage & Invocation

- Migration & Coexistence Considerations

- Miscellaneous

- Presentation Summary

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Trademarks

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

Presentation Objectives

- Find out what SLIP ACTION=CMD can do for you

- Learn about the DESC parameter to describe wait state and dumps

- Learn about miscellaneous Service Aids (SVA) enhancements
    - IPCS
        - Show the BEAR
        - Allow system symbols in IPCS parmlib members
        - NOALIGN/ALIGN for IP LIST output
        - CBFORMAT model header can now show 64 bit addresses
    - PDUU
        - Greater than 999 files supported
        - NO_FTP option
        - MGMTCLAS option

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Overview - Review

- What is SLIP?
    - Serviceability Level Indication Processing
    - System command
    - Intercepts system events and takes requested actions
        - System events:
            - Error events
                - ABENDs, program checks, SVC errors, EOT/ EOM
            - PER (program event recording) events
                - IF – instruction fetch – range of code is executing
                - SBT – successful branch
                - SA - storage alteration
                - ZAD – referencing storage from a zero pointer

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Overview - Review

- Actions:
  - SVCD, SYNCSVCD – take a dump
  - WAIT – cause a wait state
  - RECORD – create a logrec
  - RECOVERY – force recovery
  - REFBEFORE, REFAFTER – clear storage
  - NODUMP, NOSVCD, NOSYSA, NOSYSM, NOSYSU
    – do not take a dump
  - NOSUP – ignore dae (and take a dump)
  - STOPGTF – stop gtf recording when trap disabled
  - TRACE, STRACE – issue a trace (gtf or system)
  - TRDUMP, STDUMP – trace and dump when trap disabled
  - SUBTRAP, TARGETID, IGNORE – affect other SLIP traps
  - **COMMAND – issue a console command**

Overview - ACTION=CMD

- Problem Statement / Need Addressed
  - For better problem determination and first failure data capture (FFDC), SLIP should be enhanced to allow COMMAND as an ACTION to a slip trap event

- Solution
  - Allow a COMMAND to be issued as the result of a slip trap event in addition to other actions such as SVCD

- Benefit / Value
  - Problem determination and analysis can now include timely issuance of console commands as the result of a SLIP trap being hit

Overview – DESC parameter

- Problem Statement / Need Addressed
    - For better problem determination and FFDC, SLIP should be enhanced to allow a DESC keyword to customize WAIT state descriptions and dump headers (SVCD, SYNCSVCD, STDUMP, TRDUMP)

- Solution
    - Allow a DESC keyword to provide a description that will show up in WAIT state messages or dump header

- Benefit / Value
    - Installations can use DESC to more easily describe WAIT states and dumps initiated by SLIP actions, and understand where and why they occurred

Usage & Invocation – Action=CMD

- ACTION=CMD will allow SLIP to issue a command:

```
SLIP SET,...,ACTION=CMD,CMD='command1',END
```

  - Allowed on all types of traps including PER and error events
  - Allowed with other actions except WAIT and IGNORE
  - Not allowed as a REMOTE option (however ROUTE can used as a command)
  - Up to 8 commands can be specified as such:

```
SLIP SET,...,ACTION=CMD,CMD=('command1','command2',...),END
```

  - The command can be broken into parts with nested parentheses

```
SLIP SET,C=071,SDATA=(ALLNUC,SQA,CSA,LPA,LSQA,ALLPSA,RGN,
    SUM,TRT),REASON=20,ID=SS71,
    CMD=('command 1',('command 2 part 1',
    'command 2 part 2'),('command 3 part 1',
    'command 3 part 2','command 3 part 3')),A=(SVCD,CMD),END
```

Usage & Invocation – Action=CMD

- MVS commands can be up to 126 characters long
  - SLIP accepts the commands in the CMD buffer up to 126 characters
- Use the SLIP parmlib to issue longer SLIPs
  - add the SLIP to an IEASLPxx parmlib
  - issue a SET SLIP command
- To use a quote character ('), enter two quotes (")
  - The extra quote does not count against the character limit

- The user issuing the SLIP command must have authority to issue embedded commands
  - SLIP does a MGCRE and passes the SLIP issuers authorization
  - Authorization is copied from the SLIP trap enabler (See Appendix B)

Usage & Invocation – Action=CMD

- There is no guarantee in the order of completion of commands; command processing is asynchronous after a SLIP event

- If multiple matches for a SLIP with A=CMD, commands may not be issued for every match, but will be issued at least once

- There is no default MATCHLIM for A=CMD.
    - IBM strongly recommends using MATCHLIM or PRCNTLIM when using A=CMD
    - If the commands specified can cause the trap to be hit again, the sequence could recursively continue indefinitely. This can have a serious impact on system performance.

Usage & Invocation – DESC

- DESC will allow a description to be set for WAIT or dump actions (SVCD, SYNCSVCD, TRDUMP, STDUMP)

```
SLIP SET,...,ACTION=SVCD,DESC='dump description',END
```

  - DESC is optional

  - DESC can be up to 65 characters in length

Usage & Invocation – Messages

- SLIP display message IEE7351 also shows DESC=.... and CMD=.... when specified for the input slip trap

- SLIP message IEE836D has a new *err* description:

```
IEE836D SLIP {ID=xxxx|COMMAND} ERROR - keywd - err , COL nnn.
ENTER 1 KEYWORD, NULL LINE, OR 'CANCEL'.
```

  - When more than 8 commands are entered *err* can now also be

```
TOO MANY COMMANDS
```

Usage & Invocation – Example 1

- Example: Set a SLIP and DISPLAY it:

- **SLIP SET**,C=0C1,ID=NRJ1,A=(SVCD,CMD),CMD=('D SLIP','D GRS'),DESC='Nicks Command Action and Dump',END

- **D SLIP**=NRJ1

  ```
  IEE735I 15.15.04 SLIP DISPLAY 523
  ID=NRJ1,NONPER,ENABLED
  ACTION=SVCD,CMD,SET BY CONS CON3E0Y1,RBLEVEL=ERROR
  MATCHLIM=1,0,COMP=0C1
  CMD=('D SLIP',
       'D GRS')
  DESC=Nicks Command Action and Dump
  ```

Usage & Invocation – Example 1

- ## Example: Force an OC1

```
IEA992I SLIP TRAP ID=NRJ1 MATCHED.  JOBNAME=*MASTER*, ASID=0001.
IEA411I SLIP TRAP ID=NRJ1 DISABLED FOR MATCHLIM
IEA045I AN SVC DUMP HAS STARTED AT TIME=15.15.41 DATE=06/17/2013
FOR ASID (0001)
QUIESCE = YES
IEE735I 15.15.41 SLIP DISPLAY 545
ID   STATE    ID   STATE    ID   STATE    ID   STATE
SQAO ENABLED  NRJ1 DISABLED
IEA794I SVC DUMP HAS CAPTURED:
DUMPID=001 REQUESTED BY JOB (*MASTER*)
DUMP TITLE=SLIP DUMP ID=NRJ1, Nicks Command Action and Dump
ISG343I 15.15.42 GRS STATUS 550
SYSTEM    STATE                SYSTEM    STATE
SY1       CONNECTED
GRS STAR MODE INFORMATION
  LOCK STRUCTURE (ISGLOCK) CONTAINS 1048576 LOCKS.
  THE CONTENTION NOTIFYING SYSTEM IS SY1
  SYNCHRES:      YES
  ENQMAXU:      16384
...
```

Usage & Invocation – Example 2

- Example: Set a WAIT DESC SLIP

```
SLIP SET,C=0C1,ID=NRJ1,A=WAIT,DESC='Nicks Test Dump
Description',END
```

- Force an 0C1 and show the resulting wait state message:

```
IEE844W SLIP TRAP NRJ1 MATCHED.  ACTION=WAIT  TYPE=RTM2
DESC: Nicks Test Dump Description
RTM2WA ADDR:  7F53CCF0                    BEAR: 00000000_08288EA2
PSW:          07042000 80000000 00000000 08288ECE
CR 3-4:       00C00037 00000037
AR/GR 0: 00000000/00000000_01000000    1: 00000001/0A5CD588_01111111
         2: 00000001/FFFFFFFF_01222222    3: 00000001/FFFFFFFF_01333333
         4: 00000001/FFFFFFFF_01444444    5: 00000001/FFFFFFFF_01555555
         6: 00000001/FFFFFFFF_01666666    7: 00000001/FFFFFFFF_01777777
         8: 00000001/FFFFFFFF_01888888    9: 00000001/00000000_01999999
         A: 00000001/00000000_0A5CD350    B: 00000001/00000000_0A5CD588
         C: 00000001/00000000_0828AB78    D: 00000001/00000000_01DDDDDD
         E: 00000001/00000000_01EEEEEE    F: 00000001/FFFFFFFF_01FFFFFF
RESTART THE SYSTEM TO CONTINUE
```

Migration & Coexistence Considerations

- Keep in mind:
    - SLIP commands that are routed to all consoles containing ACTION=CMD or DESC will fail syntax checking on pre V2R2 systems

    - SLIP commands in IEASLPxx or COMMNDxx with ACTION=CMD or DESC will fail syntax checking when processed on pre V2R2 systems

Miscellaneous - IPCS

- Do a better job of showing the BEAR during IPCS processing
  - BEAR symbol available in IPCS

```
IP LIST BEAR
BEAR - Breaking Event Address Register
LIST 0FF0. HEADER LENGTH(X'08') STRUCTURE(Bear)
+00000 00000FF0. 00000000 08601EA2
```

- Recognize system symbolics in IPCS parmlibs
  - BLSCECT, BLSCUSER, and IPCSPRxx now support system symbols
  - Helpful to use for setting the SYSDDIR statement

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Miscellaneous - IPCS

- NOALIGN/ALIGN for IP LIST output
    - ALIGN is now a SETDEF DISPLAY(...) option
    - ALIGN displays the storage for LIST output AREA, STRUCTURE, BIT, and CHAR pointers aligned to the previous double word boundary
    - For example: `IP LIST 3.` generates this:

```
LIST 03. ASID(X'0024') LENGTH(X'1000') AREA
00000003.          00 000130E1 00000000 00000000 |   ............|
00000010. 00FD9A48 00000000 7FFFF000 7FFFF000 |........".0.".0.|
00000020. 7FFFF000 7FFFF000 7FFFF000 7FFFF000 |".0.".0.".0.".0.|
```

    - NOALIGN displays the storage for LIST output aligned to the requested bit boundary

```
LIST 03. ASID(X'0024') LENGTH(X'1000') AREA
00000003. 00000130 E1000000 00000000 0000FD9A |................|
00000013. 48000000 007FFFF0 007FFFF0 007FFFF0 |.....".0.".0.".0|
00000023. 007FFFF0 007FFFF0 007FFFF0 00000000 |.".0.".0.".0....|
```

Miscellaneous - IPCS

- CBFORMAT model header can now show 64 bit addresses

```
IP CBFORMAT 0000004800004000. STR(WXYZ)


WXYZ: 00000048_00004000

+0000  Id....... ABCD       Length... D48000  Version.. 00
....
```

Miscellaneous - PDUU

- >999 files supported
    - PDUU can generate up to 99,999 files instead of up to 999

- MGMTCLAS option
    - PDUU SYSIN allows for MGMTCLAS specification in addition to existing DATACLAS and STORCLAS keywords

    - New message to enforce MGMTCLAS input boundaries
        - `AMA763I THE LENGTH OF MGMTCLAS NAME SPECIFIED IS NOT BETWEEN 1 AND 8 CHARACTERS`

Miscellaneous – PDUU - NO_FTP

▪ NO_FTP option to separate and compress but not FTP files (RFE 69536)
  – Clients with closed data centers (with no outside internet access) want to use PDUU to prepare files to be brought to IBM without FTPing the files over the internet

  – NO_FTP(Y) indicates for PDUU to prepare the files and move them to a local USS directory without using FTP transfer
    • PDUU will separate and compress the files to manageable chunks
    • Encryption can be performed
    • PDUU uses TSO services to send the files
    • Options ignored:
      – SYSIN parameters: TARGET_SYS, CC_FTP, USERID, PASSWORD
      – FTPCMDS DD
    • CC_FTP is set 1

Miscellaneous – PDUU - NO_FTP

- Once transferred files can be extracted by the input USS directory depending on the PMR and target DSN input
  - e.x.: PMR.TARGET_DSN.Tdate.MTFTP.F00002 to Fnnnnn.
  - Number of files depends on WORK_DSN_SIZE and how well compression performs
  - A small file with suffix F001 contains info IBM needs to recreate the file
  - Bring all files to IBM as you normally bring service documentation.

- SYSTSPRT DD can be used to debug TSO problems. IF AMA778I shows a return code '4'x and a function code 'C'x the messages may help debug the failure.

Miscellaneous – PDUU - NO_FTP

- Example:

```
//FTP       EXEC PGM=AMAPDUPL
//SYSPRINT DD  SYSOUT=*
//SYSTSPRT DD  SYSOUT=*
//SYSUT1    DD  DISP=SHR,DSN=H44IPCS.WESSAMP.TRKS055K
//SYSIN     DD  *
NO_FTP=Y
TARGET_DSN=WESSAMP.BIGFILE
WORK_DSN=WES.FTPOUT
WORK_DSN_SIZE=500
DIRECTORY=/u/nickj/pduu/
PMR=12345.123.123
```

- These files are generated in the /u/nickj/pduu/ directory

```
12345.123.123.WESSAMP.BIGFILE.TE3246.MTFTP.F00002
12345.123.123.WESSAMP.BIGFILE.TE3246.MTFTP.F00003
12345.123.123.WESSAMP.BIGFILE.TE3246.MTFTP.F00004
…
12345.123.123.WESSAMP.BIGFILE.TE3246.MTFTP.F001
```

Presentation Summary

- You've now learned
    - about the SLIP ACTION=CMD and what it can do for you
    - about the DESC parameter to describe wait state and dumps
    - about some miscellaneous SVA enhancements
        - IPCS
            - Show the BEAR
            - Allow system symbols in IPCS parmlib members
            - NOALIGN/ALIGN for IP LIST output
            - CBFORMAT model header can now show 64 bit addresses
        - PDUU
            - >999 files supported
            - NO_FTP option to separate and compress but not ftp files
            - MGMTCLAS option

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Appendix

- A – Publications

- B – SLIP CMD authorization notes

Appendix A - Publications

- Publications:
    - z/OS MVS Diagnosis: Tools and Service Aids – GA32-0905
    - z/OS MVS System Commands – SA38-0666
    - z/OS MVS IPCS Commands – SA23-1382
    - z/OS MVS System Messages
        - Vol 1 (ABA-AOM) – SA38-0668
        - Vol 7 (IEB-IEE) – SA38-0674

Appendix B – SLIP CMD authorization notes

- Authorization to issue commands is copied from the SLIP trap enabler
  - USER1 has authority for the SLIP command but not the CHNGDUMP command, and enters:
    ```
    SLIP SET,ID=UAC1,MSGID=IEE852I,DISABLE,ACTION=(CMD),
        CMD=('CHNGDUMP SET,SDUMP=(HCSABYASID,HCSY)'),END
    ```
  - USER2 has authority for the SLIP and CHNGDUMP command and enters:
    ```
    SLIP MOD,ID=UCA1,ENABLE
    ```
  - When IEE8521I is seen, the CHNGDUMP command is executed (as USER2 has authority to issue CHNGDUMP)
    ```
    IEA992I SLIP TRAP ID=UA1A MATCHED.  JOBNAME=*MASTER*, ASID=0001.
    CHNGDUMP SET,SDUMP=(HCSABYASID,HCSY)
    IEE712I CHNGDUMP PROCESSING COMPLETE
    ```
  - IF USER1 enabled UCA1, then when IEE8521I is seen, the CHNGDUMP command would not be issued
    ```
    IEA992I SLIP TRAP ID=UAC1 MATCHED.  JOBNAME/ASID NOT AVAILABLE.
    IEE345I CHNGDUMP AUTHORITY INVALID, FAILED BY SECURITY PRODUCT
    ```