Common z/OS Problems You Can Avoid

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Format for each topic:

- **External**: External symptoms, messages, abends, errors, results, etc… that you may encounter.

- **Action(s)**: Actions you can take to alleviate problem, reduce impact, correct errors, etc…
LLA - Considerations

- **External:**
  - ABEND878 Rsn10
  - LLA Refresh (F LLA,REFRESH) may result in a private storage shortage in LLA.
LLA - Considerations

- **Action:**
  - LLA should be started with Region=0M to avoid an ABEND878. Additionally, LLA region size should not be restricted by an IEFUSI exit or another means that results in less than 0M.
  - LLA storage requirement based upon duplicate sets of control blocks which are needed as old version blocks remain getmained while the new version being built.
  - Amount of storage needed for LLA control blocks varies depending on how many LNKLST sets are active, size of LNKLST set, and how many non-LNKLST libraries are managed by LLA.
  - Rather than balancing these variables against the LLA region size, it is better to allow LLA all the storage it needs with Region = 0M.
GRS – List Lock contention

- **External:**
  - One or more systems in the sysplex issues -
  - **ISG361A** GLOBAL REQUEST PROCESSING DELAYED ON *sysname*. THE SYSTEM HAS BEEN WAITING *seconds* SECONDS FOR THE LIST LOCK.
  
  - Initial appearance is that the ISG361A indicates this system is having a problem and may lead to capturing a standalone dump of the 'wrong' system necessitating another occurrence to capture appropriate documentation
GRS – List Lock contention

- **Action:**
  - ISG361A will be issued on all systems that are waiting for the LIST LOCK. The list lock serializes the ability to issue global multi-resource ENQ requests and therefore it is critical to operation of the sysplex. Any system *NOT* issuing this message should be dumped.
Language Environment – PTF or FMID install

- **External:** Applying HLE7720 or higher FMID and/or PTFs (especially those that update the AMODE64 parts) may result in errors:

  - **IEW2690E** 3530 ONE OR MORE FIELD DESCRIPTORS IN GOFF RECORD 3 WITHIN MEMBER CELQxxxx IDENTIFIED BY DDNAME SMPyyy ARE NOT VALID. ERRORID = 40.
  - **IEW2307E** 1032 CURRENT INPUT MODULE NOT INCLUDED BECAUSE OF INVALID DATA
  - **IEW2509S** 3602 MODULE CELQxxxx IDENTIFIED BY DDNAME SCEERUN2 IS AN UNSUPPORTED VERSION AND CANNOT BE PROCESSED
  - **IEW2307E** 1032 CURRENT INPUT MODULE NOT INCLUDED BECAUSE OF INVALID DATA
  - **IEW2322I** 1220 9 NAME CELQxx(R) MAX ACCEPTABLE RC=00
  - **IEW2230S** 0414 MODULE HAS NO TEXT
  - **IEW2648E** 5111 ENTRY CELQyyy IS NOT A CSECT OR AN EXTERNAL NAME IN THE MODULE
  - **IEW2677S** 5130 A VALID ENTRY POINT COULD NOT BE DETERMINED
  - **IEW2638S** 5384 AN EXECUTABLE VERSION OF MODULE CELQxxx EXISTS AND CANNOT BE REPLACED BY THE NON-EXECUTABLE MODULE JUST CREATED
Language Environment – PTF or FMID install

- **External:**
  - Other symptoms related to not being able to set the module attributes correctly:
    - **BPXF150I** MVS DATA SET WITH DDNAME SYSUT1 SUCCESSFULLY COPIED INTO BINARY HFS FILE
    - **BPXF173E** RETURN CODE 000000079 REASON CODE 05E80241. PROGCTL ATTRIBUTE CANNOT BE SET FOR FILE
    - **GIM9168E** ** HFSCOPY PROCESSING TO THE SFSUMCL LIBRARY FAILED FOR HFS CEH$xxx IN SYSMOD UKnnnn. THE RETURN CODE (12) EXCEEDED THE ALLOWABLE VALUE DATE 06.095.
    - **GIM3021E** APPLY PROCESSING FAILED FOR SYSMOD UKnnnn. SYSTEM UTILITY PROCESSING FAILED FOR AN ELEMENT IN UKnnnn.
    - **GIM30219E** ** APPLY PROCESSING FAILED FOR SYSMOD UKnnnn. PROCESSING FAILED FOR SYSMOD UKnnnn, WHICH WAS SPECIFIED ON THE ++VER PRE OPERAND.
Language Environment – PTF or FMID install

- **External:**
  - If error messages are ignored or overlooked, ABEND0Cx or /U4038/U4039/U4087 may be seen during init of the run-time such as in ETCINIT.
Language Environment – PTF or FMID install

- **Action:**
  - Correct level of BINDER, HLASM and SMP/E must be used during the apply. The way to achieve this is outlined in the z/OS Program Directory.
Language Environment – PTF or FMID install

- **Action:**
  - z/OS 1.x Program Directory from Install Library:
    
    To satisfy the Binder, HLASM, and SMP/E requirements, you can use a STEPLIB DD statement to access the z/OS V1Rx Binder, z/OS V1Rx HLASM, and z/OS V1Rx SMP/E in the Wave 0 target system’s SYS1.MIGLIB and ASM.SASMMOD1 data sets.

    Ensure that the target system’s SYS1.MIGLIB and ASM.SASMMOD1 data sets are APF authorized on the driving system.
USS – Common Inet

- **External:**
  - Added instruction pathlength and reduced performance when running with a single active TCP/IP stack and Common Inet
USS – Common Inet

- **Actions:**
  - For single active TCP/IP stack environment, Common Inet is not necessary
  - `BPXPRMxx [w/ TYPE(CINET) ]`
    - `FILESYSTYPE`
    - `NETWORK`
    - `SUBFILESYSTYPE`
  - Should be commented out or removed
USS – Common Inet

- **Actions:**

```plaintext
FILESYSYPYE TYPE(CINET) ENTRYPOINT(BPXTCINT)
   NETWORK DOMAINNAME(AF_INET)
   DOMAINNUMBER(2)
   MAXSOCKETS(10000)
   TYPE(CINET)
   INADDRANYPORT(2050)
   INADDRANYCOUNT(325)
SUBFILESYSYPYE NAME(TCPIP)  /* Name of file sys */
   TYPE(CINET) ENTRYPOINT(EZBPFINI) DEFAULT
SUBFILESYSYPYE NAME(TCPIP2) /* Name of file sys */
   TYPE(CINET) ENTRYPOINT(EZBPFINI)
```
USS – Common Inet

- **Actions:**

  ```
  FILESYSTYPE TYPE(INET) ENTRYPONT(EZBPFINI)
  NETWORK DOMAINNAME(AF_INET)
  DOMAINDNUMBER(2)
  MAXSOCKETS(10000)
  TYPE(INET)
  ```

  The `TYPE()` can be set to any value as long as the filesystype and network statement types match. The statements can be added to the BPXPRMxx parmlib member.
USS – Common Inet

**Actions:**

- z/OS Initialization and Tuning Reference
- z/OS UNIX System Services Planning Guide
RSM – 64bit Memlimit

- **External (Storage exhaustion):**
  - IRA200E AUXILIARY STORAGE SHORTAGE
  - IRA204E 19% AUXILIARY STORAGE ALLOCATED TO SSHD1
  - IRA204E 19% AUXILIARY STORAGE ALLOCATED TO SSHD2
  - IRA204E 02% AUXILIARY STORAGE ALLOCATED TO SMSPDSE
  - IRA204E 03% AUXILIARY STORAGE ALLOCATED TO ZFS
  - IRA204E 07% AUXILIARY STORAGE ALLOCATED TO OMVS

  Users cannot logon:
  - IEA602I ADDRESS SPACE CREATE FAILED. A STORAGE SHORTAGE EXISTS
  - IEE328I LOGON COMMAND ABORTED
RSM – 64bit Memlimit

- **External (No storage obtained):**
  - With the introduction of LE 64bit in z/OS 1.6 (HBB7709) jobs may receive ABENDU4093 rc x'224' (548) as a result of MEMLIMIT=0M. No storage can be obtained.
  - *The MEMLIMIT parameter specifies the limit on the total number of usable virtual pages above the bar in a single address space.*
RSM – 64bit Memlimit

**Actions:**
- `MEMLIMIT={nnnnnM} {nnnnnG} {nnnnnT} {n nnnnP} {NOLIMIT}`
- `REGION=0` will result in `NOLIMIT`, so there is no limit on the number of pages above-the-bar that can be obtained by the job.
- `Sample:`

  ```
  //STEPA EXEC PGM=JOBA,MEMLIMIT=10000M
  ```
RSM – 64bit Memlimit

**Actions:**
- If MEMLIMIT is not specified by job, the default is defined by SMFPRMxx.
- The SMFPRMxx default (if not specified) is 0M, meaning no virtual can be obtained.
- The IEFUSI installation exit can override any JCL- or SMF-supplied value.
- IEFUSI: On entry Reg1 points to 9word parmlist. Word_9 is an addr pointing to the Memlimit mapping.

*Reference: z/OS V1R8 MVS JCL Reference*
*Reference: Language Environment Run-Time Messages*
*Reference: MVS Installation Exits*
TSO – 1Byte Console IDs

- External:
- On z/OS V1R8

11.30.03  d  c,l=01
11.30.03  IEE926I  L=NAME-A OPERAND INVALID-01
           NOT A CONSOLE
           COMMAND ISSUED IS D C,L=01
11.30.15  v  cn(01),offline
11.30.15  IEE274I  VARY CN  CONSOLE 01 NOT VALID
11.30.49  send 'testing 1 2 3',cn=01
11.30.49  IKJ593I  CONSOLE 01 IS NOT VALID.
TSO – 1Byte Console IDs

- **Actions:**
  - At z/OS 1.7 and higher, one-byte console IDs are no longer permitted in WTOs or Commands
  - Use 4-byte console ID, or console name
  - Info APAR – II13752
    Tracker
    D OPDATA,TR
TSO – 1Byte Console IDs

- **Actions:**
  - SETCON TRACKING=ON/OFF
  - SYS1.PARMLIB(CNIDTR00)
    Contains current exclusion list
  - SET CNIDTRxx
    Activate current exclusion list
TSO – 1Byte Console IDs

- Actions:

  CNZ1001I 15.47.47 TRACKING DISPLAY
  STATUS=ON  NUM=2  MAX=1000 MEM=n/a EXCL=0  REJECT=0
  -TRACKING INFORMATION-- VAL-JOBNAME PROGNAME+OFF--ASID NUM
  WTO: IEC350I CATALOG ADD  00  CATALOG  IGG0CLX0  80BAC  1A  1
  WTO: IEF677I WARNING MES  00  JES2  IEFNB903  C9AA  13  1

  TO REPORT THESE INSTANCES, SEND THIS MESSAGE VIA E-MAIL TO CONSOLES@US.IBM.COM. FOR ADDITIONAL INFORMATION OR TO OBTAIN A CURRENT EXCLUSION LIST, SEE APAR II13752.
ICSF – Crypto install HCR7730

- **External:**
  - Varied and unpredictable external symptoms, all associated with x’20’ byte overlays of ESQA common storage.
  - ABEND0C4
  - Varied jobs/asids will be affected, depending upon which control blocks are overlaid.
  - RAB (RSM Asid Block) is one control block that has been affected. This requires an IPL to correct if the RAB is for a non-restartable asid.
ICSF – Crypto install HCR7730

**Action:**
- An install of Crypto (ICSF) at HCR7730 or higher (HCR7731) must be done via IPL.
- The DACC control block which remains resident in ESQA was previously x’130’ bytes, but has grown to x’150’ bytes at HCR7730 and above.
### Action:

<table>
<thead>
<tr>
<th>DACC02</th>
<th>PSP Buckets for ICSF have been updated to notify users of the requirement to IPL when installing HCR7730 or higher.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;...ENCSDES</td>
<td>...ENCTDES ...............</td>
</tr>
<tr>
<td>MACGEN</td>
<td>....MACVER ...............</td>
</tr>
</tbody>
</table>

Identify the start of the control block, then locate that address within the IPCS VERBX VSMDATA 'OWNCOMM DETAIL SORTBY(ADDR)'. The owner will be within private storage in the ICSF (CSFF) job, and the getmain time will be prior to the activation of the new version of ICSF. CSFMAIN module getmains the DACC.
JES2 – Checkpoint & DR testing

- **External:**
  $HASP060 ISGENQ FAILURE - RC=00000010 RSN=00001006
  RNAME=SYSSP3SYS1.HASPCKP3
  ISG363I SYNCHRES RESERVE FLUSH INCOMPLETE FOR DEVICE: 0213
  IOSVDSTF RC: 8
  SYNCHRES REASON: API SPECIFIED.
  RESOURCE: SYSZJES2,SYSSP3SYS1.HASPCKP3 T
  JOBNAME: JES2    ASID: 0018 TCBADDR: 00AFF530
  $HASP284 JES2 INITIALIZATION CHECKPOINT DIALOG STARTED
  $HASP276 JES2 CAN NOT USE THE REQUESTED CHECKPOINT DATA SET(S) DURING A COLD START BECAUSE OF I/O ERROR RESERVING CKPT1
JES2 – Checkpoint & DR testing

- **External:**
  - During DR testing at z/OS 1.7 or higher, active I/O config may be taken to the DR site in order to test under a VM environment.
  - JES2 replaced RESERVE macro with ?ISGENQ SYNHRES=YES at z/OS 1.7.
  - If the JES2 Checkpoint resides on a DASD volume which was defined as SHAREDUP the ?ISGENQ call will not obtain the immediate Reserve.
JES2 – Checkpoint & DR testing

- **Actions:**
  - Do not define JES2 Checkpoint DASD volume as SHAREDUP *
  - There really is no need to utilize SHAREDUP for DASD volumes any more
  - Run HCD OS Config Report for each OS Configuration to determine use of SHAREDUP

* SHAREDUP: Shared when system is physically partitioned (3090, 9021, …)
**z/OS V1.7 – 32 CPs per Image**

- **External:**
  - Example: At V1.7 running with 2 zAAPs and 16 general purpose CP’s, an attempt was made to define 16 additional general purpose CP’s to the logical Image, for a total of 32 general purpose CP’s.
  - z/OS V1.7 now allows up to 32 CP’s per logical Image.
  - WAIT07C CPU Array greater than max allowed.
z/OS V1.7 – 32 CPs per Image

- **Action(s):**
  - You must consider the **sum** of the zAAPs and general purpose CP’s defined to your logical Image.
  - While >32 CP’s may be defined, and the Activation of the Image may be successful, z/OS software (v1.7) only recognizes up to 32 CP’s.
  - z/OS counts all CP’s in the dispatch pool(s), whether they are zAAPs or general purpose CP’s.
Action(s):
- As in z/OS 1.7, the limitation is 32 CP’s at z/OS 1.6.
- This limit includes both online (Initial Processors) and Reserved CP’s.
- Check your image profiles to ensure that the sum doesn’t exceed z/OS software release limitation.
z/OS V1.6 – 32 CPs per Image

- **Action(s):**
  - OA09688 GRS ENQ Performance Improvements z/OS 1.6 HBB7709 UA18477
  - OA09340 Catalog Performance Improvements z/OS 1.6 HDZ11J0 UA14470
  - For z/OS 1.7 no APARs are required as the functions are in the base release level
  - WSC Flash – 10401
Installation – z/OS 1.8

- **External:**
  - If you invoke the program management Binder on z/OS V1R8 and override the default of COMPAT=MIN (such as specifying COMPAT=CURRENT, which was the default before z/OS V1R3), you might have program objects produced that are at a higher format than you intended and that cannot be executed on systems earlier than z/OS V1R8.
Installation – z/OS 1.8

- **External:**
  - Program objects at the latest format (such as PO5) can only be *viewed and copied* on earlier releases *
  
  - Program objects can only be *executed* from z/OS releases that understand that format level (such as z/OS V1R8 for PO5).

* Assumes coexistence APARs OA13294 and OA13525 are applied.
Installation – z/OS 1.8

- **Actions:**
  - Make sure that any program management binder parameters you specify use the default for the COMPAT statement. This ensures that program objects can be executed from the most environments.
  - A common place where the COMPAT statement may be specified is in your SMP/E GLOBAL zone UTILITY entry for the program management binder.
DUMP command – Excessive delays

- **External:**
  - Dump processing may encounter excessive delays in sysplex environment when GRSQ specified on DUMP options.
DUMP command – Excessive delays

- **External:**
  - With GRSQ specified in SDATA options, ENQ resource information from all systems in the GRS complex is gathered and placed into the dump. This can be time consuming when running in STAR mode because GRS needs to collect and merge information from all systems in the sysplex.

  - The time it takes increases as more systems are added to the sysplex and/or the number of concurrent ENQs increases. System weight also becomes a factor.
DUMP command – Excessive delays

- **Actions:** Recommended GRSQ(xxx) settings in GRSCNFxx

<table>
<thead>
<tr>
<th>Mode</th>
<th>GRSQ Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAR</td>
<td>GRSQ(CONTENTION) Collects all ENQ resources on the local system, and global ENQ resources that are in contention throughout the entire sysplex.</td>
</tr>
<tr>
<td>RING</td>
<td>GRSQ(ALL) Collects all ENQ resources on the local system. In RING mode each system keeps a copy of all ENQ resources held by all of the systems in the GRS complex.</td>
</tr>
<tr>
<td>NONE</td>
<td>N/A The GRSQ setting has no effect when running in NONE mode.</td>
</tr>
</tbody>
</table>
CTC & HALT MIH in sysplex

- **External:**
  - System may be partitioned from sysplex
  - WAIT0A2 Rsn104, partitioned by SFM policy
  - Hardware problems with a CTC combined with a HALT MIH that is greater than the sysplex failure detection interval may cause partitioning.
CTC & HALT MIH in sysplex

- **Actions:**
  - Check HALT setting for MIH in IECIOSxx
  - Default is 5 seconds, **do not change!**
  - Depending upon conditions in the XCFAS address space related to Purge I/O for the failed CTC, the activity of updating the ‘heartbeat’ may be prevented, causing Sysplex Failure Management policy to partition the system.
APPC – Excessive conversations

**External:**
- ABEND878 – storage shortages in address spaces which had allocated conversations
- Auxiliary storage shortages (IRA200E, etc….)
- APPC reserves some system resources, including storage, for each conversation
- Program(s) failed to deallocate conversations

- Previously no way to monitor & manage address spaces that have ‘run-away’ transaction programs that do not clean up conversations
APPCC – Excessive conversations

- **Actions:**
  - **CONVMAX** keyword on APPC proc
  - Used to select a warning threshold to alert when a particular asid has more than a pre-determined number of conversations active

  //APPCC PROC APPC=000,CONVMAX=3000
  (100 < CONVMAX < 20,000)

  **ATB019I** THE APPC ACTIVE CONVERSATION THRESHOLD FOR ONE ADDRESS SPACE IS 3000
  **ATB020E** THE NUMBER OF APPC ACTIVE CONVERSATIONS FOR ASID XXXX HAS CROSSED THE PRE-ESTABLISHED THRESHOLD. NUMBER OF ACTIVE CONVERSATIONS: YYYY; APPC ACTIVE CONVERSATION THRESHOLD: ZZZZ
APPC – Excessive conversations

**Actions:**
- New **CMACTION** keyword on APPC proc
- Allows monitoring or rejection of conversations when CONVMAX has been achieved
- Available with OA13506 on R6 and higher
- **CMACTION = HALTNEW / MSGONLY**
- **HALTNEW** – prevents new conversations from being started in that asid

```markdown
//APPC PROC APPC=000,CMACTION=HALTNEW

ATB047I THE APPC ACTIVE CONVERSATION THRESHOLD ACTION IS aaaaaaaa.
```
SMP/E V3.4 – RECEIVE ORDER

- **External:**
  - When using SMP/E V3.4 RECEIVE ORDER command, there are several errors that may occur due to setup issues
    - Security
    - Java
    - Networking
SMP/E V3.4 – RECEIVE ORDER

- **External:**
  - Security (RACF or CA ACF2)

  GIM69198S ** CERTIFICATE name WAS NOT FOUND CONNECTED TO KEYRING name.
  GIM69137S ** USERID userid IS NOT AUTHORIZED TO ACCESS KEY RING ringname

  java.io.IOException: R_datalib (IRRSDL00) error: not RACF authorized to use the requested service

  java.io.IOException: dbToken error.
SMP/E V3.4 – RECEIVE ORDER

**External:**
- **Java** failures

  java class is not found: com/ibm/smp/GIMJVCLT

  JVMST109: Insufficient space in Javaheap to satisfy allocation request
or java.lang.OutOfMemoryError
SMP/E V3.4 – RECEIVE ORDER

- **External:**
  - Networking
    - SSLHandshakeException
      java.io.IOException: Failed validating certificate paths.
    - GIM69195S with 408 - REQUEST TIMEOUT
    - java.net.ConnectException: EDC8127I Connection timed out
SMP/E V3.4 – RECEIVE ORDER

- **Actions:**
  - **Security**
    - RACF – Consult SMP/E User’s Guide to assist in setting up Certificate Authority and User x.509 certificates and keyrings for single and shared users
    - CA ACF2 – Consult CA Hyper Notification QI73845 which provides instructions equivalent to RACF commands
SMP/E V3.4 – RECEIVE ORDER

- **Actions**:  
  - Java failures  
    - Increase region size for the job/step (use of Java may cause out-of-memory conditions). Recommended REGION=0M.  
    - Use Java 1.4.2 w/SR2 or higher or Java 1.5
SMP/E V3.4 – RECEIVE ORDER

- **Actions:**
  - **Networking**
    - Consult network admin to determine if HTTP and/or FTP proxy servers are required
    - Use appropriate statements in CLIENT tab to specify HTTP and/or FTP proxy servers
SMP/E V3.4 – RECEIVE ORDER

//*****************************
//* SMP/E RECEIVE ORDER
//*****************************
//RECEIVE EXEC PGM=GIMSMP
//STEPLIB DD DSN=SMPMAINT.BACKLVL3.E3415.LOAD,DISP=SHR
//SMPCSI DD DSN=HARUTA.SMPE.CSI,DISP=SHR
//SMPNTS DD PATH="/u/haruta/",PATHDISP=KEEP
//SMPOUT DD SYSOUT=* 
//SMPRPT DD SYSOUT=* 
//SYSPRINT DD SYSOUT=*
//SMPCNTL DD *
SET BDY(GLOBAL).
RECEIVE SYMSODS HOLDDATA
ORDER(ORDERSERVER(ORDSRVR)
CLIENT(MYCLIENT)
CONTENT(PTFS(UK20273)))
DELETEPKG .
//ORDSRVR DD *
<ORDERSERVER url="https://eccgw01.boulder.ibm.com/services/projects/ecc/ws/"
  keyring="smpering" certificate="SMPE Cert CustNum 4606985">
</ORDERSERVER>
/
//MYCLIENT DD *
<CLIENT javahome="/usr/lpp/java/J1.4" classpath="/usr/lpp/smp/classes"
  debug="YES" javadeploptions="-Dcom.ibm.smp.debug=severe -showversion -Xmx128m">
<HTTPPROXY host="access.mycompany.com">
</HTTPPROXY>
</CLIENT>
SMP/E V3.4 – RECEIVE ORDER

**Actions**
- Info APAR II13519 documents all the JAVA Service Refresh numbers and dates

```
<table>
<thead>
<tr>
<th>Service Release</th>
<th>PTF number</th>
<th>Build date(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR7 (142)</td>
<td>UK20273</td>
<td>20061124</td>
</tr>
<tr>
<td>SR6 (142)</td>
<td>UK17593</td>
<td>20060824</td>
</tr>
<tr>
<td>SR5 (142)</td>
<td>UK13868</td>
<td>20060412</td>
</tr>
<tr>
<td>SR4 (142)</td>
<td>UK11628</td>
<td>20060209</td>
</tr>
<tr>
<td>SR3 (142)</td>
<td>UK07860</td>
<td>20050929</td>
</tr>
</tbody>
</table>
```

etc....
RACF – Mixed-Case passwords

- **External:**
  - z/OS v1.7 and higher
  - TSO Logon failures
  - Netview V5.1 failures

```
  DSI401A SECURITY SOFTWARE PASSWORD IS NOT AUTHORIZED, REENTER
    ICH408I USER(BOBGARD ) GROUP(SYS1 )
    NAME(TESTER ) LOGON/JOB
    INITIATION - INVALID PASSWORD ENTERED AT TERMINAL TCPZ3003
    IRR013I VERIFICATION FAILED. INVALID PASSWORD GIVEN.
```
RACF – Mixed-Case passwords

- **External:**
  - Using DB2 V8 UDB to connect to DBB1 on z/OS (w/server authentication). To get around this problem, your TSO password must be in upper case.

ICH408I  USER(G126173 ) GROUP(SYS1 )
NAME(DEMARCM )
LOGON/JOB INITIATION -
INVALID PASSWORD
IRR013I  VERIFICATION FAILED. INVALID PASSWORD GIVEN.
DSNL030I @DBB1 DSNLTSEC DDF
PROCESSING FAILURE FOR
LUWID=G93837E2.GC4F.BE5FC1A73986
AUTHID=G126173,
REASON=00F30085
RACF – Mixed-Case passwords

Actions:
- Enabled by
  SETR PASSWORD(MIXEDCASE | NOMIXEDCASE)
- Do not enable mixed-case passwords unless all local systems sharing RACF DB are at z/OS R7 or higher
- Be aware of all exploiting applications and make appropriate adjustments prior to enablement …… backing out is NOT a simple task! Do not test on a production system.
RACF – Mixed-Case passwords

Exploiting Applications:
z/OS V1R7 and above
   Netview V5.2
   TSO/E
   Console Logon
   JOB statements
   V1R7 UNIX functions
CICS Transaction Server 3.1
CICS Transaction Server 2.3 (via PTF)
CICS Transaction Server 2.2 (via PTF)
z/OS V1R7 Communications Server and above
   FTP server
   rshd
   rexecd
   RXSERVET
   TN3270 server (RestrictAppl and Unformated System Services (USS) fcns)
   telnet server
   LPD server
RACF – Mixed-Case passwords

Exploiting Applications:

About RMF PM Java TM Technology Edition

RMF PM Java TM Technology Edition, Version 2.4.32
Includes IBM Enhanced Java Port, Version 1.4.2
Support: Email rmf@de.ibm.com

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Ok
Real Storage – No Physical Swap at 1.8

- **External:**
  - z/OS 1.8 will no longer perform physical SWAP
  - As fixed storage increases for address spaces, swapping to AUX is not viable
  - Consider that more real may be required based upon how much fixed is currently used by Swappable ASIDs
Real Storage – No Physical Swap at 1.8

**Actions:**
- Analyze pre-1.8 system and monitor physical SWAPs
- Use **CPU Activity Report** to identify physical SWAPs (OUT Ready, OUT Wait)
- If any, proceed to examine ASD and STORF reports

### CPU Activity Report

<table>
<thead>
<tr>
<th>SYSTEM ADDRESS SPACE ANALYSIS</th>
<th>NUMBER OF ADDRESS SPACES</th>
<th>ADDRESS SPACE TYPES</th>
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<tr>
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<td>AVG</td>
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</table>
Real Storage – No Physical Swap at 1.8

**Actions:**

- Use ASD (Address Space Data) Report to determine which spaces are Swappable

```
RMF - ASDJ Address Space State Data

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<th>JOBNAM</th>
<th>SKCLASS</th>
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<th>R</th>
<th>DP</th>
<th>CS</th>
<th>ESF</th>
<th>CS</th>
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<th>PIN</th>
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<th>TX</th>
<th>SWAP</th>
<th>WSM</th>
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<th>SRVCLASS</th>
<th>PL</th>
<th>LS</th>
<th>PR</th>
<th>F</th>
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</table>
```
Real Storage – No Physical Swap at 1.8

- **Actions:**
  - Use **STORF Report** to identify number of fixed frames each space owns
  - Worst case: Sum up the FIXED frames for the Swappable spaces

<table>
<thead>
<tr>
<th>Jobname</th>
<th>C Class</th>
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<th>TOTAL</th>
<th>ACTV</th>
<th>IDLE</th>
<th>WSET</th>
<th>FIXED</th>
<th>DIV SLOTS</th>
<th>RATE</th>
<th>RATE</th>
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</table>
WLM – System ASID classification

- **External:**
  - System address spaces such as GRS, XCFAS, Console may run at $< 'FF'$ dispatching priority, causing system hangs, and potential sysplex delays
  - Hangs, performance issues, ENQ delays, command processing delays, WTO processing delays, XCF communication hangs
WLM – System ASID classification

- **Actions:**
  - Examine all WLM Policies. Do not attempt to classify or manage GRS, Console or XCFAS system address spaces through User Defined service classes.
  
  - Ensure that these system address spaces end up defined to the SYSTEM Service Class (which is the WLM Policy default for the system ASIDs).