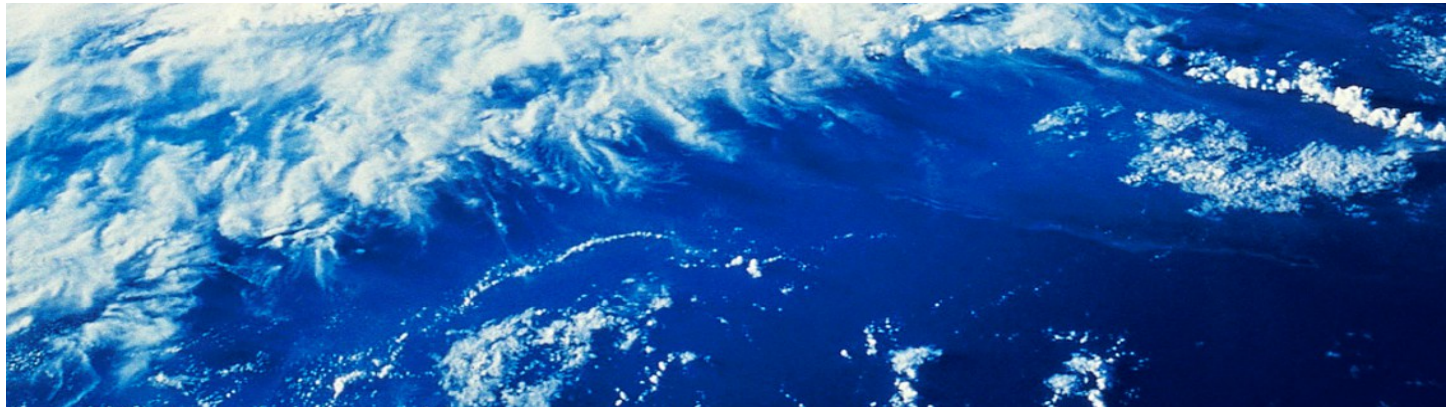
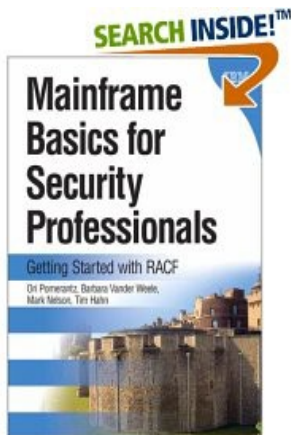


z/OS[®] V2.1 RACF[®] Update

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Agenda

What's is planned for z/OS V2.1 RACF?

- **RRSF**
 - Support for TCP/IP V6
 - Comments in the RACF parameter library
 - TLS 1.2 cipher suite support (ok... it was just a message change.... but it's in the announcement....)

- **New and improved RACF Health Checks**
 - RACF_AIM_STAGE
 - RACF_AUTOUID
 - RACF_CERTIFICATE_EXPIRATION
 - RACF_SENSITIVE_RESOURCES

- **Certificate issuer distinguished name, subject distinguished names and signature algorithms, in IRRDBU00 output**

- **&RACUID in home directory path name**

- **Access controls for JES2/JES3 job classes**

RRSF

RRSF: Quick TCP/IP Review

- **Starting with z/OS V1.13, you can link RRSF nodes using TCP/IP instead of APPC! This means that you can now:**
 - Manage your RRSF network using the same skills as the rest of your TCP/IP network.
 - Ensure that the same network security policy (IDS, IPS, etc.) is in place for your RRSF network as in place for the rest of your z/OS TCP/IP network.
 - Utilize the encryption and peer-node authentication of AT-TLS
 - Convert a node from using APPC to TCP/IP without stopping communication
 - **Keep up with improvements in z/OS Communications Server Security.**

RRSF: IPv6 Support

- **Starting with z/OS V2.1, RACF plans on changing RRSF so that it supports the use of TCP/IP V6 for communications between/among your RRSF nodes**
 - Once the z/OS Communications Server on your local node is configured for Ipv6:
 - IPv6-format addresses will be displayed
 - You do not have to migrate to IPv6 all at once: Some “remote” nodes can be IPv4 and some IPv6.

RRSF: IPv6 Addresses

Description	IPv4	IPv6
Address length	32 bits long (4 bytes)	128 bits long (16 bytes). 64 bits for network number, 64 bits for host number
Total addresses	4,294,967,296 (about 4.3 billion)	About 3.4×10^{38}
Address format in text	nnn.nnn.nnn.nnn Where $0 \leq nnn \leq 255$	xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx Where x is hex number. Double colon (::) designates any number of 0 bits
Example	9.127.42.144	2001:0db8:85a3:0000:0000:8a2e:0370:7334
Equivalent addresses	10.120.78.40	::ffff:10.120.78.40 IPv4-mapped IPv6 address
Unspecified address	0.0.0.0	:: (128 0 bits)

RRSF: TARGET LIST (V1.13)

```

NODE1 <target list node(node1)
NODE1 IRRM010I (<) RSWJ SUBSYSTEM PROPERTIES OF LOCAL RRSF NODE NODE1:
  STATE          - OPERATIVE ACTIVE
  DESCRIPTION    - <NOT SPECIFIED>
  PROTOCOL     - APPC
                  LU NAME           - MF1AP001
                  TP PROFILE NAME    - IRRRACE
                  MODENAME         - <NOT SPECIFIED>
                  LISTENER STATUS    - ACTIVE
  PROTOCOL     - TCP
                  HOST ADDRESS      - 0.0.0.0
                  IP ADDRESS       - 9.57.1.243
                  LISTENER PORT     - 18136
                  LISTENER STATUS    - ACTIVE
  TIME OF LAST TRANSMISSION TO - <NONE>
  TIME OF LAST TRANSMISSION FROM - <NONE>
  WORKSPACE FILE SPECIFICATION
    PREFIX        - "NODE1.WORK"
    WDSQUAL       - <NOT SPECIFIED>
    FILESIZE      - 500
    VOLUME        - TEMP01
  FILE USAGE
    "NODE1.WORK.NODE1.INMSG"
      - CONTAINS 0 RECORD(S)
      - OCCUPIES 1 EXTENT(S)
    "NODE1.WORK.NODE1.OUTMSG"
      - CONTAINS 0 RECORD(S)
      - OCCUPIES 1 EXTENT(S)

```

1st line indicates 'default' – not specified on TARGET.
 2nd line is resolved address, if different than specified.

RRSF: TARGET LIST(V2.1)

```

NODE1 <target list node(node1)
NODE1 IRRM010I (<) RSWJ SUBSYSTEM PROPERTIES OF LOCAL RRSF NODE NODE1:
  STATE - OPERATIVE ACTIVE
  DESCRIPTION - <NOT SPECIFIED>
  PROTOCOL - APPC
    LU NAME - MF1AP001
    TP PROFILE NAME - IRRRACF
    MODENAME - <NOT SPECIFIED>
    LISTENER STATUS - ACTIVE
  PROTOCOL - TCP
    HOST ADDRESS - :: <<< IPv6 default
    IP ADDRESS - ::FFFF:9.57.1.243 <<< IPv6 address
    LISTENER PORT - 18136
    LISTENER STATUS - ACTIVE
  TIME OF LAST TRANSMISSION TO - <NONE>
  TIME OF LAST TRANSMISSION FROM - <NONE>
  WORKSPACE FILE SPECIFICATION
    PREFIX - "NODE1.WORK"
    WDSQUAL - <NOT SPECIFIED>
    FILESIZE - 500
    VOLUME - TEMP01
  FILE USAGE
    "NODE1.WORK.NODE1.INMSG"
      - CONTAINS 0 RECORD(S)
      - OCCUPIES 1 EXTENT(S)
    "NODE1.WORK.NODE1.OUTMSG"
      - CONTAINS 0 RECORD(S)
      - OCCUPIES 1 EXTENT(S)

```

If IPv6 is enabled, addresses
Are displayed in IPv6 format

RRSF: Comments in Parameter Library

- Prior to z/OS V2.1, blank lines or whole-line comments would result in an IRRC003I (“COMMAND xxxxx IS NOT VALID”) error message

- With z/OS V2.1, blank lines and whole-line comments are allowed
 - A whole-line comment begins with “//” in any column
 - Continuation characters at the end of a whole-line comment does not continue the comment
 - Whole-line comments or blank lines may not be placed within a continued command
 - Down-level systems will continue to flag whole-line and blank lines as errors
 - Examples of valid whole-line comments:
 - //This is a comment line
 - // This is a comment line
 - // define the local node with a socket listener

RRSF: TLS 1.2 Cipher Suite Support

- **RRSF uses Application Transparent Transport Layer Security (AT-TLS) to encrypt data between RRSF nodes**
 - AT-TLS supports more cryptography suites in z/OS V2.1
 - Certificates are used in AT-TLS to provide secure connections between RRSF systems using TCP/IP
 - In z/OS V2R1, ECC certificates with stronger encryption may be used
 - All cryptography suites in Transport Layer Security (TLS) Protocol Version 1.2 are supported
- **When a connection is established between 2 RRSF systems, here is an example of the informational message issued by RACF:**
 - `IRRI027I (>) RACF COMMUNICATION WITH TCP NODE NODE1 HAS BEEN SUCCESSFULLY ESTABLISHED USING CIPHER ALGORITHM C026 TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA384.`

Health Check Updates

Health Checks: New and Updated Checks

- **RACF is planning on shipping these new checks in z/OS V2.1:**
 - RACF_AIM_STAGE
 - RACF_AUTOUID
 - RACF_CERTIFICATE_EXPIRATION
- **RACF_AIM_STAGE and RACF_AUTOUID are intended to assist you in migrating from BPX.DEFAULT.USER, which, as announced, is being withdrawn with z/OS V2.1**
 - These two checks rolled back to z/OS V1.12 and z/OS V1.13 with OA37164

Health Checks: RACF_AIM_STAGE

- **The RACF_AIM_STAGE Health Check examines your application identity mapping (AIM) setting and flags as an exception if you are at a stage less than stage 3.**
 - Stage 0: No AIM support; only mapping profiles are used
 - Stage 1: Mapping profiles are used; alternate index created and managed, but not used
 - Stage 2: Alternate index create, managed, and used; mapping profiles maintained.
 - Stage 3: Only alternate index maintained and used. Mapping profiles deleted.
- **Moving from each stage requires the execution of the IRRIRA00 utility.**
- **AIM stage 2 or stage 3 is needed for certain RACF functions**

Health Checks: RACF_AIM_STAGE (OK)

Display Filter View Print Options Search Help

```
-----
SDSF OUTPUT DISPLAY RACF_AIM_STAGE                LINE 0          COLUMNS 02- 81
COMMAND INPUT ==>                                SCROLL ==> HALF
***** TOP OF DATA *****
CHECK(IBMRA CF,RACF_AIM_STAGE)
START TIME: 05/11/2012 14:36:29.892717
CHECK DATE: 20110101  CHECK SEVERITY: MEDIUM

IRRH500I The RACF database is at the suggested stage of application
identity mapping (AIM). The database is at AIM stage 03.

END TIME: 05/11/2012 14:36:29.893680  STATUS: SUCCESSFUL
***** BOTTOM OF DATA *****
```

Health Checks: RACF_AIM_STAGE (Exception)

Display Filter View Print Options Search Help

```
-----
SDSF OUTPUT DISPLAY RACF_AIM_STAGE          LINE 0          COLUMNS 02- 81
COMMAND INPUT ==>                          SCROLL ==> HALF
***** TOP OF DATA *****
CHECK (IBMRACF,RACF_AIM_STAGE)
START TIME: 05/17/2012 16:42:53.891503
CHECK DATE: 20110101  CHECK SEVERITY: MEDIUM
```

* Medium Severity Exception *

IRRH501E The RACF database is not at the suggested stage of application identity mapping (AIM). The database is at AIM stage 00.

Explanation: The RACF_AIM_STAGE check has determined that the RACF database is not at the suggested stage of application identity mapping (AIM). Your system programmer can convert your RACF database using the IRRIRA00 conversion utility. See z/OS Security Server RACF System Programmer's Guide for information about running the IRRIRA00 conversion utility.

F1=HELP	F2=SPLIT	F3=END	F4=RETURN	F5=IFIND	F6=BOOK
F7=UP	F8=DOWN	F9=SWAP	F10=LEFT	F11=RIGHT	F12=RETRIEVE

Health Checks: RACF_UNIX_ID

- **The RACF_UNIX_ID Health Check determines whether RACF will automatically assign unique z/OS UNIX System Services identities when users without OMVS segments use certain UNIX services**
 - If you are not relying on RACF to assign UIDs and GIDs, the check informs you that you must continue to assign z/OS UNIX identities
 - If you are relying on the BPX.DEFAULT.USER support, the check issues an exception
 - If you are relying on the BPX.UNIQUE.USER support, the check will verify requirements and indicate if any exceptions are found
 - FACILITY class profile BPX.UNIQUE.USER must exist
 - RACF database must be at Application Identity Mapping (AIM) stage 3
 - UNIXPRIV class profile SHARED.IDS must be defined
 - UNIXPRIV class must be active and RACLISTed
 - FACILITY class profile BPX.NEXT.USER must be defined and its APPLDATA field must contain valid ID values or ranges
 - Note: The check only lists the APPLDATA content, it does not validate it.

Health Checks: RACF_UNIX_ID (OK)

Display Filter View Print Options Search Help

```
-----
SDSF OUTPUT DISPLAY RACF_UNIX_ID                LINE 0          COLUMNS 02- 81
COMMAND INPUT ===>                               SCROLL ===> HALF
***** TOP OF DATA *****
CHECK(IBMRA CF,RACF_UNIX_ID)
START TIME: 05/18/2012 13:56:53.321238
CHECK DATE: 20110101  CHECK SEVERITY: MEDIUM

IRRH504I RACF is not enabled to assign UNIX IDs when users or groups
that do not have OMVS segments use certain z/OS UNIX services. If you
choose not to define UNIX IDs for each user of UNIX functions, you can
enable RACF to automatically generate unique UNIX UIDs and GIDs for you.

END TIME: 05/18/2012 13:56:53.322242  STATUS: SUCCESSFUL
***** BOTTOM OF DATA *****
```

F1=HELP F2=SPLIT F3=END F4=RETURN F5=IFIND F6=BOOK
 F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT F12=RETRIEVE

Health Checks: RACF_UNIX_ID (OK)

***** TOP OF DATA *****

CHECK (IBMRACF,RACF_UNIX_ID)

START TIME: 05/18/2012 14:12:18.914396

CHECK DATE: 20110101 CHECK SEVERITY: MEDIUM

IRRH502I RACF attempts to assign unique UNIX IDs when users or groups that do not have OMVS segments use certain z/OS UNIX services.

Requirements for this support:

S Requirement

FACILITY class profile BPX.UNIQUE.USER is defined
RACF database is at the required AIM stage:
 AIM stage = 03
UNIXPRIV class profile SHARED.IDS is defined
UNIXPRIV class is active
UNIXPRIV class is RACLISTed
FACILITY class profile BPX.NEXT.USER is defined
BPX.NEXT.USER profile APPLDATA is specified (not verified):
 APPLDATA = 1000/100

IRRH506I The RACF UNIX identity check has detected no exceptions.

END TIME: 05/18/2012 14:12:18.921241 STATUS: SUCCESSFUL

Health Checks: RACF_UNIX_ID (Exception)

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY RACF_UNIX_ID          LINE 0          COLUMNS 02- 81
COMMAND INPUT ==>                          SCROLL ==> HALF
***** TOP OF DATA *****
CHECK(IBM RACF,RACF_UNIX_ID)
START TIME: 05/17/2012 16:45:01.400010
CHECK DATE: 20110101 CHECK SEVERITY: MEDIUM

```

IRRH502I RACF attempts to assign unique UNIX IDs when users or groups that do not have OMVS segments use certain z/OS UNIX services.

Requirements for this support:

S Requirement

```

-----
FACILITY class profile BPX.UNIQUE.USER is defined
E RACF database is not at the required AIM stage:
  AIM stage = 00
E UNIXPRIV class profile SHARED.IDS is not defined
E UNIXPRIV class is not active
E UNIXPRIV class is not RACLISTed
E FACILITY class profile BPX.NEXT.USER is not defined

```

* Medium Severity Exception *

IRRH503E RACF cannot assign unique UNIX IDs when users or groups that do not have OMVS segments use certain z/OS UNIX services. One or more requirements are not satisfied.

Explanation: The RACF UNIX identity check has determined that you want RACF to assign unique UNIX IDs when users or groups without OMVS segments use certain z/OS UNIX services. However, RACF is not able to assign unique UNIX identities for z/OS UNIX services because one or more of the following requirements are not satisfied:

Health Checks: RACF_UNIX_ID (Exception)

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY RACF_UNIX_ID          LINE 0          COLUMNS 02- 81
COMMAND INPUT ==>                          SCROLL ==> HALF
***** TOP OF DATA *****
CHECK(IBM RACF,RACF_UNIX_ID)
START TIME: 05/17/2012 16:45:01.400010
CHECK DATE: 20110101 CHECK SEVERITY: MEDIUM

```

IRRH502I RACF attempts to assign unique UNIX IDs when users or groups that do not have OMVS segments use certain z/OS UNIX services.

Requirements for this support:

S Requirement

```

-----
FACILITY class profile BPX.UNIQUE.USER is defined
E RACF database is not at the required AIM stage:
  AIM stage = 00
E UNIXPRIV class profile SHARED.IDS is not defined
E UNIXPRIV class is not active
E UNIXPRIV class is not RACLISTed
E FACILITY class profile BPX.NEXT.USER is not defined

```

* Medium Severity Exception *

IRRH503E RACF cannot assign unique UNIX IDs when users or groups that do not have OMVS segments use certain z/OS UNIX services. One or more requirements are not satisfied.

Explanation: The RACF UNIX identity check has determined that you want RACF to assign unique UNIX IDs when users or groups without OMVS segments use certain z/OS UNIX services. However, RACF is not able to assign unique UNIX identities for z/OS UNIX services because one or more of the following requirements are not satisfied:

Health Checks: RACF_UNIX_ID (Exception)

***** TOP OF DATA *****

CHECK (IBMRACF,RACF_UNIX_ID)

START TIME: 05/18/2012 14:22:52.066301

CHECK DATE: 20110101 CHECK SEVERITY: MEDIUM

* Medium Severity Exception *

IRRH505E The BPX.DEFAULT.USER profile in the FACILITY class indicates that you want RACF to assign shared default UNIX IDs when users or groups that do not have OMVS segments use certain z/OS UNIX services.

Explanation: The RACF UNIX identity check has found the BPX.DEFAULT.USER profile in the FACILITY class. The presence of this profile indicates an intent to have RACF assign shared default UNIX UIDs and GIDs when users without OMVS segments access the system to use certain UNIX services.

Reference Documentation:

z/OS Security Server RACF Security Administrator's Guide

Automation: None.

Check Reason: Unique UNIX identities are recommended.

END TIME: 05/18/2012 14:22:52.067783 STATUS: EXCEPTION-MED

Health Checks: RACF_CERTIFICATE_EXPIRATION

- **The RACF_CERTIFICATE_EXPIRATION health check finds the certificates in the RACF database expired or about to expire**
 - Expiration window is an installation-defined value with a default of 60 days.
 - Valid expiration window values are 0-366 days
- **For each certificate, the check displays:**
 - The certificate “owner” ('SITE', 'CERTAUTH', or 'ID(*user_id*)')
 - The certificate label
 - The end date
 - The trust status
 - The number of rings to which the certificate is connected
- **The check only flags as exceptions those certificates which are TRUSTED.**

Health Checks: RACF_CERTIFICATE_EXPIRATION (OK)

```
CHECK(IBMRA CF,RACF_CERTIFICATE_EXPIRATION)
START TIME: 01/23/2012 08:10:01.603497
CHECK DATE: 20111010 CHECK SEVERITY: MEDIUM
```

Certificates Expiring in 60 Days

S	Cert Owner	Certificate Label	End Date	Trust Rings
-	-----	-----	-----	-----

IRRH277I No exceptions are detected. Expired certificates that are not trusted or are associated with only a virtual key ring are not Exceptions.

```
END TIME: 01/23/2012 08:10:01.643285 STATUS: SUCCESSFUL
```


Health Checks: RACF_CERTIFICATE_EXPIRATION (Exception)

CHECK (IBMRACF,RACF_CERTIFICATE_EXPIRATION)
 START TIME: 02/28/2013 09:23:37.747549
 CHECK DATE: 20111010 CHECK SEVERITY: MEDIUM

Certificates Expiring within 60 Days

S	Cert Owner	Certificate Label	End Date	Trust	Rings
E	CERTAUTH	VERISIGN CLASS 1 INDIVIDUAL	2008-05-12	Yes	0
E	ID (MARKN)	MARK-001	2012-11-11	Yes	0
E	ID (MARKN)	MARK0001	2012-11-05	Yes	0
	ID (CERTAUTH)	START_OFF_M001__END_OFF_M001	2012-01-25	No	0
	ID (MARKN)	START_OFF_M001__END_OFF_M001	2012-01-25	No	0
	ID (SITE)	START_OFF_M001__END_OFF_M001	2012-01-25	No	0
	CERTAUTH	START_OFF_M365__END_OFF_M001	2012-01-25	No	0
	ID (CERTAUTH)	START_OFF_M365__END_OFF_M001	2012-01-25	No	0
	CERTAUTH	ICP-Brasil CA	2011-11-30	No	0
	CERTAUTH	MICROSOFT ROOT AUTHORITY - 01	2002-12-31	No	0
	CERTAUTH	VERISIGN CLASS 3 PUBLIC	2004-01-07	No	0
	CERTAUTH	VERISIGN CLASS 2 PUBLIC	2004-01-06	No	0

* Medium Severity Exception *

IRRH276E One or more certificates expired or are expiring within the warning period.

Explanation: The RACF_CERTIFICATE_EXPIRATION check found one or more certificates that expired or are expiring within the warning period.

Health Checks: RACF_CERTIFICATE_EXPIRATION (Exception)

The RACF_CERTIFICATE_EXPIRATION check lists each certificate that has an ending date prior to the current date or that has an ending date that is prior to the current date adjusted by the warning period that the installation has specified as a parameter to the RACF_CERTIFICATE_EXPIRATION check. If a parameter is not specified, a default warning period of 60 days is used.

Only certificates that are marked as trusted result in exceptions. These certificates have an "E" in the "S" (Status) column. The trust status of the certificate is shown in the "Trust" column. The number of key rings to which the certificate is connected (other than the virtual key ring) is shown in the "Rings" column.

Use the RACDCERT LIST command to list complete information about any certificate. The RACDCERT command syntax is:

```
RACDCERT CERTAUTH    LIST(LABEL('label-name'))
                    or
RACDCERT SITE        LIST(LABEL('label-name'))
                    or
RACDCERT ID(user-id) LIST(LABEL('label-name'))
```

See z/OS Security Server RACF Security Administrator's Guide and the z/OS Security Server RACF Command Language Reference for more information about digital certificates.

System Action: The check continues processing. There is no effect on the system.

Health Checks: RACF_SENSITIVE_RESOURCES

- The RACF_SENSITIVE_RESOURCES check has been updated to check these new “static” resources names:
 - BPX.DEBUG/FACILITY
 - BPX.WLMSEVER/FACILITY
 - IEAABD.DMPAKEY/FACILITY
 - MVS.SLIP/OPERCMDS
 - SUPERUSER.PROCESS.GETPSENT/UNIXPRIV
 - SUPERUSER.PROCESS.KILL/UNIXPRIV
 - SUPERUSER.PROCESS.PTRACE/UNIXPRIV

Health Checks: RACF_SENSITIVE_RESOURCES...

- RACF is planning on updating the RACF_SENSITIVE_RESOURCES to check these new “dynamic” resources names:
 - CSVAPF.*data_set_name*/FACILITY, excluding
 - CSVAPF.MVS.SETPROG.FORMAT.DYNAMIC
 - CSVDYMLPA.ADD.*module_name*/FACILITY
 - CSVDYNEX.*exit_name.function.modname*/FACILITY, excluding
 - CSVDYNEX.LIST
 - CSVDYNEX.*exit_name*.RECOVER
 - CSVDYNEX.*exit_name*.CALL
 - CSVDYNL.*Inklstname.Function*/FACILITY excluding
 - CSVDYNL.*Inklstname*.DEFINE CSVDYNL.*Inklstname*.UNDEFINE)
- No validation is performed on the dynamic portion of these resource names (for example *data_set_name*, *module_name*, *Inklstname*)

Health Checks: RACF_SENSITIVE_RESOURCES...

Sensitive General Resources Report

S	Resource Name	Class	UACC	Warn	ID*	User

	<existing resources>					
	BPX.WLMSEVER	FACILITY	Updt	No	****	
	CSVAPF.RACFDEV.DISCRETE.NONE.LOAD	FACILITY	None	No	****	
	CSVAPF.RACFDEV.DISCRETE.READ.LOAD	FACILITY	Read	No	****	
E	CSVAPF.RACFDEV.DISCRETE.UPDATE.LOAD	FACILITY	Updt	No	****	
	CSVAPF.RACFDEV.**.NONE.LOAD	FACILITY	None	No	****	
	CSVAPF.RACFDEV.**.READ.LOAD	FACILITY	Read	No	****	
E	CSVAPF.RACFDEV.**.UPDATE.LOAD	FACILITY	Updt	No	****	
E	CSVDYLPA.ADD.MODULE001	FACILITY	Updt	No	****	
E	CSVDYLPA.DELETE.MODULE01	FACILITY	Updt	No	****	
E	CSVDYLPA.ADD.*	FACILITY	Updt	No	****	
E	CSVDYLPA.DELETE.*	FACILITY	Updt	No	****	
	CSVDYNEX.EXITNAME_READ.MODNAME01	FACILITY	Read	No	****	
E	CSVDYNEX.EXITNAME_UPDATE.DEFINE	FACILITY	Updt	No	****	
E	CSVDYNEX.EXITNAME_UPDATE.MODNAME01	FACILITY	Updt	No	****	
E	CSVDYNEX.*.DEFINE	FACILITY	Updt	No	****	
E	CSVDYNEX.*.MODNAME01	FACILITY	Updt	No	****	
E	CSVDYNEX.*	FACILITY	Updt	No	****	
E	IEAABD.DMPAKEY	FACILITY	Read	No	****	
E	IEAABD.DMPAUTH	FACILITY	Read	No	****	

Certificate Distinguished Names in IRRDBU00 Output

IRRDBU00: Additional Certificate Information

- **The RACF Database Unload Utility (IRRDBU00) unloads basic information about digital certificates into the 0560 (“General Resource Certificate Data Record”). This record contains:**
 - The record type (“0560”)
 - The name of the general resource profile which contains the certificate
 - The class (“DIGTCERT”)
 - The date and time from which the certificate is valid
 - The date and time from which the certificate is no longer valid
 - The type of key associated with the certificate
 - The key size
 - The last eight bytes of the last certificate signed with this key
 - A sequence number for certificates within a ring
- **What's missing? The issuer's distinguished name (IDN) and the subject's DN (SDN) of the certificate!**
 - This information is encoded within the certificate
 - Maps/mungs to the profile name, but given the profile name, you can't get the IDN or SDN

IRRDBU00: Additional Certificate Information...

- **A new record type (“1560”) is planned to contain:**
 - The issuer's distinguished name
 - The subject's distinguished name
 - The hashing algorithm used for the signing the certificate
- **The “1560” record links to the “0560” record using the profile name**
 - DFSORT's JOINKEY operator can be used when processing IRRDBU00 output
- **The Mapping of the 1560 Record is:**

Field Name	Type	Position		Comments
		Start	End	
CERTN_RECORD_TYPE	Int	1	4	Record type of the certificate information record (1560).
CERTN_NAME	Char	6	251	General resource name as taken from the profile name.
CERTN_CLASS_NAME	Char	253	260	Name of the class to which the general resource profile belongs.
CERTN_ISSUER_DN	Char	262	1285	Issuer's distinguished name. (1024 characters)
CERTN_SUBJECT_DN	Char	1287	2310	Subject's distinguished name. (1024 characters)
CERTN_SIG_ALG	Char	2312	2327	Certificate signature algorithm. Valid values are md2RSA, md5RSA, sha1RSA, sha1DSA, sha256RSA, sha224RSA, sha384RSA, sha512RSA, sha1ECDSA, sha256ECDSA, sha224ECDSA, sha384ECDSA, sha512ECDSA, and UNKNOWN.

&RACUID and BPX.UNIQUE.USER

&RACUID in BPX.UNIQUE.USER

- **Clients who are using BPX.UNIQUE.USER to assign z/OS UNIX information to user IDs will be able to specify ecification of &racuid in the home directory field of the model user's OMVS segment.**
 - `ALTUSER BPXMODEL OMVS (HOME (/u/&racuid))`
- **The appropriate user ID will be substituted for &racuid when a new OMVS segment is created for a user using BPX.UNIQUE.USER**
 - In upper case if “&RACUID” is specified
 - In lower case if any lower case characters are specified
- **Notes**
 - Only the first occurrence of &racuid is substituted
 - If the substitution would result in a path name exceeding the 1023 character maximum then substitution is not performed.
 - If sharing the RACF database with a downlevel system, substitution will not be performed on the downlevel system

JES2/JES3 SAF Check for Job Input Class

JES2/JES3: SAF Check for Job Input Class

- **JES2 and JES3 are planning to perform a SAF check to verify a user's ability to use a job class**
 - Applied to both the “traditional” 36 single character classes as well as the planned up-to-eight character job classes
 - Does not apply to the “special” job classes STC and TSU
- **The resource name that is checked in the JESJOBS class is:**
 - *JESJOBS.nodename.jobclass.jobname*
- **Controlled by these profiles:**
 - JES.JOBCLASS.OWNER in the FACILITY class
 - If this profile is defined, then authorization checks are performed for job owners
 - JES.JOBCLASS.SUBMITTED in the FACILITY class
 - If this profile is defined, then authorization checks are performed for job owners
 - If both FACILITY class profiles are defined then both checks are performed.

Background: z/OS V1.13 Statement of Direction BPX.DEFAULT.USER

Statement of Direction

z/OS V1.13 is planned to be the last release to support BPX.DEFAULT.USER. IBM recommends that you either use the BPX.UNIQUE.USER support that was introduced in z/OS V1.11, or assign unique UIDs to users who need them and assign GIDs for their groups.

From Preview: z/OS Version 1 Release 13 and z/OS Management Facility Version 1 Release 13 are planned to offer new availability, batch programming, and usability functions (IBM United States Software Announcement 211-007, February 15, 2011)

z/OS V1.13 Statement of Direction ...

■ Background: Assigning UID and GIDs

- **RACF 2.1 (1994)**: Introduced OMVS segments for USERS and GROUPs.
 - Users with an OMVS segment could now use “Open MVS” (now z/OS UNIX System Services)
- **OS/390 R2.4 (1997)**: Introduced BPX.DEFAULT.USER FACILITY class profile
 - Allows assigning UIDs and GIDs to users and groups who do not have OMVS segments;
One UID and one GID shared by all default users

z/OS V1.13 Statement of Direction ...

- **Background: Assigning UID and GIDs...**
 - **z/OS V1.4 (2002):** Introduced AUTOUID/AUTOGID keyword on ADDUSER, ALTUSER, ADDGROUP, ALTGROUP
 - RACF could now find the next available UID or GID using the BPX.NEXT.USER profile in the FACILITY class
 - Required enabling RACF Alternate Index Mapping (“AIM”) to stage 2
 - Limitation of 129 eight-character users sharing one UID
 - Required running migration utility (“IRRIRA00”)
 - **z/OS V1.11 (2009):** Automatic generation of OMVS segment for USERS and groups
 - Built upon AUTOUID/AUTOGID
 - Requires AIM stage 3
 - Uses the BPX.UNIQUE.USER profile in the FACILITY class

z/OS V1.13 Statement of Direction (RACF) ...

■ What this means to you:

- If you are using BPX.UNIQUE.USER then:
 - You are not using BPX.DEFAULT.USER (even if it is defined)
 - This SoD has no impact to you.
- If you are already assigning UIDs and GIDs to all users using z/OS UNIX System Services by assigning OMVS segments to all necessary users and groups, then:
 - You must continue to assign all new users and groups OMVS segments
- If you are already assigning UIDs and GIDS to all users using z/OS UNIX System Services by defining OMVS segments using AUTOUID/AUTOGID (which uses BPX.NEXT.USER) then:
 - You are already using AIM at a minimum of stage 2
 - You must continue to assign all new users and groups OMVS segments
- If you are using only BPX.DEFAULT.USER
 - You must either move to the automatic generation of OMVS user and group segments or assign OMVS user and group segments to all necessary users and groups

z/OS V1.13: Health Check – Default UNIX ID

```

      Display  Filter  View  Print  Options  Search  Help
-----
SDSF OUTPUT DISPLAY ZOSMIGV2R1_DEFAULT_UNIX_ID      LINE 0          COLUMNS 02- 81
COMMAND INPUT ==>                                     SCROLL ==> HALF
***** TOP OF DATA *****
CHECK(IBMRA CF,ZOSMIGV2R1_DEFAULT_UNIX_ID)
START TIME: 05/11/2012 14:38:04.920543
CHECK DATE: 20110101  CHECK SEVERITY: LOW

IRRH504I RACF is not enabled to assign UNIX IDs when users or groups
that do not have OMVS segments use certain z/OS UNIX services. If you
choose not to define UNIX IDs for each user of UNIX functions, you can
enable RACF to automatically generate unique UNIX UIDs and GIDs for you.

END TIME: 05/11/2012 14:38:04.921996  STATUS: SUCCESSFUL
***** BOTTOM OF DATA *****

```

- **This is a migration check!**

- Note the name: ZOSMIGV2R1.....This check is to prepare you to identify issues when you migrate to z/OS V2.1
- Shipped INACTIVE; you activate when you start your V2.1 migration planning

Helpful Publications

- **SA22-7691 - z/OS Security Server RACF Callable Services**
- **SA22-7687 - z/OS Security Server RACF Command Language Reference**
- **GA22-7680 - z/OS Security Server RACF Data Areas**
- **SA22-7682 - z/OS Security Server RACF Macros and Interfaces**
- **SA22-7686 - z/OS Security Server RACF Messages and Codes**
- **SA22-7683 - z/OS Security Server RACF Security Administrator's Guide**
- **SA22-7681 - z/OS Security Server RACF System Programmer's Guide**
- **SA22-7692 - z/OS Security Server RACROUTE Macro Reference**
- **GA22-7689 - z/OS Security Server RACF Diagnosis Guide**
- **SA22-7693 - z/OS Cryptographic Services PKI Services Guide and Reference**
- **SC24-5901 - z/OS Cryptographic Services System Secure Sockets Layer Programming**
- **SA23-2231 - z/OS ICSF Writing PKCS #11 Applications**
- **SA22-7807 - z/OS UNIX System Services: Messages and Codes**
- **SA22-7803 - z/OS UNIX System Services Programming: Assembler Callable Services Reference**
- **SC31-8775 - z/OS Communication Server: IP Configuration Guide**
- **GC31-8782 - z/OS Communication Server: IP Diagnosis Guide**
- **SC31-8781 - z/OS Communication Server: IP System Administrator's Commands**
- **SA22-7994 - IBM Health Checker for z/OS User's Guide**

Helpful References

- **IBM Redbooks**

- SG24-7248 - z/OS V1 R8 RACF Implementation

- REDP-4590 - Exploiting the IBM Health Checker for z/OS Infrastructure

- **RFCs**

- RFC2459 - Internet X.509 Public Key Infrastructure Certificate and CRL Profile

- RFC5280 - Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile

- RFC4210 - Internet X.509 Public Key Infrastructure Certificate Management Protocol (CMP)

- RFC4211 - Internet X.509 Public Key Infrastructure Certificate Request Message Format (CRMF)