RACSEQ Command

Author: Bruce R. Wells

z/OS Security Server RACF

brwells@us.ibm.com

Change Date	Change Description
05/18/2006	Introduction of RACSEQ
07/19/2006	Add the source file to the package in TSO TRANSMIT format
01/26/2013	Added support for general resource profiles, SETROPTS, and support to specify command-line keywords for many of the R_admin input parameters and options.
10/12/2022	Moved to GitHub

Overview

RACSEQ is a sample TSO command which demonstrates the profile and SETROPTS extract functions of the R_admin RACF callable service (IRRSEQ00). For profile extract, the command accepts a class name and a profile name and displays the contents of every field in the profile. For SETROPTS extract, specify (only) "SETROPTS" on the RACSEQ command. RACSEQ output differs from LISTUSER, LISTGRP, RLIST, and SETROPTS LIST output in that it is displayed in a simplified and somewhat architected manner which lends itself more easily to consumption by programs; for example, by a REXX exec using the OUTTRAP function. Note, however, that the RACF IRRXUTIL utility is the preferred (and supported) method of obtaining RACF profile (and SETROPTS) data from within a REXX program. See RACF Macros and Interfaces for details.

You should read the R_admin documentation in the RACF Callable Services publication for an overview of the extract functions. The field names displayed by RACSEQ are defined in Appendix A of that publication. The extract functions were introduced in z/OS Version 1 Release 7, and enhanced in z/OS Version 1 Release 11. For an online z/OS ~~R13~~ R25 version, go to

https://www-40.ibm.com/servers/resourcelink/svc00100.nsf/pages/zOSV2R5SA232293/$file/ichd100_v2r5.pdf

The assembler source code of RACSEQ may also be useful as a general guide to calling IRRSEQ00, since many of the parameters are used for other functions of the interface.

Syntax

RACSEQ SETROPTS | [CLASS(*class-name*)] PROFILE(*profile-name*) [ALL]

The following options apply to both SETROPTS and PROFILE extract:

[SUPERVISOR] [CMDAUTH|NOCMDAUTH] [FACILITYAUTH] [USER(*user-id*)] [SUBPOOL(*value*)]

The following options apply only to PROFILE extract:

[GENERIC] [BASEONLY] [NAMEONLY] [UPPERCASE]

Where:

SETROPTS - Displays the current SETROPTS settings. Note that R_admin returns SETROPTS data in a different format than that for profiles. Nonetheless, RACSEQ will display its output consistently with the output for profiles. There is a single BASE segment, by convention, which contains all the fields. For repeating fields (e.g. the list of active classes), the R_admin extract-SETROPTS output does not have the same architecture as extract-profile, in that there is no architected list header field. This is simulated by simply displaying the field name itself as the "header" field. This works because all of the repeating fields for SETROPTS are 1-dimensional. See the example below.

CLASS - Specifies the class in which the specified PROFILE exists. All classes are supported with the exception of DATASET. Do not abbreviate the class name. If omitted, the default is USER.

PROFILE - Specifies the profile name to be displayed. For the CONNECT class, the profile name consists of a user ID and a group name separated by a period (for example, "IBMUSER.SYS1"). The good news is that *profile-name* is case-sensitive, and so lower-case profiles like the irrcerta USER profile can be displayed. The bad news is that *profile-name* is case-sensitive, so you must remember to enter it in upper case for the vast majority of cases (no pun intended). If you forget to upper-case the profile name, you will receive a message indicating that the IRRSEQ00 return combination was 4/4/4. Note that you can also use the UPPERCASE keyword (see below) to have RACF upper-case the name, when appropriate, for you.

ALL - Displays all profiles within the class, starting with the profile that alphabetically follows the name specified in the PROFILE operand. If PROFILE is not specified, all profiles in the class are displayed.

GENERIC – For general resource classes, requests that the matching generic profile be returned if a discrete profile does not exist. If specifying ALL with PROFILE, it indicates that *profile-name* is generic. This sets the ADMN_MAP_GENERIC request flag in the input parameter list to R_admin.

BASEONLY – Requests that only the BASE (a.k.a. "RACF") segment be returned. This sets the ADMN_MAP_BASEONLY request flag in the input parameter list to R_admin.

NAMEONLY – Requests that only the profile name be returned. This can be used with the ALL keyword to return a list of profile names that you are allowed to see in a given class, without the overhead and output associated with all the profile data. This sets the ADMN_PROF_NAMEONLY request flag in the input parameter list to R_admin. Note that this capability is introduced via RACF APAR OA41162.

UPPERCASE – Requests that the name specified in the **PROFILE** keyword be automatically upper-cased by RACF where appropriate (i.e. for USER, GROUP, CONNECT, and all general resource classes defined with CASE=UPPER). This sets the ADMN_MAP_UPPER request flag in the input parameter list to R_admin. Note that this flag is ignored by R_admin on a "next" request (I.E. when you specify ALL).

SUPERVISOR - Causes RACSEQ to MODESET into supervisor state before the IRRSEQ00 call, and back to problem state afterwards. RACSEQ must come from an authorized library to use this option (or be in the authorized TSO command list).

FACILITYAUTH - Requests that the FACILITY class check be performed when in supervisor state. By default, it is not performed for supervisor state callers. If SUPERVISOR is not also specified, this option has not effect, since the FACILITY check is always performed for problem-state callers.

CMDAUTH|NOCMDAUTH:
    CMDAUTH - Requests that the command authorization rules be enforced. This is already the default behavior for profile extract in either problem or supervisor state, and for SETROPTS in problem state. However, CMDAUTH must be specified with SETROPTS when SUPERVISOR is also specified in order to enforce the SETROPTS LIST rules.
    NOCMDAUTH - Requests that the command authorization rules be bypassed. If SUPERVISOR is not also specified, R_admin will ignore this option. This is already the default behavior for SETROPTS in supervisor state. However, NOCMDAUTH must be specified for profile-extract when SUPERVISOR is also specified in order to bypass the command-processor (e.g. LISTUSER, LISTGRP, RLIST) rules.

Authorization Required

When authorization rules are enforced (as described above), the following authorization is required.

For class	Ability to issue	At least READ authority to FACILITY resource
USER	LISTUSER	IRR.RADMIN.LISTUSER
GROUP	LISTGRP	IRR.RADMIN.LISTGRP
CONNECT	LISTUSER	IRR.RADMIN.LISTUSER
General resource classs	RLIST	IRR.RADMIN.RLIST
SETROPTS operand	SETROPTS LIST	IRR.RADMIN.SETROPTS.LIST

Example 1

RACSEQ CLASS(GROUP) PROFILE(RAPTORS)

```
Displaying profile RAPTORS in class GROUP. Segments:02
Segment: BASE     Fields:08
  SUPGROUP:SYS1
  CREATDAT:04/18/06
  OWNER   :IBMUSER
  TERMUACC:FALSE
  DATA    :BIRDS OF PREY KNOW THEY'RE COOL
  Repeat field:SUBGRPCT Subfields:01 Occurrences:0004
    SUBGROUP:HAWKS
    ----------------------------------------------
    SUBGROUP:FALCONS
    ----------------------------------------------
    SUBGROUP:EAGLES
    ----------------------------------------------
    SUBGROUP:OWLS
    ----------------------------------------------
  Repeat field:CONNECTS Subfields:02 Occurrences:0007
    GUSERID :BRUCE
    GAUTH   :CONNECT
    ----------------------------------------------
    GUSERID :KESTREL
    GAUTH   :USE
    ----------------------------------------------
    GUSERID :OSPREY
    GAUTH   :USE
    ----------------------------------------------
    GUSERID :REDTAIL
    GAUTH   :JOIN
    ----------------------------------------------
    GUSERID :SAWWHET
    GAUTH   :CREATE
    ----------------------------------------------
    GUSERID :HARRIER
    GAUTH   :USE
    ----------------------------------------------
    GUSERID :SNOWY
    GAUTH   :USE
    ----------------------------------------------
  UNIVERSL:FALSE
Segment: OMVS     Fields:01
  GID     :4
```

- The first line echoes the class name and profile name, and indicates how many segments to expect.
- Each segment is identified in a message which also indicates how many fields to expect within the segment. The fields within that segment are displayed, and then the next segment appears.
- Each field name is identified with its value.
  - The value for boolean fields is either TRUE or FALSE.

- If the field is a repeat field, special processing occurs. First, the repeat field name is displayed, along with an indication of the number of occurrences, and the number of subfields within each occurrence. Each subfield for an occurrence is displayed, followed by a separator line. The entire repeat field construct counts as a single field within the number of fields displayed for a segment. See Callable Services for more detail on repeating fields.

Example 2

RACSEQ SETROPTS

```
Displaying SETROPTS data
Segment: BASE     Fields:72
  Repeat field:CLASSACT Subfields:01 Occurrences:0006
    CLASSACT:DATASET
    ----------------------------------------------
    CLASSACT:USER
    ----------------------------------------------
    CLASSACT:GROUP
    ----------------------------------------------
    CLASSACT:FACILITY
    ----------------------------------------------
    CLASSACT:GXFACILI
    ----------------------------------------------
    CLASSACT:XFACILIT
    ----------------------------------------------
  Repeat field:RACLIST  Subfields:01 Occurrences:0002
    RACLIST :FACILITY
    ----------------------------------------------
    RACLIST :XFACILIT
    ----------------------------------------------
  INITSTAT:TRUE
  TERMINAL:READ
  Repeat field:AUDIT    Subfields:01 Occurrences:0001
    AUDIT   :USER
    ----------------------------------------------
  CMDVIOL :TRUE
  OPERAUDT:FALSE
  SAUDIT  :TRUE
  APPLAUDT:FALSE
  SLABAUDT:FALSE
  HISTORY :008
  INTERVAL:060
  MINCHANG:000
  MIXDCASE:FALSE
  REVOKE  :004
  WARNING :030
  RULE1   :4:5 LLLLL
  ADDCREAT:FALSE
  ADSP    :TRUE
  COMPMODE:FALSE
  EGN     :FALSE
  GENOWNER:FALSE
... ... ...
```

Package Contents

This package contains
- This README file
- racseq.asm.txt - the source code for the command (for casual browsing on the web site. Use the following file to actually install the code.)
- racseq.asm.xmit - the source code in TSO XMIT format

Installation Instructions

- Download the assembler source code (racseq.asm.xmit) to your workstation using a browser. Then transfer it to your z/OS system using FTP in binary mode. You must transfer it into a fixed-block 80 data set. For example, on Windows, this can be accomplished by specifying the following FTP client command before initiating the transfer
      quote site lrecl=80 recfm=fb blksize=0

- From a TSO session on z/OS, issue the RECEIVE command to unpackage the file. The syntax of the RECEIVE command is:

      RECEIVE INDATASET(dsname)

   RECEIVE prompts you for a target data set name.

   Note: If you receive a message from the RECEIVE command that indicates the input data set is in an incorrect format, verify that:
     - The files were FTP'd in binary format
     - The input files are in fixed block format
- Assemble the source.
- Link-edit the object code. Note that you have to include the IBM-supplied IRRSEQ00 stub module into your program. This stub is located in SYS1.CSSLIB. For example:

```
//SEQLINK  EXEC PGM=IEWL,PARM='NCAL,LIST,LET,XREF,SIZE=(300K,30K)'
//SYSPRINT DD   SYSOUT=*
//SYSUT1   DD   DSN=&SYSUT1,UNIT=SYSDA,SPACE=(1024,(50,20))
//SYSLMOD  DD   DISP=SHR,DSN=PROD.LINKLIB
//AOSBN    DD   DSN=MY.RACSEQ.OBJ,DISP=SHR
//CSSLIB   DD   DSN=SYS1.CSSLIB,DISP=SHR
//SYSLIN   DD   *
 INCLUDE AOSBN(RACSEQ)
 INCLUDE CSSLIB(IRRSEQ00)
 ENTRY RACSEQ
 NAME RACSEQ(R)
/*
```

Messages

Apart from normal command output, RACSEQ may issue a number of error messages.

R_admin Error! SAFrc *x* - RACFrc *y* - RACFreason *z*

Explanation: The return code combinations are all documented in Callable Services. A couple of the more likely combinations you may encounter are
*   4/4/4 - Profile does not exist. Perhaps you forgot to enter the profile name in upper case.
*   8/8/24 - You are not authorized to display the profile.

Error! Unsupported class!

Explanation: Self-explanatory.

Syntax: RACSEQ SETROPTS | CLASS(class) PROFILE(profile) ALL

Explanation: This is the command syntax displayed when you enter a syntactically incorrect command, such as by omitting the PROFILE keyword when SETROPTS is not specified.

IKJPARS error! Return Code *n*

Explanation: An unexpected error occurred from the TSO parse service.

Disclaimers, etc.