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“Is user a member of a group” – REXX function

The REXX function presented here determines whether the user invoking the function is a member of the RACF group specified as an argument. REXRACFG should be invoked from within an MVS REXX EXEC. The function accepts a single argument, namely the RACF group. This argument is mandatory. The function returns ‘true’ or ‘false’, and the variable, SYSREASON, will contain a character string providing more information, unless severe problems occur (lack of storage, etc).

In keeping with standard REXX practices, the group specified may be a variable. The value of the group must be from 1 to 8 bytes in length, and may be in upper or lower case.

The function returns an integer. This integer will indicate success or failure. An example of the function being invoked is as follows:

```
RC = REXRACFG(MVSSUPRT)
```

The different values that may be returned are as follows:

- -2 – IRXEXCOM; lack of storage
- -1 – IRXEXCOM; error condition
- 0 – NORMAL; false
- 1 – NORMAL; true.

If the return value is normal, the variable, SYSREASON, will contain a character string. The SYSREASON values are as follows:

- When RC = 1: user connected to group
- When RC = 0: user not connected to group
- Group name not 1 to 8 bytes
- Incorrect number of arguments
- No RACF profile for user
- IRXEXCOM error.

An example of the function being used is shown below.

```
/* REXX ***************************************************/
say "Enter group";
pull GROUP;
if rexracfg(GROUP) then
    say SYSREASON GROUP;
else
    do;
    say "For group:" GROUP;
    say SYSREASON;
    end;
exit;
```

REXRACFG

```
TITLE 'REXX FUNCTION TO VALIDATE CONNECTION TO RACF GROUP'
         PRINT NOGEN
*
*        PROGRAM:     REXRACFG
*                     VALIDATE THAT THE USER IS CONNECTED TO A
*                     SPECIFIC RACF GROUP
*
*        ATTRIBUTES:
*                     REENTRANT
*                     AMODE: 31
*                     RMODE: ANY
*                     AUTHORIZATION: NONE
*
*        ABSTRACT:
*        REXX FUNCTION REQUIRES A SINGLE ARGUMENT - THE RACF GROUP.
*        THE FUNCTION WILL CHECK WHETHER THE USER IS CONNECTED TO THAT
*        GROUP
*        THE FUNCTION WILL RETURN TWO VALUES:
*             THE STANDARD RETURN CODE
*             STRING VARIABLE NAMED SYSREASON
*
*        USAGE:
*        RET_CODE = REXRACFG(GROUP_NAME);
*
*        RET_CODE VALUES:
*        -2                            . IRXEXCOM - LACK OF STORAGE
*        -1                            . IRXEXCOM - ERROR CONDITION
*        Ø                             . NORMAL - CHECK REASON CODE
*        1                             . NORMAL - CONNECTED
*
*        SYSREASON (REASON CODE) VALUES:
*        Ø                             . User connected to group
*        4                             . User NOT connected to group
```

```
*        8                              . Group name NOT 1 to 8 bytes
*        12                             . Incorrect number of arguments
*        16                             . No RACF profile for user
*        2Ø                             . IRXEXCOM error
         TITLE 'EQUATES, MACROS && CONTROL BLOCKS USED'
RØ       EQU   Ø
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8                        . RETURN CODE
R9       EQU   9                        . MESSAGE CODE/REASON CODE
R1Ø      EQU   1Ø                       . BAS RETURN REGISTER
R11      EQU   11
R12      EQU   12                       . CSECT BASE REGISTER
R13      EQU   13                       . -> DYNAMIC AREA
R14      EQU   14                       . -> RETURN
R15      EQU   15                       . -> ENTRY POINT
*                                       . RETURN CODE
*
*        CALLED ROUTINES:
*              IRXEXCOM                 . REXX VARIABLE ACCESS ROUTINE
*
*        MACROS AND CONTROL BLOCKS USED:
*              DELETE                   . DELETE LOADED PROGRAM
*              ICHPCGRP                 . MAP CONNECT GROUP TABLE
*              IHAACEE                  . ACCESSOR ENVIRONMENT ELEMENT
*              IHAASCB                  . ADDRESS SPACE CONTROL BLOCK
*              IHAASXB                  . ASCB EXTENSION
*              IHAPSA                   . PREFIXED SAVE AREA
*              IKJTCB                   . TASK CONTROL BLOCK
*              IRXARGTB                 . MAP ARGUMENT TABLE
*              IRXEFPL                  . MAP EXTERNAL FUNCTIONS PLIST
*              IRXEVALB                 . MAP EVALUATION BLOCK
*              IRXSHVB                  . MAP SHARED VARIABLE BLOCK
*              LOAD                     . LOAD PROGRAM
*              STORAGE                  . STORAGE ACQUIRE AND RELEASE
         TITLE 'MAIN CSECT PROCESS'
REXRACFG CSECT
REXRACFG AMODE 31
REXRACFG RMODE ANY
         LA    R14,Ø(,R14)              . VALIDITY OF R14
         BSM   R14,RØ                   . CURRENT ADDRESSING MODE
         BAKR  R14,RØ                   . ESTABLISH LINKAGE
         LR    R12,R15                  . 12 -> EPA
         USING REXRACFG,R12             . CSECT ADDRESSABILITY
         STORAGE OBTAIN,                . ACQUIRE DYNAMIC AREA          *
```

```
              ADDR=(R13),                                            *
              LENGTH=DYNLEN,                                         *
              SP=Ø
         MVC  4(4,R13),=C'F1SA'       . INDICATE FORMAT OF SAVE AREA
         USING DYNAREA,R13            . DSECT ADDRESSABILITY
         XC   @IRXEXCOM,@IRXEXCOM     . INDICATE IRXEXCOM NOT LOADED
         SLR  R8,R8                   . SET RETURN CODE
         ST   R8,RETCODE              . SAVE RETURN CODE
         SLR  R9,R9                   . SET MESSAGE/REASON CODE
         BAS  R1Ø,REXXVECT            . REXX VECTOR PROCESSING
         BAS  R1Ø,ARGUMENT            . PROCESS ARGUMENT
         LTR  R9,R9                   . Q. ARGUMENT VALID?
         BNZ  AØØØ1                   . A. YES
         CLC  RETCODE,=F'Ø'           . Q. RETURN CODE ZERO?
         BNE  AØØØ1                   . A. NO
         BAS  R1Ø,CHECKGRP            . CHECK RACF GROUP
*
AØØØ1    EQU  *
*
         BAS  R1Ø,TERMINAT            . TERMINATION
         STORAGE RELEASE,             . RELEASE DYNAMIC STORAGE       *
              ADDR=(R13),                                            *
              LENGTH=DYNLEN,                                         *
              SP=Ø
         SLR  R15,R15                 . 15 - RETURN CODE
         PR                           . ADIOS
         TITLE 'REXX VECTOR PROCESSING'
*        PROCESS THE TWO ARGUMENTS PASSED TO REXX FUNCTIONS
*        THE ADDRESS OF THE REXX ENVIRONMENT BLOCK (OPTIONAL)
*        THE ADDRESS OF THE EXTERNAL FUNCTION PARAMETER LIST
*
*        REGISTER USAGE
*        Ø                            . -> ENVIRONMENT BLOCK
*        1                            . -> EXTERNAL FUNCTION PLIST
*        2                            . -> PARSED PARAMETER LIST
*
REXXVECT EQU  *
*
         EREG R Ø,R1                  . EXTRACT CALLER'S REGISTERS
         ST   RØ,@REXX                . SAVE REXX ENVIRONMENT BLOCK ->
         ST   R1,@EFPL                . SAVE EXTERNAL FUNCTION PLIST
         USING EFPL,R1                . IRXEFPL DSECT ADDRESSABILITY
         L    R2,EFPLARG              . 2 -> PARSED ARGUMENT LIST
         ST   R2,@ARGTAB              . SAVE
         L    R2,EFPLEVAL             . 2 -> EVALUATION BLOCK VECTOR
         L    R2,Ø(,R2)               . 2 -> EVALUATION BLOCK
         ST   R2,@EVALBLK             . SAVE
         DROP R1                      . DSECT NOT REQUIRED
*
         BR   R1Ø                     . RETURN
```

```
         TITLE 'PROCESS INPUT ARGUMENT'
*        PROCESS ARGUMENT - VALIDATE ETC.
*        ONE MANDATORY ARGUMENT - MAX EIGHT, MIN ONE BYTE
*        LOAD REXX SERVICE ROUTINE IRXEXCOM
*        SET UP PARAMETER LIST FOR IRXEXCOM
*        INVOKE IRXEXCOM TO DROP VARIABLE
*
*        REGISTER USAGE
*        1                              . ARGUMENT COUNT
*        2                              . -> CURRENT ARG TABLE ENTRY
*                                       . -> SHARED VARIABLE BLOCK
*        3                              . WORK
*        4                              . -> CURRENT ARGUMENT VALUE
*        5                              . CURRENT ARGUMENT LENGTH
*        6                              . -> SAVED VALUE
*                                       . WORK
*        7                              . ARGUMENT LENGTH
*        8                              . RETURN CODE
*        9                              . REASON CODE
*        1Ø                             . RETURN
*
ARGUMENT EQU   *
*
         SLR   R1,R1                   . 1 - ZERO (ARGUMENT COUNT)
         ICM   R2,15,@ARGTAB           . 2 -> ARGUMENT TABLE
         BZ    CØØØ2                   . BRANCH IF ZERO
         USING ARGTABLE_ENTRY,R2       . DSECT ADDRESSABILITY
*                                      . 4 -> ARGUMENT STRING
*                                      . 5 - ARGUMENT STRING LENGTH
         LM    R4,R5,ARGTABLE_ARGSTRING_PTR
         LTR   R5,R5                   . Q. LENGTH NEGATIVE OR ZERO?
         BM    CØØØ2                   . A. YES - NEGATIVE
         BZ    CØØØ3                   . A. YES - ZERO
         LA    R1,1(,R1)               . INCREMENT ARGUMENT COUNT
         CH    R5,=Y(L'GROUP)          . Q. VARIABLE NAME TOO GREAT?
         BH    CØØØ3                   . A. YES - ERROR
         MVC   GROUP,SPACES            . INITIALIZE SAVED GROUP VALUE
         LA    R6,GROUP                . 6 -> SAVED GROUP VALUE
         LR    R7,R5                   . LENGTH OF GROUP
*
CØØØ1    EQU   *
*
         MVC   Ø(1,R6),Ø(R4)           . MOVE BYTE TO SAVE GROUP
         LA    R4,1(,R4)               . 4 -> NEXT BYTE OF GROUP
         LA    R6,1(,R6)               . 6 -> NEXT BYTE OF SAVED GROUP
         BCT   R5,CØØØ1                . LOOP THROUGH GROUP
         ST    R7,#GROUP               . SAVE LENGTH
         BCTR  R7,RØ                   . DECREMENT FOR EXECUTE
         LA    R4,GROUP                . 4 -> GROUP
         EX    R7,OCUP                 . CONVERT TO UPPER-CASE
```

```
*                                       . 2 -> NEXT ARGUMENT DATA
         LA    R2,ARGTABLE_NEXT-ARGTABLE_ENTRY(,R2)
*                                       . 4 -> ARGUMENT STRING
*                                       . 5 - ARGUMENT STRING LENGTH
         LM    R4,R5,ARGTABLE_ARGSTRING_PTR
         LTR   R5,R5                   . Q. LENGTH NEGATIVE?
         BM    C0004                   . A. YES
         LA    R9,12                   . SET REASON/MESSAGE CODE
         B     C0004
*
C0002    EQU   *
*
         CH    R1,=H'1'                . Q. VALID NUMBER OF ARGUMENTS?
         BE    C0004                   . A. YES
         LA    R9,12                   . SET REASON/MESSAGE CODE
         B     C0004                   . CONTINUE
*
C0003    EQU   *                       . ARGUMENT LENGTH ERROR
*
         LA    R9,8                    . SET REASON/MESSAGE CODE
*
C0004    EQU   *
*
         ST    R9,REASCODE             . SAVE REASON/MESSAGE CODE
         DROP  R2                      . DSECT NOT REQUIRED
         LOAD  EP=IRXEXCOM             . LOAD IRXEXCOM
         ST    R0,@IRXEXCOM            . SAVE EPA
         LA    R2,SHVARBLK             . 2 -> SHARED VARIABLE BLOCK
         XC    0(L'SHVARBLK,R2),0(R2)  . INITIALIZE
         USING SHVBLOCK,R2             . DSECT ADDRESSABILITY
*
         MVI   SHVCODE,SHVDROPV        . SPECIFY ACTION
         LA    R3,SYSREAS              . 3 -> VARIABLE NAME
         ST    R3,SHVNAMA              . SAVE IN DSECT
         MVC   SHVNAML,SYSREASL        . LENGTH OF VARIABLE NAME
*
         LA    R3,CIRXEXCOM            . 3 -> CHARACTER STRING IRXEXCOM
         ST    R3,@CSTR                . SAVE IN PARAMETER LIST
         XC    @DUMMY1(L'@DUMMY1+L'@DUMMY2),@DUMMY1
         ST    R2,@SHVB                . -> SHARED VARIABLE REQ BLOCK
         OI    @SHVB,X'80'             . FLAG END OF ARGUMENTS
*
         L     R0,@REXX                . 0 -> REXX ENVIRONMENT BLOCK
         LA    R1,PIRXEXCOM            . 1 -> PARAMETER LIST
         L     R15,@IRXEXCOM           . 15 - EPA IRXEXCOM
         BASSM R14,R15                 . INVOKE IRXEXCOM
*
         LTR   R15,R15                 . Q. RETURN CODE LESS THAN ZERO?
         BM    C0005                   . A. YES - ERROR
         CH    R15,=H'28'              . Q. RETURN CODE 28?
```

```
         BE    C0005                    . A. YES - ERROR
         CH    R15,=H'32'               . Q. RETURN CODE 32?
         BE    C0005                    . A. YES -ERROR
         CLI   SHVRET,SHVCLEAN          . Q. EXECUTION OKAY?
         BER   R10                      . A. YES - EXIT
         CLI   SHVRET,SHVNEWV           . Q. NON-EXISTENT VARIABLE?
         BER   R10                      . A. YES - EXIT
*
C0005    EQU   *
*
         DROP  R2                       . DSECT NOT REQUIRED
         LA    R9,20                    . SET REASON/MESSAGE CODE
         ST    R15,RETCODE              . SAVE 15
         BR    R10
OCUP     OC    *-*(*-*,R4),SPACES       . EXECUTED UPPER CASE CONV
         TITLE 'DETERMINE CONNECTED GROUPS'
*        ACCESS THE CONNECTED GROUP NAME TABLE
*            THIS IS OBTAINED BY:
*                THE PREFIXED SAVE AREA -> TASK CONTROL BLOCK
*                IF ACEE PRESENT, USE IT ELSE
*                    THE TASK CONTROL BLOCK -> ASCB
*                    THE ADDRESS SPACE CONTROL BLOCK -> ASCB EXTENSION
*                    THE ASCB EXTENSION -> ACCESSOR ENVIRONMENT ELEM
*                THE ACEE -> CONNECTED GROUP NAME TABLE
*        PROCESS THE ENTRIES IN THE TABLE LOOKING FOR A MATCH
*
*        REGISTER USAGE
*        2                              . -> PSA
*                                       . -> CONNECTED GROUP ENTRY
*        3                              . -> TCB
*                                       . -> ASCB
*                                       . -> ASXB
*                                       . -> CGRP HEADER
*        4                              . -> ACEE
*                                       . # CONNECTED GROUPS
*
CHECKGRP EQU   *
*
         SLR   R2,R2                    . 2 - ZERO
         USING PSA,R2                   . MAP PREFIX SAVE AREA
         L     R3,PSATOLD               . 3 -> CURRENT TCB
         USING TCB,R3                   . MAP TASK CONTROL BLOCK
         ICM   R4,15,TCBSENV            . 4 -> TASK ACEE
*                                       . Q. ACEE PRESENT?
         BNZ   D0001                    . A. YES
         DROP  R3                       . TCB NOT REQUIRED
         L     R3,PSAAOLD               . 3 -> CURRENT ASCB
         USING ASCB,R3                  . MAP ADDRESS SPACE CONTROL BLK
         DROP  R2                       . PSA NOT REQUIRED
         L     R3,ASCBASXB              . 3 -> EXTENSION
```

```
         DROP  R3                       . ASCB NOT REQUIRED
         USING ASXB,R3                  . MAP ADDRESS SPACE EXTENSION
         ICM   R4,15,ASXBSENV           . 4 -> ACEE
*                                       . Q. ACEE PRESENT?
         BZ    D0004                    . A. NO
         DROP  R3                       . ASXB NOT REQUIRED
*
D0001    EQU   *                        . GET ACEE DATA
*
         USING ACEE,R4                  . MAP THE ACEE
         L     R3,ACEEFCGP              . 3 -> LIST OF GROUPS
         USING CGRP,R3                  . MAP THE CGRP HEADER
         DROP  R4                       . ACEE NOT REQUIRED
         LH    R4,CGRPNUM               . NUMBER OF TABLE ENTRIES
         LA    R2,CGRPENT               . 2 -> FIRST GROUP ENTRY
         USING CGRPENTD,R2              . MAP GROUP ENTRY
         DROP  R3                       . HEADER NOT REQUIRED
*
D0002    EQU   *
*
         CLC   CGRPNAME,GROUP           . Q. MATCH ON GROUP?
         BE    D0003                    . A. YES
         LA    R2,L'CGRPENT(,R2)        . 2 -> NEXT GROUP ENTRY
         BCT   R4,D0002                 . CHECK IT OUT
         LA    R9,4                     . SET REASON/MESSAGE CODE
         B     D0005                    . EXIT
         DROP  R2
*
D0003    EQU   *
*
         LA    R8,1                     . SET FOUND
         B     D0005                    . EXIT
*
D0004    EQU   *
*
         LA    R9,16                    . SET REASON/MESSAGE CODE
*
D0005    EQU   *
*
         ST    R8,RETCODE               . SAVE RETURN CODE
         ST    R9,REASCODE              . SAVE REASON/MESSAGE CODE
         BR    R10
         TITLE 'TERMINATION ROUTINE'
*        SET UP REXX FUNCTION RETURN CODE
*        PUT RETURN VALUE INTO REXX EVALUATION BLOCK
*        DEVELOP VARIABLE SYSREASON
*        DELETE IRXEXCOM IF LOADED
*
*        REGISTER USAGE
*        1                              . LENGTH OF RETURN VALUE
```

```
*        2                              . WORK
*                                       . -> RETURN VALUE
*                                       . -> EVAL BLOCK
*        3                              . BINARY RETURN VALUE
*                                       . EVAL BLOCK SIZE
*        4                              . LENGTH OF EDITED RETURN VALUE
*
TERMINAT EQU   *
*
         SLR   R1,R1                   . 1 - ZERO
         LA    R2,RETDATA              . 2 -> OUTPUT DATA
         MVC   RETDATA,SPACES          . INITIALIZE OUTPUT
         L     R3,RETCODE              . 3 - RETURN CODE
         LTR   R3,R3                   . Q. RETURN CODE NEGATIVE?
         BNM   E0001                   . A. NO
         MVI   0(R2),C'-'              . OUTPUT NEGATIVE SIGN
         LA    R1,1(,R1)               . INCREMENT BYTES OUTPUT
         LA    R2,1(,R2)               . 2 -> NEXT OUTPUT BYTE
*
E0001    EQU   *
*
         CVD   R3,DWORD                . PACK IT
         MVC   VARWORK,MASK8           . MOVE EDIT MASK TO WORK AREA
         ED    VARWORK,DWORD+4         . EDIT THE DATA
         LA    R3,VARWORK              . 3 -> EDITED DATA
         LA    R4,L'VARWORK            . 4 - LENGTH OF EDITED DATA
*
E0002    EQU   *
*
         CLI   0(R3),C' '              . Q. SIGNIFICANT?
         BNE   E0003                   . A. YES
         LA    R3,1(,R3)               . 3 -> NEXT BYTE
         BCT   R4,E0002                . LOOP
*
E0003    EQU   *
*
         MVC   0(1,R2),0(R3)           . MOVE OUT BYTE
         LA    R1,1(,R1)               . INCREMENT BYTES OUTPUT
         LA    R2,1(,R2)               . 2 -> NEXT OUTPUT BYTE
         LA    R3,1(,R3)               . 3 -> NEXT INPUT BYTE
         BCT   R4,E0003                . LOOP
         ST    R1,#RETDATA             . NUMBER OF BYTES
*
         L     R2,@EVALBLK             . 2 -> EVAL BLOCK
         USING EVALBLOCK,R2            . DSECT ADDRESSABILITY
         L     R3,EVALBLOCK_EVSIZE     . 3 - LENGTH
         CH    R3,=H'3'                . Q. AT LEAST THREE DOUBLES?
         BL    E0004                   . A. NO
         MVC   EVALBLOCK_EVDATA(4),RETDATA . SET RESULT
         MVC   EVALBLOCK_EVLEN(4),#RETDATA
```

```
         DROP  R2
*
E0004    EQU   *
*
         CLC   RETCODE,=F'0'           . Q. RETURN CODE ZERO?
         BE    E0005                   . A. YES
         CLC   RETCODE,=F'1'           . Q. RETURN CODE ONE?
         BNE   E0006                   . A. NO
*
E0005    EQU   *
*
         LA    R4,SHVARBLK             . 4 -> SHARED VARIABLE BLOCK
         XC    0(L'SHVARBLK,R4),0(R4)  . INITIALIZE IT
         USING SHVBLOCK,R4             . DSECT ADDRESSABILITY
         MVI   SHVCODE,SHVSYSET        . SPECIFY ACTION
         LA    R1,SYSREAS              . 1 -> VARIABLE NAME
         MVC   SHVNAML,SYSREASL        . LENGTH OF VARIABLE NAME
         ST    R1,SHVNAMA              . SAVE IN DSECT
         LA    R1,REASARR              . 1 -> MESSAGE CODE -> ARRAY
         LA    R1,0(R9,R1)             . 1 -> SPECIFIC MESSAGE ->
         L     R1,0(,R1)               . 1 -> SPECIFIC MESSAGE
         LH    R2,0(,R1)               . 2 - VALUE LENGTH
         ST    R2,SHVVALL              . SAVE IN DSECT
         LA    R2,2(,R1)               . 2 -> VALUE
         ST    R2,SHVVALA              . SAVE IN DSECT
         DROP  R4
*
         L     R0,@REXX                . 0 -> REXX ENVIRONMENT BLOCK
         LA    R1,PIRXEXCOM            . 1 -> PARAMETER LIST
         L     R15,@IRXEXCOM           . 15 - EPA IRXEXCOM
         BASSM R14,R15                 . INVOKE IRXEXCOM
*
         LTR   R15,R15                 . Q. RETURN CODE ZERO?
         BZ    E0006                   . A. YES - CONTINUE
         CH    R15,=H'1'               . Q. RETURN CODE ONE?
         BZ    E0006                   . A. YES - CONTINUE
         ST    R15,REASCODE            . SAVE IRXEXCOM RETURN
         LA    R9,20                   . SET MESSAGE/REASON CODE
*
E0006    EQU   *
*
         ICM   R2,B'1111',@IRXEXCOM    . Q. IRXEXCOM LOADED?
         BZ    E0007                   . A. YES
         DELETE EP=IRXEXCOM            . DECREMENT RESPONSIBILITY
*
E0007    EQU   *
*
         BR    R10
         DROP  R13
         TITLE 'DYNAMIC AREA'
```

```
DYNAREA  DSECT
         DS    18F
DWORD    DS    D                        . FOR CVD
@ARGTAB  DS    F                        . -> ARGUMENT TABLE
@EFPL    DS    F                        . -> REXX EXT FUNCTION PLIST
@EVALBLK DS    F                        . -> EVAL BLOCK
@IRXEXCOM DS   F                        . -> ENTRY POINT IRXEXCOM
@REXX    DS    F                        . -> REXX ENVIRONMENT BLOCK
#RETDATA DS    F                        . LENGTH OF RETURNED DATA
#GROUP   DS    F                        . LENGTH OF GROUP NAME
RETCODE  DS    F                        . RETURN CODE
REASCODE DS    F                        . REASON CODE
*
PIRXEXCOM DS   ØF                       . IRXEXCOM PARAMETER LIST
@CSTR    DS    F                        . -> CHARACTER STRING IRXEXCOM
@DUMMY1  DS    F                        . -> DUMMY ARGUMENT
@DUMMY2  DS    F                        . -> DUMMY ARGUMENT
@SHVB    DS    F                        . -> FIRST SHARED VARIABLE BLOCK
*
GROUP    DS    CL8                      . GROUP NAME
RETDATA  DS    CL8                      . RETURN DATA
VARWORK  DS    CL8                      . VARIABLE NUMBER WORK
         DS    ØF
SHVARBLK DS    CL(SHVBLEN)              . SHARED VARIABLE BLOCK AREA
DYNLEN   EQU   *-DYNAREA
         TITLE 'IBM SUPPLIED DSECTS'
         ICHPCGRP                       . CONNECT GROUP
         IHAACEE                        . ACCESS CONTROL ENVIRONMENT
         IHAASCB DSECT=YES              . ASCB
         IHAASXB DSECT=YES              . ASCB EXTENSION
         IHAPSA DSECT=YES               . PREFIXED SAVE AREA
         IKJTCB DSECT=YES               . TASK CONTROL BLOCK
         IRXARGTB                       . ARGUMENT TABLE
         IRXEFPL                        . EXTERNAL FUNCTION PARAM LIST
         IRXEVALB                       . EVALUATION BLOCK
         IRXSHVB                        . SHARED VARIABLE REQUEST BLOCK
         TITLE 'CONSTANTS'
REXRACFG CSECT
*
CIRXEXCOM DC   C'IRXEXCOM'              . NAME OF REXX SERVICE ROUTINE
MASK8    DC    X'4020202020202120'      . EDIT MASK
SPACES   DC    8C' '                    . SPACES FOR INITIALIZATION
*
         DS    ØF
SYSREASL DC    AL4(L'SYSREAS)           . REASON CODE SYMBOL
SYSREAS  DC    C'SYSREASON'
*
REASARR  DS    ØF                       . MESSAGE/REASON CODE ARRAY
         DC    A(REASØL)
         DC    A(REAS4L)
```

```
         DC    A(REAS8L)
         DC    A(REAS12L)
         DC    A(REAS16L)
         DC    A(REAS20L)
         DS    0H
REAS0L   DC    AL2(L'REAS0)
REAS0    DC    C'User connected to group'
         DS    0H
REAS4L   DC    AL2(L'REAS4)
REAS4    DC    C'User NOT connected to group'
         DS    0H
REAS8L   DC    AL2(L'REAS8)
REAS8    DC    C'Group name NOT 1 to 8 bytes'
         DS    0H
REAS12L  DC    AL2(L'REAS12)
REAS12   DC    C'Incorrect number of arguments'
         DS    0H
REAS16L  DC    AL2(L'REAS16)
REAS16   DC    C'No RACF profile for user'
         DS    0H
REAS20L  DC    AL2(L'REAS20)
REAS20   DC    C'IRXEXCOM error'
         LTORG
         END   REXRACFG
```

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“Which groups does user belong to” – REXX function

The REXX function presented here returns, in a stem variable, the RACF group names to which the user is connected. REXRACFS should be invoked from within an MVS REXX EXEC. It accepts a single argument, namely the stem name to be used. This argument is mandatory. The function returns a value and the stem variable. The stem variable with the .0 suffix will, as is common in REXX, contain a count of the number of connected groups.

The stem name must be a valid REXX name and be terminated with a period.

The function returns an integer. This integer will indicate success or failure. An example of the function being invoked is shown below.

```
RC = REXRACFS(GROUPS.);
```

The different values that may be returned are as follows:

- -2 – IRXEXCOM; lack of storage
- -1 – IRXEXCOM; error condition
- 0 – NORMAL.

An example of the function being used is shown below.

```
/* REXX ***************************************************/
rexracfs(GROUP.);
do I = 1 to GROUP.0;
    say GROUP.I;
end;
exit;
```

I appreciate that the output of the TSO ‘listuser’ (lu) command may be trapped and then parsed to obtain the same data, but this function:

- Uses about a fifth of the CPU time.
- Returns the groups in sequence.
- Uses a lot less storage.

REXRACFS

```
TITLE 'REXX FUNCTION PROCESSING RACF GROUPS'
         PRINT NOGEN
*
*        PROGRAM:     REXRACFS
*                     RETURN IN A STEM VARIABLE THE GROUPS THE USER
*                     IS CONNECTED TO
*
*        ATTRIBUTES:
*                     REENTRANT
*                     AMODE: 31
*                     RMODE: ANY
*                     AUTHORIZATION: NONE
*
*        ABSTRACT:
*        REXX FUNCTION THAT DETERMINES THE GROUPS THE USER IS
*        CONNECTED TO.
*        THE STEM.Ø WILL BE INITIALIZED TO THE NUMBER OF RECORDS
*        RETURNED.
*
*        USAGE:
*        RETURN_CODE = REXRACFS(STEM.);
*
*        RETURN_CODE VALUES:
*        -2                              . IRXEXCOM - LACK OF STORAGE
*        -1                              . IRXEXCOM - ERROR CONDITION
*        Ø                               . NORMAL
*        8                               . STEM NAME SPECIFIED > 32 BYTES
*        12                              . NO PERIOD AT END OF STEM NAME
*        16                              . STEM NAME INVALID CHARACTERS
*        2Ø                              . INVALID NUMBER OF ARGUMENTS
         EJECT
         TITLE 'EQUATES, MACROS && CONTROL BLOCKS USED'
RØ       EQU   Ø
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R1Ø      EQU   1Ø
R11      EQU   11
R12      EQU   12                        . CSECT BASE REGISTER
R13      EQU   13                        . -> DYNAMIC AREA
```

```
R14      EQU   14                      . -> RETURN
R15      EQU   15                      . -> ENTRY POINT
*                                      . RETURN CODE
*
*        CALLED ROUTINES:
*              IRXEXCOM                . REXX VARIABLE ACCESS ROUTINE
*
*        MACROS USED:
*              DELETE                  . DECREMENT USE OF LOADED MODULE
*              ICHPCGRP                . MAP CONNECT GROUP TABLE
*              IHAACEE                 . ACCESSOR ENVIRONMENT ELEMENT
*              IHAASCB                 . ADDRESS SPACE CONTROL BLOCK
*              IHAASXB                 . ASCB EXTENSION
*              IHAPSA                  . PREFIXED SAVE AREA
*              IKJTCB                  . TASK CONTROL BLOCK
*              IRXARGTB                . MAP ARGUMENT TABLE
*              IRXEFPL                 . MAP EXTERNAL FUNCTIONS PLIST
*              IRXEVALB                . MAP EVALUATION BLOCK
*              IRXSHVB                 . MAP SHARED VARIABLE BLOCK
*              LOAD                    . DYNAMICALLY LOAD MODULE
*              STORAGE                 . STORAGE ACQUIRE AND RELEASE
         EJECT
         TITLE 'MAIN CSECT PROCESS'
REXRACFS CSECT
REXRACFS AMODE 31
REXRACFS RMODE ANY
         LA    R14,Ø(,R14)             . VALIDITY OF R14
         BSM   R14,RØ                  . CURRENT ADDRESSING MODE
         BAKR  R14,RØ                  . ESTABLISH LINKAGE
         LR    R12,R15                 . 12 -> EPA
         USING REXRACFS,R12            . CSECT ADDRESSABILITY
         STORAGE OBTAIN,               . ACQUIRE DYNAMIC AREA          *
               ADDR=(R13),                                             *
               LENGTH=DYNLEN,                                          *
               SP=Ø
         MVC   4(4,R13),=C'F1SA'       . INDICATE FORMAT OF SAVE AREA
         USING DYNAREA,R13             . DSECT ADDRESSABILITY
         XC    @IRXEXCOM,@IRXEXCOM     . INDICATE IRXEXCOM NOT LOADED
         BAS   R1Ø,REXXVECT            . REXX VECTOR PROCESSING
         BAS   R1Ø,ARGUMENT            . PROCESS ARGUMENTS
         LTR   R8,R8                   . Q. ARGUMENTS VALID?
         BNZ   AØØØ1                   . A. NO
         BAS   R1Ø,STEMDEL             . DELETE STEM
         BAS   R1Ø,PROCGRPS            . PROCESS GROUPS
*
AØØØ1    EQU   *
*
```

```
         BAS   R1Ø,TERMINAT            . TERMINATION
         STORAGE RELEASE,              . RELEASE DYNAMIC STORAGE       *
               ADDR=(R13),                                             *
               LENGTH=DYNLEN,                                          *
               SP=Ø
         SLR   R15,R15                 . 15 - RETURN CODE
         PR                            . ADIOS
         EJECT
         TITLE 'REXX VECTOR PROCESSING'
*        PROCESS THE TWO ARGUMENTS PASSED TO REXX FUNCTIONS
*        THE ADDRESS OF THE REXX ENVIRONMENT BLOCK (OPTIONAL)
*        THE ADDRESS OF THE EXTERNAL FUNCTION PARAMETER LIST
*
*        REGISTER USAGE
*        Ø                             . -> ENVIRONMENT BLOCK
*        1                             . -> EXTERNAL FUNCTION PLIST
*        2                             . -> PARSED PARAMETER LIST
*
REXXVECT EQU   *
*
         EREG  RØ,R1                   . EXTRACT CALLER'S REGISTERS
         ST    RØ,@REXX                . SAVE REXX ENVIRONMENT BLOCK ->
         ST    R1,@EFPL                . SAVE EXTERNAL FUNCTION PLIST
         USING EFPL,R1                 . IRXEFPL DSECT ADDRESSABILITY
         L     R2,EFPLARG              . 2 -> PARSED ARGUMENT LIST
         ST    R2,@ARGTAB              . SAVE
         L     R2,EFPLEVAL             . 2 -> EVALUATION BLOCK VECTOR
         L     R2,Ø(,R2)               . 2 -> EVALUATION BLOCK
         ST    R2,@EVALBLK             . SAVE
         DROP  R1                      . DSECT NOT REQUIRED
         BR    R1Ø                     . RETURN
         EJECT
         TITLE 'PROCESS INPUT ARGUMENT'
*        PROCESS ARGUMENT - VALIDATE ETC.
*        ONE ARGUMENT EXPECTED AND REQUIRED
*        1. STEM VARIABLE - MUST END IN PERIOD
*           NAME MUST BE VALID FORMAT
*
*        REGISTER USAGE
*        1                             . ARGUMENT COUNT
*        2                             . -> CURRENT ARG TABLE ENTRY
*        3                             . WORK
*        4                             . -> CURRENT ARGUMENT VALUE
*        5                             . CURRENT ARGUMENT LENGTH
*        6                             . -> SAVED VALUE
*                                      . WORK
*        7                             . LENGTH OF STEM NAME
```

```
*        8                              . ERROR VALUE
*        1Ø                             . RETURN
*
ARGUMENT EQU   *
*
         L     R2,@ARGTAB               . 2 -> ARGUMENT TABLE
         USING ARGTABLE_ENTRY,R2        . DSECT ADDRESSABILITY
         SLR   R1,R1                    . 1 - ZERO (ARGUMENT COUNT)
*
*                                       . 4 -> ARGUMENT STRING
*                                       . 5 - ARGUMENT STRING LENGTH
         LM    R4,R5,ARGTABLE_ARGSTRING_PTR
         LTR   R5,R5                    . Q. LENGTH NEGATIVE?
         BM    CØØØ2                    . A. YES - LAST ARGUMENT
         LA    R1,1(,R1)                . INCREMENT ARGUMENT COUNT
         LA    R8,8                     . SET ERROR CODE
         CH    R5,=Y(L'STEM)            . Q. VARIABLE NAME TOO GREAT?
         BH    CØØØ3                    . A. YES - ERROR
         LA    R6,Ø(R5,R4)              . 6 -> AFTER LAST BYTE OF NAME
         LA    R8,12                    . SET ERROR CODE
         BCTR  R6,RØ                    . 6 -> LAST BYTE OF STEM NAME
         CLI   Ø(R6),C'.'               . Q. PERIOD PRESENT?
         BNE   CØØØ3                    . A. NO - ERROR
         LA    R8,16                    . SET ERROR CODE
         MVC   STEM,SPACES              . INITIALIZE SAVED STEM VALUE
         LA    R6,STEM                  . 6 -> SAVED STEM NAME VALUE
         SLR   R7,R7                    . LENGTH OF STEM NAME
*
CØØØ1    EQU   *
*
         SLR   R3,R3                    . 3 - ZERO
         IC    R3,Ø(,R4)                . 3 - BYTE OF STEM VARIABLE
         LA    R3,TRTABLE(R3)           . 3 - CHARACTER FROM TABLE
         CLI   Ø(R3),X'ØØ'              . Q. VALID CHARACTER?
         BE    CØØØ3                    . A. NO
         MVC   Ø(1,R6),Ø(R4)            . MOVE BYTE TO SAVE STEM
         LA    R4,1(,R4)                . 4 -> NEXT BYTE OF STEM NAME
         LA    R6,1(,R6)                . 6 -> NEXT BYTE OF SAVED NAME
         LA    R7,1(,R7)                . INCREMENT BYTES IN STEM NAME
         BCT   R5,CØØØ1                 . LOOP THROUGH STEM NAME
         ST    R7,#STEM                 . SAVE LENGTH
*
*                                       . 2 -> NEXT ARGUMENT DATA
         LA    R2,ARGTABLE_NEXT-ARGTABLE_ENTRY(,R2)
*                                       . 4 -> ARGUMENT STRING
*                                       . 5 - ARGUMENT STRING LENGTH
         LM    R4,R5,ARGTABLE_ARGSTRING_PTR
```

```
         SLR   R8,R8                    . VALID RETURN
         LTR   R5,R5                    . Q. LENGTH NEGATIVE?
         BM    C0003                    . A. YES
         LA    R8,20                    . SET ERROR CODE
         B     C0003                    . OUT OF HERE
C0002    EQU   *
*
         CH    R1,=H'1'                 . Q. VALID NUMBER OF ARGUMENTS?
         BE    C0003                    . A. YES
         LA    R8,20                    . SET ERROR CODE
*
C0003    EQU   *
*
         DROP  R2                       . DSECT NOT REQUIRED
         ST    R8,RETCODE               . SAVE RETURN CODE
         BR    R10
         EJECT
         TITLE 'DELETE ANY EXISTING STEM VARIABLE'
*        LOAD REXX SERVICE ROUTINE IRXEXCOM
*        SET UP PARAMETER LIST FOR IRXEXCOM
*        INVOKE IRXEXCOM TO DROP STEM VARIABLE
*
*        REGISTER USAGE
*        0                              . MACRO - EPA IRXEXCOM
*        1                              . -> PARAMETER LIST
*        2                              . -> SHARED VARIABLE BLOCK
*        3                              . WORK
*        10                             . RETURN
*        14                             . CALL
*        15                             . CALL
*
STEMDEL  EQU   *
*
         LOAD  EP=IRXEXCOM              . LOAD IRXECOM
         ST    R0,@IRXEXCOM             . SAVE EPA
         LA    R2,SHVARBLK              . 2 -> SHARED VARIABLE BLOCK
         XC    0(L'SHVARBLK,R2),0(R2)   . INITIALIZE
         USING SHVBLOCK,R2              . DSECT ADDRESSABILITY
*
         MVI   SHVCODE,SHVDROPV         . SPECIFY ACTION
         LA    R3,STEM                  . 3 -> STEM NAME
         ST    R3,SHVNAMA               . SAVE IN DSECT
         MVC   SHVNAML,#STEM            . LENGTH OF STEM NAME
*
         LA    R3,CIRXEXCOM             . 3 -> CHARACTER STRING IRXEXCOM
         ST    R3,@CSTR                 . SAVE IN PARAMETER LIST
         XC    @DUMMY1(L'@DUMMY1+L'@DUMMY2),@DUMMY1
```

```
         ST    R2,@SHVB                . -> SHARED VARIABLE REQ BLOCK
         OI    @SHVB,X'8Ø'             . FLAG END OF ARGUMENTS
*
         L     RØ,@REXX                . Ø -> REXX ENVIRONMENT BLOCK
         LA    R1,PIRXEXCOM            . 1 -> PARAMETER LIST
         L     R15,@IRXEXCOM           . 15 - EPA IRXEXCOM
         BASSM R14,R15                 . INVOKE IRXEXCOM
*
         LTR   R15,R15                 . Q. RETURN CODE LESS THAN ZERO?
         BM    DØØØ1                   . A. YES - ERROR
         CH    R15,=H'28'              . Q. RETURN CODE 28?
         BE    DØØØ1                   . A. YES - ERROR
         CH    R15,=H'32'              . Q. RETURN CODE 32?
         BE    DØØØ1                   . A. YES -ERROR
         CLI   SHVRET,SHVCLEAN         . Q. EXECUTION OKAY?
         BER   R1Ø                     . A. YES - EXIT
         CLI   SHVRET,SHVNEWV          . Q. NON-EXISTENT STEM?
         BER   R1Ø                     . A. YES - EXIT
*
DØØØ1    EQU   *
*
         DROP  R2                      . DSECT NOT REQUIRED
         ST    R15,RETCODE             . SAVE 15
         BR    R1Ø
         EJECT
         TITLE 'PROCESS CONNECTED GROUPS'
*        INITIALIZE STORAGE
*        SET UP PARAMETERS FOR IRXEXCOM
*        ACCESS THE CONNECTED GROUP NAME TABLE
*            THIS IS OBTAINED BY:
*                THE PREFIXED SAVE AREA -> TASK CONTROL BLOCK
*                IF ACEE PRESENT, USE IT ELSE
*                    THE TASK CONTROL BLOCK -> ASCB
*                    THE ADDRESS SPACE CONTROL BLOCK -> ASCB EXTENSION
*                    THE ASCB EXTENSION -> ACCESSOR ENVIRONMENT ELEM
*                THE ACEE -> CONNECTED GROUP NAME TABLE
*        FOR EACH GROUP
*            FORMAT STEM VARIABLE
*        SAVE COUNT OF GROUPS IN STEM.Ø
*
*        REGISTER USAGE
*        1                             . WORK
*        2                             . -> PSA
*                                      . -> CONNECTED GROUP ENTRY
*        3                             . -> TCB
*                                      . -> ASCB
*                                      . -> ASXB
```

```
*                                       . -> CGRP HEADER
*        4                              . -> ACEE
*                                       . # CONNECTED GROUPS
*        5                              . -> SHARED VARIABLE BLOCK
*        6                              . WORK
*
PROCGRPS EQU   *
*
         ST    R1Ø,ESAVE
         ZAP   #VARS,=P'+Ø'             . INITIALIZE NUMBER OF VARIABLES
*
         LA    R5,SHVARBLK              . 5 -> SHARED VARIABLE BLOCK
         XC    Ø(L'SHVARBLK,R5),Ø(R5)   . INITIALIZE IT
         USING SHVBLOCK,R5              . DSECT ADDRESSABILITY
         MVI   SHVCODE,SHVSYSET         . SPECIFY ACTION
         LA    R1,NEWSTEM               . 1 -> NEW STEM NAME
         ST    R1,SHVNAMA               . SAVE IN DSECT
         LA    R1,L'GROUP               . 1 - LENGTH OF GROUP
         ST    R1,SHVVALL               . SAVE IN DSECT
         LA    R1,GROUP                 . 1 -> GROUP
         ST    R1,SHVVALA               . SAVE IN DSECT
*                                       . GET ACEE
         SLR   R2,R2                    . 2 - ZERO
         USING PSA,R2                   . MAP PREFIX SAVE AREA
         L     R3,PSATOLD               . 3 -> CURRENT TCB
         USING TCB,R3                   . MAP TASK CONTROL BLOCK
         ICM   R4,15,TCBSENV            . 4 -> TASK ACEE
*                                       . Q. ACEE PRESENT?
         BNZ   EØØØ1                    . A. YES
         DROP  R3                       . TCB NOT REQUIRED
         L     R3,PSAAOLD               . 3 -> CURRENT ASCB
         USING ASCB,R3                  . MAP ADDRESS SPACE CONTROL BLK
         DROP  R2                       . PSA NOT REQUIRED
         L     R3,ASCBASXB              . 3 -> EXTENSION
         DROP  R3                       . ASCB NOT REQUIRED
         USING ASXB,R3                  . MAP ADDRESS SPACE EXTENSION
         ICM   R4,15,ASXBSENV           . 4 -> ACEE
*                                       . Q. ACEE PRESENT?
         BZ    EØØØ4                    . A. NO
         DROP  R3                       . ASXB NOT REQUIRED
*
EØØØ1    EQU   *                        . GET ACEE DATA
*
         USING ACEE,R4                  . MAP THE ACEE
         L     R3,ACEEFCGP              . 3 -> LIST OF GROUPS
         USING CGRP,R3                  . MAP THE CGRP HEADER
         DROP  R4                       . ACEE NOT REQUIRED
```

```
         LH    R4,CGRPNUM              . NUMBER OF TABLE ENTRIES
         LA    R2,CGRPENT              . 2 -> FIRST GROUP ENTRY
         USING CGRPENTD,R2             . MAP GROUP ENTRY
         DROP  R3                      . HEADER NOT REQUIRED
*
E0002    EQU   *
*
         MVC   GROUP,CGRPNAME          . MOVE GROUP
*
         AP    #VARS,=P'+1'            . INCREMENT VARIABLES PROCESSED
*
         BAS   R10,BLDVARNM            . BUILD VARIABLE NAME
         MVC   SHVNAML,#NEWSTEM        . LENGTH OF VARIABLE NAME
         L     R0,@REXX                . 0 -> REXX ENVIRONMENT BLOCK
         LA    R1,PIRXEXCOM            . 1 -> PARAMETER LIST
         L     R15,@IRXEXCOM           . 15 - EPA IRXEXCOM
         BASSM R14,R15                 . INVOKE IRXEXCOM
*
         LTR   R15,R15                 . Q. RETURN CODE ZERO?
         BZ    E0003                   . A. YES - CONTINUE
         CH    R15,=H'1'               . Q. RETURN CODE ONE?
         BZ    E0003                   . A. YES - CONTINUE
         ST    R15,RETCODE
         B     E0007
*
E0003    EQU   *                       . PROCESS NEXT GROUP
*
         LA    R2,L'CGRPENT(,R2)       . 2 -> NEXT GROUP ENTRY
         BCT   R4,E0002                . CHECK IT OUT
         DROP  R2
*
*                                      . PREPARE COUNT FOR STEM.0
*
E0004    EQU   *
*
         MVC   VARWORK,MASK8           . MOVE EDIT MASK TO WORK AREA
         ED    VARWORK,#VARS           . EDIT THE DATA
         LA    R1,VARWORK              . 1 -> EDITED DATA
         LA    R2,L'VARWORK            . 2 - LENGTH OF EDITED DATA
*
E0005    EQU   *
*
         CLI   0(R1),C' '              . Q. SIGNIFICANT?
         BNE   E0006                   . A. YES
         LA    R1,1(,R1)               . 1 -> NEXT BYTE
         BCT   R2,E0005                . LOOP
*
E0006    EQU   *
*
```

```
         ST    R2,SHVVALL              . LENGTH OF COUNT
         ST    R1,SHVVALA              . -> COUNT
         ZAP   #VARS,=P'+Ø'            . INSTANCE NUMBER
         BAS   R1Ø,BLDVARNM            . BUILD VARIABLE NAME
         MVC   SHVNAML,#NEWSTEM        . LENGTH OF VARIABLE NAME
         DROP  R5                      . DSECT NOT REQUIRED
*
         L     RØ,@REXX                . Ø -> REXX ENVIRONMENT BLOCK
         LA    R1,PIRXEXCOM            . 1 -> PARAMETER LIST
         L     R15,@IRXEXCOM           . 15 - EPA IRXEXCOM
         BASSM R14,R15                 . INVOKE IRXEXCOM
*
         LTR   R15,R15                 . Q. RETURN CODE ZERO?
         BZ    EØØØ7                   . A. YES - CONTINUE
         CH    R15,=H'1'               . Q. RETURN CODE ONE?
         BZ    EØØØ7                   . A. YES - CONTINUE
         ST    R15,RETCODE
*
EØØØ7    EQU   *
*
         L     R1Ø,ESAVE
         BR    R1Ø
         EJECT
         TITLE 'DEVELOP STEM NAME'
*        CREATE STEM NAME FOR VARIABLE ABOUT TO BE ADDED
*        TAKE SPECIFIED STEM AND APPEND THE OCCURRENCE NUMBER
*
*        REGISTER USAGE
*        1                             . -> INSTANCE NUMBER
*        6                             . LENGTH OF STEM
*                                      . -> NEW STEM (COMPOUND)
*        7                             . LENGTH OF NEW STEM
*        8                             . LENGTH OF INSTANCE NUMBER
*
BLDVARNM EQU   *
*
         MVC   STEMQUAL,MASK8          . MOVE EDIT MASK TO WORK AREA
         ED    STEMQUAL,#VARS          . EDIT THE DATA
         LA    R1,STEMQUAL             . 1 -> EDITED DATA
         LA    R8,L'STEMQUAL           . 8 - LENGTH OF EDITED DATA
*
FØØØ1    EQU   *
*
         CLI   Ø(R1),C' '              . Q. SIGNIFICANT?
         BNE   FØØØ2                   . A. YES
         LA    R1,1(,R1)               . 1 -> NEXT BYTE
         BCT   R8,FØØØ1                . LOOP
*
```

```
F0002    EQU   *
*
         MVC   NEWSTEM,SPACES          . INITIALIZE NEW STEM
         L     R6,#STEM                . NUMBER OF BYTES IN STEM
         LR    R7,R6                   . 7 - SAME
         BCTR  R6,R0                   . DECREMENT FOR EXECUTE
         EX    R6,MVCSTEM              . MOVE STEM INTO NEW STEM
         LA    R6,NEWSTEM              . 6 -> NEW STEM
         LA    R6,0(R7,R6)             . 6 -> AFTER STEM IN NEW STEM
*
F0003    EQU   *
*
         MVC   0(1,R6),0(R1)           . MOVE COUNT BYTE BY BYTE
         LA    R1,1(,R1)               . 1 -> NEXT BYTE OF COUNT
         LA    R6,1(,R6)               . 6 -> NEXT BYTE OF NEW STEM
         LA    R7,1(,R7)               . INCREMENT LENGTH
         BCT   R8,F0003                . LOOP
         ST    R7,#NEWSTEM             . SAVE LENGTH
         BR    R10
MVCSTEM  MVC   NEWSTEM(*-*),STEM
         EJECT
         TITLE 'TERMINATION ROUTINE'
*        DELETE IRXEXCOM IF LOADED
*        SET UP REXX FUNCTION RETURN CODE
*        PUT RETURN VALUE INTO REXX EVALUATION BLOCK
*
*        REGISTER USAGE
*        1                             . LENGTH OF RETURN VALUE
*        2                             . -> RETURN VALUE
*                                      . -> EVAL BLOCK
*        3                             . BINARY RETURN VALUE
*                                      . EVAL BLOCK SIZE
*        4                             . LENGTH OF EDITED REURN VALUE
*
TERMINAT EQU   *
*
         ICM   R8,B'1111',@IRXEXCOM    . Q. IRXEXCOM LOADED?
         BZ    G0001                   . A. YES
         DELETE EP=IRXEXCOM            . DECREMENT RESPONSIBILITY
*
G0001    EQU   *
*
         SLR   R1,R1                   . 1 - ZERO
         LA    R2,RCDATA               . 2 -> OUTPUT DATA
         MVC   RCDATA,SPACES           . INITIALIZE OUTPUT
         L     R3,RETCODE              . 3 - RETURN CODE
         LTR   R3,R3                   . Q. RETURN CODE NEGATIVE?
```

```
         BNM   GØØØ2                    . A. NO
         MVI   Ø(R2),C'-'               . OUTPUT NEGATIVE SIGN
         LA    R1,1(,R1)                . INCREMENT BYTES OUTPUT
         LA    R2,1(,R2)                . 2 -> NEXT OUTPUT BYTE
*
GØØØ2    EQU   *
*
         CVD   R3,DWORD                 . PACK IT
         MVC   VARWORK,MASK8            . MOVE EDIT MASK TO WORK AREA
         ED    VARWORK,DWORD+4          . EDIT THE DATA
         LA    R3,VARWORK               . 3 -> EDITED DATA
         LA    R4,L'VARWORK             . 4 - LENGTH OF EDITED DATA
*
GØØØ3    EQU   *
*
         CLI   Ø(R3),C' '               . Q. SIGNIFICANT?
         BNE   GØØØ4                    . A. YES
         LA    R3,1(,R3)                . 3 -> NEXT BYTE
         BCT   R4,GØØØ3                 . LOOP
*
GØØØ4    EQU   *
*
         MVC   Ø(1,R2),Ø(R3)            . MOVE OUT BYTE
         LA    R1,1(,R1)                . INCREMENT BYTES OUTPUT
         LA    R2,1(,R2)                . 2 -> NEXT OUTPUT BYTE
         LA    R3,1(,R3)                . 3 -> NEXT INPUT BYTE
         BCT   R4,GØØØ4                 . LOOP
         ST    R1,#RCDATA               . NUMBER OF BYTES
*
         L     R2,@EVALBLK              . 2 -> EVAL BLOCK
         USING EVALBLOCK,R2             . DSECT ADDRESSABILITY
         L     R3,EVALBLOCK_EVSIZE      . 3 - LENGTH
         CH    R3,=H'3'                 . Q. AT LEAST THREE DOUBLES?
         BL    GØØØ5                    . A. NO
         MVC   EVALBLOCK_EVDATA(4),RCDATA . SET RESULT
         MVC   EVALBLOCK_EVLEN(4),#RCDATA
         DROP  R2
*
GØØØ5    EQU   *
*
         BR    R1Ø
         TITLE 'DYNAMIC AREA'
DYNAREA  DSECT
         DS    18F
DWORD    DS    D                        . FOR CVD
ESAVE    DS    F                        . REGISTER SAVE AREA
@ARGTAB  DS    F                        . -> ARGUMENT TABLE
@EFPL    DS    F                        . -> REXX EXT FUNCTION PLIST
```

```
@EPAREA  DS    F                       . -> EXTERNAL PARAMETER AREA
@EVALBLK DS    F                       . -> EVAL BLOCK
@IRXEXCOM DS   F                       . -> ENTRY POINT IRXEXCOM
@REXX    DS    F                       . -> REXX ENVIRONMENT BLOCK
#NEWSTEM DS    F                       . LENGTH OF NEW STEM NAME
#RCDATA  DS    F                       . LENGTH OF RETURN CODE
#STEM    DS    F                       . LENGTH OF STEM VARIABLE NAME
RETCODE  DS    F                       . RETURN CODE
*
PIRXEXCOM DS   ØF                      . IRXEXCOM PARAMETER LIST
@CSTR    DS    F                       . -> CHARACTER STRING IRXEXCOM
@DUMMY1  DS    F                       . -> DUMMY ARGUMENT
@DUMMY2  DS    F                       . -> DUMMY ARGUMENT
@SHVB    DS    F                       . -> FIRST SHARED VARIABLE BLOCK
*
RCDATA   DS    CL8                     . RETURN CODE DATA
RSNCODE  DS    CL2                     . REASON CODE
*
NEWSTEM  DS    CL44                    . NEW STEM NAME
STEM     DS    CL32                    . STEM NAME ARGUMENT VALUE
#VARS    DS    PL4                     . NUMBER OF INSTANCES OF STEM
STEMQUAL DS    CL8                     . STEM QUALIFIER WORK
*
GROUP    DS    CL8                     . OUTPUT DATA AREA
*
VARWORK  DS    CL8                     . VARIABLE NUMBER WORK
         DS    ØF
SHVARBLK DS    CL(SHVBLEN)             . SHARED VARIABLE BLOCK AREA
*
DYNLEN   EQU   *-DYNAREA
         TITLE 'IBM SUPPLIED DSECTS'
         ICHPCGRP                      . CONNECT GROUP
         IHAACEE                       . ACCESS CONTROL ENVIRONMENT
         IHAASCB DSECT=YES             . ASCB
         IHAASXB DSECT=YES             . ASCB EXTENSION
         IHAPSA DSECT=YES              . PREFIXED SAVE AREA
         IKJTCB DSECT=YES              . TASK CONTROL BLOCK
         IRXARGTB                      . ARGUMENT TABLE
         IRXEFPL                       . EXTERNAL FUNCTION PARAM LIST
         IRXEVALB                      . EVALUATION BLOCK
         IRXSHVB                       . SHARED VARIABLE REQUEST BLOCK
         TITLE 'LIST FORM MACROS, CONSTANTS'
REXRACFS CSECT
*
MASK8    DC    X'4020202020202120'     . EDIT MASK - IRXEXCOM
SPACES   DC    80C' '                  . SPACES FOR INITIALIZATION
CIRXEXCOM DC   C'IRXEXCOM'             . NAME OF REXX SERVICE ROUTINE
```

```
TRTABLE  DC    256X'ØØ'                  . TRANSLATE TABLE
         ORG   TRTABLE+X'4B'
         DC    X'4B'
         ORG   TRTABLE+X'5B'
         DC    X'5B'
         ORG   TRTABLE+X'6D'
         DC    X'6D'
         ORG   TRTABLE+X'7B'
         DC    X'7B7C'
         ORG   TRTABLE+X'81'
         DC    X'C1C2C3C4C5C6C7C8C9'
         ORG   TRTABLE+X'91'
         DC    X'D1D2D3D4D5D6D7D8D9'
         ORG   TRTABLE+X'A2'
         DC    X'E2E3E4E5E6E7E8E9'
         ORG   TRTABLE+X'C1'
         DC    X'C1C2C3C4C5C6C7C8C9'
         ORG   TRTABLE+X'D1'
         DC    X'D1D2D3D4D5D6D7D8D9'
         ORG   TRTABLE+X'E2'
         DC    X'E2E3E4E5E6E7E8E9'
         ORG   TRTABLE+X'FØ'
         DC    X'FØF1F2F3F4F5F6F7F8F9'
         ORG
*
         LTORG
         END   REXRACFS
```

Dave Loveluck
Consultant (USA)

Leaving? You don't have to give up *RACF Update*

You don't have to lose your subscription when you move to another location – let us know your new address, and the name of your successor at your current address, and we will send *VSAM Update* to both of you, for the duration of your subscription. There is no charge for the additional copies.

Security implications with z

On 3 October 2000, most IBM hardware systems and operating systems were renamed. But there were more than just new names for old products; there were also some new or improved security features for the (formerly-named) VM and OS/390 environments where RACF runs.

But first, the new names.

NEW NAMES AND OLD

The affected hardware systems have been renamed IBM eserver ?Series, where '?' is one of four letters:

- z for *zero downtime*, zSeries, replacing System/390 mainframes.
- i for *integration*, iSeries 400, replacing AS/400.
- p for *performance*, pSeries, replacing RS/6000.
- x for *X architecture*, xSeries replacing Netfinity's Intel-based Windows servers that increasingly support Linux.

And the 'e' in eserver is circled, like the 'a' in the at sign ('@').

Most mainframe operating systems have also inherited a 'z'. z/OS replaces OS/390 (MVS), and z/VM replaces VM/ESA. Both provide support for z/architecture, including:

- 64-bit architecture
- FICON (FIbre CONnections) channels.

As well, z/OS uses workload priorities to automatically manage resources across LPARs with the new Intelligent Resource Director (IRD), and further refines the workload pricing model for software.

Just the month before, Version 2.5 of VSE/ESA was announced and became available, and remains unchanged by the October announcements. Likewise, OS/400 and AIX are still around.

THE HARDWARE

As for the hardware itself, the zSeries 900 family has 26 air-cooled models, including Model 100, a stand-alone Coupling Facility (CF). All support z/Architecture and can be combined to create a 32-way sysplex with 512 processors performing workload and up to 128 performing system and back-up functions. Models 1C1-1C9 provide a 20%-30% capacity increase over the corresponding System/390 9672 Z17-Z97 model.

It's all based on the z900 MultiChip Module (MCM), the world's densest chip module, with:

- 20 microprocessors
- 2.5 billion transistors.
- 0.18 micron copper interconnections
- 85,000 C4 (Controlled Collapse Chip Connection) joints
- 4,224 I/Os.

The z900 MCM is a five-inch-square ceramic substrate consisting of 101 layers of glass ceramic and six layers of thin film wired with one kilometre of wire. Power consumption is 1 kilowatt.

The z900 Central Processor (CP) chip runs as a seven-stage pipeline, but measures only 17.9 by 9.9 millimetres. In that space, 47M transistors are packed using CMOS 8S bulk technology with copper interconnections.

z/OS SECURITY

z/OS 1.2 is planned for October 2001 availability. Its Intrusion Detection Services (IDS) works with network-based IDS sensors and scanners to do what firewalls cannot: protect against internal and external attacks using end-to-end encryption.

Kerberos application services and a credential server will be enhanced with stronger encryption, Kerberos registry administration, automated

restart across TCP/IP network outages, and improved parallel sysplex performance. Support for Kerberos third-party authentication will be added to LDAP (Lightweight Directory Access Protocol), ftp, telnet, and rsh (remote shell). At the same time, the outdated V4 Kerberos support will be removed from Communications Server.

SSL will:

- Be added to ftp clients and servers.
- Include dynamic Transaction Layer Security (TLS).
- Use PKI for X.509V3 (PKIX) to check for revoked digital certificates.
- Allow dynamic modification to its configuration parameters without disrupting existing sessions.

tn3270 will permit client access software, such as Host On Demand (HOD), to use a single digital certificate to sign on to multiple SNA applications without even defining a password on the target system(s).

There's also cryptographic support for VISA and Europay, and the functions needed for ZKA (Zentraler Kredit Ausschuss) certification, smartcard personalization, and even creating your own functions on zSeries and System/390 cryptographic processors.

As a first step towards generalized certificate authority functions in z/OS, existing RACF-defined users can be given authorization to request a client digital certificate through a Web-based application.

z/VM SECURITY

The first release of z/VM is Version 3 Release 1. RACF for VM 1.10.0 is supported, with APAR VM62958 required for 64-bit processing. A new SSL server is supplied with z/VM, with support for 40-, 56-, and 128-bit encryption. A Kerberos Data Encryption Standard (DES) providing 128-bit encryption has been integrated into the TCP/IP feature of z/VM.

The zSeries CMOS Cryptographic Coprocessor has been redesigned since System/390. It's now a single-chip module mounted on the processor board, with each chip individually serviceable.

Unlike System/390, the PCI Cryptographic Coprocessor (PCICC) zSeries feature includes a pair of PCICCs. At maximum configuration – eight PCICC features installed and two CMOS Cryptographic Coprocessors active – a z900 server with z/OS can support up to 2000 SSL transactions per second.

Jon E Pearkins
(Canada)

RACF/security education – Internet-based training

As a special feature this issue, we look at many of the outside sources of education for RACF and security-related topics. There are five articles in all, each covering a different aspect:

- This article, which covers Internet-based training
- Other self-study courses
- Classroom courses
- Training directories
- Conferences.

More new Internet-Based Training (IBT) is being introduced each month than any other type of education. IBT has the potential to be as effective as the best forms of training available today, yet should cost little more than borrowing and reading a book from the library.

You may see IBT referred to in the marketplace as 'on-line training', 'Web-based training (WBT)', and, occasionally, 'computer-based training (CBT)'. But 'IBT' is more precise, excluding even hosting on an intranet and download and play off the Internet.

ISSUES

All forms of CBT, even download and play, languish behind IBT in one area: compatibility. Just ask the application software vendors. They know that getting their software to run on millions of client workstations worldwide is practical only when client code runs through a Web browser.

As with all forms of education, it is accuracy, breadth of topic coverage, and training methods that determine effectiveness. But, with IBT, speed is also a key factor, otherwise the student's concentration is broken and the IBT course's effectiveness declines significantly.

MINDLEADERS

I have singled out MindLeaders for in-depth coverage because (as DPEC) it pioneered widely-available, low-cost, unlimited access to large numbers of IBT courses. I have not attempted to list any of MindLeaders' worldwide distribution network of 1,000 ISP and 300 affinity channel partners. Most that stay current with the latest courses and revisions have stopped hosting the courses themselves; instead, MindLeaders hosts the courses for them. Although distributors using this approach will gain more flexibility in the future, the current pricing structure is the same wherever you go.

As well as using distributors, MindLeaders now sells all of its courses directly to individuals and organizations. In the near future, individuals will be able to use their credit card to license a course series directly from the company's Web site. Until then, you can call (800) 223 3732 or (614) 781 7300, or fax (614) 781 6510.

Mainframe courses are priced at $100 for a series, which is one to five courses covering a single technology. Non-mainframe-specific courses are usually sold in larger series, often at lower prices. Volume discounts are available to organizations training ten or more individuals – contact a MindLeaders sales representative rather than ordering through the Web site.

MindLeaders' course catalogue is available at:

http://www.mindleaders.com/products/catalog.html

There, you'll find that its computing courses are divided into seven categories, of which those with relevant RACF and security courses are shown in Figure 1.

IBT available from other vendors is shown in Figures 2-7, categorized according to the price of an average course, as listed on their Web sites.

Distributors have been listed only where the IBT company's Web site does not include course and/or ordering information, but UK readers may also be interested in http://www.blueu.com which distributes DigitalThink, SkillSoft, and Click2Learn courses.

Technical mainframe

- *MVS:2 Fundamentals of MVS and JES* (MVS101, 7 hr). An overview course, mainly covering JES2, JES3, and system-managed storage (SMS). RACF is described briefly as a 'related subsystem' near the end of the course.
- *SQL: Database Maintenance* (SQL111, 6 hr). One of the topics is access control for tables using the GRANT and REVOKE commands.

Technical general

- *CCNA:14 Network Security and Control* (SCOC14, 4 hr). Access lists are the focus of this Cisco-specific course.
- *Data Warehousing: Management* (DWHC02, 4 hr). Ensuring security is one of the topics in the 'Maintaining a Data Warehouse' module.
- *Unix:5 System Administration II* (UNXTC6, 8 hr). 'UNIX System Security' is the last of the four modules in the course.
- *FOCUS: Getting Started* (FOC101, 6 hr). The first of 11 FOCUS courses covers data security while describing FOCUS Facilities for experienced users.

Technical MCSE

- *Windows 2000 Professional:3 Administering Resources* (WINP03, 3 hr). 'Managing Security for Files and Folders' is the last of the four modules in the course.
- *Networking Essentials:1 Terminology* (NESC01, 4 hr). 'Network Security and Classifications' is the third of five modules in the course.
- *Networking Essentials:5 Implementation* (NESC05, 4 hr). Showing the course's age, 'Implementing Security' is discussed for Windows 95 and NT; disaster recovery planning (DRP) and RAID are also major topics.

Technical Web development:

- *E-Commerce:8 Customer Service and Payment* (ECOM08, 4 hr). 'Payment Security' is the last of five modules in this course.

End user desktop computing

- *Business Management: Computer Security Awareness* (COM201, 12 hr). Not just for managers; anyone using a computer would benefit from the broad cross section of security topics included in this course.
- *European Computer Driving License: Understanding Information Technology* (ECDL01, 4 hr). The last of the six modules in this new course is entitled 'Security, Copyright and the Law'.

Other

- Also featured are product-specific security courses for Windows 2000 Professional and Server, NT 4.0, Exchange Server, Lotus Notes, Microsoft Internet Information Server (IIS), CGI/PERL, Oracle, SQL Server, NetWare, and Excel.

Figure 1: MindLeaders IBT courses

ProsoftTraining – http://www.prosofttraining.com (but more easily available through a distributor, such as http://www.headlight.com/browse/catalog)

- *Networking Fundamentals: Enterprise Network Security: Authentication, Encryption, and Firewalls* (4-6 hr).
- *Networking Fundamentals: Network Security Essentials* (4-6 hr).
- *Advanced Internet Business Fundamentals: Security and the Web* (4-6 hr).

Barnes and Noble University – http://www.barnesandnobleuniversity.com

- *Web Site Design and Management*.
- *The Internet: A Smart User's Guide*.

Figure 2: Other IBT courses – less than $13 US = £9 UK

SmartForce – http://www.smartforce.com/bvlink/guestlogin.asp

- *IBM OS/390 Security* (4 hr). Overview level course on e-business security, security levels, RACF, DCE security, LDAP directory, firewall and VPN.
- *Internet Security series* (8 courses, 30 hr). Overview, cryptography, PKI, secure communications, secure Web commerce, Internet site security, firewall principles, and multi-tier virus protection.
- *Internet and Intranet Skills: Web Site Security* (4 hr).
- *E-commerce: Security Considerations* (4 hr).
- *Java Enterprise Connectivity: Security Features* (3 hr).
- *Java Security, Networking, and the Internet* (4 hr).
- *Microsoft Visual InterDev: Web Security* (3 hr).
- *Networking Essentials: Data Security* (3 hr). Part of MCSE.
- *IBM DB2 Universal Database 5.0: Security and Instances* (3 hr).
- *Management and Security* (4 hr). WAN-specific.
- *PC Fundamentals: Safety and Security* (1 hr).
- *Microsoft Windows 2000: Security Design: Security Solutions* (4 hr).
- *Microsoft Windows 2000: Implementing a Network Infrastructure: Security* (4 hr).
- *Microsoft Windows 2000: Active Directory Design: Directory Services Security* (3 hr).
- Plus product-specific security courses for Windows NT 4.0, Exchange Server, Lotus Notes and Domino, Cisco, AS/400, IIS, Novell NetWare, NetScape Enterprise Server, Windows 98, SQL Server, Microsoft Proxy Server, Sun Solaris, and Oracle.

Figure 3: Other IBT courses – $74-$140 US = £50-£100 UK (part one)

Learn2 – http://www.tutorials.com

- *Securing Applications on the Internet*.
- *Understanding Internet Security*.
- *Windows 2000 Security*.
- *NT 4.0 Security*.
- *Visual Basic for Applications: Word 2000*. Includes a chapter on digital certificates.
- *Learn2 Choose and Use a Password* (2torial #0499, free)

NIIT – http://www.niit.com (but more easily available through a distributor, such as http://www.headlight.com/browse/catalog or http://www.vcampus.com/webuol/index.cfm?L2_id=21)

- *Securing Applications on the Internet* (6-8 hr).
- *Understanding Internet Security* (6-8 hr).

Figure 4: Other IBT courses – $74-$140 US = £50-£100 UK (part two)

Course Technology – http://www.course.com (but more easily available through a distributor, such as http://www.headlight.com/browse/catalog)

- *OS/390 Security* (4-6 hr).
- *OS/390 e-Business* (4-6 hr). 'Planning Security Requirements' is the fifth and final unit.
- Plus product-specific security courses for AS/400.

netg – http://www.netg.com

- *OS/390 Unix Customization and Administration* (13766, 10-12 hr).
- *DB2 for Application Programmers* (13754, 15 hr). Includes implementing simple level security for DB2 tables.
- *IBM DB2 Universal Database V6.1 Fundamentals* (13431, 6-8 hr). The first of four units concludes with a discussion of security level definitions, the authentication process, DB2 authorization levels, and using DCL to give a user database object privileges.
- *e-Commerce Security* (13185, 6-8 hr). The four units cover firewalls, encryption, authentication and authorization, and e-commerce payments security.
- *Web Site Security: Internet and Intranet Management and Policies* (85105, 6-8 hr).
- *Web Site Security: Messaging, Servers, and Viruses* (85106, 6-8 hr).
- *i-Net+ Part 4: Internet Security and Business Concepts* (13594, 6-8 hr).

Figure 5: Other IBT courses – $140-$200 US = £100-£140 UK (part one)

netg – http://www.netg.com (continued from Figure 5)

- *Networking Technologies Series: Network Security* (12764, 6-8 hr).
- *Networking Essentials 2nd Edition, Part 3* (71443, 6-8 hr). Security plans and folder user/share level security are discussed near the end of the course.
- *Network+ Part 5: Network Security and Troubleshooting* (82515, 6-8 hr). Including remote connectivity.
- Plus product-specific security courses for Windows 2000, NT 4.0 Server, Cisco, Linux (including Red Hat), Lotus Notes and Domino, Access, Visual Basic with MTS and SQL Server, Microsoft Site Server, Oracle, IIS, AIX, Novell NetWare, Exchange Server, SQL Server, Sun, and SCO/SCR.
- Non-English translations of some courses are also available.

IBM US – http://www.ibm.com/services/learning/lsweb/search/

- *SecureWorld Presentations* (ESC02, free, 40 hr).
- *Web Site Security - Internet and Intranet Management and Policies* (WN694, 8 hr).
- *Developing Secure Commerce Applications: Part I* (Q128S, 20 hr).
- *Developing Secure Commerce Applications: Part II* (Q129S, 20 hr).
- *Implementing Security for Web Sites: Part I* (WN712, 8 hr).
- *Implementing Security for Web Sites: Part II* (WN737, 8 hr).
- *Networking Technologies Series: Network Security* (WN600, 8 hr).
- Plus platform-specific security courses for ORACLE and AS/400.

Global Knowledge – http://www.mindfire.com

- *Implementing Security for Web Sites* (280947).
- *e-Commerce Security* (281974).
- *Security Basics* (281733).
- *Network Security* (280053).
- Plus product-specific security courses for Windows 2000, Cisco, Lotus Notes and Domino, Oracle, and Microsoft Proxy Server.

Element K – http://www.elementk.com

- *Security Issues for Commercial Web Sites*.
- There are also network security lessons in the I-Net+ and Network+ certification programs.

Figure 6: Other IBT courses – $140-$200 US = £100-£140 UK (part two)

Northeastern University OnLine – http://www.nuol.edu
- *Net Security and Legal Issues* (MIS 4245).
- *Computer Privacy and Security* (MIS 4360).

DigitalThink – http://www.digitalthink.com/catalog
- Network Security and Firewalls Fundamentals (8 hr).
- Plus platform-specific security courses for SQL Server.

KnowledgeNet – http://www.knowledgenet.com/productsandsolutions
- *Designing a Secure Windows 2000 Network* (2150). 15 modules, part of MCSE program.
- *CompTIA i-Net+*. 'Troubleshooting and Security' is the sixth and final module.
- *CompTIA Network+*. 'Network Security' is the sixth of seven modules.

KT Solutions – http://www.ktsolutions.com
- *Electronic Commerce: Security Issues*.
- *ACL Services* – http://www.acl.com
- *Introduction to ACL for Windows*.

Figure 7: Other IBT courses – more than $200 US = £140 UK

OTHER TYPES OF TRAINING

Note that, although many of the courses listed above are available in other forms, they are not listed elsewhere in this series of articles.

IBT is just one form of CBT. Other types of CBT and self-study are covered in the next article in this series, 'Other RACF/security self-study courses'. What might well be considered another form of IBT is also included in that article, namely streaming audio and/or video seminars. The equivalent for conference sessions is listed at the end of 'RACF/security conferences'.

The virtual classroom is also arguably IBT, although satellite-delivery can also be used. Both of these forms are listed in the last section of 'RACF/security classroom courses'.

Editor's note: if you know of any additional sources of RACF or security related education that have not been covered in this series of articles, please send details to the editor, Fiona Hewitt, at any of the addresses shown on page 2, or e-mail her at fionah@xephon.com

Chris Bruns
(Canada)

Other RACF/security self-study

Because Computer-Based Training (CBT) and other forms of self-study are listed here only if the same course is not offered as Internet-Based Training (IBT), this article is perhaps 80% shorter than it would have been as recently as a year ago. This reflects the fact that training companies are rapidly offering IBT versions of their traditional CBT. (See the previous article for full details of IBT courses.)

Figure 1 shows RACF- and security-related computer-based courses. Note that details vary, based on what's provided on the Web site.

http://www.datatrain.net
- *How to Use RACF* (5-6 hr).
- *RACF Auditor*.
- *OS/390 Unix Customization and Administration* (10-12 hr). 'Security Considerations' is Module 7 of 13.

http://www.aavln.com
- *OS/390 Security* (CD-ROM).
- *OS/390 e-Business* (CD-ROM, 4-6 hr). 'Planning Security Requirements' is the fifth and final unit.

http://www.ibm.com/services/learning/lsweb/search
- *OS/390 Security* (RM868, CD-ROM, 7 hr).
- *Java Security, Networking and the Internet* (DC007, download and play, 4 hr).
- Plus platform-specific security courses for Lotus Domino and Notes, Oracle, Microsoft Proxy Server, and AS/400.

http://www.tivoli.com
- 'Tivoli Security Management Overview' (6 hr).

http://www.gofcs.com
- *Understanding Internet Security* (NT1310, 7 hr).
- *Securing Applications on the Internet* (NT1320, 5 hr).
- *Securing Intranets* (NT1330, 6 hr).

http://www.learn2.com
- *Security on the Internet* (CD or video).
- *Linux Security* (2 volumes, video).
- Plus platform-specific courses for NetWare.

http://www.wavetech.com
- *Windows 2000 Network Security Design eCamp*.
- *Designing Security for a Microsoft Windows 2000 Network*.

Figure 1: Computer-based courses

http://www.ekcinc.com/EKCStore.html

- *ACF2 SDSF Implementation* (White Paper).

http://www.mindfire.com

- *Mission Critical Internetworking Security* (281907, text).
- *Designing Security for Windows 2000* (281903, text).
- *Configuring Windows 2000 Server Security* (281463, text).
- *Plus platform-specific for Digital UNIX and Cisco* (text).

http://www.wavetech.co.uk

- Security modules within I-Net+ and MCSE Windows 2000 (various).

Figure 2: Audio-, video-, and text-based courses

There are not a lot of relevant RACF/security self-study courses left that have not evolved to some form of CBT from paper-based course materials in binders with bound student workbooks, or audio and video cassettes of classroom courses. In fact, there are so few that Figure 2 even includes a particularly useful White paper.

Chris Bruns
(Canada)

Looking for a specific article?

If you keep hoping for an article on a particular topic, but we never publish one, please let us know what the subject is. If it's likely to be of interest to other subscribers too, we'll commission it and publish it in *RACF Update*.

Visit the *RACF Update* Web site

http://www.xephon.com/racfupdate.html

and follow the link to *RACF-related problems*.

RACF/security classroom courses

Classroom training still represents the majority of education spending by computing departments. This is partly because it is so expensive, but mostly because IBT is too new to be accepted by most managers.

Courses are listed only once. If they have been recently offered publicly anywhere worldwide, they are listed as 'scheduled' (see Figures 1-12). They can, of course, be privately booked (Figures 13-17), but are then charged on a per course basis, rather than per student. Within each category ('scheduled' and 'privately-booked'), courses are listed by the area of the world where they are usually offered.

The 'virtual classroom' category (Figures 18) covers several new approaches to distance learning. For example, a classroom-style course may be offered via satellite or the Internet, offering one- or two-way communication, depending on whether the students can ask questions or otherwise interact. These courses may be offered live or on-demand, where students work at their own pace.

http://www.ibm.com/services/learning/global/courses.htm
- See 'North America' section (below) for US
- See 'UK' section (below) for Britain.
- For all other countries, click on country name at above URL.

http://www.verhoef.com/outline.htm
- *RACF Administration Workshop* (5 days).
- *AS/400 Security and Administration Workshop* (5 days).

http://www.tivoli.com
- *Tivoli Security Management 3.6* (2 days).
- *Tivoli Security Management Implementation* (5 days).
- *SecureWay Policy Director Planning and Implementation* (IN380, 4 days).
- *SecureWay Policy Director Architecture and Solution Design* (TR320, 4 days).
- *SecureWay Policy Director System Administration* (TR330, 4 days).
- *Tivoli User Administration 3.6* (2 days).

http://www.candle.com
- *MQSecure Workshop* (MS110C, 3 days).
- *MQSeries Security Workshop for MVS* (MQS210S, 1 day).
- *MQSeries Security Workshop for NT* (MQS501S, 1 day).
- *MQSeries Security Workshop for Unix* (MQS500S, 1 day).

Figure 1: Scheduled courses worldwide (part one)

http://www.bmc.com

- *CONTROL-SA* (4-5 days).

http://www.misti.com

- *Internet and Web Security* (3 days).
- *Fundamentals of Internet Security and Control* (2 days).
- *Accessing and Testing Internet Security* (3 days).
- *Audit and Security of Electronic Commerce* (2 days).
- *Introduction to Network Security* (3 days).
- *SWITS Network Security Advanced Class* (2 days).
- *The Network Security Infrastructure (NISA)* (2 weeks).
- *Network Intrusion Detection* (3 days).
- *The Good Guys' Guide to Network Vulnerability Testing* (3 days).
- *Protecting Your Networks with Firewalls* (3 days).
- *Testing Firewalls and Network Perimeter Security* (2 days).
- *Introduction to Audit and Security of Data Communications* (3 days).
- *Remote Access Services and Virtual Private Network Security* (3 days).
- *Securing TCP/IP Networks* (4 days).
- *Using CAs and PKIs to Protect Your Information* (3 days).
- *Controlling Client/Server Environments* (3 days).
- *How to Manage an Information Security Program* (3 days).
- *Developing and Writing Information Security Policies* (2 days).
- *Performing a Security Forensics Review* (2 days).
- *Intermediate IT Audit and Security* (3 days).
- *Advanced IT Audit and Security* (3 days).
- *Fundamentals of Information Security* (3 days).
- *Creating Information Security Awareness* (2 days).
- *Controlling and Securing Windows 2000* (4 days).
- *Planning a Secure [Windows 2000] Active Directory* (3 days).
- Plus business risk, control analysis/review, fraud and HIPPA training, as well as many audit-only seminars and platform-specific education for Oracle Financials, PeopleSoft, NT Server 4.0, SAP R/3, AS/400, NetWare, Unix, and SQL Server.

http://www.learningtree.com

- *Implementing Web Security* (486, 4 days).
- *Internet and Intranet Security: A Comprehensive Introduction* (468, 4 days).
- *Deploying Internet and Intranet Firewalls* (488, 4 days).
- *Deploying Intrusion Detection Systems* (588, 4 days).
- *Building Virtual Private Networks* (375, 4 days).
- *Public Key Infrastructure (PKI) in the Enterprise* (586, 4 days).
- *Windows 2000 Security* (562, 5 days).
- *Implementing Windows NT Security* (162, 5 days).
- *Unix and Linux Security* (433, 4 days).

Figure 2: Scheduled courses worldwide (part two)

http://www.isaca.org

- *Enterprise-Wide Security Management Tools*.
- *The Internet: Security, Audit and Control Concerns*.
- *Network Penetration Prevention Tools and Techniques*.
- *Telecommunications Security*.
- *Penetrating Windows NT Server 4.0*.
- *Windows NT: Security, Audit & Control*.
- *Novell Netware: Security, Audit & Control*.
- Plus various CISA exam review courses and several IT auditing courses.

http://www.lotus.com

- *Domino Application Security and Workflow* (2 days).

Figure 3: Scheduled courses worldwide (part three)

http://www.ibm.com/services/learning/lsweb/search

- *Basics of OS/390 RACF Administration* (H3917, 4.5 days).
- *Effective RACF Administration* (H3927, 4.5 days).
- *Exploiting the OS/390 Security Server* (RACF) (H4020, 3.5 days).
- *Exploiting the Advanced Features of RACF* (ES88A, 4.5 days).
- *Implementing RACF Security for CICS/ESA and CICS TS for OS/390* (ES840, 4.5 days).
- *Implementing IMS Security* (CM431, 4 days).
- *Ins and Outs of IMS Security* (U3799, 2 days).
- *CMOS Cryptography & ICSF Implementation* (ES80A, 5 days).
- *DCE Secure Core Concepts* (Q1244, 2 days).
- *DCE Secure Core System Administration* (Q1247, 5 days).
- *Enterprise IT Security for e-business* (ES870, 3 days).
- *Security Audit, Attacks and Threat Analysis* (PS049, 2 days).
- *Internet Security and Firewall Planning* (N3202, 2 days).
- *IBM Firewall for Windows NT* (N3204, 3 days).
- *Linux as a Firewall* (QLX24, 5 days).
- *IBM FirstSecure Boundary Server Workshop* (IN350, 2 days).
- *IBM Trust Authority Planning and Implementation* (IN370, 3.5 days).
- *Public Key Infrastructure and IBM Trust Authority Fundamentals* (IN360, 1 day).
- *Server-Side Scripting and Security* (PS057, 3 days).
- Plus platform-specific security courses for AIX, AS/400, BizTalk Server, Lotus Domino, and Red Hat Linux.

Figure 4: Scheduled courses in North America (part one)

http://www.ekcinc.com

- *RACF Orientation for Users* (R05, 1 day).
- *RACF Fundamentals of Daily Administration* (R10, 3 days).
- *RACF Advanced I: Identifying Exposures* (R30, 3 days).
- *RACF for Auditors* (R35, 3 days).
- *RACF: Security DB2* (R75, 2 days).
- *RACF: Securing CICS* (R55, 3 days).
- *RACF Security for Unix System Services* (R60, 2 days).
- *CA-ACF2: Fundamentals of Daily Administration* (A10, 3 days).
- *CA-ACF2 Advanced I: Rule Writing Techniques* (A20, 3 days).
- *CA-ACF2 Advanced II: Identifying Exposures* (A30, 4 days).
- *CA-ACF2 Advanced III: Implementing Security Interfaces* (A50, 3 days).
- *CA-ACF2: Auditing the Security System* (A35, 4 days).
- *CA-ACF2: Database Cleanup and UID Conversion* (A45, 2 days).
- *CA-ACF2 Security for Unix System Services* (A60, 3 days).
- *CA-Top Secret: Fundamentals of Daily Administration* (T10, 3 days).
- *OS/390: Security Basics for an e-Business Environment* (G60, 2 days).
- *MVS: A Security Perspective* (G30, 1 day).
- *Basics of MVS Security* (G10, 2 days).
- *Understanding Security Administration* (G20, 2 days).
- *E-SRF: Access Analysis* (E40-2, 3 days).
- *E-SRF: RACF Event Reporting* (E40-3, 1 day).
- *E-SRF: ACF2 Event Reporting* (E40-1, 1 day).
- *ETF/A: Tools for CA-ACF2* (E10, 2 days).
- *ETF/A: Practitioner's Workshop* (A100, 2 days).
- *E-SRF: Impact Program* (G100, 5 days).

http://www.computerassociates.com/education/

- *RACF Administration* (TK079, 5 days).
- *CA-ACF2 MVS Basics* (AC001, 5 days).
- *CA-ACF2 MVS: Advanced Administration* (AC002, 2 days).
- *CA-ACF2 MVS: Advanced Technical* (AC003, 2 days).
- *CA-ACF2 CICS: Subsystem* (AC004, 2 days).
- *CA-Top Secret: Basics* (TS001, 5 days).
- *CA-Top Secret: MVS Advanced Administration* (TS002, 3 days).
- *CA-Top Secret: MVS Advanced Technical* (TS003, 2 days).
- *CA-Top Secret: Intermediate Administration* (TS025, 3 days).
- *CA-Top Secret: Preparing for a Successful Audit* (TS120, 5 days).
- *CA-IDMS/DB: Security* (ID450, 2 days).
- Plus product-specific security training for SeOS, UniCenter TNG, and eTrust.

Figure 5: Scheduled courses in North America (part two)

http://www.stuhenderson.com

- *Effective RACF Administration* (HG04, 5 days).
- *Advanced RACF Administration* (HG05, 3 days).
- *How to Be an Effective OS/390 Data Security Officer* (HG17, 3 days).
- *Mastering Windows NT/2000 Security* (HG40, 3 days).

http://www.protechpts.com

- *RACF* (4 days).
- *ACF/2 Basic Administration* (5 days).
- *ACF/2 Advanced Administration* (2 days).
- *Internet Security and Firewall Systems* (2 days).
- *MQSeries Security and Systems Administration* (2 days).

http://www.sysed.com

- *RACF Administration* (26, 4 days).
- *Web Security: Implementation* (277).
- *Windows 2000: Security* (117, 3 days).
- *Windows NT: Security* (216, 3 days).

http://www.canaudit.com

- *Hardening the Network for E-Commerce* (2 days).
- *Penetration Testing: Preemptive Network Security* (2 days).
- *The Ultimate Network Penetration Class* (5 days).
- *Control and Security of the Internet* (2 days).
- *Control and Security of Electronic Commerce* (2 days).
- *Control and Security of Firewalls and Intrusion Detection* (2 days).
- *Control and Security of Interconnected Networks* (2 days).
- *Control and Security of Windows 2000* (2 days).
- *Control and Security of Windows NT Server* (2 days).
- *Control and Security of Unix* (2 days).
- *Enterprise Security Management: Tools, Contracts and Negotiation* (2 days).
- *Cyber Terrorism and Electronic Espionage*.
- *Fraud: Prevention, Detection and Prosecution* (1 day).
- Plus audit-only courses and platform-specific courses for AS/400, RS/6000, AIX, and Oracle.

http://www.techknowledge.com/Public/public.html

- *Internet Security and Firewall Preparation* (INWDVISF, 2 days).

http://www.cait.wustl.edu

- *Internet Security* (TTTL78, 2 days).
- *Unix System Administration Part 3: Security Issues* (TTUN45, 2 days).

http://www.compumaster.net

- *Achieving Maximum Web Security* (1 day).
- *The Secrets to Effective Windows NT Security* (2 days).

Figure 6: Scheduled courses in North America (part three)

http://www.stcc.cc.tn.us

- *Electronic Business Security, Risk Management & Control* (BN2450 & BN2620).

http://am.globalknowledge.com

- *Designing Security Architectures* (9860, 2 days).
- *Network Security and Firewall Administration* (9800, 3 days).
- *Secure Communications and VPNs* (9875, 3 days).
- *Windows 2000 Security* (6662, 3 days).
- Plus platform-specific courses for Cisco, Entrust, and Red Hat Linux.

http://www.wiu.edu/users/miprov/ugcat/2000/compsci.shtml

- *Computer System Security* (CS455, 3 semester hours).
- *Computer Privacy and Security* (CS395, 3 semester hours).

http://www.gocsi.com

- *Internet Security Tools and Techniques* (2 days).
- *How to Design a Security Architecture for e-Business* (2 days).
- *Securing e-Business: A Technical Guide to Implementing PKI* (2 days).
- *Management Essentials for e-Business Security and Continuity* (2 days).
- *Intrusion Techniques and Countermeasures* (2 days).
- *Firewalls and VPNs: Introduction and Best Practices* (2 days).
- *A Practical Guide to Encryption and Certificate Authorities* (2 days).
- *Point A to Point Z: A Primer on Data Communications Security* (2 days).
- *How to Perform a Technical Network Vulnerability Assessment* (2 days).
- *How to Manage a Network Vulnerability Assessment* (2 days).
- *Windows 2000 Security* (2 days).
- *Practical Forensics: How to Manage IT Investigations* (2 days).
- *A 6-Step Framework for Incident Response* (2 days).
- *Introduction to Computer and Network Security* (2 days).
- *How to Develop a Winning Security Architecture* (2 days).
- *Fast-Track Security Architecture Development Assistance* (5 days).
- *How to Develop Information Security Policies* (2 days).
- *Information Security Policies and Procedures Development Assistance* (5 days).
- *How to Develop Information Security Standards & Procedures* (2 days).
- *Management Skills for a Superior Information Security Program* (2 days).
- *Facilitated Risk Analysis for Business and Security* (2 days).
- *How to Create & Sustain a Quality Information Security Awareness Program* (2 days).
- *Essential Training for the Decentralized Security Team* (1 day).
- *How to Become an Effective Security Liaison: Security as a Part-Time Job Function* (2 days).
- *Computer Security: A Management Briefing* (2-4 hr).
- *Information Security Awareness Program Development Assistance* (5 days).
- *Technical Recovery of Electronic Evidence* (3 days).
- *CISSP Prep for Success Workshop* (3 days).

Figure 7: Scheduled courses in North America (part four)

http://www.cdicorporateeducation.com

- *Operating Systems Security* (PS52, 1 day).
- *Security Auditing, Attacks and Threat Analysis* (PS53, 2 days).
- *Network Security and Firewalls* (PS50, 2 days).
- *Designing a Secure Microsoft Windows 2000 Network* (2150, 5 days).
- *Secure Web Access Using Microsoft Proxy Server* (836, 2 days).
- Plus platform-specific security courses for Lotus Domino and BorderManager.

http://www.pbsc.com

- *Network Security and Firewalls* (PS213, 2 days).
- *Designing a Secure Microsoft Windows 2000 Network* (2150A, 5 days).
- *Operating Systems Security* (PS214, 1 day). For NT and Linux.
- *Security Audit, Attacks and Threats* (PS216, 2 days). For NT and Linux.
- Plus platform-specific security courses for Lotus Domino and Proxy Server.

http://www.wavetech.com

- *IT Security Survival Boot Camp* (5 days).
- *Windows 2000 Network Security Design* (5 days). Part of MCSE.

http://www.pgp.com/services/education

- *PGP Admin* (TNS-PA, 3 days).
- *PGP Engineer* (TNS-PE, 3 days).
- *Gauntlet Admin Unix* (TNS-GA-UNX, 3 days).
- *Gauntlet Admin NT* (TNS-GA-NT, 3 days).
- *CyberCop Admin* (TNS-CCA, 3 days).
- *Eppliance Training* (TNS-EpplA, 3 days).

http://www.natsem.com

- *Microsoft Windows NT Security in an Enterprise Environment* (1 day).

Figure 8: Scheduled courses in North America (part five)

http://www-5.ibm.com/services/learning/uk/ta-iris.nsf/External/$$X-00/$SearchForm?SearchView

- *Exploiting the OS/390 Security Server* (ES88U, 3 days).
- *MVS RACF for Admin* (BE87, 4 days).
- *Implementing RACF Security for CICS/ESA* (CE65U, 4.5 days).
- *Enterprise IT Security for e-Business: An Overview* (ES87U, 3 days).
- *Internet Security and Firewalls Concepts* (IN29U, 2 days).
- *Tivoli Security Management* (TM16U, 2 days).
- *Designing a Secure Windows 2000 Network* (MIC2150U, 5 days).
- *Securing Intranets with BorderManager* (NW770U, 3 days).
- Plus platform-specific security courses for AS/400, Lotus Domino, Red Hat Linux, Microsoft Proxy Server, and IBM Firewall.

Figure 9: Scheduled courses in the UK (part one)

http://www.rsm.co.uk

- *RACF Basics* (1 day).
- *Understanding RACF* (1 day).
- *RACF Technical Overview* (1 day).
- *RACF for Systems Programmers* (4 days).
- *RACF Administration* (4 days).
- *Auditing RACF* (2 days).

http://www.wdr.co.uk

- *OS/390 Security Server (RACF) Fundamentals* (MV26, 1 day).
- *RACF for Systems Programmers* (MV29, 2 days).
- *OS/390 Security Server (RACF) Administration* (MV27, 3 days).
- *RACF for Auditors* (MV28, 1 day).
- *Introduction to Network Security* (SE12, 1 day).
- *Exploits and Countermeasures: Practical Guide to Network Security* (SE14, 2 days).
- *Securing Microsoft Internet and Commerce Networks* (SE13, 2 days).
- *Windows 2000 Network Security* (NT16, 3 days).
- Plus platform-specific courses for Firewall-1 and AS/400.

http://www.circle-group.com/training/Schedule.htm

- *RACF Overview* (MRFO, 1 day).
- *RACF for Administrators and Auditors* (MRFA, 4 days).

http://www.amdahl-education.co.uk

- *RACF Overview* (MRFO, 1 day).
- *RACF for Administrators & Auditors* (MRFA, 4 days).

http://www.tcr.co.uk

- *RACF Administration and Auditing*.

http://www.fastpath.co.uk

- *RACF Overview* (1 day).
- *Internet Security Overview* (1 day).
- *Management of Internet Security* (3 days).
- *Introduction to PKI Technologies* (1 day).
- *Designing a Secure Windows 2000 based Network* (5 days).
- Plus platform-specific courses for AS/400, Firewall-1 and VPN-1.

http://www.wavetech.co.uk

- *IT Security Survival Bootcamp* (5 days). Currently being redeveloped.

Figure 10: Scheduled courses in the UK (part two)

http://www.consul.com
- *RACF Introduction and Overview* (ER881, 1 day).
- *RACF Reporting and Auditing* (ER884, 1 day).
- *RACF General Functions and Implementation* (ER882, 3 days).
- *RACF Advanced Functions and Implementation* (ER883, 3 days).
- *RACF Selected Topics* (CR540, 1 day).
- *Consul/RACF and Audit Overview* (CR510, 1 day).
- *RACF Management using Consul/RACF* (CR530, 2 days).
- *RACF Report and Audit with Consul/Audit* (CR520, 2 days).
- *OS/390 Auditing using Consul/Audit* (CR525, 2 days).
- *Consul Auditing and Reporting Language* (CARLa) (CR550, 3 days).

http://www.integrata.de
- *Security Server (RACF) Vertiefung* (5812, 2 days).
- *Security Server (RACF) Grundlagen* (5813, 2 days).
- *OS/390 Webserver Security* (5808, 2 days).

http://www.intranet.dk
- *RACF Overview* (MRFO, 1 day).
- *RACF for Administrators & Auditors* (MRFA, 4 days).

http://www.betasystems.com
- *RACF Workshop* (5 days).
- *BETA 88 Administration* (5 days).
- *BETA 88 Auditor/Revisor* (3 days).
- *BETA 89 Administration* (3 days).
- *BETA Query Language (BQL) Workshop* (3 days).

Figure 11: Scheduled courses in Europe

http://www.ast.co.za/education
- *RACF for Administrators* (5 days).

Figure 12: Scheduled courses in South Africa

http://www.cistraining.net/FRpage2.htm
- *RACF Introduction to Data Security* (1/2 day).
- *RACF Security Policy* (1/2 day).
- *RACF Definition of Groups and Users* (2 days).
- *RACF Program and Application Security* (1 day).
- *RACF JES2 Security* (2 days).
- *RACF DASD Dataset Security* (1/2 day).
- *RACF Tape Dataset Security* (1/2 day).

Figure 13: Privately-booked courses in North America (part one)

http://www.viplink.com/clientservices/training.cfm

- *z/OS Security Server (RACF) Administration* (4.5 days).
- *z/OS Security Server (RACF) Group Administration* (2 days).
- *z/OS Security Server (RACF) Security and Audit* (4.5 days).
- *Effective Use of Vanguard Administrator* (1 day).

http://www.actisit.com

- *RACF Security Management* (5 days).
- *Internet Security and Firewall Systems* (2 days).
- *MQSeries Security and Systems Administration* (2 days).

http://www.mentor-services.com

- *Administering RACF* (4 days).
- *Implementing Web Security*.
- *Internet and Intranet Firewalls*.
- *Deploying Internet and Intranet Firewalls*.
- *Implementing Windows NT Security*.

http://www.actpr.com

- *RACF Effective Administration* (4 days).

http://www.villegasassociates.com/services.html

- Custom designed courses in RACF, CA-ACF2, CA-Top Secret, HIPPA, business continuity planning, firewalls, and security for OS/390, AS/400, networks, the Internet, and Web sites.

http://www.estec.com

- *Security Awareness: Administrator* (1 day).
- *Security Awareness: Management* (1 hr).
- *Security Awareness: Employee* (2 hr).

http://www.masp.com

- *EDI Security, Audit and Control* (MC-30).
- Plus many IT audit and contingency planning courses.

http://www.newinstruction.com

- *Securing Your Windows 2000 Server* (3 days).

http://www.bpgtraining.com

- *Unix Security Issues* (2 days).

http://www.gpworldwide.com/services/it/it_catalog_courses.asp

- *Domino Application Security & Workflow* (LNDOASW, 2 days).

http://www.mcafeeb2b.com/services/mcafee-training

- *McAfee Basic Training* (2 days).
- *McAfee Advanced Training* (2-5 days).

Figure 14: Privately-booked courses in North America (part two)

http://www.sysprog.co.uk

- *RACF Overview*.
- *RACF for Systems Programmers*.
- *RACF Administration*.

http://www.bminternational.co.uk

- *RACF Administration and Auditing* (5 days).

http://www.it-iq.co.uk/

- *Planning and Implementing a Secure Internet Presence* (5510, 2 days).
- *Designing a Secure Windows 2000-based Network* (2150, 5 days).
- *Secure Web Access Using Proxy Server 2.0* (836, 2 days).

Figure 15: Privately-booked courses in the UK

http://www.cross-systems.de

- *MVS/ESA RACF System Programmierung* (MVSRS, 5 days).
- *MVS/ESA RACF Planung und Administration* (MVSRA, 3 days).
- *DB2 Security Konzepte und Realisierung* (DB2SR, 2 days).

http://www.quadrat-gruppe.de/stellen.html

- *RACF Administration* (RF0020).

Figure 16: Privately-booked courses in Europe

http://www.adcomed.com.au

- *RACF for Administrators* (5 days).
- *RACF V2 Structure and Impact* (1 day).
- *CICS for Security* (2 days).

http://www.softed.co.nz

- *Network Security, Policy & Firewall Implementations* (2 days).

Figure 17: Privately-booked courses in Australia and New Zealand

http://www.etnetworks.com

- *Effective RACF Administration* (H27S0, 4.5 days).
- *Enterprise IT Security for e-business: An Overview* (E70S0, 3 days).
- *Internet Security and Firewall Planning* (N02S0, 2 days).
- Plus platform-specific security courses for AIX and AS/400.

http://webtrack.cai.com/edu/will.cfm

- *CA-ACF2 MVS: Basics* (5 days).
- *CA-Top Secret: MVS Advanced Technical* (2 days).

http://www.compchannel.com

- *E-Commerce Security: Creating an Enterprise-Wide Policy* (20000903, 54 min).
- *Web Site Security: Beyond Firewalls* (990702, 54 min).
- *PKI: The Core of E-Commerce Security* (20000804, 53 min).
- *Understanding Public Key Infrastructure and Its Value* (20000302, 58 min).
- *Understanding Security for Intranets, Extranets and the Internet* (981104, 39 min).
- *Firewalls: Covering Your Assets* (20000305, 46 min).
- *IP Security: Protecting Your VPNs* (20000402, 58 min).
- *IPSec: A Review of the New Security Protocols* (991105, 37 min).
- *Distributed Security: A Guide for IT Managers* (980802, 61 min).
- *Identifying and Managing IT Risk Factors* (991006, 42 min).
- *Information Security: From Risk Containment to Arrest Attainment* (991207, 52 min).
- *Windows 2000 Security Features* (20000805, 56 min).
- *Windows NT 4.0 Series: Part 4 – Securing the NT Environment* (971201, 56 min).
- *Windows NT 4.0 Series: Part 5 – NT in High Security Environments* (980106, 48 min).

http://www.webseminarslive.com

- *Web Security: End-to-End eBusiness Security* (1-2 hr, free).
- *Security Vulnerabilities: Protecting Your Digital Assets* (1.25 hr, free).

http://am.globalknowledge.com

- *Network Security and Firewall Administration* (20 hr, $1195).

Figure 18: Virtual classroom courses

ELSEWHERE

As mentioned above, courses are listed only once in this article, even if they would fit into more than one category. Note also that because

some classroom courses are also offered as IBT or other forms of self-study, they are not listed in this article at all. Instead, they feature in 'RACF/security Internet-Based Training' or 'Other RACF/security self-study'.

Chris Bruns
(Canada)

RACF/security training directories

Most Human Resources (HR) departments do not even try to handle the education planning internally for their computing staff. Given the amount and cost of training involved, there are many consultants and even entire companies making a living fulfilling that need. And a few have begun to offer Web-based services.

But the Internet has some free sources of great information. And that is what most of the Web sites listed in Figures 1-4 provide.

The numbers indicate search results (ie number of courses listed) based on RACF and security keywords.

http://www.solutioncentral.com
- 29 RACF; 6,840 security.
- Requires free registration to get course details.

http://www.uk.thinq.com
- 7 RACF; 91 security.

http://www.courseleader.co.uk
- UK site: 2 RACF; security 28.
- US site: 5 RACF; security 61.

http://www.thinq.com
- 5 RACF; 177 security.

http://www.seminarinformation.com
- 4 RACF; 148 security .

http://www.corptraining.com
- 3 RACF; 370 security.

http://www.trainingregistry.com
- 3 RACF; 51 security.

Figure 1: Mainframe courses (part one)

http://www.atr-training.com.au
- 0 RACF; 5 CA-ACF2; 225 security.
- Requires free registration to search, substantial subscription fee to get course details.

http://www.trainseek.com
- 0 RACF; 735 security.

http://www.knowledgeplanet.com/marketplace/course/catalog.jsp?tab_sel=4
- 0 RACF; 17 security.
- Requires free registration to search; only existing customers can purchase; vendor name not always shown.

http://www.itaudit.org/YellowPages/category/education_and_training.htm
- detailed vendor list; no course list.

http://www.hatrainers.org/vendlist.htm
- vendor list only; no course list.

http://dmoz.org/Computers/Software/Online-Training
- vendor list only; no course list.

http://www.auditnet.org/trainres.htm
http://www.auditnet.org/edures.htm
- vendor lists only; no course list.

http://www.edupoint.com/providers/providerlist.jsp
- vendor list with no URLs; no course list.

http://www.loriaux.com/s390/training.html
- list of mainframe consultants and trainers.

http://www.hungrymindsuniversity.com
- search failed when tested.

Figure 2: Mainframe courses (part two)

http://www.click2learn.com
- > 300 security.

http://www.skillvest.com/indexes/index_search.htm
- > 50 security.

http://www.microsoft.com/trainingandservices
- training by Microsoft and partners.

Figure 3: Non-mainframe courses

http://fsai.fh-trier.de/~holert/fernlernen/fernlernen.html
- German.

http://web-stark.de/links/pages/Bildung/Fernstudium/index.html
- German.

Figure 4: Non-English courses

CONSULTANTS

If you can't find the course you're looking for, many training vendors can create custom training to your specifications. Alternatively, you could use a consultant, many of whom have taught classroom courses in the past. Most have extensive experience with knowledge transfer, ensuring that support staff can carry on after they have completed a project.

Local consultants can be found in a telephone directory. And the Internet has at least one large directory of consultants at:

http://www.icca.org

Chris Bruns
(Canada)

RACF Update on the Web

Code from individual articles of *RACF Update,* and complete issues in Acrobat PDF format, can be accessed on our Web site, at:

http://www.xephon.com/racfupdate.html

You will be asked to enter a word from the printed issue.

RACF/security conferences

Find the right conference, and you can learn as much in a one-hour conference session as you would in a two-day classroom course. But you have to work at it:

- Listen carefully.
- Take notes to expand on or cover points not listed on the handout (typically a copy of the slides).
- Invent your own tests and do them when you get home.
- Research any questions that come up in the relevant product manuals.
- If possible, ask the speaker a question or discuss things with other attendees.

But be warned: conferences can be exhausting experiences. To obtain maximum value:

- Come well rested.
- Do not plan any social activities in the evening if you're attending sessions all day.
- If you can afford/justify it, stay in the hotel where the conference is hosted, or at least one nearby, so that your waking hours are spent learning, not commuting.

In Figures 1-2, conferences are listed by URL only, categorized by the part of the world where they are normally held.

Unlike training, Internet-based Web delivery of conference sessions, either live or on-demand, has been very slow in coming. Back in 1996, Gartner Group offered streaming RealAudio with full-motion video, and IBM used its proprietary Bamba technology to deliver streaming audio synchronized with slides of selected technical conference sessions. Now, five years on, we seem to have not yet come back to the point where we were in 1996. The truth, of course, is that there were major problems with the technology back then.

Worldwide

- http://www.ibm.com/services/learning/conf
- http://www.idug.org
- http://www.misti.com/conf.asp
- http://www.isaca.org/conf1.htm
- http://www.ttivanguard.com
- http://www.drii.org/upcoming.htm
- http://www.iqpc.com
- http://www.gartner.com
- http://www.marcusevansconferences.com
- http://www.iir.org/locations.cfm
- http://www.interdoc.ws/e/events

North America

- http://www.vipexpo.com
- http://www.viplink.com/conference
- http://www.share.org
- http://www.gocsi.com
- http://www.caworld.com
- http://www.dci.com
- http://www.drj.com
- http://www.afcom.com
- http://www.thinkhdi.com/hdiconference
- http://www.xplor.org

UK

- http://www.xephon.com
- http://www.gse.org.uk

Europe

- http://www.gse.org

Figure 1: Traditional conferences

- http://www.ibm.com/services/learning/conf/online
- http://www.iqpc.com/cgi-bin/templates/982810787718109130858000003/document.html?document=1351&
- http://www.netsessions.net
- Plus, SHARE has conference proceedings on CD-ROM.

Figure 2: Sessions available on the Internet

Chris Bruns
(Canada)

Contributing to *RACF Update*

In addition to *RACF Update*, the Xephon family of *Update* publications now includes *CICS Update*, *MVS Update*, *TCP/SNA Update*, *VSAM Update*, *DB2 Update*, *AIX Update*, *Domino Update*, *MQ Update*, *NT Update*, *Oracle Update*, and *TSO/ISPF Update*. Although the articles published are of a very high standard, the vast majority are not written by professional writers, and we rely heavily on our readers themselves taking the time and trouble to share their experiences with others. Many have discovered that writing an article is not the daunting task that it might appear to be at first glance.

They have found that the effort needed to pass on valuable information to others is more than offset by our generous terms and conditions and the recognition they gain from their fellow professionals. Often, just a few hundred words are sufficient to describe a problem and the steps taken to solve it.

If you have ever experienced any difficulties with RACF, or made an interesting discovery, you could receive a cash payment, a free subscription to any of our *Updates*, or a credit against any of Xephon's wide range of products and services, simply by telling us all about it. For a copy of our *Notes for Contributors*, which explains the terms and conditions under which we publish articles, please write to the editor, Fiona Hewitt, at any of the addresses shown on page 2, or e-mail her at fionah@xephon.com

CONSUL/Audit 2.6 for RACF and ACF2 provides automatic status auditing of the Unix subsystem of OS/390. And Consul/Enterprise Audit 2.2.2 now provides integrated auditing across HP-UX and Lotus Domino platforms, in addition to the product's existing support for OS/390, Windows NT/2000, AIX, Sun Solaris, Check Point FireWall-1, Cisco Router, and Microsoft Internet Information Server (IIS).

For further information, contact:
CONSUL Risk Management, Marshalllaan 2, 2625 GZ Delft, Netherlands.
Tel: (31) 15 2513333.
30 Great Road, Acton, MA 01720, USA.
Tel: (888) 323 0880.
URL: http://www.consul.com

* * *

Schumann Security Software has a new name, SYSTOR, and its flagship product, SAM (Security Administration Manager), has three new components:

- SAM Role Miner applies data mining techniques to the creation of role concepts for the administration of user IDs.
- SAM Connect allows security-critical applications and platforms to be incorporated efficiently into the SAM Security Management system.
- SAM/LDAP Support interfaces SAM to the Lightweight Directory Access Protocol (LDAP) Internet security standard.

For further information, contact:
SYSTOR, Baslerstrasse 60, CH-8048 Zurich, Switzerland.
Tel: (41) 1 405 31 11.
6411 Ivy Lane, Suite 610, Greenbelt, MD 20770, USA.
Tel: (301) 486 4600.
URL: http://www.systor.com

* * *

Blockade has integrated its OS/390 security products with Entrust's getAccess secured e-business portal management software. A Pluggable Authentication and Authorization Module (PAAM) has been added to Blockade's OS/390 security server, allowing getAccess to use it to provide authentication, authorization, and auditing.

For further information, contact:
Blockade Systems, 2200 Yonge Street, Suite 1400, Toronto, Ontario M4S 2C6, Canada.
Tel: (888) 898 9949.
URL: http://www.blockade.com
Entrust Technologies, 4975 Preston Park Blvd, Suite 400, Plano, Texas 75093, USA.
Tel: (888) 690 2424.
URL: http://www.entrust.com

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IBM's eServer announcements in October 2000 have renamed or replaced most System/390 hardware systems and operating systems, as well as AS/400, AIX, and Netfinity. Relevant details can be found inside this issue in the '*Security Implications with z*' article beginning on page *29*.