



# z/OS V1R10: Custom Fields

- With Custom Fields you can create your own fields in the RACF database by defining profiles!
  - No assembler programming required
  - No ICHEINTY, RACROUTE experience required!
- Custom fields for USER and GROUP profiles
  - Field semantics (names and data formats) defined as profiles in the new CFIELD general resource class
  - New CSDATA segments in USER and GROUP profiles hold the data
  - FIELD class ("field level access") can be used to control access
  - Can be processed from
    - RACF commands
    - RACF ISPF panels
    - LDAP SDBM
    - R\_admin
    - RACROUTE REQUEST=EXTRACT
    - ICHEINTY

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# Custom Fields - Preview of the Results

- List the Custom Fields in a USER profile
  - -LISTUSER ANDREW CSDATA NORACF

USER=ANDREW

**CSDATA INFORMATION** 

EMPLOYEE SERIAL NUMBER = 256400

HOME ADDRESS = 14 Main Street, Anywhere, IL 01234

- List the Custom Fields in a GROUP profile
  - -LISTGRP TELLER CSDATA NORACF

GROUP=TELLER

**CSDATA INFORMATION** 

DEPARTMENT NUMBER = D09A40

MANAGER NAME = Jay Smith

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# Overview - What's in a Custom Field?

# What can be customized?

- Keyword name (1-8 characters)
- Field Type: Character, Numeric, Hexadecimal, Flag (Yes/No)
- Heading for LISTUSER or LISTGRP command
- · Help text
- · Maximum field length
- For character fields
  - Character restrictions for first and remaining characters
  - Mixed case or uppercase
- · For numeric fields
  - Minimum value
  - Maximum value
- Other field customization can be performed in a field validation exit (IRRVAF01) which is under the control of the MVS dynamic exit facility
  - Control format or content of a field

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# Usage & Invocation - All About Custom Fields

- RACF Command Changes
- Define a Custom Field
- Activate Custom Fields
- Put Data in a Custom Field
- Authorization to Define a Custom Field
- Authorization for CSDATA
- Multiple System Considerations
- Related Enhancements

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# TEM **RACF Command Changes** CFIELD class Profile name defines the keyword name - USER.CSDATA.HOMEADDR CFIELD profile format: profile-type.CSDATA.keyword-name - GROUP.CSDATA.DEPTNUM CFDEF (Custom Field DEFinition) segment for CFIELD class profiles Keyword is on RDEFINE, RALTER, RLIST commands - Sub-operands define the custom field attributes - RDEFINE CFIELD USER.CSDATA.HOMEADDR CFDEF ( TYPE(CHAR) MAXLENGTH(100) FIRST(ANY) OTHER(ANY) MIXED(YES) ) CSDATA (CuStom DATA) segment for USER and GROUP profiles Keyword is on ADDUSER, ALTUSER, LISTUSER, ADDGROUP ALTGROUP, LISTGRP commands Sub-operands are YOUR custom fields!

ALTUSER ANDREW CSDATA (HOMEADDR ('13 Lucky Lane,

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Anywhere, IL 12345'))

```
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                   Define a Custom Field
STEP 1 - Define custom field attributes with CFDEF segment in CFIELD
  profiles

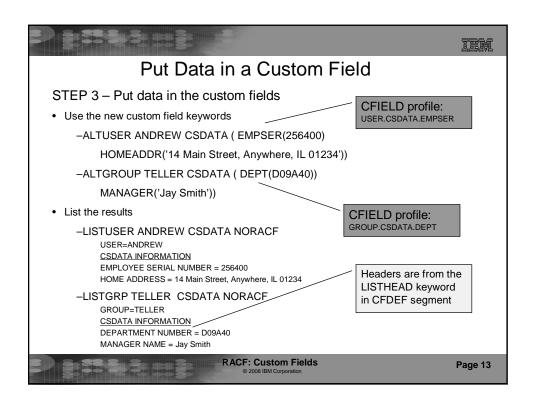
    Define a numeric field as an employee serial number

   RDEFINE CFIELD USER.CSDATA.EMPSER UACC(NONE)
   CFDEF (TYPE (NUM)
                                                  CFIELD profile format:
   MAXLENGTH(8)
                                                 profile-type.segment-name.keyword-name
   FIRST(NUMERIC) OTHER(NUMERIC)
   HELP('EMPLOYEE SERIAL NUMBER, 6-8 DIGITS')
   MINVALUE(100000)
   MAXVALUE(99999999)
   LISTHEAD('EMPLOYEE SERIAL ='))

    Define a character field as a department number

   RDEFINE CFIELD GROUP.CSDATA.DEPT UACC(NONE)
   CFDEF (TYPE (CHAR)
   MAXLENGTH(10)
   FIRST(ALPHANUM) OTHER(ALPHANUM)
   HELP('DEPARTMENT NUMBER, UP TO 10 CHARACTERS')
   MIXED(NO)
   LISTHEAD('DEPARTMENT NUMBER = '))
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```

# TEM **Activate Custom Fields** STEP 2 - Put customized fields into effect - Activate the CFIELD class • SETROPTS CLASSACT(CFIELD) - Use IRRDPI00 command to check and update the fields ALLOCATE FILE(SYSUT1) DATASET('SYS1.SAMPLIB(IRRDPSDS)') SHR IRRDPI00 CHECK **IRRDPI00 UPDATE** IRRDPI00 LIST (USER CSDATA) IRRDPI00 LIST (GROUP CSDATA) • In previous releases, it just built Dynamic Parse Tables from IRRDPSDS dataset · Enhanced to also: - Read custom field definitions from CFDEF segments of CFIELD profiles - Update Dynamic Parse Tables with custom field attributes **RACF: Custom Fields** Page 12



# TEM Authorization to Define a Custom Field STEP 4 (Optional) – Authorize certain users or groups to view and define custom field definitions and attributes - For commands, FIELD profiles CFIELD.CFDEF.templatefield are used to control who can specify CFDEF fields on a CFIELD profile definition • READ access – allows a user to view a CFDEF field in CFIELD profile • UPDATE access - allows a user to view and update a CFDEF field in a CFIELD profile Examples Allow all users to view custom field definitions RDEFINE FIELD CFIELD.CFDEF.\* UACC(READ) SETROPTS RACLIST(FIELD) REFRESH • Allow USERADM to define and alter custom field definitions ALTUSER USERADM CLAUTH(CFIELD) PERMIT CFIELD.CFDEF.\* CLASS(FIELD) ID(USERADM) ACCESS(UPDATE) SETROPTS RACLIST(FIELD) REFRESH **RACF: Custom Fields** Page 14



# Authorization for CSDATA

# STEP 5 (Optional) – Authorize certain users or groups to update the data in the custom field

- For commands, FIELD profile profile-type.CSDATA.keyword will be used to control field level access checking for the custom field
  - READ access allows a user to view a CSDATA field in each USER or GROUP profile
  - UPDATE access allows a user to view and update a CSDATA field in each USER or GROUP profile
  - &RACUID can be on the access list to allow a user to access CSDATA fields in his/her own USER profile (not applicable to GROUP profiles)

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# Authorization for CSDATA...

STEP 5 continued...(Optional) – Authorize certain users or groups to update the data in the custom field

## Examples

 Allow all users to view and update their own ADDR1, ADDR2, ADDR3 custom fields

RDEFINE FIELD USER.CSDATA.ADDR\* UACC(NONE)
PERMIT USER.CSDATA.ADDR\* CLASS(FIELD) ID(&RACUID)
ACCESS(UPDATE)

- Allow the HR group to view and update each user's EMPSER custom fields RDEFINE FIELD USER.CSDATA.EMPSER UACC(NONE)
   PERMIT USER.CSDATA.EMPSER CLASS(FIELD) ID(HR) ACCESS(UPDATE)
- Allow the HR group to view and update each group's DEPT custom field RDEFINE FIELD GROUP.CSDATA.DEPT UACC(NONE)
   PERMIT GROUP.CSDATA.DEPT CLASS(FIELD) ID(HR) ACCESS(UPDATE)

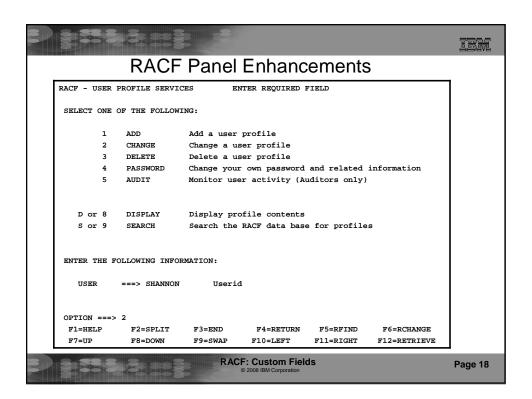
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# **RACF Panel Enhancements**

- Handle CFDEF segment on RDEFINE/RALTER/RLIST
  - Panels show the default values for each custom field type
  - RALTER panels show existing values and allow you to overtype and change the values
- Handle CSDATA segment on ADDUSER/ALTUSER/LISTUSER
  - Field names are primed from existing CFIELD profiles and can be updated by typing over the existing value
- Handle CSDATA segment on ADDGROUP/ALTGROUP/LISTGRP
  - Field names are primed from existing CFIELD profiles and can be updated by typing over the existing value

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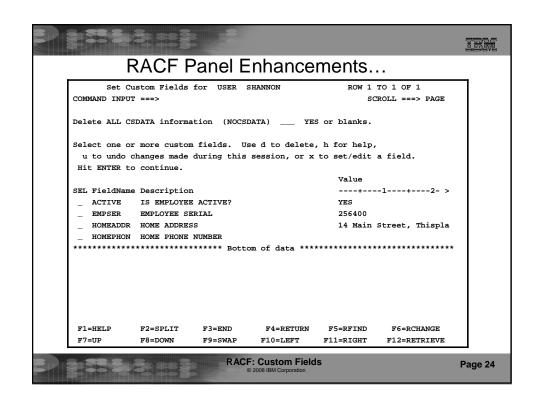
RACF Panel Enhancements	
RACF - CHANGE USER SHANNON	]
OWNER Userid or group name  USER NAME  DEFAULT GROUP Group name	
_ Change PASSWORD related information s Add or Change OPTIONAL information	
TO ASSIGN A USER ATTRIBUTE, ENTER YES, TO CANCEL, ENTER NO	
GROUP ACCESS SPECIAL ADSP OPERATIONS OIDCARD AUDITOR NO-PASSWORD RESTRICTED	
CHANGE OR DELETE THE MODEL PROFILE USED FOR USER DATA SETS (OPTIONAL):  NEW MODEL	
DELETE YES if no model is to be used  COMMAND ===>	
F1=HELP F2=SPLIT F3=END F4=RETURN F5=RFIND F6=RCHANGE F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT F12=RETRIEVE	
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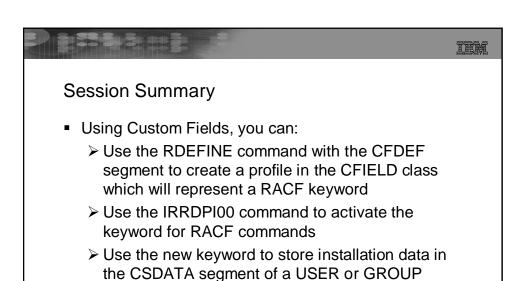
COMMAND ===>  To add or change the following information, enter any character.  CLASS AUTHORITY	RACF Panel Enhancements				
COMMAND ===>  To add or change the following information, enter any character.  _ CLASS AUTHORITY	F - CHANGE USER SHANNON				
CLASS AUTHORITY KERB PARAMETERS  INSTALLATION DATA LDAP PROXY PARAMETERS  SECURITY LEVEL OF CATEGORIES ENTERPRISE IDENTITY MAPPING  SECURITY LABEL SCADATA PARAMETERS  LOGON RESTRICTIONS  NATIONAL LANGUAGES  DFP PARAMETERS  TSO PARAMETERS  OPERPARM PARAMETERS  CICS PARAMETERS  WORK ATTRIBUTES	MAND ===>				
CLASS AUTHORITY KERB PARAMETERS  INSTALLATION DATA LDAP PROXY PARAMETERS  SECURITY LEVEL OF CATEGORIES ENTERPRISE IDENTITY MAPPING  SECURITY LABEL SCADATA PARAMETERS  LOGON RESTRICTIONS  NATIONAL LANGUAGES  DFP PARAMETERS  TSO PARAMETERS  OPERPARM PARAMETERS  CICS PARAMETERS  WORK ATTRIBUTES					
_ INSTALLATION DATA _ LDAP PROXY PARAMETERS _ SECURITY LEVEL OF CATEGORIES _ ENTERPRISE IDENTITY MAPPING _ SECURITY LABEL	add or change the following informa	ation, enter any character.			
_ INSTALLATION DATA _ LDAP PROXY PARAMETERS _ SECURITY LEVEL OF CATEGORIES _ ENTERPRISE IDENTITY MAPPING _ SECURITY LABEL	CI ACC AUTHODITY	VEDD DADAMETED			
_ SECURITY LEVEL OF CATEGORIES _ ENTERPRISE IDENTITY MAPPING  SECURITY LABEL S CSDATA PARAMETERS  LOGON RESTRICTIONS  NATIONAL LANGUAGES  DFP PARAMETERS  TSO PARAMETERS  OPERPARM PARAMETERS  CICS PARAMETERS  WORK ATTRIBUTES		_			
SECURITY LABEL S CSDATA PARAMETERS LOGON RESTRICTIONS NATIONAL LANGUAGES DIFP PARAMETERS TSO PARAMETERS OPERPARM PARAMETERS CICS PARAMETERS WORK ATTRIBUTES					
NATIONAL LANGUAGES  DFP PARAMETERS TSO PARAMETERS OPERPARM PARAMETERS CICS PARAMETERS WORK ATTRIBUTES					
DFP PARAMETERS TSO PARAMETERS OPERPARM PARAMETERS CICS PARAMETERS WORK ATTRIBUTES	LOGON RESTRICTIONS				
_ TSO PARAMETERS _ OPERPARM PARAMETERS _ CICS PARAMETERS _ WORK ATTRIBUTES	NATIONAL LANGUAGES				
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WORK ATTRIBUTES	OPERPARM PARAMETERS				
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F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT F12=RETRIEVE	DCE PARAMETERS OVM PARAMETERS LNOTES PARAMETERS	PA-DESTINA PE-DELVIA PE-DELLAVOR			

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RACF Panel Enhancements						
Set Cu COMMAND INPUT	stom Fields f	or USER S	HANNON		TO 1 OF 1 ROLL ===> PAGE	
Delete ALL CS	DATA informat	ion (NOCSD	ATA) YES	or blanks.		
	hanges made d		e d to delete, session, or x			
				Value		
SEL FieldName	Description IS EMPLOYEE	ACTIVE?		YES	-1>	
	EMPLOYEE SER			256400		
x HOMEADDR	HOME ADDRESS			14 Main	Street, Anywher	
_ HOMEPHON	HOME PHONE N	UMBER				
******	*******	***** Botto	m of data ****	******	******	
F1=HELP F7=UP	F2=SPLIT F8=DOWN	F3=END F9=SWAP	F4=RETURN F10=LEFT	F5=RFIND F11=RIGHT	F6=RCHANGE F12=RETRIEVE	
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		-8				
	RACF Panel Enhancements					
	RACF	- CUSTOM K	EYWORD DATA for	SHANNON		
COMMAND =:	==>			2	SCROLL ===> PAGE	
	e: HOMEADDR					
l l -	on: HOME ADDRES					
14 Main S	treet, Thisplace	, CA, 12345	, USA			
<u> </u>						
<u> </u>						
(Enter cl	hanges. Hit ENT	ER to save,	PF3 to CANCEL)			
F1=HELP	F2=SPLIT	F3=END	F4=RETURN	F5=RFIND	F6=RCHANGE	
F7=UP	F8=DOWN	F9=SWAP	F10=LEFT	F11=RIGHT	F12=RETRIEVE	
			-			
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RACF Panel Enhancements						
RACF HELP CUSTOM FIELD INFORMATION						$\neg$
RACE HELP		CUSIOM FIR	ELD INFORMATION	N		
Field: HOMEADDR						
EMPLOYEE HOME ADDRESS, UP TO 200 CHARACTERS. INCLUDE STREET ADDRESS, CITY, STATE, ZIP CODE, COUNTRY.						
The first ob	aragter mugt	be of type /	nny			
	aracter must aracters must					
All other ch						
		be of type		F5=RFIND	F6=rChange	





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profile

TEM **IEA Assistant:** http://publib.boulder.ibm.com/infocenter/ieduasst/stgv1r0/index.jsp z/OS V1R10 Publications available online: http://www-03.ibm.com/systems/z/os/zos/bkserv/r10pdf/ **Any Questions** Contents of Appendix > Publication references Command syntax > Format of custom fields in the RACF database ➤ FAQs **RACF: Custom Fields** 

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# **Appendix**

# Publications

f SA22-7683 Security Server RACF Security Administrator's Guide fentire chapter on "Defining and using custom fields"

fSA22-7687 Security Server RACF Command Language Reference fRDEFINE, RALTER, RLIST commands – CFDEF segment and keywords fADDUSER, ADDGROUP, ALTUSER, ALTGROUP, LISTUSER, LISTGRP commands – CSDATA segment and keywords

f SA22-7681 Security Server RACF System Programmer's Guide f Custom field validation exit IRRVAF01

f GA22-7689 Security Server RACF Callable Services

fR\_admin updates for CFDEF and CSDATA segments

fSA22-7683 Security Server RACF Macros and Interfaces

fRACF Database unload (IRRDBU00) updates for CFDEF and CSDATA segments

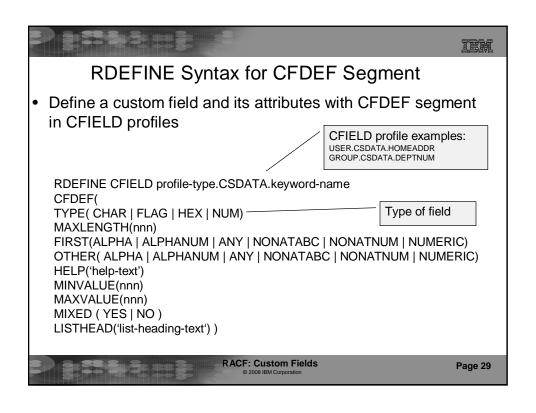
z/OS V1R10 Publications available online: http://www-03.ibm.com/systems/z/os/zos/bkserv/r10pdf/

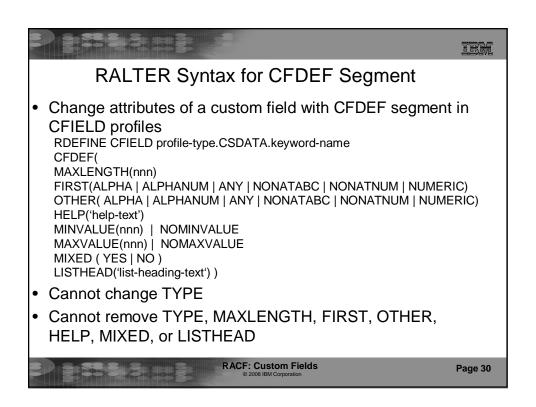
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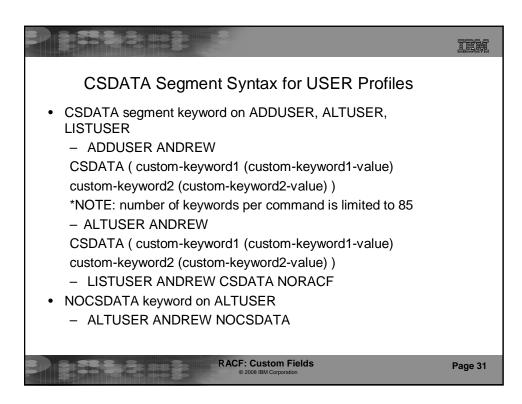
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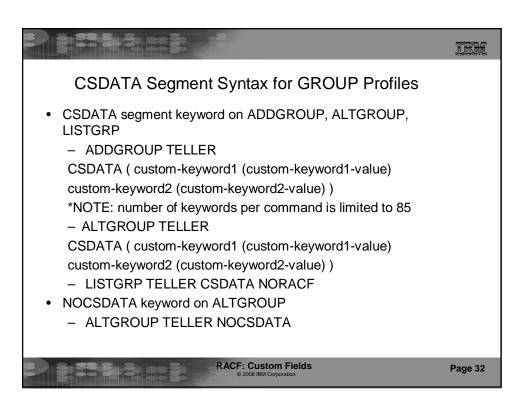
## Field Attributes for Each Type of Custom Field Hexadecimal Numeric Field Character Flag Field Type **Attribute** Keyword name 1-8 characters 1-8 1-8 1-8 characters characters characters 1-40 1-40 Heading for list 1-40 characters 1-40 characters output characters characters Help text for 1-255 characters 1-255 1-255 1-255 characters keyword characters characters Maximum length 1-1100 characters 3 1-512 hex 1-10 numbers characters Maximum value N/A N/A N/A 0 to 2 147 483 647 N/A N/A N/A 0 to 2 147 483 647 Minimum value 'YES' or Characters allowed Choose restrictions for Numbers 0-9 Numbers 0-9 first and remaining 'NO' and characters. Choose letters A-F mixed case or not. **RACF: Custom Fields** Page 28

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# Custom Fields in RACF Database

Fields are stored in CSDATA segment of USER or GROUP profile in CSDATA repeat group.

Field type is saved in database along with the data.

Repeat group is limited to 65535 bytes.

CSKEY (custom field name)	CSTYPE (custom field type)	CSVALUE (custom field value)
EMPSER	Numeric (X'02')	x'000000FF'
ACTIVE	Flag (X'03')	x'01' for YES
		or x'00' for NO
CODE	Hex (X'04')	x'F0C1C2C3'
ADDRESS	Character (X'01')	'13 TRICIA BLVD, HIGHLAND' (x'F1F340')

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# **FAQs**

- · How many custom fields can I define?
  - There is no set limit for the number of custom fields defined in an installation
  - The region size may need to be increased in any JCL which runs the IRRDPI00 UPDATE command
    - EXEC PGM=IKJEFT01,REGION=2M,PARM='IRRDPI00 UPDATE'
    - Sample IRRDPTAB procedure shipped by RACF in SYS1.SAMPLIB was updated
  - There is a 64K limit on the size of data in the CSDATA segment for a particular USER or GROUP profile

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# FAQs...

- I defined a custom field, but when I try to use it, I get this error message:
  - ALTUSER ANDREW CSDATA (RETIRED(NO))
    - IKJ56702I INVALID OPERAND, RETIRED
  - This means the keyword is not defined to RACF. Some possible reasons:
    - You did not issue the IRRDPI00 UPDATE command
    - The CFIELD class was not active when you issued the IRRDPI00 UPDATE command
    - Your keyword name does not match the 3<sup>rd</sup> qualifier of the CFIELD profile name
    - The custom field was defined with attributes that are inconsistent with its data type. (You may have received error messages on the RDEFINE command or the IRRDPI00 UPDATE command.)
- I defined a custom field, but when I try to use it I get this error message:
  - ALTUSER SHANNON CSDATA (ADDRESS (Highland, NY'))
     IRR52119I Keyword name abbreviation ADDRESS is ambiguous.
  - This is caused because you have another keyword that starts with the same letters, for example ADDRESS1
  - You will need to define a new CFIELD profile and delete the old one

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# FAQs... • How can I delete a custom field if I don't use it anymore? 1. Delete any occurrence of the keyword in USER and GROUP profiles (use DB Unload to help find the occurrences) • ALTUSER SHANNON CSDATA(NOEMPCODE) 2. Delete the definition of the keyword • RDELETE CFIELD USER.CSDATA.EMPCODE • What happens if I delete the definition of a keyword without deleting all occurrences of that keyword? — You will still be able to list the CSDATA fields in the USER and

- You will not be able to change the field contents
- You will not be able to delete the field contents
- You can still delete the entire CSDATA segment
- You can re-define the field if needed

**GROUP** profiles

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