

Abstract

This session describes the system exits available in CA IDMS™. Practical uses for the exits are discussed as well as coding conventions.

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Agenda

- Overview
- Named Exits
- Numbered Exits
- Changes in Exits
- Sample Exits



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Overview

- Why use an Exit?
 - Allow for CA IDMS site specific customization
 - Predefined exit points allow for control at critical processing points
- CA IDMS DC/UCF Named exits
 - Allow users programs to receive control during system operations
- CA IDMS/DB Named exits
 - Allow user programs to receive control during database operations
- CA IDMS Numbered exits
 - Allow users programs to receive control during system operations





CA IDMS DC/UCF Named Exits

| Entry Point | DC/UCF Module | Exit Usage |
|-------------|--------------------------------------|---|
| IDMSSVCX | The CA IDMS SVC or equivalent module | Capture transaction accounting statistics |
| TCKREXIT | DC/UCF startup module | Given control when the TICKER task is woken up |
| USRIDXIT | IDMSSTRT, UCFCICS, or IDMSINTC | To modify the user who is to sign on to the DC/UCF system |



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CA IDMS DC/UCF Named Exits (cont.)

| Entry Point | DC/UCF Module | Exit Usage |
|-------------|--|--------------------------------|
| WAITEXIT | DC/UCF startup module | Monitor operating system waits |
| WTOEXIT | IDMSOS00 or the DC/UCF startup module | Review DC/UCF messages |
| WTOREXIT | IDMSOS00 or the DC/UCF startup module | Modify operator communications |

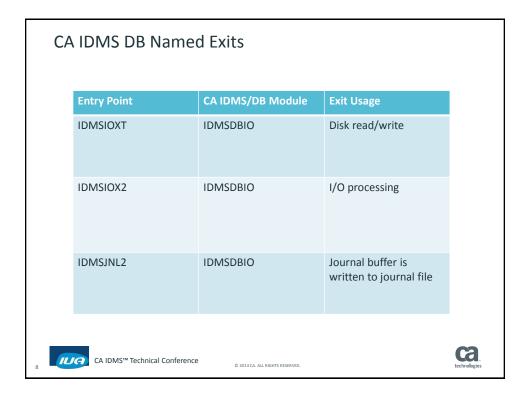
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CA IDMS DB Named Exits Entry Point CA IDMS/DB Module **Exit Usage IDMSAJNX** Archive Journal Review journal records **IDMSCLCX IDMSDBMS** Compute a CALC key target page **IDMSDPLX IDMSDBIO** Maintain duplicate journal and/or database files ca. CA IDMS™ Technical Conference © 2014 CA. ALL RIGHTS RESERVED.





Installing Named Exits

- Named exits must have specific Entry Point names
- Named exits are linked with IDMSUXIT as of release 18.0
- IDMSUXIT must be linked with all enabled named exits
 - Entry point for IDMSUXIT is UEXITS
- Sample JCL is in the CAGJSAMP install library
 - PTF RO75785 for 18.0
 - PTF RO71145 for 18.5



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CA IDMS Numbered Exits

- Numbered exits are user exits that you define via module RHDCUXIT
- RHDCUXIT is loaded at system startup as part of the nucleus, and part of the batch and non-TP monitor interface
- Numbered exits are divided into two types
 - System-invoked exits
 - User-invoked exits







CA IDMS Numbered Exits (cont.)

System-invoked exits (0-255)

- System-invoked exits provide DC/UCF functions such as signon, signoff, and security checking
- DC/UCF determines the routine that calls the exit.
 These exits are invoked at predefined logical point in DC/UCF modules.



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CA IDMS Numbered Exits (cont.)

User-invoked exits (256-above)

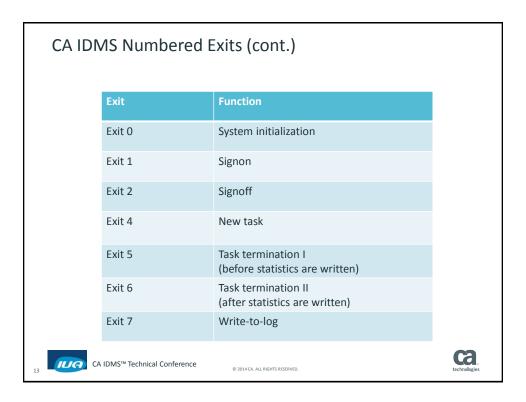
- User-invoked exits are invoked by site-written programs
- For example, a user written assembler program may call a user written exit 256 by means of the #XIT macro

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| CA IDN | CA IDMS Numbered Exits (cont.) | | |
|--------|--------------------------------|---------------------------------|--------------|
| | Exit | Function | |
| | Exit 8 | Log full | |
| | Exit 9 | System statistics | |
| | Exit 12 | Terminal I/O error | |
| | Exit 13 | Shutdown | |
| | Exit 14 | Bind Run Unit and Ready Area | |
| | Exit 15 | VIB statistics | |
| | Exit 16 | Write Printer | |
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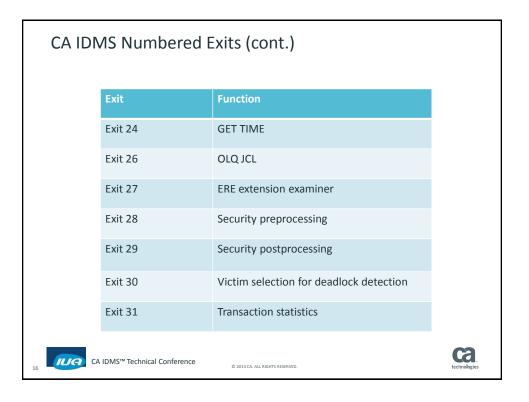
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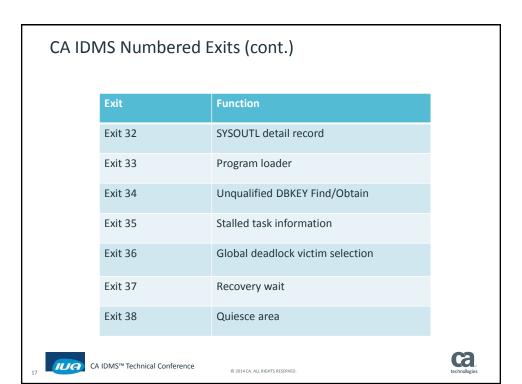


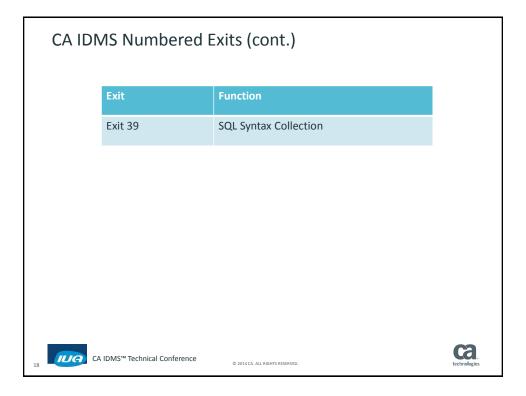
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CA IDMS Numbered Exits (cont.) Exit Exit 17 Input data stream Exit 18 Output data stream Exit 19 Asynchronous terminal connection Exit 20 Resource limit Exit 21 SYSOUTL report Exit 22 Report security and routing Pre-BIND Run Unit Exit 23











Calling Conventions

- DC/UCF Calling Conventions
 - When using these conventions, you must use the #START macro to begin the exit routine and the #RTN macro to end the exit routine
 - On entry to the exit routine the following registers contain information:

| R13 | Next available TCE stack entry. Accessible via macro #GETSTK |
|-----|--|
| R12 | Base address for module |
| R10 | Address of the common system area (CSA). The value in this register must not be modified. |
| R9 | Address of the task control element (TCE). The value in this register must not be modified |

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Calling Conventions (cont.)

- General Calling Conventions
 - Apply under DC/UCF and IBM calling conventions
 - These calling conventions apply to all numbered exits
 - On entry to the numbered exit, register 1 points to a two-word parameter list:

| Word One | The address of a fullword containing the exit number |
|----------|---|
| Word Two | Either the address of an exit specific parameter list or 0 (zero) if no parameters are passed |

On return, R15 should contain the return code

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Required Macros for DC/UCF

#MOPT

- Sets up options for the issuing module
- The only code to appear prior to #MOPT is 'TITLE' comments, or source macro definitions

#START

- The first instruction in a user-exit routine that uses DC/UCF calling conventions
- This macro is additionally used to specify the MPMODE to be assigned to the exit routine
- Modules which use DC/UCF calling conventions should be assigned an MPMODE consistent with the control blocks accessed



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Required Macros for DC/UCF (cont.)

#RTN

- Used to terminate a routine and returns control to the calling routine
- #RTN must be the last instruction executed in a user-exit routine that uses DC/UCF calling conventions

#GETSTK

Used in a system mode exit to acquire storage from the TCE stack area;
this can be useful in preserving reentrancy

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Installing numbered exits

- Code the user-exit routine
- Install the numbered exit by including an entry for the #DEFXIT macro in module RHDCUXIT
 - Can use Entry Point of program or Name of program
- If #DEFXIT coded with Entry Point
 - Assemble and Link module RHDCUXIT
- If #DEFXIT coded with name
 - Define the exit routine program to the system SYSGEN

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Assemble and Link edit RHDCUXIT

- Assembler and link edit module RHDCUXIT to make it available for nucleus loading at startup
- Include any routines which are specified by #DEFXIT macros with an Entry Point
- Specify that the RHDCUXIT entry point is UXITEP1
- Sample JCL is in the CAGJSAMP install library

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Coding the #DEFXIT Macro

- The #DEFXIT macro declares exit information to DC/UCF, this includes the exit's name, entry point, mode, addressing etc.
- Place #DEFXIT macros in numerical order in the UXIT module, according to the number of each associated exit
- Include placeholder #DEFXIT macros for skipped numbered exits
 - The placeholders will allow the #DEFXIT source to accurately reflect the position of each numbered exit



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Coding the #DEFXIT Macro (cont.)

#DEFXIT

exit 00

#DEFXIT

MODE=SYSTEM, CALL=DC, EP=XSON, AMODE=ANY exit 01

#DEFXIT

exit 02

#DEFXIT

exit 03

#DEFXIT

exit 04

#DEFXIT

MODE=SYSTEM, CALL=DC, EP=XTASK, AMODE=ANY exit 05

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Changes in Exits

- Tools Exits
- CICS Exits
- Hooked Exits

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Tools Exits

- Tools Exits are no longer linked with RHDCUXIT (as of R18.0)
 - CA ADS™ Alive
 - No longer uses exit 333
 - Task Analyzer and Master Key
 - Require SYSIDMS parameters in startup JCL to enable product features
 - TASK_ANALYZER_EXITS=ON MASTERKEY_EXITS=ON
 - CA IDMS™ DML Online (DMLO)
 - If USEREXIT=YES in customization macro USDTPARM then exit USDMLXIT is invoked
 - Sample code is in CUSTOM.SRCLIB

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CICS Exits

- No longer linked with the interface
- Now linked with IDMSINTC or IDMSINTL
- When linking IDMSINTC or IDMSINTL, must INCLUDE your exits



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CICS Exits

| Entry Point | CA IDMS/DB Module | Exit Usage |
|-------------------|--------------------|--|
| IDMSCEON | IDMSINTC | To gain control upon entry into IDMSINTC interface before the requested function is passed along to the appropriate client. |
| IDMSCEOX | IDMSINTC | To gain control upon return from processing the requested function and before control is returned to the caller of IDMSINTC. |
| OPTIQXIT | IDMSINTC | To alter dynamically so that an individual SQL session can be routed to a specific back-end CV |
| OPTIXIT | IDMSINTC, IDMSINTL | To alter dynamically the location where the request will be processed |
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Hooked Exits

- New functionality for early 2015
- Allows user programs to gain control before or after a CA IDMS vector gets control
- Can prevent a CA IDMS vector from gaining control
- Implemented through a #HOOK macro call



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Sample DC/UCF Exits

- Review of user coded Numbered Exits
- Additional Handout

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Summary

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- Named Exits
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- Changes in Exits
- Sample Exits

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