MCP Guru Series – DMSII & dbaTOOLS

Kung Lin – Unisys Corporation
Jim Stewart – Stewart Data Tech. Ltd.
MCP Guru Series - DMSII

• Recap
  – Persistent RSN
  – NOFTLOCK

• 15.0
  – LOCKPROGRAM Enhancement
  – Data Access Logging
    • Configuration
    • Analysis
  – dbaTOOLS
RECAP-
Persistent RSN & NOFTLOCK
Persistent RSN

SYSTEM/BUILDREORG Option

Set the KEEPRSN option to preserve the RSN value of new records created during a USEREORGDB reorganization. When the KEEPRSN is reset, a reorganization guarantees the uniqueness of an RSN for data set records but does not preserve the RSN value for new records created during a USEREORGDB reorganization. This option is reset by default.

Example

GENERATE EMPLOYEES KEEPRSN;
Reducing Fine Table Locking

DASDL NOFTLOCK Option

- Normally DMSII removes a set entry immediately after deletion. This holds the fine table locked until the transaction is completed or aborted. The result may cause unnecessary DEADLOCKs when multiple programs are deleting entries in the same or adjacent tables. Optionally, by use of the NOFTLOCK option, the database administrator can choose to delete a set entry that would not lock the fine table while deleting an entry in set. In the mean time, any program tries to insert or lock related table won’t have wait for the delete program exit the transaction state.
DASDL NOFTLOCK Option

- Only available for XE Disjoint Index-Sequential Set and must not have DUPLICATE option set
- DMSII will not remove deleted set entries; an On-Line Garbage Collection (OLGC via Visible Database Command) or Garbage Collection via DMSII Reorganization procedure is required to remove deleted set entries
LOCKPROGRAM Enhancement
LockProgram Enhancement

Initiates the database stack, DMSUPPORT, and RDBSUPPORT as locked processes by making use of the LP (Lock Program) MCP system command. This prevents these three processes from being discontinued. For additional information, refer to LP (Lock Program) in the System Commands Reference Manual.

By default, the LOCKPROGRAM option is reset.

The LOCKPROGRAM option can be changed either by a DASDL update or by performing a DMCONTROL operation. The value of the option is listed in the control file content.
Data Access Logging
Data Access Logging

• Data access logging enables automatic system logging of inquiry and update data access by database applications
• When data access is logged, data access information is written to the system sumlog
In addition to the task information provided for all types of DMS records (e.g. taskname, time-of-day, etc.), the following information is recorded for DMS ACCESS type records:

- Structure Name
- Structure Number
- Section Number (if sectioned)
- Record Address
- Record Serial Number (RSN) for XE structures
- DMEXCEPTION
- DMVERB
- ABSN and Audit File # recorded for update verbs
Data Access Logging (Cont.)

Access is recorded for the following DMVERBS:

- ASSIGN
- ASSIGNLOB
- CREATESTORE
- DELETE
- DELETELOB
- FIND
- FINDLOB
- FREE
- GENERATE
- INSERT
- LOCK
- LOCKSTORE
- REMOVE
- SECURE
Data Access Logging (Cont.)

![Data Access Log Display - Details](image)

### Log Header
- **ID**: 342
- **Sumlog Name**: *SYSTEM/SUMLOG ON LOGPACK*
- **Sumlog Ref#**: #32299

### Log Properties
- **Date**: 11/3/2012
- **Time**: 11/3/2012 9:29:16 PM
- **Program Name**: (HART)CANDE/CODE5220 ON RDBC
- **Entry Type**: DMS
- **Mix No.**: 1983
- **Access Type**: DATABASE ACCESS : ACCESS RECORD
- **User Code**: HART
- **User Code Privileges**: Access Code

### Database
- **Name**: (HART)TESTDB
- **Mix**: 1984
- **Stack**: 092E

### Structure
- **Name**: PLANT
- **Number**: # 5

### Details
- **DMVerb**: CREATESTORE
- **Absn**: 203192
- **Exception**: Section
- **RSN**: Record Address (0010C4800316)
- **Audit File Number**: 9

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Data Access Logging (Cont.)

![Data Access Log Display - Details](image)

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<th>Log Header</th>
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<td>Time</td>
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<td>Entry Type</td>
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<td>Mix No.</td>
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<tr>
<td>Number</td>
<td># 11</td>
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Data Access Logging Configuration
Data Access Logging – Configuration

The following configuration tasks are required to activate this feature:

• Set a new System Log Option
• Set the DASDL LOGACCESS Option
• Enable the LOGACCESS Option
System Logging Options

You can use Security Center or the LOGGING (Logging Options) system command to set the DMS ACCESS option. This action is required in order for ACCESS records to be written to the system sumlog.

The following is an example of a LOGGING system command:

LOGGING 1,35

Refer to the System Commands Reference or Security Center Help for additional information about the LOGGING system command.
DASDL LOGACCESS Option

In order to log data access, a DASDL schema update is required to SET the option for the selected structures.

You can specify the LOGACCESS option as a global default or as a data set physical option.

LOGACCESS is implicitly set for SETS and SUBSETS that span a dataset that is configured to set LOGACCESS.
DASDL LOGACCESS Option

% % % SAMPLE DASDL SOURCE CODE % % %

UPDATE;

%%% GLOBAL DEFAULTS %%%

DEFAULTS

(  
  BUFFERS = 0 + 0 PER RANDOM USER OR 2 PER SERIAL USER,
  PACK = RDBCP,
  LOGACCESS = TRUE,
  CHECKSUM = TRUE,
  DUMPSTAMP = TRUE
);

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DASDL LOGACCESS Option – structure

% % % SAMPLE DASDL SOURCE CODE % % %

PRODUCT DATA SET

(  
PNAME       ALPHA(42);
PID         NUMBER(12);
PDEPARTMENT  ALPHA(28);
)  POPULATION = 300000,
    BLOCKSIZE = 100 RECORDS,
    AREASIZE = 10 BLOCKS,
    LOGACCESS = FALSE,
    MEMORY RESIDENT = ALL
);

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Data Access Logging – Configuration (Cont.)
Data Access Logging – Configuration (Cont.)

[Image of the Data Access Logging Configuration Setup window]

- **Database:** (HART)TESTDB ON RDBCP
- **Logging Capable Structures**
  - **Structure Name** | **Structure No.** | **Enable All** | **Disable All**
  - 1. AUDITAREA | 2 | Disable | Enable
  - 2. PRODUCT | 3 | Disable | Enable
  - 3. PRODUCT/COMPUTER | 4 | Disable | Enable
  - 4. PLANT | 5 | Disable | Enable
  - 5. PLANT/CP | 6 | Disable | Enable
  - 6. CUSTOMER | 7 | Disable | Enable
  - 7. CUSTOMER/CCC | 8 | Disable | Enable
  - 8. PERSONNEL | 9 | Disable | Enable

- **Total Structures:** 10
- **Capable Structures:** 10

*Required field: [Submit][Cancel][Reset][Help]
### Data Access Logging – Configuration (Cont.)

![Configuration: Data Access Logging Setup](image)

#### Database
(HART)TESTDB ON RDBCP

#### Logging Capable Structures

<table>
<thead>
<tr>
<th>No.</th>
<th>Structure Name</th>
<th>Structure No.</th>
<th>Enable All</th>
<th>Disable All</th>
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<td>⊗</td>
<td></td>
</tr>
<tr>
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<td>PRODUCT/COMPUTER</td>
<td>4</td>
<td>⊗</td>
<td></td>
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<tr>
<td>4</td>
<td>PLANT</td>
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<tr>
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<td>6</td>
<td></td>
<td>⊗</td>
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<td>⊗</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CUSTOMER/CCC</td>
<td>8</td>
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<tr>
<td>8</td>
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<tr>
<td>9</td>
<td>PERSONNEL/SUBPERSONNEL2</td>
<td>10</td>
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</table>

**Total Structures:** 10  
**Capable Structures:** 10
Data Access Logging – Configuration (Cont.)

<table>
<thead>
<tr>
<th>No.</th>
<th>Structure Name</th>
<th>Structure No.</th>
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<td>☐ Disable</td>
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</table>
Data Access Logging – Configuration (Cont.)

Command-line Option

• This example is of a Visible DBS command to enable the PRODUCT and PERSONNEL data sets:

  `<dbs #> SM STRUCTURE PRODUCT,PERSONNEL (LOGACCESS SET)`

• This example is of a Visible DBS command to disable the LOGACCESS option for the PLANT dataset:

  `<dbs #> SM STRUCTURE PLANT (LOGACCESS RESET)`
Data Access Logging Analysis
Data Access Logging – Analysis

You can access and filter recorded information using any of the following interfaces:

- MCP Loganalyzer
- Database Operations Center
- User-written log analysis applications
- Third-party log analysis products
  - dbaTOOLS
Data Access Logging – Analysis (Cont.)
Data Access Logging – Analysis (Cont.)
Data Access Logging – Analysis (Cont.)
Data Access Logging – Analysis (Cont.)
Data Access Logging – Analysis (Cont.)

Analysis: Monitor Data Access Log

- **Database**: (HART)TESTDB ON RDBC

  - **Log Date Criteria**:
    - From: Nov 03, 2012 8:39:31 AM
    - To: Nov 6, 2012 3:39:31 PM
    - Sumlog File: 9 SUMLOGS SELECTED

- **Log Filter**:
  - **Program Name**
  - **User Code**
  - **Mix No.**
  - **Exception No.**

- **DMVerb**:
  - FIND
  - LOCK
  - SECURE
  - ASSIGN
  - CREATESTORE
  - DELETE
  - GENERATE

- **Log Structure Criteria**:
  - **Capable Structures**:
    - AUDITAREA
    - COMPUTER
    - PLANT
    - CP
    - CCC
    - SUBPERSONNEL2
    - MANAGER
  - **Selected Structures**:
    - PRODUCT
    - CUSTOMER
    - PERSONNEL

- **Processing**:
  - Please wait while records are being processed.
  - Sumlog Status:
    - Currently Being Processed
  - Time Elapsed: 00:00:16
Data Access Logging – Analysis (Cont.)

<table>
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<tr>
<th>ID</th>
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<th>Time</th>
<th>UserCode</th>
<th>DNVerb</th>
<th>ProgramName</th>
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<tbody>
<tr>
<td>1</td>
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<td>CHEATESTORE</td>
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Data Access Logging – Analysis (Cont.)
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Data Access Logging – Analysis (Cont.)
Data Access Logging – References

- Security Center Help
- Log Programming Manual, Part # 8600 1807
- DASDL Programming Reference Manual – 8600 0213
- Utilities Operations Guide – 8600 0759
  - Section 22
    Logging Data Access
- Database Operations Center Help
dbaTOOLS
dbaTOOLS Accesslog – New Product

- dbaTOOLS is a Stewart DataTech Product, which is licensed exclusively by Unisys for over 15 years.
- Accesslog joins the dbaTOOLS Analyzer and Monitor modules
- You can license these modules individually or together from Unisys
- Accesslog provides logging and reporting of all accesses of database items by scanning the System Sumlogs while pulling all the DMSII access entries and loading them into a database on the client.
- The client interface provides analysis and reporting of the loaded data.
AccessLog Overview

• Like all dbaTOOLS products AccessLog consist of two modules, one on the MCP System and one on a PC client.

• The MCP module is used to scan System SumLogs to extract the DMSII access records to a file for loading the client database.

• The client module loads the records into a Microsoft SQL database for reporting and analysis.

• All the slides and the demo use AccessLog Patch 15.1, which is available for download from the www.dbatools.com support page.
AccessLog Main Menu
AccessLog Reports

- The reports section produces reports from the SumLog data.
- The Query Report extracts the data based upon parameters provided into either a summary or detailed report.
- Other reports will be added based upon user requests and will be released as patches between releases.
AccessLog Query Report

• User select fields and conditions to select the data to report.
• User selects the report format, summary or detailed.
Select Query Fields

Click the items to use to select the records you wish to include in the Query Report

- Log Nbr
- Record Nbr
- Date/Time
- Host Name
- Database Name
- Program Name
- **Record Type**
- Mix Nbr
- Stack Nbr
- **DMSII Verb**
- Usercode
- Structure Number
- Structure Section
- Structure Name
- Record Address
- RSN
- Result
- AFN
- ABSN
- AccessCode

[Buttons: Cancel, Continue]
Query Fields

Query Date/Time

- Date/Time: Equal 9/2/2013
- Date/Time: Greater Than 2:14:51 PM
- Date/Time: Greater Than or Equal
- Date/Time: Less Than 9/2/2013
- Date/Time: Less Than or Equal 2:14:59 PM
- Date/Time: Between

Query DMSII Verb

- DMSII Verbs: FIND, LOCK, SECURE, ASSIGN, CREATESTORE, DELETE, GENERATE, INSERT, LOCKSTORE, REMOVE, ASSIGNLOB, DELETELOB, FINDLOB

Cancel  Done
Query Review

Verify the fields and values you will use to select records for the report.

To change values, conditions and fields to use, click the return button to return to the selection screen.

Where ( EntSubType = 2 ) AND ( EntDMSIIVerb = 21 )

Cancel/Exit  Back  Continue
Report Sort and Produce

The Query Report is Sorted by Host and Database. Optionally the report may also be sorted using the fields below. Add the fields to sort list in the order you wish to sort.

Select the field and click Add to move the field to the Sort List.

Sort Fields
- Date Time
- Mix Number
- Structure Name
- Usercode

Sort List
- Program Name

Select Report:
- Report Format Summary (1st Sort Requires Program Name)
- Report Format Detailed

Buttons:
- Cancel/Exit
- Back
- Produce
## Summary Report

**Host:** CPMC1  
**Database:** BOMMASVKBITDASDL  
**Program:** (BOMMASVKB)PROGBITDASDL ON ADDTEST

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## Detailed Report

### Detail Report

Sorted by: Host, Database, Program Name

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For more information contact:

Your Unisys Account Manager

Or

Jim Stewart
Stewart DataTech, Ltd.
Phone 253-848-3455
Email jstewart@dbatools.com
Thank You!

Questions ?