

Who knows?

Presented by

David Swerdlove

Principal



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**INNOVATIVE CUSTOMIZATIONS
SEASONED SPECIALISTS
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Authorized CMS.Net Services Provider for



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Unmask the evil within the
heart of your database:

THE SHADOW LOG
KNOWS!

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THE SHADOW LOG KNOWS!

- What ... is THE SHADOW LOG?
 - It is an audit table that tracks all changes made to a source table. Logs its history. Similar to a security camera. Transforms any table into a transactional table.
- What ... tables are eligible?
 - Any CMS.Net table, including custom columns and tables.
- What ... skills does it take to make it happen?
 - Point to a table, click a checkbox.
- Who ... should do it?
 - Someone who really knows what they're doing!

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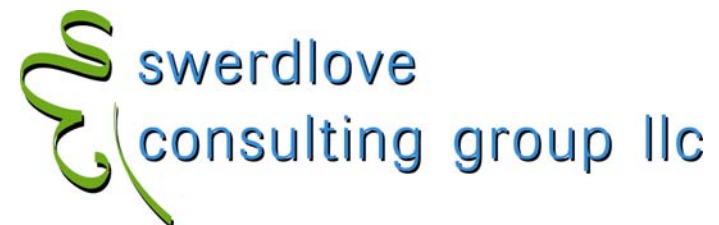
THE SHADOW LOG KNOWS!

- Why ... would one create a SHADOW LOG?
 - diagnostics (why is “x” happening?)
 - forensics (why did “x” happen and who dunnit?)
 - analytics (how often do we do “x”?)
- How ... does this work?
 - a SQL trigger is added to the table
 - Makes a copy of each row prior to an I/U/D
- Pseudo-log tables:
 - HBE_CLIENT
 - HBE_MATTER
 - HBE_PERSONL
 - HBA_PERSONL_MODD
 - HBA_PERSONL_MODP
 - TAT_TIME_MOD
 - CDT_DISB_MOD

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- what ... tables are likely candidates?

- Tables accessed directly by users where more information is needed than is normally tracked by CMS.

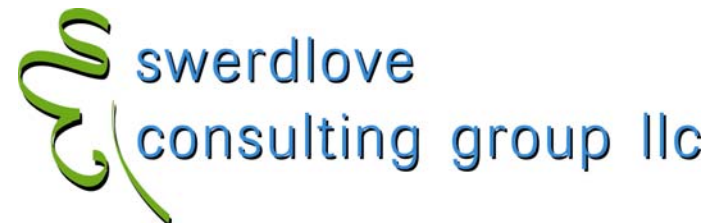
- HUB tables

- HBM_PERSONL
- HBM_CLIENT
- HBM_MATTER
- TBM_PERSONL
- TBM_CLIENT
- TBM_MATTER
- HBM_NAME
- HBM_NAME_PEOPLE

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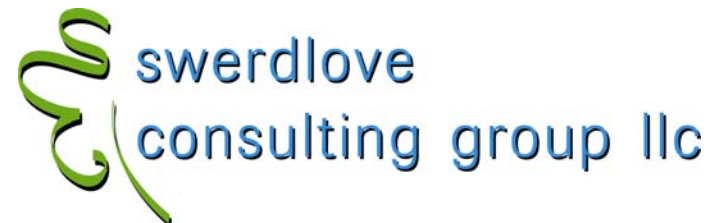
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- what ... tables are likely candidates?
 - lookup tables
 - HBL_MATT_CLASS
 - CDL_COST
 - master tables
 - APM_VENDOR
 - GLM_CHART
 - system tables
 - CMS_FORM – not supported
 - CMS_VIEWS – not supported
 - » Note! These tables contain TEXT datatype information that currently do not always log successfully!
 - parameter tables
 - TBM_PARM\$
 - TAM_PARM\$
 - CDM_PARM\$
 - custom tables

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- and, finally ...
- When ... should **THE SHADOW LOG** be set up?
 - Before you need it! – another arrow in your Disaster Recovery quiver
 - **THE SHADOW LOG** is an extremely powerful and under-utilized tool that has been included in CMS.Net since version 1.0

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THE SHADOW LOG KNOWS!

- The SHADOW LOG table.

- Inherits that source table's name prepended by SL_
- Contains every column of the source table, plus
 - SL_UNO - integer PK, identity
 - SL_ACTION - char(1) I, U, D – copies the current I, copies the existing U/D row (so the I row and first U row will be identical)
 - SL_USERNAME - SQL login
 - SL_APPLICATION - CMS.Net application (or any application)
 - SL_ENTRY_DATE - datetime stamp of when the row was copied from source for I/D; LAST_MODIFIED for U

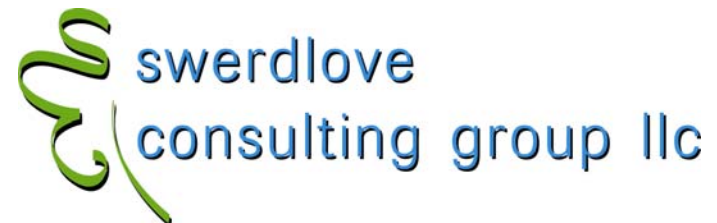
- What doesn't THE SHADOW LOG show?

- What value(s) changed. For that, you need to examine the log. The SHADOW LOG report can do this, too.
- Changes made by CMSDBO or SA – thus, maintenance updates via DBGen do not get logged (firms that use SQL routines to insert/update data won't see them in THE SHADOW LOG)

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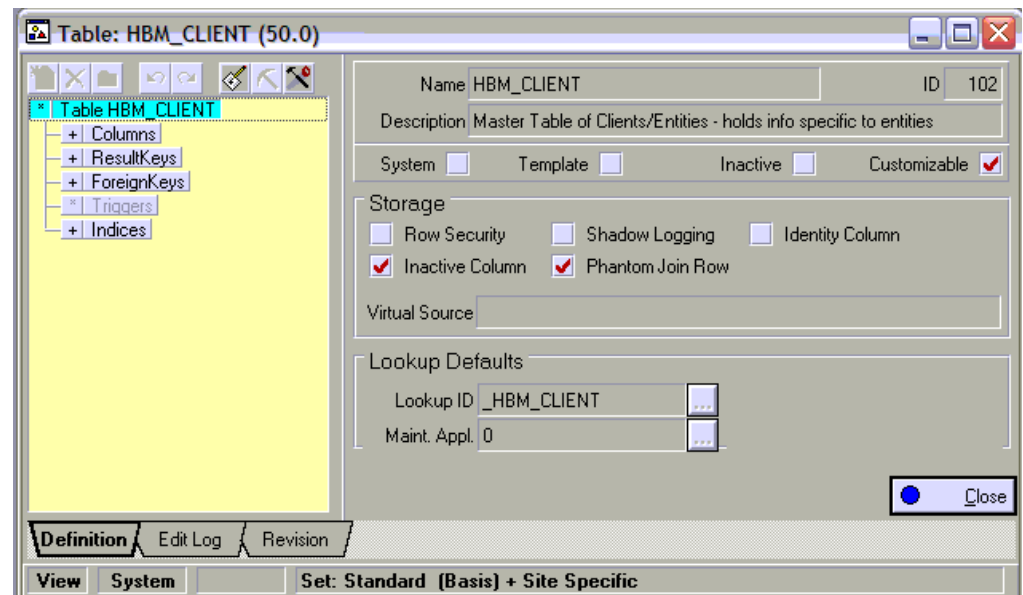
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- **Creating/Turning On THE SHADOW LOG**

- Launch DBEditor ("Data Dictionary Editor")
- Choose a CMS.Net table
- Revise
- Flag the SHADOW LOG checkbox



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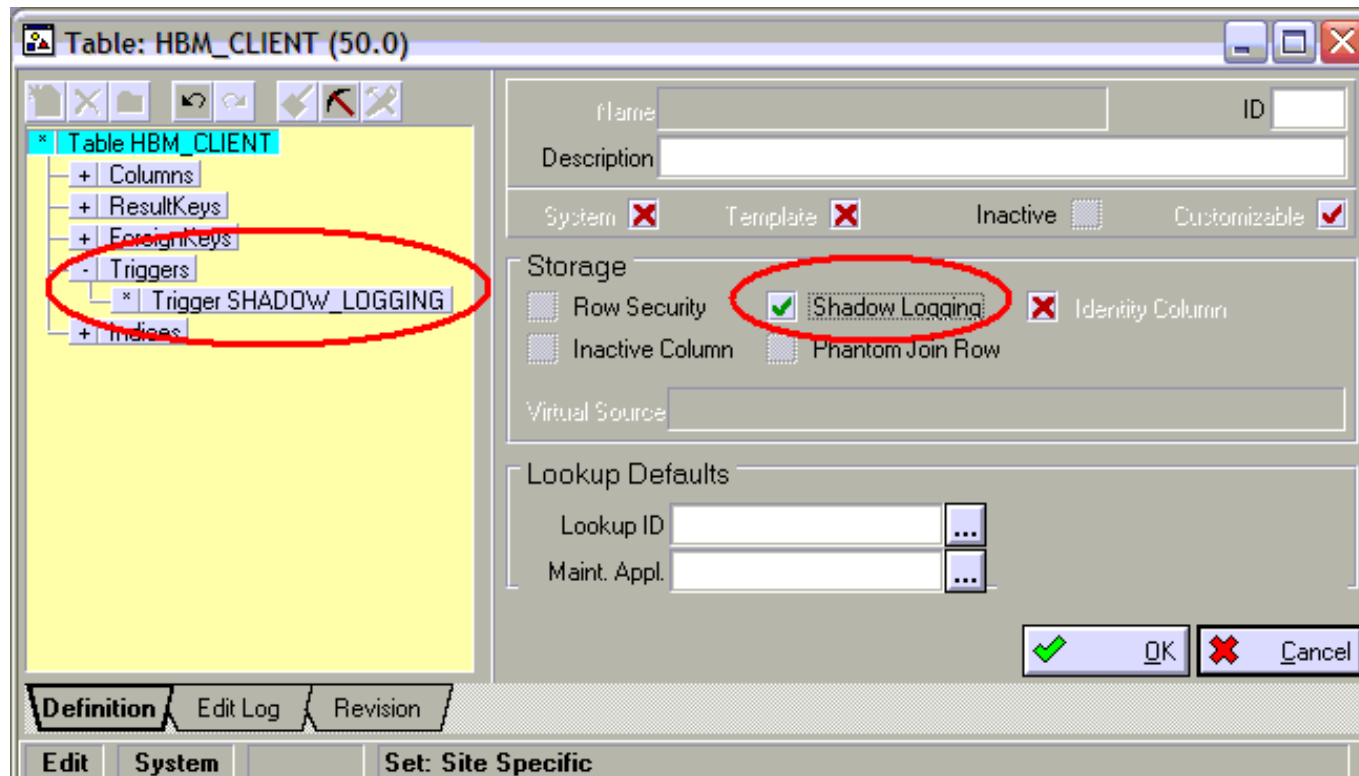
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- Be sure that you click twice to get a checkmark (not an X) and a trigger!



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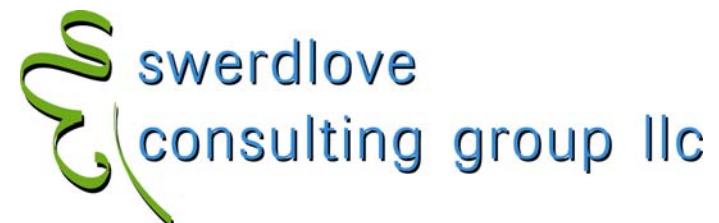
- Using THE SHADOW LOG Report
 - SHADOW.EXE (shadow.rpt is editable)

Table Name	Description
HBM_PERSONL	Master Table of personnel/t
ACL_TRAN_TYPE	General Accounting Transac
ACL_REASON	General Accounting Transac

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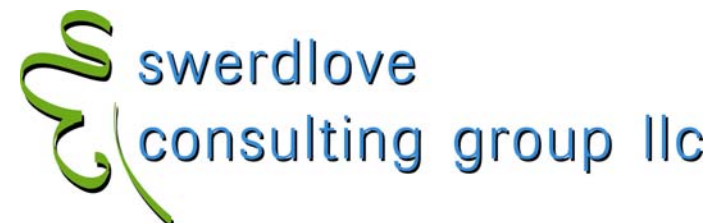
- Using THE SHADOW LOG Report

Date/Time User	Row Identifier	Field	Before Contents	After Contents
Table				
HBM_CLIENT	Master Table of Clients/Entities - holds info specific to entities			
10/9/2005 14:52:35 CMSXXcms	ZZ123 ZZZZ Sleep Co.	Client Name for reporting	ZZZZZ Sleep Co.	ZZZZ Sleep Co.
10/9/2005 14:52:09		ROW INSERT	INSERTED	ZZ123
		Ref to T&B Client	0	103
10/9/2005 13:38:58	XX123 David	Client Category		SL Savings & Loans
10/9/2005 13:38:07		Client Type Code		LLP Limited Liability Partnership
10/9/2005 13:35:10		ROW INSERT	INSERTED	XX123
		Ref to T&B Client	0	102
Table				
HBM_NAME	Master Table of Names - includes people and entities			
10/9/2005 14:52:28 CMSXXcms	167	Entity/Last Name	ZZZZZ Sleep Co.	ZZZZ Sleep Co.
		Name Sort	ZZZZZ Sleep Co.	ZZZZ Sleep Co.
10/9/2005 14:51:55		ROW INSERT	INSERTED	167
		Client		Y

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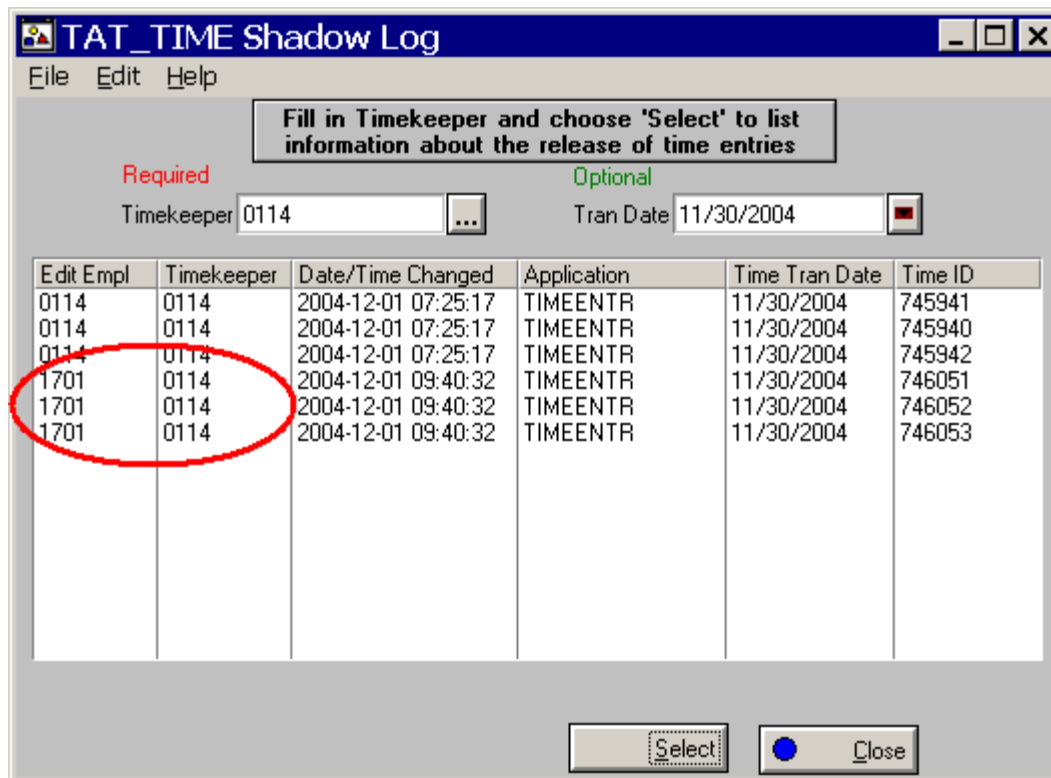
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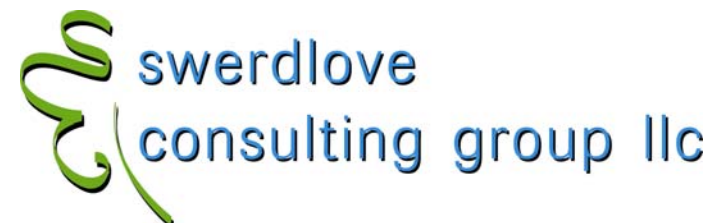
- Example: Custom app built on SL_TAT_TIME



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THE SHADOW LOG KNOWS!

• Basicscript

```
• Sub click()  
•   dim SQL as new SQLAccess, EBTranDate as new CMSEBDate, lb as List  
•   set lb = thisfield.parentform.fields("_list").list  
•   dim ReturnRows as integer  
•   TkEmplCode$ = Thisfield.parentform.fields("_Tk_empl_code").value  
•   EBTranDate.value = Thisfield.parentform.fields("_Tran_date").value  
•   TranDate$ = EBTranDate.UniversalDate  
•   if Thisfield.parentform.fields("_Tran_date").value<>" then  
•     DateFlt$ = "TRAN_DATE='" + TranDate + "' AND "  
•   else  
•     DateFlt$ = ""  
•   end if  
•   if TkEmplCode="" then  
•     ErrorMessage "Timekeeper filter required!"  
•   else  
•     SQLcmd = "select P2.EMPLOYEE_CODE, P1.EMPLOYEE_CODE, SL_ENTRY_DATE, SL_APPLICATION, SL.TRAN_DATE, SL.TIME_UNO " +_  
•       "FROM SL_TAT_TIME SL, HBM_PERSNL P1, HBM_PERSNL P2 WHERE SL.TK_EMPL_UNO=P1.EMPL_UNO AND " +_  
•       "(SL_USERNAME = 'CMS'+P2.LOGIN OR SL_USERNAME = 'CMSXX'+P2.LOGIN) AND SL_UNO IN (" +_  
•       "SELECT MAX(SL_UNO) FROM SL_TAT_TIME SL, HBM_PERSNL P1, HBM_PERSNL P2 " +_  
•       "WHERE SL.TK_EMPL_UNO=P1.EMPL_UNO AND (SL_USERNAME = 'CMS'+P2.LOGIN OR SL_USERNAME = " +_  
•       "'CMSXX'+P2.LOGIN) AND " +_  
•       DateFlt + "SL_ACTION='U' AND SL.ENTRY_STATUS='N' AND P1.EMPLOYEE_CODE = '" +_  
•       TkEmplCode + "' GROUP BY TIME_UNO) ORDER BY 3"  
•     SQL.IssueCommand SQLcmd  
•     lb.clearlist  
•     if SQL.value(1) = "" then Infomessage "No records found."  
•     while not SQL.allrowsread  
•       ListVal$ = ""  
•       for i = 1 to SQL.columncount  
•         ListVal = SQL.value(1) + chr$(9) + SQL.value(2) + chr$(9) +_  
•           SQL.value(3) + chr$(9) + SQL.value(4) + chr$(9) +_  
•           SQL.value(5) + chr$(9) + SQL.value(6)  
•       next  
•       lb.AddRow ListVal  
•       SQL.row = SQL.row + 1  
•     wend  
•   end if  
• end sub
```

THE SHADOW LOG KNOWS!

• Some SHADOW SQL

- Find all CMS.Net SHADOW LOG tables

```
select * from cms_dd_table
where table_name like 'SL[_]%'
```

(note the use of the 'escape' brackets [] to rule out tables that have a 3rd character that isn't an underscore)

- Find all CMC.Net SHADOW LOG tables that are currently logging

```
select * from cms_dd_table where logging = 'Y'
```

- Find all CMC.Net SHADOW LOG tables that are NOT currently logging

```
Select t1.* from cms_dd_table t1
JOIN cms_dd_table t2 ON t1.table_name =
SUBSTRING(t2.table_name,4,LEN(t2.table_name))
Where t2.table_name like 'SL[_]%' AND t1.logging = 'N'
```

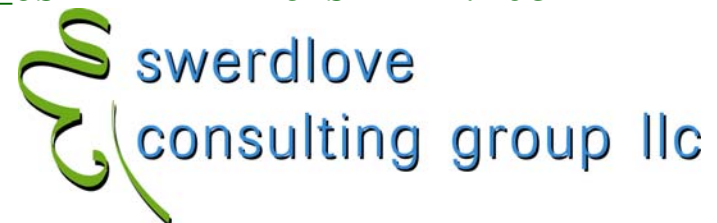
- Convert SL_USERNAME into EMPLOYEE_NAME

```
SELECT P.EMPLOYEE_CODE, P.EMPLOYEE_NAME, S.*
FROM SL_HBM_PERSNL S
JOIN HBM_PERSNL P ON
SL_USERNAME = 'CMS'+P.LOGIN OR SL_USERNAME = 'CMSXX'+P.LOGIN
```

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- **Known issues**

- K501981 `SL_USERNAME` column is `NULL` in CMS.Net versions 4.3 through 5.0SP1 on SQL Server 2000
- K503686 **SHADOW LOG** creates entries in `SL_HBM_MATTER` for every posted bill matter (updates to `TBM_MATTER` hit `HBM_MATTER.LAST_MODIFIED`)
- K504923 **SHADOW LOG Report** will always show changes to the first matter when clients share the same matter code when non-unique matter codes are used.
 - 12345.001 – Change responsible attorney
 - 99999.001 – Change matter status
 - 11111.001 – Change long matter nameReport will show 3 changes for 12345.001

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• Other issues

- Consider the overhead to the system (i.e., performance) when choosing table(s) for logging
 - Table size
 - Table type
 - Table activity
 - Network throughput
 - WAN?
 - Large updates (DR, billing, manual update via Query Analyzer)
- Consider turning the log on and off as needed
- Truncating the log
- Consider truncating the log periodically
- Monitor the size of your SL_ tables!
 - `exec sp_spaceused sl_tat_time`
 - `select 'exec sp_spaceused SL_' + table_name
from cms_dd_table
where logging = 'Y'`

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- Scenarios

- History table goes out of balance periodically (TBH_MATTER_SUMM)

- Locate corrupted column and turn a log on history table and the underlying table(s)

- Rates for a billing period were wacky

- Log TBM_RATE_FEE and check for updates

- Important data deleted

- THE SHADOW LOG can only do so much ...

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- Other approaches to Capturing the log
 - Build a log table of only the columns you care about
 - Purchase a 3rd party transaction log reader
 - Red Gate SQL Log Rescue (www.red-gate.com/rescue)
 - Lumigent Log Explorer for SQL Server (www.lumigent.com/products/le_sql.html)

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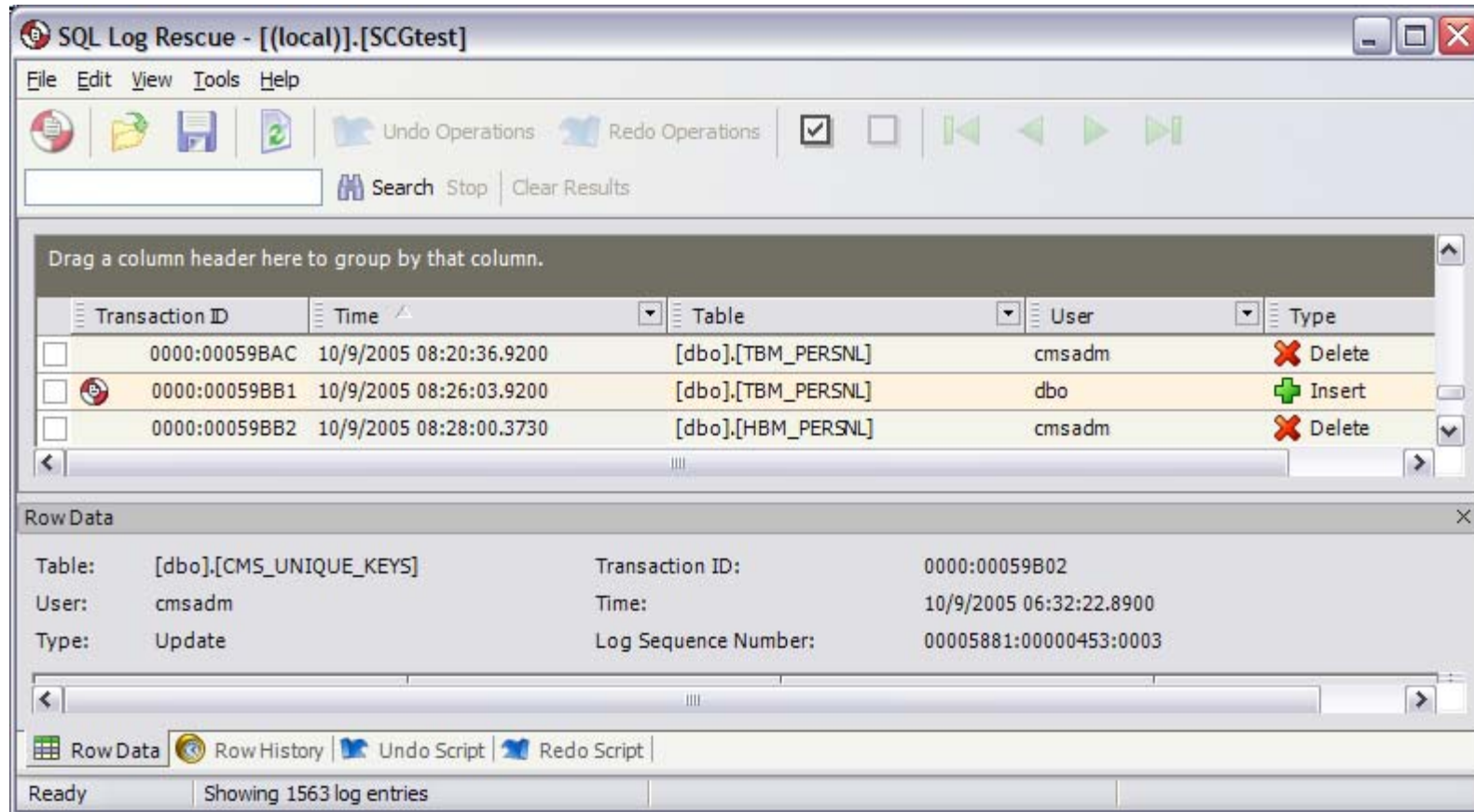
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- Red Gate “SQL Log Rescue”



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THE SHADOW LOG KNOWS!

- Discussion

- Who is currently using THE SHADOW LOG ?
- Any unusual tables or reasons?
- Any tales of smoking guns?
- Questions?

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