ABSTRACT

Managing the utilization of Cullinet's Integrated Database Management System/Relational (IDMS/R) database areas is typically one of the database administrator's most time consuming responsibilities. Although various detail reports are available to provide the DBA with a status or "snapshot" of the current database area utilization, the need exists to track area growth over time. A graphical representation which allows analysis of trends and forecasts will assist the DBA in avoiding "full area" situations. These situations can cause processing against IDMS/R database areas to come to a halt.

This presentation discusses the implementation of an on Application Development System/Online (ADS/O) graphics application, the Area Utilization Management System, which utilizes the Cullinet Logical Record Facility (LRF) and the SAS/ACCESS Interface to IDMS/R beta release. The application provides the database administrator and systems application support staff with a means to track IDMS/R area utilization by viewing trend graphs from within the IDMS/R ADS/O environment. System architecture is a generalized design which can be utilized over various functional applications.

The Area Utilization Management Systems consists of two phases:

1. Area Utilization Statistics and Report Preparation
2. Database Extraction and Graph Generation/Display

An overview of each phase will be presented. A brief discussion on the SAS/Access Interface to IDMS/R utilization of the Cullinet LRF, one of the most efficient methods of processing IDMS/R database information, will be discussed. Finally future enhancements will be previewed.

INTRODUCTION

The introduction to extract data from IDMS/R databases and generate meaningful graphs was traditionally fulfilled at GE Plastics through cumbersome batch routines. No interface existed to process directly from the databases and provide powerful graphics capabilities. At the same time, a requirement to provide mainframe graphics from within the IDMS/R ADS/O online application development environment was being proposed.

Given this scenario and the announcement by SAS Institute of the beta release of the SAS/ACCESS Interface to IDMS/R, a pilot project plan was developed to address the two requirements outlined above.

PHASE 1 - AREA UTILIZATION AND REPORT GENERATION

This batch subsystem consists of two batch assembler programs which process the IDMS/R Central Version global Device Media Control Language (DMCL) to load area utilization statistics into an IDMS/R database. These programs are automatically submitted nightly to the MVS operating system internal reader.

The first assembler program processes the global DMCL load module for a particular Central Version to compile a list of current active database areas. Thus no recompilation of the program is required whenever areas are added or deleted from the central version.

The list is passed to the next assembler program which performs fast area sweeps of all active IDMS/R areas to collect such statistics as total number of bytes in area, total number of bytes available in area, percent full, average number of records per page, total records in area, low page number, and high page number. The report is output to a DASD Generation Data Group (DDG) dataset.

A COBOL batch program completes phase I by processing the statistics reflected in the DDG dataset and loading the information into an IDMS/R network database. This database is titled the Area Utilization Management database.

PHASE 2 - DATABASE EXTRACTION AND GRAPH GENERATION/DISPLAY

This batch and online subsystem consists of several SAS*batch programs, one batch COBOL program and eight Cullinet ADS/O online dialogs and application.

Information is extracted from the IDMS/R Area Utilization database using SAS/ACCESS Interface to IDMS/R in batch mode into a SAS dataset. The IDMS/EXT procedure is invoked to utilize an existing Cullinet Logical Record Facility subschema.

Data stored in the SAS dataset is plotted and stored into a sequential DASD IBM dataset. Various parameters are used during plotting to generate exception graphs for critical areas.
area utilization in excess of seventy percent) as well as graphs for non-critical areas. Scales are adjusted accordingly.

A batch COBOL program is invoked to load the SAS graphs into the IDMS Area Utilization Management database. Each area is associated with current graphs (critical and non-critical) depicting growth trends over time.

An ADS/O application is invoked by the user to view the area utilization graphs. The application features exception reporting, pagable screens, browsing, and random access of desired areas.

SAS/ACCESS AND THE CULLINET LOGICAL RECORD FACILITY (LRF)

The use of LRF with SAS/ACCESS provides many benefits which are not available using other tools and techniques. For instance, batch processing of database records is highly efficient due to decreased SVC overhead incurred.

In addition, administration and security are enhanced since the DBA typically has control over the generation and maintenance of subschemas. LRF can be also used to generate a "relational" or flat file view of a complex network database. This provides the casual end user with a more meaningful representation of business information.

FUTURE ENHANCEMENTS

Future enhancements include the implementation of "where" clause logical record facility processing which allows a selection of a predefined path within the LRF subschema. At project implementation time, this facility was not permitted. However, at the time of this writing, "where" clause processing has been successfully implemented and tested in PROC IDMSEXCT.

Other applications are currently under development using SAS/ACCESS Interface to IDMS/R to extract IDMS/R data for statistical analysis including manufacturing usage of plant equipment. Also, the interface is currently under evaluation to become the strategic site standard for porting MVS data to VM for subsequent inclusion of summary data into an Executive Information System targeted at group vice presidents.

Finally, the PROC IDMSUTL is being evaluated as for use in updating IDMS/R databases. This procedure stores, modifies, or erases data from existing IDMS/R logical records or Cullinet automated System Facility (ASF) tables using SAS datasets as input.

CONCLUSION

SAS/ACCESS Interface for IDMS/R beta release software performed flawlessly and met or exceeded all requirements and claims. Furthermore, in addition to anticipated benefits, additional unanticipated benefits were derived. Total project benefits include:

1. More meaningful, graphic representation of business information was made possible.
2. The generated graphs allowed decision support analysis of trends and forecasts.
3. Time savings and productivity gains were realized through the use of the interface as a substitute for cumbersome batch routines.
4. The system architecture demonstrated a tight integration with existing and/or future IDMS/R applications, particularly in the ADS/O environment.
5. Existing IDMS/R security facilities remained active and intact.
6. No hardware or software upgrade was required (with the exception) of the SAS System.
7. Sub-second graph generation response time was achievable.
8. SAS/ACCESS Interface to IDMS/R utilizes the Cullinet Logical Record Facility (LRF), one of the most efficient methods of processing IDMS/R database information.

REFERENCES

1. IDMS/R Logical Record Facility DBA’s Guide, TDDB-0303-10000
3. IDMSEXCT Procedure for Testing SAS/ACCESS Software for IDMS/R (Preliminary Documentation)
4. SAS Communications Vol. XIV, No. 1 Third Quarter 1988

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IDMS/R AREA UTILIZATION TRACKING SYSTEM

GRAPH MENU

MAIN MENU (PF2)
- PCTFULL (PF4) PERCENT FULL (ALL AREAS)
- PCTFULLC (PF5) PERCENT FULL (CRITICAL ONLY)
- RECSPG (PF6) RECORDS PER PAGE (ALL)
- RECSPPC (PF9) RECORDS PER PAGE (CRITICAL)
- CLEAR (CLEAR) CLEAR TO PREV MENU
- QUIT (PAL) QUIT

RESPONSE: SEND DATA-->

MODEL: STEP

SAUMUTXT

AREA: SMF-INDEX-AREA
RENT UTIL: 66
CV: P (T=TEST, Q=QA, P=PROD)
CUR

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SAUMGTXT

IDMS/R AREA UTILIZATION PCT/FULL (CRITICAL)

AREA: SMF-INDEX-AREA

CV: P (T=TEST, Q=QA, P=PROD)

CUR

RENT UTIL: 66

U 100 +
S 95 +
T 90 +
FCT 85 +
FCT 80 +
FCT 75 +
FCT 70 +
FCT 65 +

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SAUMGTXT

IDMS/R AREA UTILIZATION RECS/PAGE (ALL)

AREA: SSB-ADT-AREA

CV: Q (T=TEST, Q=QA, P=PROD)

CUR

RENT UTIL: 9

T 300 +
T 250 +
A 200 +
A 150 +
R 100 +
RECS 50 +
PE 0 +

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