
DETAILED REQUIREMENTS – DMCS Replacement

Process / Function / Service: Archive/Restore Subsystem

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Release: DMCS Replacement

Revision History:

#	Date	Updated By	Reason
1		Rusty Pendleton	Created
2	21 May 2002	Ben Hatley	Modified
3	30 May 2002	Ben Hatley	Modified following discussion with Bob Hurley

Stakeholder Approval:

Business Unit	Reference
Washington DC	
Management	Brian Sullivan, Steve Martus, Joe Weber, Terry Helwig
Contract Process and Systems	
Loan Services	
Program Process Management	
San Francisco	
Loan Discharge	
Loan Services	
GA TOP Hearing Process	
Litigation Services	
Chicago	
Contract Services - PIC	
Loan Services	
TOP Hearing Process	
IV&V Refund Process	
Atlanta	
Contract Services- PCA	
Loan Services	
AWG Hearing Process	
Administrative Wage Garnishment	
PIC	
SLPC/NPC	
Raytheon	Bob Hurley, Richard Anderson, Amin Aziv

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I. Functional Description

High-Level As Is Description:

The Archive/Restore subsystem provides the Department of Education with a means of identifying and archiving closed accounts, as well as a facility to restore accounts previously archived. Archived data and the records that constitute the account deleted from the production database are stored on tape. Selected information is retained in the archive history record and is accessible via a CICS on-line screen (this is referred to as the shell).

The Archive process begins after the fiscal year end processing is completed with the selection of accounts to be archived. Subsequently, as time is available these accounts are archived in groups of "N" as production time is available. Since the archiving process may have adverse effects on critical jobs being run in production and also requires a significant amount of processing power, the windows of opportunity for archiving these groups of "N" are mostly during off-peak hours. "N" is the number of accounts to be archived in the current run as specified by the production staff. Adding to the inefficiency is the policy that only one database area is done at a time so as not to tie up the other areas.

Once an account has been archived, two avenues exist by which the account may be restored (the Restore job runs nightly). First, a specific request may be keyed by authorized users using the CICS on-line archive screen to restore the account. Second, the new debts automated restore facility can issue a restore request when new debts are received for archived accounts.

Detailed Description:

The archive component of the Archive/Restore subsystem is a batch process that consists of a selection process, an archive process, a delete process, and master file merge processes. During the selection process, a master extract file is generated that lists all accounts available to be archived. The archive process is run during a chosen time period for a certain number of flagged accounts. The next time the subsystem is activated, a new master extract file will not include the accounts that were archived in all previous subsystem iterations. The Archive/Restore subsystem provides a screen (Archive History Information--L112) that allows the Department of Education to examine the archive history, and to request and restore batch process accounts. The Archive/Restore subsystem also retrieves and restores the requested account(s).

In addition, the Archive/Restore subsystem produces the Archive Selection Report that lists all accounts selected for archival as of a certain date. This report is available upon request and allows the Department of Education to view the list of accounts to be archived for each region

Functions:

The Archive/Restore subsystem performs the following functions:

- Restore requests may be issued by New Debts subsystem.
- Restore request can also be made via the L112 screen.
- Accounts eligible for restore from the account extract are selected as per requests generated by the New Debts subsystem.
- Gathers all accounts eligible for archival.
- Reads all eligible accounts and extracts appropriate database records to be archived.

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- Selects accounts eligible for archival delete and the appropriate records from: ACCOUNT-AREA, PAYMENT-AREA, COLREF-AREA, FINPRO-AREA, CREDBUR-AREA, NOTEPAD-AREA, LTRHST-AREA, COAGHST-AREA, AUDHST-AREA, FISLPGM-AREA, NDSLPGM-AREA, GSLPGM-AREA, IRS-AREA, DOJ-AREA and FDP-AREA (IDMS database definitions).
- Adds newly archived accounts to data contained in the master file.
- Sorts and merges newly archived payment data to the payment master file.
- Deletes previously archived records from the database.
- Prepares a copy of the account master and the payment master for storage on tape by technical support personnel.
- Extracts records from accounts to be restored.
- Deletes restored payments from the payment master file.
- Prints accounts selected for archival from the account extract file.

See SARC0002.101 document for detailed process flows.

Current Metrics

The archive process has not been run since 1996 due to the Collection Calls class action lawsuit, which investigators are determining if defaulters were overcharged. The archiving process has been frozen and archived accounts in question have been restored until the issue of overcharged default accounts is resolved. To date, the lawsuit is still looking at accounts in DMCS and the archive process is not expected to run anytime soon.

As of 2002, there are roughly 1.2 million accounts that are closed. With 200 records on average per account, this translates to roughly 200 million records that need to be archived. It has been estimated by Raytheon that it will take at least one year, using the current archiving process, to archive all 200 million records on the system. This current method involves running an annual estimate of the number of records that will need to be archived and scheduling time for the archive jobs to run.

II. Reports:

Report	Description
GSARC500	Archival Summary Report
GSARC521	Archive Report
GSARC700	Archive Selection Report

III. Programs/Batch Jobs:

Job Number	Description
GSLARC01	Selects the accounts eligible for archival from the Account Extract File.
GSLARC02	Creates batches of accounts to be archived.
GSLARC03	Reads the extract file created in GSLARC02 and archives the database records (if still eligible) for each account in the file.

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Job Number	Description
GSLARC04	Executes GSLARC04 sixteen times to delete the appropriate records for each of the following database areas: ACCOUNT-AREA, PAYMENT-AREA , COLREF-AREA, FINPRO-AREA, CREDBUR-AREA, NOTEPAD-AREA, LETREQ-AREA, LTRHST-AREA, COAGHST-AREA, AUDHST-AREA, FISLPGM-AREA, NDSLPGM-AREA, GSLPGM-AREA, FDSLPGM-AREA, IRS-AREA, DOJ-AREA, FDP-AREA, and AWG-AREA.
GSLARC05	Merges the accounts that have been archived and adds the archived accounts data to the archive master file.
GSLARC06	Sorts and merges the new archived payment data to the payment master file.
GSLARC08	Copies the account master and payment master to data sets that will be picked up and placed on tape by technical support personnel.
GSLARC10	Deletes old restore selection criteria files, executes restore selection initiation program, sorts requests, and initiates dynamically generated jobs.
GSLARC12	Sorts and prints a listing of accounts selected for archival from the account extract file.
GSLARC13	Restores those accounts retrieved by GSLARC10.
GSLARC14	Reads a parm file, which consists of ACCOUNT NBR KEY and IAN KEY. Updates the RSR-REC database records if the status is equal to 'AD' and the AHR-REC IAN key is equal to the RSR-REC IAN key.
GSLARC3A	Restores those accounts retrieved by GSLARC10.
GSLARC4P	Executes GSLARC04 to delete the appropriate records on the data base in the ICPR-AREA.
GSARC100	Retrieves the AHR-REC information and formats and displays the information. Provides the primary facility for requesting an account be restored.
GSARC500	Processes the management report account extract file to select accounts eligible for archival.
GSARC510	Accepts a user parameter that contains the number of accounts to be archived by GSARC521.
GSARC521	Determines whether an account is still eligible for archival, performs a network check to ensure all accounts in the network are closed, extracts database records to be archived, creates DELETE records for records archived, creates the ARCHIVE HISTORY record, and writes the PAYMENT ARCHIVE and DELETE records.
GSARC530	Determines the validity of each restore request. The program then generates job control language to generate job control language through the CA7 operator to facilitate selection of accounts to be restored. A separate job is generated for each archive year represented by one or more valid requests. Actual selection and extraction of archive records for restoration is done via program GSARC531, which will be invoked by the newly generated job stream(s).
GSARC531	Creates a restore selection file containing all archived account records for which a valid restore request has been issued and which meet all selection criteria.

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Job Number	Description
GSARC560	Deletes the requested data base records as specified by the control card and delete transactions file.
GSARC580	Reads the input file for a list of accounts to be restored and then performs the process of actual restoration.
GSARC590	Modifies RSR-REC if the status is equal to 'AD'.
GSARC700	Prints the Archive Selection Report based on information provided by GSARC500. The report lists the student accounts that have been selected for archival.
GSARC900	Processes restore requests generated by the New Debts Subsystem.

IV. Questions / Open Issues

Issue	Owner	Status	Resolution
What is the lag time between archive selection and actual archive process activation?	Ben Hatley	Closed	Once the master extract file has been generated in the beginning of the year (determining all available accounts for archiving), the number of accounts for archiving is planned out for the rest of the year. Each time the archiving process is run a new master file is generated.
What is the time that it takes for one full archive process to complete (for all the batch processes to finish)?	Ben Hatley	Closed	2 hours of archiving ≈ 3000 archived accounts 10 hours archiving ≈ 15,000 archived accounts Therefore, it takes approximately 2.5 seconds to archive one account.
What is the time that it takes for one account restoration from the archive? Is the process similar to the batch process described above?	Ben Hatley	Closed	Accounts are manually selected for restoration though the restoration process. It runs similar to the archive process in that it restores accounts flagged for restoration as it runs on a Monday or Tuesday night. 1 account restored in ≈ 10 minutes. 100 accounts restored in ≈ 10 minutes 500+ accounts restored in > 10 minutes
What is the average size per record OR how much space is required for the current archive?	Terry Helwig	Closed	The size of accounts is important, not the size of records. The size of accounts differs too much to generalize. The current archive is stored in 14 cartridge reels. There is currently 31 GB of archived data.
What is the typical amount of records that were archived when this process was run?	Terry Helwig	Closed	In 1996, 400,000 accounts were selected for archival in the annual estimate. Up until that time from 1990 to 1996 roughly 200,000 accounts per year were archived. As of 2002, the GSLARC01 job has identified over 1 million accounts ready for archiving.
What are the guidelines for when things get archived? What conditions trigger the	Terry Helwig	Closed	Guidelines defined elsewhere. To the best of Raytheon's knowledge, there are two requirements: 1) The account is paid and goes into an

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archive process? Is this an automated or manual process when it is normally run?			<p>ED090 location code.</p> <p>2) The account is in ED090 location code for 6 months or there is no financial activity for 6 months.</p> <p>The annual estimate is run automatically. The schedule for when the archive process will be run is generated manually. The archive process itself (batch jobs) runs automatically when activated by an operator.</p>
What are the guidelines for restoring an account? What conditions cause an account to be restored?	Ben Hatley	Closed	<p>An account may be restored for the following reasons:</p> <ul style="list-style-type: none"> • New Debts issues a restore request • ED litigation • Research purposes
Exactly how many records are currently archived?	Terry Helwig	Closed	<p>There are roughly 121 million records that are archived.</p> <p>In 1991 there were roughly 81 records per account. In 1994 there were roughly 144 records per account. So not only is the number of accounts increasing for the archive, but the number of records in an account are increasing. This will be important in designing the future system to make sure that it is scalable.</p>