# Student Financial Assistance/
# Chief Financial Office
# Students
# FARS Retirement Detail Design

## Section II:
## MIS Reporting and Data Storage

Direct Loans

William D. Ford Federal Direct Loan Program

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**October 05 2001**

# Student Financial Assistance
# SFA CFO/Students
# FARS Retirement Detail Design
# Section II: MIS Reporting and Data Storage

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# Student Financial Assistance
# SFA CFO/Students
# FARS Retirement Detail Design
# Section II: MIS Reporting and Data Storage

## 1 Introduction

This document provides the detail design required to complete the transition of the Direct Loan's Financial Accounting and Reconciliation System (FARS) Reporting functionality, MIS Functionality and FARS Data Archive functionality into the Credit Management Data Mart and Archiving Solution. The FARS Retirement Detail Design Document is divided into two sections: Section I: FARS/FMS Detail Design, and Section II: MIS Reporting and Data Storage Detail Design.

### 1.1 THE CREDIT MANAGEMENT DATA MART

#### 1.1.1 Purpose

The purpose of this document is to design the solution for the FARS Retirement Project. With the combination of the FMS Phase III solution and the FARS Retirement functionality, the SFA CFO FMS system and Credit Management Data Mart will replace the FARS system and functionality. This document will outline the Design for the FARS and MIS functionality that will be replaced by the Credit Management Data Mart and Archiving Solution. Section I of the FARS Retirement Detail Design Document will outline the FARS functionality that will be replaced by FMS.

#### 1.1.2 Background

**Direct Loan Program**

The Student Loan Reform Act of 1993, enacted on August 10, 1993, established the Direct Loan Program under the Higher Education Act of 1965, as amended (HEA). The name of the program was changed to the William D. Ford Federal Direct Loan Program by HEA amendments contained in the Improving America's Schools Act of 1994. The Secretary of Education was directed to implement the program in accordance with the statute to provide direct loans to qualified students and parents at selected post-secondary institutions beginning July 1, 1994. As of October 21, 1998, an estimated 1,100 institutions were participating in direct lending.

**FARS**

In 1993, Affiliated Computer Services/Government Solutions Group, Inc. (ACS/GSG), formerly known as Computer Data Systems, Inc. (CDSI), was selected as the primary contractor to establish and maintain a separate database dedicated to servicing the Direct Student Loan Program. Teaming partners include Academic Financial Services Association (AFSA), Accenture, Digital Equipment Corporation and Deloitte & Touché. FARS was created to be the primary financial ledger for the Direct Loan Program. FARS

is responsible for feeding Direct Loan financial data to the Department of Education financial ledger (IE-FARS)

**Modernization Partner and FMS Project**
In 1998, the Office of Student Financial Assistance (SFA) to provide outstanding customer service while simplifying, integrating, and reducing the cost of administering federal student financial assistance programs. In 1999, Accenture and a core team of pre-existing contractors were selected as SFA's Modernization Partner.
As part of the Modernization Partner, Accenture and SFA are working to develop an integrated SFA Financial Management System (FMS). FMS' goal is to integrate all of SFA's current financial systems to be able to reach the objectives of the Performance Based Organization (PBO): - improve customer satisfaction, reduce the overall unit cost of delivering student aid, and improve employee satisfaction.

### 1.1.3 Objective of FARS Retirement

The objective of the FARS Retirement Project is to assess the on-going need for the FARS system and its functions in response to the implementation of FMS Phase III. FMS has been selected as SFA's financial management system to provide an integrated and independent solution. With the implementation of FMS the FARS functionality becomes redundant. FARS operations and maintenance costs currently run at approximately $5.5 million per year; retiring FARS will result in significant savings to SFA

**Benefits of FARS Retirement**

- Provides substantial cost reduction
  - Projected net savings by FY05: $8 million - $11 million
  - Ongoing projected annual savings after FY05: $4+ million per year
  - Leverages FMS initiative
- Improves customer service
  - Single source of financial data
  - Eliminates need to access multiple systems
  - Promotes data integrity
- Increases employee satisfaction
  - Provides enhanced reporting capability
  - Reduces training requirements for new or transferred employees
- Supports SFA Modernization Blueprint and Target State Vision
- Tombstones Legacy system

### 1.1.4 Scope of FARS Retirement Functionality and Design Document

This document only provides designs for functionality which in scope for the FARS Retirement Project. Thus, FARS Functionality that is part of the FMS Phase III effort will not be replicated in this document.

Below lists the functionality which is in scope (By FARS Retirement Functional Area) for the FARS Retirement Design Effort:

## Section I: FARS/FMS Detail Design

### LO, LC Reconciliation

- ✓ FMS Generated DLSS Schedule B for LO Data
- ✓ FMS Generated DLSS Schedule B for LC Data
- ✓ Calculated DLSS Schedule C for LO Data
- ✓ Calculated DLSS Schedule C for LC Data
- ✓ LO / DLSS Month End Reconciliation Business Process Procedures
- ✓ LC / DLSS Month End Reconciliation Business Process Procedures

### Lockbox/Treasury Reconciliation

- ✓ Cashlink to FMS Reconciliation Program
- ✓ Lockbox Automation for Summary Deposit and NSF Transactions (High-Level Approach included in this Design Document.)

### DLSS to FMS Reconciliation

- ✓ Credit Management Data Mart SSN / Loan ID Posting Report (detailed in the MIS Reporting and Data Storage Detail Design document)

### Deliverable Reporting

- ✓ FMS Accounting Recycled Files Status Report
- ✓ FMS Accounting Recycled Files Status Report Generation Process Procedures
- ✓ FY Subsidiary Report
- ✓ FY Subsidiary Report Generation Process Procedures
- ✓ TROR – Treasury Report of Receivables (Design completed to assist FMS Phase III team in their design efforts.)

### Refund Processing

- ✓ Detailed Treasury Confirmation Report
- ✓ Detailed Treasury Confirmation Report Generation Process Procedures

## Section II: MIS Reporting and Data Storage Detail Design

### MIS Reporting

- ✓ MIS Reports
  - o Weekly Project Status Report
  - o Portfolio Analysis Report
  - o Payment Allocation Report
  - o Rolling Reconciliation / Mega Record Data
- ✓ Adhoc Queries Functionality
- ✓ Associated Business Process Procedures

**Data Storage**

- ✓ Pre-FMS Solution (Data Tables and Interfaces)
- ✓ Credit Management Data Mart Solution (Financial and Servicing Data)
- ✓ Associated Business Process Procedures

### 1.1.5 Functionality Not In Scope for FARS Retirement

This section outlines all the items that are not in scope for the FARS Retirement Project. These items will be part of the FMS Phase III Project. Responsibility is either with the FMS Phase III Team or SFA CFO. When SFA CFO is listed, they are responsible only for developing the process procedures in that area.

**Processing Financial Transactions**

| | |
|---|---|
| ✓ Interface from DLSS to FMS | FMS Phase III |
| ✓ Daily System Balancing Process Procedures | SFA CFO |

**LO/ LC Reconciliation with DLSS**

| | |
|---|---|
| ✓ Interface between LO and FMS | FMS Phase III |
| ✓ Interface between LC and FMS | FMS Phase III |
| ✓ LO / FMS Reconciliation Process Procedures | SFA CFO |
| ✓ LC / FMS Reconciliation Process Procedures | SFA CFO |
| ✓ LO and LC to FMS Reconciliation Process Procedures for Deposits and Interagency Transfers | SFA CFO |

**Lockbox/ EDA Reconciliation with Treasury**

| | |
|---|---|
| ✓ Manual entry of Deposits and NFS Transactions | FMS Phase III |
| ✓ SF224 Reporting | FMS Phase III |
| ✓ Processing Lockbox Transactions Process Procedures | SFA CFO |
| ✓ Treasury Cash Link Reconciliation Process Procedures | SFA CFO |
| ✓ Submission of SF224 Report Process Procedures | SFA CFO |

**Interaction between FMS and FMSS**

| | |
|---|---|
| ✓ Interface from FMS to FMSS | FMS Phase III |
| ✓ Daily System Balancing Process Procedures | SFA CFO |
| ✓ Monthly Reconciliation Process Procedures | SFA CFO |

**Reconciliation between FMS and DLSS**

| | |
|---|---|
| ✓ Monthly Reconciliation Process Procedures | SFA CFO |

**Refund Processing**

| | |
|---|---|
| ✓ Manual Entry of Borrower Refund Data | FMS Phase III |
| ✓ Borrower Refund Process Procedures | SFA CFO |
| ✓ Borrower Refund Reconciliation Process Procedures | SFA CFO |

**Deliverable Reporting**

- ✓ Creation of all Deliverable Reports identified as part of FMS Phase III — FMS Phase III
- ✓ Corresponding Business Process Procedures — SFA CFO

**Manual/Online Transactions**

- ✓ Entry of Manual Transactions into FMS — FMS Phase III
- ✓ Automate Processes
  - o Consolidation Overpayment Upload
  - o Borrower Overpayment Upload
  - o DCS Rehabilitation Adjustment Upload — FMS Phase III
- ✓ Related Business Process Procedures — SFACFO

### 1.1.6 Project Assumptions

The following sections describe the assumptions associated with the detail designs presented in this document. If these assumptions are modified, the FARS Retirement Requirements will need to be evaluated.

a. The FARS Retirement design will minimize any changes that would be required from other Direct Loan Sub-Systems (Loan Origination, Loan Consolidation, Loan Servicing).

b. COD is not in scope for the requirements of the FARS Retirement Project. Any adjustments required to the FARS Retirement solution due to COD will be the responsibility of FMS Phase IV.

c. Any improvements to the reconciliation and the system balancing processes between the Loan Origination (LO) and the Servicing systems will be a part of the COD effort.

d. Improvements to the reconciliation and system balancing processes for LC are not in scope for FARS Retirement.

e. FMSS will replace IE-FARS in October of 2001. At this point the FMS System will feed the DLSS data to FMSS. FMS will become the primary ledger for the Direct Loan Servicing data in a production environment.

f. SFA CFO is the owner of the FMS system and processes.

g. With the retirement of FARS, DLSS will continue to generate G-Records sent from LO and LC. These G-Records will be forwarded to FMS. FMS will not process the Drawdowns (FID) and Excess Cash (FIE) transactions from this feed. FMS will process the FID and FIE transactions it receives from its direct interface with LO and LC.

### 1.1.7 Related Documentation

The following related documents have been prepared and reviewed as part of the FARS Retirement project.

a. The FARS Retirement Requirements document provides details of all the FARS functionality that should be replaced by FMS and the Credit Management Data Mart. This was discussed during the IPT meeting on 06/27/02 and 06/28/01.
b. A High-Level Approach document outlines the initial design approach for the requirements that are being covered as a part of FARS Retirement. This was discussed during the IPT meetings on 06/27/01 and 6/28/01.
c. A design presentation document was prepared that outlines which items are in scope for the design phase for FARS Retirement. This document was reviewed during the IPT meeting on 8/02/01.

### 1.1.8 Objectives of the Credit Management Data Mart

This section outlines key objectives of the Credit Management Data Mart

- Create a basis to provide "Common Servicing" to SFA. Eventually house consolidation, repayment, and collection information on the borrower, understanding that collections information is both from the direct loan portfolio as well as FFEL community.

- Replace FARS reporting requirements that cannot be satisfied by the FMS Oracle Financial System. The Credit Management Data Mart will house data at the loan level detail. The FMS Oracle Financial System will house the data consolidated at the institution level.

- Replace Direct Loan MIS functionality that utilized the FARS detail data.

- Function as a Transaction Register that supports FMS. It is not necessary or appropriate to refer to the CMDM as a sub-ledger.

- Provide an audit trail of all information stored in the CMDM back to the FMS system.

- Start to provide enhanced MIS Adhoc Query Capability beyond financial data.

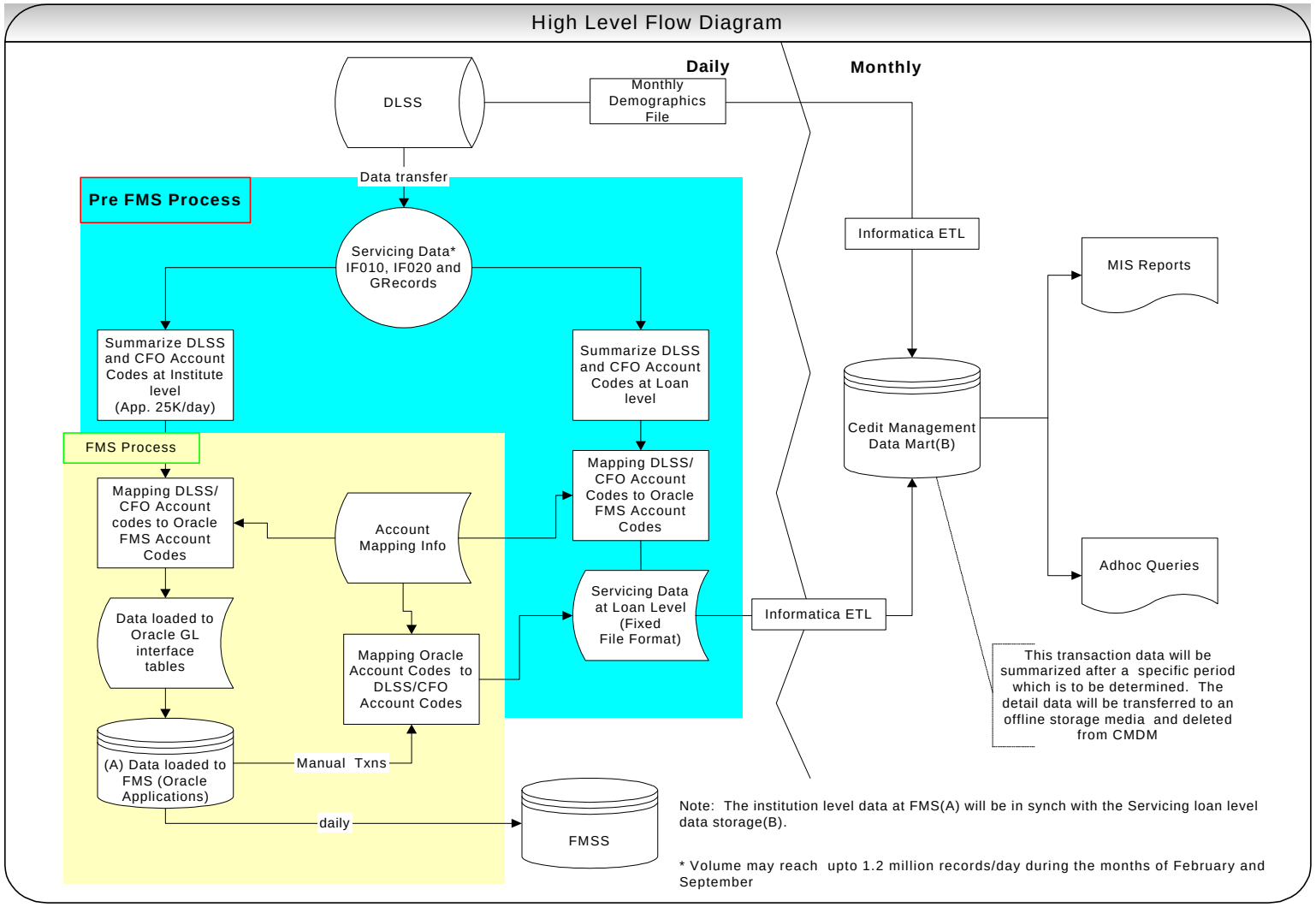
- Provide access to SFA end-users so they are empowered to get their jobs done.

- Store the data in a method that will allow SFA to meet current and future reporting requirements.

- Enhanced historical reporting capabilities.

## 1.2 CREDIT MANAGEMENT DATA MART ARCHITECTURE

Application Schematic:



The Direct Loan Servicing System (DLSS) and FMS will serve as the source systems for the CMDM. The CMDM will be an Oracle based data mart, managed by the MicroStrategy suite of tools.

Financial data from DLSS and FMS will be sent to the CMDM via the Pre-FMS process. The Pre-FMS process in CMDM and FMS are very similar and therefore share data and resources whenever possible. The FMS component of Pre-FMS will receive the daily feed with IF010, IF020 and G record transactions from DLSS.

FMS processes these transactions by completing the following steps:

- Loading the transactions received to staging tables
- Summarizing the transactions to the institution level
- Performing account mapping to translate DLSS account codes to FMS account codes
- Loading data to Oracle GL interface tables
- Executing GL import programs to load FMS application tables
- Update transactions in the staging table with process status (Success / Error)

After FMS completes processing of the transactions, the CMDM component of Pre-FMS will include:

- Select only the data successfully processed by FMS
- Copy account mapping table from FMS
- Summarize transactions to a loan level
- Perform account mapping to translate DLSS account codes to FMS account codes
- Write successfully processed data to a fixed format flat file which serves as input to an Informatica process
- Load the CMDM with transaction data via Informatica Extract-Transform-Load (ETL) ETL process

Data Volume:
It is estimated that by summarizing the payment transactions received via the IF010 data file at a loan level, there will be significant reduction (approximately 40% reduction in payment transactions volume) in the volume of data to be stored.

In addition, manual transactions will be entered in FMS on a daily basis. This data is required to be transferred to the CMDM to maintain the data integrity between the two systems. An interface will transfer the manual transaction entered in FMS on a daily basis to the data mart.

In addition to the Pre-FMS process, the CMDM will receive demographic data directly from the DLSS system. The CMDM will receive DLSS demographics data on a monthly basis. This data will serve as input to an Informatica ETL process. This process will validate the demographics data and load only the required data to the CMDM.

On a monthly basis, the daily detail transaction data for the most historic month's data in the CMDM will be summarized and archived. After the detail data is archived to tape it will be cleared from the data mart. This data will be in a format that will enable it to be easily reconverted into the CMDM if required.
In addition to the data processing the CMDM architecture supports reporting based on MicroStrategy tools. The remainder of this section gives an overview of the structure of this document in relation to the architecture introduced above. The following sections composing this document explore each of the introduced components in more detail:

- Section 2: Pre-FMS Processing
- Section 3: Data Conversion
- Section 4: Data Model
- Section 5: Reporting Requirements
- Section 6: Security Model
- Section 7: Performance
- Section 8: Data Archiving
- Section 9: Business Process Procedures

### 1.2.1 Pre-FMS

Section 2 of the document provides the detail design for the Pre-FMS solution. This includes the feed from DLSS to the CMDM and the feed from FMS to the CMDM. In addition this section outlines the control reports, which will be used for each interface.

### 1.2.2 Data Conversion

Section 3 of the document will provide the detail design for how the data is being loaded from Pre-FMS on a daily basis and from DLSS on a monthly basis. The design will include the detailed data mapping for each data load. In addition to the data loads, this section will provide the design for the initial conversion of the life to date FARS detail records.

### 1.2.3 Data Model

Section 4 of the document provides a design of the CMDM's logical data model (LDM). The LDM is essential in the understanding of the CMDM design and the reporting needs that can be fulfilled by it. The physical data model (PDM) will also be presented in section 4. The PDM discussion will be limited to a listing of the physical tables and a description of the data contained in them.

The creation of the CMDM will be based on a logical and physical data model. The logical data model describes the business functions and the relationships between them. With that it provides a description of the business and data flow at an abstract level. The physical data model contains the definition of the database level objects that need to be created to enable the CMDM.

Below gives a list of terms and definitions that will be frequently used throughout this document in conjunction with the LDM:

- **Attribute**, a logical object that represents an entity. Attributes are used to describe the business functions modeled by the LDM. Examples for attributes descriptions for any kind of things, persons, or general objects that can be used in reporting, e.g. a borrower, a loan, a transaction or a school type.
- **Relationship**, a relationship builds a link between two attributes. Usually a relationship can be linked to a 'real-world' relationship between the elements represented by an attribute. Examples for relationships are 'A SSN defines a borrower' and 'Every loan has a repayment type'.
- **Hierarchy**, a hierarchy is a grouping of related attributes and the relationships defined between them.
- **Dimension**, a dimension is a group of one or many hierarchies.

A detailed discussion and definition of the logical data model can be found in section 4.

### 1.2.4 Reporting Requirements

Section 5 of the document provides a detail design of the reports that will be generated from the CMDM.

The current reporting requirements consist of three main parts: Management Information System (MIS) Reporting, Ad-Hoc Reporting and Accounting Reporting which cannot be satisfied by the FMS System.

MIS is currently a component of the ACS/GSG and AFSA contract support for the SFA CFO programs under Deliverable 152. MIS uses Direct Loan Servicing System (DLSS) information housed across two different computing platforms: A Compaq VAX/ALPHA cluster which provides borrower loan servicing activities and an IBM mainframe which provides borrower loan financial support and MIS services. Ad-Hoc Reporting fulfills all additional reporting needs that are either posed on a regular basis or as one-time requirements.

The current system processing consist of the following Reporting functions:

- Institution Transaction Listing Report
- SFACFO Financial Data Extract on CD-ROM
- Consolidation Data Extract on CD-ROM
- Weekly Project Status Report (MIS section as part of Deliverable 80)
- Portfolio Analysis Report
- Payment Allocation Report
- Up to 50 Ad hoc query requests (including the above mentioned 6) can be submitted to the Direct Loan Repayment Division. Requestors submit to Barbara Hultberg the purpose of the query, requestor, media, recipient, frequency, due date, and selection criteria. The types of request include, but are not limited to:
    - Trend Analysis and Report Tracking
    - Financial information for Independent Public Accountants (IPA Deliverable 191), Case Management processing (Deliverable 194), ACSI borrower sampling and borrower congressional district statistics
    - Megarecords

Going forward the MIS Reporting, Adhoc Reporting, and several FARS reports will now be generated from the CMDM.

- The Weekly Project Status Report, Portfolio Analysis Report, Payment Allocation Report, Institution Transaction Listing Report, and additional Ad hoc reports will continue to be produced.
- The CMDM will provide a report to support the Treasury Report of Receivables (TROR), a Social Security Number/Loan ID Posting report, and data to support the Megarecords process.
- The CMDM will not produce the SFA CFO Financial Data Extract and Consolidation Data Extract Reports. These reports will be generated by the FMS system.

### 1.2.5 Security Model

Section 6 of the document provides an overview of MicroStrategy's security architecture and compares two security approaches: database level security and MicroStrategy application level security. The CMDM will utilize MicroStrategy's application security model that will maintain security and data access in one central location. Database level security functionality will have the option of incorporating row level security if needed.

### 1.2.6 Performance

Section 7 of the document examines the processes put in place at the database level to help provide optimal system performance. These include: Optimal Flexible Architecture (OFA), Database Partioning, and Indexing. There are several processes put in place at the application level to help provide optimal system performance. These include: pre-aggregation of data at multiple attribute levels, application partitioning, application caching, and reuse of SQL statements. To ensure optimal database performance, the following checks will be used: database design verification, application design verification, and tuning memory components.

### 1.2.7 Data Archiving

Section 8 of the document examines the data archive process. The data archive process is comprised of two parts: archiving initial FARS Financial History Loan Details into Oracle format and continual archiving of loan detail on a monthly basis from the Credit Management Data Mart (CMDM) henceforth.

### 1.2.8 Business Process Procedures

Section 9 of the document provides an overview of procedures to be followed in obtaining data from the Credit Management Data Mart (CMDM) and the CMDM data archive as well as the reconciliation procedure between the CMDM and FMS.

### 1.3 USER GROUPS

The following table lists the user groups of the CMDM and their respective functions going forward.

| User Groups | Future Tasks/Functionality | Access | Resources<br>E = External, I = Internal |
|---|---|---|---|
| **CMDM MIS Support** | • Receive query request from Students Point of Contact<br>• Execute and modify existing reports<br>• Design/Build new reports<br>• Perform Data Integrity Checks<br>• Assist in Daily Error Handling<br>• Reconcile with FMS | MicroStrategy Desktop | ACS (E)<br>• Jay Main<br>• Scott Speirs<br>• Glaydz Martinez<br>• Accounting/CMDM Analyst |
| **CMDM Systems Operations/ Informatica** | • Maintain Informatica if changes in data feeds are required<br>• Perform System Monitoring<br>• Process Daily Data Error Handling | Informatica Tools | TBD |
| **CMDM Systems Operations/DBA** | • Maintain database structure if changes are required | Oracle | TBD |
| **CMDM Systems Operations/ MicroStrategy Administrator** | • Schedule reports and maintain caches<br>• Add new attributes, update MicroStrategy project structure if necessary<br>• Add new users/update security<br>• Update MicroStrategy to incorporate changes made to database table structures<br>• Add new application objects for report building and data processing<br>• Monitor system usage by user and/or hardware. Generate reports to show the results | MicroStrategy Desktop | TBD |
| **CMDM Power User** | • Receive and Filter request<br>• Execute existing reports<br>• Modify existing reports to meet new reporting needs<br>• Perform Ad Hoc reporting | Web Based | Students (I)<br>• Monica Menard<br>• Barbara Hultberg<br>Office of the Under Secretary (I)<br>• Kirk Siegwarth |

| User Groups | Future Tasks/Functionality | Access | Resources<br>E = External, I = Internal |
|---|---|---|---|
| | | | • William Graham<br>SFA CFO (I)<br>• SFA Accounting representative<br>• FMS Accounting Contractor<br>DLSS IQCU (E)<br>• James Pogar<br>• |
| **CMDM Report User** | • Execute existing reports | Web Based | SFA CFO (I)<br>• Winston Murphy<br>• Frank Kesterman<br>SFA Budget (I)<br>• Representative<br>Accounting (I)<br>• Spencer Sakai<br>• Steve Arisumi<br>• Charlene Faunteroy<br>• Geeta Gupta<br>• Jeanette Johnson<br>Financial Reporting (I)<br>• Russell Young<br>• Replacement for Marvin Somers<br>Office of the Undersecretary (I)<br>• Rachael Bauer<br>Portfolio Management (I)<br>• Andy Cho<br>Students (I)<br>• Allen Prodgers<br>• Randy Bowman |

| User Groups | Future Tasks/Functionality | Access | Resources<br>E = External, I = Internal |
|---|---|---|---|
| | | | • Cindy Battle<br>• Ben Leborys<br>• Mike J. Murray<br>• Scott Smith<br>Analysis – Performance (I)<br>• Representative<br>Analysis (I)<br>• Representative<br>Office of Postsecondary Education (I)<br>• Donald Conner<br>• Maria Rojtman |

## 1.4 PRODUCTION ENVIRONMENT

The Direct Loan Servicing System (DLSS) will serve as the initial source system for data in the Credit Management Data Mart (CMDM). After the initial load of the historical

***CM Data Mart (Release 1.0) Architecture***

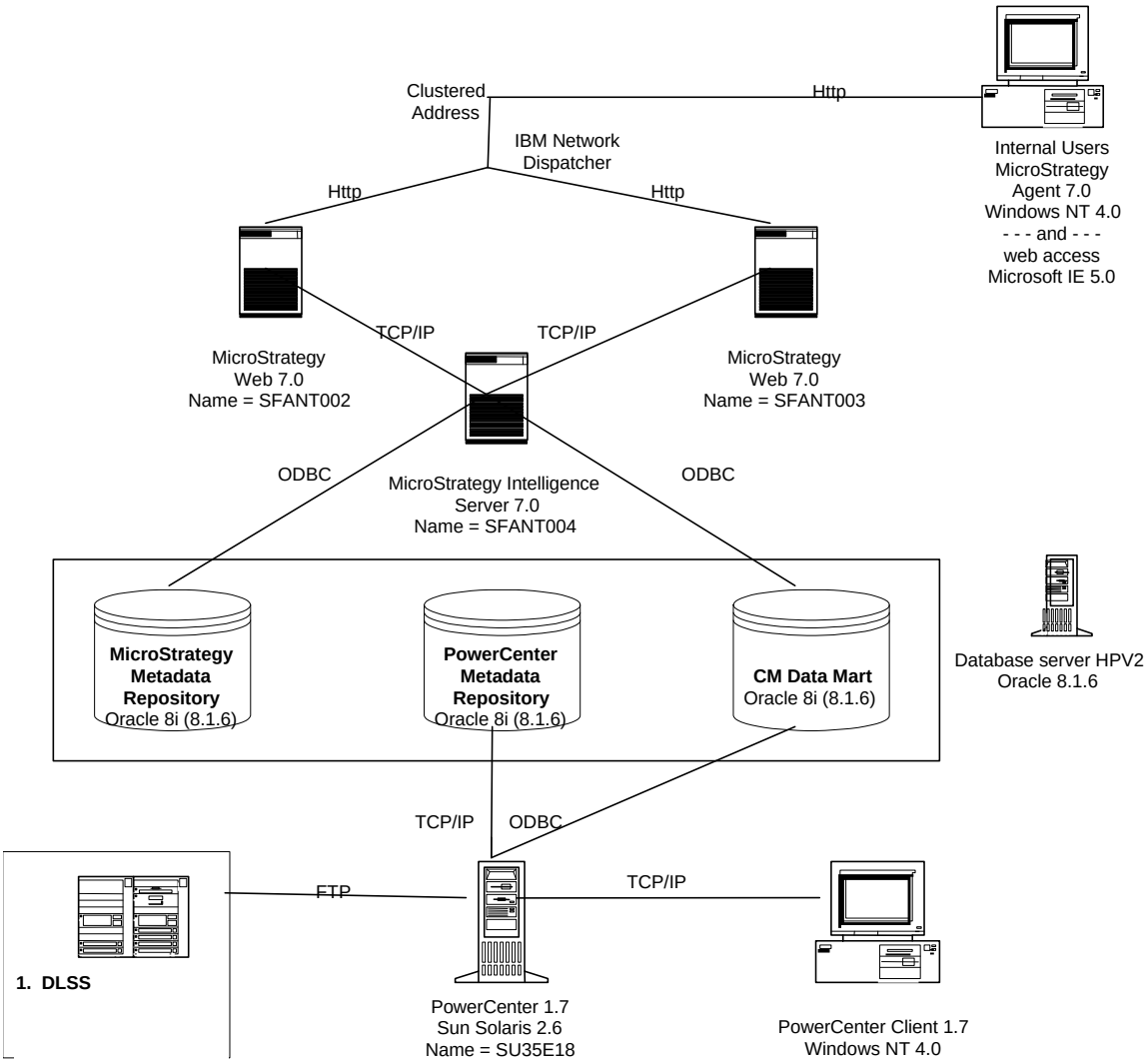



***Figure 1.4.1: Schema of Production Environment***

Information that was extracted from the DLSS system, DLSS will perform a routine copy of activity that occurred in the DLSS system from the last time that the extract program(s) was executed. This data will be exported via the File Transfer Protocol (FTP) to the Informatica server at the VDC. Informatica will perform the necessary transformations, load the data into Oracle, and populate the CMDM. This data mart will be accessed by the MicroStrategy Intelligence Server to satisfy user requirements that are sent via a web interface. The internal users will access the CMDM directly through

SFA's intranet. External users will be authenticated prior to allowing access to the CMDM. The project team is working with other SFA and Modernization Partner security and architecture personnel in order to determine a common approach to authentication. Figure 1.4.1 shows the diagram of the CMDM architecture.

For more information on SFA's approach to data warehousing and data marts, please refer to the *SFA Technology Policy and Standards Guide* – specifically section 4.3 Enterprise Data Management.

### 1.5 ASSUMPTIONS

As a result of the ongoing design effort with the Subject Matter Experts (SME), specific assumptions and decisions regarding the scope of the CMDM have been developed and documented below to ensure an understanding of the abilities and constraints of the first release.

| Decision/Assumption | Description |
|---|---|
| Data Requirements | The transactional financial data will reside in the Oracle database with historical data converted for complete duration of storage. |
| | Demographic information regarding loans, borrowers and schools will be converted without history (current only), since historical data is not available. Going forward, history for demographic data will only be maintained for the loan status, repayment type and risk category. The CMDM will start to collect a complete monthly history at the system go-live date for the above-mentioned fields. For all other demographic data, the previous and current months data will be maintained. |
| | All transactional data will be loaded on a daily basis keeping full history of every transaction.<br>Demographical data will be loaded monthly. The monthly demographic data load results in loss of multiple data changes to the same data field in one month. E.g. if a loan status first changes to 'Repayment Filed' and then to 'Delinquent Rejected' in the same month, only the latter change will be stored and available for historical research. |
| | The Central Database System (CDS) transaction codes are used on G record fields instead of SLSS transaction codes and are currently converted to the T-record file.<br>Since the CDS was retired and in discussions with SMEs it was determined that the CDS codes are not used anymore the CMDM will not maintain them and queries based upon them will not be supported. |
| | The CMDM will have the ability to handle adjustments or cancellations of transactions by booking 'reversal values' (negative transactions amounts) for any given transaction value. Actual transaction values will not be changed once they are stored in the system. This approach will allow the CMDM to track history of loan transactions over time and not loose any information due to changes of existing transaction values. |
| | Transaction dates will be unchangeable in the CMDM. The reason for this policy is that a date change could impact already reported values. E.g. a report is generated for all loan disbursements. Then an error in one |

| Decision/Assumption | Description |
|---|---|
| | of the disbursement transactions is found that would require a date change. If the transaction date would change that would invalidate the already generated report. Therefore the CMDM will handle transaction date changes only with 'reversal values' as explained above.<br>It was determined in discussions with SMEs that transaction date changes should be very rare and the current FARS system does not have a mechanism to deal with those. |
| | The CMDM will not continue to maintain the E-indicator that is currently being used to flag transactions that need to be resent. If needed the FMS system will have the ability to resend transactions. |
| | The CMDM will keep maintaining Common Account Number (CAN) codes for now. The CAN code can be derived from other transaction codes in the FMS system combined with the cohort year, so all reporting requirements can be fulfilled without maintaining it, but for easier understanding of reports the CAN code will be maintained at least for a grace period. |
| | The CMDM will permanently maintain at least 13 months of transactional data for reporting purposes. Data older than 13 months will be archived off to tape storage and only be restored by request. This is done to save space and for performance considerations. |
| | School qualifying data will only be maintained as school names, types, control, DL number, and OPE IDs. Since the demographic data feed includes a lot of additional school data (school description, addresses, contact information, etc.) this data can easily be added to the CMDM. Initially it will not be available for reporting. |
| Report Formats | Standard accounting formats will be used for reports (e.g., parenthesis for negative number/credits). |
| | The number of decimal places for dollars and cents must be to the penny for payments and to the dollar for summary amounts. |
| Data Loads | During the design phase, it was initially determined that IF020 file is not needed as part of any FARS Retirement requirements. The IF020 contained Unapplied Payment transactions. Unapplied payment reporting is being satisfied as part of the FMS Phase III effort.<br>The IF020 data file also contains the unapplied refund transactions (FARS Code = 3). Although the CMDM was not to store the non-borrower level data, a conscious decision was made to include the unapplied refund transactions. This is because FMS summarizes the transactions received on a daily basis and loses track of the individual transactions. These transactions may be required at a later date for audit or query purposes. |
| Error handling | Only errors related to referential integrity will be corrected during the Extract-Transform-Load (ETL) process. All other errors will be handled and reported but not corrected. |
| Future Considerations | DLSS will need to provide a field called interface_id on the IF010 file. |

| Decision/Assumption | Description |
|---|---|
| | The interface ID will be populated with the source system of a transaction, e.g. LC payment. The Pre-FMS load will then need to be modified to be able to accept an IF010 with interface ID. The program will forward the interface ID to the CMDM. Until this change occurs (estimated for February 2002) the Pre-FMS data load will create an interface ID field based on the originating system. This is less detailed and more error prone. The CMDM data model will not need to be changed as a result of this change to the data load process. |
| | A reconciliation process for COD transactions stored in the CMDM needs to be established. This will need to be established when the COD system becomes available in 2002. A reconciliation report will then need to be created based upon the data stored in the CMDM and the reconciliation process design. |

As the project continues to deployment, the SMEs will continue to be involved in the design and test phase to ensure that development progresses along the right guidelines.

### 1.6 DIFFERENCE BETWEEN TRANSACTIONAL SYSTEMS AND DATA MARTS

Data marts are relatively new to many of the expected CMDM end users. The following table provides some level of comparison between a typical transactional system, such as DLSS, and a data mart.

| Topic/Function | Transactional (OLTP) System | Data Mart |
|---|---|---|
| Data Current | Current valued | Historical, Summarized data |
| Data Organization | Application by application | Subject areas across enterprise |
| Nature of Data | Dynamic, continual updates | Static until scheduled refresh |
| Data Structure | Structured for fast efficient read / write activity on a record by record basis | Structured for efficient read-only access to large volumes of data |
| Access Type | High volumes of single-record inserts, updates, queries | High volumes of records accessed in complex queries |
| Queries and Indexing | Optimized for fast direct access to individual records | Optimized for fast access to a large range of records with multi-table joins to associated detail and descriptions |
| Level of Data Detail | Records accessed and updated at most detailed, atomic level | Varying query and analysis needs may require both atomic detail and high-level summaries |
| Usage | Highly structured, repetitive processing | Highly unstructured, analytical processing |
| Response Time | Sub-second to 2-3 seconds | Several seconds to minutes |

A data mart is a database of data gathered from operational data and other sources that is designed to serve a particular group of decision makers. The emphasis of a data mart is on meeting the specific demands of a particular group of knowledge users in terms of analysis, content, presentation, and ease-of-use. Users of a data mart expect to have data presented in a format familiar to them, and with response times acceptable for detailed analytical reporting needs.

Typical analytical operations performed on a data mart are:

- Drilling down to detailed data from a higher summarization level. For example, drilling down to loan level information from Risk Category information.
- Summarizing Lender information by congressional district or school.

Performing analytical functions such as time-based trending, moving averages and ranking functions typically are not found in simple query and reporting environments.

### 1.7 OUTLOOK

The FARS IPT team and SFA leadership have determined the vision of the CMDM is to:

- provide "Common Servicing" to SFA.: eventually housing consolidation, repayment, and collection information on the borrower, understanding that collections information is both from the direct loan portfolio as well as FFEL community
- not to be in a vacuum and understand current initiatives and how they may fit into the CMDM in the future
- provide access to SFA end-users so they are empowered to get their jobs done. There are efforts that the FARS Retirement team recommends be considered for future upgrades for the CMDM and items that were out of scope for this effort.

With this vision in mind, the IPT team wanted to document the following as possible future efforts for the CMDM.

- Have the ability to report on all underlying loans within Consolidation Loans – not just Direct Loans
- Have the ability to track collection information from guarantee agencies in the interest of driving payments from agencies
- Have the ability to report on PLUS Loans
- Have the ability to provide complete delinquency reporting functionality

# 2 Pre-FMS Data Processing

This section describes the interfaces and reports in the Pre-FMS process that will be implemented for the initial deployment of the data mart. It describes each of the interfaces first and then the reports involved.

## 2.1 INTERFACE DETAIL DESIGN

The interface detail design covers the technical details to design and build the interfaces. All the interfaces are inbound and therefore load data to the Credit Management Data Mart (CMDM).

The Pre-FMS process to load the Credit Management Data Mart will have 4 sources of data.

These sources are:

1 IF010 transactions from Direct Loan Servicing System (DLSS)
2 IF020 transactions from DLSS
3 G record transactions from DLSS
4 Manual transactions from FMS

### 2.1.1 Pre-FMS IF010 transactions to CMDM

The Pre-FMS IF010 to Data Mart detailed design lays out the technical design for transfer of the required IF010 data from the DLSS to the Credit Management Data Mart (CMDM).

#### 2.1.1.1 Program Overview

**Environment**:

Hardware: HP V Class Server
Operating System: HP Unix
Database: Oracle RDBMS Version 8.1.6
The interface will be coded using Oracle PL/SQL and required Unix utilities.

**Process:**

This section describes the interface process with reference to Fig 2.1.1.1, the program flow schematic depicted in the next section:

Step A:
The Oracle FMS System receives the IF010 data file on a daily basis. FMS will load the transactions to a staging table in the FMS database and process them to load Oracle General Ledger. There will be a flag in the staging table to indicate whether the transaction was successfully processed by FMS.

Step B:
The account mapping data will be copied from Oracle FMS database to the Credit Management database. This is done to ensure that Oracle FMS and the CMDM always use the same account mapping rules to arrive at the Oracle FMS account codes.

Step C:
Only rows that are successfully processed by FMS will be processed by the Pre-FMS IF010 to Data Mart interface.
The IF010 transactions are processed in two categories

a. Payment transactions: These transactions are grouped at a loan level by Loan Id, Transaction Code and Cohort year. This means that if there are multiple transactions for the same loan id and transaction code on the same day, they will be combined into one record.
b. Other transactions: Transactions other than the payment transactions are not summarized. Data is stored at the transaction level.

This is the same process as FARS follows today.

Step D:
The payment transactions grouped in the previous step will be summed by the Transaction code for each loan. Other transactions will not be affected during this process.

Step E:
Every record, is taken through the Account Mapping process to translate the Servicing transaction code to Oracle FMS account codes. The value for the interface id column will be derived based on the transaction source. The program will currently derive the values for LO and LC only. It will have the capability to start accepting (with minimal changes) the Interface Id field as input from the IF010 file when interface id field is added the IF010 file as part of Servicing's FY01R3 release scheduled to go live February, 2002.

Step F:
Data successfully translated to Oracle FMS account codes are written to a fixed format flat file. This file serves as input to the Informatica process to load the CMDM. The records that did not successfully translate to Oracle FMS account codes are flagged as error records and the error messages are written to an error table in the CM database.

The data in error will continue to stay in the staging table until they are resolved by FMS Support, after which the Pre-FMS IF010 to Data Mart interface will process the records

The major validations performed to process a transaction successfully are:

- FMS account mapping for the SLSS TC Code should be defined and available in FMS
- FMS account mapping definition for the SLSS TC Code should be complete
- Institution should be valid and be defined in FMS
- Variable segments in the FMS Accounting Flexfield such as Limitation and Institution should be successfully derived using data from the IF010 record and FMS application

Step G:
This step indicates the Manual transaction interface, to transfer the manual transactions entered in Oracle FMS to the CMDM. This process is documented in Section 2.1.4 of this document.

Every interface execution and summary results information regarding the execution of the interface will be logged in a control table. The control table will have:

- Name of the interface executed
- Date and Time interface started
- Number of rows processed
- Number of rows successfully processed
- Date and Time interface completed

**Error Handling:**
Errors encountered during the interface execution will be written to a error table. The error table will have:

- Name of the interface executed
- Date and Time error occurred
- Primary key of the transaction in error
- Error Message

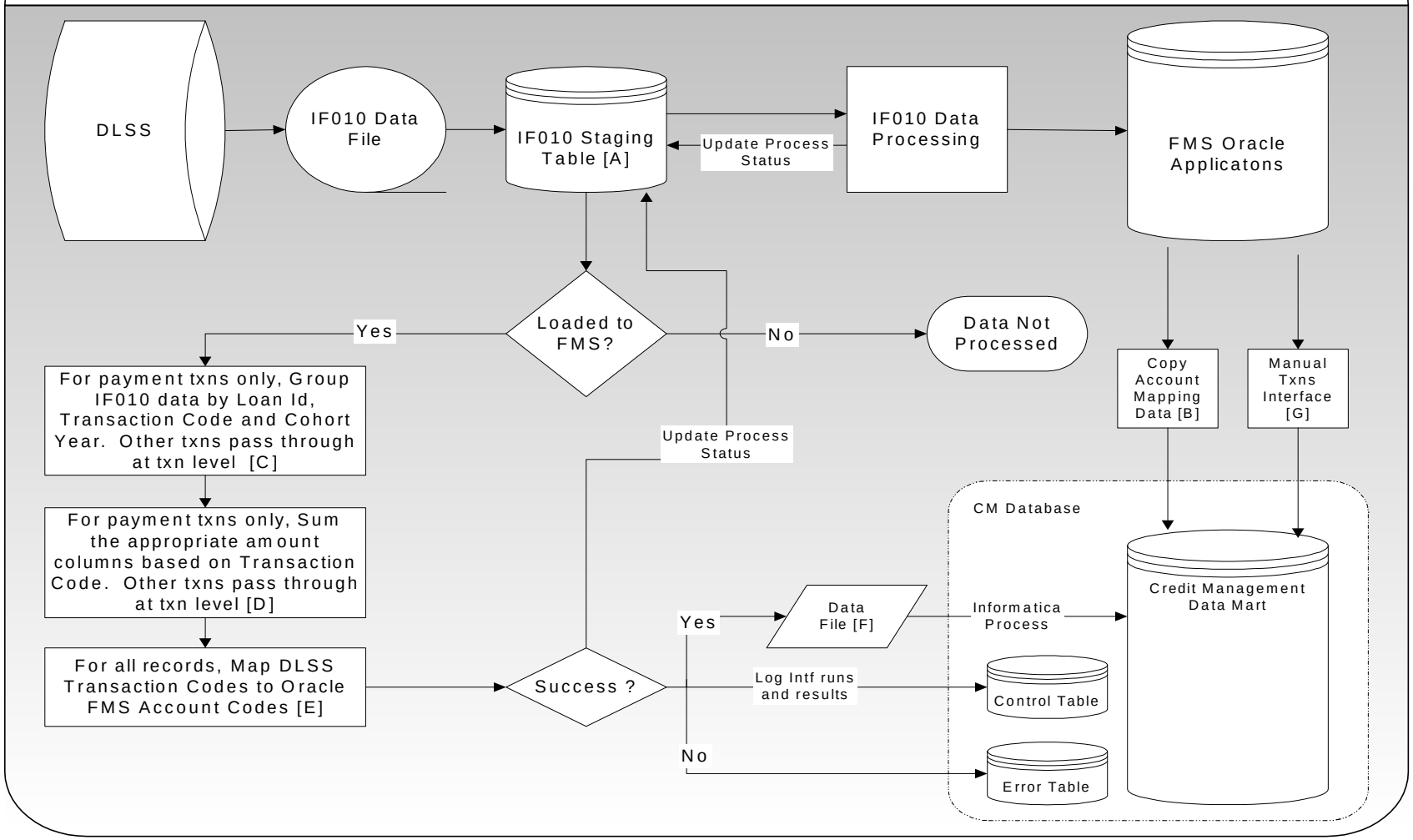
Errors will be reported on a control report executed automatically after the interface. The detailed design of this report is provided in section 2.2.1 of this document.

**Reprocessing Strategy:**
Every interface run will process all new records and records that were in error during previous runs. The records in error will be successfully processed if the cause of the error has been fixed.

**Scheduling:**
The interface will be scheduled to execute automatically on a daily basis immediately after the Oracle FMS IF10 interface execution is complete.

**Program Flow:**

Fig 2.1.1.1 - IF010 Data to CM Data Mart - Program Flow



#### 2.1.1.2 Program Details

| | |
|---|---|
| **Program Name** | Dlss_if10_intf.sql |
| **Description** | This program is designed to read the IF10 data, process it and write the output to a flat file |
| **Data Source** | Staging Table, DLSS_IF010_DETAIL_TEMP in Oracle FMS |
| **Data Volume** | Average 600K / day |
| **Frequency** | Daily |
| **Source Platform** | Oracle |
| **Target Platform** | Oracle |
| **Output Media** | Flat file |
| **Pseudocode** | Begin<br>Copy Account Mapping Table FFELGA_ACCOUNT_SEGMENTS from Oracle FMS database<br><br>Select data from table DLSS_IF010_DETAIL_TEMP when column STATUS = 'Processed' and CMDM_Status = NEW or Error in the Oracle FMS database.<br>If Payment transactions<br>Group the records by Loan_id, Tran_cash_type_cd and Co_yr<br>Sum the required amount columns based on Tran_cash_type_cd (Appendix A for details)<br>else<br>Records are not summarized<br><br>Perform account mapping process which will translate Tran_cash_type_cd to Oracle Account Segments<br>(See Account Mapping Process section for details)<br>Derive value for the Interface Id column.<br>If LC transaction, Interface Id = LO0101<br>If LO transaction, Interface Id = LO0401<br><br>If Error<br>Write details of the error to error table<br>Update column DLSS_IF010_DETAIL_TEMP.CMDM_Status = 'Error'<br>End If<br><br>Update column DLSS_IF010_DETAIL_TEMP.CMDM_Status = 'Processed'<br>Write successful data to an output data file<br><br>End; |

**Account Mapping Process**
The Account Mapping process involves translating the DLSS transaction codes received in the IF010 data file to Oracle FMS equivalent Account codes.

Every DLSS transaction code (Eg: 4090A, 5040NL, etc…) will be mapped to a 15 segment Oracle FMS account code. The Oracle FMS account code is made of the following segments.

1. Fund
2. Category
3. Budget Fiscal Year
4. Account
5. Organization
6. Limitation
7. Object Class
8. Activity
9. CFDA
10. Cohort Year
11. Sector
12. Source Code
13. Cost Code
14. Institution
15. Loan / Grant Type

The mapping table is attached as Appendix F for reference.

**Below is the input field detail listing of the IF010 table columns used by the IF010 interface. The next table contains the output field listing. Both tables have a source/target column to help map columns across the tables.**

**Input Field Detail (IF010 staging table)**

| Field Name | Field Position | Length | Format | Output Field Name |
|---|---|---|---|---|
| Record_Type | NA | 1 | Char | Not Used |
| Soc_nbr | NA | 9 | Number | SSN |
| Packet_nbr | NA | 1 | Number | Not Used |
| Client_cd | NA | 2 | Char | Not Used |
| Port_nbr | NA | 12 | Number | School Id |
| Disb_dt | NA | 8 | Date | Disbursement Date |
| Sale_dt | NA | 8 | Date | Not Used |
| Bond_id | NA | 2 | Number | Not Used |
| Loan_id | NA | 21 | Number | Loan Id |
| School | NA | 6 | Number | Not Used |
| Guarantor | NA | 2 | Char | Not Used |
| Int_rate | NA | 6 | Number | Interest Rate |

| Field Name | Field Position | Length | Format | Output Field Name |
|---|---|---|---|---|
| Proc_dt | NA | 8 | Date | Process Date |
| Tran_cash_type_cd | NA | 6 | Char | SLSS TC/Transaction Code, Cash Code, Type Code |
| Base_cd | NA | 1 | Char | Not Used |
| Ibsa_reason | NA | 1 | Char | Not Used |
| Eff_dt | NA | 8 | Date | Effective Date |
| Ref_dt | NA | 8 | Date | Not Used |
| Borr_count | NA | 5 | Number | Not Used |
| Note_count | NA | 5 | Number | Not Used |
| Disb_count | NA | 5 | Number | Not Used |
| Ola_amt | NA | 11 | Number | Amount |
| Int_cap_amt | NA | 11 | Number | Amount |
| Borr_int_paid_amt | NA | 11 | Number | Amount |
| Borr_prin_paid_amt | NA | 11 | Number | Amount |
| Claim_int_paid_amt | NA | 11 | Number | Amount |
| Claim_prin_paid_amt | NA | 11 | Number | Amount |
| Pbo_amt | NA | 11 | Number | Amount |
| Rebate_amt | NA | 11 | Number | Amount |
| Sch_refund_amt | NA | 11 | Number | Amount |
| Irb_amt | NA | 11 | Number | Amount |
| Irgc_amt | NA | 11 | Number | Not Used |
| Irgp_amt | NA | 11 | Number | Not Used |
| Late_chg_amt | NA | 11 | Number | Amount |
| Late_chg_paid | NA | 11 | Number | Amount |
| Borr_name | NA | 25 | Char | Not Used |
| Loan_type | NA | 1 | Char | Loan Type |
| Void_flag | NA | 1 | Char | Not Used |
| Pen_error_type | NA | 1 | Char | Not Used |
| Basic_alternate_flag | NA | 1 | Char | Not Used |
| Orig_fee_amt | NA | 11 | Number | Amount |
| Note_amt | NA | 11 | Number | Not Used |
| Nsf_chg_amt | NA | 11 | Number | Amount |
| Nsf_chg_paid_amt | NA | 11 | Number | Amount |
| Days_past_due | NA | 9 | Number | Days Past Due |
| Trace_nbr | NA | 7 | Number | Trace Number |
| Deposit_ticket | NA | 6 | Char | Deposit Ticket |
| Deposit_ticket_dt | NA | 8 | Date | Not Used |
| Deposit_type | NA | 6 | Char | Not Used |
| Check_nbr | NA | 15 | Number | Not Used |
| Check_type | NA | 2 | Char | Not Used |

| Field Name | Field Position | Length | Format | Output Field Name |
|---|---|---|---|---|
| Fars | NA | 1 | Char | Not Used |
| Payer_name | NA | 25 | Char | Not Used |
| Co_yr | NA | 2 | Number | Not Used |
| CRC | NA | 4 | Char | CRC-Cohort Year<br>CRC-Program Type<br>CRC-Code Risk Category |
| Disb_segment | NA | 2 | Number | Disbursement Number |

**Output Field Detail ( Fixed format flat file )**

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| SSN | 1 | 9 | Char | Soc_nbr |
| School Id | 11 | 6 | Char | Port_nbr |
| Disbursement Date | 18 | 11 | Date | Disb_dt |
| Loan Id | 30 | 21 | Char | Loan_id |
| Interest Rate | 52 | 10 | Number | Int_rate |
| Process Date | 63 | 11 | Date | Proc_dt |
| SLSS TC / Transaction Code | 75 | 4 | Char | First 4 characters of Tran_cash_type_cd |
| Cash Code | 80 | 1 | Char | 5th character of Tran_Cash_type_cd |
| Transaction Type Code | 82 | 1 | Char | 6th character of Tran_cash_type_cd |
| Effective Date (Transaction Date) | 84 | 11 | Date | Eff_dt |
| Amount | 96 | 15 | Number | All amount fields on the IF010 data file |
| Loan Type | 112 | 1 | Char | Loan_type |
| Deposit Ticket | 114 | 10 | Char | Deposit_ticket |
| CRC-Cohort Year | 125 | 2 | Number | First 2 characters of CRC |
| CRC-Program Type | 128 | 1 | Number | 3rd character of CRC |
| CRC-Code Risk Category | 130 | 1 | Number | 4th character of CRC |
| Disbursement Number | 132 | 2 | Number | Disb_segment |
| Days Past Due | 135 | 9 | Number | Days_past_Due |
| Fund | 145 | 7 | Char | Derived using tran_Cash_type_cd |
| Category | 153 | 1 | Char | Derived using tran_Cash_type_cd |
| Budget Year | 155 | 2 | Char | Derived using tran_Cash_type_cd |
| Account | 158 | 6 | Char | Derived using tran_Cash_type_cd |
| Organization | 165 | 8 | Char | Derived using tran_Cash_type_cd |
| Limitation | 174 | 3 | Char | Derived using tran_Cash_type_cd |
| Object Class | 178 | 5 | Char | Derived using tran_Cash_type_cd |
| Activity | 184 | 3 | Char | Derived using |

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| | | | | tran_Cash_type_cd |
| CFDA | 188 | 3 | Char | Derived using tran_Cash_type_cd |
| Sector | 192 | 1 | Char | Derived using tran_Cash_type_cd |
| Source Code | 194 | 2 | Char | Derived using tran_Cash_type_cd |
| Cost Code | 197 | 2 | Char | Derived using tran_Cash_type_cd |
| Institution | 200 | 6 | Char | Derived using tran_Cash_type_cd |
| Loan/Grant Type | 207 | 2 | Char | Derived using tran_Cash_type_cd |
| Interface Id | 210 | 6 | Char | Will be derived initially. Servicing's R3 release will include interface id field in the IF010 data file, after which the source would be the IF010 file. |
| FMS Transaction Code | 218 | 15 | Char | Derived using tran_Cash_type_cd |
| Trace Number | 235 | 7 | Char | Trace_nbr |

### 2.1.2 Pre-FMS IF020 transactions to CMDM

The Pre-FMS IF020 to Data Mart detailed design lays out the technical design for transfer of the required IF020 data from the DLSS to the Credit Management database.

The unapplied refund transactions (FARS Code = 3) in the IF020 data file will be processed by the IF020 interface. Although the CMDM was not to store the non-borrower level data, a conscious decision was made to include the unapplied refund transactions. This is because FMS summarizes the transactions received on a daily basis and loses track of the individual transactions. These transactions may be required at a later date for audit or query purposes.

The IF020 unapplied refund transactions will be stored in the CM database, but will not be combined with the borrower level data stored in the CMDM. They will be input to a separate table insulating the IF020 transactions totally from the CMDM. By storing the unapplied refund transactions in a separate table, we achieve:

- Support to service the summarized IF020 transactions in FMS, if required
- Keep the IF020 transactions in the CM database, but not part of the primary CMDM repository of borrower level data
- IF020 data would never appear in any of the reports from the main CMDM repository

The IF020 transactions can be moved, reported on or deleted at a later date from the CM database without any impact to the CMDM

#### 2.1.2.1 Program Overview

**Environment:**

Hardware: HP V Class Server
Operating System: HP Unix
Database: Oracle RDBMS Version 8.1.6
The interface will be coded using Oracle PL/SQL and required Unix utilities.

**Process:**

This section describes the interface process with reference to Fig 2.1.2.1, the program flow schematic depicted in the next section:

Step A:

The Oracle FMS System receives the IF020 data file on a daily basis. FMS will load the transactions to a staging table in the FMS database and process them to load Oracle General Ledger. There will be a flag in the staging table to indicate whether the transaction was successfully processed by FMS.

Step B:

The account mapping data will be copied from Oracle FMS database to the Credit Management database. This is done to ensure that Oracle FMS and the CMDM always use the same account mapping rules to arrive at the Oracle FMS account codes.

Step C:
Only rows that are successfully processed by FMS will be processed by the Pre-FMS IF020 to Data Mart interface.

Every record being processed will be taken through an account mapping process to translate the servicing transaction code to FMS account codes.
The IF020 transactions are stored as original transactions. There is no summarization done at loan level. The IF020 interface will process only unapplied refunds (FARS Code = 3). FMS also processes unapplied refunds only from the IF020 data file. This is because this is the only transaction in the IF020 data file that creates accounting events

Step D:
Data successfully translated to Oracle FMS account codes are written to a fixed format flat file. This file serves as input to the Informatica process to load the separate IF020 table in CM database. The records that did not successfully translate to Oracle FMS account codes are flagged as error records and the error messages are written to an error table in the CM database.

The data in error will continue to stay in the staging table until they are resolved by FMS Support, after which the Pre-FMS IF020 to Data Mart interface will process the records

The major validations performed to process a transaction successfully are:

- FMS account mapping for the SLSS TC Code should be defined and available in FMS
- FMS account mapping definition for the SLSS TC Code should be complete
- Institution should be valid and be defined in FMS
- Variable segments in the FMS Accounting Flexfield such as Limitation and Institution should be successfully derived using data from the IF010 record and FMS application

Step E:
This step indicates the Manual transaction interface, to transfer the manual transactions entered in Oracle FMS to the CMDM. This process is documented in Section 2.1.4 of this document.
Every interface execution and summary results information regarding the execution of the interface will be logged in a control table. The control table will have:

- Name of the interface executed
- Date and Time interface started
- Number of rows processed
- Number of rows successfully processed
- Date and Time interface completed

**Error Handling:**
Errors encountered during the interface execution will be written to an error table. The error table will have:

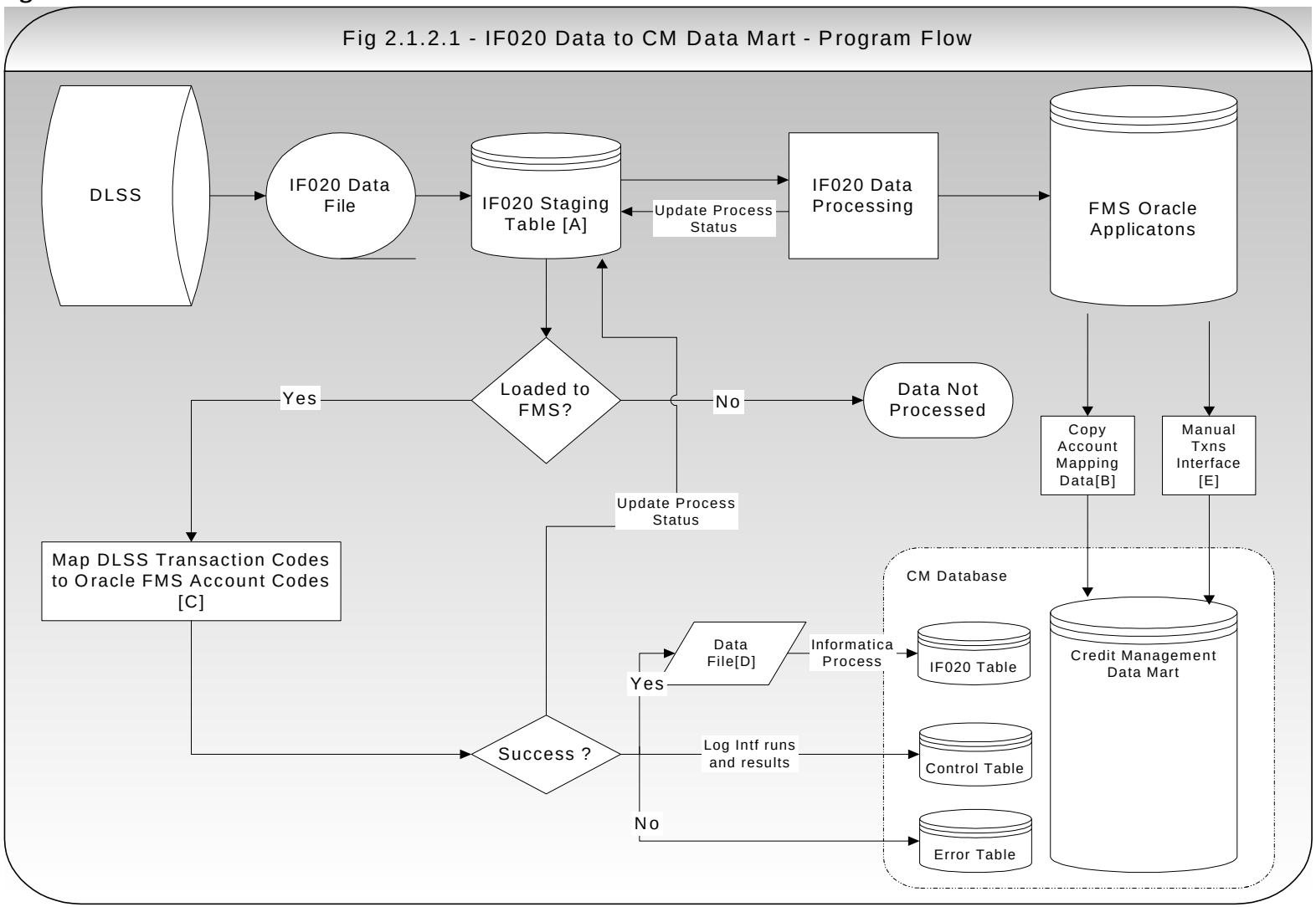
- Name of the interface executed
- Date and Time error occurred
- Primary key of the transaction in error
- Error Message

Errors will be reported on a control report executed automatically after the interface. The detailed design of this report is provided in section 2.2.1 of this document.

**Reprocessing Strategy:**
Every interface run will process all new records and records that were in error during previous runs. The records in error will be successfully processed if the cause of the error has been fixed.

**Scheduling:**
The interface will be scheduled to execute automatically on a daily basis immediately after the Oracle FMS IF020 interface execution is complete.

**Program Flow:**



#### 2.1.2.2 Program Details

| | |
|---|---|
| **Program Name** | Dlss_if20_intf.sql |
| **Description** | This program is designed to read the IF20 data, validate data for each transaction and write the output to a flat file |
| **Data Source** | Staging Table, DLSS_IF020_DETAIL_TEMP in Oracle FMS |
| **Data Volume** | Average 2000 / day |
| **Frequency** | Daily |
| **Source Platform** | Oracle |
| **Target Platform** | Oracle |
| **Output Media** | Flat file |
| **Pseudocode** | Begin<br>If Account Mapping Table not copied for current day,<br>Copy Account Mapping Table<br>FFELGA_ACCOUNT_SEGMENTS<br>from Oracle FMS database<br><br>Select data from table DLSS_IF020_DETAIL_TEMP when<br>column STATUS = 'Processed' and CMDM_Status = NEW or Error<br>and FARS Code = 3 in the Oracle FMS database.<br><br>Perform account mapping process which will translate<br>Tran_cash_type_cd to Oracle Account Segments<br>(See Account Mapping Process section for details)<br><br>If Error<br>Write details of the error to error table<br>Update column<br>DLSS_IF020_DETAIL_TEMP.CMDM_Status = 'Error'<br>End If<br><br>Update column<br>DLSS_IF020_DETAIL_TEMP.CMDM_Status = 'Processed'<br>Write successful data to an output data file<br><br>End; |

**Below is the input field detail listing of the IF020 table columns used by the IF020 interface. The next table contains the output field listing. Both tables have a source/target column to help map columns across the tables.**

**Input Field Detail (IF020 Staging Table)**

| Field Name | Field Position | Length | Format | Target Field Name |
|---|---|---|---|---|
| Dls020s1_record_type | NA | 1 | Char | Not Used |
| Dls020s1_Ssn1 | NA | 3 | Char | SSN |
| Dls020s1_Ssn2 | NA | 2 | Char | SSN |
| Dls020s1_Ssn3 | NA | 4 | Char | SSN |
| Dls020s1_Pkt_nbr | NA | 1 | Char | Not Used |
| Dls020s1_Eff_dt | NA | 8 | Char | Effective Date |
| Dls020s1_Trn_cd | NA | 2 | Char | Transaction Code |
| Dls020s1_Trn_cat | NA | 2 | Char | Transaction Category |
| Dls020s1_Amt1 | NA | 11 | Number | Amount1 |
| Dls020s1_Amt2 | NA | 11 | Number | Not Used |
| Dls020s1_Act_cd | NA | 1 | Char | Not Used |
| Dls020s1_Src_cd | NA | 1 | Char | Not Used |
| Dls020s1_Typ_cd | NA | 1 | Char | Not Used |
| Dls020s1_Cap_cd | NA | 1 | Char | Not Used |
| Dls020s1_Err_nbr | NA | 6 | Char | Error Number |
| Dls020s1_Rcycle_dt | NA | 8 | Char | Not Used |
| Dls020s1_Payer_name | NA | 20 | Char | Not Used |
| Dls020s1_Trace_nbr | NA | 7 | Char | Not Used |
| Dls020s1_Deposit_ticket | NA | 6 | Char | Deposit Ticket |
| Dls020s1_Deposit_ticket_dt | NA | 8 | Char | Deposit Ticket Date |
| Dls020s1_Deposit_type | NA | 1 | Char | Deposit Type |
| Dls020s1_Check_nbr | NA | 15 | Char | Not Used |
| Dls020s1_fars | NA | 1 | Char | Not Used |
| Dls020s1_Key_prc_cd | NA | 6 | Char | Not Used |
| Dls020s1_Key_batch_nbr | NA | 6 | Char | Not Used |
| Dls020s1_Key_seq_nbr | NA | 6 | Char | Not Used |

**Output Field Detail (Fixed format flat file)**

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| SSN | 1 | 9 | Char | Dls020s1_ssn1, Dls020s1_ssn2, Dls020s1_ssn3 |
| Effective Date | 11 | 11 | Date | Dls020s1_Eff_dt |
| Transaction Code | 23 | 6 | Char | Dls020s1_Trn_Cd |
| Transaction Category | 28 | 4 | Char | Dls020s1_Trn_Cat |
| Amount1 | 33 | 15 | Number | Dls020s1_Amt1 |
| Error Number | 49 | 20 | Char | Dls020s1_Err_nbr |

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| Deposit Ticket | 70 | 6 | Char | Dls020s1_deposit_ticket |
| Deposit Ticket Date | 77 | 8 | Number | Dls020s1_deposit_ticket_dt |
| Deposit Type | 86 | 1 | Number | Dls020s1_deposit_type |
| Fund | 88 | 7 | Char | Derived from FMS Account mapping table |
| Category | 96 | 1 | Char | Derived from FMS Account mapping table |
| Budget Year | 98 | 2 | Char | Derived from FMS Account mapping table |
| Account | 101 | 6 | Char | Derived from FMS Account mapping table |
| Organization | 108 | 8 | Char | Derived from FMS Account mapping table |
| Limitation | 117 | 3 | Char | Derived from FMS Account mapping table |
| Object Class | 121 | 5 | Char | Derived from FMS Account mapping table |
| Activity | 127 | 3 | Char | Derived from FMS Account mapping table |
| CFDA | 131 | 3 | Char | Derived from FMS Account mapping table |
| Sector | 135 | 1 | Char | Derived from FMS Account mapping table |
| Source Code | 137 | 2 | Char | Derived from FMS Account mapping table |
| Cost Code | 140 | 2 | Char | Derived from FMS Account mapping table |
| Institution | 143 | 6 | Char | Derived from FMS |

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| | | | | Account mapping table |
| Loan/Grant Type | 150 | 2 | Char | Derived from FMS Account mapping table |
| FMS Transaction Code | 153 | 15 | Char | Derived from FMS Account mapping table |

### 2.1.3 Pre-FMS G Record transactions to CMDM

The Pre-FMS G record data to Data Mart detailed design lays out the technical design for transfer of the required G record data from the DLSS to the Credit Management Data Mart (CMDM).

The G record data file consists of the transactions mentioned below:

- Summary Deposits (FAD)
- Drawdowns (FID)
- Inter-Agency transfers (FIG)
- Excess Cash (FIE)

The FID and FIE transactions in the G record data file are not processed by FMS. This is because the FID and FIE transactions are sent directly to FMS from the legacy systems (LO and LC). Specifically, FMS processes only the FAD and FIG transactions in the G record data file. Therefore the CMDM also processes just the FAD and FIG transactions that are processed by FMS. These transactions are stored in the CMDM solely for the purposes of support and servicing of the summarized FMS transactions.

The following transactions will be processed by the G record interface initially:

1. SF215 deposits
2. SF5515 corrections - NSFs
3. Inter-agency transfers

There is currently a plan to automate the lockbox deposit and NSF transactions. Post lockbox automation, 2 additional transactions will be processed by the G record interface

4. SF215 deposits from lockbox
5. SF5515 corrections –NSFs from lockbox

#### 2.1.3.1 Program Overview

**Environment:**

Hardware: HP V Class Server
Operating System: HP Unix
Database: Oracle RDBMS Version 8.1.6
The interface will be coded using Oracle PL/SQL and required Unix utilities.

**Process:**

This section describes the interface process with reference to Fig 2.1.3.1, the program flow schematic depicted in the next section:

Step A:
The Oracle FMS System receives the G record data file on a daily basis. FMS will load the transactions to a staging table in the FMS database and process them to load Oracle General Ledger. There will be a flag in the staging table to indicate whether the transaction was successfully processed by FMS.

Step B:
The account mapping data will be copied from Oracle FMS database to the Credit Management database, if required. This is done to ensure that Oracle FMS and the CMDM always use the same account mapping rules to arrive at the Oracle FMS account codes.

Step C:
Only rows that are successfully processed by FMS will be processed by the Pre-FMS G record to Data Mart interface.

> Every record being processed will be taken through an account mapping process to translate the servicing transaction code to FMS account codes. The G record transactions (FAD and FIG) are stored as original transactions. There is no summarization at any level.

Step D:
Data successfully translated to Oracle FMS account codes are written to a fixed format flat file. This file serves as input to the Informatica process to load the CMDM. The records that did not successfully translate to Oracle FMS account codes are flagged as error records and the error messages are written to an error table in the CM database.

The data in error will continue to stay in the staging table until they are resolved by FMS Support, after which the Pre-FMS G record data to Data Mart interface will process the records

The major validations performed to process a transaction successfully are:

- FMS account mapping for the SLSS TC Code should be defined and available in FMS
- FMS account mapping definition for the SLSS TC Code should be complete
- Institution should be valid and be defined in FMS
- Variable segments in the FMS Accounting Flexfield such as Limitation and Institution should be successfully derived using data from the IF010 record and FMS application

Step E:
This step indicates the Manual transaction interface, to transfer the manual transactions entered in Oracle FMS to the CMDM. This process is documented in section 2.1.4 of this document.

Every interface execution and summary results information regarding the execution of the interface will be logged in a control table. The control table will have:

- Name of the interface executed
- Date and Time interface started
- Number of rows processed
- Number of rows successfully processed
- Date and Time interface completed

**Error Handling:**
Errors encountered during the interface execution will be written to an error table. The error table will have:

- Name of the interface executed
- Date and Time error occurred
- Primary key of the transaction in error
- Error Message

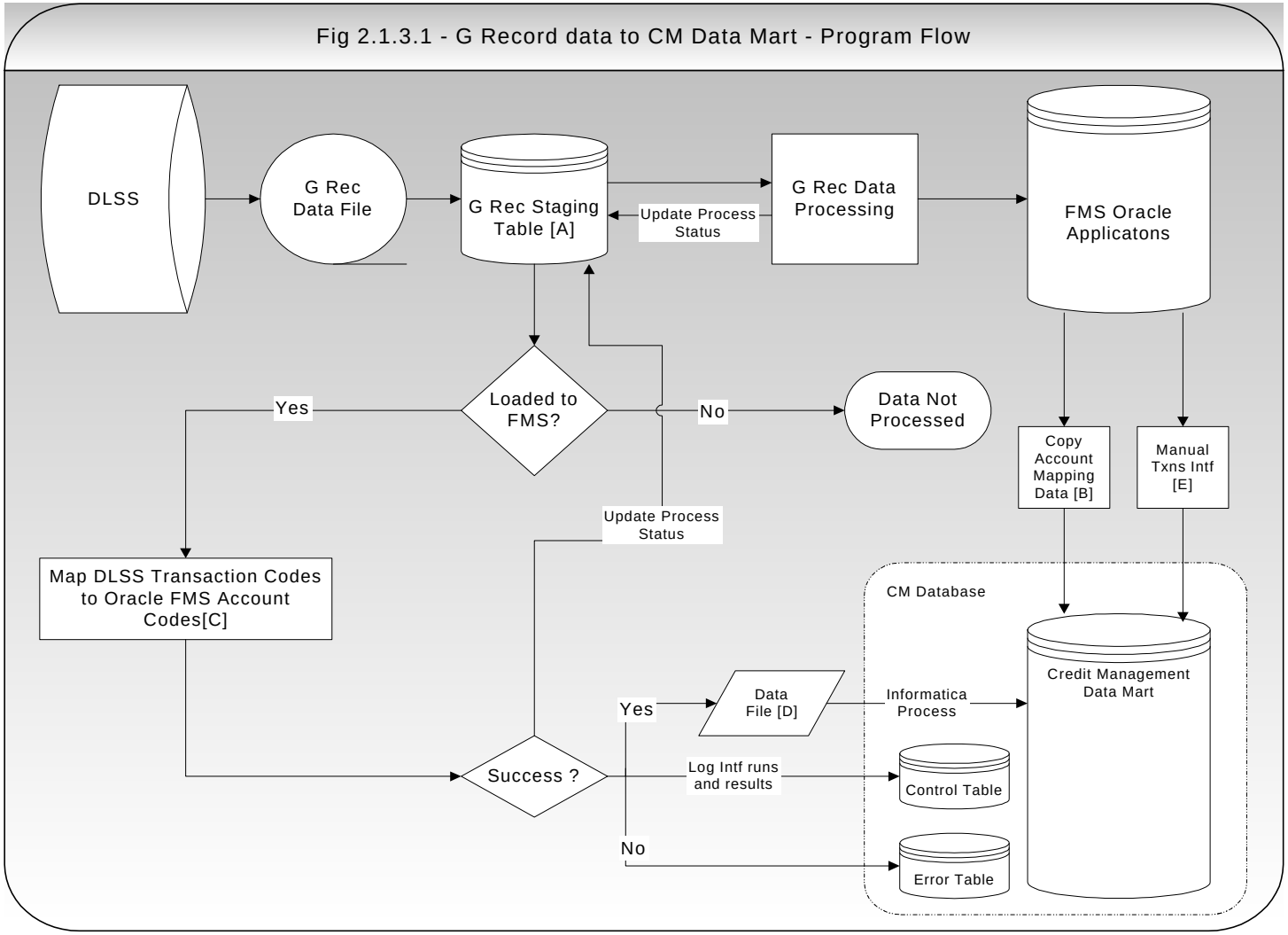
Errors will be reported on a control report executed automatically after the interface. The detailed design of this report is provided in section 2.2.1 of this document.

**Reprocessing Strategy:**
Every interface run will process all new records and records that were in error during previous runs. The records in error will be successfully processed if the cause of the error has been fixed.

**Scheduling:**
The interface will be scheduled to execute automatically on a daily basis immediately after the Oracle FMS G record interface execution is complete.

**Program Flow:**

Fig 2.1.3.1 - G Record data to CM Data Mart - Program Flow



#### 2.1.3.2 Program Details

| | |
|---|---|
| **Program Name** | Dlss_grec_intf.sql |
| **Description** | This program is designed to read the G record data, process it and write the output to a flat file |
| **Data Source** | Staging Table, DLSS_GREC_DETAIL_TEMP in Oracle FMS |
| **Data Volume** | Average 5000 / day |
| **Frequency** | Daily |
| **Source Platform** | Oracle |
| **Target Platform** | Oracle |
| **Output Media** | Flat file |
| **Pseudocode** | Begin<br><br>Verify if Account mapping table was copied from Oracle FMS for the<br>current day<br>If not copied, copy Account mapping table from Oracle FMS<br><br>Select data from table DLSS_GREC_DETAIL_TEMP when column<br>STATUS = 'Processed' and<br>CMDM_Status = NEW or Error in the Oracle FMS database.<br><br>For each det_slss_cash_type_tc (Appendix A for details)<br>Perform account mapping process which will translate<br>Tran_cash_type_cd to Oracle Account Segments<br><br>If Error<br>Write details of the error to error table<br>Mark table DLSS_GREC_DETAIL_TEMP.CMDM_Status = 'Error'<br>End If<br>Write successful data to an output data file<br><br>End; |

**Below is the input field detail listing of the G record table columns used by the G record interface. The next table contains the output field listing. Both tables have a source/target column to help map columns across the tables.**

**Input Field Detail (G Record Staging Table)**

| Field Name | Field Position | Length | Format | Target Field Name |
|---|---|---|---|---|
| G_rec_tran_type | NA | 5 | Char | Not Used |
| Det_gl_mm | NA | 2 | Char | Transaction Date |
| Det_gl_dd | NA | 2 | Char | Transaction Date |
| Det_gl_cc | NA | 2 | Char | Transaction Date |
| Det_gl_yy | NA | 2 | Char | Transaction Date |
| Det_gl_trans_code | NA | 2 | Char | FARS TC |
| Det_gl_profile | NA | 2 | Char | Profile |
| Det_gl_level | NA | 2 | Char | Level |
| Det_gl_amount | NA | 15 | Number | Amount |
| Det_gl_school_id | NA | 12 | Char | School |
| Det_gl_object_code | NA | 2 | Char | Not Used |
| Det_gl_loan_type | NA | 2 | Char | Loan Type |
| Det_gl_pdoc_type | NA | 1 | Char | Primary Reference No |
| Det_gl_docid1p | NA | 6 | Char | Primary Reference No |
| Det_gl_docid2p | NA | 7 | Char | Primary Reference No |
| Det_servicer_id | NA | 1 | Char | Primary Reference No |
| Det_gl_vendor_id | NA | 18 | Char | Primary Reference No |
| Det_gl_loan_id | NA | 21 | Char | Loan Id |
| Det_gl_crc | NA | 4 | Char | CRC |
| Det_slss_cash_type_tc | NA | 6 | Char | SLSS Transaction Code |
| Det_gl_note_amount | NA | 13 | Number | Not Used |
| Det_gl_process_date | NA | 4 | Char | Not Used |
| Det_gl_disb_no | NA | 1 | Char | Disbursement Number |

**Output Field Detail (Fixed format flat file)**

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| Effective Date (Transaction Date) | 1 | 11 | Date | Det_gl_mm, Det_gl_dd, Det_gl_cc, Det_gl_yy |
| FARS TC | 13 | 2 | Char | Det_gl_trans_code |
| Profile | 16 | 2 | Char | Det_gl_profile |
| Level | 19 | 2 | Char | Det_gl_level |
| Amount | 22 | 15 | Number | Det_gl_amount |
| School | 38 | 6 | Char | Det_gl_school_id |
| Loan Type | 45 | 1 | Char | Det_gl_loan_type |
| Primary Reference No | 47 | 15 | Char | Det_gl_pdoc_type<br>Det_gl_docid1p<br>Det_gl_docid2p<br>Det_gl_servicer_id |
| CRC-Cohort Year | 63 | 2 | Number | Det_gl_crc |

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| CRC-Program Type | 66 | 1 | Number | Det_gl_crc |
| CRC-Code Risk Category | 68 | 1 | Number | Det_gl_crc |
| SLSS TC/Transaction Code | 70 | 4 | Char | Det_slss_cash_type_tc |
| Disbursement Number | 75 | 11 | Date | Det_gl_disb_no |
| FMS TC | 87 | 10 | Char | Derived from FMS Account mapping |
| Fund | 98 | 7 | Char | Derived from FMS Account mapping |
| Category | 106 | 1 | Char | Derived from FMS Account mapping |
| Budget Year | 108 | 2 | Char | Derived from FMS Account mapping |
| Account | 111 | 6 | Char | Derived from FMS Account mapping |
| Organization | 118 | 8 | Char | Derived from FMS Account mapping |
| Limitation | 127 | 3 | Char | Derived from FMS Account mapping |
| Object Class | 131 | 5 | Char | Derived from FMS Account mapping |
| Activity | 137 | 3 | Char | Derived from FMS Account mapping |
| CFDA | 141 | 3 | Char | Derived from FMS Account mapping |
| Sector | 145 | 1 | Char | Derived from FMS Account mapping |
| Source Code | 147 | 2 | Char | Derived from FMS Account mapping |
| Cost Code | 150 | 2 | Char | Derived from FMS Account mapping |
| Institution | 153 | 6 | Char | Derived from FMS Account mapping |
| Loan/Grant Type | 160 | 2 | Char | Derived from FMS Account mapping |

### 2.1.4 FMS Manual Transactions to CMDM

The Credit Management Data Mart (CMDM) will store all detail transactions that pertain to the Direct Loan Servicing System (DLSS), processed and summarized at a institution level by Oracle Financial Management System (FMS). The transactions are received via the IF010, IF020 and G record transaction data files sent on a daily basis from DLSS.

In addition to the above-mentioned transactions, there are a few manual transactions that are directly keyed into the FMS system. To maintain the data integrity between CMDM and FMS, the required manual transactions entered in FMS will be transferred to CMDM.

The FMS Manual transactions to CMDM detailed design lays out the technical design for transfer of the required manual transaction records from the FMS to CMDM.

#### 2.1.4.1 Program Overview

**Environment:**

Hardware: HP V Class Server
Operating System: HP Unix
Database: Oracle RDBMS Version 8.1.6
The interface will be coded using Oracle PL/SQL and required Unix utilities.

**Process:**

This section describes the interface process with reference to Fig 2.1.4.1, the program flow schematic depicted in the next section:

Step A:
Manual transactions will be entered in FMS as required. The following are the possible manual transactions in FMS:

1. Manual Journal Vouchers
2. Excess Cash
3. Refunds
4. Reissues
5. SF5515 Corrections
6. Summary deposits
7. Transfer unapplied refunds to treasury

The transactions are entered and saved in the FMS database. The table below describes the reasoning behind the decision whether a manual transaction type is to be transferred to the data mart or not

| Manual Transaction Type | CMDM | Description |
|---|---|---|
| Manual Journal Vouchers | Some | These are miscellaneous adjustments to be made to the CMDM. All entries made at the detail level and contain a valid Loan Id (follows the pattern of the 21 char loan id) will be transferred to the CMDM |
| Excess Cash | Yes | The CMDM will store deposits coming through the G records. The Excess Cash manual transactions will be transferred to the CMDM as it will be a summary deposit update. |
| Refunds<br>(i)Manual<br>(ii) Overpayment borrowers<br>(iii) Lender Consolidation | Yes | The Manual DCS transactions are now coming through the IF010 data file and will not be transferred to the CMDM<br><br>The overpayment borrower and lender consolidation transactions in the IF010 data file are requests that are processed by FMS in the FMS IF010 interface. It was decided that these would be transferred to the CMDM. There would be 2 manual transactions for every request that comes in on the IF010 record<br>(i) Reverse the original request that came in on the IF010<br>(ii) Re-enter another transaction with all the required details |
| Reissues | No | The transaction is coming through the IF010 data file and will not be transferred to the CMDM |
| SF5515 Corrections | No, if Automated | There is a plan to automate the SF5515 corrections. If automated, the transactions need not be transferred to the CMDM. As a contingency plan, the program will have the capability to process the SF5515 correction transactions. This capability can be disabled, if required with minimal changes to the program |
| Summary Deposits | No, if Automated | There is a plan to automate the summary deposits (SF215 ). If automated, the transactions need not be transferred to the CMDM. As a contingency, the program will have the capability to process the summary deposits. This capability can be disabled, if required with minimal changes to the |

| Manual Transaction Type | CMDM | Description |
|---|---|---|
| | | program |
| Transferring unapplied refunds to treasury | Yes | The transaction will be transferred to the CMDM as the detail will be lost when FMS rolls up data for the month end process |

Step B:
The interface will scan through the FMS database for all the required manual transactions posted for the current day. The manual transactions are recognized by:

- Reading the date and time stamp for the records entered during the day
- Reading the user who entered the transaction
- All transactions not created by the FMS interface user will be considered manual transactions
- Determine if the manual transaction is to be transferred to the CMDM based on the reason in the table mentioned in Step A
- It is important to note that the posted date may not be the same as the date on which the transaction was entered

Step C:
The extracted data is validated for valid values. The validation is performed based on the manual transaction type. All manual transactions should mandatory have the following columns:

- Transaction Date
- FMS Account code (15 Segment)
- CRC
- Transaction Amount
- Loan Id – (May or may not be a valid loan id depending on the transaction type)

For Manual Journal Vouchers, the transaction is to validate the Loan id will be validated for the proper structure.

Step D:
The extracted records will then be validated for account mapping against the Account Mapping table in the CM database. Records successfully mapped will be written to a fixed format flat file. This file will be the input to an Informatica process to load the CMDM.

If there are any errors, they will be written to the error table. The rows in error are re-processed during the next run of the interface. If the cause of the error has been fixed, the rows will be successfully processed.

The major validations performed to process a transaction successfully are:

- FMS account mapping for the SLSS TC Code should be defined and available in FMS
- FMS account mapping definition for the SLSS TC Code should be complete
- Institution should be valid and be defined in FMS
- Variable segments in the FMS Accounting Flexfield such as Limitation and Institution should be successfully derived using data from the IF010 record and FMS application

**Error Handling:**
Errors encountered during the interface execution will be written to an error table. The error table will have:

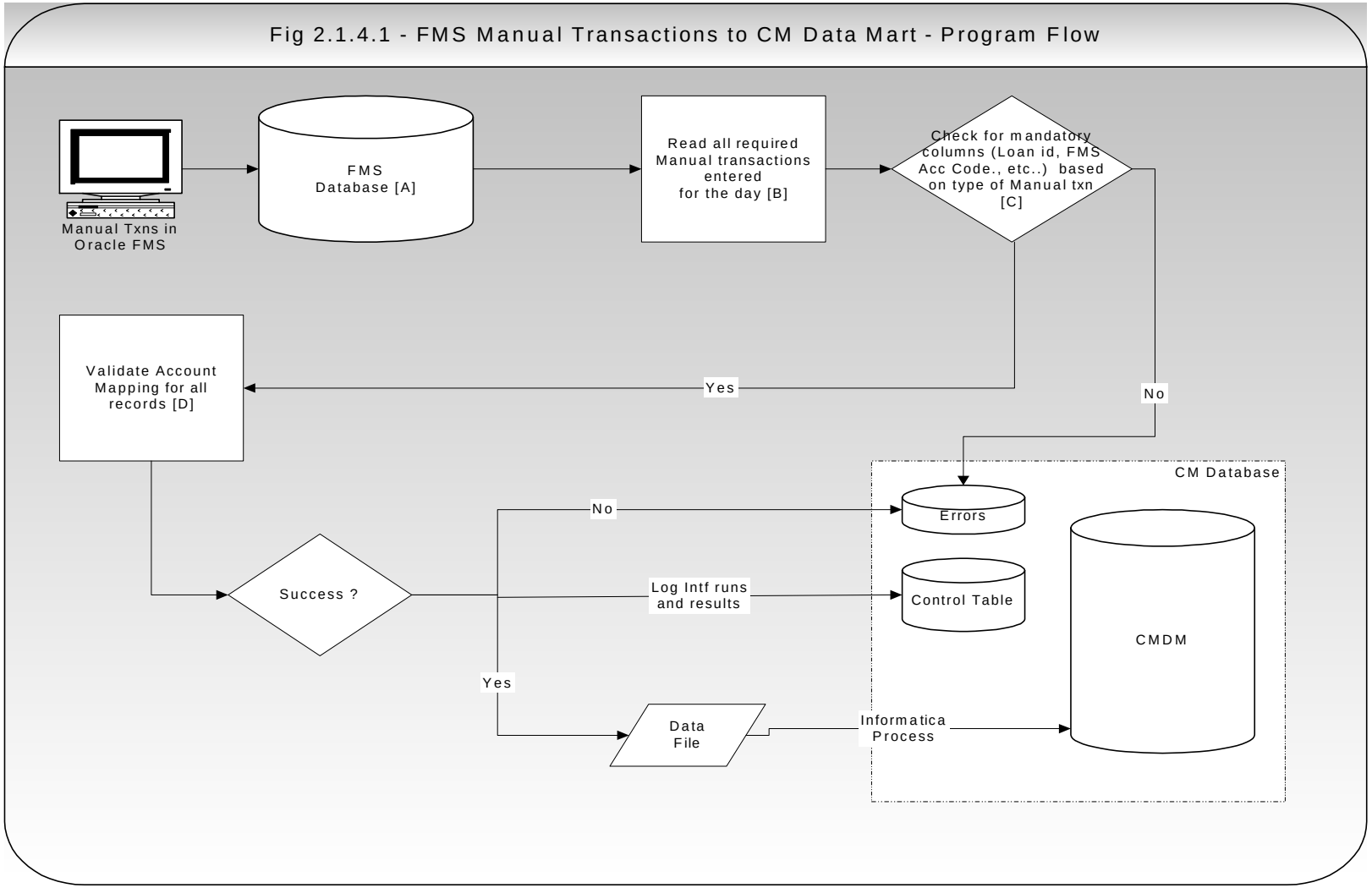
- Name of the interface executed
- Date and Time error occurred
- Primary key of the transaction in error
- Error Message

Errors will be reported on a control report executed automatically after the interface. The detailed design of this report is provided in section 2.2.1 of this document.

**Reprocessing Strategy:**
Every interface run will process all new records and records that were in error during previous runs. The records in error will be successfully processed if the cause of the error has been fixed.

**Scheduling:**
The interface will be scheduled to execute automatically on a daily basis.

**Program Flow:**



#### 2.1.4.2 Program Details

| | |
|---|---|
| **Program Name** | Dlss_mtxns_intf.sql |
| **Description** | This program is designed to read the manual transactions in FMS, validate the data and write the output to a fixed format flat file |
| **Data Source** | FMS |
| **Data Volume** | 2000 records / day |
| **Frequency** | Daily |
| **Source Platform** | Oracle |
| **Target Platform** | Oracle |
| **Output Media** | Flat File |
| **Pseudocode** | Begin<br>Copy Account Mapping Table FFELGA_ACCOUNT_SEGMENTS<br>from Oracle FMS database<br><br>Select data from GL_JE_HEADERS, GL_JE_LINES, GL_CODE_COMBINATIONS<br>when CREATED_BY IS NOT “FMS Interface”<br>and STATUS = ‘P’<br>and last_update_date = Today<br>and segment12 = ‘SV’ (Segment 12 is source code of the FMS Accounting flexfield)<br><br>Data is validated as described in Step C<br>Perform account mapping validation to verify all Oracle Account<br>Segments translate to a servicing transaction code<br>(See Account Mapping Process section for details)<br><br>If Error<br>Write details of the error to error table<br>End If<br><br>End; |

**Below is the input field detail listing of the Manual transaction columns used by the manual transactions interface. The next table contains the output field listing. Both tables have a source/target column to help map columns across the tables.**

**Input Field Detail (Oracle GL Tables)**

| Field Name | Field Position | Length | Format | Target Field Name |
|---|---|---|---|---|
| FMS Account Code (15 segment) | NA | 60 | Char | 15 Oracle segments starting from Fund and ending at Loan/Grant type in target table below |
| CRC | NA | 2 | Char | CRC |
| Description (Loan Id) | NA | 21 | Char | Description (Loan Id) |
| Transaction Date | NA | 10 | Char | Transaction Date |
| Primary Reference No | NA | 15 | Char | Primary Reference No |
| Secondary Reference No | NA | 15 | Char | Secondary Reference No |
| Amount | NA | 15 | Number | Amount |

**Field Detail (Fixed format flat file)**

| Field Name | Field Position | Length | Format | Source Field Name |
|---|---|---|---|---|
| SLSS TC | 1 | 6 | Char | Derived from the FMS account mapping table |
| CRC | 8 | 4 | Char | CRC |
| Description (Loan Id) | 13 | 21 | Char | Description (Loan Id) |
| Transaction Date | 35 | 10 | Char | Transaction Date |
| Primary Reference No | 46 | 15 | Char | Primary Reference No |
| Secondary Reference No | 62 | 15 | Char | Secondary Reference No |
| Amount | 78 | 15 | Number | Amount |
| FMS TC | 94 | 10 | Char | FMS Account Code |
| Fund | 105 | 7 | Char | FMS Account Code |
| Category | 113 | 1 | Char | FMS Account Code |
| Budget Year | 115 | 2 | Char | FMS Account Code |
| Account | 118 | 6 | Char | FMS Account Code |
| Organization | 125 | 8 | Char | FMS Account Code |
| Limitation | 134 | 3 | Char | FMS Account Code |
| Object Class | 138 | 5 | Char | FMS Account Code |
| Activity | 144 | 3 | Char | FMS Account Code |
| CFDA | 148 | 3 | Char | FMS Account Code |
| Sector | 152 | 1 | Char | FMS Account Code |
| Source Code | 154 | 2 | Char | FMS Account Code |
| Cost Code | 157 | 2 | Char | FMS Account Code |
| Institution | 160 | 6 | Char | FMS Account Code |
| Loan/Grant Type | 167 | 2 | Char | FMS Account Code |

## 2.2 REPORTS DETAIL DESIGN

### 2.2.1 Control Report for CMDM Interfaces

#### 2.2.1.1 Report Overview

The Control report for CMDM interfaces is a report required to evaluate the outcome of the daily inbound interface runs to load data to the Credit Management Data Mart (CMDM).

The CMDM will have the following daily inbound interfaces.

1. IF010 transactions from Direct Loan Servicing System (DLSS)
2. IF020 transactions from DLSS
3. G record transactions from DLSS
4. Manual transactions from Oracle FMS

The control report for CMDM interfaces will be executed after the above-mentioned interfaces have completed. The report output will be automatically e-mailed to the CMDM support team.

Source of data for this report will be a Control table and an Error table in the CM database. These tables will be populated with interface execution information and summary results by each of the interfaces when executed. Errors, if any will be written to the Error table. The control report will consolidate data from both the control table and the error table and provide output in the required format.

#### 2.2.1.2 Report Details

| | |
|---|---|
| **Report Name** | Control report for CMDM interfaces |
| **Description** | This document reports the outcome of IF010, IF020, G record and manual transaction interfaces to the CMDM. |
| **Use** | This report will be used by the CMDM support team to ensure that the interfaces executed successfully. The report will help to resolve errors, if any |
| **Frequency/Timing** | Daily. The report will be automatically executed after IF010, IF020, G record and Manual transaction interfaces have completed. |
| **Data Source** | This data for this report will be consolidated from the Control table and Error table in the Credit Management database |
| **Distribution** | CMDM Support |
| **Output Media** | Electronic copy |
| **Quality Control** | NA |
| **Volume** | Will vary according to the number of errors encountered. |
| **Number of Copies** | One copy to everyone on distribution |
| **Selection Screen Criteria** | Not Applicable |
| **Sort** | Not Applicable |

| | |
|---|---|
| **Report Name** | Control report for CMDM interfaces |
| **Sub Totals/Totals** | Not Applicable |
| **Sums** | Not Applicable |

#### 2.2.1.3 Report Field Details

*Note: Read Source/Calculation column as TableName.ColumnName*

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Interface Name | 1 | 50 | Char | C_Cmdm_Module_Control.Intf_Name |
| Execution Start Date and Time | 2 | 20 | Date | C_Cmdm_Module_Control.Start_Dt |
| Execution End Date and Time | 3 | 20 | Date | C_Cmdm_Module_Control.End_Dt |
| Rows Processed | 4 | 15 | Number | C_Cmdm_Module_Control.Rows_Processed |
| Rows Successfully processed | 5 | 15 | Number | C_Cmdm_Module_Control.Rows_success |
| Rows Rejected | 6 | 15 | Number | C_Cmdm_Module_Control.Rows_Processed - C_Cmdm_Module_Control.Rows_success |
| Error Message | 7 | 50 | Char | C_Cmdm_Module_Error.Error_Msg |

**Table Layouts:**

**Control Table – CMDM_MODULE _CONTROL**

| Column Name | Description | Data Type/Width | Null ? |
|---|---|---|---|
| Intf_id | Running sequence number to uniquely identify a row | Number | Not Null |
| Intf_Name | Name of the Module / Interface | Varchar2 (50) | Not Null |
| Start_Dt | Date and Time stamp the process started | Date | Not Null |
| End_Dt | Date and Time stamp the process ended | Date | Not Null |
| Rows_Processed | Number of rows processed by the program | Number | Not Null |
| Rows_Success | Number of rows successfully processed | Number | Not Null |
| Last_updated_by | User id of the person / program that | Varchar2(50) | Not Null |

| Column Name | Description | Data Type/Width | Null ? |
|---|---|---|---|
| | last updated the record | | |
| Last_update_date | Date the record was last updated | Date | Not Null |

**Error Table – CMDM_MODULE _ERROR**

| Column Name | Description | Data Type/Width | Null ? |
|---|---|---|---|
| Intf_id | Running sequence number to uniquely identify a row | Number | Not Null |
| Intf_Name | Name of the Module / Interface | Varchar2 (50) | Not Null |
| Primary_Col_Nm | Name of the primary / key column(s) | Varchar2(50) | Not Null |
| Primary_Col_Value | Value of the primary / key column(s) | Varchar2(80) | Not Null |
| Error_Msg | Error Message | Varchar2(512) | Not Null |
| Last_updated_by | User id of the person / program that last updated the record | Varchar2(50) | Not Null |
| Last_update_date | Date the record was last updated | Date | Not Null |

**Sample Error Messages**

Some sample error messages are listed below. These messages will be displayed along with the interface and other information required to uniquely identify the source of errors. The number of errors is expected to be significantly low or non-existent since we will be processing only the data that is successfully processed by FMS.

- SSN is Blank
- Loan Id is Blank
- Account Mapping is not available
- ORACLE ERROR - <Any error message returned by the Oracle Database)

### 2.2.1.4 Report Layout

RUN DATE: 06/01/98 STUDENT FINANCIAL ASSISTANCE PAGE: 1
Control Report for CMDM Interfaces TIME: 04:21:54

**Interface Name - IF010 Transactions Interface**

| *Start Dt/Time* | *End Dt/Time* | *Rows Processed* | *Rows Successful* | *Rows Rejected* |
|---|---|---|---|---|
| 05/31/98 18:30 | 05/31/98 20:00 | 950,000 | 949,995 | 5 |

Errors:
<Loan Id> <Transaction Code> < ----------Error Message---------->
<Loan Id> <Transaction Code> < ----------Error Message---------->

**Interface Name - IF020 Transactions Interface**

| *Start Dt/Time* | *End Dt/Time* | *Rows Processed* | *Rows Successful* | *Rows Rejected* |
|---|---|---|---|---|
| 05/31/98 18:30 | 05/31/98 19:01 | 200 | 200 | 0 |

Errors:

**Interface Name - G Record Transactions Interface**

| *Start Dt/Time* | *End Dt/Time* | *Rows Processed* | *Rows Successful* | *Rows Rejected* |
|---|---|---|---|---|
| 05/31/98 18:30 | 05/31/98 21:00 | 500,000 | 449,995 | 5 |

Errors:
<Loan Id> <Transaction Code> < ----------Error Message---------->
<Loan Id> <Transaction Code> < ----------Error Message---------->

**Interface Name - FMS Manual Transactions Interface**

| *Start Dt/Time* | *End Dt/Time* | *Rows Processed* | *Rows Successful* | *Rows Rejected* |
|---|---|---|---|---|
| 05/31/98 19:30 | 05/31/98 21:00 | 500 | 495 | 5 |

Errors:
<Loan Id> <Transaction Code> < ----------Error Message---------->
<Loan Id> <Transaction Code> < ----------Error Message---------->

### 2.2.2 Reconciliation Report

#### 2.2.2.1 Report Overview

The CMDM and FMS reconciliation report will serve as the primary tool for reconciliation between CMDM and FMS systems. The report will be generated out of CMDM on a weekly basis. It will be similar to the report that FMS produces for reconciliation with DLSS.

The report will have the capability to accept a start date and an end date from the user. For the given dates, the sum of amounts for each transaction code will be calculated and printed on the report.

#### 2.2.2.2 Report Details

| | |
|---|---|
| **Report Name** | CMDM and FMS reconciliation |
| **Description** | The report will accept start and end dates from the user and calculates the amount for each transaction code. |
| **Use** | The report will be used for reconciliation with FMS |
| **Frequency/Timing** | Weekly |
| **Data Source** | Credit Management Data Mart |
| **Distribution** | CMDM MIS Support |
| **Output Media** | Hard Copy |
| **Quality Control** | NA |
| **Volume** | 60,000 to 75,000 records |
| **Number of Copies** | Three |
| **Selection Screen Criteria** | Start Date – Date from which data is to considered for the report<br>End Date – Date till which data is to considered for the report |
| **Sort** | Not Applicable |
| **Sub Totals/Totals** | Grand total for each amount column on the report |
| **Sums** | Sum transaction amounts and increment transaction counts for each transaction category within each posting date |

#### 2.2.2.3 Report Field Details

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| FMS Transaction Code | 1 | 10 | Char | CMDM FMS Account Code attributes |
| Principal Amount | 2 | 15 | Number | CMDM amount attribute for the transaction code |
| Interest Amount | 3 | 15 | Number | CMDM amount attribute for the transaction code |
| NSF Amount | 4 | 15 | Number | CMDM amount attribute for the transaction code |

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Late Charge Amount | 5 | 15 | Number | CMDM amount attribute for the transaction code |
| Origination Fee Amount | 6 | 15 | Number | CMDM amount attribute for the transaction code |
| Rebate Amount | 7 | 15 | Number | CMDM amount attribute for the transaction code |

### 2.2.2.4 Report Layout

RUN DATE: 06/01/98 STUDENT FINANCIAL ASSISTANCE PAGE: 1
Reconciliation Report TIME: 04:21:54

| Transaction Code | Principal Amt | Interest Amt | NSF Amt | Late Chg Amt | Origination Fee Amt | Rebate Amt |
|---|---|---|---|---|---|---|
| 6035NA 40 | 10,100,750.03 | (10,100,750.03) | | | | |
| 6035NA 80 | 19,729,275.59 | (19,729,275.59) | | | | |
| 6099N 4 | | 131,911,082.02 | | | | |
| 6099N 8 | | 190,921,485.77 | | | | |
| 7045NA40 | (184.23) | 11.13 | | | | |

Grand Total

# 3 Data Load

## 3.1 DATA ACQUISITION

**Overview**
Data acquisition, which is also known as Extract-Transform-Load (ETL) consists of three steps. Data acquisition typically uses ETL (Informatica) tools, which specialize in this function.

- **Extraction -** is the process of acquiring data from one or more systems for the purpose of loading a Data Mart. These source systems can be a combination of Relational tables, Flat-files, VSAM files, Mainframe or ERP sources.

- **Transformation -** is a general term for cleansing and validating incoming data, which includes: handling missing elements, looking up tables, aggregating rows and standardizing field formats. Informatica Designer will handle the required transformations and source to target mappings.

- **Loading -** Loading is the process of transferring the processed and transformed data to a database for storage. There are two ways to load data:
  a. Record-by-record through the Informatica Server Manager
  b. Bulk load through an external loader (Oracle Bulk Loader).

The Direct Loan Servicing System (DLSS) and Financial Management System (FMS) were identified as the source systems for the CMDM. Based upon the end user requirements, extract programs were designed to extract the following data files:

- Financial Servicing data from DLSS and manual transactions from Oracle FMS on a daily basis.
- DLSS Demographics data on a monthly basis.

### 3.1.1 FMS Detailed Loan Servicing Financial Data.

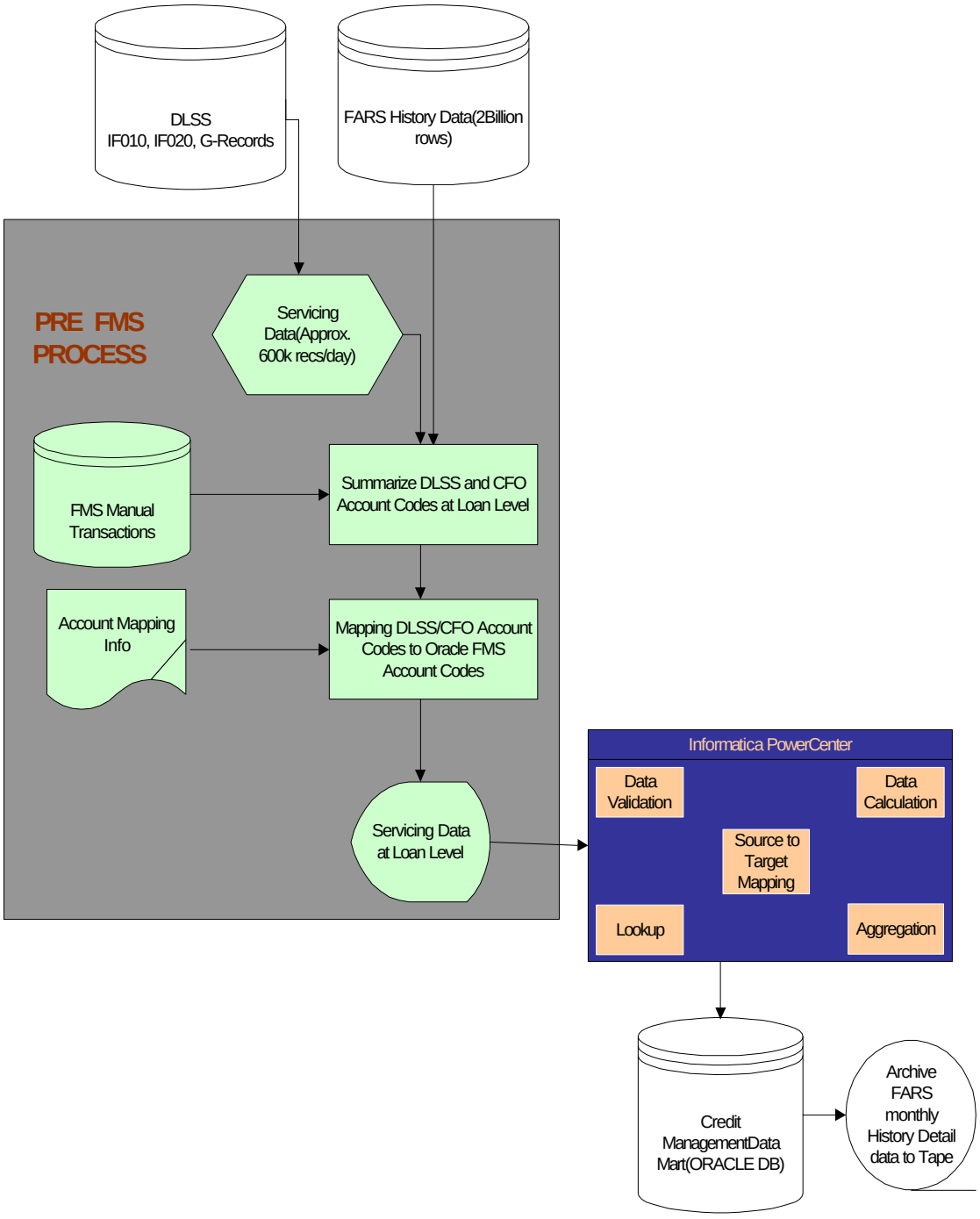



**FIGURE 3.1.1 Data Acquisition process for FMS Manual Transactions and Detailed Financial Loan Servicing Data**

DLSS will transmit the following Servicing Financial data on a daily basis to FMS and the CMDM via the IF010, IF020 and G Records files. In addition, manual transactions entered in Oracle FMS will also be transferred to the CMDM on a daily basis. For additional detail on this interface flow, please refer to Section 2 Pre-FMS in the detail design.

The data will be loaded to staging tables in Oracle FMS. The Pre-FMS process will:

- Process only the data that is successfully loaded by Oracle FMS
- Summarize the financial data at a loan level
- Perform account mapping to translate servicing transaction codes to Oracle FMS account codes
- Write the data to an output file

The output of the Pre-FMS process will serve as input to the Informatica process. The Informatica process will then work with this data to validate, transform and cleanse it before loading into the CMDM.

Informatica will begin the mapping / transformation process as soon as the files are received, and will perform necessary lookups, filtering, aggregating and loading of the data in the CMDM. These files will be transformed according to the business rules and loaded into the CMDM, which comprises of Oracle tables. Current plan is to hold the detailed financial loan servicing data for 13 rolling months after which it will be aggregated, removed from the CMDM and archived to tapes.

- **Financial Data Extraction –** The source for the financial data extract process is the output file written to the staging area by Pre-FMS.

- **Financial Data Transformation –** The transformation process involves performing data validation, calculations, data lookups, aggregations and target mapping. If any invalid values are found (E.g.: Blank Loan Id, SSN etc..), they will be defaulted with a pre-determined value. Refer the data mapping section in this document for complete mapping.

- **Financial Data Load –** The transformed data will be loaded to the database as per the target mapping performed in the earlier step. Informatica server manager will be utilized to do this process.

    **a.** IF010, G-records and FMS Manual Transactions will be loaded to the CMDM.
    **b.** IF020 will be loaded to Oracle tables and will not be part of the core CMDM schema.

### 3.1.2 DLSS Demographic Data

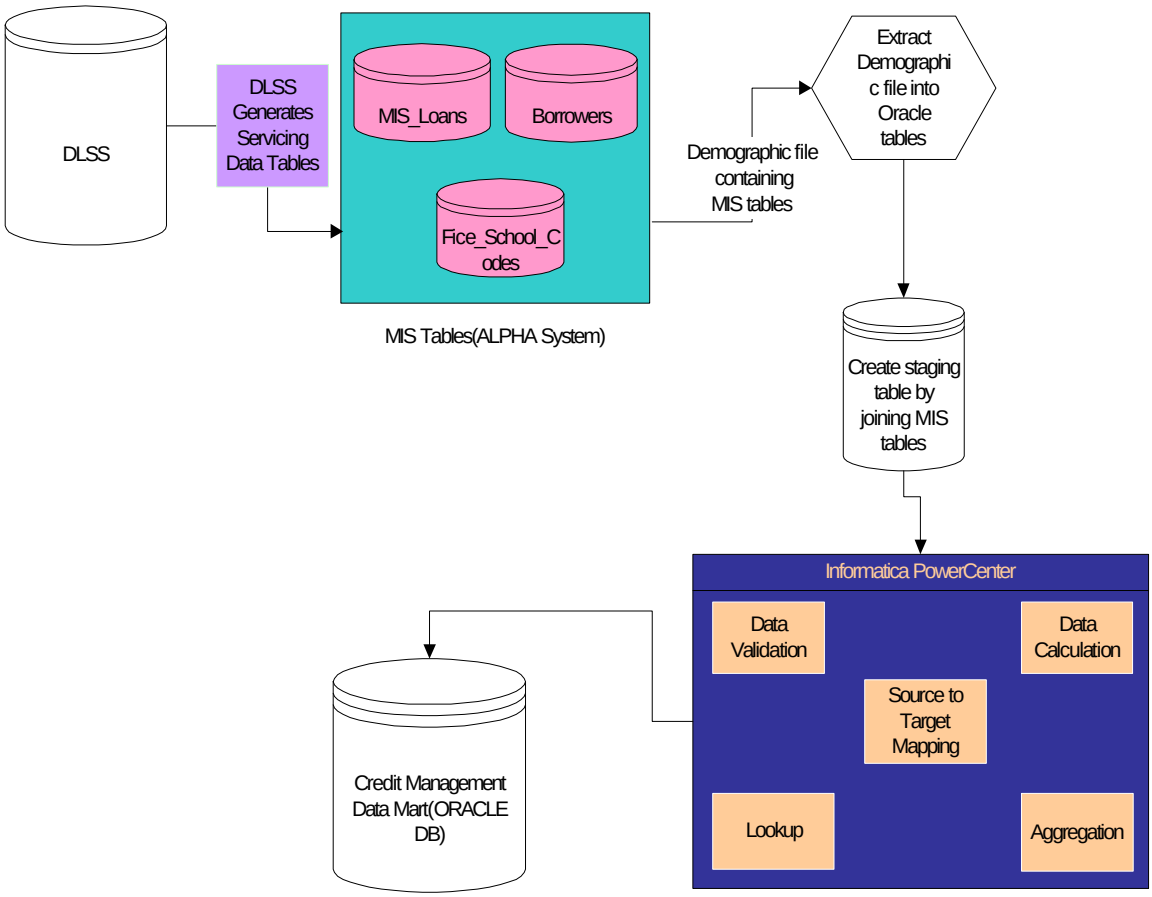



**FIGURE 3.1.2 Data Acquisition process for DLSS Demographic data**

DLSS will send a Demographics file on a monthly basis to the Data Mart's staging area. This file will be an extract of MIS tables housed on the Alpha system. It will consists of the following MIS tables:

a. MIS_LOANS
b. BORROWERS
c. FICE_SCHOOL_CODE

This file will be staged into staging tables in the CMDM. . It will serve as the source for the Informatica process. There is a plan to keep complete history for the following Demographic fields: Loan_Status_ID, Repayment_Plan_ID, Risk Category and Monthly_Payment_Amount , Interest Rate fields.

The approach to load the demographics data will be to:

- Read the data table and check if the information exists in the CMDM
- If existing, compare the data and see if there is any change
- If there is a change, add the changed data from the data table.(Only for Loan_Status_ID, Repayment_ID, Interest Rate, Risk Category and Monthly_Payment_Amount fields, For all other fields, the data will be compared, if there is a change then those fields will be updated with the new data received.
- If there is no change, the data will be ignored and not stored in the CMDM
- If there is new information, load it to CMDM

Informatica will then work with this data to validate and cleanse it before loading into the CMDM.

- **Demographics Extraction –** The source for the demographics extract is DLSS. At month end a copy of the DLSS tables is made and a subset of these tables are stored on the Alpha for MIS reporting. Specific tables needed for the CMDM will be forwarded to the Informatica Server and will serve as an input to the Informatica process.

- **Demographics Transformation –** The transformation process involves performing data validation, calculations, data lookups, aggregations and target mapping. If any invalid values are found (E.g.: Blank Loan Id, SSN etc.), they will be defaulted with a pre-determined value. Refer the data mapping section in this document for complete mapping.

- **Demographics Load –** The transformed data will be loaded to the CMDM as per the target mapping performed in the earlier step. Informatica server manager will be utilized to do this process. Informatica will read the DLSS tables and extract the data that is required for the CMDM.

**Error Handling**
The error handling and validation processes have been developed to provide the users with as much DLSS data as possible. It can be achieved by loading the targets with the same data as the source system. The challenge here is that DLSS has a vastly different data model from the Data Mart model.

The CM Data Model is designed to provide only load level validation, that is, those rows which do not conform to the rules of *referential integrity** will be rejected (e.g., duplicative key fields, etc.). These rows will be written to an error files on the Informatica server (Sun Solaris su35e18). These error files can be viewed by subject matter experts to reconcile the error records.

***Referential Integrity - A feature is provided by relational database management systems (RDBMS) that prevent users or applications from entering inconsistent data. Most RDBMS*

*have various referential integrity rules that can be applied when creating a relationship between two tables. For example, referential integrity would prevent adding a record to Table B that cannot be linked to Table A.*

**Data Quality Assurance**

The quality assurance steps listed below will help to ensure that complete and correct data is loaded to the CMDM.

- Verify whether FTP of the file processed correctly: This will be performed by matching the number of records of the FTP file received with the number of records of the original file from the source system.

- Verify whether the incoming data has correct values: The software will check for spaces or nulls in the input columns. If there are spaces or nulls in the mandatory fields, the value 'UNKNOWN' or nulls will be assigned to the affected columns, so that the user will obtain correct and meaningful information from the CMDM.

- Generate reports with the data loaded in the CMDM and compare them with FMS reports.

- Verify the Informatica input file with the values in the CMDM. The input file can be loaded directly into a staging table in Informatica. SQL is used to sum columns in the staging tables with columns in the CMDM tables. Also, verify back some of the staging tables with the extract file on the mainframe by using batch job to sum totals in the extract file.

- Verify valid keys for incoming data: Keys (basically the fields that comprise the dimensions by which each fact table is accessible) will be generated for those records that have invalid keys or no key values, using Informatica's Sequence Generator.

## 3.2 DATA MAPPING

**Overview**

Data mapping is a process where fields from the source system are mapped to the target fields. Source can be flat-files, VSAM files or Relational tables. Targets can be a flat-files or Relational tables. Source data might undergo several sets transformations before it is loaded to a target. Some of the commonly used transformations are Filter, Aggregator, Lookup, Expression and Joiner.

In the CMDM, the source will undergo several field level checks before it reaches the target. e.g.

- Check for nulls, negative numbers, and blank spaces.
- Format incoming dates into standard database date format.
- Aggregate data before loading into database tables.
- Filter incoming data based on business logic.

### 3.2.1 FMS Detailed Loan Servicing Financial Data

DLSS financial data will be copied from the Pre-FMS staging areas on a daily basis the SLSS transaction codes are translated to FMS Account Codes. The Oracle FMS manual transactions will also be processed on a daily basis.

Following is the layout of the output files (IF010, IF020, G-records, FMS manual transactions) generated by the Pre-FMS process. This fixed format flat file will be input to the Informatica process. Not all fields from the input file will be loaded into the CMDM. The source fields that have "N/A" in the 'Data Mart Table Name/Column Name' column in Tables 3.2.1a, 3.2.1b,3.2.1c,3.2.1d will not be loaded into the CMDM.

**TABLE 3.2.1a (IF010)**

| Source Field Name | Length | Format | Validation Rules | Data Mart | |
|---|---|---|---|---|---|
| | | | | Table Name | Field Name |
| SSN | 9 | Char | Default Value: 999999999 | D_SSN | Social_Security_Number |
| School ID | 6 | Char | | D_School | School_id |
| Disbursement Date | 11 | Char | dd-mon-ccyy | D_DisbursementDate | Disbursement_Date |
| Loan Id | 21 | Char | Default Value: 9999999999SyyG9999901 | F_Loan | Loan_ID |
| Interest Rate | 10 | Number | With leading – if negative, With leading zeros, implied decimal point (i.e –00000002545.00) | F_Transaction | Interest_Rate |
| Process Date | 11 | Date | | D_DLSSProcessDate | DLSS_Process_Date |
| SLSS TC Code | 4 | Char | Default Value: 9999 | D_SLSSTranscationCode | SLSS_Transaction_Code |
| Cash Code | 1 | Char | Default Value: 9 | D_CashCode | Cash_Code |
| Transaction Type Code | 1 | Char | Default Value: 9 | D_TypeCode | Type_code |
| Loan Type | 1 | Char | Default Value: S | D_LoanType | Loan_Type_ID |
| Transaction | 11 | Char | dd-mon-ccyy | D_TransactionEffect | Transaction_Ef |

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name |
|---|---|---|---|---|---|
| Date | | | | iveDate | fective_Date |
| Amount | 15 | Number | With leading – if negative,<br>With leading zeros, implied decimal point<br>(i.e –00000002545.00) | F_Transaction | Transaction_Value |
| Deposit Ticket | 10 | Char | | D_DepositTicket | Deposit_Ticket_ID |
| CRC_Risk Type Code | 1 | Number | | D_RiskCategory | Risk_Category_ID |
| CRC_Program_Type | 1 | Number | | D_LoanType | Loan_Type_ID |
| CRC Cohort Year | 2 | Number | | D_CohortYear | Cohort_Year_ID |
| Disbursement Number | 2 | Number | | D_DisbursementNumber | Disbursement_Number_ID |
| Days Past Due | 9 | Number | | F_TXN | Delinquent_Day_Count |
| Fund | 7 | Char | | D_FMSFund | FMS_Fund_ID |
| Category | 1 | Char | | D_FMSCategory | FMS_Category_ID |
| Budget Year | 2 | Char | | D_FMSBudgetFiscalYear | FMS_Budget_Fiscal_Year_ID |
| Account | 6 | Char | | D_FMSAccount | FMS_Account_ID |
| Organization | 8 | Char | | D_FMSOrganization | FMS_Organization_ID |
| Limitation | 3 | Char | | D_FMSLimitation | FMS_Limitation_ID |
| Object Class | 5 | Char | | D_FMSObjectClass | FMS_Object_Class_ID |
| Activity | 3 | Char | | D_FMSActivity | FMS_Activity_ID |
| CFDA | 3 | Char | | D_FMSCFDA | FMS_CFDA_ID |
| Sector | 1 | Char | | D_FMSSector | FMS_Sector_ID |
| Source Code | 2 | Char | | D_FMSSourceCode | FMS_Source_Code_ID |
| Cost Code | 2 | Char | | D_FMSCostCode | FMS_Cost_Code_ID |
| Loan Grant Type | 2 | Char | | D_FMSLoanGrantType | FMS_Loan_Grant_Type_ID |
| Institution | 6 | Char | | D_FMSInstitution | FMS_Institution_ID |

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name |
|---|---|---|---|---|---|
| Interface ID | 6 | Char | | D_Transaction_Interface | Transaction_Interface_ID |
| Trace Number | 7 | Char | | F_TXN | Trace_Number_ID |
| FMS Transaction Code | 15 | Char | | D_FMSTransaction Code | FMS_Transaction_Code_ID |

**TABLE 3.2.1b (IF020)**

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name |
|---|---|---|---|---|---|
| SSN | 9 | Char | Default Value: 999999999 | D_SSN | Social_Security_Number |
| Transaction Code | 6 | Char | Default Value: 9999 | D_SLSSTranscation Code ? | SLSS_Transaction_Code |
| Transaction Category | 4 | Char | | D_FMSCategory | FMS_Category_ID |
| Transaction Date | 11 | Char | dd-mon-ccyy | D_TransactionEffectiveDate | Transaction_Effective_Date |
| Amount | 15 | Number | With leading – if negative,<br>With leading zeros, implied decimal point<br>(i.e –00000002545.00) | F_Transaction | Transaction_Value |
| Error Number | 20 | Char | | N/A | N/A |
| Deposit Ticket | 6 | Char | | D_DepositTicket | Deposit_Ticket_ID |
| Deposit Ticket Date | 8 | Number | | N/A | N/A |
| Deposit Type | 1 | Char | | N/A | N/A |
| Fund | 7 | Char | | D_FMSFund | FMS_Fund_ID |
| Category | 1 | Char | | D_FMSCategory | FMS_Category_ID |
| Budget Year | 2 | Char | | D_FMSBudgetFiscal Year | FMS_Budget_Fiscal_Year_ID |
| Account | 6 | Char | | D_FMSAccount | FMS_Account_ID |
| Organization | 8 | Char | | D_FMSOrganizatio | FMS_Organiza |

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Field Name |
|---|---|---|---|---|---|
| | | | | n | tion_ID |
| Limitation | 3 | Char | | D_FMSLimitation | FMS_Limitation_ID |
| Object Class | 5 | Char | | D_FMSObjectClass | FMS_Object_Class_ID |
| Activity | 3 | Char | | D_FMSActivity | FMS_Activity_ID |
| CFDA | 3 | Char | | D_FMSCFDA | FMS_CFDA_ID |
| Sector | 1 | Char | | D_FMSSector | FMS_Sector_ID |
| Source Code | 2 | Char | | D_FMSSourceCode | FMS_Source_Code_ID |
| Cost Code | 2 | Char | | D_FMSCostCode | FMS_Cost_Code_ID |
| Loan Grant Type | 2 | Char | | D_FMSLoanGrantType | FMS_Loan_Grant_Type_ID |
| Institution | 6 | Char | | D_FMSInstitution | FMS_Institution_ID |
| FMS TC | 15 | Char | | D_FMSTransaction Code | FMS_Transaction_Code_ID |

**TABLE 3.2.1c (G-Records)**

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Field Name |
|---|---|---|---|---|---|
| Effective(Transaction) Date | 11 | Char | dd-mon-ccyy | D_TransactionEffectiveDate | Transaction_Effective_Date |
| FARS TC | 2 | Char | | D_FARSGLAccount Code | FARS_GL_Account_Code |
| Profile | 2 | Char | | D_FARSTransaction Profile | FARS_Transaction_Profile |
| Level | 2 | Char | | D_FARSTransaction Level | FARS_TransactionLevel_ID |
| Amount | 15 | Char | With leading – if negative,<br>With leading zeros, implied decimal point<br>(i.e –00000002545.00) | F_Transaction | Transaction_Value |
| School | 6 | Char | | D_School | School_id |
| Loan Type | 1 | Char | Default Value: S | D_LoanType | Loan_Type_ID |
| Primary Ref. | 15 | Char | | F_Transaction | Primary_Ref_ |

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name |
|---|---|---|---|---|---|
| Number | | | | | Number |
| CRC_Risk Type Code | 1 | Char | | D_RiskCategory | Risk_Category_ID |
| CRC_Program_Type | 1 | Char | | D_LoanType | Loan_Type_ID |
| CRC Cohort Year | 2 | Char | | D_CohortYear | Cohort_Year_ID |
| SLSS TC Code | 6 | Char | Default Value: 999999 | D_SLSSTranscation Code | SLSS_Transaction_Code |
| Disbursement Number | 2 | Number | | D_DisbursementNumber | Disbursement_Number_ID |
| FMS TC | 15 | Char | | D_FMSTransaction Code | FMS_Transaction_Code_ID |
| Fund | 7 | Char | | D_FMSFund | FMS_Fund_ID |
| Category | 1 | Char | | D_FMSCategory | FMS_Category_ID |
| Budget Year | 2 | Char | | D_FMSBudgetFiscal Year | FMS_Budget_Fiscal_Year_ID |
| Account | 6 | Char | | D_FMSAccount | FMS_Account_ID |
| Organization | 8 | Char | | D_FMSOrganization | FMS_Organization_ID |
| Limitation | 3 | Char | | D_FMSLimitation | FMS_Limitation_ID |
| Object Class | 5 | Char | | D_FMSObjectClass | FMS_Object_Class_ID |
| Activity | 3 | Char | | D_FMSActivity | FMS_Activity_ID |
| CFDA | 3 | Char | | D_FMSCFDA | FMS_CFDA_ID |
| Sector | 1 | Char | | D_FMSSector | FMS_Sector_ID |
| Source Code | 2 | Char | | D_FMSSourceCode | FMS_Source_Code_ID |
| Cost Code | 2 | Char | | D_FMSCostCode | FMS_Cost_Code_ID |
| Institution | 6 | Char | | D_FMSInstitution | FMS_Institution_ID |
| Loan Grant Type | 2 | Char | | D_FMSLoanGrantType | FMS_Loan_Grant_Type_ID |

**TABLE 3.2.1d (FMS Manual Transactions)**

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name |
|---|---|---|---|---|---|
| SLSS TC Code | 6 | Char | Default Value: 999999 | D_SLSSTranscation Code | SLSS_Transaction_Code |
| CRC | 4 | Char | | D_Credit_Reform_ Code | Credit_Reform_Code_ID |
| Description(Loan Id) | 21 | Char | Default Value: 9999999999SyyG9999901 | F_Loan | Loan_ID |
| Transaction Date | 11 | Char | dd-mon-ccyy | D_TransactionEffectiveDate | Transaction_Effective_Date |
| Primary Ref. Number | 15 | Char | | F_Transaction | Primary_Ref_ Number |
| Secondary Ref. Number | 15 | Char | | N/A | N/A |
| Amount | 15 | Number | With leading – if negative,<br>With leading zeros, implied decimal point<br>(i.e –00000002545.00) | F_Transaction | Transaction_Value |
| FMS TC | 15 | Char | | D_FMSTransaction Code | FMS_Transaction_Code_ID |
| Fund | 7 | Char | | D_FMSFund | FMS_Fund_ID |
| Category | 1 | Char | | D_FMSCategory | FMS_Category_ID |
| Budget Year | 2 | Char | | D_FMSBudgetFiscal Year | FMS_Budget_Fiscal_Year_ID |
| Account | 6 | Char | | D_FMSAccount | FMS_Account_ ID |
| Organization | 8 | Char | | D_FMSOrganization | FMS_Organization_ID |
| Limitation | 3 | Char | | D_FMSLimitation | FMS_Limitation_ID |
| Object Class | 5 | Char | | D_FMSObjectClass | FMS_Object_Class_ID |
| Activity | 3 | Char | | D_FMSActivity | FMS_Activity_ ID |
| CFDA | 3 | Char | | D_FMSCFDA | FMS_CFDA_ID |
| Sector | 1 | Char | | D_FMSSector | FMS_Sector_ID |
| Source Code | 2 | Char | | D_FMSSourceCode | FMS_Source_Code_ID |
| Cost Code | 2 | Char | | D_FMSCostCode | FMS_Cost_Code_ID |

| Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name |
|---|---|---|---|---|---|
| Institution | 6 | Char | | D_FMSInstitution | FMS_Institution_ID |
| Loan Grant Type | 2 | Char | | D_FMSLoanGrantType | FMS_Loan_Grant_Type_ID |

### 3.2.2 DLSS Demographic Data

Below represents the fields that will be loaded from the Month End MIS tables to the CMDM.

**TABLE 3.2.2**

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name | History Y/N |
|---|---|---|---|---|---|---|---|
| **BORROWERS** | PKT_Borr_Addr1 | 35 | Char | | D_Borrower | Address_1 | N |
| | PKT_Borr_C_O_Name | 35 | Char | | D_Borrower | Address_2 | N |
| | PKT_Addr_Cond_Cd | 1 | Char | G = Good<br>B = Bad<br>R = Returned | D_Borrower | Address_Condition_Flag | N |
| | PKT_Borr_City | 25 | Char | | D_Borrower | City | N |
| | PKT_Borr_First_Disb_Dt | | Date | | D_DisbursementDate | Disbursement_Date | N |
| | PKT_Borr_Foreign_Cd | 1 | Char | Blank = US Address<br>F = Foreign Address | D_Borrower | Foreign_Address_Flag | N |
| | PKT_Borr_Name | 30 | Char | | D_Borrower | First_Name<br>Last_Name | N |
| | BORR_Soc_Nbr | | Integer | | D_Borrower | Social_Security_Number | N |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field | History Y/N |
|---|---|---|---|---|---|---|---|
| | PKT_Borr_St | 2 | Char | | D_Borrower | State | N |
| | PKT_Borr_Zip1 | 5 | Char | | D_Borrower | ZIP_Code | N |
| | PKT_Borr_Zip2 | 4 | Char | | D_Borrower | ZIP_Code_Plus_4 | N |
| | PKT_Borr_Birth Dt | | Date | | D_Borrower | Birth_Date | N |
| | PKT_Borr_Res_Phn | 10 | Char | | D_Borrower | Home_Phone_Number | N |
| | PKT_Res_Phn_Cd | 1 | Char | G = Good<br>B = Bad | D_Borrower | Home_Phone_Number_Condition_Flag | N |
| | PKT_Email_Status | 1 | Char | G = Good<br>B= Bad | D_Borrower | Email_Address_Status | N |
| | PKT_Email_Address | 50 | Char | | D_Borrower | Email_Address | N |
| | PKT_Borr_Bus_Phn | 10 | Char | | D_Borrower | Business_Phone_Number | N |
| | PKT_Bus_Phn_Cd | 1 | Char | G = Good<br>B = Bad | D_Borrower | Business_Phone_Condition_Flag | N |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name | History Y/N |
|---|---|---|---|---|---|---|---|
| **FICE_SCHOOL_CODES** | FICE_Cong_Dist | 8 | Char | | D_CongressionalDistrict | Congressional_District_ID | N |
| | FICE_Dls_Nbr | 6 | Char | Direct Loan School Number (with G or E prefix) for individual campus<br>'G' - Main Campus<br>'E' - Branch Campus | N/A | N/A | N |
| | FICE_Inst_Ctl | 1 | Char | Control code to indicate whether a school is:<br>1 = Public<br>2 = Private<br>3 = Proprietary<br>4 = Foreign | D_SchoolControl | School_Control_ID | N |
| | FICE_Inst_Type | 1 | Char | 0 = 300 hour school<br>1 = 600 hour school<br>2 = 1 year school<br>3 = 2 year school<br>4 = 3 year school<br>5 = 4 year school<br>6 = 5 or more years | D_SchoolType | School_Type_ID | N |
| | FICE_Long_Name | 70 | Char | | D_School | School_Name | N |
| | FICE_Closed_Dt | | Date | | D_School | School_Closed_Date | N |
| | FICE_State | 2 | Char | | D_School | State | N |
| | FICE_Zip | 5 | Char | | D_School | ZIP_Code | N |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name | History Y/N |
|---|---|---|---|---|---|---|---|
| | FICE_Zip4 | 4 | Char | | D_School | ZIP_Code_Plus_4 | N |
| | FICE_Duns_Nbr | 15 | Char | | D_School | DUN_Number | N |
| | FICE_Ethnic_Cd | 1 | Char | 1 Native American (Land Grant Colleges)<br>2 Historically Black College or University (HBCU)<br>3 Hispanic<br>4 Traditionally Black (Non-Land Grant Colleges)<br>5 Ethnicity not reported | D_School | School_Ethnic_Type_ID | N |
| | FICE_OPE_Nbr | | Number | | D_School | OPE_Number | N |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field | History Y/N |
|---|---|---|---|---|---|---|---|
| **MIS_LOANS** | PKT_Bill_Cycle | | Smallint | A value from 1 to 4 indicating on which of the four monthly billing cycles the borrower is to receive his normal billings. This field also dictates when the borrower's due date will be. The codes translate to the following due dates:<br>1 - 7th<br>2 - 14th<br>3 - 21st<br>4 - 28th | F_Loan | Billing_Cycle_ID | N |
| | PKT_Loan_ID | 21 | Char | Transaction Loan ID<br>if field is blank; default value is: 999999999SyyG999999001 | F_Loan | Consolidated_Loan_ID | N |
| | Loan_Type | 1 | Char | S = Subsidized Stafford<br>U = Unsubsidized Stafford<br>C= Consolidated<br>P = PLUS<br>Loan_Type derived from PKT_LOAN_ID:<br>SSN 1-9<br>Loan_Type 10<br>Loan_Year 11-12<br>Consolidation_Code 13-18<br>Prom_Note_Seq. # 19<br>Prom_Note # 20-21 | F_Loan | Loan_Type_ID | N |
| | PKT_Fix_Pay_Amt | | Integer(2) | | F_Loan | Monthly_Payment_Amount | N |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field | History Y/N |
|---|---|---|---|---|---|---|---|
| | PKT_Grace_End_Dt | | Date | | F_Loan | Grace_Period_End_Date_ID | N |
| | NBR_Days_Delinquent | | Integer | | D_DelinquentDayCount | Delinquent_Day_Count | N |
| | BORR_Soc_Nbr | 9 | Char | | F_Loan | SSN | N |
| | PKT_Crc_Cd | 4 | Char | PKT_CRC_Cd:<br>Cohort_Yr_ID 1-2<br>Risk_Ctg_ID 4 | F_Loan | Cohort_Yr_ID, Risk_Ctg_ID | N |
| | PKT_Payout_Del_Dt | | Date | | F_Loan | Delinquent_Date_ID | N |
| | PKT_Repay_Plan | 1 | Char | A = All 10 year plans<br>G = SLMA Graduated plan<br>E = Fixed amount<br>X = Minimum payment amount<br>V = Variable interest, fixed term | F_Loan | Repayment_Plan_ID | Y |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name | History Y/N |
|---|---|---|---|---|---|---|---|
| | PKT_Susp_Cd | 1 | Char | D = Death<br>H = Disability<br>X = Bankruptcy<br>F = Force Default *<br><br>* - indicates the account is in default for the reason indicated, or the claim has been filed, or is in process on that basis.<br>An entry of 'S' (special handling) suspends due diligence processing by the delinquent subsystem. | F_Loan | Suspense_Code | N |
| | PKT_Curr_Status | | Smallint | | F_Loan | Loan_Status_ID | Y |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field | History Y/N |
|---|---|---|---|---|---|---|---|
| | PKT_Def_Category | 1 | Char | A Armed Forces<br>C Economic Hardship<br>D Disability<br>E Forbearance<br>F Graduate Fellowship<br>H Public Health Service<br>L Parental Leave<br>M Working Mother<br>N Internship (Residency)<br>O NOAA<br>P Peace Corps<br>R Rehabilitation<br>S Student<br>T Teacher Shortage<br>U Unemployment<br>V Vista<br>X Tax Exempt | F_Loan | Deferment_Category_ID | N |
| | PKT_DefEnd_Dt | | Date | | F_Loan | Deferment_End_Date_ID | N |
| | PKT_Fix_Pay_Amt | | Integer(2) | | F_Loan | Monthly_Payment_Amount | Y |

| Source Table Name | Source Field Name | Length | Format | Validation Rules | Data Mart Table Name | Data Mart Field Name | History Y/N |
|---|---|---|---|---|---|---|---|
| | PKT_Claim_Code | 1 | Char | C Closed School<br>D Death<br>F Forced to DCS<br>H Disability<br>I Ineligible Borrower<br>M Susp. for False Certification<br>O Defaulted Non-Skip<br>P Non Return of Payout Note<br>S Default Skip<br>T Teacher Forgiveness<br>V Other DLSS N/A<br>X Bankruptcy<br>Z Other | F_Loan | Claim_Code_ID | N |
| | PKT_Int_Rate | | Integer(2) | | F_Loan | Current_Interest_Rate | Y |
| | PKT_Sep_Dt | | Date | | F_Loan | Separation_Dt_ID | N |

## 3.3 INITIAL DATA CONVERSION

### Overview

Apart from the daily and monthly transmissions of Servicing Financial data and DLSS Demographic data, we will be extracting, transforming and loading the FARS History data.

### 3.3.1 Direct Loan Detailed Financial Data (FARS History)

The FARS History data has about eight years worth of data. It is estimated that the total size of History data is about 330GB and has approximately two billion rows. It will be extracted one month at a time because of the magnitude of the data. It will be extracted and sent in the same format as the FMS detailed financial loan servicing data.

This data will undergo the same process as the Daily Servicing Financial Data (**Figure 3.1.1**) and will be loaded one month at a time. This file will be run through the Pre-FMS process comprising of PL/SQL programs to summarize the detail data at loan level and perform account mapping to translate DLSS Account codes to Oracle FMS account codes. The output of PL/SQL programs (fixed format flat files) containing the mapped data will serve as the input to the Informatica process (**Figure 3.1.1**).

The transformation logic used for FARS history data will be same as FMS detailed financial loan servicing data. There will be a one-time effort of extracting and loading FARS Historical data into the CMDM.

### 3.3.2 Data Aggregation & Archiving

Once the FARS history data is loaded into the CMDM, Aggregate tables will be loaded with this data. The history data from the CMDM tables will be moved to files, which will be archived and moved to tapes. Following are the steps involved:

- Load the CMDM tables (facts and dimensions) with the monthly FARS History data.
- Aggregate newly loaded monthly history detailed data and load it into tables.
- Delete the detailed monthly history data from the fact tables.
- Write the deleted detailed monthly data to a flat file on the Informatica server (su35e18i) and archive it to tape.

The archived monthly detail data can be loaded into the CMDM from the archived files in case of an audit query.

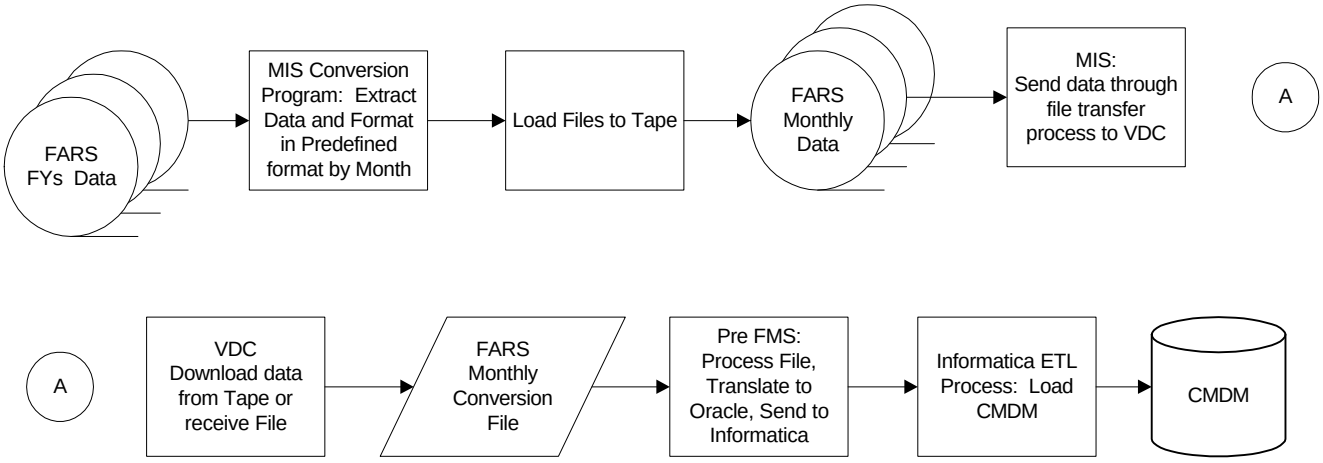
The file layout for the FARS History data will be similar to the FMS Detailed Loan Servicing Financial Data (**Table 3.2.1 a-d**). Archiving is explained in detail in **Section 7.3** of this document.

### 3.3.3 Conversion Extract Program

#### 3.3.3.1 Program Overview

Currently, FARS financial transactions consist of approximately 2 billion records (330 gigabytes). They are archived on tape cartridge files by fiscal years 1994 thru 2000. Fiscal year 2001 is being accumulated on postable files month by month but will be available by fiscal year 2001 by November 3, 2001. The objective of this process is to convert all required financial transactions from FARS to corresponding FMS Oracle financial transactions that will be loaded onto the Credit Management Data Mart. This process will be done using IBM mainframe Easytrieve software via the attached conversion work chart and guidelines.

Program Flow: *Figure 3.3.3.1*



3.3.3.2 Program Details

| | |
|---|---|
| Program Name | MISFMSCV |
| Description | FARS Conversion software to convert T-record archive storage records to FMS format output to then be converted to an Oracle System. |
| Data Source | FARS Backup Master FY / Postable Files |
| Data Volume | See Inputs record counts |
| Frequency | One time conversion. Run each fiscal year separately. |
| Inputs | C2810P.DLS.BACKUP.DLSFFG08.FY94;<br>Record count = 1,217,230<br>C2810P.DLS.BACKUP.DLSFFG08.FY95;<br>Record count = 20,645,720<br>C2810P.DLS.BACKUP.DLSFFG08.FY96;<br>Record count = 70,183,376<br>C2810P.DLS.BACKUP.DLSFFG08.FY97;<br>Record count = 152,594,431<br>C2810P.DLS.BACKUP.DLSFFG08.FY98;<br>Record count = 280,243,158<br>C2810P.DLS.BACKUP.DLSFFG08.FY99;<br>Record count = 453,325,492<br>C2810P.DLS.BACKUP.DLSFFG08.FY00;<br>Record count = 553,399,974<br>C2810P.DLS.BACKUP.DLSFFG08.FY01;<br>Record count = not available yet<br>FARS Current Months Postable File (remaining)<br>Record count = TBD |
| Source Platform | All Files are IBM 3490 Density tapes, Fixed Block, Record length=160 characters |
| Target Platform | HP Server |
| Output Media | Formatted Extract Files by Fiscal Year and Posting Month within fiscal year. Media will be IBM 3490 Density tapes, Fixed Block, Record length = 153 characters and formatted as ASCII |
| Program Logic | Read each input file by fiscal year<br>Increment transaction read counter<br>Validate input data format. Modify with default values if necessary. Select input transactions from input selection guideline spreadsheet.<br>Accumulate amounts by GL Acct Code<br>Format corresponding output data fields from input data fields<br>Write output record in ASCII format, Fixed length. Create 12 separate output files, by each calendar month using input posting month as factor.<br>At end of job display total transactions read, and display summarized amounts by GL acct code for verification to FARS DLSFB600 report |

**Input Output File Detail**

**A. Input File – T-Record**

| Field Name | Length | From | To | Format |
|---|---|---|---|---|
| Detail Transaction Record | 160 | 1 | 160 | |
| 1. Transaction Record ID | 1 | 1 | 1 | Char |
| 2. Transaction User ID | 4 | 2 | 5 | Char |
| 3. Transaction Code | 2 | 6 | 7 | Char |
| 4. Transaction Effective Date | 8 | 8 | 15 | Char |
| 4.1 Transaction Effective Date MM | 2 | 8 | 9 | Char |
| 4.2 Transaction Effective Date DD | 2 | 10 | 11 | Char |
| 4.3 Transaction Effective Date CC | 2 | 12 | 13 | Char |
| 4.4 Transaction Effective Date YY | 2 | 14 | 15 | Char |
| 5. Transaction Primary Ref. Number | 15 | 16 | 30 | Char |
| 5.1 Primary Document Type | 1 | 16 | 16 | Char |
| 5.2 Primary Document No | 13 | 17 | 29 | Char |
| 5.3 Journal Voucher Code | 2 | 17 | 18 | Char |
| 5.4 Primary Trace No | 7 | 23 | 29 | Char |
| 6. Transaction Secondary Ref No. | 15 | 31 | 45 | Char |
| 6.1 SSN | 9 | 31 | 39 | Char |
| 6.2 Disbursement Date | 4 | 41 | 4 | Comp-3 Julian Date CCYYDDD |
| 7. Transaction Vendor Number | 15 | 46 | 60 | Char |
| 8. Transaction Accounting Group | 17 | 61 | 77 | Char |
| 8.1 Transaction Class Code | 1 | 61 | 61 | Char |
| 8.2 Transaction School ID | 9 | 62 | 70 | Char |

| Field Name | Length | From | To | Format |
|---|---|---|---|---|
| 8.3 Transaction Object Code | 2 | 71 | 72 | Char |
| 8.4 Transaction Loan Pgm Code | 2 | 73 | 74 | Char |
| 8.5 Transaction School Two | 3 | 75 | 77 | Char |
| 9.0 Redefined area:Txn Acctg Group | 17 | 61 | 77 | Char |
| 9.1 Filler | 6 | 61 | 66 | Char |
| 9.2 Transaction GL Account Code | 4 | 67 | 70 | Char |
| 9.3 Transaction CAN | 7 | 71 | 77 | Char |
| 10. Transaction SLSS Txn Code | 4 | 78 | 81 | Char |
| 11. Transaction CRC | 4 | 82 | 85 | Char |
| 11.1 CRC Year | 2 | 82 | 83 | Char |
| 11.2 CRC Pgm Type | 1 | 84 | 84 | Char |
| 11.3 CRC Risk Code | 1 | 85 | 85 | Char |
| 12. Transaction Profile | 2 | 86 | 87 | Char |
| 13. Transaction Level | 2 | 88 | 89 | Char |
| 14. EDPAS Indicator | 1 | 90 | 90 | Char |
| 15. Transaction Amount | 7 | 97 | 103 | Comp-3 Packed<br>13 bytes<br>S9(11)v99 |
| 16. Filler | 10 | 104 | 113 | Char |
| 17. Transaction Loan ID | 21 | 114 | 134 | Char |
| 17.1 SSN | 9 | 114 | 122 | Char |
| 17.2 Loan Type | 1 | 123 | 123 | Char |
| 17.3 Academic Year | 2 | 124 | 125 | Char |
| 17.4 School Code | 6 | 126 | 131 | Char |

| Field Name | Length | From | To | Format |
|---|---|---|---|---|
| 17.5 Sequence Code | 3 | 132 | 134 | Char |
| 18. Transaction Cash Code | 1 | 135 | 135 | Char |
| 19. Transaction Type Code | 1 | 136 | 136 | Char |
| 20. Transaction Disbursement No. | 1 | 137 | 137 | Char |
| 21. Filler | 7 | 138 | 144 | Char |
| 22. Transaction Post Indicator | 1 | 145 | 145 | Char |
| 23. Transaction Posting Date | 8 | 146 | 153 | Char |
| 23.1. Transaction Posting Date MM | 2 | 146 | 147 | Char |
| 23.2 Transaction Posting Date DD | 2 | 148 | 149 | Char |
| 23.3 Transaction Posting Date CC | 2 | 150 | 151 | Char |
| 23.4 Transaction Posting Date YY | 2 | 152 | 153 | Char |
| 24. Transaction EOM Data Flag | 1 | 154 | 154 | Char |
| 25. Filler | 6 | 155 | 160 | Char |
| | | | | |

**B. Output File – Pre-FMS Conversion Files**

| Field Name | Length | From | To | Format | Input Source / Default |
|---|---|---|---|---|---|
| Output-Transaction-Record | 152 | 1 | 152 | | |
| Loan Id | 1 | 1 | 21 | Char | 17. Transaction Loan ID if field is blank; default value is: 999999999SyyG999999001 |
| Transaction Date | 11 | 22 | 32 | Char as dd-mon-ccyy | 4. Transaction Effective Date |
| Primary Ref. Number | 15 | 33 | 47 | Char | 5. Primary Ref.Number |
| Primary Document Type | 1 | 33 | 33 | Char | 5.1 Primary Document Type |
| | | | | Char | 5.3 Journal Voucher Code |

| Field Name | Length | From | To | Format | Input Source / Default |
|---|---|---|---|---|---|
| Journal Voucher Code | 2 | 48 | 49 | | |
| Primary Document Number | 13 | 50 | 62 | Char | 5.2 Primary Document No |
| Primary Trace Number | 13 | 63 | 75 | Char | 5.4 Primary Trace No |
| SSN | 9 | 76 | 84 | Char | 6.1 SSN<br>if field is blank; default value is: 999999999 |
| Disbursement Date | 11 | 85 | 95 | Char as dd-mon-ccyy | 6.2 Disbursement Date<br>must convert from Julian format to Gregorian format |
| Class Code | 1 | 96 | 96 | Char | 8.1 Transaction Class Code |
| School Id | 6 | 97 | 102 | Char | 17.4 School Code |
| GL Account Code | 4 | 103 | 106 | Char | 9.2 Transaction GL Account Code |
| Loan Type | 1 | 107 | 107 | Char | 17.2 Loan Type<br>If field blank or not U,S,P; default value is: S (Stafford)<br>If 17.4 school code = 'G8888*' or 'G7777*', default value is: C (consolidated) |
| SLSS TC Code | 4 | 108 | 111 | Char | 10. Transaction SLSS Txn Code<br>If field blank; default value is:<br>9999 |
| CRC Cohort Year | 2 | 112 | 113 | Char | 11.1 CRC Year |
| CRC Program Type | 1 | 114 | 114 | Char | 11.2 CRC Pgm Type |
| CRC Risk Type Code | 1 | 115 | 115 | Char | 11.3 CRC Risk Code |
| FARS Transaction Code | 2 | 116 | 117 | Char | 3. Transaction Code |
| | | | | | |
| Profile | 2 | 118 | 119 | Char | 12. Transaction Profile |
| | | | | Char | 13. Transaction Level |

| Field Name | Length | From | To | Format | Input Source / Default |
|---|---|---|---|---|---|
| Level | 2 | 120 | 121 | | |
| FMSS Code | 1 | 122 | 122 | Char | 14. EDPAS indicator |
| Amount | 15 | 123 | 137 | Char | 15. Transaction Amount format with leading zeros and implied decimal point. If negative value format with a leading – sign (i.e. –00000002745.00) |
| Entry Id | 4 | 138 | 141 | Char | 21. Entry ID |
| Posting Date | 11 | 142 | 152 | Char as dd-mon-ccyy | 23. Transaction Posting Date |

**Data Selection Guidelines**

Certain transactions will be filtered from the process, as they are not necessary for the CMDM. These excluded transactions include:

- Class 6 and 7 Transactions – Transactions maintain school data for each T Record transaction. Not required as this data will be housed in the CMDM in the school table.
- Transactions with TC Profile Level of 99 99 99 – These are error transactions and would never have made it into FARS.

**Quality Control**

For verification of input records processed a total record count from each file processed is verified against FARS master file list statistic counts.

**Data Reconciliation**

From conversion, summary amounts by GL Acct Code are displayed by fiscal year and matched to FARS fiscal year FMS equivalent DLSFB600 report by GL Acct Code. This ensures that all history records have been successfully converted.

**Data Clean Up Process/Steps**

Any out of balance condition will be researched, data selection guidelines will be adjusted, and input file will be re-converted.

# 4 Data Model

This section describes the logical and physical data models (database design) that will be implemented for the initial deployment of the data mart. It shows the logical model in a schematic view and then gives a list of the attributes and dimensions that are part of the data model.

## 4.1 LOGICAL DATA MODEL

The logical data model shown below is designed based on information gathered in interviews and discussions with the subject matter experts (SMEs), report developers and end users in SFA, FARS and MIS. It gives a schematic high-level overview of the attributes and the relationships defined in it.

For simplification purposes the date attributes in the model have been reduced to just one attribute per date, describing the actual day. However for reporting purposes, dates are generally modeled in four distinct attributes to allow for reporting on a daily, monthly, quarterly and yearly basis. These dates are not displayed in the figures below. The corresponding attributes are listed in section 4.2.

The logical model has been distributed into two figures. Figure 4.1.1 shows the attributes that will be available for reporting. Figure 4.1.2 shows the attributes that are used to allow for code mappings. The various systems (DLSS, FARS and FMS) all maintain their own unique way of coding transactions. This results in many different attributes that essentially describe the same ‘real-world’ transaction. Due to this the Credit Management Data Mart (CMDM) maintains a transaction mapping mechanism that describes which code from which system corresponds to which code in each of the other systems. For example if the servicing transaction code ‘4090A’ corresponds to the FMS account number ‘135001’, then this will be stored in the transaction mapping table. The attributes necessary to facilitate this mapping mechanism are shown in figure 4.1.2 below. Going forward the FARS transaction codes will be retired, however they are included in the model for a smoother transition phase.

The detailed definition of the LDM is stored in ERWin format. ERWin is a data modeling tool that offers various features to the data modeler. Printouts of the ERWin model are attached in Appendix D.

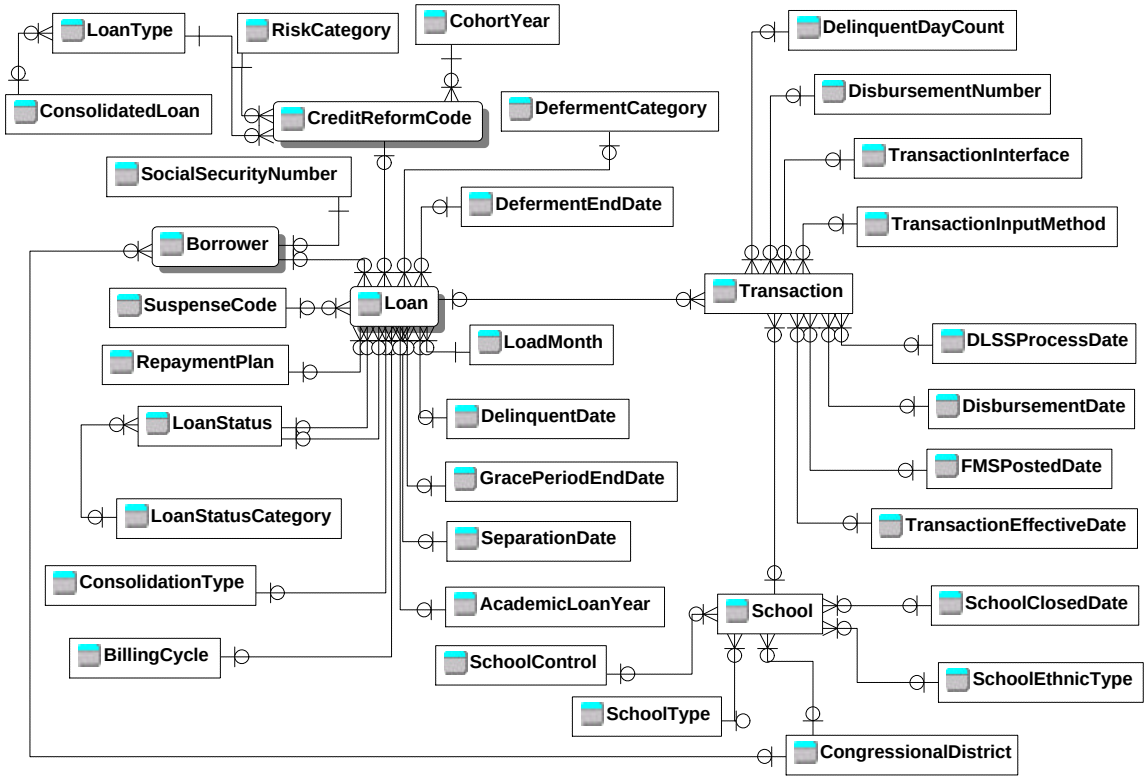



***Figure 4.1.1: Logical Data Model***

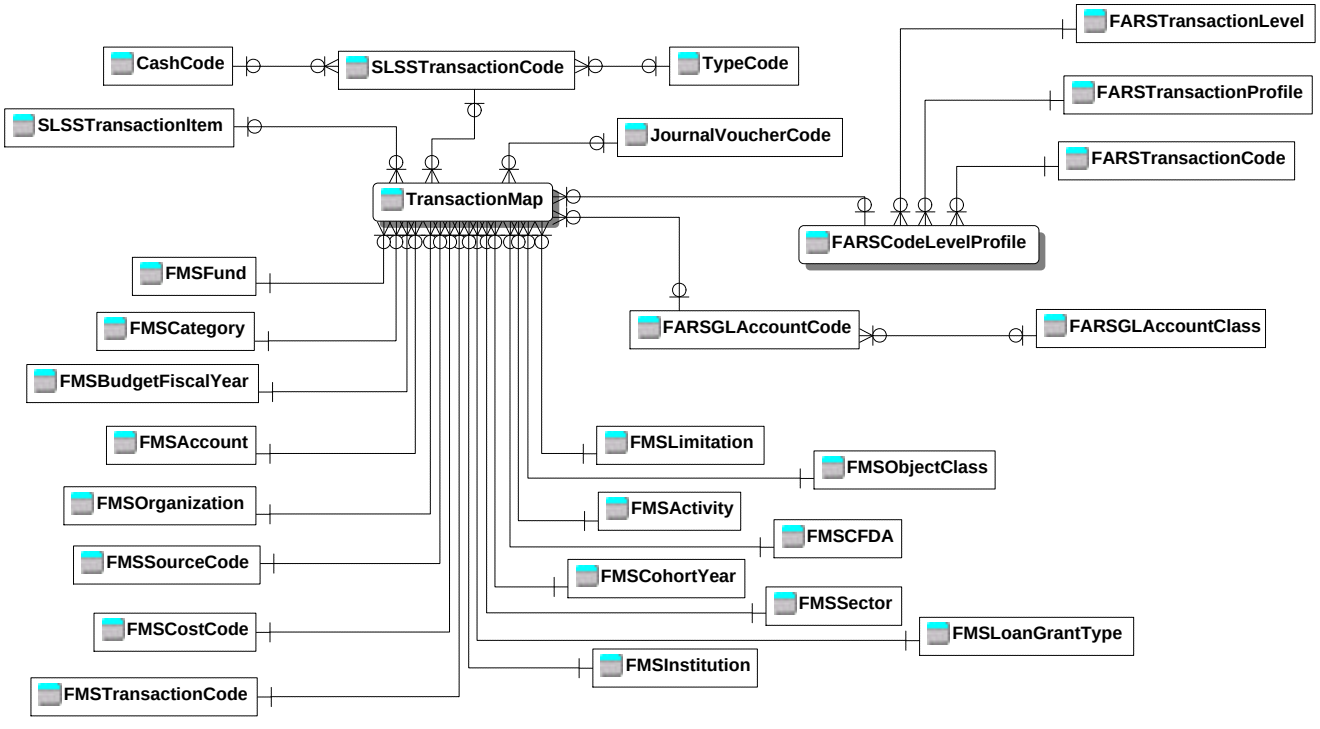



***Figure 4.1.2: Transaction Code Mapping Schema***

## 4.2 ATTRIBUTE DEFINITIONS

The following table gives a definition of the logical attributes described in the previous section and a list of data items being stored for them where applicable.

| Attribute Name | Attribute Definition |
|---|---|
| Academic Loan Year | The academic year of a loan. The academic year starts on 07/01 and lasts till 06/30. |
| Billing Cycle | A value from 1 to 4 indicating on which of the four monthly billing cycles the borrower is to receive his normal billings for this loan. This field also dictates when the borrower's due date will be. Values are:<br>• 1 (7th day of the month)<br>• 2 (14th day of the month)<br>• 3 (21st day of the month)<br>• 4 (28th day of the month) |
| Borrower | Information about the borrower, including name address, phone numbers, address condition, birth date and email address. A borrower is uniquely identified by its social security number. |
| Cash Code | 5th position of the SLSS transaction code, values are:<br>• Cash<br>• Non-cash |
| Claim Code | Indicates the account is in default for the reason specified, or the claim has been filed, or is in process on that basis.<br>• Closed School<br>• Death<br>• Forced to DCS<br>• Disability<br>• Ineligible Borrower<br>• Susp. For false Certification<br>• Defaulted Non-Skip<br>• Non Return of Payout Note<br>• Default Skip<br>• Teacher Forgiveness<br>• Other DLSS N/A<br>• Bankruptcy<br>• Other |
| Cohort Year | The cohort year of a loan. This is identical to the fiscal year (October 1st – September 30th) in which the loan was disbursed. |
| Congressional District | The congressional districts of the US. Is used by both the school and borrower attribute. |
| Consolidated Loan | Flag that indicates if a loan is consolidated or not. |
| Consolidation Type | Types of consolidated loans. Values are:<br>• Regular<br>• Expedited<br>• Fast track<br>• In school |

| Attribute Name | Attribute Definition |
|---|---|
| Credit Reform Code | The credit reform code (CRC) is a combination of loan type, risk category and cohort year. |
| Days Past Due | The number of days a loan has been delinquent |
| Deferment Category | The deferment category of a loan. |
| Deferment End Date | Date on which the deferment category period for a loan ended. |
| Deferment End Month | Month on which the deferment category period for a loan ended. |
| Deferment End Quarter | Quarter on which the deferment category period for a loan ended. |
| Deferment End Year | Year on which the deferment category period for a loan ended. |
| Delinquent Date | Date on which a loan becomes delinquent. |
| Delinquent Month | Month on which a loan becomes delinquent. |
| Delinquent Quarter | Quarter on which a loan becomes delinquent. |
| Delinquent Year | Year on which a loan becomes delinquent. |
| Delinquent Day Count | Number of days that a received payment is delinquent. |
| Deposit Ticket | The deposit ticket is maintained to allow for research queries from Big Ed. |
| Disbursement Date | Date a loan was disbursed. |
| Disbursement Month | Month a loan was disbursed. |
| Disbursement Number | Sequential numbering of the disbursement transactions for a loan. 1st, 2nd, ... |
| Disbursement Quarter | Quarter a loan was disbursed. |
| Disbursement Year | Year a loan was disbursed. |
| DLSS Process Date | Date a transaction was booked by DLSS. |
| DLSS Process Month | Month a transaction was booked by DLSS. |
| DLSS Process Quarter | Quarter a transaction was booked by DLSS. |
| DLSS Process Year | Year a transaction was booked by DLSS. |
| FARS Code Level Profile | Grouping of the attributes 'FARS Transaction Code', 'FARS Transaction Profile' and 'FARS Transaction Level' for better reporting. |
| FARS GL Account Class | High level grouping of GL account codes. Values are:<br>• Assets – Class 1 |

| Attribute Name | Attribute Definition |
|---|---|
| | • Liabilities – Class 2<br>• Equity – Class 3<br>• Expenditures / Revenues – Class 5 |
| FARS GL Account Code | GL account codes used to classify transaction by FARS. Possible values are Cash, Consolidation Advance, Loans Receivable, … |
| FARS Transaction Code | Transaction codes to classify transactions by FARS. Values 10 – 90 |
| FARS Transaction Level | Transaction levels to classify transactions by FARS. |
| FARS Transaction Profile | Transaction profiles to classify transactions by FARS. |
| FMS Account | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Activity | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Budget Fiscal Year | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Category | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS CFDA | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Cohort Year | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Cost Code | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Fund | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Institution | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Limitation | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Loan Grant Type | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Object Class | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Organization | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Posted Date | Date a transaction was posted to the FMS system. |
| FMS Posted Month | Month a transaction was posted to the FMS system. |
| FMS Posted Quarter | Quarter a transaction was posted to the FMS system. |
| FMS Posted Year | Year a transaction was posted to the FMS system. |
| FMS Sector | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| FMS Source Code | Attribute to classify transactions based on the new classification |

| Attribute Name | Attribute Definition |
|---|---|
| | schema used by Oracle FMS. |
| FMS Transaction Code | Attribute to classify transactions based on the new classification schema used by Oracle FMS. |
| Grace Period End Date | Date when the grace period for a loan ends. The loan grace period lasts for six months and starts the first day of the month after a borrower is not in school anymore. |
| Grace Period End Month | Month when the grace period for a loan ends. |
| Grace Period End Quarter | Quarter when the grace period for a loan ends. |
| Grace Period End Year | Year when the grace period for a loan ends. |
| Journal Voucher Code | Schedule Type used by Bid Ed to categorize transactions. Maintained for research purposes. |
| Load Month | The month in which a loan record was loaded into CMDM |
| Load Year | The year in which a loan record was loaded into CMDM |
| Loan Status | The status of a loan, values are:<br>• In School - Current<br>• In Grace - Current<br>• In Grace - Delinquent Payout Note<br>• Payout - Current<br>• Payout - Delinquent Payout Note<br>• Payout - Delinquent Installation<br>• Reduced Payment<br>• Special Handling<br>• Deferment - Current<br>• Deferment - Delinquent Installation<br>• Post Deferment Grace - Current<br>• Post Deferment Grace Delinquent Installment<br>• Deferment - Complaint<br>• Forbearance - Current<br>• Forbearance - Delinquent<br>• Forbearance - Complaint<br>• Temp Pay Plan - Current<br>• Temp Pay Plan - Delinquent<br>• Default - In School<br>• Default - In Grace<br>• Default - Payout<br>• Default - Deferment<br>• Default - Forbearance<br>• Rejected Claim - In School<br>• Rejected Claim - In Grace<br>• Rejected Claim<br>• Claim Filed - In School<br>• Claim Filed - Grace<br>• Claim Filed - Payout<br>• Claim Filed - Deferment<br>• Claim Filed - Forbearance |

| Attribute Name | Attribute Definition |
|---|---|
| | • Paid In Full<br>• Paid In Full - By Claim |
| Loan Status Category | Categorizes loan status values for better reporting. Values are:<br>• In School<br>• In Grace<br>• Payout<br>• Deferment<br>• Post Deferment<br>• Forbearance<br>• Temp Pay Plan<br>• Default<br>• Rejected Claim<br>• Repayment Filed<br>• Paid In Full<br>• Other |
| Loan Type | Type of the loan, values are:<br>• Federal Direct Stafford, Subsidized<br>• Federal Direct Stafford, Unsubsidized<br>• Federal Direct PLUS<br>• Consolidation, Stafford Subsidized<br>• Consolidation, Stafford Unsubsidized<br>• Consolidation, PLUS |
| Payment Allocation Category | Artificial Attribute that is only used for the payment allocation report. |
| Payment Allocation Fee Type | Artificial Attribute that is only used for the payment allocation report. |
| Portfolio Analysis Category | Artificial Attribute that is only used for the portfolio analysis report. |
| Portfolio Analysis Display Category 1 | Artificial Attribute that is only used for the portfolio analysis report. |
| Portfolio Analysis Display Category 2 | Artificial Attribute that is only used for the portfolio analysis report. |
| Portfolio Analysis Summary | Artificial Attribute that is only used for the portfolio analysis report. |
| Repayment Plan | The repayment plan of a loan, values are:<br>• Standard<br>• Extended<br>• Graduated<br>• ICR<br>• Alternative Fixed Payment<br>• Alternative Term Graduated<br>• Alternative Fixed Payment 12 Months Amortization |

| Attribute Name | Attribute Definition |
|---|---|
| | • Alternative Fixed Term |
| Risk Category | Associates every loan to a risk category, values are 1 – 9 |
| School | List of schools in the US that are part of the direct loan program. The table contains the school's ID, OPE number, name, state, ZIP code and the DUN (Dun and Bradstreet number) |
| School Closed Date | Date the direct loan participation agreement was terminated due to a school closure. |
| School Closed Month | Month the direct loan participation agreement was terminated due to a school closure. |
| School Closed Quarter | Quarter the direct loan participation agreement was terminated due to a school closure. |
| School Closed Year | Year the direct loan participation agreement was terminated due to a school closure. |
| School Control | Grouping of schools, possible values are:<br>• Public<br>• Private<br>• Proprietary<br>• Foreign |
| School Ethnic Type | Ethnic classification of schools, possible values are:<br>• Native American (Land Grant Colleges)<br>• Historically Blank College or University (HBCU)<br>• Hispanic<br>• Traditionally Black (Non-Land Grant Colleges)<br>• Ethnicity not reported |
| School Type | Grouping of schools, possible values are:<br>• 300 hours<br>• 600 hours<br>• 1 year<br>• 2 years<br>• 3 years<br>• 4 years<br>• 5 or more years |
| Separation Date | Date on which a borrower is no longer enrolled at least on a half-time basis, anticipates ceasing to be enrolled, graduation or leaving school. Grace period begins the first day of the month after the separation date. |
| Separation Month | Month of the separation date |
| Separation Quarter | Quarter of the separation date |
| Separation Year | Year of the separation date |
| SLSS Transaction Code | 6-digit code including the cash code and type code attributes. Together with SLSS Transaction Item it specifies the type of transaction.<br>This can be used to derive the new Oracle (FMS) encoding or the old FARS encoding of a transaction. |
| SLSS Transaction | Artificial identifier that combined with SLSS Transaction Code |

| Attribute Name | Attribute Definition |
|---|---|
| Item | attribute classifies a transaction. It specifies the number value (transaction amount) populated in IF010 file. There are 18 different possible values, many of which can be populated in the same line. |
| Social Security Number | The social security number of a borrower. |
| Suspense Code | Indicates the account is in default for the reason specified, or the claim has been filed, or is in process on that basis. An entry of 'S' (special handling) suspends due diligence processing by the delinquent subsystem.<br>• Deceased (D)<br>• Disability (H)<br>• Bankruptcy (X)<br>• Force default (F)<br>• Special Handling (S)<br>• Teacher Forgiveness<br>• Child Care Forgiveness |
| Transaction Effective Date | Date when a transaction was effective in servicing (DLSS) data. |
| Transaction Effective Month | Month when a transaction was effective in servicing (DLSS) data. |
| Transaction Effective Quarter | Quarter when a transaction was effective in servicing (DLSS) data. |
| Transaction Effective Year | Year when a transaction was effective in servicing (DLSS) data. |
| Trace Number | The trace number for payments |
| Transaction Input Method | Identifies how a transaction record was added to the system. Values are:<br>• Manual<br>• Data Feed |
| Transaction Interface | Identifies the owner of a loan, values are:<br>• LO<br>• LC<br>• COD<br>This data will only become available when it is being added to the IF010 data file (see also section 1.5). Initially only two values, LO and LC, will be generated. |
| Transaction Map | Relationship table to define relationship between SLSS Transaction codes, the FMS/Oracle coding and the old FARS coding.<br>This table will include a new surrogate key to allow for easier identification of the transaction type. The key is then used in the Transaction fact table to identify the type of financial transaction that is being stored. |
| Type Code | 6th position of the SLSS Transaction Code attribute. Possible values are:<br>• Prior Month Payment (B)<br>• Payment Correct (D) |

| Attribute Name | Attribute Definition |
|---|---|
| | • Loan Consolidation (L)<br>• EDS Direct Loan Payoff (R)<br>• Foreign Exchange (E)<br>• Current Lockbox or EDA Payment (Z) |

### 4.3 FACT TABLES

The following table gives a definition of the fact tables of the logical data model. The fact tables differ from the attributes defined in the previous section by combining attribute definitions and storing numerical data that enables reporting. While the attributes can be seen as descriptive data, the fact tables store the numbers that will be seen on reports described by the attributes. Fact tables are usually of a much higher cardinality in terms of rows than attribute tables. Also the rows stored in fact tables steadily grows with new transactional data becoming available, while attribute data generally remains static.

| Fact Table Name | Fact Table Description |
|---|---|
| Loan | The loan table stores information about loans. It enables loan reporting based on:<br>• Academic Loan Year<br>• Billing Cycle<br>• Cohort Year<br>• Consolidation Type<br>• Delinquent Date<br>• Grace Period End Date<br>• Loan Status<br>• Loan Type<br>• Repayment Plan<br>• Risk Category<br>• Separation Date<br>• Social Security Number<br>• Suspense Code<br>In addition to these reporting levels the loan table stores numeric information for:<br>• Current Interest Rate of the loan<br>• Monthly Repayment Amount of the loan |
| IF020_Transaction | The IF020 Transaction table is used to store information just for IF020 records. The reporting capabilities for IF020 records will include:<br>• Deposit Ticket<br>• Social Security Number<br>• Transaction Effective Date<br>• Transaction Type<br>The numeric fields in the IF020 Transaction table are limited to the value of the actual transaction. |
| Transaction | The transaction table is by far the biggest table in the data model |

| Fact Table Name | Fact Table Description |
|---|---|
| | in number of rows stored in it. It contains all the information needed to report on financial transactions of the direct loan program:<br>• Delinquent Day Count<br>• Deposit Ticket<br>• Disbursement Number<br>• Disbursement Date<br>• DLSS Process Date<br>• FMS Posted Date<br>• Loan, by being able to report on loans, transactions can also be linked to all attributes listed in the row for the loan table above<br>• School<br>• Transaction Effective Date<br>• Transaction Input Method<br>• Transaction Interface ID<br>• Transaction Type<br>The transaction fact table also stores numeric information about interest rate changes and transaction amount values. The transaction amount value is then being used to enable reporting on different types of transaction:<br>• Borrower Interest Paid<br>• Borrower Principal Paid<br>• Disbursement Amount<br>• Interest Receivable Balance<br>• Late Charge Amount<br>• Late Charge Paid<br>• Original Loan Amount<br>• Principal Balance Outstanding<br>• Rebate Amount<br>• School Refund Amount |

# 5 Reporting Requirements

As discussed in section 1.2.4 the current reporting requirements consist of two main parts: Management Information System (MIS) Reporting and Ad-Hoc Reporting. To fulfill the requirements not covered by the FMS system, the CMDM will provide the following predefined reports:

- Weekly Project Status Report
- Portfolio Analysis Report
- Payment Allocation Report
- Treasury Report of Receivables (TROR)
- Social Security Number / Loan ID Posting report
- Rolling Reconciliation (MegaRecords) Process Data report

Additionally the CMDM will provide extensive ad-hoc query capabilities to be able to process all the reporting needs not covered by the FMS system.
The following section describe the detailed design for all the above reports and ad-hoc query capabilities.

## 5.1 WEEKLY PROJECT STATUS REPORT

### 5.1.1 Report Description

The Weekly Project Status Report provides a listing of weekly loan disbursements and yearly disbursement numbers by the school year. The resulting data is separated into number of transaction and total dollar amounts.

### 5.1.2 Report Details

| | |
|---|---|
| **Report Name** | Weekly Project Status Report |
| **Description** | Current inputs to this report are:<br>• FARS Cumulative Month Postable and Beginning Balance files (Jack Heytens)<br>• EDP Audit spreadsheet (Tamara Lilly)<br>• Utica Service Center spreadsheet (Dawn Wise)<br>• Fulfillment spreadsheet (Misty Karnasuta)<br>• Production Interface document (Sharon Reese)<br>• DLSS Web document (Maylon Hayes)<br>As part of the above-mentioned FARS Cumulative Month Postable and Beginning Balance files, MIS currently provides Weekly Disbursements, which is used in preparing the Weekly Project Status Report. |
| **Use** | SFA Repayment Division, ACS / GSG, and others. Uses of the report includes, but is not limited to, the verification and validation of invoices, Work In Progress updates, status, audits, and management needs. |
| **Frequency/Timing** | Every Friday and the last calendar day of the month |
| **Data Source** | CMDM |

| | |
|---|---|
| **Distribution** | Edward Baran |
| **Output Media** | ASCII File |
| **Quality Control** | To be determined, report reconciliation will be done against Transaction Summary Report equivalent to be created by FMS. |
| **Volume** | 30,000 bytes |
| **Number of Copies** | One |
| **Selection Screen Criteria** | N/A, No user interaction |
| **Sort** | Loan ID |
| **Sub Totals/Totals** | N/A |

### 5.1.3 Report Field Listing

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| | | | | |
| SLSS Transaction Code | See layout | 6 | Text | CMDM – SLSS Transaction Code attribute |
| | | | | |
| Amount | See layout | 13 | Number | CMDM – Transaction attribute amount field |
| Loan ID | See layout | 21 | Text | CMDM – Loan attribute |
| Post Date | See layout | 8 | Date | CMDM – FMS Posted Date attribute |
| FMS Transaction Code | See Layout | 15 | Text | CMDM – FMS transaction Code attribute |

### 5.1.4 Report Layout

The report layouts displayed in this and the following sections are supposed to offer a preview of how reports can look like using the MicroStrategy product interface. The displayed layouts and samples are not displaying the reports as they will be provided, but only small parts of them. The complete reports will be finalized with the report end users once data is available in the CMDM so that a complete picture can be drawn.

| | | Posted Date Period |
|---|---|---|
| | | School Year |
| **Disbursement Type** | **Total Dollar Amount** | |
| | **Total Transaction Count** | |
| | **Total Dollar Amount for Period** | |

This is a sample view of how an actual report version could look like. It is only a preview and not meant to be complete.

| | Posted Date Week 08/13/2001 – 08/19/2001 | |
|---|---|---|
| | School Year | |
| **Metrics** | **2000** | **2001** |
| Total Disbursements Dollar Amount | $ 11,111,111,111.00 | $ 22,222,222,222.00 |
| Total Number of Disbursements | 4,444,444 | 5,555,555 |
| Total Disbursement Amount for Period | $ 6,666,666.00 | $ 7,777,777.00 |

## 5.2 PORTFOLIO ANALYSIS REPORT

### 5.2.1 Report Description

The Portfolio Analysis Report breaks down direct loan transactions by risk category and repayment plan of loans. The resulting data is presented by cohort year.

### 5.2.2 Report Details

| | |
|---|---|
| **Report Name** | Portfolio Analysis Report |
| **Description** | This report shows life to date information on loan portfolios according to consolidation status, loan type, and repayment plan. |
| **Use** | The Portfolio Analysis Report is a report that depicts all loans by risk categories 1 through 4: (1) proprietary schools (2) public and private, (3) 4-year proprietary, public or private freshman and sophomores (4) 4-year proprietary, public or private junior and senior that are currently used for the OMB annual budget, reclassification project, credit reform purposes, research, and other purposes. The financial loan type and financial cohort fields are used where as the servicing loan status, servicing repayment loan, and the financial risk category fields are not used. |
| **Frequency/Timing** | End of Month / by the 15th business day |
| **Data Source** | CMDM |
| **Distribution** | Kirk Siegwarth |
| **Output Media** | Hard Copy |
| **Quality Control** | To be determined, report reconciliation will be done against Transaction Summary Report equivalent to be created by FMS. |
| **Volume** | 100,000 to 150,000 output data rows |
| **Number of Copies** | One |
| **Selection Screen Criteria** | N/A, No user interaction |
| **Sort** | By repayment plan and transaction type. |
| **Sub Totals/Totals** | Accumulate sum totals to grand total by consolidation indicator, repayment plan, loan type, and cohort year. |

### 5.2.3 Report Field Listing

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Credit Reform Code | See layout | 4 | Text | CMDM – Credit Reform Code attribute |
| | | | | |
| | | | | |
| Loan ID | See layout | 21 | Text | CMDM – Loan attribute |
| Post Date | See layout | 8 | Date | CMDM – FMS Posted Date attribute |

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Transaction Date | See layout | 8 | Date | CMDM – Transaction Effective Date attribute |
| Amount | See layout | 13 | Number | CMDM – Transaction attribute amount field |
| SLSS Transaction Code | See layout | 6 | Text | CMDM – SLSS Transaction Code attribute |
| | | | | |
| | | | | |
| Consolidation Indicator | See layout | 1 | Text | CMDM – Portfolio Analysis Category attribute |
| Summary Category | See layout | 2 | Text | CMDM – Portfolio Analysis Category attribute |
| FMS Transaction Code | See Layout | 15 | Text | CMDM – FMS transaction Code attribute |
| FMS Account | See Layout | 6 | Text | CMDM – FMS transaction account attribute |

### 5.2.4 Report Layout

The report layout for the portfolio analysis report will be created slightly different from that of other reports. Since the line items of the portfolio analysis report cannot be grouped by one or multiple attributes, an artificial attribute called 'Portfolio Analysis Category' has been created that will contain a list of descriptions and corresponding FMS transaction codings for all lines of the report. The line items will then be further grouped by the attributes 'Portfolio Analysis Display Category 1', 'Portfolio Analysis Display Category 2', and 'Portfolio Analysis Summary'. This design allows for an easy grouping of the line items identified on the portfolio analysis report in the order desired.

The report layout given below therefore shows the artificial attributes, while the sample view of the report also contains the actual line item descriptions that will be displayed on the report.

| | | | | Risk Category |
|---|---|---|---|---|
| | | | | Transaction Dollar Amount |
| **Repayment Plan** | **Portfolio Analysis Display Category 1** | **Portfolio Analysis Display Category 2** | **Portfolio Analysis Category** | |

This is a sample view of how an actual report version could look like. It is only a preview and not meant to be complete.

| | | | Metrics | Risk Category 1 | Risk Category 2 |
|---|---|---|---|---|---|
| **Repayment Plan** | **Portfolio Analysis Display Category 1** | **Portfolio Analysis Display Category 2** | **Portfolio Analysis Category** | **Transaction Dollar Amount** | **Transaction Dollar Amount** |
| In School & In Grace | New Loans Disbursed | | | $ 99,999.00 | $ 99,999.00 |
| | | | | $ 11,111.00 | $ 11,111.00 |
| | | Loans Paid In Full | Consolidated | $ 5,555.00 | $ 5,555.00 |
| | | | Non-Consolidated | $ 5,555.00 | $ 5,555.00 |

## 5.3 PAYMENT ALLOCATION REPORT

### 5.3.1 Report Description

The Payment Allocation Report breaks down direct loan transactions by loan type, repayment plan and cohort year by principal and interest. The dollar amounts are calculated on a quarterly basis and as year to date numbers for the current fiscal year.

### 5.3.2 Report Details

| | |
|---|---|
| **Report Name** | Payment Allocation Report |
| **Description** | Provide financial category amount transactions for reporting by Cohort Year, Loan Type, and Repayment Categories. |
| **Use** | Direct Loan Repayment only uses the extract to address the CFO concerns regarding payment allocation. |
| **Frequency/Timing** | Quarterly, by 15th calendar day |
| **Data Source** | CMDM |
| **Distribution** | Sandy E. Harris, Gordon Peterson, and Frank Kesterman |
| **Output Media** | Excel Spreadsheet |
| **Quality Control** | To be determined, report reconciliation will be done against Transaction Summary Report equivalent to be created by FMS. |
| **Volume** | N / A |
| **Number of Copies** | 4 |
| **Selection Screen Criteria** | N / A, No user interaction |
| **Sort** | Data is sorted by Cohort Year, Payment Category (principal, interest, origination fee, late charges), Loan Type, and Repayment Plan in that order |
| **Sub Totals/Totals** | Accumulate sum totals to grand total by repayment plan. |

### 5.3.3 Report Field Listing

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Loan Id | See layout | 21 | Text | CMDM – Loan attribute |
| Credit Reform Code (CRC) | See layout | 4 | Text | CMDM – Credit Reform Code attribute |
| Servicing Transaction Code (SLSS) | See layout | 6 | Text | CMDM – SLSS Transaction Code attribute |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Posting Date | See layout | 8 | Date | CMDM – FMS Posted Date attribute |

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Amount | See layout | 11 | Number | CMDM – Transaction attribute amount field |
| Cohort Century/Year | See layout | 4 | Date (Year Only) | CMDM – Cohort Year attribute |
| Category Type Code | See layout | 1 | Text | CMDM – Portfolio Analysis Category attribute |
| Detail Type Code | See layout | 1 | Text | CMDM – Portfolio Analysis Category attribute |
| FMS Transaction Code | See Layout | 15 | Text | CMDM – FMS transaction Code attribute |
| FMS Account | See Layout | 6 | Text | CMDM – FMS Account attribute |
| | | | | |

### 5.3.4 Report Layout

The report layout for the payment allocation report will be created slightly different from that of other reports. Since the line items of the payment allocation report can only partly be grouped by one or multiple attributes, an artificial attribute called 'Payment Allocation Category' has been created that will contain a list of descriptions and corresponding FMS transaction codings for all lines of the report. The line items will then be further grouped by the artificial attribute 'Payment Allocation Fee Type', and the regular attribute 'Loan Type'. This design allows for an easy ordered grouping of the line items identified on the payment allocation report. The report layout given below therefore shows the artificial attribute, while the sample view of the report also contains the actual line item descriptions that will be displayed on the report.

| | | | | Fiscal Year | |
|---|---|---|---|---|---|
| | | | | Transaction Dollar Amount 1st Quarter | Transaction Dollar Amount Fiscal Year to Date |
| Cohort Year | Repayment Plan | Loan Type | Payment Allocation Fee Type | | |

This is a sample view of how an actual report version could look like. It is only a preview and not meant to be complete.

| | | | Metrics | 2001 | |
|---|---|---|---|---|---|
| Cohort Year | Payment Allocation Fee Type | Loan Type | Repayment Plan | Transaction Dollar Amount 1st Quarter | Transaction Dollar Amount Fiscal Year to Date |
| 1994 | Principal Payments | Plus | Standard Repay | $ 50,000.00 | $100,000.00 |
| | | | Extended Repay | $ 60,000.00 | $200,000.00 |
| | | | Graduated Repay | $ 70,000.00 | $300,000.00 |
| | | Stafford Subsidized | Standard Repay | $ 80,000.00 | $400,000.00 |
| | | | Extended Repay | $ 90,000.00 | $500,000.00 |
| | | | Graduated Repay | $ 80,000.00 | $600,000.00 |

## 5.4 TREASURY REPORT OF RECEIVABLES

### 5.4.1 Report Description

The Report on Receivables Due From the Public [Treasury Report of Receivables (TROR)], formerly called SF 220- Schedule 9 is a Standard Form that is submitted to the U.S. Department of Treasury from the U.S. Department of Education, Office of the Chief Financial Officer, every quarter. This report is the Department of the Treasury's only comprehensive means for periodically collecting data on the status and condition of the Federal Government's non-tax debt portfolio, in accordance with the requirements of the Debt Collection Act of 1982 and the Debt Collection Improvement Act of 1996 (DCIA). This Detail Design document states the reporting requirements for the Direct Student Loan Program. The FMS / TROR submitted to FMSS combines financial data from both the Direct Loan Program and the Debt Collection Service.

### 5.4.2 Report Details

| | |
|---|---|
| **Report Name** | Report on Receivables Due From the Public -Treasury Report of Receivables (TROR) |
| **Description** | Treasury Report of Receivables (TROR), formerly called SF 220-Schedule 9 is a Standard Form that is due to the Treasury from the Department of Education every quarter. Part I of this Report contains Fiscal Year to Date data about the receivables and collections. It also contains data about Delinquent Debt by Age, which is provided by Credit Management Data Mart and DCS. Part II of this Report (Debt Management Tool and Technique Performance Data) contains data that is provided by DCS. This Report contains the number of loans and the principal, interest and late charges and the total amounts of the receivables. |
| **Use** | This Report is a Treasury requirement in order to identify the receivables due from the public. The Financial Reporting Division in SFA CFO sends the report to the OCFO. OCFO forwards the Report to the Treasury. |
| **Frequency/Timing** | Quarterly |
| **Data Source** | The receivables and collections data is provided by FMS. The Credit Management Data Mart and DCS provide the delinquency data. |
| **Distribution** | CFO Financial Reporting |
| **Output Media** | Microsoft Excel |
| **Quality Control** | To be determined, report reconciliation will be done against Transaction Summary Report equivalent to be created by FMS. |
| **Volume** | N / A |
| **Number of Copies** | One |
| **Selection Screen Criteria** | N / A, No user interaction |
| **Sort** | Loan ID |
| **Sub Totals/Totals** | N / A |

### 5.4.3 Report Field Listing

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| (1) Beginning FY balance | Number of Loans, Principal, Interest / Late Fees, Total Amount[1] | The number of loans, principal, interest and late fees are entered. This amount is the current beginning fiscal year balance of all receivables and remains the same in all the quarterly reports for a particular Fiscal Year. |
| (2) New Receivables (+) | Number of Loans, Principal, Total Amount | This amount is the total new receivables (new disbursements) that have been booked during the Fiscal Year in GL Account is Loans Receivable – Direct Loans (135001) Only the number of loans and the principal amount are shown. |
| (3) Accruals (+) | Interest / Late Fees, Total Amount | This is the accrued interest and late charges that have accrued on loans and have not yet been paid. The following transactions are included:<br>Monthly Interest Accrual, Late Charges, NSF Fees<br>These amounts are obtained from the GL Account Interest Receivable- Direct Loans (134001) and Accounts Receivable – Other (131002). |
| (4) Collection on Receivables (-) | Principal, Interest / Late Fees, Total Amount | This amount is the total principal, interest and late charges that have been collected during the Fiscal Year on all debts. This is subtracted from the receivables. This includes amounts in GL Accounts Cash Collections (100103) |
| (4) Collection on Receivables (-)<br>(A) At Agency | Principal, Interest / Late Fees, Total Amount | All collections for Direct Loans fall under this category. This must be equal to the total collections on the previous line. |
| (4) Collection on Receivables (-)<br>(B) At Third Party | | Does not apply to Direct Loans |
| (4) Collection on Receivables (- | | Does not apply to Direct Loans |

[1] All principal, interest and Total Amount are in the format Z,ZZZ,ZZZ,ZZZ.

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| )<br>(C) Asset Sales | | |
| (4) Collection on Receivables (-)<br>(D) Other- must footnote | | Does not apply to Direct Loans |
| (5) Adjustments | Principal, Interest/Late Fees, Total Amount | This is the total of the amounts that should be adjusted from the total receivables.<br>**Note: All amounts reported on this line are to be footnoted with the reason for adjustment.** |
| (5) Adjustments<br>(A) Reclassified/Adjustment Amounts (+ or -) | Number, principal, Interest/Late Fees, Total Amount | The following are the adjustments:<br>• Capitalized interest, which is that portion of interest that is capitalized and added to the principal. The following transactions are included: Capitalized Interest-Principal<br>• Repayment Incentive Rebate is the rebate amount for prompt repayment of monthly installments.<br>• Adjustments for loans of borrowers in child care professions.<br>• Corrections to amounts previously reported as receivables, refunds of amounts previously reported as collections.<br>• Collections towards written off debts. |
| (5) Adjustments<br>(B) Adjustments due to sale of assets (+ or -) | Total Amount | Does not apply to Direct Loans |
| (5) Adjustments<br>(C) Consolidation (+ or -) | Principal, Interest/Late Fees, Total Amount | Does not apply to Direct Loans |
| (6) Amounts Written Off (-) | Number of loans, Principal, Interest/Late Fees, Total | This is the total of the amounts written off due to various reasons that should be subtracted from the receivables. For Direct Loans this should equal 6 (B) |

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| | Amount | |
| (6) Amounts Written Off (-)<br>(A) Currently not collectible | | Does not apply to Direct Loans |
| (6) Amounts Written Off (-)<br>(B) Written Off and/or Closed out | Number of loans, Principal, Interest/Late Fees, Total Amount | All Direct Loan amounts that are written off are reported here. The following principal, interest, late fees and NSF fee transactions are included: Principal, interest, late charges and NSF fees written off due to death, disability, bankruptcy, closed school, false certification and unauthorized payment/disbursement and teacher forgiveness.<br>**Note: The program will allow addition of codes in future.** |
| (7) Ending balance | Number of loans, Principal, Interest/Late Fees, Total Amount | This is the net effect of Lines (1) through (6) |
| (A) Foreign/Sovereign<br>(B) State and Local Government | | Does not apply to Direct Loans |
| (8) Rescheduled Debt<br>(A) Delinquent<br>(B) Non- Delinquent | | Does not apply to Direct Loans |
| • (9) Interest and Late Charges | Interest/Late Fees, Total Amount | This amount is total of the interest, late charges and NSF fees associated with total outstanding receivables for Direct Loans at the end of the reporting period.<br>**Note: The program will allow addition of codes in future.** |

**Part I-Status of Receivables (Section B Delinquent Debt by Age)**

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| (1) Total Delinquencies<br>(A) 1- 90 days<br>(B) 91-180 days<br>(C) 181-365 days<br>(D) 1-2 years | Number of loans, Principal, Interest/Late Fees, | The number and dollar amount of receivables reported on line 7 (Outstanding Receivables, Ending balance) in Part I, Section A that are delinquent at the end of the quarterly |

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| (E) 2-6 years<br>(F) 6-10 years<br>(G) Over 10 years | Total Amount | reporting period are reported as Total Delinquencies. Multiple loans for a single borrower are to be counted as a separate debt for each loan. The total dollar amount equals the sum of lines (A) through (G)<br>Lines (A) through (G) show dollar amounts of receivables that are delinquent for the respective time periods. The total of lines (A) through (G) also equals the sum of lines (2) and (3) of this section.<br>**Note: The delinquency information will be stored in the Credit Management Data Mart.** |
| (2) Commercial | | Does not apply to Direct Loans |
| (3) Consumer | Number of loans, Principal, Interest/Late Fees, Total Amount | All the direct loans are consumer debt. |
| (4) Foreign/Sovereign Debt | | Does not apply to Direct Loans |

**Part II-Debt Management Tool and Technique Performance Data (Section A Delinquent Debt 180 Days or Less)**

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| (1) Total Delinquencies 1- 180 days | Principal, Interest/Late Fees, Total Amount | This line reports the cumulative dollar amount of delinquent debt outstanding 180 days or less as of the end of the quarterly reporting period. This total should be equal to the total of Part I, Section B (1) Total Delinquencies<br>(A) 1-90 days<br>(B) 91-180 days |
| (A) In Bankruptcy | Number of Loans, Principal, Interest/Late Fees, | This is the number and dollar amount of Direct Loans Delinquent debt in bankruptcy<br><br>**Note: This information will be** |

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| | Total Amount | **obtained from the Credit Management Data Mart.** |
| (B) In Forbearance or In Formal Appeals Process<br>(C) In Foreclosure<br>(D) At Private Collection Agencies<br>(E) At DOJ<br>(F) Eligible for Internal Offset<br>(G) In Wage Garnishment<br>(H) At Treasury for Cross Servicing<br>(I) At Treasury for Offset<br>(J) At Agency<br>(K) Other - must footnote | | Does not apply to Direct Loans |

**Part II-Debt Management Tool and Technique Performance Data (Section B Debt Eligible for Referral to Treasury for Offset and Cross Servicing)**
**NOTE: DOES NOT APPLY TO DIRECT LOANS**

| Name | Fields | Description/ Source/Calculation |
|---|---|---|
| (1) Debt Eligible for Referral to Treasury for Offset | | |
| (A) Delinquent Debt Over 180 Days and Currently not Collectible | | |
| (B) In Bankruptcy (-) | | |
| (C) Foreign Sovereign Debt (-) | | |
| (D) In Forbearance or Formal Appeals Process (-) | | |
| (E) In Foreclosure (-) | | |
| (F) Other - must footnote (+ or -) | | |
| (G) Debt Eligible for Referral to Treasury for Offset | | |
| (H) Debt Referred to | | |

| Name | Fields | Description/ Source/Calculation |
|---|---|---|
| DOJ/Litigation (-) | | |
| (I) Debt Eligible for Referral to Offset by Agency | | |
| (J) Debt Referred to Treasury for Offset (-) | | |
| (K) Balance of Debt Eligible for referral by the Agency | | |
| (2) Debt Eligible for Referral to Treasury or a Designated Debt Collection Center for Cross-Servicing | | |
| (A) Debt Eligible for Referral to Offset by Agency | | |
| (B) At PCAs (-) | | |
| (C) Eligible for Internal Offset (-) | | |
| (D) Debt Exempted by Treasury from Cross Servicing (-) | | |
| (E) Other - must footnote (+ or -) | | |
| (F) Debt Eligible for Referral to Treasury or a Designated Debt Collection Center for Cross-Servicing | | |
| (G) Debt Referred to Treasury for Cross Servicing (-) | | |
| (H) Balance of Debt Eligible for referral by the Agency | | |

**Part II-Debt Management Tool and Technique Performance Data (Section C Collections)**
**NOTE: DOES NOT APPLY TO DIRECT LOANS**

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| (1) Collections on Delinquent Debt | | |
| (A) By Private Collection Agencies | | |

| | | |
|---|---|---|
| (B) By DOJ | | |
| (C) By Internal Offset | | |
| (D) By Third Party | | |
| (E) By Asset Sales | | |
| (F) By Wage Garnishment | | |
| (G) By Treasury for Offset | | |
| (H) By Treasury for Cross Servicing | | |
| (I) By Agency | | |
| (J) Other - must footnote | | |

**Part II-Debt Management Tool and Technique Performance Data (Section D Debt Disposition)**

| Name | Fields | Description/Source/Calculation |
|---|---|---|
| (1) Currently not Collectible (Written Off and Not Closed Out) | | Does not apply to Direct Loans |
| (A) At Private Collection Agencies | | Does not apply to Direct Loans |
| (B) At Treasury or a Designated Debt Collection Center for Cross Servicing | | Does not apply to Direct Loans |
| (C) At Treasury for Offset | | Does not apply to Direct Loans |
| (D) Other-must footnote | | Does not apply to Direct Loans |
| (2) Reported to IRS on Form 1099-C (Written Off and Closed Out) | Number of loans, Principal, Interest/Late Fees, Total Amount | This will contain Direct Loans data in the future. Loans against which no payments have been made for 25 years or more are reported to IRS as income. **Note: This information will be obtained from the Credit Management Data Mart** |

### 5.4.4 Report Layout

| | Fiscal Year | |
|---|---|---|
| | Transaction Posted Quarter | |
| | Transaction Number | Transaction Dollar Amount |
| **Beginning FY Balance** | | |
| **New Receivables** | | |
| **Accruals** | | |
| **Collections on Receivables** | | |
| **(A) At Agency** | | |
| **(B) At Third Party** | | |
| **(C) Asset Sales** | | |
| **(D) Other – must footnote** | | |
| **Adjustments** | | |
| **(A) Reclassified/Adjusted Amounts** | | |
| **(B) Adjustments Due to Sale of Assets** | | |
| **(C) Consolidations** | | |
| **Amounts Written Off** | | |
| **(A) Currently not Collectible** | | |
| **(B) Written off and Closed Out** | | |
| **Ending Balance** | | |
| **Total Delinquencies** | | |
| **(A) 1-90 Days** | | |
| **(B) 91-180 Days** | | |
| **(C) 181-365 Days** | | |
| **(D) 1-2 Years** | | |
| **(E) 2-6 Years** | | |
| **(F) 6-10 Years** | | |
| **(G) Over 10 Years** | | |

| | Fiscal Year | |
|---|---|---|
| | Transaction Posted Quarter | |
| | Transaction Number | Transaction Dollar Amount |
| **Commercial** | | |
| **Consumer** | | |
| **Total Delinquencies in Bankruptcy** | | |
| **Reported to IRS on Form 1099-C** | | |

This is a sample view of how an actual report version could look like. It is only a preview and not meant to be complete.

| | 2001 | |
|---|---|---|
| | Q2 | |
| **Metrics** | **Transaction Number** | **Transaction Amount** |
| Beginning FY Balance | 11,111,111,111 | $ 22,222,222,222.00 |
| New Receivables | 444,444 | $ 555,555.00 |
| Accruals | 6,666 | $ 7,777.00 |

## 5.5 SOCIAL SECURITY NUMBER / LOAN ID POSTING REPORT

### 5.5.1 Report Description

The Social Security Number / Loan ID Posting report provides the ability for Servicing to obtain detailed level information of any IF010 posting activity within FMS and captured in the CMDM. The report contains SSN / Loan Identification level data. It will be used for research and reconciliation purposes by Servicing.
This report will be run by an MIS Analyst and provided to a DLSS Analyst as requested. Specific data requests will vary, but are limited to the 28 fields contained within the IF010 data file.

### 5.5.2 Report Details

| | |
|---|---|
| **Report Name** | SSN / Loan ID Posting Report |
| **Description** | SSN / Loan ID level report generated from the CMDM. |
| **Use** | Report used by DLSC staff for research and reconciliation purposes. |
| **Frequency/Timing** | Report provided as requested by DLSC staff. Report generally requested by DLSC staff once a month. Expected turnaround time to receive the report is up to 3 business days. |
| **Data Source** | CMDM |
| **Distribution** | FTP to DLSC Greenbar Server. Users will access report from server based on defined DLSC access rights. |
| **Output Media** | Electronic format. |
| **Quality Control** | N / A |
| **Volume** | Unclear |
| **Number of Copies** | One |
| **Selection Screen Criteria** | N / A, No user interaction |
| **Sort** | Any arrangement used to organize data<br>Three different scenarios:<br>SSN then FMS Posting Date<br>SLSTC Code then FMS Posting Date |

| | |
|---|---|
| | Dollar Amount then Posting Date |
| **Sub Totals/Totals** | No need for sub totals if the report is placed on the Greenbar Server as stated under Distribution.<br>Optional sub totals by transaction type per SSN. |

### 5.5.3 Report Field Listing

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Social Security Number | See layout | 9 | Number | CMDM – SSN attribute |
| Disbursement Date | See layout | 8 | Date | CMDM – Disbursement Date attribute |
| Loan Identification | See layout | 21 | Text | CMDM – Loan attribute |
| Process Date | See layout | 8 | Date | CMDM – DLSS Process Date attribute |
| SLSS Transaction Code | See layout | | Text | CMDM – SLSS Transaction Code attribute |
| Cash Code | See layout | 1 | Text | CMDM – Cash Code attribute |
| Type Code | See layout | 1 | Text | CMDM – Type Code attribute |
| Effective Date | See layout | 8 | Date | CMDM – Transaction Effective Date attribute |
| Credit Reform Code | See layout | 4 | Text | CMDM – Credit Reform Code attribute |
| Original Loan Amount | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Interest Capitalization Amount | See layout | 9 | Number | CMDM – Transaction attribute amount field |

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Borrower Interest Paid | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Borrower Principal Paid | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Repayment Interest Paid | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Repayment Principal Paid | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Principal Balance Outstanding | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Rebate Amount | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Interest Receivable Balance (IRB) | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| Origination Fee | See layout | 9 | Number | CMDM – Transaction attribute amount field |

Report Layout
This is just a sample layout for the social security number / loan id report. It can contain more or less attributes in various combinations to accommodate the reconciliation requirements.
For better readability the report is laid out with calculation metrics in the top row and the attributes in the left column. The actual report may be formatted to be in a complete tabular layout instead of a cross tabbed design.

| | OLA | Interest Cap Amt | Borrower Interest Paid | Borrower Principal Paid | Claim Interest Paid | Claim Principal Paid | PBO | Rebate Amt | IRB | Origination Fee |
|---|---|---|---|---|---|---|---|---|---|---|
| **Social Security Number** | | | | | | | | | | |
| **Disbursement Date** | | | | | | | | | | |
| **Loan Identification** | | | | | | | | | | |
| **DLSS Process Date** | | | | | | | | | | |
| **SLSS Transaction Code** | | | | | | | | | | |
| **Cash Code** | | | | | | | | | | |
| **Type Code** | | | | | | | | | | |
| **Transaction Effective Date** | | | | | | | | | | |

This is a sample view of how an actual report version could look like. It is only a preview and not meant to be complete.

| Social Security Number | Metrics<br>Loan ID | Original Loan Amount | Principal Balance Outstanding |
|---|---|---|---|
| 123-45-6789 | 111111111111111111 | $ 99,999.00 | $ 99,999.00 |
| 987-65-4321 | 999999999999999999 | $ 11,111.00 | $ 11,111.00 |

## 5.6 INSTITUTION TRANSACTION LISTING REPORT

### 5.6.1 Report Description

The Institution transaction listing report is a summary report that contains total lines displaying transaction counts and amounts for each transaction category within posting date. The report reflects school reconciliation information for document control (FAD), Institution Drawdown (FID), Institution Excess Cash (FIE) and Interagency funds transfer of payments (FIG) transactions.
The report replaces the Institution Transaction Listing report that is being generated from FARS. The report will be generated by the FMS system, which is the reason for its differences in format from the other reports in this chapter.

### 5.6.2 Report Details

| | |
|---|---|
| **Report Name** | Institution Transaction Listing |
| **Description** | This is a summary report to reflect school reconciliation for document control, institution drawdown, institution excess cash and interagency funds transfer of payments. |
| **Use** | This report will be used as a source for verification of summary dollar amounts listed on the Advance Account Reconciliation report. |
| **Frequency/Timing** | End of the month by the 15th business day |
| **Data Source** | Oracle FMS Application tables |
| **Distribution** | Winston Murphy |
| **Output Media** | Hard Copy |
| **Quality Control** | To be determined, report reconciliation will be done against Transaction Summary Report equivalent to be created by FMS. |
| **Volume** | 60,000 to 75,000 records |
| **Number of Copies** | Three |
| **Selection Screen Criteria** | N/A, No User interaction |
| **Sort** | Report will be sorted by Posted Date |
| **Sub Totals/Totals** | Grand total of Document Control, Institution Drawdown, Institution Excess Cash, and Interagency Funds |
| **Sums** | Sum transaction amounts and increment transaction counts for each transaction category within each posting date |

### 5.6.3 Report Field Details

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Posting Date | 1 | 15 | Text | CMDM – Transaction Processing Date Attribute |
| Document Control Count | 2 | 5 | Date | CMDM – Count of the number of transactions for |

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| | | | | Document Control |
| Document Control Amount | 3 | 20 | Number | CMDM – Sum of the amounts attribute of all transactions for Document Control |
| Institution Drawdown Count | 4 | 5 | Number | CMDM – Count of the number of transactions for Institution Drawdown |
| Institution Drawdown Amount | 5 | 20 | Number | CMDM – Sum of the amounts attribute of all transactions for Institution drawdown |
| Excess Cash Count | 6 | 5 | Number | CMDM – Count of the number of transactions for Excess Cash |
| Excess Cash Amount | 7 | 20 | Number | CMDM – Sum of the amounts attribute of all transactions for Excess Cash |
| Interagency Funds Transfer Count | 8 | 5 | Number | CMDM – Count of the number of transactions for Interagency Funds |
| Interagency Funds Transfer Amount | 9 | 20 | Number | CMDM – Sum of the amounts attribute of all transactions for Interagency Funds |

### 5.6.4 Report Layout

The Institution Transaction Listing report will be generated from the FMS system and not as part of the CMDM reporting application. Therefore the layout and format of the report will be different from the other reports described in this chapter.

| FMS Transactions Summary Report | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Posting Date | Document Control | | Institution Drawdown | | Institution Excess Cash | | Interagency Funds | |
| | Count | Amount | Count | Amount | Count | Amount | Count | Amount |

This is a sample view of how an actual report version could look like. It is only a preview and not meant to be complete.

| FMS Transactions Summary Report | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Posting Date | Document Control | | Institution Drawdown | | Institution Excess Cash | | Interagency Funds | |
| | Count | Amount | Count | Amount | Count | Amount | Count | Amount |
| 04/02/2001 | 1 | 2176.72 | 25 | 41,670.61 | 4 | 39,601.78 | 0 | 0.00 |
| 04/03/2001 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| 04/04/2001 | 0 | 0.00 | 5 | 25,675.98 | 6 | 25,678.09 | 0 | 0.00 |
| 04/05/2001 | 0 | 0.00 | 0 | 0.00 | 7 | 34,685.00 | 4 | 18,502.03 |
| 04/06/2001 | 4 | 10,251.51 | 35 | 578,673.45 | 0 | 0.00 | 8 | 25,768.90 |

## 5.7 ROLLING RECONCILIATION (MEGARECORDS) PROCESS DATA

### 5.7.1 Report Description

The CMDM will provide the reconciliation data in form of a flat file extract. The reconciliation data contains disbursement transactions at the loan level.

### 5.7.2 Report Details

| | |
|---|---|
| **Report Name** | Rolling Reconciliation (Megarecord) Process Data |
| **Description** | The current Megarecord Extract software, which uses FARS to maintain and update the DLSS Compare File, will be provided as part of FARS Retirement.<br>The CMDM will provide the DLSS Compare File that is used in the Megarecord compare process. |
| **Use** | The Megarecord compare and matching process will be executed quarterly to support the Rolling Reconciliation (Megarecord) process. |
| **Frequency/Timing** | Quarterly |
| **Data Source** | CMDM |
| **Distribution** | ACS Identified personnel |
| **Output Media** | Data Extract File |
| **Quality Control** | N / A |
| **Volume** | Academic Year Volume Dependent |
| **Number of Copies** | One |
| **Selection Screen Criteria** | N / A |
| **Sort** | Loan ID |
| **Sub Totals/Totals** | N / A |

### 5.7.3 Report Field Listing

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Loan Identification | See layout | 21 | Text | CMDM – Loan attribute |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| SLSS Transaction Code | See layout | 4 | Text | CMDM – SLSS Transaction Code attribute |
| Cash Code | See layout | 1 | Text | CMDM – Cash Code attribute |
| Type Code | See layout | 1 | Text | CMDM – Type Code attribute |

| Field Name | Field Position | Length | Format | Source/Calculation |
|---|---|---|---|---|
| Disbursement Date | See layout | 8 | Date | CMDM – Disbursement Date attribute |
| Disbursement Date + 5 days | See layout | 8 | Date | CMDM – Disbursement Date attribute |
| Disbursement Date – 5 days | See layout | 8 | Date | CMDM – Disbursement Date attribute |
| Posted Date | See layout | 8 | Date | CMDM – FMS Posted Date attribute |
| Effective Date | See layout | 8 | Date | CMDM – Transaction Effective Date attribute |
| Borrower First Name | See layout | 20 | Text | CMDM – Borrower attribute |
| Borrower Last Name | See layout | 30 | Text | CMDM – Borrower attribute |
| Social Security Number | See layout | 9 | Text | CMDM – Social Security Number attribute |
| Amount | See layout | 9 | Number | CMDM – Transaction attribute amount field |
| FMS Transaction Code | See Layout | 15 | Text | CMDM – FMS Transaction Code attribute |
| FMS Account | See Layout | 6 | Text | CMDM – FMS Account attribute |

### 5.7.4 Report Layout

| | | | | | Net Loan Amount |
|---|---|---|---|---|---|
| Loan ID | SSN | First Name | Last Name | Disbursement Date | |

Since the Rolling Reconciliation data is provided as a file extract, no report sample will be provided in this design document. The above layout displays the fields to be exported for the data extract.

## 5.8 AD-HOC REPORTING

### 5.8.1 Report Description

The ad-hoc report capabilities are an important part of the CMDM deliverables. The logical data model described in Section 4 has been designed with the ad-hoc reporting requirements in mind. The attributes and dimensions that enable the various reporting functionalities have been created and refined based on long discussions with subject matter experts and end users of the current system. As a result a wide range of ad-hoc reporting can be supported, due to the open architecture of the data model and the flexibility of the MicroStrategy product.

The following sections give an overview of the requirements and possibilities for ad-hoc reporting. However due to the nature of ad-hoc reporting this list cannot and is not meant to be complete.

### 5.8.2 Report Details

| | |
|---|---|
| **Report Name** | Ad-Hoc Reports |
| **Description** | Fifty MIS reports are available under Deliverable 152 (including Institution transactions listing, SFACFO Financial Data, Consolidation Data Extract, Weekly Project Status Report, Portfolio Analysis, and Payment Allocation Report). |
| **Use** | Various groups within and outside of the Department of Education have access to request Ad Hoc reports. These reports include the Institution transactions listing, SFA CFO Financial Data, Consolidation Data Extract, Weekly Project Status Report, Portfolio Analysis, and Payment Allocation Report.<br>For a listing of the user groups refer to section 1.3.<br>The purpose of the ad-hoc request include, but is not limited to:<br>Audits<br>Quality control<br>Analysis<br>Megarecords<br>IG inspection<br>New management request<br>Survey creation |
| **Frequency/Timing** | Various from a one time request to multiple request |
| **Data Source** | CMDM |
| **Distribution** | Barbara Hultberg and/or directly to requestor |
| **Output Media** | Data files, Excel spreadsheet, hard copy, CD Rom, floppy disk, etc. |
| **Quality Control** | To the extent required |
| **Volume** | Peaks during fiscal year end due to audit request |
| **Number of Copies** | Various |
| **Selection Screen Criteria** | Selections are based on the request. For a listing of all available attributes that can be used for ad-hoc reports refer to section 4.2. |

| | |
|---|---|
| **Sort** | Dependent on the request |
| **Sub Totals/Totals** | Dependent on the request |

### 5.8.3 Sample Ad-Hoc Requests

The following is a list of ad-hoc queries that were created by the Accounting team using the FARS system. This list only gives a sample of what type of queries will be supported by the CMDM. It is not meant to be a complete list of requests.

| Query Name/Description | Freq |
|---|---|
| Detail and Summary reports of all TC = 66, G/L Acct = 1355/131X (DCS Transfers of monthly activity for Dale King (AFMS). | M |
| Summary reports of all monthly Cash Activity for Katrina Chavers. Note: Should be cumulative, but cannot be run due to system constraints. | M/C |
| Detail and Summary reports of DLSFB700 FARS Recycle File as of last day of month. | M |
| Detail and Summary reports of all TC = 73, G/L Acct = 1355/2110 (1166 Refund Requests) of daily activity. | 1/2W |
| Summary reports of all G/L Accts. 1010, 1011, 1013, 1015, 1017, 1018, 1111, 1190, 1191, 131X, 1355, 1413, 1414, 1415, 1416 of monthly activity for Lester Langford. | M |
| Detail and Summary reports of all FARS manual entries of monthly activity. | M |
| Detail and summary reports of all to-date SF1166 Unapplied Refund activity. For Ben Riazi. | M |
| Detail and summary reports of all to-date SF1166 Overpayment Refund activity. For Ben Riazi. | M |
| Detail and summary reports of all to-date SF1166 Overpayment Refund activity. Only prints SSN's that net to an amount greater than 0. | M |
| Detail and summary reports of all to-date SF1166 Overpayment Refund activity to G/L Acct 2222. For Ben Riazi. | M |
| Detail and summary reports of all to-date SF1166 Unapplied Refund activity to G/L Acct 2222. For Ben Riazi. | M |
| Summary reports of G/L Acct 1355 - PAS TC 223, 239, 130. | M |
| Summary reports of G/L Acct 1355 - PAS TC 131, 101. | M |
| Summary reports of G/L Acct 1355 - PAS TC 185, 223. | M |
| Summary reports of G/L Acct 1413, 131T, 131W, 2120 - PAS TC 252, 068. | M |
| Summary reports of all G/L Accts 131X/1355 of monthly activity. For Pat Brosius. | M |
| Summary reports of all TC = 66, G/L Acct = 1355/131X (DCS Transfers) of weekly activity. For Dale King (AFMS) and Tracy Curran (Utica). | M |
| Summary Reports of G/L 131X, 1355, 1357, 1358, + 1359. For Katrina Chavers | M |
| Report of FARS Trial Balance. For Katrina Chavers. | M |
| Report of ACS Express Re-finance transactions. | M |

# 6 Security Model

This section gives an overview of the MicroStrategy security architecture and compares two security approaches: database level security and MicroStrategy application level security. The CMDM will utilize MicroStrategy's application level security functionality with the option of incorporating row level security if needed. Figure 6.1 depicts a high-level overview to MicroStrategy's enterprise-level security architecture.

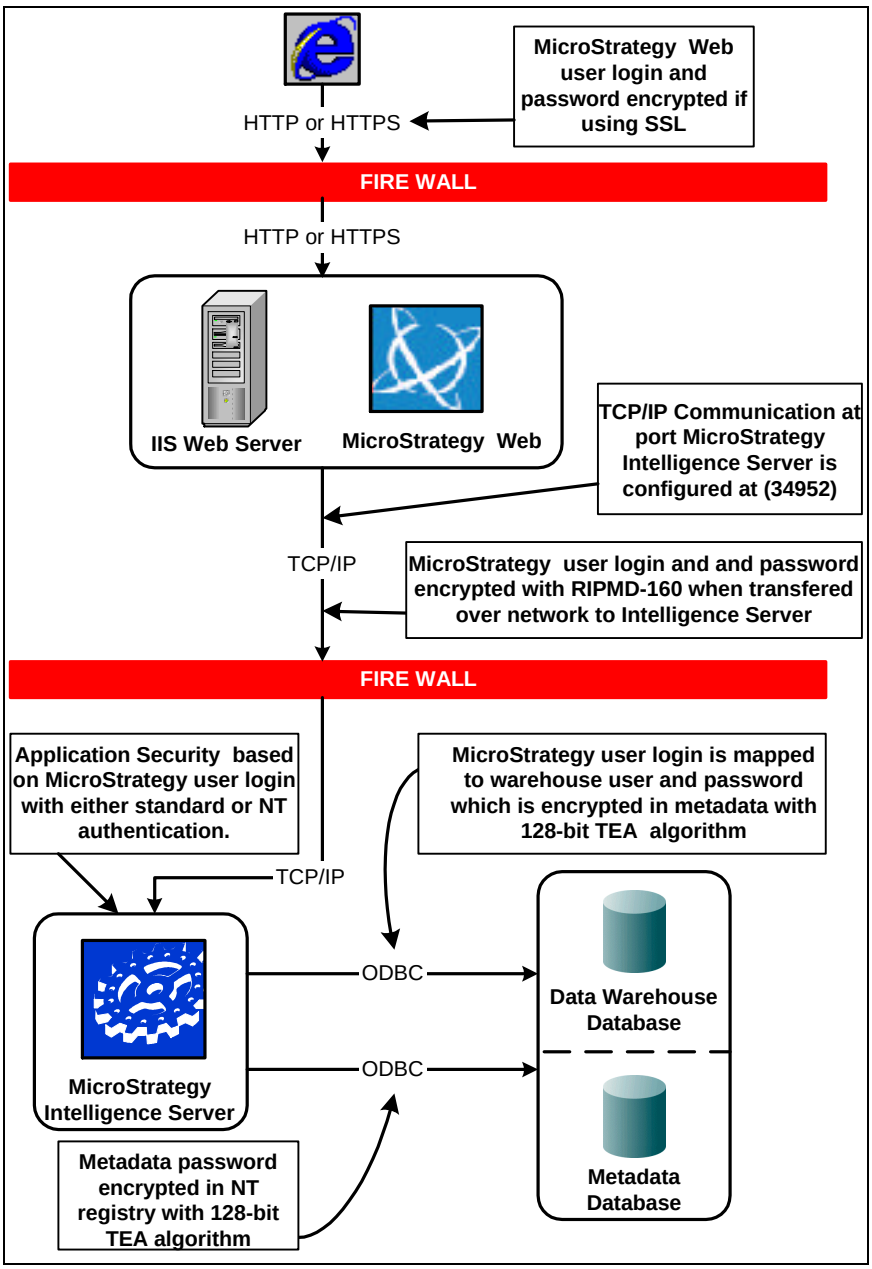



***Figure 6.1: MicroStrategy Security Architecture***

The following two sections explain the advantages and disadvantages of the two security approaches in detail.

## 6.1 APPLICATION LEVEL SECURITY

Access to the CMDM MicroStrategy software will be controlled using standard authentication. Users logging in, either as power users or through the web interface for report browsing will get user ids assigned that will be used to limit access as desired. Users who only receive reports either via email or other forms of transmission will not require a user id.

When a request for access by a user is approved, the System Administrator will create a user id and password for each individual user. Individual user IDs will be grouped in subject matter groups. Each of these groups can have its own privileges window to allow the system administrator to grant the desired privileges to either entire groups or individual users. In addition, a guest or public user ID can be created with limited functionality. This will allow demonstration of the CMDM to outside parties. The different user groups of the CMDM are explained in section 1.3.

The individual user IDs used by MicroStrategy software will be mapped to a back-end Oracle database login id. All users of the CMDM could use one Oracle login id or different login ids mapped to groups. This scenario provides several advantages including:

1. Individual Oracle user ids will not have to be created for each individual user of the CMDM
2. Groups can be assigned to individual Oracle user ids. If certain groups of users have different Oracle database privileges, or database usage is to be tracked by particular groups, this feature would be utilized. MicroStrategy Administrator software already allows for comprehensive usage statistics, so the described feature will only be needed on rare occasions.
3. Users of the CMDM would not (and don't need to) know the login id and password for the Oracle database. This provides enhanced security, since users will be unable to log into the database on other utilities such as SQL Plus.
4. The MicroStrategy application will be the only place to maintain security settings; there is no maintenance overhead.
5. The MicroStrategy application makes it easy to assign and understand user privileges at the reporting level. There is no need to map reports to tables in order to assign the right security level.

## 6.2 DATABASE LEVEL SECURITY

An alternative approach to using application level security is to leverage the security concepts that come with the database system, in the case of the CMDM the Oracle database server. In that scenario the DBA would assign database logins to the individual user groups and maintain the data access at the table level.

The advantage of that approach is that a very fine-grained level of security can be supported. The DBA can assign access at the row level and therefore restrict users from seeing rows in a table that may be visible to other users.

However this approach has a number of disadvantages, which support the decision to use application level security for the CMDM:

1. Using database level security forces a mapping of application level objects to database tables. Then the access to the database tables has to be defined for the individual users. This is a very unintuitive way to maintain security and requires a high design and maintenance overhead.
   Alternatively the database level security could be coupled with application level security, which would only double the effort of maintaining security only at the application level.
2. There is often no concept of user groups at the database level, which requires duplicating users with the same access rights.
3. There will always be a need to maintain security at the application level as well in order to prevent users from seeing certain reports.
4. Maintaining security at the database level means that users will have access to a database login, thus enabling them to log on to the database server. This poses additional security risks

In conclusion the main advantage of maintaining security at the database level is to maintain row level data access. This can be leveraged and encapsulated through application level security as well, by assigning different application user ids separate database logins. This will prevent the end user from knowing a database login. Therefore the CMDM will use an application level security approach.

# 7 Performance

The Credit Management data mart will take advantage of Oracle 8i features and application features in order to ensure acceptable performance. Oracle 8i has several new features, which are specifically designed to meet the performance requirements of very large database applications. Performance will be measured against the requirements listed in the Requirements Document.

## 7.1 DATABASE LEVEL PERFORMANCE

Oracle 8i employs the functionality of several features to provide high-quality performance for various types of database applications. The Credit Management database will be using several of these features including partitioning, index structures and the Oracle Optimal Flexible Architecture. This will be explained in the following sections.

### 7.1.1 Partitioning

Partitioning helps to solve large space management issues by breaking the space out into smaller chunks. Partitioning allows very large tables and indexes to be broken out into smaller more manageable pieces. Each of these pieces or partitions can be managed separately and stored separately. This means that different operations can be going against one partition without affecting the other partitions. A direct load could be loading data into one partition of a table while the other partitions are handling DML operations for queries – the advantage is that neither operation is competing for resources because each partition is stored in a different location. Data recovery and data archiving can also be done on one partition without affecting the availability or performance of other partitions within the table.

### 7.1.2 Index Structures

Another important database feature that will be employed in the Credit Management system is the use of Indexes. Indexes are Oracle's way of organizing the data stored in tables for faster access. Indexes if used properly will help queries retrieve data from the database faster. Indexes are smaller groupings of the data within a table. A table stores all the data while the index only stores a portion of the data. For instance, if the department table commonly has queries against the department_no column, a index could be built on the department_no column. When ever a query come in asking for the department_no, rather than go through the entire table, Oracle can just look in the index and get the location of all the records with a department_no that meets the requirements. Indexes will be placed on all appropriate columns within the Credit Management database. In addition to the typical type of indexing, Oracle 8 introduced another type of index that is specifically aimed at databases with large amounts of data.

The bitmapped index is a series of bits where each bit represents a record within the corresponding table. The bitmapped index allows quicker access to data within the warehouse because the index itself is a fraction of the size of a normal index and can be searched through much easier than a traditional index. Bitmapped indexes also take up much less storage space than a traditional index – rather than storing bytes of data the index only stores a series of bits for each row. Another big advantage to using

bitmapped indexes with very large database is that they provide a more efficient way to load data into the Oracle 8i database.

### 7.1.3 Oracle Optimal Flexible Architecture

The Oracle Optimal Flexible Architecture (OFA) will also be implemented in order to reduce maintenance and ensure reliable performance. OFA is a set of guidelines that Oracle has established to provide a more reliable database requiring less maintenance. OFA is specifically designed to organize large amounts of data and software on disk in order to avoid performance issues and potential bottlenecks. Additionally, OFA helps facilitate routine maintenance and management functions (i.e., backups) that are often susceptible to corruption.

## 7.2 APPLICATION LEVEL PERFORMANCE

In addition to improving performance at the database level, there are also a number of application level performance optimization techniques that can be applied to a project. Three main strategies offered through the MicroStrategy 7 products will be described in the following sections.

### 7.2.1 Pre-aggregation of Data at Multiple Levels

A very powerful technique to increase report execution times is MicroStrategy's support for pre-aggregated data at different attribute levels. Tables with summarized data at levels that are often queried upon can be added to the schema. For example, to speed up a report that summarizes data based on the loan type and the repayment plan, an additional fact table that has transaction data already calculated at the loan and repayment plan level can be added to the schema. The report could then be executed using that summarized table thus reducing the query execution time dramatically.

The disadvantage of pre-aggregation is the redundancy of data stored in the data mart. It has to be guaranteed that the summarized data exactly matches the aggregations performed on the original fact table. However since the CMDM is a read only data mart that is only updated through the scheduled data loads, the pre-aggregation only needs to be refreshed at load time.

To decide which table to use at report execution time, MicroStrategy uses a concept called logical table size. The logical table size is an integer number that represents the granularity or level of aggregation of a particular table. It is called 'logical' because it is not related to the physical size of the tables (number of rows). It is calculated according to the attribute IDs that are present in the table and their level in the system hierarchy. Even though, the number does not reveal the actual number of rows in the table, it is an accurate way of measuring a table size without having to access its contents. It is automatically maintained by MicroStrategy and therefore transparent to the end user and without additional maintenance overhead to the system administrator.

### 7.2.2 Application Level Data Partitioning

Data partitioning is a technique used to optimize query performance and is defined as the splitting of one base fact table into several partitioned base tables built on a definable data grouping. Partitioning can be applied at the database level (as described earlier in

this chapter) and at the application level. This section describes application level partitioning as it is supported by MicroStrategy 7 software.

In MicroStrategy 7, a warehouse can be partitioned along any number of dimensions. Partitioning of large tables into multiple smaller tables provides the following advantages:

- The query response time is improved
- The time required to load into tables is decreased

The disadvantage of partitioning is:

- The increased maintenance

In choosing a partitioning strategy, the overall goal is to gain the most benefits in terms of query performance, database management and batch processing. To improve query performance, the project architect must minimize the number of tables and records (within a table) that must be read to satisfy the majority of queries issued against the warehouse.

To enable partitioning, a Partition Mapping Table (PMT) is needed. This table contains the attribute ID(s) used to define the partitioning (partition keys). In addition, the PMT must contain a column named 'PBTNAME' containing the names of each of the partitioned base tables.

The following is an example of how a PMT for the F_Transaction table could look like, given that the table is being partitioned based upon the 'Transaction Effective Year' attribute and the 'School' attribute:

**F_TRANSACTION_MAP:**

| T_EFFECTIVE_YEAR_ID | SCHOOL_ID | PBTNAME |
|---|---|---|
| 1999 | 1 | S01_Y1999_TRANS |
| 1999 | 2 | S02_Y1999_TRANS |
| … | … | … |
| 2000 | 1 | S01_Y2000_TRANS |
| 2000 | 2 | S02_ Y2000_TRANS |

**Important**: There is a 1 to 1 relationship between the partition key and the table name. For example, Transaction_Effective_Year 1999 and School_ID 1 must not exist in two tables and the S01_Y1999_TRANS table must only contain data for the year 1999 and school 1. The S01_Y1999_TRANS table is called a Partition Base Table (PBT). A report that looks at transactions per school in a certain transaction effective date could now be calculated by just accessing the necessary partition base tables.

The partitioned tables must be created and populated by the DBA. Views are not recommended since they defeat the purpose of partitioning and the performance will be hampered instead of improved.

### 7.2.3 Application Caching

The MicroStrategy 7 architecture offers different levels of caching that are greatly improved over previous versions with respect to administration, security, and prompting. This section discusses some of the caching features offered by the application software.

There are three types of requests for which MicroStrategy 7 uses caching to improve response times:

- Metadata object requests. Frequently used metadata objects (i.e., templates, filters, reports, metrics, custom groups, consolidations, attributes, etc.) are stored in memory, in addition to the metadata repository, so they can be retrieved more quickly.
- Lookup table element requests. Frequently used lookup table elements are stored in memory, in addition to the warehouse database, so they can be retrieved more quickly.
- Report execution requests. Pre-calculated and pre-processed report results are stored in memory, and on disk, so they can be retrieved more quickly than re-executing the request against the warehouse database.

For the CMDM the caching of reports will be of high importance to allow for scheduled execution of frequently used reports during off-peak hours.

Cache retrieval is affected by multidimensional security. Multidimensional security (also known as the security filter) is the feature set that allows a data filter to be assigned to a project-user combination. Whenever a user runs any report within a given project, the security filter is applied to the underlying query. When a report request hits a report cache, the cache-matching algorithm accounts for the user of security filters. Therefore, a report request may use a cache if the security filter associated with the request is a subset of the information in the cache.

Caching can also be used to support prompts. When a report is cached, it is indexed by the answers to the prompts used for the report. In order to retrieve results from the cache, a report request must include the exact same prompt answers as the execution that created the cache. When using server caching, the user is prompted for prompt answers before the cache-matching algorithm checks for a cache match. A common usage scenario is to be able to have a prompted report use the cache, regardless of what the user requests.

Finally MicroStrategy 7 provides strong cache administration functionality, including cache backup, cache loading and/or unloading from memory, cache updating, cache expiration, cache invalidation, and cache status.

## 7.3 HARDWARE REQUIREMENTS

The choice of hardware will take into account the amount of data and the special processing need of the Credit Management Data Mart. This application will differ from some traditional data processing applications in that it will have single transactions that deal with very large data sets rather than large numbers of transactions that deal with small data sets.

The server on which the data mart is housed should be a large SMP or MPP machine with at least 500GB of disk space. The multiple processors will allow for parallel queries, data loads, archives and backups. The implemented hardware will be capable of meeting OFA requirements and provide a means to communicate with the FMS system. Additionally, the implemented hardware will provide a means of redundancy in the event of disk failure or file corruption.

## 7.4 PERFORMANCE VERIFICATION

In order to ensure the system performs as needed, the CMDM will undergo integration tests, stress tests and database performance tuning.

Integration tests will be performed to ensure that the application as a whole performs as expected before moving the application to production.

Stress Tests will be performed in order to ensure acceptable system response times given the anticipated volume of data for the production system. The stress tests will focus on testing system performance when the following types of transactions are being performed:

- High volume periods of the year, such as February and September / October

In addition to formal testing, the CMDM will undergo database performance tuning. Database tuning ensures that the database is functioning at peak performance. Typically 80%or more of the performance is built into the design and applications. That means only 20% of the performance can be affected through the database tuning. Hence, a significant portion of the time will be spent in integration and stress testing prior to database tuning. Tuning will be done in the following steps:

- Tune database design – the database design will be properly normalized and denormalized to ensure acceptable performance.
- Tune application – application will be built to use partitioning, integrity constraints, indexes and well tuned SQL.
- Tune memory – the memory will be tuned to allocate proper amounts to the different memory structures including the shared pool, data dictionary, and database buffer cache.
- Tune I / O – OFA will be implemented to ensure proper I / O balancing.

Tune Contention – Proper hardware configuration and OFA guidelines will be implemented to ensure that multiple users are not contending for the same resources.

# 8 Data Archiving

This section explains the data archive process. The archive process has two parts:

1. Archiving initial FARS Financial History Loan Details to Oracle format.
2. Continual archiving of Loan Detail on a monthly basis from the Credit Management Data Mart (CMDM).

## 8.1 ARCHIVING FARS HISTORY DATA

The FARS history data will be loaded one month at a time into the CMDM because of the huge volume of data (approximately 2 billion records). The source for this data load will be the archived data on tape from FARS. The file layout for the FARS history data will be similar to the FMS Detailed Loan Servicing financial data received on a daily basis from FARS. (**Table 3.2.1**).

After the FARS history data at the transaction level is loaded into the CM Data Mart, aggregate tables in the data mart will also be loaded with this data. The aggregate tables serve to:

- Perform historical and trend analysis at an aggregate level
- Have quick response time for the reports
- Consume less space over time as data is summarized

The historical transaction data from the CM Data Mart tables will be extracted from the detail transaction tables, moved to files and archived to tapes for storage. The archived transaction data is available for restoration when required for reconciliation or audit queries. The business process for requesting the restoration of archived data to the CM Data Mart is outlined in the business procedures section of this document.

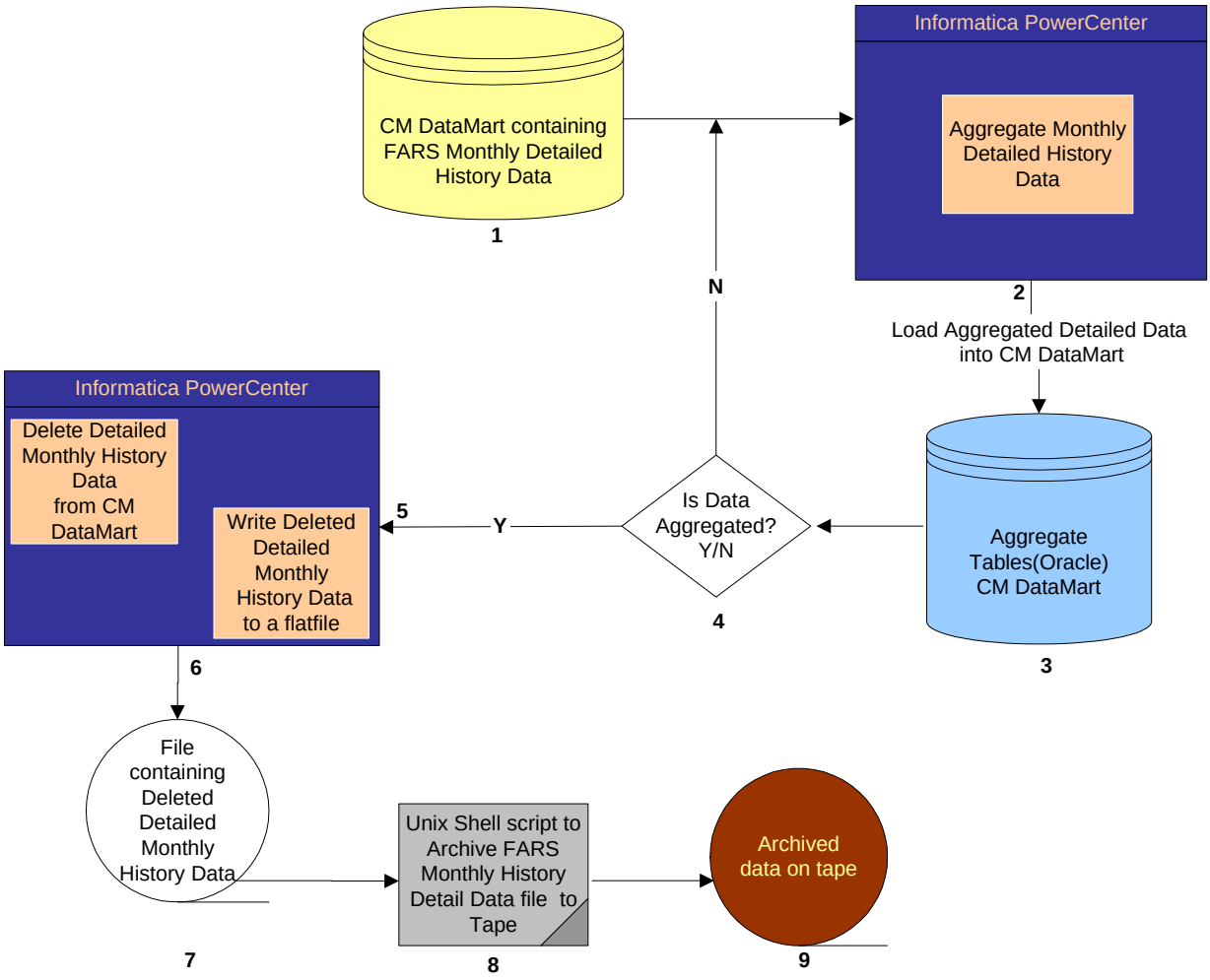



***Figure 8.1: Archive System Flow***

Following are the steps involved in performing the Aggregation and Archiving the detail data using Informatica processes:

Step 1
The CMDM tables (facts and dimensions) will be loaded with the monthly detailed FARS History data as explained in section **3.3.2**.

Step 2&3
When a month worth of data is ready to be archived, Informatica will aggregate the detail data and load the aggregate values into the CMDM aggregate tables.

Step 4&5
After the aggregate tables are loaded in the CMDM, extract the monthly history data from the fact tables for which the aggregate tables have been created. The detailed data extraction process will be done only if the aggregate tables have been successfully loaded. The extracted data will be written to a flat file on the server where the Informatica server resides (Unix Machine -Sun Su35e18i).

Step 6&7
For verification purposes, the number of detailed monthly history data rows extracted from the CMDM will be compared to the number of detailed rows originally loaded into the CMDM. This information will be stored in a table in the CMDM for reconciliation and verification.

Step 8
After the flat file is successfully created, verified and reconciled in the CMDM, the detailed monthly history data will be deleted from the fact tables

Step 9
The final step will be to invoke a post-session Unix shell script that will archive this file to tape(s).

In case of an audit query, this archived monthly detail data, which is in Oracle format, can be loaded into the CM Data Mart.

### 8.2 CONTINUAL ARCHIVING OF LOAN DETAIL DATA

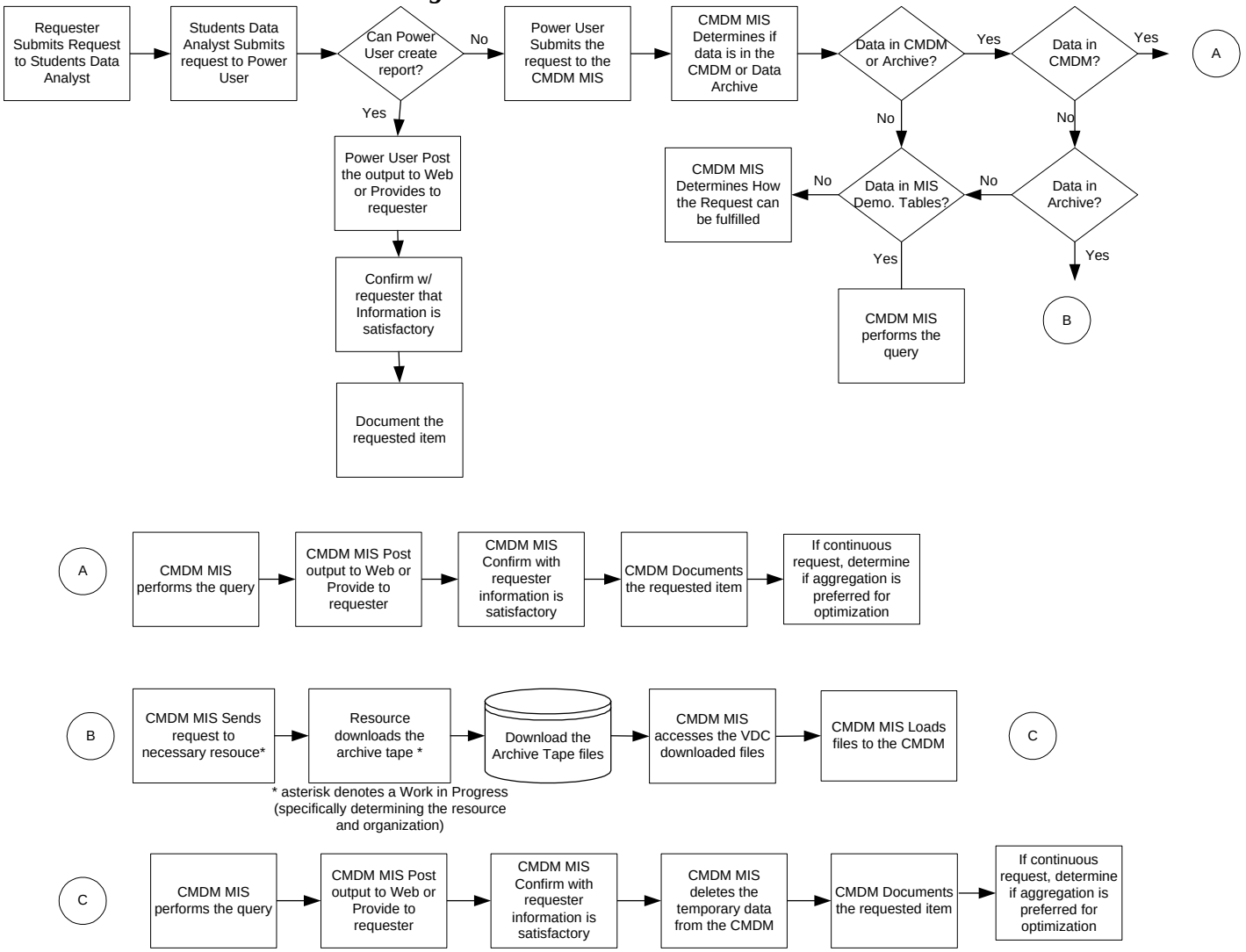
The archiving process will continue once the CMDM is live in Production. The process going forward will be the same as the initial data archiving. The current plan is to store the data for thirteen rolling months in the CMDM and then on a monthly basis archive off the latest month of detail data.

# 9 Business Procedures

## 9.1 CMDM AND DATA ARCHIVE DATA RETRIEVAL PROCESS

This process details the procedure to be followed to obtain data from the Credit Management Data Mart (CMDM) and the CMDM data archive. Currently, requests are made via several resources: Students (Barbara Hultberg), ACS MIS (Jay Main) or ACS Accounting (Pete Cove). Post FARS Retirement implementation, CMDM and data archive request will be a centralized process. Request will be made to the Students Data Analyst per the detailed process below.

## Schematic/Detailed Process Flow *Figure 9.1*



**Supporting Policy**

There is no policy to support this requirement.

**Responsibility**

| Job Title | Organization | Tasks | Hours | Frequency |
|---|---|---|---|---|
| Student Data Analyst | Students | Filter and forward request to Power Users and CMDM MIS | 20 | Weekly |
| Power User | Students | Execute and Modify existing reports | 20 | Weekly |
| CMDM MIS | ACS | Processes and forwards request made for CMDM and archived data | 40 | Weekly |
| DBA | Students VDC Data Manager | Support for Archive Data request | 40 | Yearly |

**Procedure Trigger**

This activity is performed whenever an End User makes a request. These requests are as frequent as multiple CMDM request per day and several data archive request per year.

**Inputs/Outputs**

| Input | Sent By | Due On | Received By |
|---|---|---|---|
| Request by End User | Requester | Within 3 business day | Students Data Analyst |
| Request by Students Data Analyst | Students Data Analyst | Within 3 business day | Power User |
| Request by Power User | Power User | Within 3 business day | CMDM MIS |
| VDC Download | DBA (resource and organization TBD) | Dependent on request | CMDM MIS |

| Output | Sent By | Due On | Received By |
|---|---|---|---|
| Report | Students Data Analyst or CMDM MIS | Within 5 business days (from CMDM) Dependent on request (from archive) | Requester |
| Confirm e-mail from requester | Requester | Within 1 week after report is received | CMDM MIS |

**Process: Submit Request to Students Data Analyst**
**Steps:**

1. Requester submits an e-mail request to the Students Data Analyst detailing the following:
    a. Requester, Organization, Date of Request, Due Date, Purpose, and On-time/On going (frequency)
2. If the Students Data Analyst can perform the request, the Student Data Analyst provides the request
3. If the Student Data Analyst cannot perform the request, the Power User would be contacted.

**Process: Create Report for Requester via Power User**
**Steps:**

1. The Power User receives the e-mail request from the Students Data Analyst
2. If the Power User can perform the request, the Power User provides the request
3. Once the request is created, the Power User either post to the Web or provides to the requester directly
4. Within a week, the Power User confirms the request satisfied the requester's needs
5. Within a week, the Power User documents the following information:
    - Organization
    - Date of Request
    - Due Date
    - Received Date
    - Purpose
    - On-time/On going (frequency)
    - Data Elements Used
    - Retrieved from CMDM/Data Archive
6. If the Power User cannot perform the request, CMDM MIS would be contacted

**Process: Create report for Requester via CMCM MIS using CMDM**
**Steps:**

1. CMDM MIS receives the e-mail request from the Power User
2. CMDM MIS determines the source of the data (CMDM, archive, or other)
3. If the request is from the CMDM, CMDM MIS performs the query
4. CMDM MIS post the output to the Web or provides to the requester
5. Within a week, CMDM Power User confirms the request satisfied the requester's needs
7. Within a week, CMDM MIS documents the following information:
    - Organization
    - Date of Request

- Due Date
- Received Date
- Purpose
- On-time / On going (frequency)
- Data Elements Used
- Retrieved from CMDM / Data Archive

8. If this is a continuous request, CMDM performs an analysis to determine if aggregation of data is necessary

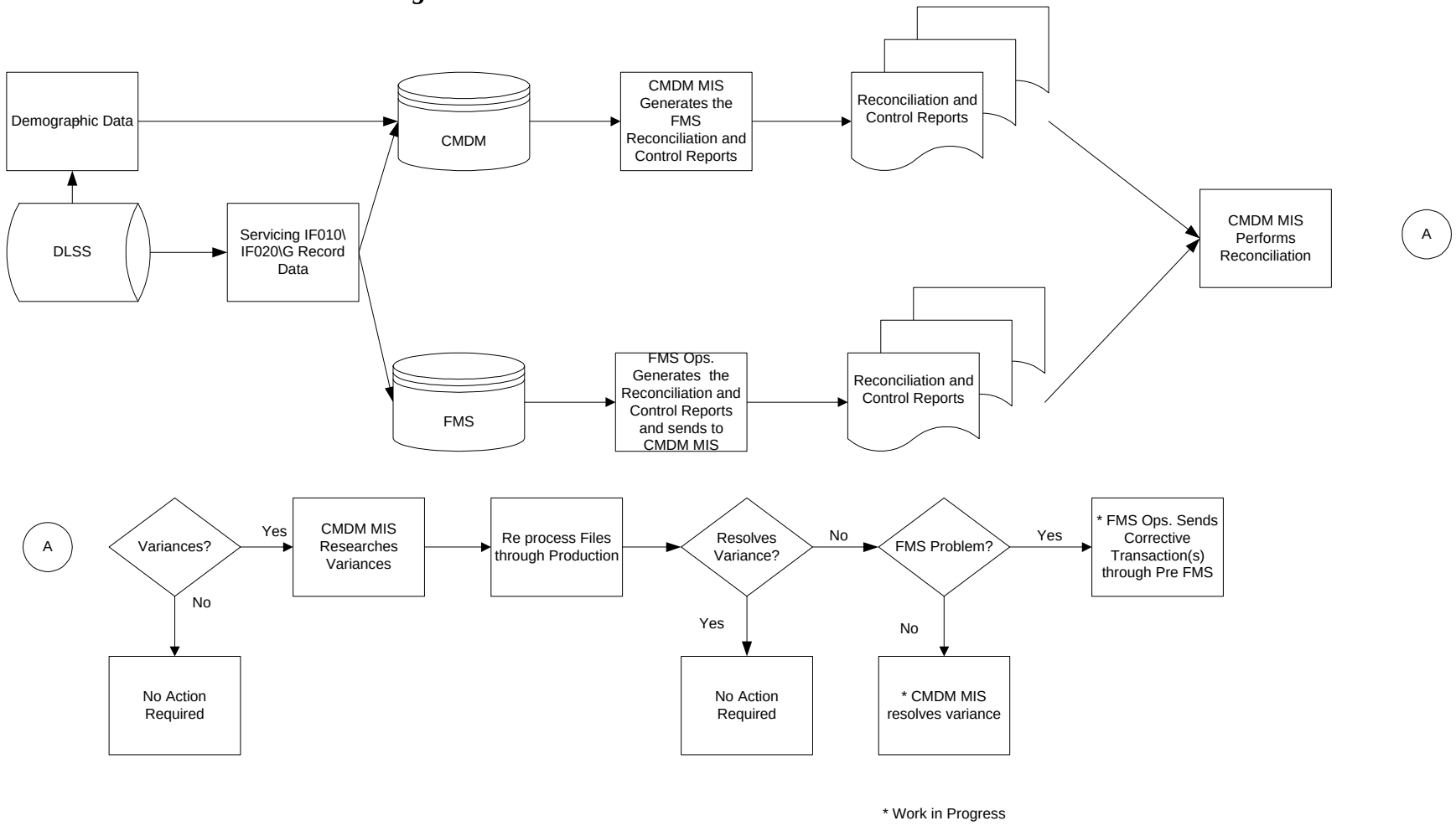
**Process: Create report for Requester via CMCM MIS using Data Archive**
**Steps:**

1. CMDM MIS receives the e-mail request from the Power User
2. CMDM MIS determines the source of the data (CMDM, archive, or other)
3. If the request is from the Data Archive, CMDM MIS sends the request to the necessary personnel (this resource and organization are yet to be determined)
4. The DBA downloads the archive tape data to hard disk drives so that CMDM MIS may access.
5. CMDM MIS uploads the VDC downloaded files to the CMDM
6. CMDM MIS performs the query
7. CMDM MIS post the output to the Web or provides to the requester directly
8. Within a week, CMDM MIS confirms the request satisfied the requester's needs
9. Within a week, CMDM MIS documents the following information:
    - Organization
    - Date of Request
    - Due Date
    - Received Date
    - Purpose
    - On-time / On going (frequency)
    - Data Elements Used
    - Retrieved from CMDM / Data Archive
10. If this is a continuous request, CMDM MIS performs an analysis to determine if aggregation of data is necessary
11. Within a week, CMDM MIS deletes the temporary files from the CMDM

## 9.2 CMDM AND FMS RECONCILIATION PROCESS

As part of FARS Retirement, reconciliation will occur between the CMDM and FMS on a daily basis initially and decreased as deemed necessary. First, FMS will process financial data from DLSS. After FMS has successfully processed the financial data, the Pre-FMS process will load the successfully processed FMS data through the CMDM. Finally, reconciliation between the successfully processed FMS data and the processed CMDM data will occur. Since the CMDM only receives successfully processed data from FMS, the need for this reconciliation process will be minimal and will only be needed for catastrophic events. Discrepancies will be identified via the FMS and CMDM Reconciliation and Control Reports. FMS and CMDM resources will work together to reconcile discrepancies.

**Schematic/Detailed Process Flow** ***Figure 9.2***



**Supporting Policy**
There is no policy to support this requirement.

**Responsibility**

| Job Title | Organization | Tasks | Hours | Frequency |
|---|---|---|---|---|
| FMS Ops. Analyst | FMS | FMS Ops. Analyst Sends FMS Reports to CMDM MIS | .5 | Daily |
| CMDM MIS | ACS | CMDM MIS Creates CMDM Reports | .5 | Daily |
| CMDM MIS | ACS | CMDM MIS Performs Reconciliation between FMS and CMDM Monthly Reports | 1 | Daily |
| CMDM MIS | ACS | If Variances are found, CMDM MIS Researches Variances by examining the files sent and the Production run | 2 | Daily |
| FMS Ops Analyst | FMS | If FMS Error, FMS Ops. Analyst Sends Corrective Transaction(s) through Pre-FMS process | .5 | Daily * |
| CMDM MIS | ACS | If CMDM Error, CMDM MIS Re processes data and Resolves Variances | 1 | Daily |
| SFA Representative | SFA | Review notification of discrepancies and resolution | .5 | Daily |

**Procedure Trigger**

- End of Day unless deemed less frequently is sufficient

**Inputs/Outputs: Schematic/Detailed Process Flow**

| Input | Sent By | Due On | Received By |
|---|---|---|---|
| FMS Reconciliation Report | FMS | Following business day for the previous business day | CMDM MIS |
| FMS Control Report | FMS | Following business day for the previous business day | CMDM MIS |
| CMDM Reconciliation Report | CMDM | Following business day for the previous business day | CMDM MIS |
| CMDM Control Report | CMDM | Following business day for the previous business day | CMDM MIS |
| Reconciliation | CMDM | Once Reconciliation | SFA Representative |

| Input | Sent By | Due On | Received By |
|---|---|---|---|
| Notification Report | | is performed | |

**Process: Generate the FMS Reconciliation and Control Report**
**Steps:**

1. After the CMDM has processed all of the transactions sent by DLSS for the particular day, the FMS Ops. Analyst and CMDM MIS both generate the FMS Reconciliation and Control Reports from their respective systems.
2. FMS Ops. Analyst sends the FMS generated FMS Reconciliation and Control Reports to CMDM MIS

**Process: Perform Monthly Reconciliation**
**Steps:**

1. CMDM MIS will check for variances between the FMS and CMDM generated FMS Reconciliation and Control Reports.
2. If there are no variances, no action is required.
3. If there are variances caused by problems encountered during the Production run, CMDM MIS will need to reprocess the files.
4. IF there are no variances after then run, no action is required.
5. If there are still variances, more research will be required.
6. For FMS errors, FMS Ops. Analyst will send the corrective transactions through the Pre-FMS process.

# 10 Open Issues

This section outlines items that remain open upon delivery of the MIS and Data Storage Detail Design on September 14, 2001. The FARS Retirement team will be working with SFA to resolve these issues as per the Target Date. All updates due to the items will be documented in the design and tracked in a change control list.

| ID | Issue | Resolution | Resp. | Target Date |
|---|---|---|---|---|
| 1 | Update quality control of report layout sections based on feedback from Monica Menard. Specifically, to show what sections / fields of each identified report will be used to reconcile. | Updated report descriptions in section 5 to reflect that reports will be reconciled against the Transaction Summary Report equivalent to be generated by FMS. | Roland | Closed |
| 2 | Finalize report layouts with end users when reporting solution is in place. Will review layouts with key end users and SME during development and unit test. | Since, FMS is not complete with manual transaction design, we will work with FMS in October to finalize design | Madhu | 10 / 26 / 01 |
| 3 | Clarify / Solidify environment requirements and process for interface with FMS. Need to determine which server this interface will reside on. | Interface will reside on the FMS database | Madhu | Closed |
| 4 | Manual transactions interface:<br>• Need to determine if the refund transactions (Manual, borrower overpayments, and consolidation overpayments) need to be sent to CMDM. The reason being: The refunds, overpayment borrower and lender consolidation transactions in the IF010 data file are requests that are processed by FMS in the FMS IF010 interface. These transactions are entered again manually in FMS potentially causing a double booking. FMS is aware of this situation and has multiple solutions to address the issue of double booking. The final solution is yet to be determined by FMS. Depending on the solution provided by FMS, CMDM may or may not have to process the manual transaction in FMS for transfer.<br>• FMS is not complete with the Manual Transaction design. Changes may | Resolution: It was determined the refund manual transactions are required. The manual transaction will reverse one FMS account, and then add to another FMS account - thus we need to track these transactions in the CMDM. | Madhu / Gray | Closed |

| ID | Issue | Resolution | Resp. | Target Date |
|---|---|---|---|---|
| | impact our design. The FARS Retirement team will work with FMS to minimize risks.<br>• Manual Journal Vouchers. Need to determine during development which journal vouchers are required to go to CMDM. | | | |
| 5 | Finalize Section 9.2 of the Detail Design addressing the CMDM FMS Reconciliation Procedure. Resolve open item regarding the procedure for both the MIS CMDM and FMS resource (see 8/29 IPT Minutes). Specify how variances between MIS CMDM and FMS will be resolved. | As of 9/26, FMS has not defined the reconciliation procedure to be used between FMS and Servicing. As we are working to mimic the reconciliation between those two systems in creating the reconciliation between CMDM and FMS, this will be resolved once FMS has defined the reconciliation tools that it will use in it's procedures. | Faithea | 10/26/01 |
| 6 | Determine resource responsible for downloading CMDM archived tapes for the data retrieval process. | The team anticipates utilizing the same resource structure as other Modernization Projects. That includes in house DBA(s) who would have access to those VDC data retrieval needs. The details are still being finalized through working with the Modernization Partner VDC team and we expect to include this under Task Order 75. | Faithea | 10/12/01 |
| 7 | Obtain CIO data definition to maintain consistency. Confirm with Frank (Kesterman?) whether or not CIO will use data definitions. | Currently SFA CIO data definitions is a work in process. Therefore, the FARS Retirement will meet with then on 10/3 to confirm that the FARS Retirement data dictionary format meets SFA CIO requirements although they are not currently defined. | Faithea | Closed |

| ID | Issue | Resolution | Resp. | Target Date |
|---|---|---|---|---|
| 8 | Review outcome of 9/13 data meeting on demographic and delinquency reporting fields from follow-up meeting with Sybil Phillips.<br>• Several scenarios were provided for delinquency reporting. Team needs review if these reporting scenarios are possible, and if they are not possible review this with the IPT Team.<br>• This review may impact which MIS tables are brought over to the CMDM and what fields will be in the CMDM. Impact should be minimal | Follow up meeting occurred on 9/24 with Sybil Phillips, Monica Menard, and Gray Griffith. A subsequent meeting was requested by Sybil to take place during the week of 10/1 and has therefore been scheduled for 10/3. That meeting occurred and subsequent changes were added. | Faithea | Closed |
| 9 | As per 9/13 data meeting on demographic and delinquency reporting, there were several follow-ups for Jay Main and Monica Menard. These follow-ups are documented. They will be reviewed and any impact updated in the detail design | All of the items have been closed. | Faithea Jay/Monica | Closed |
| 10 | Communicate turnaround time for all data processing to impacted resources during development phase. (This will be done during coding, as we will produce reports and to enable accurate estimation of processing time.) | As of 9/26, 10/ 19 will be the date in which the team can communicate the turnaround time (i.e. 10/19 is the final date we are scheduled to receive the data loads) | Faithea | 10/19/01 |
| 11 | Monica Menard has requested the team create a consolidate data element table, which provides the following information on CMDM Data Fields: Name, Definition, CMDM Table/Name, Potential Values, and History indicator. Team will create and add to design. We will remove any tables that are duplicated due to this effort. | This has been compiled and was reviewed with Monica on 9/27. Minor updates are being made prior to 10/3 | Faithea | Closed |
| 12 | As per 9/13 data meeting it was communicated that the mega record process uses MIS Table Field, Disbursement Table Disbursement Segment. The team needs to determine if we need this table and field or if it can be derived. Adding this table will requirement more space for data transfer for DLSS Demographic Data. | Jay confirmed that the disbursement segment and disbursement number are the same. Since the CMDM will have the disbursement number from the IF010, disbursement segment is not needed. | Roland/ Jay | Closed |

| ID | Issue | Resolution | Resp. | Target Date |
|---|---|---|---|---|
| 13. | As per the 9/13 data meeting, it was requested to provide history on MIS data loans fixed payment amount. The team needs to determine the best approach to store history for this field. This will be updated in the design when completed. | History for this field will be stored along with history for risk category, repayment type and loan status. Changes to this field will be tracked monthly. | Roland | Closed |
| 14 | In our SFA SME detail design review, questions regarding defaulted values were raised. Specifically, when will they be used and how will they be corrected. What is our business rule? Defaulted values will be used when the CMDM receives blank or invalid values for fields. The business rule detailing the corrective measures is Open Item. | The default values and associated business rules that the CMDM will use have been finalized. The current FARS default values will be used. | Chimayo | Closed |
| 15 | In our SFA SME detail design review, questions regarding incorrect record lengths were raised. This is an open item. The team will need to obtain the most recent and correct file layouts with associated record lengths to update the documentation accordingly. | Regarding demographic tables, since we are receiving the entire table this is now a non issue. Regarding, Pre-FMS this currently being resolved among Madhu/Vivek/Chirayu - specifically Madhu and Vivek providing Chirayu with the file length and layout. | Chirayu | Closed |

# Student Financial Assistance
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# Section II: MIS Reporting and Data Storage

## Appendix A: Glossary

Appendix A provides a glossary for the terms used in the Data Storage and Archiving detail design.

| Term | Description |
|---|---|
| ACH | Automated Clearing House |
| ACS/GSG | Affiliated Computer Services/Government Solutions Group, Inc. |
| AFSA | Academic Financial Services Association |
| AGI | Adjusted Gross Income |
| AP | Account Payable |
| Booked Loan | Valid + Complete Loan Origination record + signed promissory note + Disbursement record |
| CAN Code | Common Account Number, field within the T Record |
| CashLink System | A system that generates a weekly MS Excel file of deposits (SF215) and debit vouchers (SF5515) from SFA CFO |
| CCR | Change Control Review |
| CDS | Central Database System (Retired) |
| CDSI | Computer Data Systems, Inc., Former name of ACS. |
| CFO | Chief Financial Officer, DOE |
| CFO Accounting | The Accounting Department within SFA CFO |
| CFO Financial Reporting | The Financial Reporting Department within SFA CFO |
| Channel | A SFA organization defined as Students, Schools and Financial Partners |
| COD | Common Origination and Disbursement System, which will replace LOS |
| Cohort Year | The year the initial loan was funded |
| CPS | Central Processing System (Calculates student eligibility) |
| CRC | Credit Reform Code |
| CRS | Central Registry System |
| CSC | Computer Sciences Corp. |
| Current Month | FARS last completed cumulative month's data |
| DCL | Direct Consolidation Loan, Application for loan consolidation |
| DCS | Debt Collection System (Title IV defaulted loans) |
| DCS | Debt Collection Service |
| DLSAS | Direct Loan School Account Statement |
| DLSC | Direct Loan Servicing Center, Center that services the direct loan |
| DLSS | Direct Loan Servicing System, Services Direct Loans in the Direct Loan Program |
| DMR | Development Modification Review |
| DMCS/SL | Debt Management and Collection System for Student Loans |
| DOE | Department of Education |

| | |
|---|---|
| Drawdowns | Payments of Advance/Obligation amount to schools through the GAPS system |
| ED | Department of Education |
| EDA | Electronic Debit Account |
| EFC | Expected Family Contribution |
| EFT | Electronic Funds Transfer |
| EOM | End of Month |
| Excess Cash | Unused portion of funds returned by an institution to LO via GAPS or directly |
| FAADS | Federal Assistance Award Data System (Census Bureau) |
| FAD | Summary Deposits |
| FAFSA | Free Application for Federal Student Aid |
| FARS | Financial Accounting and Reporting System, the system being retired |
| FAU | Misdirected, Unapplied Payments |
| FCA | Consolidation Payoff Transaction |
| FDSLP | Federal Direct Student Loan Program |
| FFEL | Federal Family Education Loan |
| FFELP | Federal Family Education Loan Program |
| *FID* | *Institution Drawdown Transactions, sent by LO to LS to report drawdowns required* |
| FIE | Institution Excess Cash Transactions |
| FIG | Interagency Funds Transfer of Payments, sent by Direct Loan Partners to LS |
| FLA | Loan Applied (Booked) Transaction |
| FLB | Subsequent Loan Disbursement |
| FLC | Loan Disbursement Cancellation Transaction |
| FLD | Loan Disbursement Adjustment Transaction |
| FMS | Financial Management System, New system to replace FARS |
| FMSS | Financial Management System Software, Ed's new Financial Processing system |
| FRB | Federal Reserve Bank |
| FTP | File Transfer Protocol |
| FYTD | Fiscal Year To Date |
| G Records | FARS based post IF010, pre T record layout |
| GAO | General Accounting Office |
| GAPS | Grants and Awards Payment System |
| GL | General Ledger |
| ICR | Income Contingent Repayment |
| IDS | Institutional Data Systems |
| IE-FARS | Ed’s current Financial Accounting System |
| IF010 | Excel Spreadsheet from servicing detailing principal, interest, upfront fees |
| IF020 | Excel Spreadsheet from servicing detailing misdirected and unapplied payments |
| IQCU | Internal Quality Control Unit |
| IRB | Interest Rate Balance |
| IRS | Internal Revenue System |
| ISG | Internal Service Group |
| LCC | Loan Consolidation Center, center for processing consolidation application |
| LCS | Loan Consolidation System |

| | |
|---|---|
| LOS | Loan Origination System |
| LS | Loan Servicing System, system that services the loan |
| LTD | Life To Date |
| LV | Level as part of FARS VSAM file |
| Management Program Analyst | Analyst in the Students Channel |
| MIS | Management Information Systems |
| MTD | Month to Date |
| NSF | Non Sufficient Funds |
| NSF Transactions (SF 5515) | Debit vouchers |
| NSLDS | National Student Loan Data System (Title IV aid, demographics) |
| OIG | Office of the Inspector General |
| OLA | Original Loan Amount |
| Payment Adjustments | Payments, Refunds, Obligations and Negative Obligations |
| PBO | Principal Balance outstanding |
| PEPS | Postsecondary Education Participation System – Title IV Student Financial Assistance (Status of institutions) |
| PIC | Public Inquiry Contractor |
| PLUS loans | Parent Loans to Undergraduate Students |
| P-Note | Promissory Note |
| POS | Payment (to institutions) for Origination Services |
| PR | Profile as part of the FARS VSAM file |
| Query | Reports of information posted in FARS |
| Receivables | Amounts to be received. |
| Reissues | Reversing Refund transactions |
| SF1098 | Log of Treasury Cancelled or Undelivered Checks |
| SF215 | Deposit Ticket from the DOE |
| SF224 | Statement of transactions, documenting financial activity for the month and forwarded to the Treasury |
| SF5515 | Debit Voucher from the DOE |
| SFA | Students Financial Assistance, Agency with DOE providing customer service |
| SFA CFO | Chief Financial Officer for SFA |
| SLSS TC | IF010 Transaction Code |
| Statement of Differences (SF6652) | Report created by Treasury only if there is a monthly SF215 out of balance condition between the Department of Education and Treasury |
| Summary Deposits (SF 215) | Deposit vouchers |
| SVC | Servicer System |
| T Record | FARS based detailed level VSAM transaction |
| TC | Transaction Code as part of the FARS VSAM file |
| Treasury Refund Confirmation Report | Treasury's Report listing the refunds for the month. |
| Utica Payment Center | Dept in DLSC that deals with all payment activity, lockbox EDA |
| VRU | Voice Response Unit |
| WIP | Work in Process |

**Standard Abbreviations**
The abbreviations used in this document are listed below.

| Abbreviation | Full Word (s) |
|---|---|
| Acct | Account |
| | Accrued |
| Acrnym | Acronym |
| Actvy | Activity |
| Addl | Additional |
| Adj | Adjust, adjustment |
| Advncd | Advanced |
| Aft | After |
| Allow | Allowance |
| Amt | Amount |
| Annl | Annual |
| Appld | Applied |
| Avail | Available |
| Avg | Average |
| Bal | Balance |
| Bnkrptcy or Bnkrpt | Bankruptcy, Bankrupt |
| Begn | Begin, Beginning |
| Bnft | Benefit |
| Brrwr | Borrower |
| Clndr | Calendar |
| Cncld | Cancelled |
| Cptl | Capital, Capitalized |
| Ctg | Category |
| Chng or Chg | Change |
| Chrg | Charge |
| Clm | Claim, Claims |
| Cllctn | Collection |
| Cmplmnt or Cplmnt | Complement |
| Cntgnt | Contingent |
| Conv | Conversion |
| Cnt | Count |
| Crdt | Credit |
| Cmltv | Cumulative |
| CFY | Current Fiscal Year |
| Dly | Daily |
| Dflt | Default |
| DDT | Departmental Directed Transaction |
| Disbrsd | Disbursed |
| Dischrg | Discharged |
| Fdrl | Federal |

| Abbreviation | Full Word (s) |
|---|---|
| FY | Fiscal Year |
| Fnd | Fund |
| GA | Guaranty Agency |
| Gnty | Guaranty, Guarantee |
| ID | Identifier |
| Incr | Increase, Increases |
| Ind | Indicator |
| Insrnc | Insurance |
| Intrst or int | Interest |
| Lndr | Lender |
| Ln | Loan |
| Ndisc | Not Discharged |
| Nbr | Number |
| Oper | Operating |
| Orig | Original |
| Othr | Other |
| Out | Out, Outstanding |
| Pd | Paid |
| Partl | Partial |
| Pymt | Payment |
| Pct | Percent |
| Prev | Previous |
| Prncpl or Prin | Principal |
| PFY | Prior Fiscal Year |
| Prjctd or Prjct | Projected |
| Purch | Purchase, Purchased |
| Qty | Quantity |
| Qtr | Quarter |
| Rcvbl | Receivable |
| Rcvd | Received |
| Rdctn | Reduction |
| Rfnd | Refund |
| Rehab or Rhab | Rehabilitated |
| Rebrsd or Rbrsd | Reimbursed |
| Reinsrnce or Reins | Reinsurance |
| Rqstd | Requested |
| Rstrct | Restricted |
| Rtnd | Returned |
| Schdld | Scheduled |
| Spcl | Special |
| Stmt | Statement |
| SOA | Statement of Account |
| Ttl | Total |
| Txn | Transaction |

| Abbreviation | Full Word (s) |
|---|---|
| Txfr | Transfer |
| Trg | Trigger |
| Uncnsmtd | Unconsummated |
| Unpd | Unpaid |
| Yr | Year |

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## Appendix B: Demographic Data Requirements Matrix

Appendix B contains the FARS Retirement Demographic Requirements Matrix Cover Page and FARS Retirement Demographic Requirements Matrix. The FARS Retirement Requirements Matrix details the ACS MIS demographic data tables and their relationship to the FARS Retirement Credit Management Data Mart (CMDM). The matrix was compiled from working with SFA and ACS Subject Matter Experts (SMEs). The matrix shows exactly what demographic data will be housed in the CMDM and how (i.e. via the demographic tables, financial transactions, or CMDM derived). The tables needed for the CMDM are:

- Borrowers
- Loans
- FICE School Codes Table

Please refer to the below legend for further details.

**Legend**:

Determined by SFA Student SME and team SMEs, where the follow represents:

| | |
|---|---|
| High (H) | As part of FARS Retirement, unless otherwise noted |
| Medium (M) | Recommendations for SFA's future efforts |
| Low (L) | If MIS, as it is currently known, were to retire what remaining fields must be maintained |
| Blank | Therefore, any field not checked with H, M or L and not having a strikethrough indicates that it is not needed in the data mart at any point in time |

These fields are duplicated in demographic tables, therefore, any subsequent references has a strikethrough

**FARS Retirement CMDM Content column (Data Source)**

1 = From demographic file in which the 1 is located
2 = From the IF010 (unless otherwise noted – i.e. IF020 or G record)
3 = Derivable from other CMDM housed data

| | Current MIS Demographic Tables | Requirement Level determined by Students | | 1= Demo.file<br>2= IF010<br>3 =Derivable | |
|---|---|---|---|---|---|
| | | High, Medium, Low | Field | CMDM Content | Description and Use |
| 1 | Borrowers Table | | | | Specified fields will be used by the CMDM. |
| 2 | | H | Borrower Address | 1 | Borrower street address |
| 3 | | H | Borrower Address Status | 1 | Condition of Borrower's address with values as follows: G = Good, B = Bad, R = Returned |
| 4 | | H | Borrower C/O Name | 1 | Borrower c/o or addition address line |
| 5 | | H | Borrower City | 1 | Borrower address city name |
| 6 | | H | Borrower First Disbursement Date | 1 | Disbursement date of this borrower's first loan. |
| 7 | | H | Borrower Foreign Code | 1 | Indicates whether the borrower's address is US or foreign. For foreign addresses, the field pkt-borr-csz is used to contain the city and country. Values are:Blank = US address, F = foreign address |
| 8 | | H | Borrower Name | 1 | The borrower's name, positioned within the key to provide sequential read of borrower name (alphabetic) within client number. Format is last, first. |
| 9 | | H | Borrower SSN | 2 | Borrower social security number |
| 10 | | | Borrower SSN Part | | Last 4 digits of the Social Security Number. Derivable from Borrower SSN |
| 11 | | H | Borrower State | 1 | Borrower address state code |

| | | | | | |
|---|---|---|---|---|---|
| 12 | | H | Borrower Zip1 | 1 | Borrower 5 digit Zip code |
| 13 | | H | Borrower Zip2 | 1 | Borrower Zip plus 4 additional Zip digits |
| 14 | | H | Borrower's Birth Date | 1 | Borrower date of birth |
| 15 | | H | Borrower's Residence Phone Number | 1 | Borrower's current residence phone number. (High order 3 bytes are area code.) |
| 16 | | H | Borrower's Residence Phone Condition Code | 1 | Borrower's current residence phone number Condition Code: G= good, B = bad |
| 17 | | L | Borrower's Business/Auxiliary Phone Number | 1 | Borrower's current Business/Auxiliary phone number. (High order 3 bytes are area code.). Although, L (low) needed as part of delinquency reporting needs. |
| 18 | | L | Borrower's Business/Auxiliary Phone Condition Code | 1 | Borrower's current Business/Auxiliary phone number Condition Code: G= good, B = bad. Although, L (low) needed as part of delinquency reporting needs. |
| 19 | | | ~~Borrower's Residence Phone Number~~ | | Borrower's current residence phone number. (High order 3 bytes are area code.). Derivable from the previous same file: Borrower's Residence Phone |
| 20 | | M | Last Date of Change of Condition Code | | The last date on which the borrower's address condition code changed from Good to Bad (or Returned) or vice versa. |
| 21 | | L | Multi Packet Indicator | | A number indicating number of Packets for the Borrower |
| 22 | | H | Borrower's Email Address | 1 | Borrower's E-mail address |
| 23 | | H | Borrower's Email Address Status | 1 | Condition of Borrower's e-mail address with values as follows: |
| 24 | Loans Table | | | | Specified fields will be used by the CMDM. |
| 25 | | H | Billing Cycle | 1 | A value from 1 to 4 indicating on which of the four monthly billing cycles the borrower is to receive his normal billings. This field also dictates when the borrower's due date will be. The codes translate to the following due dates: 1 = 7th, 2 = 14th, 3 = 21st, 4= 28th |
| 26 | | H | Borrower Interest Paid | 2 | The cumulative amount of interest paid through the accrued through date to the borrower's account packet record. |
| 27 | | H | Borrower Principal Paid | 2 | The cumulative amount of principal repaid through the accrued through date. |
| 28 | | | ~~Borrower SSN~~ | | Borrower Social Security Number |
| 29 | | H | Claim Paid Date | 3 | The most recent guarantor insurance claim payment date. Derivable from the Claim Paid financial transactions that come through on the IF010 file. |
| 30 | | H | Cohort Year | 2 | Cohort Year of Loan - Oct. 1 thru Sept. 30 - based on first disbursement for this loan |
| 31 | | H | CRC (Credit Reform Code) Code | 2 | Credit Reform Code (CRC) |

| | | | | | |
|---|---|---|---|---|---|
| 32 | | H | Current Status (Loan Status) | 1 | The current status code of the borrower's account as listed<br>10 In School - Current<br>20 In Grace - Current<br>22 In Grace - Delinquent Payout Note<br>30 Payout - Current<br>32 Payout - Delinquent Payout Note<br>33 Payout - Delinquent Installation<br>38 Reduced Payment<br>39 Special Handling<br>40 Deferment - Current<br>41 Deferment - Delinquent Installation<br>42 Post Deferrment Grace - Current<br>43 Post Deferment Grace Delinquent Installment<br>47 Deferment - Complaint<br>50 Forbearance - Current<br>53 Forbearance - Delinquent<br>57 Forbearance - Complaint<br>58 Temp Pay Plan - Current<br>59 Temp Pay Plan - Delinquent<br>61 Default - In School<br>62 Default - In Grace<br>63 Default - Payout<br>64 Default - Deferment<br>65 Default - Forbearance<br>67 Rejected Claim - In School<br>68 Rejected Claim - In Grace<br>69 Rejected Claim+H74<br>71 Claim Filed - In School<br>72 Claim Filed - Grace<br>73 Claim Filed - Payout<br>74 Claim Filed - Deferment<br>75 Claim Filed - Forbearance<br>90 Paid In Full<br>91 Paid In Full - By Claim |
| 33 | | H | Current Status Effective Date | 3 | The DLSC date on which the borrowers account has changed from its original loan status or of an action applied to a borrowers account. |
| 34 | | H | Disbursement Application Date | 2 | Date the disbursement is applied to the system. |

| | | | | | |
|---|---|---|---|---|---|
| 35 | | H | Disbursement Count | 3 | Number of disbursements for this Loan ID to date. Derivable in the CMDM by counting of the disbursement transactions. |
| 36 | | H | DLS Number | 2 | Unique ID to identify the current school. Direct Loan School Number (with G or E prefix) for individual campus G' - Main Campus, 'E' - Branch Campus |
| 37 | | | ~~First Disbursement Date~~ | | Date of the first disbursement for this loan. |
| 38 | | H | Fix Payment Amount | 1 | The fixed monthly loan repayment amount. |
| 39 | | H | Grace End Date | 1 | The date the borrower's grace period ended (if the date before entering repayment is in the past), or is scheduled to end (if the date is one day in the future). |
| 40 | | L | Grace Length (Grace Months) | 3 | The number of months in the borrower's grace period, which will be between 0 and 6. Although, noted as low can be calculated in CMDM by using the Separation, Current Date and Grace End dates. |
| 41 | | L | Insurance Type | | NSLDS unique identifier for unique loans. Currently NSLDS does not use Loan ID. The combination of other fields would allow for duplication without this extra field. Values are 'A' thru 'Z'. Fields NSLDS use are Student's first name, SSN, DOB, Original School Attended, Loan Type, Loan Date (Packet Note Date), and if PLUS - Borrower's SSN |
| 42 | | H | Interest Receivable Borrower | 2 | The amount of unpaid interest which has accrued on the borrower's outstanding loan balance payable by the borrower. |
| 43 | | H | Loan ID | 1 | Unique identifier for a loan assigned by the loan originator. Loan identification number required for reporting to certain guarantors. |
| 44 | | H | Loan Type | 2 | Type of loan. Values are: S= subsidized Stafford, U = Unsubsidized Stafford, P = PLUS |
| 45 | | L | Note Amount | | The face value of the promissory notes. The amount may equal or exceed the disbursement amount. |
| 46 | | H | Number of Days Delinquent | 1 | Number of days since an account was current. |
| 47 | | H | Old Status | 3 | This field is updated with the borrower's previous status code whenever the current status code is changed. Derivable in CMDM that stores a history of loan status changes. |
| 48 | | H | Old Status Effective Date | 3 | The old (previous) status effective date. That is, the date on which the old status code was originally entered in the system. Derivable, since this is part of the history stored for loan status in the CMDM. |
| 49 | | H | Outstanding Loan Amount | 2 | The total amount of all disbursements to the borrower for this loan. |
| 50 | | H | Payout Delinquent Date | 1 | Payout installment delinquency date is the oldest due date of an unpaid installment, or the date on which delinquency arose due to the discovery of earlier separation date. The date is advanced to the next installment due date for each installment payment processed, and is set to high values when the total past due payout (PKT_PAYOUT_PAST_DUE) and the current due (PKT_PAYOUT_CUR_DUE) become zero. This field should be initialized to High Values. |

| | | | | | |
|---|---|---|---|---|---|
| 51 | | H | Principal Balance Outstanding | 2 | The outstanding balance on the borrower's account including any interest which has capitalized. |
| 52 | | H | Repayment Plan | 1 | Indicates repayment plan code which identifies the repayment plan used in calculating the most recent disclosure or payout note. This entry is originated at conversion. Value codes are: Standard A, Extended C, Graduated D, Alternative Fixed Payment E, Alternative Term Graduated G, ICR I, Alt. Fixed Pmnt 12 Mon Amort. J, Alt. Fixed Term X |
| 53 | | H | Separation Date | 1 | Date the borrower ceases to be enrolled on at least a half-time basis (if the date is in the past), anticipates ceasing to be enrolled on at least a half time basis (if the date is in the future), graduation, or leaving school. Grace period begins on the first day of the month following the separation date. |
| 54 | | | ~~Student SSN~~ | | Student's SSN |
| 55 | | H | Suspense Code | 1 | blank N/A,<br>C Closed School<br>D Death<br>E Suspended for Death, awaiting documentation<br>F Forced to DCS<br>G Suspended for Disability, awaiting documentation<br>H Disability<br>I Ineligible Borrower<br>J Susp.for False Certification, awaiting documentation<br>K Susp. for Fraud, awaiting documentation<br>L Susp.for Fraud, documentation received<br>M Susp.for False Certification, documentation received<br>U Unpaid Refund Discharge<br>W Prevent from DCS Transfer.<br>X Bankruptcy<br>* Clears Suspense<br>An entry of 'S' (special handling) suspends due diligence processing by the delinquent subsystem. Indicates the account is in default for the reason indicated, or the claim has been filed, or is in process on that basis.<br>Child Care has not been defined as of 9/24/01.<br>T Teacher Forgiveness |
| 56 | | | ~~SSN Part~~ | | Last 4 digits of the Social Security Number. Derivable from Borrower SSN |
| 57 | | H | Payout Past Due | 1 | The total of installment payments past due that are accumulated from the payout amounts billed at the time they become delinquent (PKT_PAYOUT_CUR_DUE). |
| 58 | | H | Bill Type | 1 | The method of billing. A=Electronic Debit Account (EDA), M=Monthly Billing, X=Not Used (place holder). Will be used by the CMDM to link EDA borrowers for reporting |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | purposes. |
| 59 | | | Next Bill Type | | Reflects pending changed billing type to a borrower's account to occur on the next billing cycle once selection has been accepted into the system. |
| 60 | | H | Consolidation Type | 1 | The consolidation types are: IS - In School, FT = Fasttrack -DCS, EX - Expedited FCS, RG = Regular consolidation |
| 61 | | H | FICE Institution Type | 1 | 0 = 300 hour school, 1 = 600 hour school, 2 = 1 year school, 3 = 2 year school, 4 = 3 year school, 5 = 4 year school, 6 = 5 or more years |
| 62 | | H | FICE Institution Control | 1 | Control code to indicate whether a school is: 1 = Public, 2 = Private, 3 = Proprietary, 4 = Foreign, |
| 63 | | L | DEF Category | | Loan Deferment Category<br>Blank = No Deferment<br>> A = Armed Forces<br>> C = Economic Hardship<br>> D = Disability<br>> E = Forbearance<br>> F = Graduate Fellowship<br>> H = Public Health Service<br>> L = Parental Leave<br>> M = Working Mother<br>> N = Internship (Residency)<br>> O = NOAA<br>> P = Peace Corps<br>> R = Rehabilitation<br>> S = Student<br>> T = Teacher Shortage<br>> U = Unemployment<br>> V = Vista<br>> X = Tax Exempt |
| 64 | | H | School Refund Date | 2 | The effective date of the most recent refund (to the lender) by the educational institution. |
| 65 | | H | School Refund Amount | 2 | The total cumulative amount of refunds from the school which has been applied to the borrower’s account for this disbursement. |
| 66 | | H | Interest Rate | 2 | Current interest rate for this specific loan |
| 67 | | L | Paid In Full Date | 3 | Paid in full date, which indicates that the account is closed by receipt of either the final payment or the closeout claim payment. The CMDM can derive from Effective Date that is stored when this type of transaction occurs |
| 68 | | L | Default Date | 3 | The date the borrower entered a default status. The CMDM can derive by adding 271 days to the delinquency date |

| | | | | | |
|---|---|---|---|---|---|
| 69 | | L | Last Paid Date | | Date the last payment came in from a borrower |
| 70 | | | Def End Date | | Loan Deferment Category End Date |
| 71 | | H | OPE Number | 1 | Office of Post Secondary Education number. School ID number assigned by the Department of Education. |
| 72 | Consolidation Type Table | | | | Items in this table are a duplicate of data in the Loans Table |
| 73 | | | ~~Consolidation Type~~ | | The consolidation types are: IS - In School, FT = Fasttrack -DCS, EX - Expedited FCS, RG = Regular consolidation |
| 74 | | | ~~Loan ID~~ | | Loan ID |
| 75 | | | ~~Original Loan Type~~ | | The amount of this disbursement to the borrower for this loan. |
| 76 | | | ~~Borrower's SSN~~ | | Borrower's Social Security Number |
| 77 | | | ~~Delinquency Range (Delinquency Date)~~ | | |
| 78 | | | ~~Fix Payment Amount~~ | | |
| 79 | | | ~~Repay Plan~~ | | Indicates repayment plan code which identifies the repayment plan used in calculating the most recent disclosure or payout note. This entry is originated at conversion. Value codes are: A = All 10 year plans, G = SLMA Graduated plan, E = Fixed amount, X = Minimum payment amount, V = Variable interest, fixed term |
| 80 | | | ~~Suspense Code~~ | | Alternate entries:D = deceased, H = disability, X = bankruptcy, F - force default * - indicates the account is in default for the reason indicated, or the claim has been filed, or is in process on that basis. An entry of 'S' (special handling) suspends due diligence processing by the delinquent subsystem. |
| 81 | | | ~~Original Loan Amount~~ | | The amount of this disbursement to the borrower for this loan. |
| 82 | | | ~~Principal Balance Outstanding~~ | | The outstanding balance on the borrower's account including any interest which has capitalized. |
| 83 | | | ~~Interest Receivable Borrower~~ | | The amount of unpaid interest which has accrued on the borrower's outstanding loan balance payable by the borrower. |
| 84 | | | ~~School Refund Amount~~ | | The total cumulative amount of refunds from the school which has been applied to the borrower's account for this disbursement. |
| 85 | | | ~~Current Status~~ | | The current status code of the borrower's account. See Attachment B. |
| 86 | | | ~~First Disbursement Date~~ | | Date of the first disbursement for this loan. |
| 87 | | | ~~Loan Booked Date~~ | | Date in which the loan was booked |
| 88 | | | ~~DLS Number~~ | | Direct Loan School Number (with G or E prefix) for individual campus G = main campus, E = branch campus |
| 89 | Disbursement Table | | | | All of the H identified items will be obtained from the IF010/IF020/G Record files, therefore, this will not be used by the CMDM |
| 90 | | | ~~Borrower Interest Paid~~ | | The cumulative amount of interest paid through the accrued through date to the borrower's account packet record. |
| 91 | | | ~~Borrower Principal Paid~~ | | The cumulative amount of principal repaid through the accrued through date. |

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| 92 | | | ~~Claim Paid Date~~ | | The most recent guarantor insurance claim payment date |
| 93 | | | ~~Cohort Year~~ | | Cohort Year of Loan - Oct. 1 thru Sept. 30 - based on first disbursement for this loan. |
| 94 | | | ~~CRC (Credit Reform Code) Code~~ | | Credit Reform Code (CRC) The first two positions identify the cohort (fiscal) year in which the first disbursement was made. |
| 95 | | | ~~Disbursement Application Date~~ | | The date the disbursement was added to the borrower's record. |
| 96 | | H | Disbursement Date | 2 | The date on which the funds covered by this disbursement were made available to the borrower. This is equal to or later than the note date. |
| 97 | | M | Disbursement Segment (I.e. Disbursement Number) | | The disbursement segment is a unique number for disbursements given out on a loan. So every disbursement will have it's own unique segment associated with it.Number values: 01-04 for consolidated loans, 01-32 for non-consolidated loans |
| 98 | | L | NSLDS Unique Identifier | | NSLDS unique identifier for unique loans. Currently NSLDS does not use Loan ID. The combination of other fields would allow for duplication without this extra field. Values are 'A' thru 'Z'. Fields NSLDS use are Student's first name, SSN, DOB, Original School Attended, Loan Type, Loan Date (Packet Note Date), and if PLUS - Borrower's SSN |
| 99 | | | ~~Interest Rate~~ | | Current interest rate for this specific loan |
| 100 | | | ~~Interest Receivable Borrower~~ | | The amount of unpaid interest which has accrued on the borrower's outstanding loan balance payable by the borrower. |
| 101 | | | ~~Loan ID~~ | | Unique identifier for a loan assigned by the loan originator. Loan identification number required for reporting to certain guarantors. |
| 102 | | L | Loan Period Begin Date | | The beginning date of the school enrollment period for which this disbursement was made. |
| 103 | | L | Loan Period End Date | | The end date of the school enrollment period for which this disbursement was made. |
| 104 | | | ~~Loan Type~~ | | Type of loan. Values are: S= Subsidized Stafford, U = Unsubsidized Stafford, P = PLUS, C = Consolidation |
| 105 | | | ~~Month Disbursed~~ | | Month in which this disbursement was disbursed. |
| 106 | | L | ~~Note Amount~~ | | The face value of the promissory notes. The amount may equal or exceed the disbursement amount. |
| 107 | | L | Note Date | | The date on which the promissory note was signed by the borrower. |
| 108 | | H | Origination Fee | 2 | The fee amount which is currently defined as follows: Stafford Subsidized and Unsubsidized Loans with the first disbursement date of August 15, 1999 and after bear a 3% fee, whereas loans made prior to August 15, 1999 bear a 4% fee. PLUS loans bear a 4% fee and there is no fee for Consolidation Loans. |
| 109 | | L | Origination Lender | | Six digit code identifying the original lender (school) of the originated loan - an institution code. |
| 110 | | | ~~Outstanding Loan Amount~~ | | The amount of this disbursement to the borrower for this loan. |

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| 111 | | L | Packet Number | | When a borrower has multiple sub and/or unsub loans which have the same grace end date these loans will be part of the same packet. PLUS and consolidated will both have unique packet numbers. Consecutively allocated packet number for this account number. The original packet entry is "1". Additional 8 which are subsequently added (where serialization is precluded) are consecutively numbered 2 through 9 |
| 112 | | | ~~Principal Balance Outstanding~~ | | The outstanding balance on the borrower's account including any interest which has capitalized. |
| 113 | | M | Principal Balance Outstanding at Payout | | The principal balance outstanding at the time the loan matured for payout; made up of the principal balance at maturity date plus any borrower interest amounts capitalized to that date. |
| 114 | | | ~~School Refund Amount~~ | | The total cumulative amount of refunds from the school which has been applied to the borrower's account for this disbursement. |
| 115 | | | ~~School Refund Date~~ | | The effective date of the most recent refund (to the lender) by the educational institution. |
| 116 | | | ~~SSN Part~~ | | Last 4 digits of the Social Security Number |
| 117 | | | ~~SSN~~ | | Social Security Number of the Borrower |
| 118 | | | ~~Year Disbursed~~ | | Century and year of when this disbursement was made. |
| 119 | | L | Claim Filed Date | | The date DLSC received the documentation confirming the borrower's death, disability, closed school or other claim filed condition. Also used for the result in the transfer of the account to DCS. |
| 120 | | | ~~Insurance Type~~ | | NSLDS unique identifier for unique loans. Currently NSLDS does not use Loan ID. The combination of other fields would allow for duplication without this extra field. Values are 'A' thru 'Z'. Fields NSLDS use are Student's first name, SSN, DOB, Original School Attended, Loan Type, Loan Date (Packet Note Date), and if PLUS - Borrower's SSN |
| 121 | Electronic Data Account (EDA) Accounts Table | | | | EDA reporting capability will continue to be obtained from ACS's MIS. The CMDM will be able to identify, thus report on, EDA borrowers via the packets' table billing type field therefore, this table will not be used by the CMDM |
| 122 | | | ~~SSN Part~~ | | Last 4 digits of the Social Security Number |
| 123 | | | ~~SSN~~ | | Social Security Number of the Borrower |
| 124 | | H | EDA Start Date | | Electronic Debit Account Begin Date |
| 125 | | H | EDA Effective Date | | Electronic Debit Account Effective Date |
| 126 | | H | EDA Status | | EDA Status. They are A, D, G, N, and S |
| 127 | | H | EDA Status Update | | Date of EDA Status Update |
| 128 | | H | EDA Cycle | | EDA Cycle. 1 = 7th, 2 = 14th, 3 = 21st, 4= 28th |
| 129 | | H | EDA Cycle Update | | Date of last Update of the EDA Cycle |

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| 130 | | H | EDA Payment Amount | | The Fix Amount to be Withdrawn from the Borrower Bank Account |
| 131 | | H | EDA Payment Amount Update | | Date of last Update to the Fix Payment Amount. |
| 132 | | H | EDA Old Payment Amount | | The Prev. Fix Monthly Payment Amount |
| 133 | | H | Last Insufficient Funds Date | | Date of Last Transaction Failure due to insufficient funds. |
| 134 | | H | Last Insufficient Funds Reason Code | | R01, R02, R03, R04, R08, R09, R10, R99 |
| 135 | | H | Previous Insufficient Funds Date | | Date of Prior Transaction Failure due to insufficient funds. |
| 136 | | H | Prior Insufficient Funds Reason Code | | R01, R02, R03, R04, R08, R09, R10, R99 |
| 137 | | H | Insufficient Funds Received | | |
| 138 | | H | Bank Routing Number | | Routing Number of the Bank where the Borrower Account number resides. |
| 139 | | H | Borrower Bank Account Number | | Borrower Bank Account Number |
| 140 | | H | Account Type | | Borrower Account Type. S= Savings, C = Checking |
| 141 | | H | Time Stamp | | Record Time Stamp |
| 142 | | H | Prior Bank Account Number | | Prior Borrower Bank Account Number |
| 143 | | H | Prior Bank Routing Number | | Prior Bank Routing Number |
| 144 | | H | Prior Account Type | | Prior Account Type |
| 145 | | H | PF Message | | Previous Non Sufficient Funds Message |
| 146 | FICE School Codes Table | | | | Specified fields will be used by the CMDM. |
| 147 | | L | Account Manager Flag | | Code for the account manager for the school. |
| 148 | | L | Add Change Flag | | Flag to indicate if the record is to be added or changed: A = Add the School, C = Change the School information. |
| 149 | | L | Bursar Name | | Name of the primary contact in the bursar's office. |
| 150 | | L | Bursar Phone Number | | Telephone number of the bursar's office. |
| 151 | | L | School City | | School city |
| 152 | | L | Closed Date | | Date the Direct Loan Participation Agreement was terminated due to a school closure. |
| 153 | | L | Closed Notice Sent Date | | Date Closed Notice sent to borrower |
| 154 | | H | Congressional District | 1 | Congressional District where the school is located |
| 155 | | | ~~DLS Number~~ | | Direct Loan School Number (with G or E prefix) for individual campus G = main campus, E = branch campus |
| 156 | | | DLS Number MC | | Direct Loan School Number of Main Campus |
| 157 | | M | Effective Date | | Date on which school information became effective for this academic year. |

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| 158 | | M | Entity Number | | Central Registry System (CRS) Entity Number is an identifier assigned by CRS and used by the Accounting process. CRS values: 'Blank' - for foreign institution or some branch campus , '3' - as the first digit followed by 11 alpha characters (used for the Institutions participating in the Direct Loan program) |
| 159 | | M | FAO Name | | Name of the primary contact in the Financial Aid Office. |
| 160 | | M | FAO Phone Number | | Telephone Number of the Financial Aid Office. |
| 161 | | H | Ethnic Code | 1 | Ethnic origination associated with the institution. 1 - Native American (Land Grant Colleges), 2 - Historically Blank College or University (HBCU), 3 - Hispanic, 4 - Traditionally Black (Non-Land Grant Colleges), 5 - Ethnicity not reported |
| 162 | | | ~~Institution Control~~ | | Control code to indicate whether a school is: 1 = Public, 2 = Private, 3 = Proprietary, 4 = Foreign, |
| 163 | | | ~~Institution Type~~ | | 0 = 300 hour school, 1 = 600 hour school, 2 = 1 year school, 3 = 2 year school, 4 = 3 year school, 5 = 4 year school, 6 = 5 or more years |
| 164 | | M | Exit Interview | | Number of days lead time required by the Institution prior to the separation date that the Institution wants SEPX notices (exit interview materials) to be provided to the Institution. |
| 165 | | M | School Long Name | 1 | Long school name |
| 166 | | L | School Name | 3 | Short school name. Derivable from Long Name |
| 167 | | L | New PIN Effective Date | | Effective Date of new PIN number and password. |
| 168 | | L | New PIN Number | | New Personal Identification Number (PIN) number to be used by the Institutions for drawdowns. |
| 169 | | L | New PIN Password | | New PIN password |
| 170 | | L | OE Region Code | | A code, assigned by the Department of Education, which designates the region in which an Institution is located. Value are: 01 thru 10 plus 99 |
| 171 | | | ~~OPE Number~~ | | Office of Post Secondary Education number. School ID number assigned by the Department of Education. |
| 172 | | L | OSA City | | Official School Administration city |
| 173 | | L | OSA State | | Official School Administration state |
| 174 | | L | OSA Street Address | | Official School Administration street address. |
| 175 | | L | OSA Zip | | Official School Administration ZIP |
| 176 | | L | OSA Zip4 | | Official School Administration ZIP4 |
| 177 | | L | PELL Number | | PELL School Code |
| 178 | | L | PIN Number | | Original Personal Identification Number (PIN) used by Institutions for drawdowns. |
| 179 | | L | PIN Password | | Original Personal Identification Number (PIN) Password for a specific school |
| 180 | | L | PIN School Code | | The School Code for this particular PIN Number and Password |
| 181 | | L | Reconciliation End Day | | Reconciliation Day is day of the month by which institution reconciliation will be done. Must be 01 thru 31. 31 indicates last day of every month. |
| 182 | | L | Registrar Name | | Name of the primary contact in the registrar's office. |

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|---|---|---|---|---|---|
| 183 | | L | Registrar Number | | Telephone number in the registrar's office. |
| 184 | | L | Sequence Number | | A unique number assigned by ED accounting for the drawdown of POS payments. Institutions authorized to complete drawdowns must have a DL Institution Number that begins with “G”. |
| 185 | | L | Special Handling Code | | Code to indicate special handling for the school. blank = no special handling, 1 = Physically closed, 2 = Ownership changed, 3 = HEAL (Health Education Assistance Loan) |
| 186 | | L | SSCR Month 1 | | Month scheduled to send SSCR (Student Status Confirmation Report) reports to school ? is this used anymore |
| 187 | | L | SSCR Month 2 | | Month scheduled to send SSCR (Student Status Confirmation Report) reports to schools. ? is this used anymore |
| 188 | | L | SSCR Week 1 | | Week scheduled to send SSCR reports to school. ? is this used anymore |
| 189 | | L | SSCR Week 2 | | Week scheduled to send SSCR reports to school. ? is this used anymore |
| 190 | | L | School State | | School state |
| 191 | | L | School Address | | School street address |
| 192 | | L | School Team | | A code assigned to the Origination Team that maintains a relationship with this institution. |
| 193 | | L | Title IV Flag | | Flag to indicate Title IV deferment eligibility. N - Not Certified, C - Certified, P - Provisionally Certified |
| 194 | | L | Title IV Number | | Identifies schools participating in the Title IV program. Must begin with a G, B, E or O. |
| 195 | | L | Title IV WAN Effective Date | | Date on which the information pertaining to the event or the element described by the element qualifier is or will become valid. |
| 196 | | L | Version Number | | Version number for this entry |
| 197 | | L | WAN Indicator | | Indicator that identifies which WAN (Wide Area Network) the institution is using. T4W = Title IV WAN, Blank = no network |
| 198 | | L | School Zip | | School 5 position zip code |
| 199 | | L | School Zip4 | | School extra 4 position zip code |
| 200 | | L | FICE ZipPlus | | School Zip |
| 201 | | L | FICE Foreign Province | | School Foreign Province |
| 202 | | L | FICE Country | | School Country |
| 203 | | L | FICE Comments | | Comments regarding |
| 204 | | L | FICE Lead TM | | Lead Time for exit interview. Number of Days required by institution prior to the borrower's leaving the school |
| 205 | | L | FICE Sequence Number | | A unique number assigned by ED accounting for the drawdown of POS payments. Institutions authorized to complete drawdowns must have a DL Institution Number that begins with “G”. |
| 206 | | L | FICE OSA ZipPlus | | Official School Administration4 digit zip extension |
| 207 | | L | FICE OSA Foreign Province | | Official School Administration foreign province |

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| 208 | | L | FICE OSA Country | | Official School Administration country |
| 209 | | L | FICE Defer Eligible Indictor | | Flag indicator to the school for students eligibly for TIVWAN loans |
| 210 | | L | FICE DL Part Code | | Direct Loan participation code |
| 211 | Income Continguent Repayment (ICR) Borrower Table | | | | ICR reporting capability will continue to be obtained from ACS's MIS, thus this table will not be used by the CMDM |
| 212 | | M | Active Income Amount | | The amount of income reported for the borrower. |
| 213 | | M | Active Income Source | | Identifies the origin of the income information currently in use to calculate borrower's ICR plan schedule. 0 - INT - borrower placed on ICR without income data., 1 - ALT - Alternative income reported from borrower., 2 - AGI - Adjusted Gross Income reported from IRS |
| 214 | | M | Active Income Year | | The year associated with the reported income. |
| 215 | | M | Borrower's Family Size | | The size of the borrowers family. Used to calculate the payment. |
| 216 | | M | Borrower's IRS SSN | | Borrower's SSN as listed with the IRS, if different from the DLSS system. |
| 217 | | M | Borrower's Name Control | | The IRS name control field. The field consists of the first four characters of the last name. |
| 218 | | M | Borrower's Repayment Option | | The option selected for ICR repayment. Valid options are: 1 = Formula plan based on income, 2 = 12 year amortization, 3 = July 1, 1996 Regulations |
| 219 | | M | Current Beginning Date | | Identifies the date on which the borrower most recent separation date began on the ICR plan. |
| 220 | | M | Filing Status | | The filing status of the borrower for whom the IRS income was reported. |
| 221 | | L | First Repayment Date | | Identifies the first repay date for the borrower on the ICR plan. |
| 222 | | M | Income Calculated Effective Date | | The date the currently used income data became effective. |
| 223 | | L | Income Effective Date | | The date the income data was provided. |
| 224 | | M | IRS Consent Beginning Year Date | | Identifies the actual signed consent date from the borrower which is used to request AGI information from the IRS. |
| 225 | | L | Joint Repayment Code | | Code identifies the borrower under a joint repayment plan with their spouse. blank = not on ICR, J - Joint ICR Repayment, S - Single ICR Repayment |
| 226 | | L | Original Beginning Date | | Identifies the date on which the borrower originally began on the ICR plan. |
| 227 | | M | Participant Code | | A code to identify whether the ICB_BORROWER record has a packet which is currently on the ICR plan. B - Borrower has packet on DLSS, S - Borrower or Spouse has no ICR packets on DLSS |
| 228 | | L | Regulation Date | | A date related to the PARM_ICR table that will pull out the pertinent calculation information. |
| 229 | | M | Send to IRS Date | | The date when the next request to the IRS can be made. |
| 230 | | M | Spouse's Name | | Borrower name is here instead of spouse name. |
| 231 | | M | Spouse's SSN | | Social security number of the spouse. |

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| 232 | | | ~~SSN~~ | | ICR Borrower SSN |
| 233 | | | ~~SSN Part~~ | | Last four digits of the ICR Borrower's SSN |
| 234 | Packets Table | | | | Specified fields will be used by the CMDM from non-demographic sources as noted (2 and 3) |
| 235 | | L | 78 Interest Amount | | For accounts accruing interest under the rule of 78's method, the amount of borrower interest accrued and not capitalized while in an interim or forbearance status. |
| 236 | | | ~~Billing Cycle~~ | | A value from 1 to 4 indicating on which of the four monthly billing cycles the borrower is to receive his normal billings. This field also dictates when the borrower's due date will be. The codes translate to the following due dates: 1 = 7th, 2 = 14th, 3 = 21st, 4= 28th |
| 237 | | L | Claim Code | | A code indicating the basis for which the claim was filed. D = deceased, H = disability, X = bankruptcy, O = default non-skip, P = non -return of payout note, S = default skip, Z = other |
| 238 | | | ~~Current Status~~ | | The current status code of the borrower's account. |
| 239 | | | ~~Current Status Effective Date~~ | | The current status effective date. That is, the date on which the new status code was entered to the system. This is maintained by the status analysis subroutine. |
| 240 | | L | CY B Interest Paid | | The total of payments applied to borrower's interest during the current calendar year. This field is set to zero at the end of each calendar year. |
| 241 | | | ~~Default Date~~ | | The date the borrower entered a default status. The CMDM can derive by adding 271 days to the delinquency date |
| 242 | | L | Disc Last Payment Amount | | The disclosure/payout note final payment amount. |
| 243 | | L | Disc Number of Payments | | The number of payments to be made from the current (that is, issued or scheduled for issue) disclosure statement or payout note. |
| 244 | | | ~~End Of Month Status~~ | | Borrower's status code at the end of the previous month. See separate table of Status Code Definitions. |
| 245 | | | ~~Fix Payment Amount~~ | | The monthly loan repayment amount. |
| 246 | | | ~~Grace End Date~~ | | The date the borrower's grace period ended (if the date before entering repayment is in the past), or is scheduled to end (if the date is one day in the future). |
| 247 | | | ~~Grace Length~~ | | The number of months in the borrower's grace period, which will be between 0 and 6. |
| 248 | | L | Grad Factor | | The fraction by which the payment amount will be graduated at the next graduated repayment date. (for accounts on graduated repayment only). |
| 249 | | L | Interim Current Due | | The amount of interim interest that has not been recently billed. It consists of interest occurring on the non-subsidized disbursement balances prior to the end of either the grace period or the deferment period. It is billed at the end of each calendar quarter. |
| 250 | | L | Interim Past Due | | Total amount of past due interim interest, which is an accumulation of billed interim interest amounts remaining unpaid at the respective delinquency dates. |

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| 251 | | M | Last Interest Paid | | The portion of the last payment amount applied to pay the borrower's interest receivable. |
| 252 | | M | Last Late Payment Paid | | The portion of the last payment received amount which was applied to reduce the outstanding late charges. |
| 253 | | M | Last Principal Paid | | The portion of the last payment received amount which was applied to reduce the principal balance. |
| 254 | | M | Late Charge Paid | 2 | Total late charges paid by the borrower. (Late fees are not assessed at the present time.) |
| 255 | | M | Late Charge Amount | 2 | The fee assessed in the event the borrower's installment is received after the due date (late fees are not assessed at the present time.) |
| 256 | | | ~~Loan Type~~ | | Type of loan. Values are: S= subsidized Stafford, U = Unsubsidized Stafford, P = PLUS |
| 257 | | L | Maximum Interest | | The total amount of borrower's interest which may be accrued and billed over the life of the loan. Used primarily for accounts disclosed under the rule of 78's accrual method |
| 258 | | L | Old Due Amount | | When the redisclosure calculation occurs, the total due amount (PKT_PAYOUT_CUR_DUE + PKT_PAYOUT_PAST_DUE) is moved to this field. |
| 259 | | L | Old Fix Payment Amount | | When the redisclosure calculation occurs, the PKT_FIX_PAY_AMT will be moved to this field. |
| 260 | | | ~~Old Status~~ | | Previous borrower status code which is updated whenever the current status code is changed. |
| 261 | | | ~~Old Status Effective Date~~ | | The old (previous) status effective date. That is, the date on which the old status code was entered to the system. |
| 262 | | L | Packet Number | | Numeric redefinition of the borrower's primary packet number. |
| 263 | | | ~~Paid in Full Date~~ | | Paid in full date, which indicates that the account is closed by receipt of either the final payment or the closeout claim payment. The CMDM can derive from Effective Date that is stored when this type of transaction occurs |
| 264 | | L | Payout Current Due | | The last payout amount billed. It is due by the payout delinquent date. The amount is entered by the billing processing subsystem, and is subsequently reduced by payments received which exceed the total of the interim due and payout past due (PKT_INTERIM_PAST_DUE, PKT_PAYOUT_PAST_DUE and PKT_INTERIM_CUR_DUE). |
| 265 | | | ~~Payout Delinquent Date~~ | | Payout installment delinquency date is the oldest due date of an unpaid installment, or the date on which delinquency arose due to the discovery of earlier separation date. The date is advanced to the next installment due date for each installment payment processed, and is set to high values when the total past due payout (PKT_PAYOUT_PAST_DUE) and the current due (PKT_PAYOUT_CUR_DUE) become zero. This field should be initialized to High Values. |
| 266 | | L | Payout Current Due | | The total of installment payments past due that are accumulated from the payout |

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| | | | | | amounts billed at the time they become delinquent (PKT_PAYOUT_CUR_DUE). |
| 267 | | L | Port Number (School ID) | 2 | The portfolio number to which the borrower accounts are grouped for reporting purposes. |
| 268 | | L | PY B Interest Paid | | The total of payments applied to borrower interest during the previous calendar year. |
| 269 | | | ~~Repayment Plan~~ | | Indicates repayment plan code which identifies the repayment plan used in calculating the most recent disclosure or payout note. This entry is originated at conversion. Value codes are: A = All 10 year plans, G = SLMA Graduated plan, E = Fixed amount, X = Minimum payment amount, V = Variable interest, fixed term |
| 270 | | | ~~Separation Date~~ | | Date the borrower ceases to be enrolled on at least a half-time basis (if the date is in the past), anticipates ceasing to be enrolled on at least a half time basis (if the date is in the future), graduation, or leaving school. Grace period begins on the first day of the month following the separation date. |
| 271 | | | ~~SSN~~ | | Social Security Number from 8 table |
| 272 | | | ~~Suspense code~~ | | Alternate entries: D = death, H = Disability, X = Bankruptcy, F = Force Default, * - indicates the account is in default for the reason indicated, or the claim has been filed, or is in process on that basis. An entry of 'S' (special handling) suspends due diligence processing by the delinquent subsystem. |
| 273 | | | ~~SSN Part~~ | | Last 4 digits of the Social Security Number. Derivable from Borrower SSN |
| 274 | | | ~~Bill Type~~ | | The method of billing. Will be used by the CMDM to link EDA borrowers for reporting purposes. |
| 275 | | | Next Bill Type | | Previous billing type |
| 276 | | | ~~Loan Deferment Category~~ | | Loan Deferment Category |
| 277 | | | ~~Last Paid Date~~ | | Date the last payment came in from a borrower |
| 278 | | | ~~Def End Date~~ | | Loan Deferment Category End Date |
| 279 | PLUS Loans Table | | | | Not used by CMDM |
| 280 | | | ~~Part of SSN~~ | | Last 4 digits of the Borrower's SSN |
| 281 | | M | PLUS Student Alien Number | | PLUS student alien registration number |
| 282 | | | ~~PLUS Student Birth Date~~ | | PLUS loan student's date of birth |
| 283 | | M | PLUS Student Citizenship | | Status as to citizenship: 1 = US citizen, 2 = Eligible non citizen |
| 284 | | M | PLUS Student Default | | Default status for PLUS student:Y = Yes, N = No, Z = Override |
| 285 | | | ~~PLUS Student First Name~~ | | PLUS loan student's first name |
| 286 | | | ~~PLUS Student Last Name~~ | | PLUS loan student's last name |
| 287 | | | ~~PLUS Student Loan ID~~ | | This is the Loan ID for a PLUS student which would contain the student's SSN |
| 288 | | | ~~PLUS Student Middle Initial~~ | | PLUS loan student's middle initial |
| 289 | | | ~~PLUS Student SSN~~ | | PLUS loan student's SSN - not the SSN on the Loan ID |
| 290 | | L | PLUS Std Student SSN Part | | Solely database indexes |
| 291 | | L | PLUS Std Student SSN | | Solely database indexes |

# Student Financial Assistance
# SFA/CFO Students
# FARS Retirement Detail Design
# Section II: MIS Reporting and Data Storage

## Appendix C: Delinquency Data Requirements Matrix

Appendix C provides the matrix used to show the relationship between the delinquency data mart and the respective fields in the CMDM.

| Delinquency Data Mart | Demographics Table | Demographics Field | Maintain in CMDM | Comments |
|---|---|---|---|---|
| Borrower Address line 1 | Borrowers | Borrower Address | Yes | |
| Borrower Address line 2 | Borrowers | Borrower C/O Name | Yes | |
| Borrower City | Borrowers | Borrower City | Yes | |
| Borrower First Name, Last Name, Middle Initial | Borrowers | Borrower Name | Yes | |
| Borrower SSN | Borrowers | Borrower SSN | Yes | |
| Borrower State | Borrowers | Borrower State | Yes | |
| Borrower Zipcode | Borrowers | Borrower Zip1 (5 digits) and Zip2 (4 digits) | Yes | |
| Borrower Date of Birth | Borrowers | Borrower's Birth Date | Yes | |
| Borrower Residence Phone | Borrowers | Borrower's Residence Phone Number | Yes | |
| Borrower Work Phone | Borrowers | Business Work Phone | Yes | |
| Borrower Country | Borrowers | Borrower Foreign Code | Yes | The borrowers table foreign code shows the code for the countries versus the delinquency table country which details the country name. Nevertheless, per past reporting foreign code is sufficient and can identify the country by name if needed. |
| Borrower Address Condition | Borrowers | Borrower Address Status | Yes | |
| **Grace End day, year, month** | Loans | Grace End Date | Yes | |

| | | | | |
|---|---|---|---|---|
| **Academic Completion day, month, year** | Loans | Separation Date | Yes | |
| DCS Transfer Day, Month, Year | Loans | Payout Delinquent Date | Yes | Since the transfer date of the loan to DCS occurs after it's 271 days delinquent, this is derivable from the Delinquency Date in the CMDM |
| **Delinquent Day, Month, Year** | Loans | Payout Delinquency Date | Yes | |
| Days Delinquent | Loans | Number of Days Delinquent | Yes | |
| Repay Option Description | Loans | Repayment Plan | Yes | |
| Loan Type Description | Loans | Loan Type | Yes | |
| (VDC) Posting date | | | Yes | Related to the calendar month end date of when the transaction was processed by the VDC. The CMDM equivalent would be the CMDM processed date which is when the transaction was processed by DLSS. |
| Loan Status | Loans | Current Status | Yes | |
| Loan Desc | | | No | No MIS demographic table reporting equivalent |
| **School Code Desc** | FICE School Codes | DLS Number | Yes | |
| **School Short Name Desc** | FICE School Codes | School Name | Yes | Derivable from School Long Name |
| School Long Name Desc | FICE School Codes | School Long Name | Yes | |
| School TIVWAN Institution Name | | | No | Source of the following TIVWAN field is from an outside daily file from TIVWAN schools. This informaiton is not from any demographic tables. |
| School TIVWAN Participation Year | | | No | Source of the following TIVWAN field is from an outside daily file from TIVWAN schools. This informaiton is not from any demographic tables. |
| School TIVWAN Address | | | No | Source of the following TIVWAN field is from an outside daily file from TIVWAN schools. This informaiton is not from any demographic tables. |

| | | | | |
|---|---|---|---|---|
| School TIVWAN Cycle | | | No | Source of the following TIVWAN field is from an outside daily file from TIVWAN schools. This informaiton is not from any demographic tables. |
| School TIVWAN Format Code | | | No | Source of the following TIVWAN field is from an outside daily file from TIVWAN schools. This informaiton is not from any demographic tables. |
| School Switch | | | No | Delinquency Datamart specific field to indicate valid TIVWAN records for that month's delinquency run. Related to TIVWAN data. |
| Fees amount | IF010 | Transaction Amount Field | Yes | Not derived from demographics data |
| Loan Amount | IF010 | Transaction Amount Field | Yes | Not derived from demographics data |
| Charges Amount | IF010 | Transaction Amount Field | Yes | Not derived from demographics data |
| Past Due Amount | IF010 | Transaction Amount Field | Yes | Not derived from demographics data |
| **Monthly Payment Amount** | Loans | Fixed Payment Amount | Yes | |
| Defaulted This Month | | | Yes | Derivable from CMDM data |
| Defaulted Cal YTD | | | Yes | Derivable from CMDM data |

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## Appendix D: ERWin Data Model Printouts

ERWin is the tool used to generate the logical and physical data models. This appendix houses the actual logical and physical data models generated by ERWin.

This appendix contains documents that cannot be provided electronically. If you require this appendix, please contact the FARS Retirement team.

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## Appendix E: Requirements to Detail Design Mapping

Appendix E provides a mapping from the FARS Retirement Detail Design Document to the Requirements document completed in June 2001. This appendix will help the team reference where the requirements are outline in the design document.

| Req. # | Description | Design Section |
|---|---|---|
| 2.2.2-01 | No longer generate the SFA CFO Financial Data Extract Report | N / A |
| 2.2.2-02 | No longer generate the Consolidation Data Extract since LC will be using SFA's RDC file in the future | N / A |
| | Generate the Institution Transaction Listing, new requirement | 5.6 |
| 2.2.2-03 | Generate the Weekly Project Status Report | 5.1 |
| 2.2.2-04 | Generate the Portfolio Analysis Report | 5.2 |
| 2.2.2-05 | Generate the Payment Allocation Report | 5.3 |
| 2.2.2-06 | Provide the Rolling Reconciliation (Megarecord) Process Pre-FMS equivalent data | 5.7 |
| 2.2.2-07 | Create a solution which enables SFA MIS end user and ACS MIS users access to generate queries of financial and demographic data as specified in Deliverable 152 by providing reporting capability on the following Pre-FMS equivalent financial data:<br><br>Principal, Interest, Late Charges, Origination Feeds, and NSF Fees financial information<br><br>with the following financial fields:<br><br>Disbursements, Cancellations, Adjustments, Payments (Paid in Full, Collections, DL-DL Consolidated, and FFEL Consolidated), Interest (Accrual, Capitalized, and Paid), Write-Offs, and Refunds<br><br>for Non-Consolidated (i.e. Unsubsidized, Subsidized, and PLUS) borrowers and Consolidated borrowers by the Loan ID index; and for the | 5.8 |

| Req. # | Description | Design Section |
|---|---|---|
| | following DLSS demographic data:<br><br>Year, Month, Loan ID, Loan Type, Social Security Number, Status, Original Loan, Amount (OLA), Principal Balance, Outstanding (PBO), Interest Receivable Borrower (IRB), School ID, Congressional District, and Cohort Year. | |
| 2.2.2-08 | Provide quality control in data handling | 1.5, 3.1 |
| 2.2.2-09 | Provide a central source of data for SFA and MIS to meet Target State Vision | 1.1 |
| 2.4.2-01 | Obtain Non-consolidated (i.e. Unsubsidized, Subsidized, and PLUS) borrowers and consolidated borrowers<br>Disbursements,<br>Cancellations,<br>Adjustments,<br>Payments,<br>Accrual Interest,<br>Capitalized Interest,<br>Write-Offs,<br>Refunds for financial transactions<br>by Loan ID<br><br>Extract fields:<br>Principal,<br>Interest,<br>Late Charges,<br>NSF Fees<br><br>Demographics:<br>Year<br>Month<br>Loan ID<br>Loan Type<br>Social Security Number<br>Status<br>Original Loan Amount (OLA)<br>Principal Balance Outstanding (PBO)<br>Interest Rate Balance (IRB)<br>School ID<br>Congressional District<br>Cohort Year<br><br>Pre-FMS equivalent to the below in support of | 2, 3 |

| Req. # | Description | Design Section |
|---|---|---|
| | Megarecords:<br>Transaction Codes<br>General Ledger Account Code<br>SLSS Code (6 positions)<br>Disbursement Date (CCYYMMDD)<br>Posting Date (CCYYMMDD)<br>Effective Date<br>Amount<br>Disbursement Sort Flag Indicator | |
| 2.4.2-02 | Complete Month-end reconciliation and issue resolution prior to data storage | 2.2.2 |
| 2.4.2-03 | Provide monthly audit report for financial transactions with transactions count<br>This requirement was modified to produce control reports on a daily basis. | 2.2.1 |
| 2.4.2-04 | Have multiple daily access to month to date data by the 2nd calendar day after month-end with a turnaround of 2 to 4 hours | |
| 2.4.2-05 | Have daily access to fiscal year to date data by the 2nd calendar day after month-end with a turnaround time of 24 to 30 hours | |
| 2.4.2-06 | Have several times a year access to life to date data. Have access to that data by the 4th calendar day after prior Month-end with a turnaround time of 40 to 50 hours. | 3.3.2 |
| 2.4.2-07 | Provide a central source of data for SFA to satisfy audit trail requirements and meet SFA Target State Vision | |
| 2.4.2-08 | Provide an accessible source of data which provides SFA query capabilities | |
| 2.4.2-09 | FMS Manual intervention transactions will be reflected in stored data | 2.1.4 |
| 2.4.2-10 | Provide quality control in data storage | 2.2.2 |

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## Appendix F: Loan Servicing Account Mapping

Appendix F provides the matrix used to perform the account mapping between the SLSS TC and FMS account codes. This document, created and maintained by the FMS team will be provided on request.

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## Appendix G: 508 Compliance

Appendix G provides information regarding the Credit Data Mart's compliance with Section 508 of the Workforce Investment Act of 1998.

The following letter of commitment was delivered to the Department of Education by Microstrategy to address the open issues in attaining 508 compliance for their product.

**To:** The U.S. Department of Education

Denise Hill,
James Greene,
Rob Selvage,
Joe Tozzi,
Russ Young,
Nancy Krecklow,
Shyam Pai,
Christine Williams

**From:** MicroStrategy
**Date:** May 4, 2001

The purpose of this letter is to address the U.S. Department of Education's concerns over MicroStrategy, Inc. compliance with Section 508 of the Rehabilitation Act of 1973. Recently, MicroStrategy Web was submitted to the Technology Center for an Accessibility Review to ensure that persons with disabilities could use it. The web application was reviewed using the following assistive technology products:

- Screen reader used by the blind and visually impaired to access Windows 95/2000 (Jaws for Windows, Version 3.7).
- Screen enlargement program used by persons with low vision

According to the study (MicroStrategy 7 Installation and Configuration Report – 4/16/2001; EDNet Management Support Services Task
BPA 1, Task 001Task Order Number: ED-00-PO-2778 PCN: ED-001-JAK-1118), MicroStrategy is compliant in 6 out of 7 main categories. The only area in

which MicroStrategy was considered to be out of compliance is how MicroStrategy Web handles report display with the use of HTML tables.
From the study:
“This web application does generate onscreen reports in its present version, and while the data is readable, because the table is non-standard and not presented as an HTML table, one cannot move through the data using a screen reader and hear the headings or row titles.”
Currently, our reports are displayed using a Report Widget, which presents information in HTML using embedded tables that are difficult to linearize. While this provides us functionality and nice presentation, it is difficult for a screen reader to read the data cells within the Report Widget as they are layered.
We plan to address all of these issues in our next platform technology release, scheduled for Q4 (October – December) of 2001.
**Action Items:** In addition to usability studies performed in house, we would like an opportunity for further 508 compliance testing by the Department of Education. We would like to make at least two testing appearances to make sure that we are fully in compliance.
Below, please find a table with guidelines and gap analysis, where applicable, for 508 compliance.

| **Area of Assessment** | **Gap Analysis for MicroStrategy** | **Date Scheduled for Compliance** |
|---|---|---|
| KEYBOARD | Navigable for mouse actions, but not screen reader | By 12/1/01 |
| TIMED RESPONSES | N/a | N/a |
| ICONS/PULL-DOWN MENUS | Compliant | N/a |
| SOUND | N/a | N/a |
| DISPLAY | Compliant | N/a |
| LABELING | Compliant | N/a |
| REPORTS | Not currently readable by Screen Reader | By 12/1/01 |
| Skip Navigation | Not on all pages | By 12/1/01 |
| Replacement of Superflous Icons and “alt” tab | Appears on some icons | By 12/1/01 |

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## Appendix H: Data Dictionary