CMS Manual System	**Department of Health & Human Services (DHHS)**
Pub 100-20 One-Time Notification	**Centers for Medicare & Medicaid Services (CMS)**
Transmittal 1261	**Date: July 26, 2013**
	Change Request 8285

SUBJECT: Fee for Service Beneficiary Data Streamlining (FFS BDS) Local Beneficiary File Analysis

I. SUMMARY OF CHANGES: Request for all Fiscal Intermediaries (FIs), Carriers, Durable Medical Equipment Medicare Administrative Contractors (DME MACs), Part A and Part B Medicare Administrative Contractors (A/B MACs), Enterprise Data Centers (EDCs) and Shared System Maintainers (SSMs) to perform detail analysis, that allows the introduction of a Beneficiary Data Streamlining (BDS) into the Fee For Service (FFS) claims processing environment eliminating the local files.

Cross reference CRs 7548, 7611, 7712, 7895 and 8091.

EFFECTIVE DATE: January 6, 2014
IMPLEMENTATION DATE: January 6, 2014

Disclaimer for manual changes only: The revision date and transmittal number apply only to red italicized material. Any other material was previously published and remains unchanged. However, if this revision contains a table of contents, you will receive the new/revised information only, and not the entire table of contents.

II. CHANGES IN MANUAL INSTRUCTIONS: (N/A if manual is not updated)
R=REVISED, N=NEW, D=DELETED-*Only One Per Row.*

R/N/D	CHAPTER / SECTION / SUBSECTION / TITLE
N/A	N/A

III. FUNDING:
For Fiscal Intermediaries (FIs), Regional Home Health Intermediaries (RHHIs) and/or Carriers:
No additional funding will be provided by CMS; Contractors activities are to be carried out with their operating budgets

For Medicare Administrative Contractors (MACs):
The Medicare Administrative Contractor is hereby advised that this constitutes technical direction as defined in your contract. CMS does not construe this as a change to the MAC statement of Work. The contractor is not obliged to incur costs in excess of the amounts allotted in your contract unless and until specifically authorized by the Contracting Officer. If the contractor considers anything provided, as described above, to be outside the current scope of work, the contractor shall withhold performance on the part(s) in question and immediately notify the Contracting Officer, in writing or by e-mail, and request formal directions regarding continued performance requirements.

IV. ATTACHMENTS:

One Time Notification

**Unless otherwise specified, the effective date is the date of service.*

Attachment - One-Time Notification

Pub. 100-20	Transmittal: 1261	Date: July 26, 2013	Change Request: 8285

SUBJECT: Fee for Service Beneficiary Data Streamlining (FFS BDS) Local Beneficiary File Analysis

EFFECTIVE DATE: January 6, 2014
IMPLEMENTATION DATE: January 6, 2014

I. GENERAL INFORMATION

A. Background: Beneficiary eligibility encompasses Medicare data and business logic within the Medicare FFS environment that is accessed multiple times by multiple stakeholders throughout a claim's lifecycle. Beneficiary eligibility is checked at a minimum:

• By FFS Shared System (SS) prior to processing the claim using local files.

• By the Common Working File (CWF) system prior to determining utilization of benefits.

In June, 2011, at the request of senior CMS officials, the three shared system maintainers, HPES (MCS and FISS), ViPS (VMS) and 2020 Company (CWF) conducted a summit with CMS management representing a number of operating divisions. The maintainers collaborated to present numerous improvement ideas, with the end goal of finding efficiencies that will enable CMS to get the greatest benefit from the programming hours contracted each quarter.

One of the improvement ideas put forward was the development and use of a common eligibility service that would occur earlier in the claims lifecycle than the current CWF eligibility check. The maintainers proposed to consolidate the FFS eligibility functionality (currently residing in 4 different systems) into one shared service, accessible at the beginning of the claims adjudication process. This new service will be used by all 4 systems to eliminate duplicate or unnecessary processing.

Subsequent discussions took place between the maintainers, CMS and two A/B MACs also participated in the discussions, which further defined the Eligibility Service and ideas for a phased implementation.

Results from the research and analysis done as part of CMS CR 7548, 7611 and 7712, 'Fee For Service Common Eligibility Services Conference Calls and Research', are presented in Attachment 'A' Modified Options Paper.

As part of this CR, all Fiscal Intermediaries (FIs), Carriers, Durable Medical Equipment Medicare Administrative Contractors (DME MACs), Part A and Part B Medicare Administrative Contractors (A/B MACs), Enterprise Data Centers (EDCs) and Shared System Maintainers (SSMs) shall perform analysis to eliminate the multiple beneficiary data sources among all contractors. The pre-requisite to the data store reduction process is to allow the SSMs to connect to the CWF BDS System. The BDS system will be implemented in October 2013 via CMS CR 8091-C.

B. Policy: There is no policy change associated with this CR.

II. BUSINESS REQUIREMENTS TABLE

"Shall" denotes a mandatory requirement, and "should" denotes an optional requirement.

Number	Requirement	Responsibility											
		A/B MAC			DME MAC	FI	CARRIER	RHHI	Shared-System Maintainers				Other
		A	B	HHH					FISS	MCS	VMS	CWF	
8285.1	Contractors shall develop an analysis document for elimination of local shared systems beneficiary files. Contractors should include at least the following: 1. Contractor Name 2. System (FISS, MCS, VMS, Local Data Center) 3. File Name 4. Description of File and Data 5. Usage (how many times called for daily processing i.e., cycle on-line query, batch jobs, etc.) 6. Alternative solution to access the data from BDS	X	X		X	X	X	X	X	X	X	X	COBC, EDCs, HIGLAS
8285.1.1	Analysis shall include but not be limited to the following areas: 1. Correspondence systems 2. Financial processing including interface with HIGLAS 3. MSNs 4. COBC processes 5. Reporting 6. Non-Base 7. Etc.	X	X		X	X	X	X	X	X	X	X	COBC, EDCs, HIGLAS
8285.1.2	Completed analysis document should be submitted to Sylvia.Sampson@cms.hhs.gov and Sri.Anne@cms.hhs.gov, no later than, Monday, November 4, 2013.	X	X		X	X	X	X	X	X	X	X	COBC, EDCs, HIGLAS

Number	Requirement	Responsibility											
		A/B MAC			DME MAC	FI	CARRIER	RHHI	Shared-System Maintainers				Other
		A	B	HHH					FISS	MCS	VMS	CWF	
8285.2	Contractors shall identify edits that require local beneficiary data stores and analyze if any of the edits can be consolidated and moved to the BDS system.	X	X		X	X	X	X	X	X	X		EDCs
8285.3	Contractors shall attend 2 conference calls with the CMS to discuss the local shared systems beneficiary file analysis document to address any questions and/or issues before the final document is due to CMS.	X	X		X	X	X	X	X	X	X	X	COBC, EDCs, HIGLAS
8285.3.1	Contractors shall attend a conference call with the CMS to discuss the local shared systems beneficiary files analysis document on Thursday, September 19, 2013 at 3:00 p.m. Eastern to address any questions and/or issues before the final document is due to CMS.	X	X		X	X	X	X	X	X	X	X	COBC, EDCs, HIGLAS
8285.3.2	Contractors shall attend a conference call with the CMS to discuss the local shared systems beneficiary files analysis document on Thursday, October 17, 2013 at 3:00 p.m. Eastern to address any questions and/or issues before the final document is due to CMS.	X	X		X	X	X	X	X	X	X	X	COBC, EDCs, HIGLAS
8285.4	Contractors shall attend additional conference calls with the CMS to discuss the analysis documents received.											X	
8285.4.1	Contractors shall attend up to 2 additional conference calls with the CMS to discuss the analysis documents received.	X				X		X	X			X	COBC, EDCs, HIGLAS
8285.4.2	Contractors shall attend up to 2 additional conference calls with the CMS to discuss the analysis documents received.		X				X			X		X	COBC, EDCs, HIGLAS
8285.4.3	Contractors shall attend up to 2 additional conference calls with the CMS to discuss the analysis documents received.				X						X	X	COBC, HP EDC

III. PROVIDER EDUCATION TABLE

Number	Requirement	Responsibility							
		A/B MAC			DME MAC	FI	CARRIER	RHHI	Other
		A	B	HHH					
	None								

IV. SUPPORTING INFORMATION

Section A: Recommendations and supporting information associated with listed requirements: N/A

"Should" denotes a recommendation.

X-Ref Requirement Number	Recommendations or other supporting information:

Section B: All other recommendations and supporting information: N/A

V. CONTACTS

Pre-Implementation Contact(s): Sylvia Sampson, 410-786-6153 or Sylvia.Sampson@cms.hhs.gov (Sri Anne, Sri.Anne@cms.hhs.gov)

Post-Implementation Contact(s): Contact your Contracting Officer's Representative (COR) or Contractor Manager, as applicable.

VI. FUNDING

Section A: For Fiscal Intermediaries (FIs), Regional Home Health Intermediaries (RHHIs), and/or Carriers:
No additional funding will be provided by CMS; Contractors activities are to be carried out with their operating budgets

Section B: For Medicare Administrative Contractors (MACs):
The Medicare Administrative Contractor is hereby advised that this constitutes technical direction as defined in your contract. CMS do not construe this as a change to the MAC Statement of Work. The contractor is not obligated to incur costs in excess of the amounts allotted in your contract unless and until specifically authorized by the Contracting Officer. If the contractor considers anything provided, as described above, to be outside the current scope of work, the contractor shall withhold performance on the part(s) in question and immediately notify the Contracting Officer, in writing or by e-mail, and request formal directions regarding continued performance requirements.

ATTACHMENT

Centers for Medicare & Medicaid Services
Office of Financial Management
Provider Compliance Group
7500 Security Blvd
Baltimore, MD 21244-1850

FFS Shared Systems

Common Eligibility Services (CES)

OPTIONS PAPER

Version: 2.0
Last Modified: April 15, 2012

Document Number: CMS CR 7548- Common Eligibility Services Research

APPROVALS

Submitting Organization's Approving Authority:

	Bruce Hudson	02/02/2012	443-729-2916
Signature	Printed Name	Date	Phone Number

CWF Project Manager

The CMS Approving Authority:

	Sylvia Sampson	02/16/2012	410-786-6153
Signature	Printed Name	Date	Phone Number

CWF Project Officer / Government Task Leader

REVISION HISTORY

Version	Date	Organization	Description of Changes
1.0	02/02/2011	CWFM/2020 Company	Version 1.0
1.1	02/21/2012	CWFM/2020 Company	Version 1.1 – Updated based on comments from CMS via email on 2/16/2011.
2.0	04/15/2012	CWFM/2020 Company	Version 2.0 – Updated with responses to TRB comments

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1. INTRODUCTION

Beneficiary eligibility encompasses Medicare data and business logic within the Medicare FFS environment that is accessed multiple times by multiple stakeholders throughout a claim's lifecycle. Beneficiary eligibility is checked at a minimum:

- By FFS Shared System (SS) prior to processing the claim using local files.
- By the Common Working File (CWF) system prior to determining utilization of benefits.

In June, 2011, at the request of senior CMS officials, the three shared system maintainers, HPES (MCS and FISS), ViPS (VMS) and 2020 Company (CWF) conducted a summit with CMS management representing a number of operating divisions. The maintainers collaborated to present numerous improvement ideas, with the end goal of finding efficiencies that will enable CMS to get the greatest benefit from the programming hours contracted each quarter.

One of the improvement ideas put forward was the development and use of a common eligibility service that would occur earlier in the claims lifecycle than the current CWF eligibility check. The maintainers proposed to consolidate the FFS eligibility functionality (currently residing in 4 different systems) into one shared service, accessible at the beginning of the claims adjudication process. This new service will be used by all four systems to eliminate duplicate or unnecessary processing.

Two subsequent discussions took place between the maintainers and CMS. Two A/B MACs also participated in a third discussion, which was a day-long workgroup that further defined the Eligibility Service and ideas for a phased implementation. CMS has requested that the maintainers continue to collaborate and develop an alternative analysis paper, exploring at least two options for implementing the Common Eligibility Service (CES).

Results from the research and analysis done as part of CMS CR 7548, "Common Eligibility Services Research", are presented in this document.

2. REFERENCED DOCUMENTS

Table 1: Referenced Documents

Document Name	Document Number	Issuance Date
FFS Strategies for Eligibility Services Workgroup presentation slides		July 8, 2011
CMS CR-7548 – Common Eligibility Services Conference Calls and Research	CR-7548 in E-chimp	August 2, 2011
CMS 7712- Fee for Service Common Eligibility Services Conference calls and research.	CR-7712 in E-chimp	December 12, 2011

3. PURPOSE

This document is designed to examine multiple options to implement a consolidated and centralized Common Eligibility Service (CES) to support all FFS eligibility processing for the Medicare FFS Systems. It outlines the following:

- A general framework to gather the information required to present and select the best eligibility option for the FFS claims processing systems.
- Options for building and implementing a CES that is scalable.
- Justification for consolidating some of the data repositories for beneficiary eligibility for use by all FFS systems, thereby providing consistent beneficiary information throughout the claims processing lifecycle, and making it possible to eventually eliminate duplicated data resources and business logic processing across the FFS systems.

3.1 SCOPE

The scope of this document is to review the existing Medicare beneficiary eligibility business and systems processes and to provide various alternatives for incorporating a centralized common eligibility service for FFS claims processing.

3.2 DOCUMENT ORGANIZATION

This document is organized as follows:

- Section 1 provides an introduction on why this paper is being prepared and what is to be accomplished
- Section 2 details the referenced documents
- Section 3 describes the purpose and organization of this options paper
- Section 4 identifies the overall project assumptions and constraints
- Section 5 provides an overview of the current FFS Claims eligibility processes
- Section 6 presents the CES Alternative Analysis components
- Section 7 presents the Conclusions and Recommendations
- Section 8 presents the Implementation Approach
- Section 9 presents the Benefits and Risks of CES
- The Acronyms List defines the acronyms used in this document.
- Appendix A presents the CWF 2011 ORPT Production Edit Error report by Error percent
- Appendix B presents the CES Edit Errors selected for Phase-1 implementation
- Appendix C presents the FFS Part-A, Part-B and CWF Production cycle statistics

4. ASSUMPTIONS AND CONSTRAINTS

4.1 ASSUMPTIONS

The following assumptions guided analysis during development of this Options Paper.

- The primary objective of this project is to provide a single service to determine the eligibility of a beneficiary during the FFS claims processing.
- There is sufficient network capacity and processing to handle eligibility inquiry and response transmissions within the FFS network.
- Changes to the FFS legacy systems to incorporate the CES are acceptable.
- An increase in the utilization of CPU resources in claims processing due to the provision of a single service is acceptable.
- The CES will conform to the CMS Technical Reference Architecture.
- The CES will be considered as an integral part of the claims processing subsystems and thereby must not hinder any of the maintainer and operational SLAs.
- The CES architecture must support multiple users using both online and batch queries.

4.2 CONSTRAINTS

The following constraints guided analysis during development of this Options Paper.

- Target Performance Constraints:
  - CES will process and return each eligibility inquiry in a real time mode. The CES hardware and software architecture will be developed in accordance with this constraint.
  - It is anticipated that the Shared Systems' and CWF average processing time per claim (i.e., time per cycle / number of claims processed in the cycle) may increase after CES implementation.
- The CES must comply with the CMS Security guidelines.

5. OVERVIEW OF CURRENT CLAIMS ELIGIBILITY

This Section describes the current Medicare FFS systems that will utilize the CES for determining eligibility during claims processing.

5.1 COMMON WORKING FILE (CWF) ELIGIBILITY PROCESSING OVERVIEW

CWF has multiple online and batch processes for checking beneficiary eligibility**.** CWF claims processing performs two eligibility checks during the cycle, which are listed below. The eligibility logic reads the CWF beneficiary file and several CWF auxiliary files. The CWF beneficiary files carry current beneficiary information. Updates to the CWF beneficiary files are received daily from CMS Enrollment Database (EDB) and Coordination of Benefits (COBC) system. The CWF auxiliary files contain information pertaining to other beneficiary entitlements such as MSP, ESRD and MCO. At the end of each day's cycle, an eligibility extract file is created and sent to Common Medicare Environment (CME) and Next Generation Desktop (NGD).

1. **CWF Daily Cycles** - CWF performs eligibility checks within the nightly claims processing cycles on all Part A and Part B/DME claims and maintainer transactions received from the MACs and legacy contractors. The nine CWF host sites process more than four million claims per night which result in over four million batch eligibility checks.
2. **HELG –** This Part B Eligibility System allows Part B MACs and legacy contractors to request beneficiary eligibility through a batch process executed in the daily CWF cycles. This system provides limited eligibility information, that includes HICN, name, gender, entitlement, deductible and HMO enrollment information, to contractors who request eligibility on a beneficiary. The batch HELG system maintains information on up to 10 contractors who previously requested eligibility on the beneficiary and automatically sends an eligibility response if deductibles or HMO entitlements change. At this time the HELG transaction response is not accessed by the Shared Systems.

5.2 FISS PART A ELIGIBILITY PROCESSING OVERVIEW

The FISS system stores beneficiary eligibility data on ten internal FSSFBEN* VSAM files. When a claim for a new beneficiary is processed, a shell record is created for initial processing. Once the claim is transmitted to CWF, this shell record is updated from the CWF response to contain the current eligibility information. Certain fields on this shell file can be updated by MAC clerks, such as beneficiary address, but CWF claim responses are currently the only way eligibility data from CWF is updated on these files. Therefore, the eligibility data stored on the FISS internal files is only as current as the last adjudicated claim. For this reason, most eligibility editing has been removed from the FISS system, which now relies on CWF for accurate eligibility editing.

The internal eligibility files are also accessed for a variety of batch functions, such as generating internal reports, MSNs, COBC, HIGLAS and IDR extracts, CFO reporting, and the ECPS batch editing process.

5.3 MCS PART B ELIGIBILITY PROCESSING OVERVIEW

MCS retains an internal eligibility file and Medicare Secondary Payer file. These internal files are used in the preliminary editing for both online and batch processing. They are updated and retain the most current information received from CWF during each cycle from claims data and other trailer information.

Internal eligibility file information is accessed to send to HIGLAS, to populate the MSN beneficiary address, and to correct local information not yet received from CWF for current claim processing.

While MCS does utilize these internal files for initial processing, once the claims are transmitted to and processed by CWF, the CWF eligibility information is subsequently applied on the claims. The internal MCS files are used to identify potential errors in submission and entry earlier in the process, but ultimately it is CWF data that drives eligibility determination for each claim processed.

5.4 VMS DMEPOS ELIGIBILITY PROCESSING OVERVIEW

VMS also retains an internal beneficiary master VSAM file. Within the current VMS system, beneficiary eligibility is checked early in the on-line editing process of the claim using this beneficiary master File. The file contains the information related to the beneficiary that is current as of the last time a claim was sent to CWF on behalf of this beneficiary. Therefore, the information is not as current as the data that resides at CWF for a given beneficiary. In addition, if the beneficiary is new to this jurisdiction, the DME MAC will have no record to verify against and assumes the beneficiary is eligible. Carriers/MACs do however have the ability to update a beneficiary's date of eligibility, birth, and date, as well as, their address in response to a call from the beneficiary.

Once the claim is processed through the VMS on-line edits and all edits have been resolved, it is processed by the nightly batch cycle. During the cycle, the claim is processed against the current claim history file for additional beneficiary editing and utilization. When all editing and utilization processing is complete, a query is created to be sent to CWF for processing. Once CWF makes a decision on the claim, a reply is created and sent back to VMS for processing and updates to the local VMS beneficiary master file. During the next nightly batch cycle, after processing the reply from CWF, the claim will either be finalized or, based upon CWF edits, reprocessed.

5.5 CURRENT SHARED SYSTEM CYCLE BENCHMARKS

Adding "service requests" to any system has the potential to impact the overall throughput of the system. In the case of a shared system CES, there will be many edits that are moved from one or more of the Shared Systems into the CES. There will be network latency, as illustrated in Figure

1 below, when the Shared Systems make the requests for those edits at runtime. Processing will be dropped from the Shared Systems, and processing will be added to CES. Ideally, the latency will be minimal, and the processing changes will offset one another.

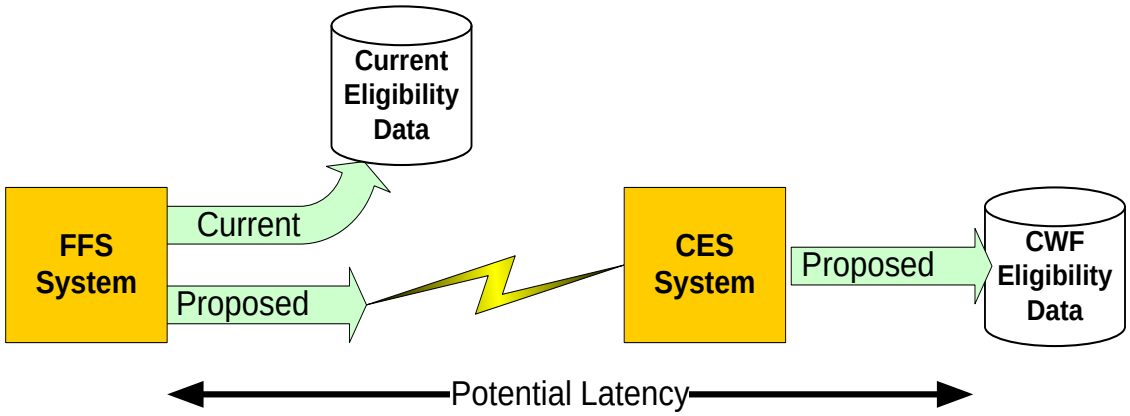

Figure 1: Potential Network Latency

A well-designed implementation plan will include a benchmark that is tested before and after the new software is introduced into each environment in order to assess the latency. To this end, the FFS SSM Workgroup together decided to use the metric "claims per second" as a benchmark for comparison, and identify the components within each system to measure for that benchmark.

It should be noted that each system will measure "claims per second" by measuring runtime within the modules that are impacted by the applicable eligibility edits, and that the placement of those modules varies from system to system. As a result, the metrics cannot be compared across the three Shared Systems – they will only be useful as a metric to determine latency within a given Shared System. In practice, the measurements will be captured before and after cycles in the FFS "TEST" environments. For consideration in this paper, the sample measurements below were collected from the current "PROD" environments of FISS, MCS, VMS and CWF.

- The FISS benchmark will run the FSSA process (online adjudication), specifically the FSS1 transaction. Current production statistics are as follows across five workloads, of varying sizes, with an average of 6.3 claims processed per second.

Table 2: FISS Operations

Workloads	Number of Claims Processed	Wall clock time (hh:mm) to process the workload
1	16,075	1:22
2	8,167	0:17
3	10,891	0:20
4	4,487	0:06
5	15,212	0:19

- The VMS benchmark will run the CICS sequential terminal transaction VMSQ. Current production statistics are as follows across 5 days of Jurisdiction C processing accumulated

across all 8 sequential terminals resulting in an average of 5.26 claims per second for the 608, 024 claims.

Table 3: VMS Operations

Date	Number of Claims Processed	Wall Clock time (hh:mm:ss) to process all claims
10/19/11	117418	5:47:12
10/20/11	84417	7:01:15
10/21/11	120740	4:55:44
10/24/11	119489	4:34:18
10/25/11	165960	9:46:57
Totals	608024	32:05:26

- The MCS cycle includes the jobs from DA00 through the DV44 or DD20 job depending upon which job finishes last. The mainline jobs are DA10 through DD18 as they perform a majority of the eligibility processing against claims. The time and claim count for the early front-end and MPAP jobs were also taken into consideration. The claim count was determined by using the average of the claims processed in the DA10, DA20, DB10 and DD18 jobs. The following table shows the claims processed per second based upon cycle size and the MCS overall average for the entire cycle and just the mainline processing. For the 35 MCS cycles there were a total of 6,356,000 claims processed per day with an average of 11.028 claims processed per second.

Table 4: MCS Operations

Average counts for a week based on Cycle Size	Wall clock processing - Average claims processed in a second	Wall clock processing - Average claims processed in a second for Mainline	Daily Claim Volume
Small	0.367	1.266	4,500
Medium	8.688	14.144	180,000
Large	8.539	10.729	472,000
Overall	6.964	11.028	6,356,000

- The CWF operational cycles were reviewed for 5 days across all nine host sites including both ISA and OSA jobs. Current production statistics across 5 days for a single host resulted in an average of 24.7 claims per second. Current CWF production statistics across all MAC contractor workloads of varying sizes processing a total of 5.5 million claims per day are as follows:

Table 5: CWF Operations – Across 9 Hosts

Cycle Dates	Claims Processed	CPU Processing Time- (minutes)	Wall clock Processing Time- (minutes)
11/28/2011	5,555,731	999.17	2,115.33
11/29/2011	6,218,498	967.78	2,284.16
11/30/2011	5,073,211	774.67	1,730.38
12/1/2011	5,680,274	1,039.51	2,141.17

12/2/2011	5,216,168	1,042.89	2,003.84
Average per day	5,548,776	965	2,055

5.6 SUPPORT JUSTIFICATION FOR CHANGE

It is necessary for a claim to go through one or more iterations of eligibility checks throughout its lifecycle. Within the FFS process, the claim is subjected to multiple redundant eligibility-checking systems that utilize various other redundant data resources (e.g., entitlement, MSP). This has resulted in multiple interpretations and instances of eligibility business logic and multiple beneficiary eligibility files across the FFS systems where CWF-returned data is used to populate those local files. Additionally, eligibility and other beneficiary data in these files is updated by Carrier/MAC staff if the beneficiary calls to have certain fields changed. (e.g., address, Date of Birth, Date of Death).

To maintain consistent information throughout the claims lifecycle and save resources, the following features are needed:

- A common data repository that the Shared Systems can query for determining beneficiary eligibility;
- A consolidated set of logic conditions that determine beneficiary eligibility; and
- An architecture that provides a shared eligibility service that can easily fit within the FFS claims processing system without negatively impacting the daily cycles.

The following sections describe the group's approach to developing a CES that will meet these needs, starting with the components most necessary to define the envisioned processing, the architecture and data sources; identification of the implications, advantages and disadvantages to the current systems and business processes; and the implementation approach that is least risky to all stakeholders.

6. ALTERNATIVE ANALYSIS COMPONENTS

The three components below are the driving factors in the analysis of CES alternatives:

a. Choosing the best data source,
b. Designing an optimal technical architecture, and
c. Choosing the best method of incorporating CES into claims processing business/system functions.

Each Medicare FFS System (FISS, MCS, VMS and CWF) has one or more business/system functions and data sources associated with determining eligibility and entitlement. Section 7 lists the alternatives based on the best combination(s) of these key factors from which the team will recommend the most suitable alternative for CES.

6.1 DATA SOURCES

Analysis indicates four potential data sources for consideration that contain some or all of the beneficiary eligibility and entitlement data. Each data source is discussed in the sections below.

6.1.1 The CWF Beneficiary files

The existing CWF beneficiary and auxiliary files contain all data needed for performing eligibility and other claim non-history edits. The CWF is updated by the latest information in the Enrollment Database (EDB) which contains the most current enrollment, entitlement and utilization information on the beneficiaries. CWF also contains information related to the beneficiary supplemental insurance and will flag the records that need to go to the Coordination of Benefit Contractors (COBC). Although CWF contains the latest updates from EDB, it can be approximately two to three days behind real time data (two days behind EDB, which is one day behind SSA). Figure 2 below illustrates the beneficiary data movement across the CMS data stores as they pertain to the FFS systems..

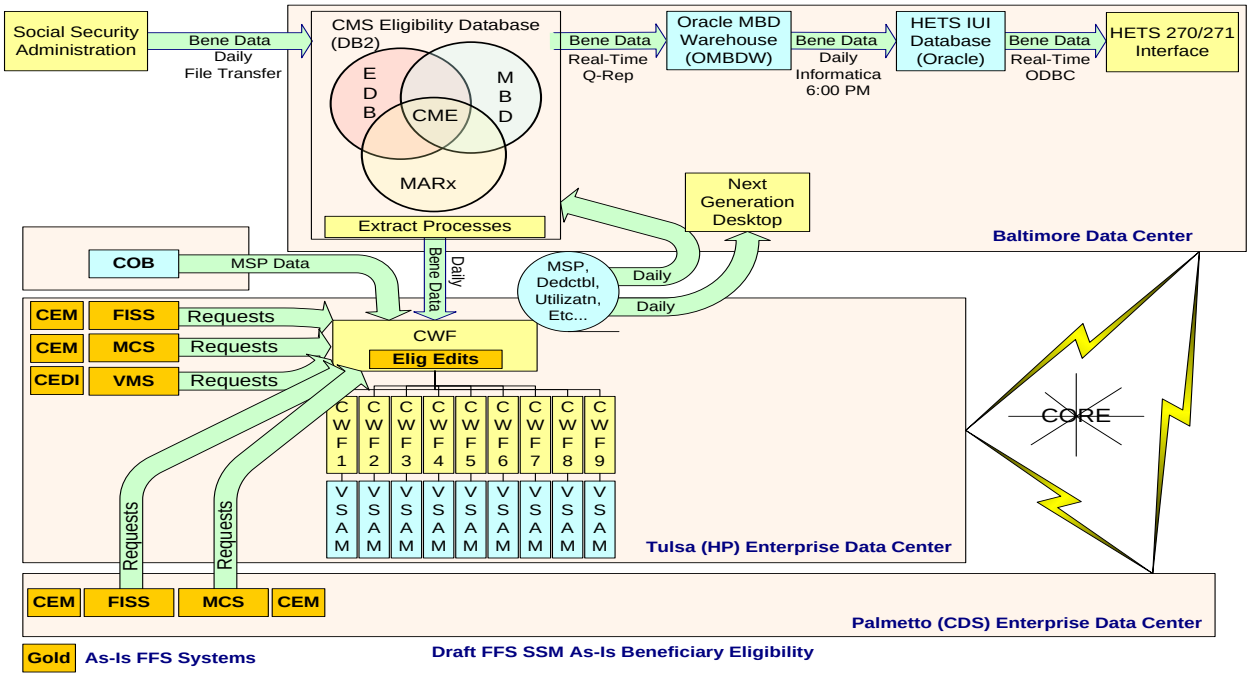

Figure 2: Beneficiary Data Movement

The CWF data set offers direct access through CICS, which will require the least customization to support the CES' data access requirements. However, the CWF VSAM files are distributed within the nine CWF host sites, forcing the CES to establish the CWF Host ID accurately prior to accessing the data. While this distribution adds to data access complexity, it allows for parallel processing which supports CES' considerable I/O requirements. This data source may cause contention and latency due to the anticipated addition of over 4 million Shared System CES eligibility transactions processed throughout the day, unless additional processing resources are added to the existing CWF Host regions.

6.1.2 The Common Medicare Environment (CME):

The CME is a z/OS mainframe-based relational DB2 database that houses beneficiary eligibility data at the CMS Baltimore Data Center (BDC). An Application Programming Interface (API) is used to facilitate system-to-system communication and to share and update beneficiary demographic and entitlement data with other CMS systems. Like CWF, the CME currently receives its beneficiary data from EDB and CWF. Access to the CME from the CES would require another layer of communication to the BDC (either directly from the Shared Systems or via CWF) and may therefore cause delays in response times. An alternative solution to explore accessing HETS via web services and/or messaging queues across the CORE network to allow CES to access data from CME. In addition, preliminary analysis indicates that the CME database does not contain all the necessary data that may be required to implement some of the edit enhancements at the CES. For example, the Montana Pilot program (that allows persons who have been affected by asbestos related disease as a result of exposure in Libby Montana to

enroll in Medicare) for which CWF receives data from EDB. This data is used by Noridian to verify information on Beneficiaries eligible for the Montana Pilot program.

6.1.3 A CES Operational Data Store:

In addition to the data sources currently available, CMS could create a new data source specifically for the CES. The CES Operational Data Store (ODS) would contain up to date beneficiary data and some of the auxiliary data. Such data is already being extracted by CWF at the end of each daily cycle to send to CME and NGD.

Existing CWF VSAM data can be ported to a separate CICS region and distributed into 10 files by beneficiary HIGIT (i.e., the last digit of the SSN). Ordering the files by HIGIT and not by Host ID (as with current CWF files) will eliminate the further transmission of the query not found at the primary host to a secondary host. Alternatively, the operational data store can be created as DB2 tables. VSAM is only preferable to DB2 at this time because it is not currently installed for FFS at both the EDCs.

By building an ODS, the data file can be designed specifically to meet the needs of the CES and facilitate efficient access to the CES business functions by Share Systems. This data store will have no contention with CWF applications and cycles – significantly reducing the risk of latency in system response time.

The first task in the CWF daily cycle is to update the CWF beneficiary master with EDB changes. The CES data store would be updated once each day at the end of the cycle.

6.1.4 The HETS IUI Database:

The HETS IUI is an Oracle database hosted at the BDC that houses only beneficiary eligibility data. HETS currently receives its beneficiary data from CMS Common Table and CWF. HETS offers an extranet-based X12N 270/271 Eligibility System for high volume transactions to check Medicare eligibility. The X12 interface with HETS for the CES is not an ideal solution to interface with HETS for claims processing. The preferred solution is to explore accessing HETS via web services and/or messaging queues across the CORE network to allow CES to access data from HETS IUI. Like the CME alternative, access to HETS from the CES will require another layer of communication to the BDC and may cause delays in response times. The HETS IUI database also does not contain all the auxiliary data that may be required to perform non-eligibility type edits at the CES.

At the request of CMS, the team performed a "*100-Beneficiary Test*", described in Section 6.1.4.1, that extracted and compared eligibility data information from the HETS and CWF systems. Due to time constraints, the team could not perform similar tests with CME.

6.1.4.1 Eligibility Production '100-Beneficiary' Test:

Both CWF hosts and HETS MEIC were provided with a list of 100 beneficiary IDs for which data was retrieved from respective repositories during the same week. CWF retrieved current and history beneficiary and claims information while HETS retrieved eligibility data for the time

period third quarter of 2009 through first quarter of 2012 for each beneficiary ID. The CWF data was provided in EBCDIC format and the HETS data was provided as X12 270/271 layouts.

Due to variation in record formats and data, the CWF maintainer (CWFM) performed a manual review to compare data on random beneficiary records. Upon comparison and review of beneficiary data from both HETS and CWF, the following discriminators have been identified in the areas of data format, data latency and data element for both systems.

Data Formats

- The Shared Systems currently share the same technology (IBM Mainframe) and data format (EBCDIC) as CWF. This enables the CWF data source to easily adapt to the new eligibility requests using native mainframe interfaces, copybooks and formats.
- In order to retrieve data from HETS, a web services and/or messaging technology needs to be explored.

Data Latency

- Both the HETS IUI and the CWF data stores have a similar 1-day latency from the mainframe DB2 CME database. Each data source has some data elements which are available earlier than the other, but they are generally comparable.

Data Elements

- The CWF data source contains all claim data elements required for eligibility, entitlement, as well as utilization determination. The HETS database only contains those data elements that are required to determine beneficiary eligibility and is basically utilized by providers and contractors to verify eligibility prior to processing the claims by FFS systems.
- The Shared Systems expect that eligibility information will be returned by CES to support their claims adjudication processing.
- Data elements were compared one-on-one for randomly selected beneficiaries from the 100-bene test data pool. While most of the information for data elements compared between HETS and CWF matched, there were some variances that were noted. Table 6 depicts the data information areas in CWF and HETS along with variances noted based on the 100-beneficiary eligibility test data.

Table 6: CWF vs. HETS 100-Beneficiary Eligibility Data Comparison

Field	CWF	HETS	Remarks
HIC Number, Name, Sex, Date of Birth	√	√	
Host ID	√		Not available in HETS. Required for CWF only – OSA query processing
Current Entitlement dates	√	√	
Prior Entitlement dates	√	√	

Field	CWF	HETS	Remarks
Inactive Status - Date of Death, Incarcerated Deportation, Alien	√	√	
Lifetime Reserve Days	√	√	
Lifetime psychiatric days	√		Psychiatric days remaining not available in HETS
Days remaining – Hospital, SNF (Full and Co-insurance)	√	√	
Cash deductibles	√	√	HETS returns deductible remaining. SS require deductible applied to be returned to ensure correct pricing of the claim.
Blood Deductible data	√	√	
Dates of earliest and latest billing	√	√	
Rehab data	√	√	
Preventative Services	√	√	
Therapy data	√	√	
Home Health data / Home Health Plan of Care	√	√	HETS does not return Home Health Part A visits remaining and Part B visits applied that is currently returned during claims processing to SS to ensure claim meets Home Health requirements.
MSP and other Insurer data	√	√	HETS returns limited MSP data elements – enrollment dates, insurance policy/address info. CWF returns all MSP data elements in the CWF MSP file including employer data , validity indicator, etc.
Prescription Drug Data		√	CWF does not carry Part D Prescription drug data. These fields are informative and are not required at this time for processing claims by SS.
MCO Data	√	√	
Screening Data	√	√	
Smoking Cessation data	√	√	
Hospice Data	√	√	HETS returns a series of “contiguous hospice periods” into one whereas CWF returns each hospice period separately along with additional hospice information to the SS via trailers, e.g. first and second Provider ownership, etc.

Field	CWF	HETS	Remarks
Data Indicators	√		Not available in HETS. The beneficiary data indicators are received at CWF from EDB and used during claims processing cycle to determine additional beneficiary entitlement and demographic data. For example phase-1 edit 5211- Claim from and through date is greater than DOD checks beneficiary data indicator five to equal '1' or '3'.
Part A & B Claims History indicators	√		Required for future phases to determine if the beneficiary has A or B claim history information.
Representative payee data	√		HETS does not return representative payee information. VMS initial analysis requires beneficiary residential state for pricing. CWF can return beneficiary or representative payee address data.
Other Auxiliary data used to determine services or procedures utilized or covered including Demonstration projects	√		Some of the auxiliary data resident at CWF are: - VISION Demonstration Project to cover low vision rehab - Disease Management Program - Veterans Administration Claims utilization or overlap
Data required for future CES phases	√		Claim based data

6.1.5 Data Sources Recommendation:

The four potential data sources described in sections 6.1.1 through 6.1.4 will each have potential benefits and risks with respect to the new CES. Because CMS wants the Eligibility edits consolidated, the impact will be isolated to the service itself as opposed to the three Shared Systems that will "consume" the service.

After assessing the relative advantages and disadvantages of each data source, the Common Working File (CWF) data is recommended by the FFS SSM Workgroup as the best choice as it offers the most current direct access to the most comprehensive and up-to-date beneficiary and claims data. In addition, the CWF houses all data in a distributed setting by host type and is designed to support high volume, concurrent mainframe access.

The distinguishing factors for each of the data sources are summarized in Table 7 below:

Table 7: Data Sources Comparison

FACTORS	CWF	CME	HETS	New CES Data Store
Content	- Contains Current beneficiary information - Contains all beneficiary eligibility and auxiliary data - Contains Claims history data for potential future CES processing	- Contains all relevant eligibility data. - May not contain all the CWF Auxiliary data - Does not contain claims history	- Contains all relevant eligibility data. - May not contain all the CWF Auxiliary data - Does not contain claims history	- All information needed to edit for eligibility and auxiliary data will be developed. - Will not contain claims history - Establish new CICS region
Access and Storage Method	- VSAM	- DB2	- ORACLE	- DB2
Physical Location	- Tulsa, OK EDC – - Multiple Host CICS Regions	- Baltimore Data Center	- Baltimore Data Center	- Tulsa, OK EDC – - Single CICS region
Data Latency	- 12-24 hours	- 12-24 hours	- 12-24 hours	- 12-24 hours
Development Needs for data access	- None. Current CWF I/O modules will be used	- Access to CME needs to be developed in CES - Access to CWF files for data not in CME	- New access to HETS to be developed in CES - Explore web services and/or messaging	- Customized I/O modules
Benefits	- Most current beneficiary information - MAC cycles at Tulsa, OK EDC and Columbia, SC EDC can access the data	- Centralized database that many users go to for beneficiary data. - Current beneficiary profile information	- Centralized service that is used by Providers and Clearing houses - MACs receive the same data as is available to other HETS users	- Current beneficiary information with customization to include additional data elements - No access contention with other systems
Risks & Disadvantages	- Data is distributed within 9 host regions – 10 files each - Contention with CWF production - Possible delayed response times	- Additional connectivity layer. CES connect to the BDC to access the CME for each query - Delayed response times - No claims data	- Additional connectivity layer. CES connect to the BDC to access the HETS for each query - Delayed response times - No claims data	- Duplication of CWF data with the beneficiary master file - Creation of DB2 database and software is costly - No claims data

6.2 TECHNICAL ARCHITECTURE

Based on the assumptions and constraints listed in Section 4, the CES will be hosted as a z/OS-based IBM mainframe system that will control the flow of all data and eligibility edit transactions from the Shared Systems with the possibility of additional users in the future. The architecture as shown in the Figure 3 below is being proposed by the team to allow the MAC daily cycles to communicate directly with the CWF host sites to perform eligibility edits at multiple points in the lifecycle of each claim.

6.2.1 Service Communication Architecture

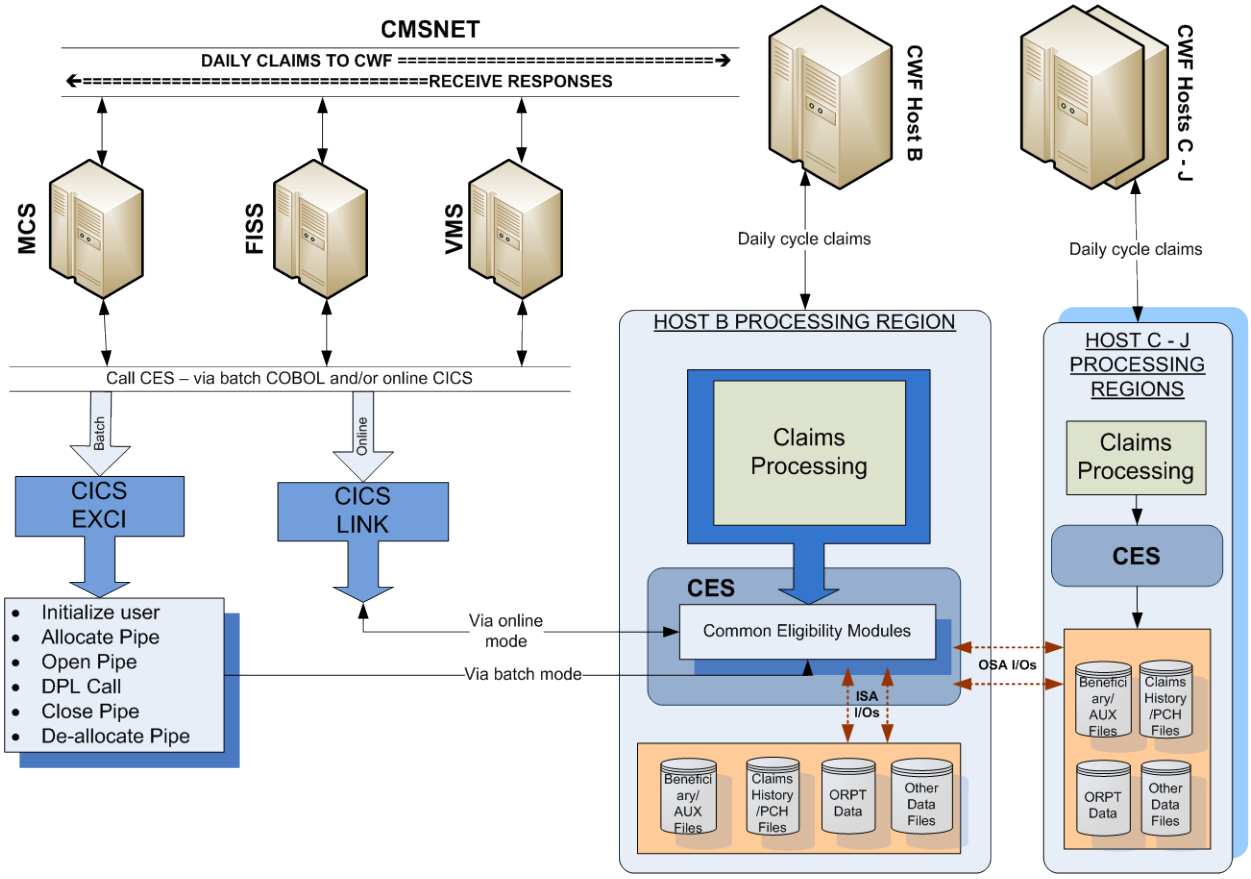

Figure 3: CES EXCI Communication

The proposed architecture will use the CWF host sites to execute the common eligibility services. The method of communication between client(s) and server (or "consumer and service") will initially be via CICS EXCI and LINK commands. EXCI refers to the External CICS Interface. This interface for batch has been around for a long time and it allows a non-CICS program to call a CICS program, and pass information back and forth via the program's COMMAREA. The non-CICS program (often a batch program) is considered the "client", and the CICS program is considered the "server."

The EXCI CALL interface uses following six commands:

- Initialize User
- Allocate Pipe
- Open Pipe
- DPL Call
- Close Pipe
- De-allocate Pipe

A standard CICS LINK will be used to link to the program in the CICS region for online eligibility queries.

Eventually, the CICS EXCI and CICS LINK commands can be wrapped with web service and/or messaging calls.

6.2.2 CES Software Architecture

The CES software will be structured as a mainframe COBOL/CICS query system that can return a variety of information to the Shared Systems. The CES will be architected to perform two main functions as depicted in Figure 4 below:

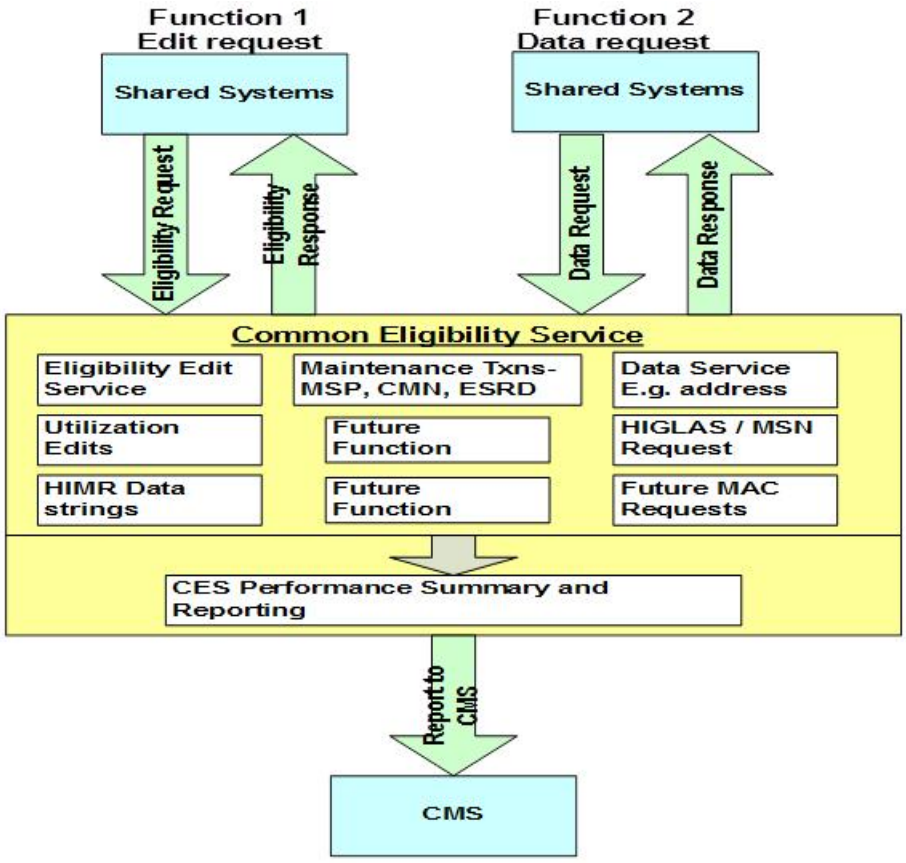

Figure 4: CES Software Architecture

Function 1 – Edit request

1. The Shared System can request the CES to perform a set of edits such as eligibility and entitlement (Phase-1 edits). The CES will perform the edits and return a response along with pre-determined data elements back to the Shared Systems.
2. The CES edit request/response format will be flexible enough so that a Shared System has the option to request in either batch or online mode that:
    a. CES perform a single type of edit (e.g. eligibility only)
    b. CES perform a group of edits (e.g. eligibility & utilization)
    c. CES return only the CWF disposition code and error code
    d. CES return CWF disposition code, error code and specific trailer or all trailer data such as MSP, or HMO, or Hospice data

Function 2 – Data request

1. The Shared System can request the CES to provide beneficiary or other data that will be utilized in the Shared System adjudication processing by providing a HICN and optional processing data. The CES will retrieve beneficiary and/or auxiliary/claim data from the CWF data files and return in a pre-determined format back to the Shared Systems.
2. The CES data request input format will be flexible so that a Shared System has the option to request non-adjudication data specific to their need in a batch or online mode, such as:
    a. Specific auxiliary data, such as beneficiary address, representative payee data, MSP, HMO, CMN or other.
    b. Specific combinations of data such as start and end dates for MSP entitlement, Hospice periods, HH episodes, etc.

The CES will have a modular structure with a design strategy in which the software components are composed of relatively small and autonomous routines that fit together. At a high level, the CES System will consist of three main functions to receive queries, process queries and send query responses back to the Shared Systems. Temporary storage queues will be used to manage query data within the host environments. Functional routines such as consistency edits, eligibility edits, data requests, and response creation will be independent of each other.

Once an edit is coded in CES, all areas of CWF that perform the edit logic will call the appropriate CES module to perform the same function, thereby eliminating duplication in existing CWF code.

The CES will be structured to be scalable to ensure that it can process more workload, with a proportional increase in system resource usage. All processing will be done in a real-time or pseudo real-time (batch) mode where transactions that are sent via EXCI or LINK are responded to without human intervention for scheduling batch jobs.

For each phase of implementation, CWFM, with input from the Shared Systems maintainers and CWF Host Operations will review the CWF host CICS resource allocation and expected usage and recommend resource or operational adjustments.

The CES System modules will access the Common Working File (CWF) data stored on the CWF Hosts at the Tulsa, OK EDC. The Shared Systems will direct the query to the MAC primary host site by entering the "Host ID" on the input record. If Host ID is not provided on the input record, CWF will identify the location of beneficiary data at remote Hosts based on information available in the local Host's "True Not in File" (TNIF) records. The query will then be transferred to the appropriate host determined by the TNIF record. CES will not initially perform any updates to the CWF master files.

CES will capture statistics for the transactions processed on a daily basis and provide periodic reporting to CMS.

CES functions will be implemented in phases that will span one or more FFS quarterly releases. Each phase will undergo a full CMS system lifecycle process from planning what is required by the Shared System, providing CMS with the business case, generating a change request through development, testing and implementation.

6.3 INCORPORATION OF CES INTO EXISTING BUSINESS/SYSTEM FUNCTIONS

The Shared Systems maintainers and CWFM will implement new code for creating and accessing the CES in a manner that is most optimal for each system and which best reduces any potential latency or unnecessary processing. The information required by Shared Systems and data layouts for generating the Shared Systems' call to the CES shall be agreed upon between all the maintainers during the analysis and requirements development phases of CES implementation.

Each Shared System utilizes eligibility in several facets of processing which shall require interfacing with the CES at intermediate points during processing. The team's adopted approach will drive the interface points required for each of the Shared System function to be implemented in phases. The multiple interfaces and claims processing functions to access CES which will be gradually moved into production in phases are described in Section 6.3.5 – Future Options.

Sections 6.3.1 through 6.3.4 describe how the Shared Systems and CWFM will update their systems to access CES to determine beneficiary eligibility early in the claims processing lifecycle, prior to adjudication of claims. This process is defined as Phase-1 beneficiary eligibility edits using CES, as shown in Figure 5, and will be the first set of edits implemented with the creation of the CES.

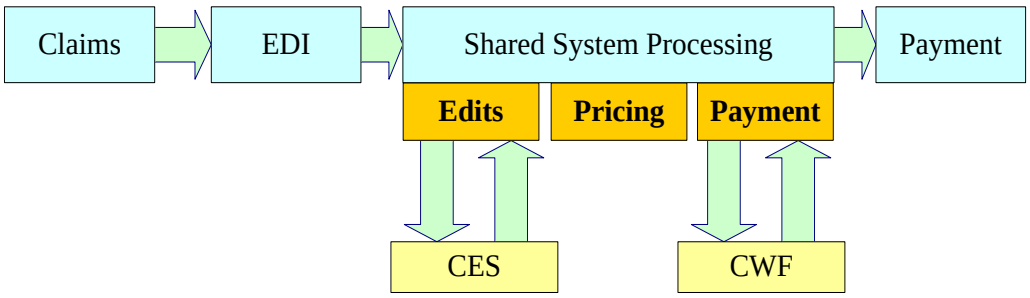

Figure 5: Phase-1 Shared Systems business process

The transition to sole use of the CES (i.e., a state in which all beneficiary edits and data have been moved from Shared Systems to the CES) is a large undertaking and will require a phased transition of processes to use of that service. Until complete transition occurs, Shared Systems shall retain and maintain their internal eligibility file so that the processes which will not be included in Phase-1 will still function as before.

Based on resources available and volume of transactions, each Shared Systems will access CES via batch and/or online modes. Each system will optimize their process to minimize the number of calls to CES.

6.3.1 MCS

Phase-1 Suggested Approach

This section defines the MCS functions that require immediate eligibility information and the suggested solution for addressing this need.

MCS is a batch claims adjudication processing system and the primary method for accessing the CES from a batch system is the EXCI interface. A risk identified for utilizing the EXCI interface is the potential to add significant time to the Part B claim adjudication batch cycle due to large claim volumes. To handle the needs for immediate eligibility information, an MCS interactive module (wrapper module) will be created to access the CES.

The MCS Phase-1 approach, as shown in Figure 6, performs the initial CES calls for Common Edits Module (CEM) generated claims (electronic claims) and MCS on-line generated claims (adjustments, data correction, and data entry) called by CICS, using a CICS LINK. These CES calls are received as collected rather than waiting for the MCS batch. Remaining claims coming from batch sources (recycled claims, batch adjustments, etc.) will initially call CES from MCS' Front End system using the EXCI interface. This option will not interfere with existing CEM processing.

The eligibility request calling the CES will be passed utilizing an agreed upon copybook for the linkage communications area. Once received, the CES will edit each eligibility request. A transaction communication process will be developed and agreed upon for accepted and rejected transactions. The CES will return the edit results and requested eligibility data back to the calling MCS program within the linkage area.

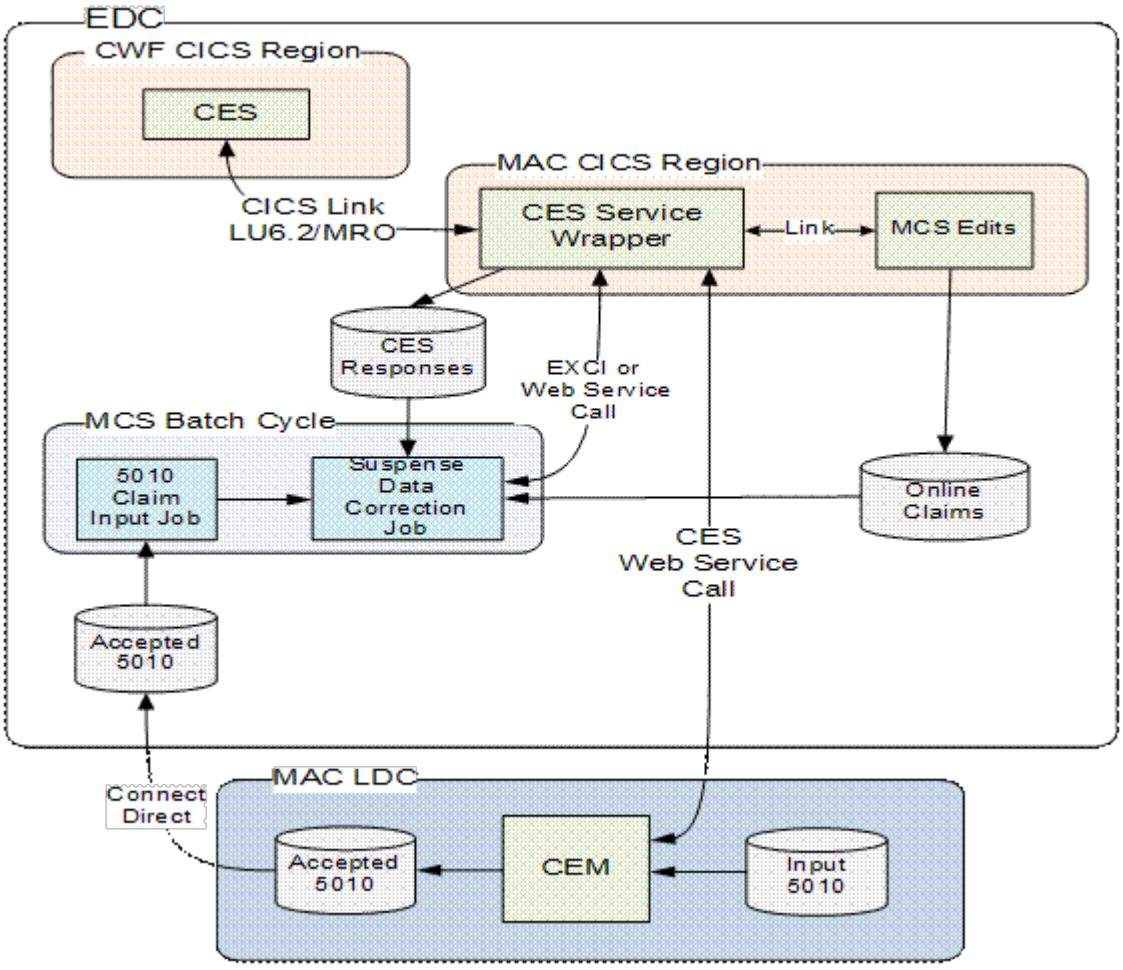

Figure 6: CICS Web Services function

For MCS CEM generated claims (electronic claims) the following process will be developed to invoke the CES:

- Instead of a Connect Direct (NDM) of the claims processed by CEM from Local Data Center (LDC) to EDC they are sent via HTTPS to the appropriate MCS CICS region as part of the web services call.
- Using the CICS Web Services a newly developed wrapper program (see more details on the wrapper program below) would be invoked in the MCS CICS region.
- The wrapper writes the input records out to a file in the MCS CICS region as they are received.
- The wrapper program takes in the input data passed to it via the COMMAREA and appropriately formats and executes a CICS LINK to the CES with the appropriate CES COMMAREA.

- The CES response is written to an output file in the MCS CICS region and tied to the claim records.
- The wrapper program acknowledges to CEM the receipt of the data and that it has been processed by the wrapper program and CES.
- *Optional: the wrapper program returns errors to the CEM. This can be developed, however the 277CA is not currently designed to handle this type of error and this is an error that would occur after the claim has been assigned an ICN. CMS would have to approve this option and provide direction on alterations to the 277CA.*

For MCS on-line generated claims (i.e. claims that are not submitted electronically) the following process will be developed:

- A CICS LINK to the wrapper program will invoke the CES. The CES response is written to an output file and tied to the claim record.
- For batch generated claims, MCS' front end process will invoke the CES in a batch accessor to perform the beneficiary eligibility data request.

Within MCS processing for all accepted claims, the first check of eligibility will have high priority after the system has determined a complete claim is received. Claims denied for ineligibility or invalid beneficiary will generally be denied in the initial cycle. This process shall reside prior to MCS' Medical Policy Auditing (MPAP) processing, performing more extensive checking for related claim history. Since this denial is based upon CES eligibility data prior to MPAP, the claim will not be sent to CWF following MPAP.

Once the claim processes through MCS front end with validated eligibility information, MPAP and CWF transmission follows.

It is anticipated that CWF will call the CES for the claim transmission to revalidate eligibility, since eligibility may have been updated since CES was first consulted in processing of the claim.

The following is a high level overview of how the Wrapper Program and the CICS Web Services function:

- The service requester would be the CEM (acting as a Java JAX-WS client).
- The CWF CICS CES program represents the processing that we wish to expose as a web service.
- The interface to the CES program is the CICS CES web service wrapper program. The CICS wrapper program will call the CES and receive back the requested information and format the data as needed for the service requester.
- The CICS wrapper program becomes the driver of the CICS Web Service Provider and will have its COMMAREA exposed as part of the web service.
- There will be a WSDL file that provides the mapping in XML format of the data areas in the CICS wrapper program's COMMAREA used by the service requester.

- A WSBind file will be used at run time by CICS to perform the mapping between the CICS Wrapper program's data structures and the SOAP messages that communicate with the CEM which is the service requester.
- The CICS wrapper may also be invoked from within the MCS CICS application directly through a CICS LINK and from batch jobs via the EXCI.

As an alternative to the EXCI call in the batch job, a Java application could be used to make a web services call to the CES web services wrapper program

6.3.2 FISS

For Phase-1, FISS will be retaining the full eligibility data file unchanged, so that the processes which will not be included in Phase-1 will still function as before.

Preferred Approach

A new FISS I/O module will be created to access the CES. Information needed to generate the call to the CES service will be passed into this module via a copybook in the linkage area. After performing basic validity checks against the passed data, the module will generate a transaction via CICS LINK into the associated CWF Host site. It will then wait (synchronously) for the response via the same CICS LINK. It will then pass this response back to the calling FISS program within the Linkage area.

For online claim adjudication, a new call to the above FISS CES I/O module will be inserted within the claim path adjudication, which would perform the full beneficiary/claim request. Based upon preliminary review, the optimal location will be after the initial consistency editing (Unibill, Consistency, and Administrative editing). This placement should provide claims with basic field validity, while realizing the benefits of bypassing some of the more CPU intensive editing (duplicate checking, medical policy editing, and ECPS processing) for claims which will be denied by CWF for ineligibility.

The CES response data, containing the current CWF eligibility, as well as the claim associated edits would be applied to the corresponding FISS files (FSSFDCNS, FSSFCLMU, FSSFCWFA, and FSSFBEN*). If CES edits are received, the claim will take the appropriate action (suspend or reject). If no CES edits are received, the claim will continue along the FISS claim path to adjudication.

Once the claim has passed internal adjudication edits, it will be transmitted to CWF as currently, though with fewer CWF related edits.

Alternative Approach 1- Same as MCS

Utilize the MCS "Phase-1 Suggested Approach" to handle the needs for immediate eligibility information, creating an interactive module (Wrapper Module) to access the CES. Refer to the MCS Suggested Approach in section 6.3.1 for further details on this alternative. Under this alternative there will still remain a need to access the CES within the adjudication process for updated claims, so the mechanics of the preferred solution will also need to be in place.

Alternative Approach 2- Multiple transactions-Multiple beneficiary calls

The current FISS online adjudication transaction could be split into three separate consecutive transactions. The current adjudication transaction which performs editing and pricing against the pending claims requires a very large memory footprint within the CICS region. This size limits the number of concurrent transactions to approximately five to ten strings. If these strings should each experience a long delay due to the CES service intersystem communication, the cycle batch times could become unreasonably long. This approach would split the FSSA transaction into three distinct transactions:

1. Perform the preliminary editing with one transaction, moving claims to the status location associated with the CES transaction.
2. Perform a second transaction, containing only the CES service call. This transaction would process claims in the CES status location, and should require a very small memory footprint, accommodating a greatly increased number of concurrent strings. A sufficient volume of concurrent transactions should help minimize the processing delay imposed by the intersystem communication by allowing perhaps 100 such transactions at any given time. This process would move claims from the status location to a post-CES status location.
3. Perform a third transaction to do the secondary editing, processing claims that are in the post-CES status location, and moving them to final adjudication.

Alternative Approach 3- Single transaction – Single beneficiary call

Rather than doing the claim specific CES transaction, the smaller beneficiary CES transaction could be developed. This would have the benefit of requiring a single daily CES transaction per beneficiary, regardless of the number of beneficiary's claims processed during that day. The FISS system would be required to retain the associated internal editing, but these edits should have greater accuracy given current beneficiary data.

6.3.3 VMS

The beneficiary eligibility edits within the VMS on-line claims processing system relies on the beneficiary data that has been returned from CWF in the nightly batch replies. A new functionality associated with CES would be incorporated into the VMS on-line claims processing system to provide the most current beneficiary eligibility information for VMS editing when the claim first enters the VMS system.

Analysis will first be performed to identify all current VMS edits that are comparable to the proposed CES Phase-11 beneficiary eligibility edits and the location of these edits within the current VMS processing. A new CES module will be developed using the shared communication area defined by the combined Shared System Maintainer effort. This module will produce a single request with VMS claim data (e.g. HICN) to be sent to CES using the CICS LINK interface, from the same point in processing where the current beneficiary eligibility checking occurs. The VMS edits that will be replaced by the CES system edits will be removed. One request will be made to CES for each new incoming claim.

The CES system will return a response to the new VMS module with all applicable beneficiary information. This information will be retained within the VMS system in CICS temporary storage and will be utilized for all beneficiary related edits while that claim is being processed.

However, an additional inquiry will be sent to the CES system for each instance that a claim is reprocessed.

If the CES system eligibility inquiry fails, VMS will develop a contingency plan for the reprocessing of the affected claims.

With subsequent phases described in section 6.3.5, we envision that inquiries using CES could be utilized in certain VMS batch processes to obtain the most current beneficiary information.

6.3.4 CWF

CWF performs consistency, eligibility and entitlement, utilization, Part A and Part B crossover and duplicate checking on each claim, in that order. The CWF is updated by the latest information in the Enrollment Database (EDB) which contains the most current enrollment, entitlement and utilization information on the beneficiaries. CWF executes daily batch cycles that are run in a pseudo real-time mode using CICS for each Contractor. To adapt to the CES:

- The CWF system will utilize the CES software to perform all eligibility edits that are incorporated in CES for claims processed in a daily cycle. Existing hardcoded and duplicated eligibility edit logic within the CWF software will be consolidated at CES.
- The CWF batch cycle will call CES after performing consistency edits to access edits for each phase. The edits shall be inclusive for all claims transactions types.
- CWF Modules for each claim type will have a pre-defined common-area to call CES via CICS LINK.
- For claims that passed the CES edits and sent to CWF for approval, CWF will re-execute all eligibility edits performed by the Shared Systems at CES during the nightly batch cycle. Reprocessing at CWF ensures that the daily EDB, MSP, ESRD and CMN maintenance updates are taken into consideration while processing the claim at CWF.
- CWF modules for each claim type will receive a pre-determined response from CES and continue to respond to the claim. When queries to CES are returned with a ‘failed’ response, CWF will continue to generate the appropriate errors. When queries to CES are returned with a ‘passed’ response, CWF will continue its normal processing path to perform utilization, duplicate checking, etc. to approve the claim.
- The CWF Daily cycle claims that are processed within the same CICS Region as CES will have high priority over the CES transactions from Shared Systems. This priority will ensure that CWF cycles are completed within schedule and responses returned to the Shared Systems for further processing on a timely basis.
- CWF Host will follow the existing problem reporting process when problems are encountered with CES during operations.

6.3.5 Future Options

Opportunities for improving the operational efficiency and effectiveness of the FFS systems as part of CES are provided in this section. The options described below are ordered in relevance of tasks that are most beneficial and cost effective to CMS:

- Detection of claim errors early in the claims processing lifecycle
- Reduction in duplicate data stores
- Consolidation of FFS edit logic and functionalities
- Allow access to MACs and external entities

Table 8: Operational Efficiency and Effectiveness Improvement Options

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
1	Claims High Profile Eligibility & Entitlement Edits	Beneficiary eligibility for incoming claims prior to adjudication. See section 8.1 for more detail on "high profile" edits.	✓	✓	✓	✓	Phase-1
2	Additional Eligibility & Entitlement Edits	Selected Edits that are inclusive of all the CWF auxiliary files. These edits will require more than just basic beneficiary profile and eligibility to set an error. These are edits that do not require claims history but ensure that claim is compliant with information residing in the various beneficiary auxiliary datasets, such as Home Health, Hospice, etc. For example: - *Edit 5262, 5264 that determine claim and GHO inconsistencies.*	✓	✓	✓	✓	Phase-2

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
3	MSP, ESRD, CMN Maintenance Transactions	Move CWF, MSP, CMN and ESRD maintenance transaction pre-editing to CES. These edits are currently done by MACs with CWF provided software. Maintainers can access CES to perform these consistency edits prior to submission. E.g. - *RDxx – ESRD edits,* - *CMxx – CMN edits,* - *SPxx – MSP edits* Secondly, allow the maintenance transaction to update the CWF auxiliary files at CES ensuring availability of most current MSP, CMN and ESRD data to – CWF Cycles, HIMR queries and Eligibility queries.	✓	✓	✓	✓	Phase-2 or 3
4	Correspondence	Shared Systems can interactively retrieve the eligibility data from the CES to provide customer service immediate access to equivalent information. - The Automated Correspondence System (TACS) is a batch process can retrieve beneficiary information from the CES during the cycle for letter writing. - Automated Development System (ADS) can call CES to retrieve beneficiary address data for the ADS beneficiary letters. The ADS process works jointly with SS editing and auditing processing that will also need to access the CES information data as described above.	✓	✓	✓		Future

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
5	Financial Processing	SS Financial processing (accounts receivables, cash receipts, void/reissues) can access CES during the batch process for address information from CES for letter production. - Case Tracking Demand letters - Individual AR demand letters - Online entry of accounts receivable records editing - Non-claim related checks issued to beneficiaries. - 1099 processing for non-HIGLAS contractors	✓	✓	✓		Future
6	Medicare Summary Notices (MSNs)	MSN production batch system can access CES to acquire beneficiary/legal representative, deductible and limitation information at the time the MSN is scheduled for release. The information currently returned from CWF on the response and related trailers cannot be utilized since MSN production occurs once per quarter and the information from when the claim processed would likely be outdated.	✓	✓	✓		Future
7	COBC Crossovers	The creation of the outbound 837 for COBC can access CES in a batch mode for updated eligibility information.	✓	✓	✓		Future

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
8	HIGLAS (beneficiary eligibility)	SS and HIGLAS house beneficiary name and eligibility information and are kept in sync via the 271 outbound transaction sent to HIGLAS. HIGLAS requires specific beneficiary information to produce payments and track information for general ledger reporting and production of the IRS 1099. Currently, for claim related transactions SS can send HIGLAS beneficiary data returned from CWF via trailers however for non-claim related transactions the beneficiary data at the SS can currently be outdated since CWF is accessed only for claims processing. SS can access CES to provide current eligibility information for non-claim transactions however this would be a significant change in processing. Alternatively, HIGLAS could possibly interact directly with the CES to obtain all eligibility information, thus cutting out SS as the middleman.	✓	✓	✓		Future
9	CERT Resolution	The Certification (CERT) Contractor Sample Resolution processing utilizes beneficiary eligibility information to verify correct Medicare fund disbursement. SS can tap into CES to provide the current beneficiary information returned on the sampled claim response.	✓	✓	✓		Future

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
10	Claims Adjustment Process	The following SS adjustment processes utilize eligibility information for automatically creating adjustments and can call CES to get current beneficiary information. - Mass Adjustment processing - Recovery Audit Contractor (RAC) processing - CWF Unsolicited Response processing - Express Adjustments (both an online and batch process)	✓	✓	✓	✓	Future
11	Miscellaneous Reporting	There are numerous reports prepared that contain beneficiary information currently accessed from SS internal eligibility file. SS can access the CES to obtain the necessary beneficiary information for producing these various reports. This data could be pulled on an as needed basis or iteratively throughout the process seeking to obtain only updated information.	✓	✓	✓		Future
12	HIMR Screen Scraping	The current HIMR screen scraping Shared System Utilities (e.g. VMS-FEPI), that is used to display the beneficiary and claims data from HIMR can be consolidated at CES.	✓	✓	✓		Future

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
13	Data Store Reduction	There are multiple beneficiary data sources among all maintainers containing the same information each of which exposes disparate interfaces and can become potentially out of sync with the others. The Data store reduction process can begin with Phase-1 – SS requesting beneficiary information from the CES, and consecutively modifying other SS interfaces to access CES for beneficiary data. This in turn will gradually eliminate redundant, costly database storage and software. At a later stage, a joint SS and CWFM team can research non-beneficiary data stores (e.g. HCPCS, Contractor data, or other) that are similar across all the Shared Systems that will reduce resources if migrated to a single data store at CES.	✓	✓	✓		Future
14	CWF Utilization Edits at CES	Expand CES to include the option for Shared Systems to perform FFS Utilization edits - Shared System may request selective utilization edits to be performed after the claim is priced. - Shared System may request potential duplicate alerts from CES based on data in the CWF Paid Claims History (PCH).	✓	✓	✓		Future

#	System Area	Description	Relevance				
			MCS	VMS	FISS	CWF	
15	CES Open System Platform	Upgrade CES architecture to an open systems platform - CWF Web Services interface or "wrapper" for the CES to allow access by non-mainframe systems – MACs and other external systems - Modernizing the service code to include a Business Rules Engine and/or Service-oriented Architecture.				✓	Future

7. CONCLUSIONS AND RECOMMENDATIONS

The team selected and analyzed four alternatives listed in order of alternatives by preference listed in the table below:

Table 9: CES Alternatives

Alt	Architecture	Data source	Security	Connectivity	Business Functions	Risks
A	**CES/CWF** – The CES will utilize the CWF Host environment for processing.	CWF beneficiary and auxiliary data files	Create new RACF security for CES	Call via CICS EXCI and CICS LINK	- CWF and SS eligibility & entitlement edits - All functions described in section 6.3.5 Future phases	- Possible contention with existing CWF Host environment resources - Could cause delays for CWF production cycles
B	**CES/ODS –** Create Single New CICS region in the HP EDC that will house the CES. CES data store will be created from CWF beneficiary datasets	New Data-store at the CES environment	Create new RACF security for CES	Call via CICS EXCI and CICS LINK	- CWF and SS eligibility & entitlement edits - Most functions described in section 6.3.5 Future phases that pertains only to eligibility data	- Limited data – only eligibility available - Development of a new data store will increase maintenance; possibility of data differences - Requires exploration of web services
C	**CES/HETS –** Create Single New CICS region in the HP EDC that will house the CES.	HETS IUI Database	New RACF security HETS security requirements	External – TCPIP	- Eligibility functions currently available under HETS	- Additional layer of connectivity for data - Requires exploration of web services - Requires HETS resources - Only eligibility/some entitlement edits
D	**CES/CME –** Create Single New CICS region in the HP EDC that will house the CES	CME Database	New RACF security CME security requirements	External – TCPIP	- CWF and SS eligibility & entitlement edits - Some functions described in section 6.3.5 Future phases that pertains only to eligibility data	- Additional layer of connectivity for data - Requires CME resources - Only eligibility/some entitlement edits

8. IMPLEMENTATION APPROACH

The CES will be implemented in multiple phases starting with basic eligibility edits and building upon the architecture to provide enhanced edit and data functionalities. This phased implementation approach will (1) reduce the risk inherent in large complex releases, (2) provide for planned course corrections from "lessons learned" across releases, (3) provide improved Shared System testing, and (4) provide avenues for MAC participation in later phases.

8.1 PHASED APPROACH

To ensure that the errors for the FFS claims are detected as early as possible, CWFM will apply software, in phases, into the CES allowing claims to be possibly denied early in the Shared System claims lifecycle. CWFM has reviewed the annual ORPT claim edit errors and compiled a report showing all the claim edit errors in production categorized by the highest percentage of errors.

Appendix A – ORPT – CWF 2011 Edit Errors – By Error Percent (highest to lowest) shows CWF production error counts for Year 2011, with Phase-1 edit errors highlighted.

CES edit and data functions will be implemented in phases as follows:

Phase-1 – High Profile Eligibility & Entitlement Edits – Approximately 40 high profile Eligibility and Entitlement edits that have the highest percentage production error counts and do not require data other than basic beneficiary and claim information to determine an error. This set of edits will be inclusive of MSP and HMO entitlement checks along with validating beneficiary profile, entitlement, address and deductible validation.

Phase-2 – Additional Eligibility & Entitlement Edits – Selected edits that are inclusive of the CWF auxiliary files to determine the eligibility of a claim to other program entitlements or benefits. These edits will require more than just basic beneficiary profile and basic claim data to set an error. These edits do not require claims history but ensure that claim is compliant with information residing in the various beneficiary auxiliary datasets, such as Home Health, Hospice, and Screening. For example:

- *Edit 5262, 5264 that determine claim and GHO inconsistencies.*
- *Edit 5361 through 5365 that determine screening benefit inconsistencies.*
- *Edit 5102 – Hospice NOE to add a new Election Period (8xA) and four election periods are already present on the Hospice master file for this beneficiary.*

Additionally, as part of Phase-2, Shared Systems may select other subsystems (Online Correspondence, financial processing, etc), to access beneficiary information from CES.

Additional Phases – See Future Options- 6.3.5 for detail on phases after Phase-2.

8.2 IMPLEMENTATION LIFECYCLE FOR CES PHASES

This section defines the implementation approach for the initial and subsequent new CES functionalities, such as, CES interface with HIGLAS or HIMR scraping. Regular CES system maintenance such as enhancement to existing edits, addition of new edits, or modifications due to non-CES change requests will follow the current CMS single quarterly release implementation lifecycle path.

The life cycle development and implementation of the initial and subsequent new CES phases may span anywhere from 1 to 3 FFS quarterly releases:

- Release 1 – Shared Systems maintainers and CWFM will perform detailed analysis and design along with requirements development for implementation of each CES Phase and provide CMS with estimates, preliminary schedule, benefits and risks, and possible return on investment. Upon approval of the analysis, the team will continue into Release 2 activities. Based on the complexity and effort required to work a CES phase, CMS, Shared Systems maintainers and CWFM may choose to combine analysis and development activities into a single release or split into two releases.
- Release 2 – CWFM will develop and implement the initial and any subsequent new CES functionality software, making it available to Shared Systems for testing in the subsequent release.
- Release 3 – The Shared Systems will perform system development and testing activities and implement the CES phase with this release. Shared Systems maintainers will disable the existing edits and/or data stores in their systems. Shared Systems maintainers and CWFM will perform system, beta and user acceptance testing.
- All parties will benchmark performance (before and after), and document changes, lessons learned, and release guidelines for the remaining phases.

The implementation approach will also depend greatly on the allocation of funding for this project. Depending on the estimated hours to develop each phase and allocation of funds and change requests for each quarterly release, the CES workload may split into a multi-release implementation approach for each phase. The CES can also be worked as a special project separately funded to ensure a steady and scalable addition to the FFS claims processing environment.

As part of this approach, the CES phases can run concurrently to ensure continuity of CES functionality enhancements and earlier return on investment for CMS. For example, as shown in Figure 7, CWFM will support the testing during Release 3 and begin analyzing and adding new edits to the service – and will always be one release ahead.

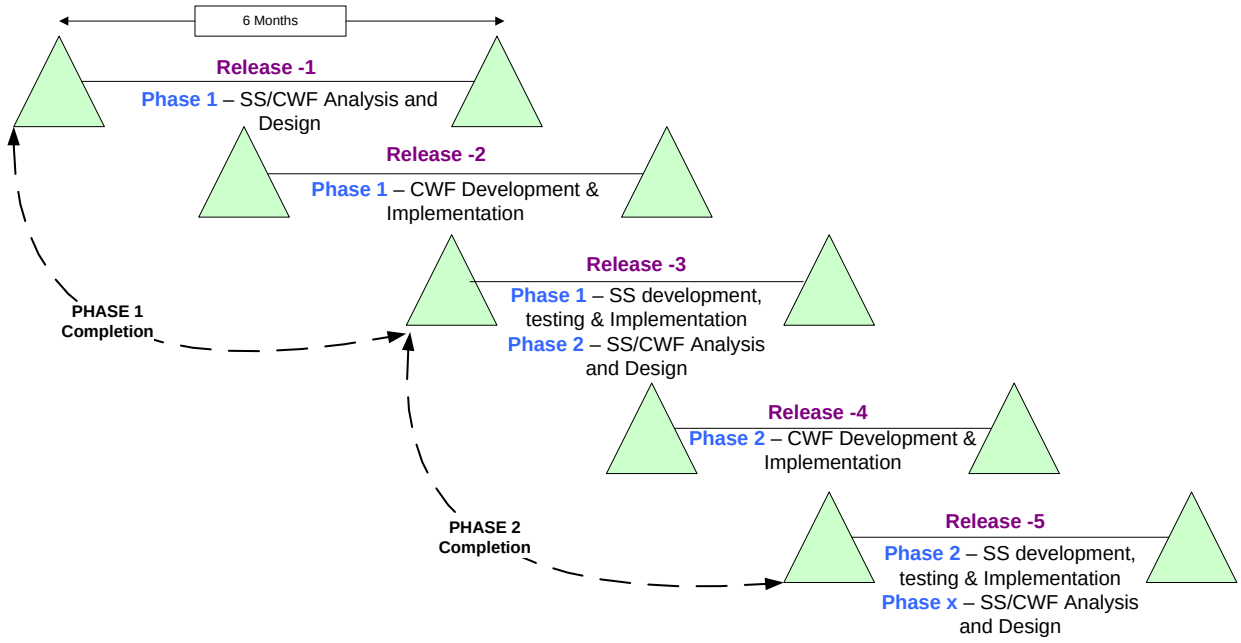

Figure 7: CES Implementation Approach

8.3 PHASE-1 HIGH PROFILE ELIGIBILITY & ENTITLEMENT EDITS – *HIGH LEVEL ANALYSIS*

The Shared Systems maintainers and CWFM have completed preliminary analysis for Phase-1 as part of this document and have provided the high level requirements to implement Phase-1. Subsequent (analysis, development, and implementation) will be performed upon approval from CMS.

The following sections expand on Phase-1 high level requirements, ROM, Preliminary schedule, Benefits and Risks, and Return on Investment.

1. For Phase-1 Edits the Shared Systems maintainers and CWFM have selected approximately 40 high profile errors to be implemented at CES. *Appendix B – "CES Edit Errors –Phase-1"* describes:
    a. Edit Error codes and description
    b. Claim types impacted by the edit – All Shared Systems will be impacted by most of the edits that have been selected.
    c. Type of trailers currently returned by CWF for which data will have to be provided by the CES
    d. Shared System edits that are similar to CWF and may be removed from Shared System software. Preliminary eligibility edits that can be eliminated at the Shared Systems are identified.

The input format for the CES query will consist of basic beneficiary information required by CWF to read the beneficiary master files: Input data elements required, but not limited to at this time, by CES for phase-1 edits are as follows:

a. Beneficiary Profile - HICN, Surname, Date of Birth, Sex Code
b. Mandatory Claim data – Claim Type, Dates of Service, Admission date (Part A), Action/Entry code, Control Numbers (ICN/CCN/DCN), Type of Bill, Provider, Intermediary or Carrier, Demonstration number, Zip-code
c. Optional Claim data – Patient Status, Occurrence code (Part A), CWF Host ID
d. HMO data if available – HMO ID, Option code, Election/Termination dates
e. MSP data if available – MSP Indicator

Output data elements from CES to Shared Systems required, but not limited to, at this time are as follows:

a. CWF Disposition Code
b. CWF Error Code
c. Beneficiary data – deductibles, date of death, address, other benefit related fields
d. Optional data - MSP data, HMO data

2. CWF and Shared Systems will perform a detailed analysis and design to implement Phase-1 of CES. Detail design to both CWF and Shared Systems will be based on SS and CWF processes affected by the edits that are defined in *Appendix B – "CES Edit Errors –Phase-1*.
    a. Detailed input and output record layouts and data requirements from CES for each Shared System will be defined with the detailed analysis.
    b. The Shared System maintainers will do the analysis and design to find the optimal location in the software code from which to call ("link to") the new CES service, and re-factor the code to process the beneficiary data and edits indicators returned from the service.
3. There will be a requirement for CWF operational sites (the Tulsa, OK EDC) to review existing production CWF resources and proposed increase in CES transaction volume and recommend adjustments.
4. CWFM will develop the basic foundation of CES software addressing:
    a. The interface that will be used to access CES. Interface Modules using CICS-EXCI for batch access and CICS-LINK for online access will be developed.
    b. The management of transaction traffic to and from CES, Input/Output modules, OSA calls and connectivity to CWF Data source.
5. CWFM will develop software to process CWF Eligibility and Entitlement edits for Phase-1.
6. CWFM will develop reporting requirements for CMS.

7. Shared Systems maintainers and CWFM will modify their claims processing software as follows:
    a. Shared Systems will disable the existing edits, implement the link to the CES, and test to work through any technical issues – firewalls, etc. CWFM will modify claims processing modules to incorporate the edits via CES and remove any hardcoded edits within software claims processing modules.
    b. Shared Systems will modify software and claims adjudication processing to react to responses received from the CES.
8. A capacity test pilot will be performed before the start of normal release testing to determine "capacity and threshold" at a selected CWF host site. Large volumes of transactions will be introduced at various times of the day to evaluate resource utilization. Test jobs will be scheduled so as to not process these transactions while CWF production cycles are executing to mitigate any risk of impacting the production workload.
9. CWF User and System documentation will be updated to add CES functionality.
10. All systems maintainers will benchmark performance (before and after), and document changes, lessons learned, and release guidelines for the remaining phases.
11. Shared Systems maintainers and CWFM will analyze modules impacted and provide detailed estimates to implement Phase-1. Preliminary Phase-1 estimates, schedule, anticipated volumes and return on investment are provided in subsequent sub-sections.

8.3.1 Phase-1 Preliminary ROM Estimates

Based on the preliminary analysis performed during the research to create this options paper and the prior analysis performed over the last several years the Shared Systems maintainers and CWFM have compiled the following rough order of magnitude (ROM) hourly estimates for Phase-1. This does not include the analysis work being done under CMS CRs 7548 and CR-7611 (April 2012).

The estimates for Phase-1 implementation are depicted in the tables below in two ways:

1. The first estimate represents work that is expected to occur across each system lifecycle development stage to implement Phase-1. This starts with the requirements analysis phase, followed by detail design, development, Beta and UAT testing and implementation.

PHASE-1 ROM – HOURS BY SDLC					
SDLC Phases	**CWF**	**FISS**	**VMS**	**MCS**	**Total**
Requirements Analysis	300	200	100	292	892
Design	200	220	140	701	1261
Code/Unit Test/Documentation	4000	1000	2050	977	8027
Alpha Test	400	120	170	453	1143
Beta / UAT Support	400	160	500	142	1202
Other Support Hours	0	120	140	89	349
Total	**5300**	**1820**	**3100**	**2654**	**12874**

2. The second estimate represents work that is expected to occur in 3 separate releases. The first release would include requirements analysis and design hours. The second release would be the CWF CES development and implementation. The third would be the Shared Systems development, testing and production CES implementation.

PHASE-1 ROM – HOURS BY IMPLEMENTATION RELEASES				
System Maintainers	**Release-1 Requirements, Analysis & Design**	**Release-2 CWF Development & Alpha Testing**	**Release-3 SS Development & Beta/User Testing**	**Total Hours**
CWF	500	4400	400	5300
FISS	420		1400	1820
VMS	240		2860	3100
MCS	993		1661	2654
TOTAL	2153	4400	6321	12874

Estimate Assumptions:

- ROM hours assume successful implementation of "preferred approach" described in section 6.3.1. If this approach should yield long transaction times or cause unacceptable cycle delays, the alternative approaches will be explored.
- Phase-1 will incur higher development and testing hours than subsequent phases due to initial set up and testing of the CES foundation software architecture.
- As some FISS test regions lack CWF connectivity, the FISS solution will include ability to process without CWF connection during the testing phase.
- All maintainers will work with the EDCs to ensure that these changes do not impact their MAC SLA agreements in regard to transaction times or online availability.
- Phase-1 edits, interface and record layout details, and software design will be finalized as part of the requirements and analysis phase.
- Batch CWF edit processing in the VMS system will not be removed with Phase-1 of this Project.
- The CWFM will implement their CES processing in a release prior to the SS implementation.
- The CWFM will work with each EDC to address any technical issues before SS implement connectivity to the CES system. This will include the availability SLA for the CES system/region.
- Estimate includes hours to evaluate changes in the response time with the new CES system.

8.3.2 Phase-1 Preliminary Schedule

Shared Systems and CWF will perform detail analysis for Phase-1 CES over a single quarterly release period. The development and implementation of the CES software by CWF will be done in a single but separate quarterly release period. In the subsequent quarterly release, the Shared Systems will modify their systems to interface with CES for testing and implementation. Below is a preliminary schedule for the completion of CES Phase-1.

- Detail Analysis & Design by all Maintainers -October 2012 Release
- CWF Development of CES software -April 2013 Release
- SS Development, Beta/User Testing, Implementation -July 2013 Release

8.3.3 Phase-1 Anticipated Transaction Volumes

Each Shared System maintainer and CWFM has reviewed existing production claim counts and resources and provided in this section the anticipated volumes that will be utilized for Phase-1 of CES.

- For a medium sized cycle within the MCS system an average of 116,800 claims are processed daily that would require calls to the CES. There are 35 MCS cycles of varying sizes and could result in over 4 million daily calls for Phase-1.
- FISS estimates approximately 400,000 calls to CES per day across all MAC cycles.
- VMS estimates approximately 382,900 calls to CES per day across all 4 DME MAC Jurisdiction based on a week's worth of claims processing for Phase-1.
- CWFM anticipates that MIPS usage will rise primarily due to increase in transaction volumes at each Host site due to CES, along with growth in the software applications due to regular FFS change requests. The transaction counts to access CES from CWF will not increase or cause significant resources to be utilized as the CES modules will be linked from the CWF calling modules.

Appendix C shows FFS Part-A, Part-B and CWF production cycles over a period of time ranging from a week to several months that is used for measuring estimated transaction volumes for Phase-1 for this options paper.

Based on the actual production Part A, B and DME claim counts received from the EDCs, production resource statistics received from the CWF Host sites for processing daily cycles, and estimated calls to CES provided by each maintainer, the table below depicts anticipated volumes into CES for Phase-1.

Table 10: Phase-1 Anticipated Volumes and Resources

FFS Maintainer Systems at EDCs	Average daily claim volumes	Anticipated Phase-1 Volumes to CES
Part A – CDS	447,146	400,000
Part A – HP	353,722	
Part B – CDS	2,906,548	4,000,000
Part B – HP	1,197,539	
DME – HP	382,900	300,000
CWF – HP	5,548,776	3,000,000
CES Processing		7,700,000

8.3.4 Return on Investment

Phase – 1

As part of Phase-1 implementation, the Shared Systems maintainers and CWFM will determine benchmarks and the components within each system to measure for that benchmark to determine resources that are utilized and/or saved due to CES. These benchmarks and measurements will support the determination of ROI. Data to support these measurements can be captured at the CES as well as each Shared System.

Potential areas of savings may include:

- Savings (systems and workload) due to reduction in re-processing of the claim through the adjudication process when errored by CES.
- Savings due to re-processing at CWF of a claim errored by CES.
- Reduction in manual intervention for Medical Review for claims that could be re-processed
- Reduction in maintenance costs as edit logic for Phase-1 is removed from Shared System software.

One of the key ways to optimizing costs is by reducing the software code to be maintained. CWFM plans to achieve this by:

- Consolidating eligibility edits code spread in multiple CWF modules at CES for Phase-1 thereby reducing maintenance hours in the future.
- CWFM will also measure the performance of the CES within the host environments and identify measurements to optimize the CICS environments and Host Production cycles.

- Removal of the HELG sub-system from CWF after implementation of Phase-1 since CES can provide the same information and more than HELG. The maximum potential savings at each CWF Host site from eliminating the HELG process will be as follows:
    - Average CPU = 0.000148.
    - Average wall clock time daily at each host = 50 mins.
    - Average responses sent by each host = 18,000 including creating of datasets and transmission resources and time.
    - Minimal software maintenance hours

Future Phases

Benchmarks and measurements created in Phase-1 will continue to support determining ROI as each subsequent CES phase is implemented. Factors that will contribute to savings that can be measured in later phases are identified, but are not limited to, below at this time:

- Reduction in adjudication CPU resources due to early detection of claim's compliancy against additional CWF auxiliary information.
- Reduction in CWF cycle CPU and timeline if MSP, ESRD, CMN updates in real-time mode at CES.
- Reduction in reprocessing and manual rework if current beneficiary data is available for all correspondence activities, financial processing, MSNs, CERT Reviews, HIGLAS and other claims processing tasks at the Shared Systems.
- Reduction in CPU and maintenance costs as SS beneficiary edit logic and data stores are eliminated.

9. BENEFITS AND RISKS

9.1 BENEFITS:

Table 11: Benefits

Communication Architecture
- No extensive development needed for network communication. If the inquiry beneficiary is at the local Host, processing will take place at the initial local Host, if not the new CICS Eligibility program will link to itself at the appropriate remote Host to process the inquiry. - The DPL Request command is synchronous and therefore has lower overhead and greater throughput. - Flexible control fields in the COMMREA will let the program know whether it was processing the eligibility services locally or remotely and accurately return the Eligibility information back to the client.
Software Architecture
- Same mainframe and web services architecture currently at the EDC maintains continuity of formats and operations. - Flexibility of operation via batch or online mode
Shared Systems
- Pricing decisions for DME are more accurate when the beneficiary address information is received early in processing (DMEPOS claims are priced by the beneficiary residence state and/or zip code). - Receiving same address throughout the process will eliminate the archaic method of communicating addresses that often end up truncated or jumbled. - Claim decisions will be made with the most current beneficiary information before other extensive claim review procedures are performed - Batch processing associated with CWF reply processing and certain CWF errors will be reduced - Both manual and systematic processing efforts will not be wasted on ineligible beneficiaries if they are identified early in the claim flow. - Providers will be more promptly notified when the beneficiary information submitted has eligibility problems. - Having a central repository of eligibility information will increase quality of data.
CWF
- All eligibility edits in CWF will be consolidated at the CES

9.2 RISKS:

Table 12: Risks

Risk	Mitigation
Communication Architecture	
The EXCI interface utilizes COMMAREA, and therefore it is restricted to the 32K limit that the CICS COMMAREA allows.	The entire claim data is not required to determine eligibility therefore the data will be less than 32K.
Using EXCI for jobs that process numerous records significantly increases the time it takes for the job to finish. Consideration needs to be given to sync-pointing or committing the work for Updates. Recovery management becomes complex.	Section 6.3.1 contains an alternative way to communicate to CES via web services, avoiding a batch EXCI call. At the current time, the CES will not trigger any updates to CWF. Performance testing will be done in Phase-1 to determine processing and VSAM resources.
Due to the large volume of production, the architecture needs to address load balancing across all CWF Host CICS regions. The EXCI can allocate a maximum of 250 sessions with a default of 100.	Performance and capacity testing will be done in Phase-1 to address load balancing for the CWF hosts. An optimal limit for balancing sessions will be addressed to prevent any of the EXCI clients from monopolizing Host resources.
Software Architecture	
CES will share the CWF production Host CICS region that is used for executing CWF cycles. CES activity can degrade the performance of the CICS region causing resource restrictions.	CWF host regions will be monitored and optimized regularly.
Shared Systems	
The obvious and most serious risk lies in the possible impact to SS cycle runtimes with the insertion of a real time CES intersystem transaction. Slow response time from SS to CES and back would hinder claims processing.	The FFS workgroup has defined alternative approaches in Section 6.3 to address response time.
The non-availability of the CWF CICS region to accept the CES transaction during the SS adjudication process.	Review of CWF current availability shows that this should not be an issue, but it will require monitoring during the development and deployment of the CES service. CES availability will not be 24/7 – (when CICS regions are down or CWF beneficiary files are

Risk	Mitigation
	closed for maintenance).
CES calls may pose a risk to production process when incoming claim volumes are more than the average daily production volumes. Such situation may occur during an implementation dark day period when claims are held and processed the next day.	For Phase-1 SS will have the ability to bypass CES when needed. During this time SS will rely on CWF setting the same errors as CES during the CWF claims cycle.
Dual processing for a claim due to dual processing of CWF errors via CES and in existing batch query/reply process for those edits that are returned from CES (if CWFM does not remove the edits from the query/reply process). This will potentially increase resources utilization.	CWF will continue to perform the same CES edits in the daily CWF cycles. In most cases once claim is denied and corrected at CES, CWF should not set the same error unless there has been a change to the beneficiary within the same cycle. Processing at CWF is necessary to ensure that EDB updates, MSP, ESRD & CMN maintenance updates are taken into consideration while processing the claim at CWF.
CES capability to expeditiously process the volume of eligibility requests.	CES will be continuously monitored and optimized to handle increase in volume and interfaces with SS.
Repetitive need to re-check CES throughout processing rather than a single check at the end of processing could hinder CES performance capability.	Shared Systems will optimize their process to minimize the number of calls to CES.
Correspondent clerks cannot immediately correct inaccurate beneficiary name and address information if SS beneficiary data stores are not used.	This risk pertains to a future phase when SS beneficiary stores are eliminated and will be addressed at that time possibly with a CES update request.
CWF	
Increase in data requests from SS can degrade the performance of the CWF CICS region causing resource restrictions and cycle delays.	CICS priorities will be set higher for cycle related transactions vs. queries. If CWF cycles are low on resources, the CES transactions can be suspended until the daily CWF online cycles are complete. CWF will address non-availability via transaction message.

ACRONYMS

Acronym	Description
ADS	Automated Development System
API	Application Programming Interface
BDC	Baltimore Data Center
CDS	Companion Data Services
CEDI	Common Electronic Data Interchange
CERT	Comprehensive Error Rate Testing
CES	Common Eligibility Service
CFO	Chief Financial Officer
CICS	Customer Information Control System
CME	***Common Medicare Environment***
CMN	Certificate of Medical Necessity
CMS	Centers for Medicare and Medicaid Services
COBC	Coordination of Benefits contractor
CPU	Central Processing Unit
CWF	Common Working File
CWFM	Common Working File Maintainer
DME	Durable Medical Equipment
DPL	Distributed Program Link
ECPS	Expert Claims Processing System
EDB	Enrollment Database
EDC	Enterprise Data Center
ESRD	End Stage Renal Disease
EXCI	External CICS Interface
FEPI	Front End Programming Interface
FFS	Fee For Service
FISS	Fiscal Intermediary Shared System
HCPCS	Healthcare Procedure Codes
HELG	Healthcare Eligibility System
HETS	HIPAA Eligibility Transaction System

Acronym	Description
HIC	Health Insurance Claim number
HIGIT	The last digit of the Social Security Number
HIGLAS	Healthcare Integrated General Ledger Accounting System
HIMR	Health Insurance Master Record
HMO	Health Maintenance Organization
HP	Hewlett Packard
I/O	Input / Output
IDR	Integrated Data Repository
ISA	In Service Area
IUI	Integrated User Interface
LDC	Local Data Center
MAC	Medicare Administrative Contractor
MBD	Medicare Beneficiary Database
MCO	Managed Care Organization
MCS	Multi Carrier System
MPAP	MCS Medical Policy Auditing
MRO	Multi Region Operation
MSN	Medicare Summary Notice
MSP	Medicare Secondary Payer
NGD	Next Generation Desktop
NOE	Notice of Election
ODS	Operational Data Store
OSA	Out of Service Area
RACF	Resource Access Control Facility
REPP	Representative Payee
ROM	Rough Order of Magnitude
SLA	Service Level Agreement
SS	Shared Systems
SSA	Social Security Administration
SSM	Shared System Maintainers
SSN	Social Security Number

Acronym	Description
TACS	MCS Automated Correspondence System
TCPIP	Transmission Control Protocol/Internet Protocol
TNIF	True Not in file
VMS	VIPS Medicare System
VSAM	Virtual Storage Access Method