

FSA Integration Partner

United States Department of Education

Federal Student Aid



EAI Core Operations Services Performance Report V

Task Order #117

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1 Introduction

1.1 Summary

The purpose of this report is to document the EAI Core Operations services performed in support of Task Order 117, EAI Release 4.0 during the period of October 1, 2003 through October 31, 2003.

Task Order 117 provides for operational support and maintenance of the EAI architecture and infrastructure. Additionally, EAI Core services enable business application teams to implement application interfaces built upon the existing EAI architecture.

The efforts of the Core Operations services are summarized in the following sections:

- **Section 2: Major Accomplishments** - Provides an overview of the major accomplishments of the EAI Team over the course of the reporting period.
- **Section 3: EAI Architecture Overview** - Provides an up-to-date view of the EAI Architecture as it evolves over the duration of the task order.
- **Section 4: Infrastructure Change Requests, Upgrades, and Enhancements** - Provides a summary of the change requests, significant updates and enhancements to the EAI infrastructure.
- **Section 5: Environments** - Provides an overview of the environment infrastructure supporting the EAI Release 4.0 development and testing efforts.
- **Section 6: Test Summary** - Provides a summary of application EAI interface testing activities for the reporting period.
- **Section 7: Integrated Planning Summary** - Provides a high level summary of infrastructure planning and support for new initiatives and applications coming onto EAI.
- **Appendix A: EAI Software Installation Report**- Documents the current status of all installed software for all EAI environments.
- **Appendix B: EAI Core Release 4.0 Organization Chart** - Documents the organizational structure and the resources assigned to the release for this reporting period.
- **Appendix C: EAI Core Release 4.0 Contact List** - Provides contact information for the EAI team.
- **Appendix D: EAI Environment Diagrams** - Documents the detailed EAI Development, Test, and Production environments.
- **Appendix E: EAI Change Request Summary, October 2003** - Provides the summary and detailed information for all EAI submitted Change Requests for the reporting period.



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- **Appendix F:** *EAI Operations Support Schedule, October 2003* – The support instructions and schedules provided to the Virtual Data Center (VDC) for EAI Operations.
 - **Appendix G:** *COD 2.2 & 3.0 Development and Test Documentation*- A compact disc containing the technical design and testing documentation to implement the EAI related changes for COD 2.2 and COD 3.0.



2 Major Accomplishments

The following list of accomplishments represents the major efforts and initiatives for this reporting period:

- COD 2.2
 - Edit 115 was added to the R2.2 requirements. This Pell Disbursement Edit was added for Student Loan Award Years 0203 and 0304.
 - Edit 61 was added as requested by the COD Business Unit.
 - Supporting COD R2.2 Product Test and IST interfaces with weekly EAI code deployments.
- COD 3.0
 - Updated Interface Control Documents (ICD) for CPS, NSLDS, and FMS.
- FAFSA 8.0 Performance Testing support
 - Supporting 24 performance test cycles of the updated FAFSA 8.0 application. This included monitoring the MQ infrastructure and tracking throughput and response time statistics for the duration of each test, as well as writing and executing back-end transaction load generation script for two of the cycles.
- New EAI Development
 - Developed and implemented a mechanism to log information for incoming COD records produced with Datatel software. EAI compiles and distributes daily statistics detailing the schools that submitted records that day, the version of software they used and the number of students in each record. COD requires this information to track the migration of schools to the new version of the Datatel software.
 - Developed and implemented a mechanism to log information for all outbound COD files, including reports. EAI compiles and distributes daily statistics detailing the number of files sent to schools, sorted by message class.
- Finalized deployment of new EAI queue manager (DMP1). This new queue manager was created to bring the SU35E18 EAI architecture and configuration in line with the standards of the other EAI enabled servers. Previously, the EAI software on SU35E18 consisted only of client versions for MQSeries and Data Integrator. This differed from all other EAI servers which are installed with server versions of the software. The client software did not provide the reliability compared with the server versions. An effort was undertaken to replace the client with the server software. Replacing the software required MQSeries configuration changes including the creation of a new MQSeries queue manager – DMP1. All application interfaces to the Financial and Credit Data Marts on SU35E18 now route through this new queue manager. This effort was completed this reporting period. The DMP1 queue manager services message traffic between the Data Marts and the following applications: FMS, DLSS, PEPS, and NSLDS.
- Provided 24 hours-a-day operations support for EAI architecture. Performed issue tracking and resolution and responded to daily adhoc support requests. Compiled detailed operations support



metrics. Detailed production operations information is contained in the *EAI Production Architecture Performance Report* deliverables (117.1.2a *EAI Production Architecture Performance Report I* – delivered January 27, 2003, 117.1.2b *EAI Production Architecture Performance Report II* delivered – May 9, 2003)

- EAI Evergreening – Refer to **Appendix A- EAI Software Installation Report** for additional detailed information.
 - MQSeries v5.3 upgrade for the EAI environments will be included as part of the planned VDC hardware refresh. Other EAI enabled application servers will be upgraded as those servers are refreshed. Refer to Section 4.2.1 Virtual Data Center Hardware Refresh for details and current planned dates.
- All application interfaces have been migrated off MQSeries Integrator (MQSI) and replaced with a custom Java transformation capability. MQSI software will be removed from the FSA Production environment as part of the pending hardware refresh effort. MQSI components will not be installed on the replacement servers.
- Created and distributed EAI Operations support schedule to VDC. Refer to **Appendix F – EAI Operations Support Schedule October 2003** for detailed information.
- Enhanced System Monitoring –
 - The EAI team assisted the VDC identify key elements of the architecture and business processing to be monitored with QPasa!.
 - Developed and implemented functionality to monitor and notify the EAI team in the event of an SAIG interface (Get / Put Adapters) outage.
 - Developed and tested capability to monitor and send automated notification to EAI team in the event an error is detected in any of the EAI log files.
- Delivered, updated, and received approval for the following deliverables:
 - 117.1.1d EAI Operations Services Performance Report IV
 - Submitted 9/30
 - Approved 10/16
 - 117.3.3 EAI Current State Report
 - Submitted 9/30
 - Approved 10/16



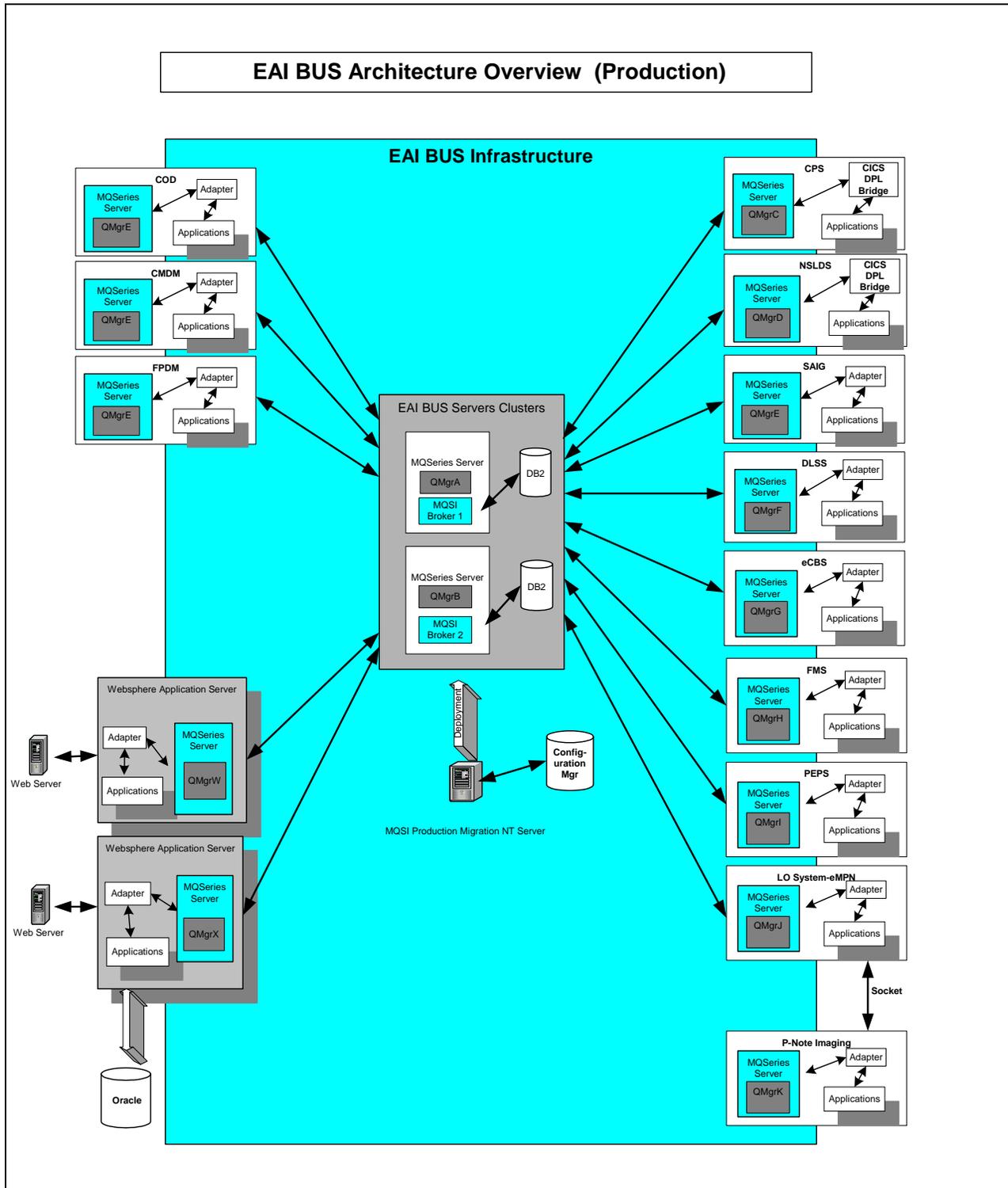
3 EAI Architecture Overview

The EAI Architecture is comprised of legacy systems, interfaces to the legacy systems, interfaces to modernization systems, and interfaces to FSA's Integrated Technical Architecture (ITA). No changes were made to the EAI architecture this reporting period.

The FSA Enterprise Application Integration Core Architecture includes the following five component areas:

- Legacy Systems - Mainframe and Mid-Tier
- Modernization Systems
- Internet - Websphere Application Server
- EAI Bus Servers
- EAI Development Workstations

The following diagram is a high level view of the EAI Architecture.





4 Infrastructure Change Requests, Upgrades, and Enhancements

One of the key objectives of EAI Core Operations Services is to provide infrastructure maintenance. This section provides a summary of the EAI submitted change requests and the significant updates and enhancements to the EAI infrastructure, including the reason for these enhancements.

4.1 Change Requests

The Change Request management process provides the structure to implement fixes, upgrades, or enhancements to the EAI environments. Change Requests are submitted, tracked, and implemented using a Rational ClearQuest tool called ECM Change Request Tracking Tool. During this reporting period of FY2003, the EAI Team logged and assisted in the implementation of 18 Change Requests affecting the Development, Test, and Production environments. Before a Change Request is submitted to Production, the EAI Team thoroughly tests the change, which is subsequently packaged with instructions and/or other supporting documentation for implementation. Additionally, the EAI Team provides the VDC with implementation and post-implementation support and validation for the majority of the Change Requests.

Refer to *Appendix E – EAI Change Request Summary, October 2003* for a detailed summary of all change requests.



4.2 Upgrades

Upgrades or evergreening of the EAI infrastructure are being performed to continue vendor support and to obtain enhancements provided by new releases. For the purposes of this report, an upgrade is defined as a maintenance patch, release, or other fix that has been applied to the existing infrastructure (i.e., new software, new hardware). Detailed software upgrade information is contained in the 117.1.3 *EAI Evergreening Schedule and Approach* deliverable.

The following software upgrades were completed:

Date	Software	Environment	Server(s)	Old Version	New Version	Reason
10/05/2003	FTFSTATD (Part of Data Integrator)	Production	SU35E14	4.2.4.0	4.3.5.18	To resolve FTFSTATD intermittent daemon crashing
10/17/2003	MQSeries	Test	SU35E17	MQSeries v5.3 CSD04	MQSeries v5.3 CSD04+e-fix	An e-fix to resolve a channel problem with QMGR EAI11
10/19/2003	JDK	Production	HPL16	JDK 1.3.1	JDK 1.4.1.03	To correct an issue that causes the EAI adapter to intermittently hang
10/26/2003	JDK	Development/Test	HPL15	JDK 1.4.1.03	JDK 1.4.1.05	Upgrade to resolve a bug in the 1.4.1.03 version



4.2.1 Virtual Data Center Hardware Refresh

The VDC is currently undergoing an effort to replace a subset of the existing FSA servers with updated servers. This includes migrating the affected Sun midrange servers to HP servers. An initial high level plan has been published which includes the dates in which the VDC plans to have all the replacement servers installed with the required software. The following table lists the servers and planned dates for all the affected servers in the EAI architecture. The information in the table is based on the published FSA Server Refresh Project 2003 dated October 23,2003.

Computing Environment	Server (Host Name)	Planned Start Date	Planned End Date	Status
EAI Development	SU22E28	11/24/2003	12/17/2003	Not Started
EAI Test (SIT,IST,UAT)	SU35E17	11/24/2003	12/17/2003	Not Started
EAI Staging	SU22E25	11/23/2003	12/21/2003	Not Started
EAI Production	SU35E3,SU35E14	11/28/2003	12/28/2003	Not Started
FAFSA Performance	rp7410-3	9/28/2003	10/14/2003	Complete
FAFSA Demo Development	SU35E5	10/05/2003	11/10/2003	In Progress
FAFSA Demo Production	SU35E9	10/16/2003	11/16/2003	In Progress
FAFSA Demo Production	SU35E13	10/16/2003	11/16/2003	In Progress
Informatica - Data Marts Production	SU35E18	11/24/2003	12/17/2003	Not Started
FMS/Oracle Production	HPV2	11/09/2003	12/07/2003	Not Started
FMS/Oracle Production Failover	HPV1	11/09/2003	12/07/2003	Not Started
PEPS Production	HPK2	10/03/2003	11/09/2003	In Progress
FMS Development	HPL6,HPL7	11/24/2003	12/21/2003	Not Started

Included in the hardware refresh will be the upgrade of MQSeries v5.2 to WebSphere MQ (formerly MQSeries) v5.3 and the retirement of MQSeries Integrator (MQSI). MQSI will not be installed on the replacement servers.



4.3 Enhancements

The EAI team continually evaluates products that would improve the EAI infrastructure. For the purposes of this report, an enhancement is defined as new component that has been added to the existing infrastructure (i.e., new software, new hardware).

4.3.1 MQ Software QPasa!

As part of the initial implementation phase, QPasa! has been configured to replicate the monitoring functionality of MQMON. Once operational, QPasa! will replace MQMON as the EAI architecture monitoring tool. Due to continued implementation issues, the VDC has not determined the final plan to retire MQMON.

Refer to *Appendix A – EAI Software Installation Report* for a list of all servers and environments that QPasa! is installed.



5 Environments

This section provides detailed diagrams of the EAI environments, configurations, and interface connectivity to support all phases of the EAI System Design Life Cycle (SDLC). A critical component of Core Operations Services is the maintenance of all EAI environments in addition to Production. The following table represents the environments built previously to, but supported during this reporting period.

- Development
- System Integration Test (SIT)
- Inter System Test (IST)
- Product Test (formerly called UAT)
- Staging
- Production
- FAFSA EAI Development
- FAFSA Development
- FAFSA Demo Development
- FAFSA Test
- FAFSA Performance Test
- FAFSA Demo Production
- FAFSA Production

Refer to *Appendix D – EAI Environment Diagrams* for detailed diagrams of the current configuration of the above listed environments.

5.1 Environment Updates

5.1.1 COD 2.2 Product Test / IST

The EAI source code build was migrated to Product Test and IST to support COD 2.2 testing. Edit 61 and Edit 115 were added to the message transformation during this reporting period. No other major environment updates were made.

5.1.2 FAFSA 7.0

The FAFSA Performance Test server HPN3 has been replaced by the new HP server rp7410-3.

Refer to *Appendix D – EAI Environment Diagrams, FAFSA-Production tab* for a diagram of the current configuration.



5.1.2.1 Development and Test

Changes since last report have been highlighted in bold.

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
EAI Dev	HPA2	FAFSAD2 (1420)	FAFSADC1	CPD1
FAFSA Development	HPA2	FAFSAD1 (1416)	FAFSADC1	CPD1
FAFSA Test	HPA2	FAFSAT1 (1417)	FAFSATC1	CPT1
FAFSA Performance	rp7410-3	FAFSAI1 (1414)	FAFSAIC1	CPA1
FAFSA Performance	HPN8	FAFSAI2 (1414)	FAFSAIC1	CPA1
FAFSA Demo Development	SU35E5	FAFSAD3 (HPA2: 1417)	FAFSATC1	CPT1
FAFSA Demo Production	SU35E9	FAFSAT2(1417)	FAFSATC1	CPT1
FAFSA Demo Production	SU35E13	FAFSAT3(1415)	FAFSATC1	CPT1

5.1.2.2 Production

No changes since last reporting period.

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
FAFSA Production	HPN4	FAFSAP7 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN15	FAFSAP2 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN16	FAFSAP3 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN2	FAFSAP6 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN7	FAFSAP5 (1414)	FAFSAPC1	CPP1

Additional information for FAFSA 7.0 can be found in the following FAFSA 7.0 Production Readiness Review documentation:

- FAFSA_7.0_Operations Checklist v3_12_20_02.doc



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- FAFSA_7.0_TroubleShootingGuide_12-19-02.doc
 - FAFSA_7.0 TechArchRequirements_v1.1_12-20-02.doc
 - FAFSA 7.0 Performance Test_ver1.6_12-19-02.doc
 - FAFSA_7.0_Install Guidelines (ITA) v1.2_12-20-02.doc



6 Test Summary

This section provides a summary of application EAI interface testing activities during the reporting period.

Type	Effort	
Integration	SAIG to/from COD	Transformation code and configuration developed for updated School interfaces supported in COD R2.2.
Integration	FMS to/from COD	Transformation code and configuration developed for updated interfaces supported in COD R2.2.
Integration	SAIG/COD logging	Logging capability added to capture information for incoming Datatel records and all outgoing records.
Performance	FAFSA 8.0 Performance Testing	Developed and executed test scripts for two test cycles. Generated simulated transaction load to test the FAFSA back-end components. Monitored the MQ infrastructure, transaction throughput, and response time statistics for the duration of each test.

Refer to *Appendix G – COD 2.2 & 3.0 Development and Test Documentation*. The enclosed CD contains Interface Control Documents (ICD) and Testing Documentation. The complete list of files on the CD is included below:

Interface Control Documents:

- EAI_COD_FMS_TRAN_ICD_002t_v12.doc
- EAI_COD_to_NSLDS_ICD_001at_v3.doc
- EAI_CPS_RECIPIENT_ICD_01at_v3_3.doc
- EAI_CPS_to_COD_AAR_ICD_001at_v6.doc

Test Documents:

- 24.07 Pell Legacy Disbursement Edits 0203 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disbursement Edits 0203 Unit Test Scripts v01.xls
- 24.07 Pell Legacy Disbursement Edits 0304 Unit Test Conditions v01.xls
- 24.07 Pell Legacy Disbursement Edits 0304 Unit Test Scripts v01.xls
- SAIG_Logging_Test_Scripts.xls



7 Integrated Planning Summary

No change to this section during this reporting period.

The EAI team is working with the Data Strategy and the Technology Strategy teams by meeting with them and reviewing their deliverables (123.1.9 Internal Data Strategy, 123.1.11 External Information Access (FSA Gateway) Strategy) to ensure that the strategies they develop leverage the EAI Architecture effectively. The EAI team also met with the Security team to discuss potential uses of EAI as component of the overall security solution.