

FSA Integration Partner

United States Department of Education

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EAI Operations Services Performance Report I (Core Services)

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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 September 27, 2002 through December 20, 2002.

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: EAI Communication** – Provides a summary of EAI external communication activities.
- **Appendix A: Software Installation Report**- Documents status of newly acquired software.
- **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 FY03 Q1 Change Request Summary** – Provides the summary and detailed information for all EAI submitted Change Requests for the quarter.



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- **Appendix F:** *LaRS – NSLDS Interface Control Document*- Documents the technical design for the application interface between LaRS and NSLDS.
 - **Appendix G:** *Mellon - FMS Interface Control Document*- Documents the technical design for the application interface between Mellon Bank and FMS.
 - **Appendix H:** *PEPS - eZAudit Interface Control Document*- Documents the technical design for the application interface between PEPS and eZAudit.
 - **Appendix I:** *MQ Series OS 390 Sizing Estimator* – Estimating tool based on IBM sizing calculations for MQ Series objects on the OS/390 platform.
 - **Appendix J:** *EAI Operations Support Schedule October - December 2002*- The support instructions and schedules provided to the Virtual Data Center (VDC) for EAI Operations.
 - **Appendix K:** *COD Design Alternatives Bad Data from Schools LOEs*- Documents the design alternatives and associated cost estimates for the approach of handling of malformed or bad input data from the Schools to COD.



2 Major Accomplishments

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

- Provided 24 hours-a-day operations support for EAI Architecture. Performed issue tracking and resolution and responded to daily adhoc support requests. Detailed production operations information is contained in the *EAI Production Architecture Performance Report* deliverable.
- FAFSA 7.0 - Developed, tested and implemented the EAI components as part of FAFSA 7.0. Provided significant support for extensive performance testing, issue root cause analysis, resolution validation, and on several occasions coordinated support from IBM. Developed custom connection pooling program and channel exit enhancements, installed and configured MQSeries and clustered Queue Managers on 4 servers and CPS. As this application was recently migrated to Production, documenting of FAFSA 7.0 is still being compiled. FAFSA 7.0 technical details outside of the Production Readiness Review materials will be available in future documentation.
- New Interface Development - LaRS and Mellon interfaces migrated to Production. eZAudit interface designs and development. ISIR XML Schema definition. Refer to **Appendix F - LaRS - NSLDS Interface Control Document**, **Appendix G - Mellon - FMS Interface Control Document**, and **Appendix H - PEPS - eZAudit Interface Control Document** for detailed interface information.
- Developed utility to test EAI network and application connectivity in support of CSC/VDC network migration. Supported network testing and validation, which occurred over 4, separate weekends.
- EAI Capacity Planning. Performed DASD assessment for CPS and NSLDS mainframe MQSeries Queue Manager that revealed an inadequate amount to support FAFSA 7.0. A recommendation for an additional 11.2 GB each for the NSLDS and CPS mainframes was requested. Refer to **Appendix I - MQ Series OS/390 Sizing Estimator** for detailed sizing calculation information used as the basis for the CPS and NSLDS DASD sizing increase recommendation.
- Environment installation, configuration and validation. To support NSLDS II, FAFSA 7.0, SAIG Performance, updated CPS imaging interface with IDC, IST, UAT, QPasa! efforts.
- Created QPasa! prototype drove the software selection and planning. Currently involved with implementing in the Development environment.
- Developed, tested, and implemented a Data Integrator (DI) logger utility to track and store in an Oracle database all file transfer status for improved file researching and customer support capability. Currently, development of a web-based user interface to the logger is in progress, which will enable self-service to Trading Partners and Customer Support for file transfer inquiries. Data Integrator (DI) Logger technical detail will be available in future documentation.



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- Planned software upgrades for EAI architecture for FY2003. Successfully upgraded and tested a DB2 database maintenance upgrade in the EAI Development and Test environments. VDC will perform this upgrade in Production. This is a prerequisite for the upcoming MQSeries Integrator (MQSI) product upgrade. Created MQSI regression test documentation and data. Detailed information is contained in the *EAI Evergreening Schedule and Approach* deliverable.
 - Formalized EAI Operations support procedures and schedule with VDC. Refer to **Appendix I** – *EAI Operations Support Schedule Oct-Dec 2002* for detailed information.
 - EAI identified and reviewed alternatives and cost estimates with COD for the purpose of handling bad input data from schools. Refer to **Appendix K** - *COD Design Alternatives Bad Data from Schools LOEs* presentation for detailed design alternative and associated cost estimate information.



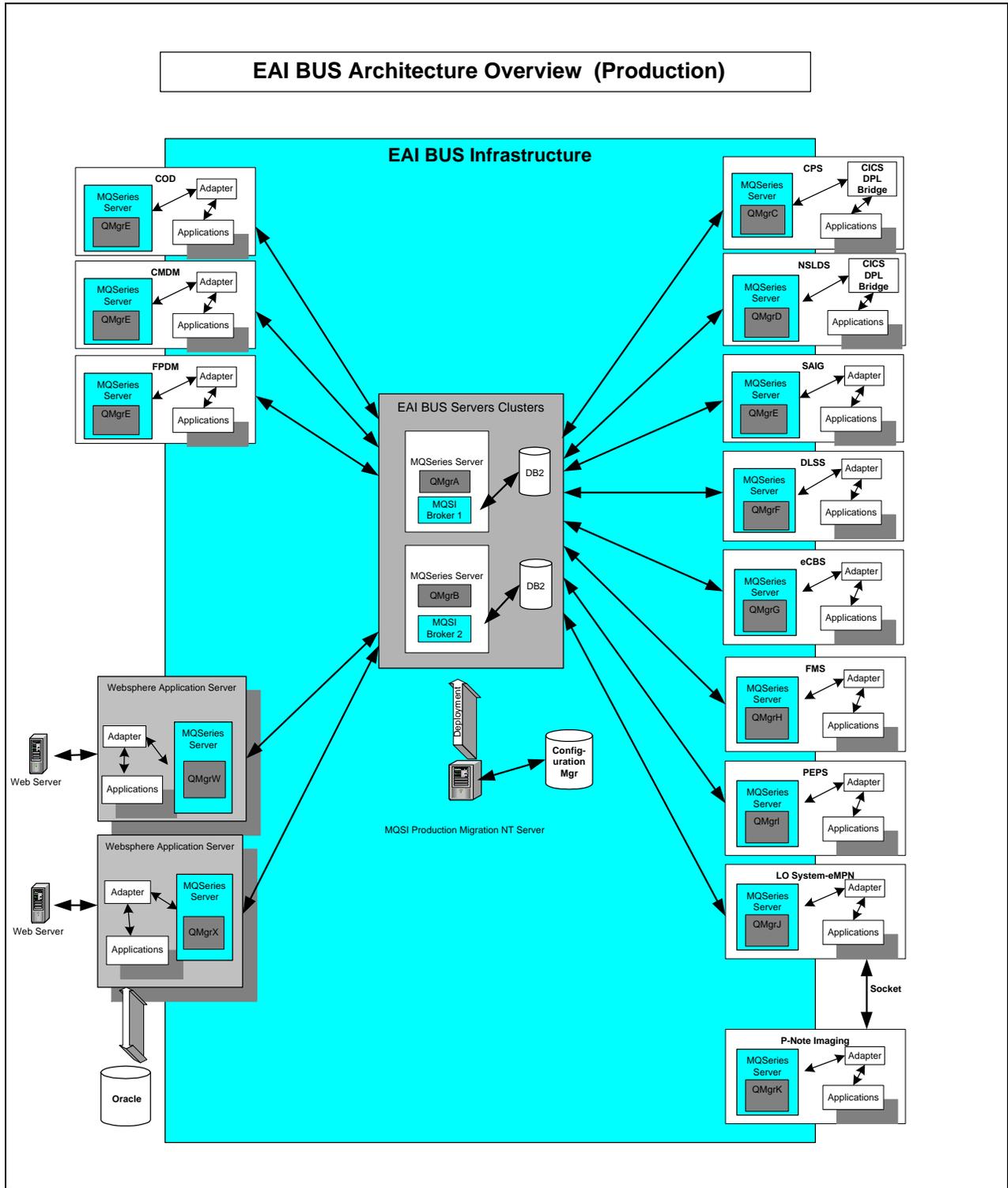
3 EAI Architecture Overview

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).

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 the first quarter of FY2003, the EAI Team logged and assisted in the implementation of 52 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 FY03 Q1 Change Request Summary** for a detailed summary of all change requests.

4.2 Upgrades

Upgrades 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 *EAI Evergreening Schedule and Approach* deliverable.

The following software upgrades were completed:

Software	Environment	Server(s)	Old Version	New Version	Reason
MQ Series v 5.2	Development	SU35E16	CSD04	CSD05	IBM recommended to resolve Channel Cluster issue
MQ Series v 5.2	Test	SU35E17, SFANT006	CSD04	CSD05	IBM recommended to resolve Channel Cluster issue
MQ Series v 5.2	Production	SU35E3, SU35E14	CSD04	CSD05	IBM recommended to resolve Channel Cluster issue
DB2 v6.1	Test	SU35E17, SFANT006	Fix Pack 7	Fix Pack 11	Migration path for MQSI 2.0.2 upgrade



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). No enhancements were performed during this period.

4.3.1 MQ Software QPasa!

EAI, with support from CSC, evaluated QPasa! and determined this enhancement would greatly improve the administration of MQSeries. QPasa! will help to standardize and improve MQSeries configuration management, deployment and monitoring capabilities. The software procurement is complete and the software is currently installed in the EAI and CSC development environments. CSC's Greg Dwyer is the Project Manager for the effort. Initial implementation has been planned for first quarter of FY03, but due to some initial configuration challenges this may be delayed until second quarter FY03. Once implemented, QPasa! will replace MQMon for monitoring MQSeries.



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.

- Development
- System Integration Test (SIT)
- Inter System Test (IST)
- User Acceptance Test (UAT)
- Staging
- Production
- FAFSA EAI Development
- FAFSA Development
- FAFSA Test
- FAFSA Performance Test
- 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 IST/UAT

Significant effort was required to configure and validate the IST and UAT environments to accommodate COD environment changes. The COD changes required the re-definition of MQ Series Queue Managers from the COD “U” and “Q” environments to the EAI Bus (EAIU1, EAIU1) Queue Managers. In addition, the remote Queue definitions for all the trading partner servers (i.e., FMS, CPS, NSLDS, SAIG, LOWeb, CMDM, FPDM, DLSS) had to be reconfigured to ensure connectivity between trading partners and COD.

Additional environment changes were required to support the NSLDS II development and testing, SAIG Performance testing, and CPS for testing of the updated CPS imaging interface with IDC.

5.1.2 FAFSA 7.0

During the first quarter, the largest environment related activities revolved around building out the development, test, and production environments to support FAFSA 7.0. The EAI Team installed, configured, and validated the FAFSA 7.0 environments in cooperation with CSC, NCSP, and the Integrated Technical Architecture (ITA) teams.



5.1.2.1 Development and Test

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	HPN3	FAFSAI1 (1414)	FAFSAIC1	CPA1
FAFSA Performance	HPN8	FAFSAI2 (1414)	FAFSAIC1	CPA1
Demo Development	SU35E5	FAFSAT1 (HPA2: 1417)	FAFSATC1	CPT1
Demo Production	SU35E9	FAFSAT1(HPA2: 1417)	FAFSATC1	CPT1

5.1.2.2 Production

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
Production	HPN7	FAFSAP1 (1414)	FAFSAPC1	CPP1
Production	HPN15	FAFSAP2 (1414)	FAFSAPC1	CPP1
Production	HPN16	FAFSAP3 (1414)	FAFSAPC1	CPP1
Production	HPN2	FAFSAP4 (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
- 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

5.1.3 Staging

Currently CSC is building out the Staging environment, which is not available for use for EAI pre-Production staging.



6 Test Summary

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

Type	Effort	
Performance	FAFSA 7.0	Point to point MQSeries interfaces between FAFSA and CPS were added as a part of the FAFSA 7.0 release. Due to the large volumes of transactions the interface must support, performance of the interfaces is extremely important.
Integration Performance	COD Post-Bus Response	An architecture change to move COD Post Bus Responses (PBR) from Generation Data Groups (GDG) to individual datasets was designed to fix a current Production issue. If a GDG fails or hangs during a PBR write, all subsequent PBR writes will fail. The architectural change will
Regression	MQSI Regression DB2 v6.1 Fix Pack 11 Upgrade	The MQSeries Integrator (MQSI) underlying database repository (DB2) was upgraded to the most recent maintenance patch level in preparation for a MQSI v2.0.2 upgrade.
Performance	SAIG	The SAIG hardware configuration was modified to support peak processing for the 2002-2003 school year. Performance testing was conducted to ensure the hardware configuration was adequate to support peak processing.



7 EAI Communication

To facilitate communication of EAI accomplishments, capabilities and services, the EAI Core Team plans to conduct future workshops focusing on both business and technical aspects of EAI. Between September 27, 2002 and December 20, 2002 the Task Order had not been awarded. As a result, external communication activities were put on hold. Communication activities will resume now that the Task Order has been officially awarded.