

FSA Integration Partner

United States Department of Education

Federal Student Aid



EAI Production Architecture Performance Report IV

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APPENDIX A: EAI ISSUE SUMMARY

APPENDIX B: EAI ARCHITECTURE AVAILABILITY SUMMARY

APPENDIX C: EAI OPERATIONS METRICS – NOVEMBER 2003

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1 Introduction

1.1 Summary

The purpose of this report is to document the EAI Production Architecture Performance metrics for services performed in support of Task Order 117, EAI Release 4.0 during the period of November 16, 2003 through December 15, 2003.

Task Order 117 provides for operational support and maintenance of the EAI architecture and infrastructure. The EAI Core Operations personnel provide 24 hrs x 365 days a year support of the EAI Production Architecture. In the event of any EAI related production incident or alert, EAI Operations is engaged to troubleshoot and restore the operability of the system.

The EAI Production Architecture Performance Report is summarized in the following sections:

- **Section 2: EAI Architecture Availability** - Provides a summary of the EAI Production Architecture availability and major support events.
- **Section 3: EAI Operations Support Summary** - Provides a summary of support pages, bad data file transfer issues, and adhoc support requests.
- **Appendix A: EAI Issue Summary** - Documents the EAI Operations related issues that opened or closed during the reporting period.
- **Appendix B: EAI Architecture Availability Summary** - Documents the availability for the EAI Architecture components.
- **Appendices C-D: EAI Operations Metrics – November – December 15 2003**



2 EAI Production Architecture Availability

The availability, or up time, of the EAI Production Architecture is a high level metric used to determine the overall health and stability of the architecture. The EAI Team works in conjunction with its data center counterparts to ensure the highest availability possible outside the normal, defined server maintenance windows.

2.1 Availability

The EAI Team operates with the informal availability target of 100%. This represents the ideal availability.

To provide a more accurate picture of the EAI Architecture availability, it is necessary to calculate the availability for each component (i.e., application interface, EAI server). The component availability, compared with a cumulative availability, provides a more accurate representation of availability and is the approach used for calculating this metric for the EAI architecture.

The key inputs for calculating the interface availability are based on:

- *FSA Server Maintenance Schedule*
- *Root Cause Analysis (RCA) documentation* - A RCA document is created for each major system event or outage and is the result of a System Restoration Team (SRT) being assembled by a Virtual Data Center (VDC) Availability manager in response to a Production outage or issue. Detailed information pertaining to each outage or issue is contained within each of these documents including total time of the outage or degradation of service.
- *VDC Operations Status Reports* - This report is published every business day by VDC Operations and covers all FSA servers and applications. It details any recent issues and outages and provides updates to prior issues as they are resolved. The report also references RCA documents when applicable.



2.1.1 Calculation

The architecture availability for each component is a simple calculation using the following variables:

- Total_H - Total Number of hours in Period
- Total_{MW} - Total Number of Scheduled Maintenance Window hours in Period
- Total_O - Total Number of Outage hours in Period

The calculation is as follows:

$$\frac{(\text{Total}_H - \text{Total}_{MW}) - \text{Total}_O}{(\text{Total}_H - \text{Total}_{MW})} * 100 = \% \text{ Availability}$$

To demonstrate the calculation, a sample interface availability is calculated for the period from September 27th through December 31st, with the cumulative, non-maintenance window outages equaling 5 hours.

E.g.

$$\frac{(2304 - 84) - 5}{(2304 - 84)} * 100 = 99.7 \% \text{ Availability}$$

The breakdown of each calculation for each variable:

- Total Number of hours (Total_H) in Period:

$$\begin{aligned} \text{Total}_H &= (\text{Period End Date} - \text{Period Begin Date}) * 24 \\ &= (12/31/02 - 9/27/02) * 24 \\ &= (96) * 24 \\ \text{Total}_H &= \mathbf{2304 \text{ hours}} \end{aligned}$$

- Total Number of Scheduled Maintenance Window hours (Total_{MW}) in Period:

$$\begin{aligned} \text{Total}_{MW} &= \text{Number of Sundays in Period} * 6 \text{ hours} \\ &= 14 * 6 \\ \text{Total}_{MW} &= \mathbf{84 \text{ hours}} \end{aligned}$$

- Total Number of Outage hours (Total_O) in Period:

$$\begin{aligned} \text{Total}_O &= \text{Sum of all outage hours} \\ \text{Total}_O &= \mathbf{5 \text{ hours}} \end{aligned}$$



2.1.2 Component Availability

The following table summarizes the EAI Production Architecture component availability.

Period = November 16, 2003 through December 15, 2003
Total_H = 720 hours

Note: All application interfaces have a dependency on the EAI Bus and therefore any EAI Bus service outage impacts all components. The EAI Bus supports transport of transactional data and files between Trading Partner applications. The clustering of the EAI Bus servers allows fail over of all transactional data to the non-affected server. Due to software configuration constraints, file transfers are routed through either of the EAI Bus servers (SU35E3 or SU35E14). The Trading Partner application is configured to transfer files using either SU35E3 or SU35E14. There is no fail over to the other server in the event of a MQ Series outage. If a server experiences an outage, all Trading Partner file transfers configured for that affected server will be queued up until the issue is resolved. Once restored, the messages will be transferred normally. Therefore, the availability of all components will be affected for the length of the service outage for SU35E3 or SU35E14.

Refer to *Appendix B - EAI Architecture Availability Summary* for a detailed summary of the availability of the architecture components.



2.2 Major Production Events

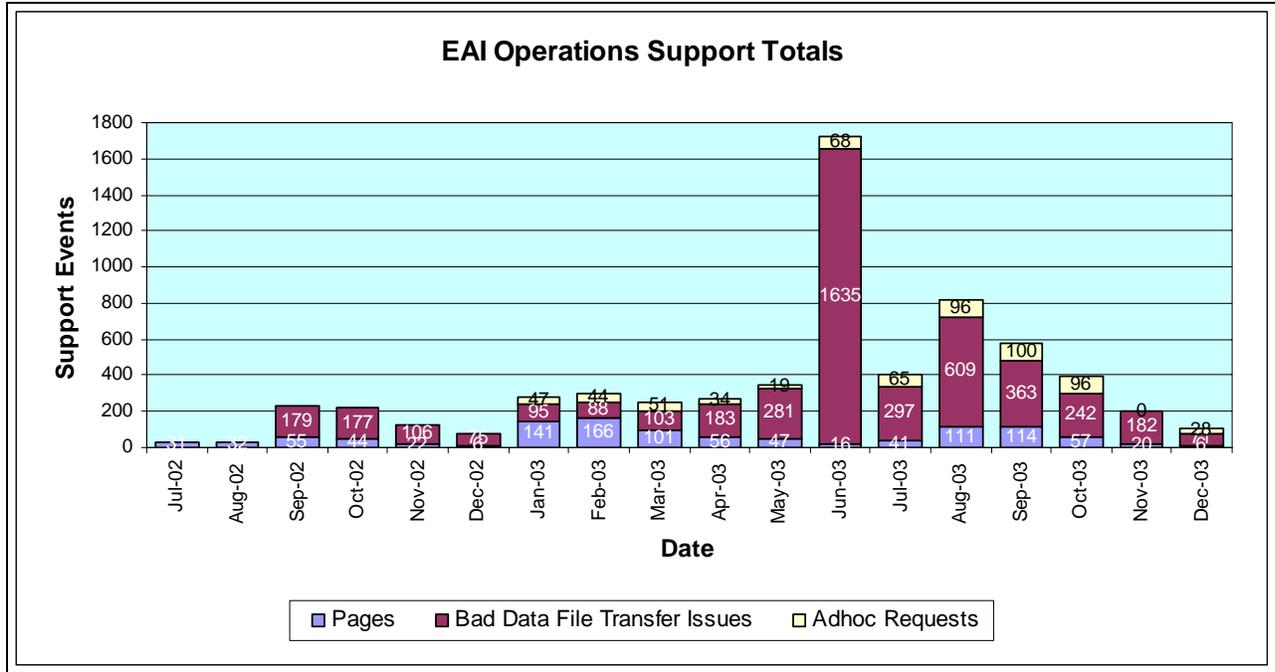
Production events are defined as system affecting occurrences ranging in severity from Degradation of Service to a Service Outage. The tables in *Appendix B – EAI Architecture Availability Summary* summarize the major events encountered in the EAI Production architecture for this reporting period and are separated into events that are EAI related and non-EAI related. EAI related events are issues that have occurred in Production that are problems identified in the EAI architecture (i.e., MQSeries, Data Integrator). Non-EAI related events are issues that affect the EAI architecture, but where the EAI architecture is not the source of the issue (i.e., hardware failure, network outage, etc.). The information contained in these tables is used to calculate the availability metrics also found within *Appendix B – EAI Architecture Availability Summary*.

The 2.33 hours of Non-EAI related outage time are CPS-FAFSA related as shown in the spreadsheet.



3 Support Summary

The EAI team provides support that can be categorized into three general areas: Production support pages, bad data file transfer issues, and ad hoc support requests. The following table summarizes the metrics currently collected for the support pages, bad data file transfer issues, and adhoc requests.



3.1 Support Pages

The above chart summarizes the support pages for this reporting period. A higher number than usual appear in August and September, and this can be attributed to an EAI logging issue that caused frequent support pages during those months. This issue has since been resolved.

To provide greater insight to the areas of the architecture that have recurring errors or problems, we have implemented a mechanism to provide detailed MQ Series metrics. These metrics are based on the email alerts sent to the EAI Operations Support mailbox by the MQ Series monitoring software (MQMON). Refer to *Appendices C-D - EAI Operations Metrics- November - December 15 2003* for detailed metrics.

3.1.1 Pager Response Time

The EAI team transitioned Tier I support responsibility to VDC, and will no longer be paged directly for Tier I events. During the reporting period, the VDC escalated issues to the EAI team via phone conversations resulting in an immediate response time.



3.2 Bad Data File Transfer Issues

The bulk of the application interfaces consist of file transfers over Data Integrator. As expected, there are file transfer issues that occur. The most common causes for transfer issues arise in the SAIG to COD interface. Schools send files via SAIG to COD. Often the file formats and data are not correct and the file transfer fails. The EAI Team provides the research and analysis into the specific cause of the file transfer issue. Frequently the files are not in the correct format or layout. This root cause information is communicated to COD Customer Service so that the School can fix and resend the files. In addition the team provides support for file resend requests.

In the EAI Operations Support Totals diagram shown above, the number of transfer issues has stayed relatively stable over time, and the higher months were driven by the increase in overall SAIG volume. The large number of file transfer issues in June was due to two incidents of Data Integrator failure; one occurred on SAIG and the other at COD. Both happened during high traffic periods and caused a large number of transfer failures.

3.3 Adhoc Requests

The EAI Team provides support for adhoc requests. These requests vary in complexity from the simple status or configuration questions to creation of environments and extracurricular testing support.

In the above table, EAI Operations Support Totals, the number of adhoc requests has stayed relatively stable over time, and the higher months were driven by the increase in overall SAIG volume.