

*FSA Integration Partner*

United States Department of Education

Federal Student Aid



## ITA Production Operations Goals Report III

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# 1 Introduction

## 1.1 ITA Overview

The Integrated Technical Architecture (ITA) provides a standardized, reusable infrastructure for enabling business capabilities within the FSA application community. The long-term goal of the ITA team is to provide an integrated, enterprise-wide technical architecture that will enable FSA to meet its goal of reducing the number of custom-built applications that are difficult and costly to update and maintain. Copies of the environment diagrams are provided in Appendix A to illustrate this.

## 1.2 Executive Summary

The ITA Production Operations Goals Report III (November 14, 2003) documents the maintenance services provided by the ITA team between May 1 and November 14, 2003. These maintenance services were provided to FSA applications using ITA products hosted in the ITA production environment. The following is a brief overview of the contents of each section of this report:

### **Section 1 Introduction:**

- Provides an overview of the contents of this report.
- Describes FSA applications maintained in the ITA production environment and identifies the ITA products being maintained.
- Provides an overview of the products that ITA supports as outlined in the Service Level Agreements (SLAs) between ITA and each FSA application using the ITA production environment.

### **Section 2 Maintenance Services:**

- Summarizes ITA availability for maintenance services.
- Provides a brief summary of pages and calls, and includes the total number of incidents.

### **Section 3 Issue Troubleshooting and Resolution:**

- Provides an overview of the Issues section of this document.
- Summarizes production issues that were identified and resolved between May 1 and November 14, 2003.
- Summarizes any outstanding production support issues.



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## 1.3 FSA Applications

This section provides an overview of FSA applications hosted in the ITA production environment. The ITA team provides the following maintenance services to these applications:

- Environment maintenance.
- Upgrades and patches as needed.
- Change request processing.

### 1.3.1 eCampus Based

The intent of the project is to modernize the existing CB application architecture; migrating from the current platform (COBOL, IBM Mainframe, VSAM data store) to a relational database platform (Oracle), developing a web-based user interface (WebSphere), along with additional software functionality enhancements. This modernized solution is named eCB (electronic Campus Based). The main objective of the modernization effort is to offer institutions and CB staff an integrated and intuitive solution that increases access to information and self-service capabilities supporting FSA's strategic goals.

The eCampus Based application receives support for WebSphere Application Server, IBM HTTP Server, and Network Dispatcher.

### 1.3.2 Exit Counseling

Exit Counseling is the process students go through prior to graduation, and it is the beginning of the repayment phase of the financial aid process. The Exit Counseling application utilizes WebSphere and MQSeries to access the National Student Loan Data System (NSLDS) mainframe to retrieve appropriate loan information.

ITA provides WebSphere Application Server and IBM HTTP Server product support to the Exit Counseling application.

### 1.3.3 Free Application for Federal Student Aid on the Web (FAFSA on the Web)

The FAFSA on the Web application is used by college students and schools to submit financial aid applications to FSA via the Internet.

ITA provides FAFSA on the Web with support for WebSphere Application Server, IBM HTTP Server, and Network Dispatcher.

### 1.3.4 Financial Partners Data Mart (FP Data Mart)

The FP Data Mart initiative provides initial Risk Management, Customer Relationship Management, Compliance Management, and Portfolio Management functionality related to the thirty-six Guaranty Agencies and the approximately four thousand lenders.

FP Data Mart receives ITA support for the Informatica product.



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### **1.3.5 FSA Computer-Based Orientation to Aid Concepts and How-to's (FSA COACH)**

FSA COACH is a comprehensive introductory course on school requirements for administering post-secondary student financial aid programs.

ITA provides Network Dispatcher and IBM HTTP Server product support to the FSA COACH application.

### **1.3.6 FSANet**

FSANet is an internal portal for FSA employees. It provides general information about FSA, FSA Channels, and the Department of Education. The portal also houses information about FSA standards.

ITA provides WebSphere Application Server, IBM HTTP Server, and Network Dispatcher product support to the FSANet Application.

### **1.3.7 Information for Financial Aid Professionals (IFAP)**

The IFAP website is an electronic library for financial aid professionals containing publications, regulations, and guidance regarding the administration of Title IV Federal Student Aid Programs.

IFAP receives ITA support for WebSphere Application Server, IBM HTTP Server, and Network Dispatcher.

### **1.3.8 Lender Reporting System (LaRS)**

LaRS is part of the Financial Management System phase IV project. LaRS is an Oracle Financials based application that improves the reliability of lender billing data through a redesigned loan payment process.

ITA provides Network Dispatcher product support to the LaRS application.

### **1.3.9 Ombudsman Redesign**

The Ombudsman website contains information and resources about FSA Ombudsman. The site contains searchable content and links to quickly retrieve information.

ITA provides WebSphere Application Server, IBM HTTP Server, and Network Dispatcher product support.

### **1.3.10 Program Guidance**

The Program Guidance application provides a central location for resources needed by the Program Development Division within FSA. The application provides documents and profiles to identify relevant information quickly for members of this division.

ITA provides WebSphere Application Server, IBM HTTP Server, and Network Dispatcher product support.

### **1.3.11 Schools Portal**

The Schools Portal is a homepage for school-specific information with links, headlines, and calendar functions frequented by the schools. The site is customizable and can store bookmarks.



ITA provides WebSphere Application Server, IBM HTTP Server, Interwoven, Autonomy, and Network Dispatcher product support.

### 1.3.12 Students & Financial Partners Portal

Portals were developed for the Students and Financial Partners channels to provide a central location for information needed by students and financial partners.

ITA provides WebSphere Application Server, IBM HTTP Server, Interwoven, Autonomy, and Network Dispatcher product support.

### 1.3.13 Table of FSA Application Release Numbers

The table below presents the release numbers of the FSA applications supported by the ITA team in the production environment.

| Application                          | Current Release Number     |
|--------------------------------------|----------------------------|
| eCampus Based                        | 3.0                        |
| Exit Counseling                      | -                          |
| FAFSA on the Web                     | 7.0                        |
| FP DataMart                          | 2.0                        |
| FSA COACH                            | 1.0                        |
| FSANet                               | 2.0                        |
| IFAP                                 | 2.0                        |
| LaRS                                 | 4.11                       |
| Ombudsman                            | -                          |
| Program Guidance                     | 1.0                        |
| Schools Portal                       | 2.0                        |
| Students & Financial Partners Portal | Students - 2.0<br>FP - 2.0 |



## **1.4 ITA Products**

This section provides an overview of ITA products used by FSA applications hosted in the ITA production environment.

### **1.4.1 IBM HTTP Server**

IBM's web serving offering is based upon the Apache web server. The implementation that IBM has custom tailored allows for tight integration into IBM WebSphere applications and other IBM products. It allows for the serving of multiple web documents, while also providing the necessary interaction with the Application Server.

### **1.4.2 IBM WebSphere Application Server**

The IBM WebSphere Application Server manages, deploys, programs, and integrates development like IBM's WebSphere. It makes use of Java technology that is compatible for most web application offerings. WebSphere Application Server is a highly configurable solution for a small offering or a large enterprise. It is the middleware between the HTTP servers and the databases.

### **1.4.3 Network Dispatcher**

This IBM product is an integrated portion of the IBM Edge Server. Network Dispatcher provides load balancing. It administers the resource balancing between clusters of web servers and application servers. It is one of many components within the network architecture that allows for high availability of web applications.

### **1.4.4 Interwoven TeamSite**

As the flagship product of the Interwoven Platform, TeamSite enables content contribution, collaboration, and management across the enterprise. It provides the necessary components to streamline business processes, integrate currently used productivity tools, and accelerate all eBusiness initiatives.

### **1.4.5 Informatica**

Informatica is a mainframe data tool that converts mainframe data for Oracle so MicroStrategy can generate reports.

### **1.4.6 Autonomy**

Through the use of Autonomy the entire Internet offering is easily parsed into a searchable resource. Users can seamlessly search for content throughout enterprise offered information. It does this through its connectors that combine varying forms of resources (databases, html pages, e-mails, etc.) into one easily accessible resource.

### **1.4.7 Microstrategy**

This product provides reporting, analysis, and information delivery capabilities.



#### 1.4.8 Table of ITA Product Software Versions

The table below presents the version(s) of the software products installed in the ITA production environment.

| Software Product                   | Current Version  |
|------------------------------------|--|
| IBM HTTP Server (IHS)              | v1.3.12<br>v1.3.26 (FAFSA HP upgrade)*                                       |
| WebSphere Application Server (WAS) | v3.5.6 (HP machines)<br>v3.5.5 (SUN machines)<br>v.5.0.1 (FAFSA HP upgrade)* |
| eNetwork Dispatcher                | v4.0.2.25  |
| Interwoven TeamSite                | v5.0.1   |
| Informatica                        | v5.1.2   |
| Autonomy                           | v3.1.13.2  |
| Microstrategy                      | v7i  |
| Solaris                            | v2.8   |

\* As of Oct. 5, 2003 the FAFSA HP production servers have been upgraded to IHS v1.3.26 and WAS v5.0.1 and no longer use IHS v1.3.12 or WAS v3.5.6. As of Nov. 14, 2003, the SUN ITA production servers are still running IHS v1.3.12 or WAS v3.5.6 and are planned to be refreshed with HP servers running IHS v1.3.26 and WAS v5.0.2.



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## 2 Maintenance Services

### 2.1 Availability

The ITA team offers continuous secondary production support (tier two) to CSC in their maintenance escalation process of resolving production issues. ITA provides support twenty-four hours a day, seven days a week. This level of support helps ITA ensure a high level of service as outlined in the Service Level Agreements (SLAs) with each application team. The schedules & team used to provide this support are detailed in Appendix B & C.

Target Availability: 100% (24/7 production support)

Actual Availability: The IT Services Report is published on a daily basis. Actual Availability is detailed in these individual reports. However, there is no comprehensive report with numbers on Availability for multiple weeks. The details of these reports can be obtained as issued by Ernest Sheffield at [Lin.Sheffield@ed.gov](mailto:Lin.Sheffield@ed.gov).

### 2.2 Pager Support

The ITA team provides non-business hour support through pager support. The ITA team has escalation procedures to ensure that support for production issues is readily available. During business hours the ITA team answers an average of 5 calls per day. During non-business hours the ITA team answers 4 pages per week. Additionally, the ITA team has been participating in weekly production issue status calls. The incidents (production issues) that have been captured thus far include those that are logged in the change request tool that are described in Section 3.2. An additional table of historical data are provided in Appendix D



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## 3 Issue Troubleshooting and Resolution

### 3.1 Issue Matrix

The issue log included in Section 3.2 of this document provides detailed issue troubleshooting and resolution information for production environment issues addressed between May 1 and November 14, 2003. The matrix is organized chronologically by application name.

This matrix consists of the following categories:

- **Date Opened:** Provides the date the issue was opened.
- **Application:** Provides the name of the application.
- **Description:** Provides a description of the issue.
- **Resolution:** Summarizes steps taken by the ITA team to resolve an issue.
- **Priority:** Provides the issue's level of priority (high, medium, low).
- **Issue Status:** Indicates the issue's status (open – issues that have not yet been resolved, closed – issues that have been resolved and implemented).
- **Issue Resolution/Target Date:** Provides the issue's resolution date or target date.
- **Approximate Time Spent:** The number of hours spent resolving the issue.

Some issues span a greater time period and closure may not have been possible before the deadline of this report.



### 3.2 Issue Resolution Log

| Date Opened | Application | Description  | Resolution   | Priority | Issue Status | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|--|--|----------|--------------|--------------------------------|---------------------------|
| 7/2/2003    | FAFSA       | The FAFSA Production environment experienced several peaks & stoppages related to the MaxClients on the IHS servers. The number of http clients on the web servers ramps up rapidly, without any increase in user load. Several outages occurred over a two week period related to this single issue   | <p>The ITA team identified several steps for diagnosing &amp; troubleshooting the problem, as the outages typically happened very quickly and then faded.</p> <p>The ITA team recommended several configuration setting changes to help troubleshoot &amp; alleviate the problem. No Root Cause was identified by IBM, ITA or CSC and the issue was monitored until 9/18/2003. On this date WebSphere 5.0 went into production and the issue moot.</p> | 3-Normal | Closed       | 9/18/2003                      | 100                       |
| 9/22/2003   | FAFSA       | <p>The ITA team, during our audit of the new FAFSA WebSphere 5.0 environment discovered an outage and issue with the servers in production.</p> <p>There were a number of StaleConnectionExceptions thrown within the FAFSA application server relating to a Shadow connection in use for reverse compatibility.</p> <p>The ITA team recommended changes to several DataSources in order to bring their timeout values inline with previously unidentified back end systems.</p> | <p>The ITA team recommended a change in the timeout values to ensure that WebSphere, and not the Shadow region on the Mainframe, controls the timeout of any connections.</p> <p>In addition to this, a redirect from the old ShadowDirect access page to the new page for any sites that were still linking to the old pages. These changes were implemented by CSC under a waiver</p>  | 2-High   | Closed       | 9/25/2003                      | 6                         |



| Date Opened | Application | Description   | Resolution   | Priority | Issue Status | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|---|--|----------|--------------|--------------------------------|---------------------------|
| 9/22/2003   | FAFSA       | The ITA team, during our audit of the new FAFSA WebSphere 5.0 environment discovered an outage and issue with the servers in production.<br><br>There were a number of StaleConnectionExceptions thrown within the FAFSA application when it attempted to access the Session Database through the WebSphere DataSource.                   | The ITA Team recommended changing the timeout & stale connection clean up values to more intelligently handle and recover from any Stale connections that are encountered with the session database.   | 2-High   | Closed       | 9/25/2003                      | 10                        |
| 9/22/2003   | FAFSA       | The ITA team, during our audit of the new FAFSA WebSphere 5.0 environment discovered an outage and issue with the servers in production.<br><br>Upon further examination, the ITA team discovered open TCP/IP connections that exist between IHS & WAS. These connections linger after they have been used without being properly closed. | The ITA team has opened a PMR with IBM and we are actively researching the issue with the environment.<br><br>This situation has not caused any degradation or outage to date. The ITA team is closely monitoring this to make sure that this does not cause an issue in the future. | 2-High   | Open         | 10/15/2003                     | 10                        |
| 9/22/2003   | FAFSA       | The ITA team, during our audit of the new FAFSA WebSphere 5.0 environment discovered an outage and issue with the servers in production.<br><br>The ITA team identified several discrepancies in the production environment from the Performance Test recommendations.  | The ITA team is currently in the process of reviewing and recommending memory and java heap size values for the WebSphere 5.0 environment going forward based upon production usage data.  | 2-High   | Open         | 10/05/2003                     | 125                       |



| Date Opened | Application | Description   | Resolution   | Priority | Issue Status | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|---|--|----------|--------------|--------------------------------|---------------------------|
| 10/29/2003  | FAFSA       | TNG alert that web sites were having problems came in at 1:17. CSC reported max clients were over 300 and climbing. IHS was restarted, but max clients immediately started climbing. Jeff found the admin client showed one clone down on hpn4. It was decided to take the node manager down and restart on both n4 and n16 one at a time. Once that was done, max clients returned to normal levels and no errors were shown in plugin logs. All TNG alerts cleared. | We have made three requests to CSC to provide the ITA team more information on this outage. That information has not been provided   | 2-High   | Open         | 11/15/2003                     | 4                         |
| 6/23/2003   | FSANet      | The FSANet team identified an issue with Interwoven OpenDeploy, where files were not deploying to production.   | The ITA team engaged the command center and the OpenDeploy process was restarted on both production IHS machines   | 2-High   | Closed       | 6/23/2003                      | 4                         |
| 9/15/2003   | FSANet      | Files would not deploy through TeamSite to production.  | The permissions on /tmp/odnodes.xml were not correct, so users could not overwrite the file for deployments.<br><br>The ITA Team corrected this problem and deployments proceeded normally | 3-Normal | Closed       | 9/15/2003                      | 2                         |
| 5/1/2003    | IFAP        | Autonomy Search Results for the IFAP application has formatting characters (bullets, tab, etc) that are converted to characters that are displayed in the search returns.   | The issue was resolved in the upgraded version of Autonomy   | 3-Normal | Closed       | 5/14/2003                      | 10                        |
| 5/1/2003    | IFAP        | Autonomy Search Results are not returning accurate information for searches on specific pages.  | This issue was re-checked to ensure that the upgrade did not re-create the problem. It did not.  | 3-Normal | Closed       | 5/14/2003                      | 3                         |



| Date Opened | Application | Description  | Resolution  | Priority | Issue Status   | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|--|---|----------|----------------|--------------------------------|---------------------------|
| 5/7/2003    | IFAP        | Autonomy Search Results issues: After the upgrade of the Autonomy engine, several issues were revisited to ensure compliance with existing open issues   | Previous Issues resolved.   | 3-Normal | Closed         | 5/14/2003                      | 4                         |
| 6/13/2003   | IFAP        | The ITA team identified errors and inconsistencies in the WebSphere logs where DataSources connections timed out without explanation.<br><br>After the issues were fixed (see previous item) additional timed-out connections were observed in the IFAP application. | The ITA team discovered, while working with INDUS, that the IFAP application did not utilize WebSphere DataSources, instead relying on building, and destroying, a full database connection for each page that required database access.<br><br>The ITA team, drawing from previously published best practices, identified and assisted in the effort to implement DataSources, rather than raw database connections, within the IFAP application.<br><br>During this process, the ITA team reviewed approximately 300 IFAP JSP pages for any best practices that needed to be implemented. | 3-Normal | Closed         | 8/6/2003                       | 30                        |
| 6/30/2003   | IFAP        | Files would not deploy through TeamSite to production.   | The ITA team reset the configuration file for IFAP. TeamSite was restarted to pick up the file.   | 3-Normal | Closed         | 6/30/2003                      | 4                         |
| 8/8/2003    | IFAP        | INDUS has discovered on August 8 that IFAP branch is accessible from other branches.   | This change is a known permissions change in order to enable the IFAP workflows to work properly.<br><br>The ITA team is awaiting response from   | 4-Low    | Awaiting Input | 10/15/2003                     | 4                         |



| Date Opened | Application | Description   | Resolution  | Priority    | Issue Status | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|---|---|-------------|--------------|--------------------------------|---------------------------|
|             |             |   | INDUS about how to proceed. No response has been received to date.  |             |              |                                |                           |
| 10/29/2003  | IFAP        | INDUS requested that new branches be created to support content going into the production environment.  | The ITA team created the new branches and INDUS verified their functionality  | 3-Normal    | Closed       | 10/31/2003                     | 2                         |
| 6/1/2003    | ITA         | The ITA team identified errors and inconsistencies in the WebSphere logs where DataSources connections timed out without explanation.<br><br>Upon further examination, the ITA team learned that CSC had implemented a Firewall between the WebSphere servers and the database server. Due to the timeout settings in the firewall, WebSphere was losing its connections to the database. | The ITA team identified several DataSources that needed to be updated in light of the previously unknown firewall. Working with all partners, the team made sure that every application's DataSources were configured correctly for the new Firewall.<br><br>After these changes were implemented, no more stale connections were observed through the DataSources. | 3-Normal    | Closed       | 6/13/2003                      | 60                        |
| 6/24/2003   | ITA         | The TeamSite process, including the GUI, was not running. Users were unable to access, edit or deploy content to Production.<br><br>The TeamSite server (su35e1) rebooted during the morning and TeamSite did not start up when the server came back up.  | TeamSite was restarted. CSC investigated the cause of the reboot and reported their findings in their RCA   | 1-Emergency | Closed       | 6/24/2003                      | 16                        |



| Date Opened | Application         | Description  | Resolution   | Priority | Issue Status | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|---------------------|--|--|----------|--------------|--------------------------------|---------------------------|
| 6/25/2003   | ITA                 | Certain users were unable to add PDF files into the TeamSite server and consequently deploy the files to production.   | The directory permissions for the affected users were updated to reflect the proper settings.<br><br>Users were then able to properly add & deploy PDF files to production.  | 3-Normal | Closed       | 6/25/2003                      | 2                         |
| 9/22/2003   | Schools Portal      | Schools Portal could not deploy Headlines through the DataDeploy feature of TeamSite.  | The ITA Team investigated the error and found that Headline entries have not been deployed via DataDeploy since 11/05/2002, so modification of configuration files was necessary. In the meantime, the headline in question has been posted through the web front-end that updates the Schools Portal. | 3-Normal | Closed       | 9/22/2003                      | 2                         |
| 10/22/2003  | Schools & FP Portal | Yesterday afternoon, we experienced a production outage in the ITA environment. The PORTALS clones on su35e9 and su35e13 went down sometime around 4:24 p.m. Paul Noniewicz asked that I capture the standard error and standard out logs for each clone and send them to you for your review. |  | 2-High   | Closed       | 11/3/2003                      | 8                         |
| 10/17/2003  | Students Portal     | Production Edition Deployment is not working in the students branch.   | Edition deployment script needed to be modified to fix a malformed XML error.  | 2-High   | Closed       | 10/17/2003                     | 1                         |



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| Total Issues |  |  |  |  |  |     | Total Hours |
|--------------|--|--|--|--|--|-----|-------------|
| 22           |  |  |  |  |  | 407 |             |