

*FSA Integration Partner*

United States Department of Education

Federal Student Aid



# ITA Architecture Maintenance Goals Report III

*Task Order #118*

Deliverable # 118.1.2c

**Version 1.0**

September 30, 2003



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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 vision of the ITA is to provide an integrated, enterprise-wide technical architecture that will enable FSA to reduce the number of custom-built applications that are difficult and costly to update and maintain.

## 1.2 Executive Summary

The ITA Architecture Maintenance Goals Report III (September 30, 2003) documents the architecture maintenance services provided by the ITA team between May 1 and September 30, 2003. These maintenance services were provided to FSA applications using ITA product software and Reusable Common Services hosted in the ITA development, testing, and staging environments. 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.

### **Section 2 Environments:**

- Describes the pre-production environment (development, testing, staging) and includes a detailed diagram of this environment.
- Lists successfully provided environments and includes a diagram of these environments.

### **Section 3 ITA Product Software:**

- Provides a summary of ITA product software.

### **Section 4 Infrastructure Updates and Enhancements:**

- Provides an overview of the updates and enhancements section of this document.
- Summarizes the updates and enhancements that were performed between May 1 and September 30, 2003

### **Section 5 Reusable Common Services (RCSs)**

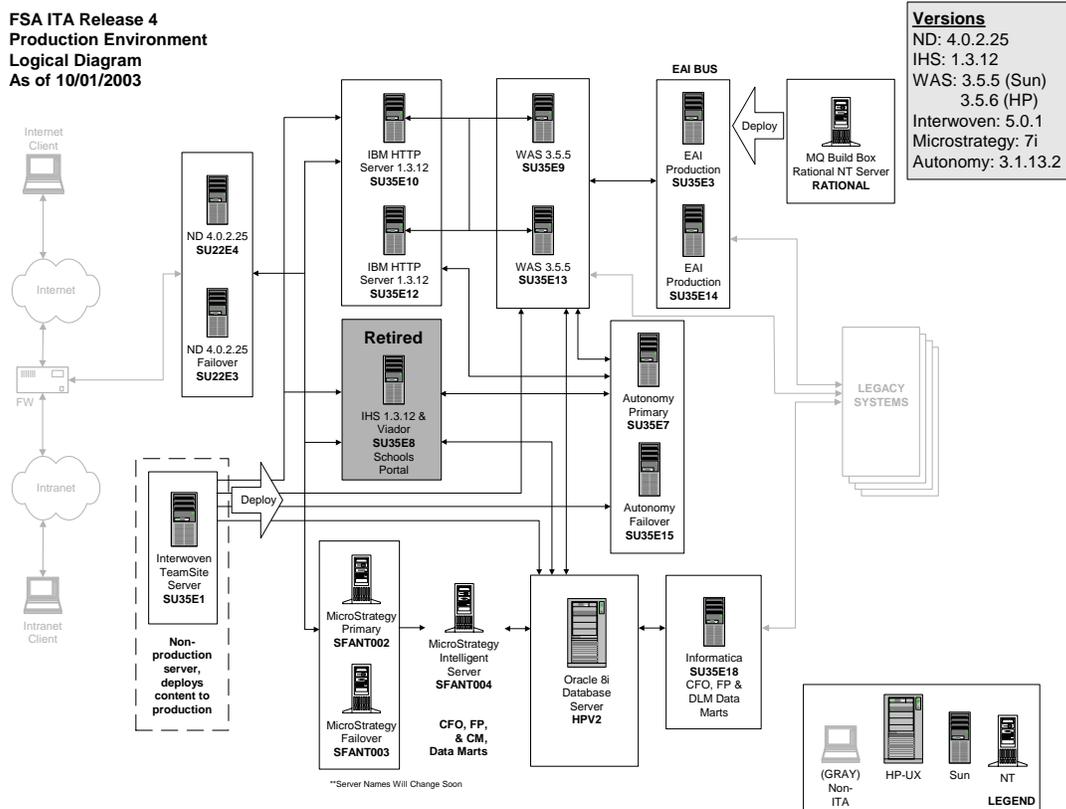
- Summarizes the changes to any RCSs hosted in the ITA architecture.

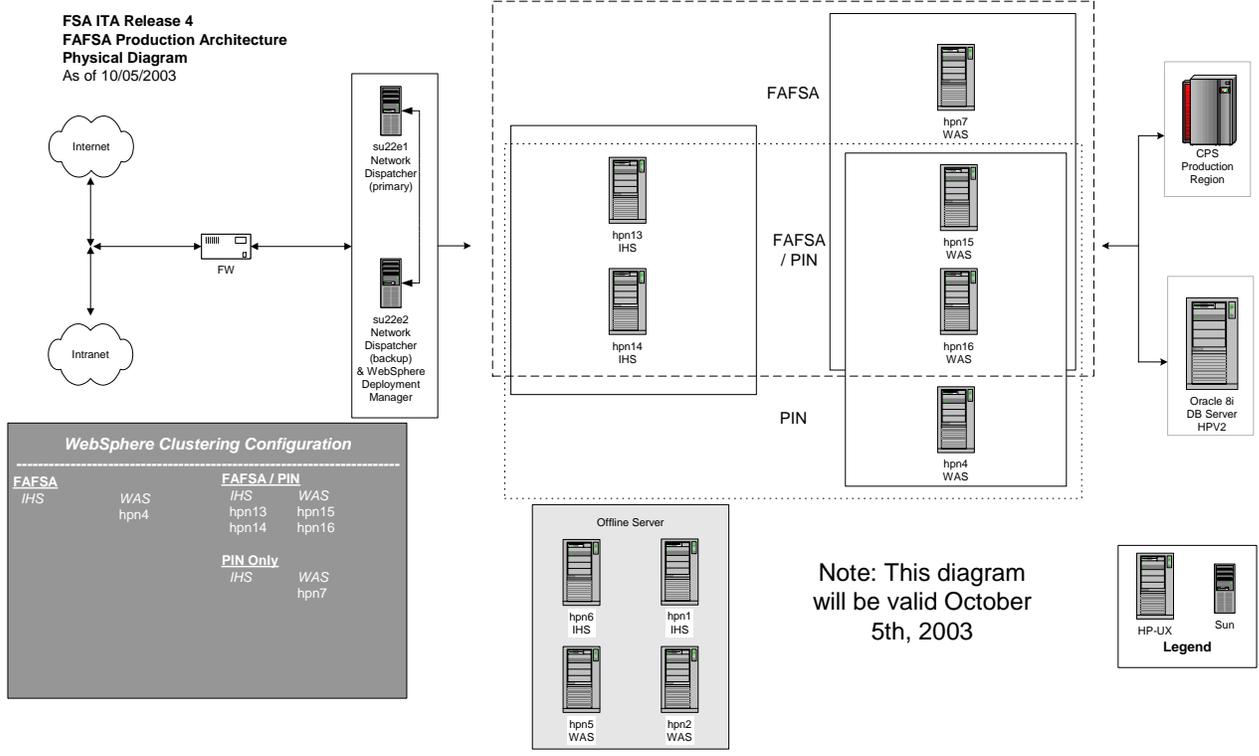
## 2 Production Environments

### 2.1 Production Environment

The production environments consist of all of the hardware necessary to keep FSA's various websites in good working order. The diagram, attached below, is a snapshot of the current environment

#### 2.1.1 Production Environment Diagram





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## ITA Product Software

Another key objective of ITA Architecture Maintenance Services is to provide product software maintenance. This section provides the details of the ITA product software such as Software, Environment, and Current Version.

### 3.1 Table of ITA Product Software

The table below presents details of what product software is installed in which environment and what version of the software has been installed in that environment.

| Software                           | Current Version                | Upgrade Version <sup>^</sup> |
|------------------------------------|--------------------------------|------------------------------|
| IBM HTTP Server (IHS)              | v1.3.26                        | v1.3.26                      |
| WebSphere Application Server (WAS) | v3.5.6 (ITA)<br>v5.0.1 (FAFSA) | v5.0.2                       |
| Autonomy                           | v3.1.13.2                      | -                            |
| eNetwork Dispatcher                | v4.0.2.25                      | -                            |
| Interwoven                         | v5.0.1                         | v5.5.2                       |
| Microstrategy                      | v7i                            | -                            |
| Solaris                            | v2.8                           | v2.8                         |

<sup>^</sup> ITA upgraded the non-production environment's software products during the May - Sept 2003 time period.



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## **IBM HTTP Server (IHS)**

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

## **IBM WebSphere Application Server (WAS)**

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

### **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.

### **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 ITA network architecture that allows for high availability.

### **Interwoven TeamSite**

As a 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.

### **Microstrategy**

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

### **Solaris**

Sun Solaris is the Unix based operating system (OS) running on the HP and Sun servers.



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## 4 Infrastructure Updates and Enhancements

### 4.1 Updates and Enhancements Matrix

The updates and enhancements log included in Section 4.2 of this document provides detailed information for development, testing, staging, and performance environment issues addressed with updates or enhancements between January 1 and September 30, 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:** Denotes the name of the application.
- **Description:** Offers a description of the issue.
- **Environment:** Lists the environment(s) in which the issue occurred (Development, Test, Staging, Performance).
- **Resolution:** Summarizes steps taken by the ITA team to resolve an issue.
- **Priority:** Provides the issue's level of priority ranging (high, medium, low).
- **Issue Status:** Indicates the issue's status (open, closed).
- **Issue Resolution/Target Date:** Provides the issue's resolution date or target date.
- **Approximate Time Spent:** The number of hours spent resolving the issue.



## 4.2 Production Support Log

| Date Opened | Application | Env  | Description   | Resolution  | Priority | State  | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|------|---|---|----------|--------|--------------------------------|---------------------------|
| 5/7/2003    | IFAP        | Prod | 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                         |
| 5/1/2003    | IFAP        | Prod | 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        | Prod | 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                         |
| 6/1/2003    | ITA         | Prod | 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                        |



| Date Opened | Application | Env  | Description   | Resolution   | Priority    | State  | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|------|---|--|-------------|--------|--------------------------------|---------------------------|
| 6/13/2003   | IFAP        | Prod | <p>The ITA team identified errors and inconsistencies in the WebSphere logs where DataSources connections timed out without explanation.</p> <p>After the issues were fixed (see previous item) additional timed-out connections were observed in the IFAP application.</p> | <p>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.</p> <p>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.</p> <p>During this process, the ITA team reviewed approximately 300 IFAP JSP pages for any best practices that needed to be implemented.</p> | 3-Normal    | Closed | 8/6/2003                       | 30                        |
| 6/23/2003   | FSANet      | Prod | 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                         |
| 6/24/2003   | ITA         | Prod | <p>The TeamSite process, including the GUI, was not running. Users were unable to access, edit or deploy content to Production.</p> <p>The TeamSite server (su35e1) rebooted during the morning and TeamSite did not start up when the server came back up.</p>             | 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 | Env  | Description  | Resolution  | Priority | State  | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|------|--|---|----------|--------|--------------------------------|---------------------------|
| 6/25/2003   | ITA         | Prod | 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                         |
| 6/30/2003   | IFAP        | Prod | 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                         |
| 7/2/2003    | FAFSA       | Prod | 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 | The ITA team identified several steps for diagnosing & troubleshooting the problem, as the outages typically happened very quickly and then faded.<br><br>The ITA team recommended several configuration setting changes to help troubleshoot & 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. | 3-Normal | Closed | 9/18/2003                      | 100                       |



| Date Opened | Application    | Env  | Description   | Resolution   | Priority | State          | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|----------------|------|---|--|----------|----------------|--------------------------------|---------------------------|
| 8/8/2003    | IFAP           | Prod | 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 INDUS about how to proceed. No response has been received to date.   | 4-Low    | Awaiting Input | 10/15/2003                     | 4                         |
| 9/15/2003   | FSANet         | Prod | 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                         |
| 9/22/2003   | Schools Portal | Prod | 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                         |



| Date Opened | Application | Env  | Description  | Resolution   | Priority | State  | Issue Resolution / Target Date | Approx Time Spent (hours) |
|-------------|-------------|------|--|--|----------|--------|--------------------------------|---------------------------|
| 9/22/2003   | FAFSA       | Prod | <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</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                         |
| 9/22/2003   | FAFSA       | Prod | <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 when it attempted to access the Session Database through the WebSphere DataSource.</p>   | <p>The ITA Team recommended changing the timeout &amp; stale connection clean up values to more intelligently handle and recover from any Stale connections that are encountered with the session database.</p>  | 2-High   | Closed | 9/25/2003                      | 10                        |



| Date Opened         | Application | Env  | Description  | Resolution  | Priority | State | Issue Resolution / Target Date | Approx Time Spent (hours) |
|---------------------|-------------|------|--|---|----------|-------|--------------------------------|---------------------------|
| 9/22/2003           | FAFSA       | Prod | <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>Upon further examination, the ITA team discovered open TCP/IP connections that exist between IHS &amp; WAS. These connections linger after they have been used without being properly closed.</p> | <p>The ITA team has opened a PMR with IBM and we are actively researching the issue with the environment.</p> <p>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.</p> | 2-High   | Open  | 10/15/2003                     | 10                        |
| 9/22/2003           | FAFSA       | Prod | <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>The ITA team identified several discrepancies in the production environment from the Performance Test recommendations.</p>  | <p>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.</p>  | 2-High   | Open  | 10/05/2003                     | 125                       |
| <b>Total Issues</b> |             |      |  |   |          |       |                                | <b>Total Hours</b>        |
| 17                  |             |      |  |   |          |       |                                | 315                       |



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## 5 Reusable Common Services (RCS)

The RCS provides common technical and business services that are required for virtually every web-based application within FSA. These services can be built once and reused across all the applications. ITA Release 4.0 is maintaining the existing RCS library. The following list details changes made to any RCS(s) maintained in Release 4.0.

- **Search RCS:** the Search RCS was maintained and its functionality for IFAP was changed so that search results now display a document's URL and date.