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AIS+ EE

Advanced Image Solution+ Enterprise Edition

Version 1.0

Web Client

Installation/User Reference/Detail Design

Table of Contents

Table of Contents	1
Section I – Web Client Installation/Getting Started	3
1. Installation	4
1.1 Determine Installation Parameters	4
1.2 Install Files	5
1.3 Configure the FluxWorks Product	5
1.4 Configure the IBM HTTP Server	6
1.5 Configure WebSphere Application Server	7
2. Operational Overview	8
Section II – Web Client User Reference	11
1. User Interaction	12
1.1 User Logon	12
1.2 Search Menu	13
1.3 Layout	14
1.4 Document List	15
1.5 Document Viewer	16
1.6 Logoff	16
Section III – Web Client Detail Design	17
1. Detail Program Specification Design	18
1.1 System Features	18
1.2 Functional Purpose	19
1.3 Detailed Description	19
1.4 Data Section	19
1.5 Audit and Control Report Statistics	22
1.6 Program Parameters	23
1.7 Environment and Registry Considerations	23
1.8 Trace and Debug Considerations	23
1.9 Performance Considerations	23
1.10 Run-to-Run Controls	24
1.11 Dataflow Model Programs Used	24
1.12 Design Flow	25
1.13 Error Information	26

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Section I – Web Client Installation/Getting Started

1. Installation

Fluxworks/Web 2000 provides a web-based user interface to IBM ImagePlus documents. It is a Java application that requires IBM's WebSphere Application Server to execute the Java Server Pages and Java Servlets. This document details the installation on Fluxworks/Web 2000 onto IBM's HTTP Server web server and into IBM Websphere Application Server.

The host based Fluxworks component must be installed and functioning on the host OS/390 system that the AIS+EE 1.0 Web Client will be connected to. See the SYSCOM manuals AIS+ EE 1.0 Client Toolkit Mainframe Install and Systems Programmer Guide for FAF or AIS+ for details for installing the host component.

Further detailed information on the Web Client can be obtained in the SYSCOM manual AIS+ EE 1.0 Release enhancement detail design, Web Interface Application

1.1 Determine Installation Parameters

Use the following table to determine installation parameters necessary for your installation. Subsequent sections refer to these parameters. Print this table and use the 'Your Value' column as a work area.

Table 1 Installation Parameters

Parameter Name	Description	Sample Value	Your Value
<APP_PATH>	Web Path alias for web server	/fluxworks	
<WebServerIP>	TCP/IP address of the webserver	1.2.3.4	
<CD_DRIVE>	CD drive holding the install CD	E:	
<FLXINSTDIR>	Top Level physical installation directory	e:\fluxworks	
<ImageStoragePathAlias>	Alias defined in WebServer to be used for access to downloaded images (leading / is assumed)	Images	
<ImageStoragePath>	NT directory used to store downloaded images. This value must have double slashes instead of a single slash.	D:\fluximages\	
<MainFrameIP>	TCP/IP address of ImagePlus	10.11.99.1	
<MainFrameFluxPort>	TCP/IP port that the ImagePlus FAF listener uses	3000	
<MainFrameOdmPort>	TCP/IP Port configured in the ODM workstation configuration table for the server	4000	
<JAVALIB>	Location of Java Libraries	C:\jdk1.1.8\lib	

Parameter Name	Description	Sample Value	Your Value
<LogFilePath>	Location of Fluxworks servlet output log file. This value must have double slashes instead of a single slash.	E:\logs\	
<LogFileName>	File Name of Fluxworks servlet output log file.	fluxworks.txt	

1.2 Install Files

Perform the following steps to transfer the product files from the installation CD to the NT server.

1. Create the <FLXINSTDIR>
2. Copy the contents of the CD to the <FLXINSTDIR>.

1.3 Configure the FluxWorks Product

Use notepad to edit the <FLXINSTDIR>\system.properties file. Substitute your values from above in the places shown in the following figure.

Figure 1 Properties File

```

#FluxWorks/Web Properties File 10/13/2000
#Any line starting with # is ignored. No blanks should exist between lines
#No blanks should exist within a line.
#
MainFrameIP=<MainFrameIP>
MainFrameOdmPort=<MainFrameOdmPort>
MainFrameFluxPort=<MainFrameFluxPort>
LoginFirst=prompt.jsp
SelectAppFirst=prompt2.jsp
LoginSuccessURL=SelectApp.jsp
LoginFailURL=logon.jsp
SelectAppSuccessURL=SelectFolder.jsp
SelectFolderSuccessURL=DocListTreeView.jsp
SelectFolderFailedURL=DocListFail.jsp
DocumentRetrieveSuccessURL=ViewDoc.jsp
DocumentRetrieveFailedURL=DocFailMessage.jsp
DocumentRetrieveCancelURL=SelectFolder.jsp
ImageStoragePath=<ImageStoragePath>
ImageStoragePathAlias=<ImageStoragePathAlias>
WebServerIP=<WebServerIP>
LogFilePath=<LogFilePath>
LogFileName= <LogFileName>
#if MaxThreadNumber=0, there is no upper limit
MaxThreadNumber=0
InitThreadNumber=5
ThreadWaitingTimeOut=100
FileDownloadTimeOut=100
#
#loglevel 1:error; 2:info; 3:debug
#production environment LogLevel should be 1.
LogLevel=1
ApUserID=XXXXXXXX
InitialString=SRET,01XXXX MASTER MASTER
MainFrameCode=ASCII
OSYSID=
COPYTYPE=
RESPLEVL=
FORMFLAG=
#END OF PROPERTIES

```

1.4 Configure the IBM HTTP Server

Create the following alias definitions in the HTTP server using the 'Mappings' – 'Aliases' configuration page.

1. Alias: <APP_PATH> Path: <FLXINSTDIR>
2. Alias: '/'<ImageStoragePathAlias> Path: <ImageStoragePath>

Stop then restart the IBM HTTP server service.

1.5 Configure WebSphere Application Server

Perform the following steps in order shown to configure the IBM WebSphere Application Server Standard Edition for the Fluxworks Java 2000 application.

1. Make sure the IBM WS AdminServer (Windows NT service) is running on your server machine
2. Open the WebSphere Administrator's Console
3. Go to the Tasks tab

In the 'Configuration' branch of the tasks tree, click 'Configure an application server'

1. Press the green start button
2. In the resource types dialog, choose the following:
 - Uncheck 'Enterprise Beans' (not available on standard edition)
 - Check 'Web Applications'
3. Press 'Next'
4. In 'Application Server Properties' - 'General' tab enter the following:
 - Application Server Name: **FluxWorks**
 - Command line arguments: add **-classpath**
<FLXINSTDIR>\servlet\FluxWorkWeb.jar;<JAVAILIB>
 - Working Dir: **<FLXINSTDIR>**
5. Press 'Next'
6. In the start server dialog, check 'Do not start the server automatically after creating it'
7. Press 'Next'
8. In the 'Nodes' dialog, open the tree and select your hostname as node
9. Press 'Next'
10. In the 'Virtual Hosts' dialog, open the tree and select 'default_host'
11. Press 'Next'
12. In the servlet engine 'General' dialog, enter:
 - Servlet Engine Name: 'FluxWorksServletEngine'
13. Press 'Next'
14. In the Web application 'General' dialog, enter the following:
 - Web Application Name: 'FluxWorksWebApp'
 - Virtual Host: 'default_host'
 - Web Application Path: **<APP_PATH>**
15. In the Web application 'Advanced' tab, choose the following:
 - Enter DocumentRoot: **<FLXINSTDIR>**
 - Delete the predefined Classpath from the listbox
 - Add **<FLXINSTDIR>/servlet/FluxWorkWeb.jar** to the classpath
16. Press 'Next'
17. In the servlet/JSP dialog, choose the following:

- Check 'Enable File Servlet'
- Uncheck 'Serve Servlets by Class Name'
- Select 'Enable JSP 1.0'

18. Press 'Finished'. Websphere creates the servlet. Click OK on 'create successful' dialog.

4. Select the Topology tab

1. Open the tree and locate the 'FluxWorks' server
2. Open the server node and then open the 'FluxWorksServletEngine' branch of the tree
3. Right click and hold the mouse button on the 'FluxWorksWebApp' Web application and select 'Create' - 'Servlet'
4. In 'Create Servlet' dialog - 'General' tab enter the following:
 - Servlet Name: 'FluxWorks'
 - Web Application: 'FluxWorksWebApp' should already be selected
 - Servlet Class Name: com.syscom.customer.servlet.MasterTask
 - In the 'Servlet Web Path List' select the 'Add' button
 - Enter Servlet Path: <APP_PATH>/Master
 - Press 'OK'
5. In 'Create Servlet' - 'Advanced' choose the 'Init Parameters' list box and enter:
 - Init Parm Name = HTMLDir , Init Parm Value = <APP_PATH>
6. Click 'Create'. Websphere creates servlet. Click OK on the 'servlet created' dialog.
7. Select the 'Fluxworks' server from the Topology Tree and click the green Start Button
8. Click OK on the 'start successful' dialog.

2. Operational Overview

The following list depicts the logical connections between the components of the Fluxworks application Configuration. The typical operational scenario is:

1. User (via WebBrowser) enters address http://<APP_PATH>/index.html to request the logon page from the web server.
2. Servlet (through Application Server and using a JSP) returns logon page to user.
3. User fills in userid and password and that initiates a request to Servlet.
4. Servlet (via Application Server) communicates with ImagePlus Folder Application Facility to verify userid and password. When successfully verified, the Servlet returns the Application Selection page to the user.
5. User selects Application and that initiates a request to Servlet.
6. Servlet returns folder selection search panel.
7. User selects desired folder name and that initiates a request to Servlet.
8. Servlet communicates with ImagePlus Folder Application Facility to verify presence of folder. If present, a display request is issued to the ODM region for each document in the folder.
9. User receives waiting panel from WebServer.
10. ODM transmits resulting document list to Servlet.

11. User receives list of documents.
12. User selects a document from the list and that initiates a document retrieval from ODM.
13. Servlet asynchronously receives document from ODM.
14. Servlet launches viewer.
15. User navigates documents.

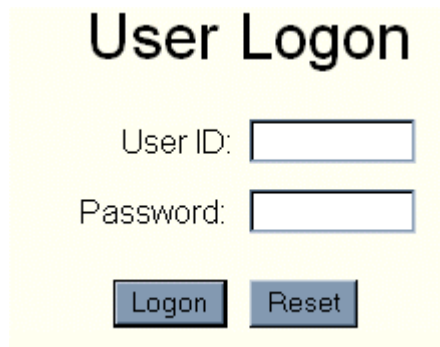
This page intentionally left blank.

Section II – Web Client User Reference

1. User Interaction

1.1 User Logon

Once the application has been accessed via a web browser, the user will be prompted by the application to provide a valid user ID to gain access to further functionality. Depending on the specific configuration, a password may be required as well. If the password is not required, the password field will not be displayed on the **User Logon** screen. The user ID and password may be up to 8 characters long. Any other rules for logging on to IBM Image Plus will still apply.

The image shows a web form titled "User Logon" on a light yellow background. The title is in a large, bold, black font. Below the title, there are two input fields. The first is labeled "User ID:" and the second is labeled "Password:". Both labels are in a standard black font. Below the input fields, there are two buttons: "Logon" and "Reset". Both buttons are rectangular with a blue gradient and white text.

Clicking the **Logon** button performs the logon. Clicking the **Reset** Button clears the user ID and password fields.

If the logon fails, the "Logon Failed" message will be displayed and the user will be returned to the **User Logon** screen.

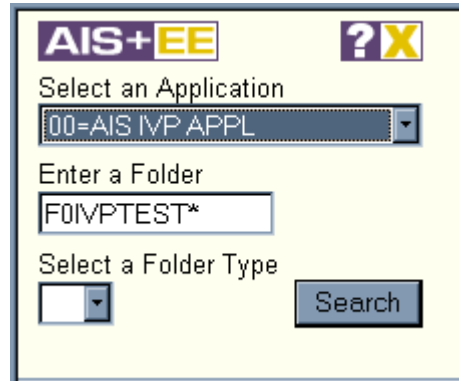
Since this page is the first entry into the application, this is also when the first call is made to the mainframe. If the application is unable to connect to the mainframe, a "No Connection" error message will be displayed. In the event of this error, the user should contact the system administrator.

1.2 Search Menu

After logon, the user must enter the desired **Search Criteria**. To do so, the user is required to make a selection from a list populated with the applications available to that user.

The user must also enter a folder ID. The folder ID may be an exact folder ID or if folder searching is enabled, folder ID may be a partial folder ID with the wild card (*). Whether folder searching is enabled is determined by the system configuration.

Clicking the **Search** button or pressing the **Enter** key initiates the search.



The screenshot shows a web form titled "AIS+EE" with a "? X" icon in the top right corner. The form contains three input fields and a "Search" button. The first field is a dropdown menu labeled "Select an Application" with the value "00-AIS IVP APPL" selected. The second field is a text input labeled "Enter a Folder" containing the text "F01VPTEST*". The third field is a dropdown menu labeled "Select a Folder Type" which is currently empty. A "Search" button is located to the right of the "Select a Folder Type" dropdown.

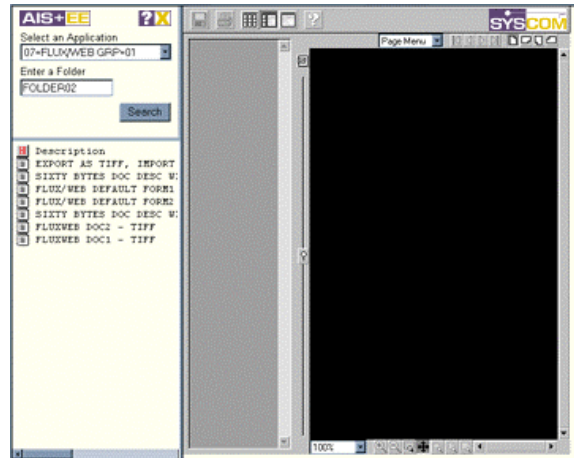
If a valid folder ID is provided, the servlet engine will return the document list corresponding to that folder. If the wild card is detected and folder searching is enabled, the user will be asked to select a folder type before a list of folders is returned. The user may then click one of the folder icons in that list to retrieve the document list corresponding to that folder.

If the wild card is detected and folder searching is not enabled, an error message will be displayed.

The user may click on the **Help** icon to access documentation about using the system. When finished working with the system, the user should click the **Logoff** icon to exit the session.

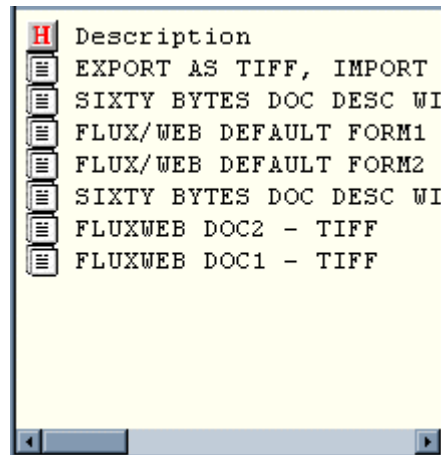
1.3 Layout

After a successful search, the user is able to begin viewing the documents contained in the specified folder. The screen layout contains three frames. The menu is located in the upper left frame. The document list is located in the lower left frame. The document viewer is located in the right frame. A frame border can be moved by clicking on the border and dragging it to the desired position.







1.4 Document List

After a successful search, the lower left frame displays a list of the documents contained in the specified folder. For information on how the list is formatted, the user may click on the header icon at the top of the document list. To the right of the header icon are the column headings: Description, Date Received, Date Filed, Version, Pages, TabName. To see these, the user may drag the frame border to the right or use the scrollbar at the bottom of the frame. When the user moves the cursor over a document icon, the Description, Date Received, and Number of Pages for that document are displayed in the status bar at the bottom of the browser window.



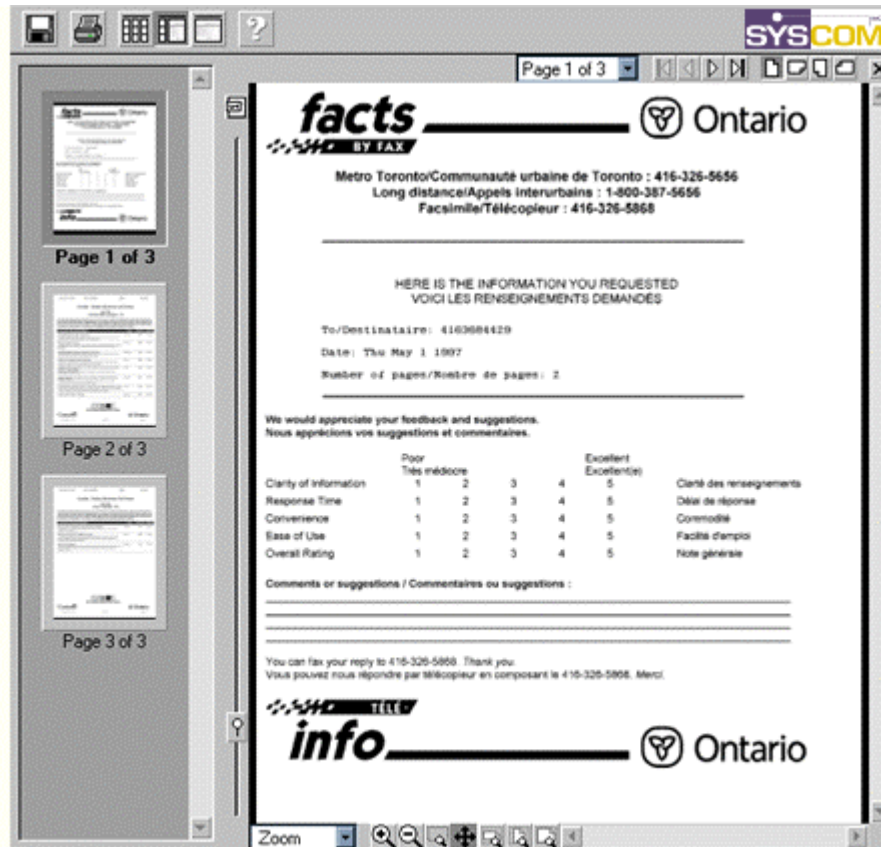
To view an image, click on the document icon. Depending on the size of the document, it may take up to 10 seconds to download an image. Once a document has been viewed, the color of its icon is changed as follows:

-  The image has not been viewed.
-  The image is currently being viewed.
-  The image has previously been viewed.
-  The image is not been available.

1.5 Document Viewer

The viewer is blank when it is initially loaded. Clicking on a document in the list in the lower left frame loads that document into the viewer. The viewer displays the selected document in both a thumbnail view and a full-page view. Multi-page documents will display in the viewer pane one page at a time with the preview of each page shown in the **Thumbnail Pane** on the left side of the viewer.

Detailed help information is provided with the viewer. These help documents can be viewed by clicking the "?" in the viewer frame of the application.



For users with Microsoft Internet Explorer or a Netscape Navigator on a Windows NT/98/95 operating system, installing the Enhanced Print upgrade can enhance the document viewer's printing. A link to this upgrade is available in on the Document Viewer page of the Help section of AIS+ EE Web.

1.6 Logoff

When finished working with the system, the user should click the Logoff icon in the menu to end the session. This redirects the user to the **Logoff** screen. From here, the user may return to the **Logon** screen.

Section III – Web Client Detail Design

1. Detail Program Specification Design

Program Name	AIS+ Enterprise Edition Web			
Program ID	AIS+ Web Interface & Application Server Program			
Author	Syscom Inc.			
Release	V1.0			
Program Type	Server & Application			
Functional Area	Web Interface to AIS			
Platform and Version	NT4.0, AIX			
Programming Language and Version	Java 1.1.8, JSP1.0, HTML4.0			
Change Log				
Revision #	Date Revised	Due Date	Person Modifying	Description
00000001				Initial Version 1.0

1.1 System Features

Image viewer:

- Supports MO:DCA IOCA images without overlays
- Supports B&W TIFF G3 images
- Rotate images in any of 4 possible orientations – 0, 90, 180,270 degrees.
- Provides 3 possible views - Thumbnail, Thumbnail and Image, and Image
- Supports multiple page images
- Print an image to a connected printer
- Save an image to disk
- Zoom a displayed image

Application features:

- Ultra-thin client uses TCP/IP
- Authenticate user through userid/password
- Select IBM Image Plus application
- Search folder list of a type
- Retrieve document list of a specific folder with associated document information
- Retrieve a specific document from a document list
- View the document in the browser
- Debug log and user audit log are available
- Online help

1.2 Functional Purpose

AIS+ Web provides an intuitive and convenient web user interface to IBM Image Plus. This allows the user to search and view an image document via Microsoft Internet Explorer or Netscape Navigator over the Internet without needing any application-specific software installed on the viewing computer. It is a secure application that requires user login authentication.

1.3 Detailed Description

Architecturally speaking, there are three components working together to make AIS+ Web Application possible. The front end is a web browser (Microsoft Internet Explorer 4.0 above or Netscape Navigator 4.0 above) with a viewing applet working as the client. The centerpiece is an IBM WebSphere powered servlet engine. IBM Image Plus and Syscom's FluxWorks on the mainframe serve as the backend piece. The servlet engine relays user's request to the mainframe, if necessary, and push back the response from mainframe to the user. The servlet engine also keeps track of each user and their stages in the application and serves all of the users concurrently. The mainframe and the WebSphere servlet engine need to be specifically configured for the application to work. All of communication is realized via TCP/IP connection.

From a user's point of view, the application achieves its functionality through an interaction of user input and servlet engine response page. In order to search or view an image, a user must first access the application via a web browser. The user will be prompted by the application to provide a valid user ID to gain access to further functionality. Depending on the specific configuration, a password may be required as well.

The user may then make a selection from a list populated with the applications available to that user and type in a folder ID. The folder ID may be an exact folder ID or a partial folder ID with the wild card (*). If a valid folder ID is provided, the servlet engine will return the document list corresponding to that folder. If the wild card is detected, the user will be asked to select a folder type before a list of folders is returned. From that list, the user may then click on a folder icon to retrieve the document list corresponding to that folder.

The document list will contain information for each document such as document description, date received, number of pages, date filed and version. The user may click on a document icon to view the image in the browser via the viewing applet. The viewing applet provides a host of features such as print, rotate, magnify, etc.

1.4 Data Section

This section lists external tables and fields, external files and records, internal structures and fields, and internal parameters used by the program. A detailed list exists for each entry on the following table.

Table 2 Data Sources

Data Source	Description	Type	Location	Access
system.properties	Configuration Parameters of the program	External File	WebSphere Server machine	Read by program when initialized

Sample "System.properties" file

```
# AIS+ Web Properties File 01/19/2001
#-----
# Any line starting with # is ignored by the application.
# These lines are used for comments.
# No blank lines should exist within this file.
#
#-----
# This section consists of installation-specific parameters.
#
WebServerIP=10.4.1.161
MainFrameIP=10.4.0.28
MainFrameOdmPort=3000
MainFrameFluxPort=3001
#
indexPath=/dev/aiseeweb/
servletPath=/flx/
ImageStoragePath=c:\\flux\\
ImageStoragePathAlias=SSS
AuditFileName=UserAudit.txt
AduitFileSeparator=****
LogFilePath=c:\\logs\\
LogFileName=aiseeweb.txt
#
#loglevel 1:error; 2:info; 3:debug
#production environment LogLevel should be 1.
LogLevel=1
#
#if MaxThreadNumber=0, there is no upper limit
MaxThreadNumber=0
InitThreadNumber=5
ThreadWaitingTimeOut=100
FileDownloadTimeOut=100
SessionTimeOutInMinutes=2
#
ApUserID=XXXXXXXX
InitialString=SRET,01XXXX    MASTER    MASTER
MainFrameCode=EBCDIC
#
FolderSearchEnabled=no
passwordRequired=no
#
#-----
# This section consists of jsp's(Java Server Pages)
# that correspond to results from the servlet.
# Verify the path info, but do not rename the pages.
#
LoginFirst=LogonFailed.jsp
ChannelOpenFailedURL=NoConnection.jsp
LoginSuccessURL=frames.jsp
#
SelectFolderFromFrameSuccessURL=DocList.jsp
SelectFolderFromFrameFailedURL=DocListFail.jsp
SelectFolderTypeFromFrameURL=navbar.jsp
#
FolderListSearchFrameSuccessURL=FolderAndDocList.jsp
FolderListSearchFrameFailedURL=FolderListFail.jsp
#
DocumentRetrieveSuccessURL=hiddenLoader.jsp
DocumentRetrieveFailedURL=DocRetrieveFail.jsp
#
```

```

SessionTimedOutURL=TimedOut.jsp
#
DocListHeadLineURL=HeadlineHelp.jsp
HeadLine=Description Date Recvd Ver Pgs Date Filed TabName
#
#-----
# This section consists of system values determined by Syscom.
# These system values should not be changed.
#
COPYTYPE=
RESPLEVL=
FORMFLAG=
OSYSID=
# END OF PROPERTIES
    
```

Table 3 Data Source Details

Data Source			
Physical Name	Description	Usage	Value(example)
WebServerIP	IP address of Web server that host WebSphere application.	Required	10.4.1.161
MainFrameIP	IP address of mainframe that hosts Image Plus and FluxWorks	Required	10.4.0.28
MainFrameOdmPort	TCP/IP port number for ODM region that set up for this application on the mainframe	Required	3000
MainFrameFluxPort	TCP/IP port number for CICS region that connected to FluxWorks on the mainframe	Required	3001
IndexPath	Absolute path for index.jsp. This directory is the root directory of the application.	Required	/dev/aiseeweb/
ServletPath	Absolute path for servlet	Required	/flx/
ImageStoragePath	Absolute path for storing cached images	Required	C:\flux\ (NT)
ImageStoragePathAlias	HTTP alias for ImageStoragePath	Required	SSS
AuditFileName	File name of the audit file. The file will be created in the "LogFilePath" directory.	Optional	UserAudit.txt
AuditFileSeparator	String value that separates each field of a single record. If no value provided, "*****" will be used.	Optional	****
LogFilePath	Absolute path for log file	Required	c:\logs\
LogFileName	File name of the log file	Required	aiseeweb.txt
LogLevel	Determines the degree of message logging. In a production environment, the LogLevel should be set to 1. Values allowed: 1(error), 2(info), 3(debug)	Required	1
MaxThreadNumber	The max allowed current instance of ODMRetriever class. A value of 0 means no upper limit.	Required	0
InitThreadNumber	Initial number of threads generated when the program is started. Value must be less than MaxThreadNumber, unless Max is 0	Required	5

Data Source			
Physical Name	Description	Usage	Value(example)
ThreadWaitingTimeOut	Number of seconds of waiting for a thread. If this value is too small, the user's request may not be served.	Required	100
FileDownloadTimeOut	Time out in seconds for no activity of download process from mainframe. This is an accumulative value.	Required	100
SessionTimeOutInMinutes	Number of minutes of inactivity before the active session will expire.	Required	60
ApUserID	Default Application User ID. String value with maximum length of 8.	Required	XXXXXXXX
InitialString	Message for establishing initial SRET command mode.	Required	SRET,01XXXXXXXXxxxx xxxxXXXXXXXX
MainFrameCode	Character representation of messages sent to the mainframe. Values allowed: EBCDIC, ASCII	Required	EBCDIC
FolderSearchEnabled	Determines if folder searching with wild card is allowed. Values allowed: yes, no	Required	no
passwordRequired	Determines if a password is required for logon. Values allowed: yes, no	Required	no
The following four parameters are only provided for rare occasions. Please do not use them unless instructed by Syscom.			
COPYTYPE	SRET command parameter	Optional	
RESPLEVL	SRET command parameter	Optional	
FORMFLAG	SRET command parameter	Optional	
OSYSID	SRET command parameter	Optional	

1.5 Audit and Control Report Statistics

This section lists audit and control information that the program generates.

There is an optional user audit file that tracks viewed document by user and time.

Sample Audit File

```

UserID **** ApplID **** FolderID **** Doc Description **** total pages **** access time ****
****master****ZZ****F0IVPTEST01****IVP FORM0 - AIS V3.1 ****001****Wed Dec 13 14:52:43 EST 2000

****master****ZZ****F0IVPTEST01****IVP FORM0 - AIS V3.1 ****001****Wed Dec 13 15:06:22 EST 2000

****master****ZZ****F0IVPTEST01****IVP FORM1 ****001****Wed Dec 13 15:06:27 EST 2000

****master****FW****FOLDER02****FLUXWEB DOC1 - TIFF ****006****Wed Dec 13 15:07:11 EST 2000

****master****FW****FOLDER02****SIXTY BYTES TEST 002****001****Wed Dec 13 15:07:26 EST 2000

****master****FW****FOLDER02****FLUX/WEB DEFAULT FORM1 ****001****Wed Dec 13 15:07:36 EST 2000

****master****IM****LDPS-TIFF****TEST CLAIM"S ****001****Mon Dec 18 11:08:04 EST 2000
    
```

1.6 Program Parameters

This section lists parameters passed when the program is invoked.

- None.

1.7 Environment and Registry Considerations

This section lists Path, Environment variables, and Registry entries.

- See AIS+ Web Servlet Engine install documents.

1.8 Trace and Debug Considerations

This section lists tracing and debugging that the program supports.

- There is a log function that can be set to monitor all the critical stages of program execution with appropriate result log for that execution. This is accomplished when “LogLevel” is set to 3 in the system.properties file. This log is a good tool for debugging and tracing problems. However, since the log file can grow to tens of megabytes quickly, for any production application, the “LogLevel” should be set to 1. With this setting, only program errors will be logged. Also since there is less I/O operation with this setting, the performance of the application will be improved.

Sample section of a LogLevel 3 log file

```
Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Request Parameter 'Transaction' value Logon
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Request Parameter 'Logon' value Logon
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Request Parameter 'UserID' value master
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Request Parameter 'Password' value master
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Parameter in hashtable 'Password' value is master
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Parameter in hashtable 'UserID' value is master
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Parameter in hashtable 'Transaction' value is Logon
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Parameter in hashtable 'Logon' value is Logon
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.servlet.MasterTask:
Session's Transaction Name is: Logon
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Communication:
In FWCommTCP->Connect...socket created.
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Communication:
In FWCommTCP->Connect...flip written
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Communication:
FLIP response is: X
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Communication:
FLIP returned successfully.
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Login: Send out
message buffer is: 00000040002100141018MASTER00141048MASTER
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Communication:
Stream Encoding is: Cp1252
[Fri Jan 05 13:38:43 EST 2001] info: 2BA5DKAAAAAAECQEAHXC5WQ class com.syscom.customer.functions.Communication:
Message is: [B@341
```

1.9 Performance Considerations

This section lists considerations related to the performance of the program.

- The performance depends on many factors, important ones are: web server CPU speed, RAM size, LAN connection speed, web server concurrent work load, mainframe load. The maximum work load is determined by WebSphere servlet engine.

1.10 Run-to-Run Controls

This section lists controls that the program supports in order to insure proper execution between multiple consecutive executions of the program.

- If an external error occurs and the program is not responding, the user only needs to close the browser window and open a new one to restart the program

1.11 Dataflow Model Programs Used

This section details programs called. The following table lists the platform of called program, lists the name of the program, describes the program, and provides parameters and values necessary to call the program.

Table 4 External Calls

Platform	Program ID	Description	Parameters	Value
Mainframe	FluxWorks 0021	Sigon	UserID, Password	
Mainframe	FluxWorks 0023	SelectApplication	UserID, Applid	
Mainframe	FluxWorks 0017	FolderListByID	Applid,UserID,OperSecClass FolderType,FolderID, FolderListFlag, SecurityExitFlag	
Mainframe	FluxWorks 0011	DocumentList	Applid, UserID, OperSecClass, FolderID, DocListFlag, ExitSuffix, SecurityExitFlag, CustomerExitFlag	
Mainframe	Image Plus API	SRET	OBJNAME, OBJCLASS,COLLNAME	

1.12 Design Flow

This section shows a diagram of the processing of the program.

Design Flow



The above diagram depicts the major design flow of the whole application with a focus on web server. Each step is labeled by a number or alphabetic character, and will correspond to following description:

1. A user sends a request to the web server via a web browser, the request is accepted by IBM HTTP server. If it is a simple HTML page that the HTTP server can locate, it will respond the request without asking WebSphere (step 8).
2. If the browser asks for a JSP page or HTML page that HTTP server cannot locate, it will pass the request to WebSphere Application Server.
3. The WebSphere servlet will analyze the incoming request and depending on the value of the hidden command field of the incoming HTML or JSP page, the servlet will generate the appropriate triplet codes and send them to the mainframe host. The value for generating triplet codes is from request and previous cached values.
4. Flip on the mainframe will then pass the triplet codes for FluxWorks, which will in turn invoke appropriate FAF function.
5. FAF will return the appropriate results to FluxWorks (Manage FAF).

6. FluxWorks will in turn pack the result in triplet codes and return to the WebSphere servlet.
7. The servlet parses the triplet codes and sends the response back to HTTP server.
8. HTTP server passes the response back to user via the web browser.

The above program flow will apply to logon, select application, search folder, and search document list. The difference is the parameters and function code that are packed in triplet codes.

The program path will be different if the user asks for viewing a document.

1. User requests to view a document via browser.
2. HTTP server relays the request to WebSphere application servlet.
3. The servlet checks in-memory cache to see if the image document has already been downloaded.
 - A. If the image is not in cache, the servlet will issues an SRET command to the OAM region of the mainframe with OBJNAME, OBJCLASS and COLLNAME as the parameters.
 - B. The image is sent back to servlet.
 - C. The servlet saves the image into the in-memory cache.
4. The servlet will then inform HTTP server of the URL of saved image.
5. HTTP server retrieves the document from the URL.
6. The image is passed to the applet inside the browser for the user to view.

The cached image document is indexed with a concatenation string value of OBJNAME, OBJCLASS and COLLNAME. The cache is cleared daily during the night.

It is our recommendation that IBM HTTP server and WebSphere application server are installed on the same physical machine.

1.13 Error Information

Since WebSphere and HTTP configuration warrant another document, the following error condition discussion is based upon a successful installation of the application. If the configuration is not correct, the most common error will be "unhandled recursive error", "page can not be displayed or found".

The application is designed and written in a fashion to handle and recover from an error condition automatically with an appropriate message or prompt.

Table 5 Error Conditions

Error Condition	Severity	Reason	Action
Unhandled recursive error	high	Unexpected error	Report to developer the details
No connection to mainframe	high	Mainframe down or related services down	Report to mainframe administrator
Page can not be displayed	moderate	WebSphere server is down	Report to WebSphere server administrator