iSafari

for iSeries

ADVENTURETECH GROUP, INC.

iSafari™ version 2.03

Installation and Operations Guide

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Published in the U.S.A. May, 2004

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Welcome to iSafari!

iSafari was created to allow RPG programmers to do web development by using their skills to manage data access on an iSeries, while taking advantage of the ability of HTML to format and interact with the rest of the world!

The following steps outline the web (HTTP) information request cycle using iSafari:

- A person using a computer starts a browser like Internet Explorer or Navigator.
- They then issue a HTML page request by either clicking on a link or by keying an URL into the address input line.
- A HTTP server takes this incoming browser request, which is then handed over to a Perl CGI program for processing.
- This Perl program opens a socket communication over a specified port to an iSafari application server on an iSeries with a request to a specific program for instructions and/or data.
- The iSafari server then calls the specified RPG program, passing it the request data.
- The RPG program then returns instructions and/or data to the iSafari server, which then bundles the information together and passes it back to the Perl program.
- The Perl program parses the data into name-value pairs and merges these pairs with a pre-written HTML document and passes the result to the HTTP server.
- The HTTP server passes the HTML document to the requesting browser for display to the user.

About This Guide

The purpose of this guide is to help you install the iSafari ecommerce and customer maintenance application. For more information on customizing iSafari, please contact the AdventureTech Group.

Technical Support and Troubleshooting

This guide contains brief explanations for how you can properly maintain iSafari. For more comprehensive information, such as white papers, release notes, or patch information, visit the AdventureTech website at www.atgi.org. For help on a specific problem, you can send email to support@atgi.org or call (913) 791-3600.

Chapter 1

Installing iSafari

The chapter covers the following:

- User Assumptions
- Minimum Hardware and Software Requirements
- Configuration Requirements
- ~ One server
  ~ Multiple servers
- Before You Install (setup procedure)
- Installing iSafari
- Upgrading iSafari

Note: If you have an existing installation of iSafari, you still must perform the procedure in the "Before You Install" section on page 4.

User Assumptions

It is assumed that the installer of iSafari is experienced with or has a working knowledge of the following:

- Linux/Unix commands or Windows commands
- Perl and CGI scripting
- File Transfer protocol (FTP)

Minimum Hardware and Software Requirements

This section covers the minimum hardware and software requirements that you should meet before installing iSafari, as well as some typical server configurations.

- AS/400 V5R2 or iSeries eserver V5R2 or a newer version.
- A CD drive.
- 512 Mb of RAM on your web server(s) and file server.
- An internal Apache HTTP server or an external HTTP server residing on an NT, XP Professional, or Linux server. (You can also have an LPAR running Linux.)

Configuration Requirements

This section covers the minimum requirements for the following two types of iSafari configuration models.

One Server

- Ethernet card
- TCP started
- RPG IV
- Apache HTTP server (included)
- PASE environment installed
- Perl (free from IBM using CPAN)

Multiple Servers

- Ethernet card
- TCP started
- RPG IV
- A machine running a HTTP server
- Ethernet card.
- HTTP server
- Perl (free from ActiveState for Windows)

Before You Install

Whether or not you have an existing installation of iSafari or plan to install it for the first time, you must transfer the iSafari savefile to the iSeries and restore the install/upgrade library.

1. **Create a savefile named ATWS2UPD in a library of your choice on your iSeries.**

2. **Launch a command window on the source computer.**

3. **Insert the iSafari CD into the target computer's CD drive.**

4. **From the DOS command window, change the drive prompt to CD drive, such as the following:**

   <letter of CD drive>:

   (then press Enter)

5. **From the DOS command window, enter the following command:**

   cd isafari v2

   (this will change current directory to iSafari v2)

6. **Open an FTP session and then enter the following commands (be sure to press Enter after each command):**

   FTP *ipaddress*

   userid

   password

   binary

   put atws2upd *libname*/atws2upd

   quit

   this will end your FTP session. Control is then passed back to your command window.

7. **From the iSeries, enter the following commands:**

   RSTLIB SAVLIB(ATWS2UPD) DEV(*SAVF) SAVF(*libname*/ATWS2UPD)

   EDTOBJAUT ATWS2UPD *FILE

   i. Set QPGMR to *ALL authority

   ii. Set *PUBLIC to *USE authority

   the screen refreshes and the command line clears.

Installing iSafari

The following procedure is for a machine that does not already have iSafari installed on it. If you want to upgrade your existing version of iSafari, skip to the section "Upgrading iSafari" on page 6.

1. **Enter the following command:**

   ATWSUPD/INSTALL

   this will setup the iSafari system by creating a user profile of ISAFARI and a job description of $ADMIN, as well as a subsystem with a default shared pool of 03. (If these are not created, you probably do not have the special authority of *SECADM. Please see your system administrator for assistance.

   Note: You can change the default shared pool of 03, if needed.

2. **Enter the following command:**

   WRKSHRPOOL

   this provides the pool with a memory allocation and activity level.

3. **Enter the following command:**

   WRKLICINF

   this simply means Work with License Information.

4. **Browse to the product file 1SAFARI and select option 1 – Add License Key.**

5. **Enter a Processor Group of * (any), the license key, and a usage limit of *NOMAX**.

   Note: Individual servers can be setup with whatever special security requirements needed by creating a user ID, assigning it the level of security required, and then assign it to the server. By default, when a server is created it is assigned to a user profile of **ISAFARI**.

Upgrading iSafari

The following procedure applies to existing versions of iSafari, specifically, version 2.04 or earlier.

1. **Enter the following command:**

   ATWSUPD/INSTALL

   this will setup the iSafari system by creating a user profile of ISAFARI and a job description of $ADMIN, as well as a subsystem with a default shared pool of 03. (If these are not created, you probably do not have the special authority of *SECADM. Please see your system administrator for assistance.

   Note: You can change the default shared pool of 03, if needed.

2. **Enter the following command:**

   WRKSHRPOOL

   t**his provides the pool with a memory allocation and activity level.**

   Note: Individual servers can be setup with whatever special security requirements needed by creating a user ID, assigning it the level of security required, and then assign it to the server. By default, when a server is created it is assigned to a user profile of **ISAFARI**.

Chapter 2

Installing Third-Party Applications

iSafari requires certain third-party applications to function at an optimal performance-level. This chapter covers the third-party applications needed for your particular operating system, where they can be obtained, and how they are installed and configured. The applications are the following:

- Installing PASE and Perl for iSeries
- Before You Install (setup procedure)
- Installing iSafari
- Upgrading iSafari

Installation of PASE environment & Perl – iSeries

PASE is Portable Application Solutions Environment and is often referred to as AS/400 PASE. PASE must be installed to achieve a run-time environment similar to UNIX. This will allow the installation of Perl to be handled like it was running on Linux.

Note: Perl is being used instead of C because the latter is a compiled language, and because of this requires a unique run-time version for every operating system. Perl, on the other hand, is an interpreted and open language.

Installation of PASE

You must first obtain the PASE environment from your IBM business partner or supplier. If you do not have an IBM business partner or supplier, you can purchase version v5r1 of PASE

from ATGI for $100. (Version v5r2 is free!) Once you obtain the PASE environment (product 5722SS1 option 33), follow the instructions provided to correctly install it.

Installing Perl

Installing Perl on your HTTP server is necessary for iSafari to perform correctly. It is recommended that Perl version 5.8.0.804 or greater (more recent version). The free version of Perl on the iSafari CD was obtained from the ActiveState website (www.activestate.com).

Installing Perl on Linux/Unix

Use the following procedure (including the second procedure on the Perl module) to install Perl on your iSeries.

1. **Launch your internet browser and go to the following website:**

   http://www.redbooks.ibm.com/tstudio/workshop/tiptools/perl.htm

2. **Click on the ports/as400 link and download the Perl 5.8.0 tgz file.**

3. **Rename the file using the following command:**

   ren perl-5,8,0@18380-05400,tgz perl.tgz

   this is simply for ease of use.

4. **For Linux, run the following command:**

   gunzip perl.tgz

   this will create the perl.tar file.

5. **Run the following FTP commands (Be sure to press Enter after each command.):**

   binary

   site namefmt 1

   put perl.tar /QopenSys

   this will transfer the perl.tar file to the iSeries.

6. **Call QP2TERM to open a PASE terminal session.**

7. **Run the following command:**

   cd /QOpenSys

   this will change the current directory to QOpenSys.

8. **Run the following command:**

   ls –l

   this will list the contents of QOpenSys to ensure that the perl.tar file was successfully transferred to this directory.

9. **Run the following command:**

   tar –xvf perl.tar

   this will unpack the perl tarball.

Installing the Perl Module on Linux/Unix

1. **From the /QOpenSys/perl/lib/site_perl/5.8.0 location, run the following command:**

   mkdir ATG

   this will create a new directory called ATG.

2. **From the iSafari CD, locate the ATG directory and copy the file Mods20.pm to the ATG directory you just created.**

   The Mods20.pm file contains the modules iSafari uses on the web server client to do the following:

   — Pack the update to send to the AS/400
   — Handle communications to the AS/400
   — Unpack received data
   — Merge data fields with the specified HTML documents

3. **Use the following command line:**

   #!/usr/local/bin/perl

   this will execute the installation

Installing the Perl Module on Red Hat

The following procedure is applicable to Red Hat version 9.0.

1. **From the /QOpenSys/perl/lib/site_perl/5.8.0 location, run the following command:**

   mkdir ATG

   this will create a new directory called ATG.

2. **From the iSafari CD, locate the ATG directory and copy the file Mods20.pm to the ATG directory you just created.**

   The Mods20.pm file contains the modules iSafari uses on the web server client to do the following:

   — Pack the update to send to the AS/400
   — Handle communications to the AS/400
   — Unpack received data
   — Merge data fields with the specified HTML documents

3. **Use the following command line:**

   #!/usr/local/bin/perl

   this will execute the installation.

4. **Access the Comprehensive Perl Archive Network (or CPAN from www.cpan.org) and download and install CGI.pm, which is a Perl library.**

5. **Use the following command:**

   tar -zxvvf CGI.pm-2.93.tar.gz

   this will unpack and load the contents of the library.

6. **Change to the new directory and run the following commands (Be sure to press Enter after each command.):**

   perl Makefile.PL

   make

   make test

   make install

   this will complete the installation.

Installing Perl for Windows

Installing Perl on your HTTP server is necessary for iSafari to perform correctly. It is recommended that Perl version 5.8.0.804 or greater (more recent version). The free version of Perl on the iSafari CD was obtained from the ActiveState website (www.activestate.com).

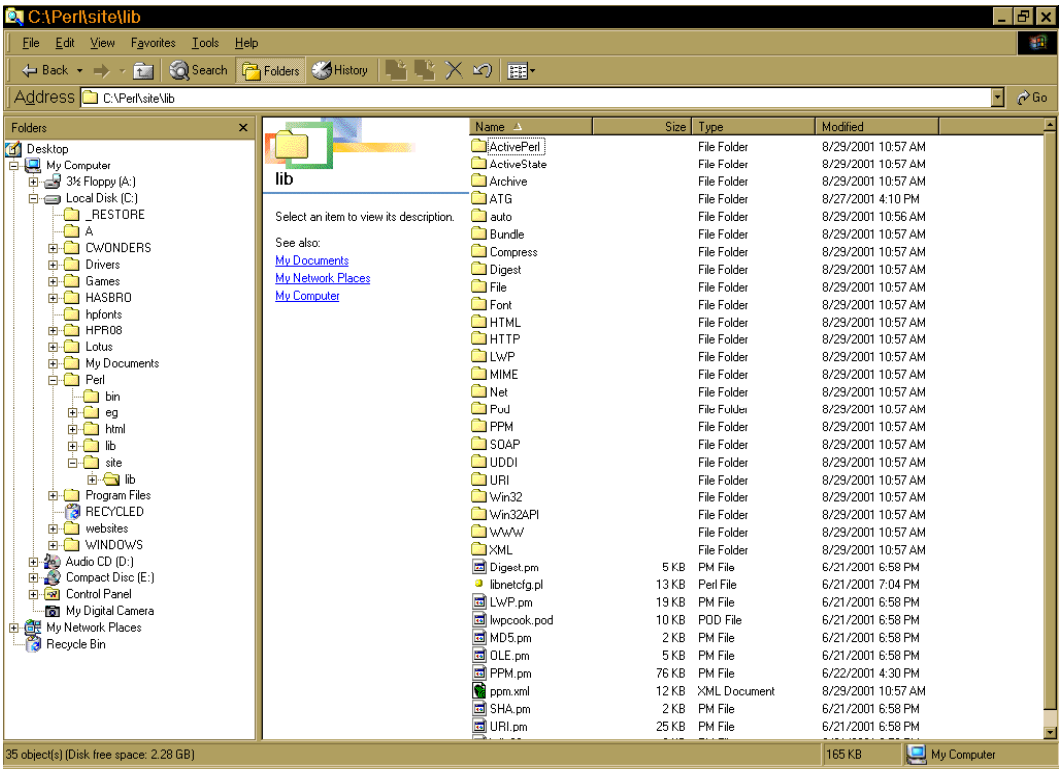
Note: When installing Perl for Windows, it is recommended that it be installed in the Program Files directory.

Use the following procedure to install Perl on your Windows machine:

1. **Double click the Perl package to initiate the install.**

2. **At the prompt where you are asked if you want a path or extension added to Windows, select NO. (By selecting No, you'll be able to avoid executing a Perl program that you mistakenly left-clicked on.)**

   Note: If you use IIS, you must add an extension within its configuration so it will know where to find the Perl executable and how to pass in the program name. We will cover that in detail sometime/somewhere else.



3. **One of the folders included in the iSafari package folder is called ATG. You must install this folder in the Perl/site/lib folder (fig. B). This folder contains a Perl module – Mods20.pm – which contains the subroutines or functions that do most of the work.**

Chapter 3

Managing the iSafari Servers

This chapter covers the management of the iSafari ADMIN server and any other user-defined server(s) on your iSeries.

Primary Server Commands

ATWSENDSVR

Syntax: ATWSENDSVR <*server_name*>

This command is used to stop the server(s). Like the start command, it has one parameter – Server Name with the following options:

- Key the name of the server to be ended
- *ALL will end all servers

ATWSSTRSVR

Syntax: ATWSSTRSVR <*server_name*>

This command is used to start the server(s) and then confirm that the server has started. It has one parameter – Server Name which has the following options:

- Key the name of the server to be started
- *ALL will start all servers
- *AUTOSTART will start all servers with Autostart = YES

Note: Usually after ending and immediately restarting, a server can be used within a few seconds. However, sometimes the system will lock the port for up to two minutes before releasing it.

Appendix A

iSafari Reserved Keywords

All the application programs called by the server must have the following two parameters: the session data and the incoming data string. System-set reserved words have their value set by the system for user program information, while user program-set reserved words allow the user programs some control of their destiny.

Parameter Name	Description
PinSessDS	Contains the all reserved keyword values.
PinData	Contains the incoming string of data.

ATDTAQ

This is a system-set value reserved word that represents the name of the data queue used to accumulate and format data.

ATENV#

This is a system-set value reserved word that contains the server's environment number (#).

ATFUNCT#

This is a system-set value reserved word that contains the application function number (#) sent from the html document or cgi program.

ATHTTPS

This is a system-set value reserved word containing a blank value if incoming data was passed through an insecure request or a non-blank value if the data was passed through an established secure link (HTTPS was negotiated).

ATIPADDR

This system-set value reserved word contains the incoming request's IP address.

ATNEXTHTML

This is a user program-set reserved word for the name of the HTML file residing on the web server that the outgoing steam of data is to be merged with.

ATPGMID

This is a system-set value reserved word that contains the program request ID sent from the html document or cgi program.

ATSECURE

This is a system-set/user program-set reserved word. The value returned can be used to override the HTTPS required flag specified on each server application program entry. Setting this field to a value of "Y" will redirect the incoming browser request to negotiate a HTTPS connection before sending the data back. A blank value in this field allows the system to negotiate a HTTPS connection if required, or to terminate a HTTPS connection if it is not required.

ATSESSID

This is a system-set value reserved word that contains the unique 16-byte hexadecimal value identifying this session, if applicable.

ATSESSID32

This is a system-set value reserved word that contains the unique 16-byte hexadecimal session ID extended to 32 bytes, if applicable.

ATSRVNAME

This is a system-set value reserved word that represents the name of the server handling the processing request.

ATUSER#

This is a system-set value reserved word that has a field that holds the user number (#) that is currently logged on, if any.

ATUSERID

This is a system-set value reserved word that has a field that holds the user ID that is currently logged on, if any.

Appendix B

Using External Authentication Programs with iSafari

Authentication processes consist of the following:

- Logging in
- Changing passwords
- Logging out

The iSafari authentication or verification processes can be modified to use externally written verification programs for those instances when the internal processes do not provide enough functionality.

Using an External Login Verification Program

The overriding external program name should be keyed onto the *LOGIN or *LOGIN1 built-in application through the update server application option. The following are parameters for verifying an external login:

Parameter Name	Description
Parm 1	This parameter is 1 character in length and returns a status flag of one of the following: **N** = userid/ password passed verification. **E** = userid/password failed verification.

Parameter Name	Description
PinData	This parameter contains the incoming string, and returns an outgoing string if the verification fails.

Note: The system will not normally log a login request, however, if an external login verification program is installed, you will have the ability to turn on logging.

External Change Password Program

The overriding external program name should be keyed onto the *CHGPWD built-in application through the update server application option. The following are parameters for verifying a change password request:

Parameter Name	Description
Parm 1	This parameter is 1 character in length and returns a status flag of one of the following: **N** = Password updated successfully. **E** = Password failed update.
PinData	This parameter contains the incoming string, and returns an outgoing string if the change password update request fails.

Note: The system will not normally log a change password request, however, if an external change password program is installed, you will have the ability to turn on logging.

External Logout Program

The overriding external program name should be keyed onto the *LOGOUT application through the update server application option. The parameter list is the same as a normal program call.

Appendix C

List of Limits and Miscellaneous Information

This appendix contains maximum size limits for transaction stream and fields. All limits shown are in bytes.

Transaction Stream Limits

- Incoming = 15360
- Outgoing = 64000

Field Limits

- Incoming = 5000
- Outgoing = 5000
    - Limit can be pushed to maximum by using concatenation.

Note: Special characters are not allowed in field names (only alpha-numeric).

Appendix D

iSafari Subsystem & Server Autostart

The iSafari package contains a subsystem called ISAFARI, which incorporates the server Autostart feature. The ISAFARI subsystem uses *SHRPOOL03 by default, which can be changed to whatever shared pool is required. If *SHRPOOL03 is used, then the command WRKSHRPOOL should be used to setup *SHRPOOL03.

The included command ATWSSTRSVR has the option of starting servers that have been setup