JES² Mail and JES² FTP

Concepts and Facilities

z/OS

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INTRODUCTION TO JES2MAIL AND JES2FTP

DATA (REPORT) SOURCES

DATA (REPORT) DESTINATIONS AND REPOSITORIES

DATA (REPORT) OUTPUT FORMATS

PROCESSING CONCEPTS

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Introduction to JES2Mail and JES2FTP

Benefits and Features

The production of paper reports from computers has been commonplace for many decades. Over the years, many programs have been written to create reports on printed mediums. This is especially true in the traditional IBM mainframe environment. The IBM mainframe can now house much more information than its predecessors from years past. Today, it is not feasible, nor prudent, to print all the data produced by these programs.

As new applications are developed, there are still issues regarding delivery of information to those who require it. People still need information, but they want to be more selective of what they view and print. They would also like to print on demand, from their desks, to a printer they normally use.

The JES2xxx solution allows z/OS installations to package spooled print data into a modern form of electronic packaging, and deliver this package to the end-point through electronic means. The end user may view this information from a desktop computer, and print what they wish, when and where they need it.

JES2xxx can address these old and new issues. With the advent of the World Wide Web, coupled with the JES2xxx components, you can open up new methods of allowing applications to succeed in overall deployment. You may now create reports, and store them into application data stores to be made available to their web-based applications, or deliver them through e-mail.

Where People Need the Data

In today’s decentralized work environments, it is not feasible to print large reports at the main office, and ship them off to remote locations where they are required. In many instances, the data would not arrive in a timely enough fashion to be useful.

Data can now be available electronically, through a company’s intranet, or the Internet. Field personnel can access information through their notebook computers or PDAs.

Summarization and Extraction of Existing Reports

Existing reports may contain more data than is normally necessary to view. The JES2xxx components give you the ability to extract and send the most pertinent summary data from these reports.

Given an existing report showing sales by field office and total sales, JES2xxx can process this report into several sub reports, by field office, deliver those reports to individuals in their respective offices, and deliver the totals to home office sales management.
**Easier Than Storing Paper**

If large hardcopy reports are created by a computing platform it becomes difficult to store these reports, and in many cases they just end up in the recycle bin.

When they are made available electronically they are much easier to manage for future reference and easier to retrieve than their paper alternatives. This also allows the resulting information to be kept in a central repository for backup and recovery purposes.

Results from JES2xxx processing may be stored on virtually any platform, database, or medium available today. For example, the archival of this information to CD-ROM for offsite storage is a convenient and inexpensive method of backup.

**Printing at User’s Discretion and Location**

If a user’s reports are available electronically, they may print any portion of, or entire reports, at their location and at their convenience.

When Adobe® PDF (Portable Document Format) documents are generated, you can print on any printer, and the data will appear exactly as it was created.

**Preparing Data for Presentation on the Web**

Historically, multiple copies of the same reports are generated for different people. With the advent of the World Wide Web, this common information can be published on a web site, allowing many users access to the same information.

**Flexibility of Delivery**

The data contained within your reports may need to be emailed to various recipients. It may require being FTP’d to another server for viewing on the web or for availability as a downloadable file. You may even wish to place it back into an MVS dataset or into a z/OS Unix (HFS) file system for processing by another application. The JES2xxx family gives you this flexibility.

One of the newer methods of delivering information through the Internet is the concept of user subscription to RSS web feed files. RSS, or Really Simple Syndication, is a new standard in the Internet world enabling users to decide what information they wish to subscribe to and upon subscribing to a given RSS feed they are automatically notified of new documents made available through that feed. JES2RSS, which is the JES2FTP product with the RSS option, supports this method of document publication and subscription.
**Flexibility of Format**

It would be overwhelming to continually change existing applications to produce the desired data into the various formats required by your expanding business needs. With JES2xxx the formatting is performed outside of the application thus relieving it of this concern.

The possible delivery formats that your users require may seem daunting and changing an existing application to produce even one of these formats would likely require tremendous resources. They may wish for delivery as an Adobe Acrobat PDF file, as an HTML web page, as a delimited file that enables insertion of the data into a spreadsheet, as an XML file, or as an RTF file for use within a word processing package. They might even ask for a combination of these formats.

With the aid of JES2xxx the response to these requests will be, “We can do that for you.”

**Why do it on the ‘Mainframe’?**

- That is where the report is generated.
  - Access to all available report attributes.
- Few points of failure and management.
  - The entire process is done under mainframe control.
- Less involvement from ‘LAN’ people.
  - Minimal or no LAN personnel involvement.
- Faster than PC based solutions.
  - Some customers report 20 to 1 advantage.

Typically only a single mainframe application level skilled person is required to install, test, and roll the process into production.
Objective: Less Paper
Introducing the JES2xxx Family

The JES2xxx products provide a z/OS installation with the capability to package legacy spooled reports into modern forms of generally accepted mediums, and convey this information to Internet based endpoints. The JES2xxx products work with JES2 or JES3 environments.

**JES2Mail**

JES2Mail may run in JESWriter mode, in Batch mode, or in HFS Directory Watch mode.

In JESWriter mode, JES2Mail runs as a started task within the system. When running in this mode, it may select data to be processed directly from the JES spool. JES2Mail selects spool data sets from the JES queue, converts the data to one of a number of formats, and sends the output to intended end users via standard Internet e-mail (SMTP, or Simple Mail Transfer Protocol). The data will appear as attachments in the e-mail message on the receiving end.

In Batch mode, JES2mail executes as a job step within an existing job, or as a separate job. When running in this mode, the input data to be processed is an standard sequential file.
In HFS Directory Watch mode, JES2Mail watches an HFS directory for files that it is to process. It can be configured to watch, or check, the directory one time only. Or it can be configured to keep watching the directory by waking up on a set time interval to check again.

There are no dependencies as to the e-mail system the end user chooses to use, so long as the type of data produced can be viewed on the destination platform. Some examples of typical workstation based e-mail systems in use today are:

- Microsoft Outlook (with or without Exchange)
- Microsoft Outlook Express
- Microsoft Entourage (Apple Macintosh)
- Netscape Messenger (Windows or Apple)
- Novell GroupWise
- Lotus Notes
- Qualcomm Eudora
- Kmail (Linux)
- Ximian Evolution for SuSE or Red Hat
- ...and many others
JES2FTP may run in JESWriter mode, in Batch mode, or in HFS Directory Watch mode.

When running in JESWriter mode, as a started task, it may select data to be processed directly from the JES spool.

JES2FTP selects spool data sets from the JES queue, converts the data to one of a number of formats, and sends the output to specified FTP site, file based location, or back into JES.

In Batch mode, JES2FTP executes as a job step within an existing job, or as a separate job. When running in this mode, the input data to be processed is an MVS sequential file.

In HFS Directory Watch mode, JES2FTP watches an HFS directory for files that it is to process. It can be configured to watch, or check, the directory one time only. Or it can be configured to keep watching the directory by waking up on a set time interval to check again.

JES2FTP may deliver its output to a server that has the FTP server service enabled. This allows for many possibilities for delivering the information to end users. The destination site may also be configured as a standard file server, where users may pick up the reports in a designated folder or directory. The destination FTP site could also be used as an HTTP server, where the report may be displayed through a standard web browser, such as Internet Explorer, Netscape, Mozilla or Konqueror. If the documents you
produce are confidential or sensitive, they may be hosted by a secure web server.

The JES2RSS option of JES2FTP allows for the publication of reports as items added to an RSS feed file. JES2RSS can transfer a report to an FTP server and subsequently update an RSS feed file so that all subscribers to that feed file will be automatically notified that a new report is available for them.

For secure file transfer JES2FTP supports SSL/TLS transmission security.
Data (Report) Sources

**JES2 or JES3 Spool Input**

The main repository for print data in a z/OS system is the JES spool. This may be either JES2 or JES3. When JES2xxx is running as a started task, the spool is where it obtains reports for processing. The reports selected for processing by JES2xxx are based upon the attributes of the spool data sets. The reports to be processed may be in a designated spool sysout class, form, or destination.

**Direct File Input**

JES2xxx may process sequential files that contain print data. These files can be on disk or tape. They may come from an MVS type dataset or from a file within an HFS (z/OS Unix Services) directory. When processing sequential files, JES2xxx must run as a step within a batch job stream. The sequential files may be created within the same or a different job, so long as it has been created prior to JES2xxx's attempts to process the data.
Data (Report) Destinations and Repositories

E-mail or SMTP Destination

Using the JES2Mail component, JES spool data sets can be processed, and the results e-mailed to one or more individuals. The actual reports appear as attachments to the body of the e-mail sent. Additional flexibility can be implemented with the use of distribution lists, where a single report generated may be addressed to multiple recipients. Reports can be sent anywhere in the world an e-mail can be sent.

Report bundling is accomplished by including several different reports to be packaged as multiple attachments within a single e-mail message created by JES2Mail.

The following example shows an email sent by JES2Mail being viewed in Outlook. The coverpage for this email is a basic one that illustrates how values from the processed report file can be inserted into the coverpage itself.
FTP Destination (or Repository)

Utilizing the JES2FTP component, the resulting report can be transferred to an FTP server. This allows an installation to put these reports onto a file server where an entire community can view reports. When coupled with a web server, these reports can be accessed through end users’ web browsers.

Standard z/OS Data Sets, Unix Files, or JES

Output from the JES2xxx components can also be stored back onto the z/OS system.

With IBM’s introduction of the web server on this powerful platform, it could be advantageous for a client to publish reports into the z/OS Unix (HFS) file system and allow viewing through the z/OS web server by the end user’s web browser.

With output stored back into traditional z/OS sequential data sets, partitioned data sets, or the z/OS Unix file system, these files can also be accessed through the z/OS FTP server.

These techniques allow all the reports generated to be backed up using the existing z/OS backup/recovery procedures currently in place.

The output from the JES2xxx components may also be directed back to the JES spool for traditional print mechanisms, or for redirection by JES2xxx.
Data (Report) Output Formats

Adobe® Portable Document Format (PDF)

Adobe® PDF format is the best format to have the report presented as close to a “printed copy” as possible. To view the PDF formatted report, the Adobe® Acrobat Reader™ is required. The Reader is available free from Adobe® at [http://www.adobe.com/](http://www.adobe.com/).

Formatting options for PDF allow for landscape versus portrait, page size, font size, and font type.

Many options may be exploited with the PDF document output option. Other information and features may be included in the resulting PDF document, such as:

- Graphics (JPEG and TIFF-F)
- Overlays and backgrounds
- Specialized fonts
- Bookmarks and indices
- Document security (encryption both RC4 and AES)

When utilizing backgrounds, overlays, and specialized fonts, an initial PDF must be produced with the data you wish to use. Tools are provided to convert the PDF into an overlay for use by the program. The master PDF may be created with a wide variety of workstation based tools.
<table>
<thead>
<tr>
<th>SKU</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Extended Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>Part One</td>
<td>1</td>
<td>2.50</td>
<td>2.50</td>
</tr>
<tr>
<td>0002</td>
<td>Part Two</td>
<td>1</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>0003</td>
<td>Part Three</td>
<td>4</td>
<td>0.60</td>
<td>2.40</td>
</tr>
</tbody>
</table>

**Note:** *Taxable Material  *State Added ELG Tax

<table>
<thead>
<tr>
<th>Subtotal</th>
<th>Tax</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.50</td>
<td></td>
<td>12.69</td>
</tr>
</tbody>
</table>

**Page 5 for Account 01-115-5423 on 2002-11-07**
Adobe Embedded Files

In addition to the Report contents, extra data files can also be embedded (attached) to the PDF. The embedded files are also compressed and encrypted like normal other PDF contents. This provides a secure ‘package’ for not only reports by data files as well.

Plain Text

Some environments need to simply ship an entire print file to the end-point. This essentially is no conversion, other than EBCDIC to ASCII translation of the document. CR/LF (carriage return/line feed) combinations are inserted after each line, and FF (form feed) is inserted at the beginning of each page. This is accomplished through the “PackageType: text” statement.
Comma Delimited

In some instances, there may be a need to extract data from a given report, and allow it to be imported into a spreadsheet or a database. This can be accomplished with comma-delimited, or tab-delimited, output to be generated. This is accomplished with “PackageType: text”, that includes a script that utilizes the “ExtractData()” function.

Rich Text Format (RTF)

A report can be encoded in the Rich (or Revisable) Text Format (RTF). Microsoft Word, Wordpad, Star Office and OpenOffice support RTF, similar to the features of PDFs with Acrobat Reader. RTF supports page breaks, which are not supported by HTML, and it supports fonts, which are not supported by plain text.
Hyper Text Markup Language HTML

Reports can be encoded in HTML instructions suitable for viewing with a standard WEB browser.

There is no “new page” HTML command so a horizontal rule line “<hr>” statement separates each page (unless overridden in the Ruleset).

With the Report Splitter very extensive HTML encoding can be performed, including breaking up a report into a set of HTML encoded files as well as building an Index or Table of Contents providing direct access to the entire report.

Additionally, report data can be extracted and placed into an HTML table. This could then be inserted into a webpage for viewing through a web browser.

The resulting HTML table in the browser might look like:
The XML support provided by JES2xxx allows data to be extracted from a report page and formatted into an XML document.

The approach used is to “pick out” data from the report as it is processed, and generate a secondary file containing the XML coding. At the end of the report, the secondary file is attached to the email as a text attachment.

And if the file is opened with Internet Explorer we see:

```
<?xml version="1.0"?>
<Doc1>
  - <Division DivName="NORTH" Num1="18506">
    <Name CO="INTERSTATE STOCKYARDS" />
    <ProductA>18506</ProductA>
    <ProductB>36281</ProductB>
    <ProductC>58649</ProductC>
    <ProductD>43323</ProductD>
    <ProductE>28934</ProductE>
    <ProductF>5997</ProductF>
    <ProductG>47634</ProductG>
    <ProductH>45455</ProductH>
  </Company>
  - <Company>
    <Name CO="WYTG BROADCASTING INC" />
    <ProductA>60506</ProductA>
    <ProductB>35567</ProductB>
    <ProductC>67208</ProductC>
    <ProductD>61974</ProductD>
    <ProductE>51073</ProductE>
    <ProductF>56008</ProductF>
    <ProductG>95638</ProductG>
    <ProductH>29411</ProductH>
  </Company>
  - <Company>
    <Name CO="HOMESTEAD ESTATES" />
    <ProductA>70635</ProductA>
    <ProductB>78414</ProductB>
    <ProductC>97709</ProductC>
    <ProductD>18095</ProductD>
    <ProductE>76115</ProductE>
    <ProductF>14549</ProductF>
    <ProductG>49566</ProductG>
    <ProductH>77416</ProductH>
</Doc1>
```
**ZIP Compression Support**

JES2Mail has several levels of compression support. In addition to the built-in ‘Native’ ZIP compression, PKWare’s PKZIP for MVS is supported in addition to Data21’s ZIP/390.

**JES2Mail**

The level of support depends upon the attachment type and the mechanism configured for use. There are three files that JES2Mail can deliver in the email message as an attachment. The first is the ‘main’ report file, which is the result of the report processing and may be in PDF, HTML, RTF, or text formats. The second are the files from the extract operations, i.e. spreadsheet ready files. The third are the ‘extra’ attachment files, those that are incorporated with the ATTACH message header statement.

The two purposes for a ZIP archive are compression and encryption.

Here is a table of support for JES2Mail:

<table>
<thead>
<tr>
<th></th>
<th>NATIVE ‘Built-in’</th>
<th>PKZIP</th>
<th>ZIP390</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Main’ Report file</td>
<td>Compression</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>‘Extract’ Data File</td>
<td>Compression</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>ATTACH files</td>
<td>Compression</td>
<td>Compression and Encryption</td>
<td>Compression and Encryption</td>
</tr>
</tbody>
</table>

**JES2FTP**

JES2FTP can generate a compressed ZIP archive file. This facility does not use any external product.

Here is a table of the support for JES2FTP:

<table>
<thead>
<tr>
<th></th>
<th>NATIVE ‘Built-in’</th>
<th>PKZIP</th>
<th>ZIP390</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Main’ Report file</td>
<td>Compression</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>‘Extract’ Data File</td>
<td>Compression</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Here is what an archive might look like with a set of PDF and Comma delimited data files, all packaged and delivered as a single ZIP file.
JES2FTP supports the gZip protocol which is better suited for ‘really big’ file compression and transmission.
Processing Concepts

**JESWriter Mode vs. Batch Mode vs. HFS Directory Watch**

Whether using JESWriter mode or Batch mode or HFS Directory Watch, the same method of process and delivery of the report is employed.

The major difference is that in JESWriter mode, any spooled report may become available for processing, which requires some initial dynamic determination of how the data will be processed.

In Batch mode, specific report file(s) are specified to be processed.

In HFS Directory Watch mode the product is given criteria for deciding what files within the HFS directory to process.

**Processing Defaults**

Defaults may be chosen for reports that fit general rules for processing. It is recommended you set up the installation defaults to cover the majority of reports that will be processed by JES2xxx.

The specification of Report Processing Language, configuration keywords, and statements are case insensitive. All operands specified are case insensitive, with the exception of Unix directories and file names, user IDs and passwords.

**Processing in JESWriter Mode**

When JES2xxx is run in JESWriter mode, as a system started task, it can select data sets from the JES spool queue for direct processing. Various criteria may be configured to select data for processing by JES2xxx. JES2xxx must be configured with rules, so it knows how to handle the various jobs that are selected for processing. Defaults must be chosen for those data sets that do not have a rule.

**Processing in Batch Mode**

JES2xxx may run as a job step within an existing batch job stream, or an entirely different job. Data that requires processing in this mode of operation must exist as a disk file. Following the production of this data, it may be processed by JES2xxx.

This method of operation works especially well in the early phases of testing a new report. When testing is completed, you may wish to move the rules and other supporting data to the production started task operation.

Batch mode also allows the use of other third party report management systems to be the data fed into JES2xxx for processing.
**Processing in HFS Directory Watch Mode**

When running in this mode, JES2xxx will be given the name of the HFS directory that is to be watched along with a mask of what the file names are expected to look like so that it can recognize those files within the directory that are to be processed.

There will also be the specification of what is to be done with the file after it is processed. You might wish for the file to be deleted after it is processed or possibly moved to another directory of completed work. This choice can also be set to depend upon whether processing of the file is successful or if there is a failure of any kind.

JES2xxx will normally scan the specified directory one time and then quit. However, it can be instructed to continue watching this directory after waiting a specified number of seconds. It will continue to do this until it is “shutdown” by a console command.

**How Work is Selected**

When JES2xxx runs in JESWriter mode, reports are selected from the JES queue based on the configuration. The selection criteria must be determined for JES2xxx to recognize work it has to process. This highest level of selection is accomplished using one of the “JESWaiton...” statements in the configuration file.

The criteria that may be used to select JES spool data sets are:

- A Writer name, using the JESWaitOnWriter statement
- A Destination, using the JESWaitOnDestID statement
- A sysout class, using the JESWaitOnClass statement

When first implementing JES2xxx, it is typical to utilize the “JESWaitOnWriter” statement, with a chosen JES writer name. Work may be given to JES2xxx by using a DD statement, with “SYSOUT=(x,writername)”, where “writername” is the value specified for the JESWaitOnWriter statement, and in the JCL creating the report.

When JES2xxx runs in Batch mode, reports to be processed are explicitly specified.

When the product is run in the HFS Directory Watch mode it is given a specific HFS directory name to watch along with a filename mask that allows it to recognize those files you wish it to process.

The HFSWatchFilemask configuration statement might specify “*.TXT”, for example, which indicates that all files suffixed with “.TXT” are to be processed. Case is important in HFS file names so files suffixed with “.txt” would not be selected.
How a Ruleset is Selected.

A ruleset is a collection of rules, where one or more rules may be applied to the processing of a report. A ruleset is a member within the configuration library. Within a ruleset, each rule is separated by a blank line.

When JES2xxx executes in JESWriter mode, and a report has been selected from the JES queue, it must determine how to process the information. A typical installation will utilize the JES destination identifier to select a particular “ruleset”. If there is no applicable ruleset by that name, the default ruleset is utilized.

When JES2xxx runs in Batch mode, or in HFS Directory Watch mode, a ruleset is explicitly specified for use in processing the report file.

Report Recognition

Once a ruleset is selected, processing in all modes is the same.

Specific rules within the ruleset are selected for use through the “RecognizeBy” statement specified in each rule. The first rule in the set is considered the default rule for the ruleset. If no specific rule is matched within the set, the default rule is used.

Typical ‘mapping’ of JES SYSOUT to JES2xxx processing

A minimal JCL statement for the generated report might look like this:

```
//PRINT DD SYSOUT=(A,JES2MAIL,GREEN),DEST=RULE1
```

In the JES2XXX system configuration (CONFIG) there would be statements like:

```
JESWaitOnWriter: JES2MAIL
Ruleset: &DestID
```

and in the configuration library (PDS), there would be a member called “RULE1”, and it would look something like this:

1) Default
2) Name: Report from job &Jobname;
3) To: User@domain
4) From: JES2Mail@domain
5) PackageType: text
6) Coverpage: No
7) ID: PDF1
8) to: user@domain
9) PackageType: PDF
10) Fontsize: 10
11) RecognizeBy: Formname: GREEN
12) CoverPage: coverhtm
13) Overlay: GreenBar

- 22 -
Sequence of processing:

1) JES will ‘pass’ the SYSOUT to JES2xxx because of the Writer Name. (ie. JES2MAIL).
2) JES2XXX will use the DESTID value (ie. RULE1) to designate a ruleset.
3) The ‘RecognizeBy’ will match up with the form name (i.e. GREEN).
4) The report is converted to PDF and delivered via email, and in this case the standard GreenBar overlay will be applied.
5) If the report didn’t match any RecognizeBy statement, it would ‘fall back’ to the default and send it as a text email.

**Report Processing Language to Tailor Processing**

The Report Processing Language, or RPL, is a simple but powerful language. It gives the implementer many controls for analyzing a report, or modifying the output.

An RPL script, or just “script”, is referenced through the “Script:” statement within a rule. This statement specifies the DDname, member, data set, or library and member name of the source.

The user that implements a script written in RPL is given the ability to process “pages” of a report. The report page is available to the script in a buffer that may be referenced by row and column on the page. There is extensive capability to search the page for specific text strings, insert, remove, and change text. You may also use this to “split” a single report into multiple reports.

When creating HTML or PDF output, a script can be employed to insert special formatting, specify text positioning, determine font selection, insert graphics, and many other functions. When creating a PDF, it may be used to select the actual form, or overlay, that will frame the content of the resulting report.

**Report Splitting**

It is common to split a single report into several components, and have those components routed to different individuals. With RPL, you may split these reports into one or more output files, based upon content within the report.
General Use of Report Processing Language

Many reports require specific processing to transform the data into a new form. In some cases, text may need to be moved. When these needs arise, the report processing language, or RPL, may be employed to create specific output page layouts.

RPL is a powerful modern language optimized for report and page processing.

Some specific needs to employ the RPL are as follows:

- Control ‘splitting’ of report into sub-reports
- Extract data for addressing
- Do a lookup for an email address
- Define cover pages for email
- Define notify messages for FTP delivery
- Specific text placement on a page
- Use of multiple fonts, font sizes, or styles
- Removal of text from a page
- Insertion of index marks for Adobe® PDF
- Tailoring HTML pages
- Producing comma-delimited, or tab-delimited, output
- Produce HTML table using report data
- Produce XML file using report data

Exits to Tailor Processing

In some instances, a user’s requirements cannot be fulfilled entirely through using RPL. Because of these special requirements, several
exit points have been provided to allow an installation to further tailor their processing needs.

Exit samples are provided, and must be coded to fit your needs, compiled at your installation, and made available to JES2xxx at execution time. Exits are implemented as DLLs (Dynamic Link Libraries). Exit samples are provided in C, COBOL, and assembler. Using the DLL implementation allows the exits to remain independent of JES2xxx. This allows your installation to update either the exits or the JES2xxx executables independent of each other.
RSS Web Feeds

What is RSS?

The RSS Web Feed protocol has become a powerful and widely supported method of distributing content to a web-based audience. There are several terms to describe the technology, Web Feed, Blogging, Web Publishing and others, but the most pervasive acronym at the moment is RSS which stands for “Really Simple Syndication” and the current version of RSS is 2.0. We will use the term RSS or WebFeed for this feature.

Historically, we have called JES2Mail a ‘push’ method of delivering report contents because JES2Mail will transform, package and email reports to recipients, thus pushing the report out to them. We used the term ‘pull’ method for JES2FTP, where the program will transform the mainframe report/SYSOUT content and place it on an FTP server for a user to later ‘pull’ the report down when they want it. This has been augmented with the email notify process to send an email notice with a link to the report. JES2FTP with the RSS option becomes an ideal combination of both approaches for those reports that are intended for groups of recipients.

Introducing JES2RSS

JES2RSS consists of JES2FTP with its available RSS option. A JES2RSS publishing operation uses JES2FTP to transform, package, and store the report content (i.e., a PDF) on an FTP server, but then instead of sending an email notice, it will generate or update an RSS feed file to announce the publishing of the new report. You may ask how this is different from an email notice and it comes down to this: With the email notice approach, a message has to be created and delivered to each interested party, and this means that someone on the mainframe must maintain a distribution list. In addition, if the report is going to be widely available, this can result in a very large number of emails. Using RSS, the end-user decides that they want to “subscribe” to the RSS feed using an RSS client, which then regularly checks for newly published items. The user can then decide when and if they want to look at the report. With RSS, there is no central distribution list, which greatly reduces the administration. The end user decides that they want to subscribe to a report or stop subscribing. The RSS feed file itself is accessed using HTTP, and is subject to the security that would be in place for any HTML web page. This approach can work very smoothly with an intra-net web server that controls access to web pages based on roles or other security approaches. For example, it would be easy to have payroll reports published to a web site that only ‘HR’ users have access to.
You may be curious if something special is required on the HTTP server to support RSS feeds. No! The RSS feed is simply an XML file that the user accesses just like any web page. The ‘heavy lifting’ of keeping track of what has been downloaded or not is done by the client software. One such RSS ‘aggregator’ or ‘reader’ is Microsoft Outlook 2007. You can subscribe to any number of RSS feeds and Outlook will check for updates on a regular basis. Firefox has built-in support for RSS feeds as does Internet Explorer. When Firefox encounters an RSS feed file, it shows the available items, and then asks if you want to subscribe to the feed. It will give you a selection of available clients to use in subscribing.

With an email notice only the latest report is included in the message. However, with an RSS feed the latest ‘x’ number of reports can be listed. This can allow multiple revisions of the reports to be published. The ‘x’ can be set to whatever is appropriate for that feed. For example you might have an RSS feed that allows access to the latest ten versions of the generated report. On the other hand, you may prefer to only keep the latest version of the report, but you still want the subscribers to be made aware that the content has changed. This is all elegantly handled by the RSS Web Feed process.

One concern you might have about the web clients checking for new feeds is the creation of a lot of network traffic. With the RSS standard you can specify how often you will allow a client to check back for a new file. If you know that the reports are generated during a nightly batch process you might define that the feed is only to be checked once a day, or maybe once every few hours, or as often as every few minutes.

**Publishing with JES2RSS**

The report publishing operation consists of two steps. The first is a regular JES2FTP operation to take a report/SYSOUT, transform it to PDF (or another package type), and write it to an FTP server.

The second operation, which also uses the FTP protocol, is to create or update the RSS feed file. As described, this is a text based XML file that exists on the web server.

JES2RSS uses FTP for its communication protocol (no surprise), but RSS and users generally use HTTP. To make this process work, JES2RSS must have FTP access to a website that is also available to an HTTP web server. While JES2RSS will use FTP for its part in the process, the user will use HTTP (although they may not be aware of it) for their operations. In our development labs we had the web master set up an FTP access that uses a special port and UserID to sign on and update the necessary files. This way, there is no general FTP access exposed.
Creating the RSS Web Feed File

To create the RSS Web Feed file, we need to combine data elements from a variety of fixed and variable sources. For example, a variable element could be the file name of the newly stored report. A fixed element could be a general description of the report to help self document the RSS feed.

Here is a flowchart of the sources of the various data elements:

The two key input files for the publishing operation are the “Working Set of FeedParms”, called the “FeedParms” file or “Feed parameters”, and the “Feed Template File” or just “Template”.

These two files are merged with JES2FTP information, such as the filename of the newly stored PDF report, into the final RSS feed file that is stored on the web server. This is the file that the end user retrieves using their browser or RSS reader.

The template file is expected to be rather static. It is formatted with the XML standard and probably will not need to be modified in an installation. The current template supplied is for an RSS 2.0 web feed. Other templates will follow.

The FeedParms contain all of the information for the publish operation. For example, it contains the FTP server address, access ID, and location on the directory to place the final feed file. But most importantly, it contains the information about the new item to be published.
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