



# Print Solutions from Atac

Newsletter for Asia Pacific Region

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## Barr RJE – What is it?

RJE stands for Remote Job Entry. It's a mainframe term which refers to an SNA remote workstation with the ability to send jobs to the mainframe and receive data or print back. Typically, these were 'green-screens' with a 25 line x 80 character display, a punch card reader and 'writer', and possibly a local printer.

The IBM model name for these RJE units is 3777. The RJE workstation is called a remote because it is usually located some distance from the host computer. The workstation connects to the host through a modem or local area network. When you send jobs from the remote workstation to the host computer, the process is called Remote Job Entry.

RJE devices are the paths over which you exchange data with the host computer. The remote workstation sends programs and data files to the mainframe computer for processing via the host READER device. Output comes back from the host via the PUNCH and PRINTER devices. The COMMAND device allows print or punch queue queries and RJE device status, as well as releasing jobs to output.

RJE capabilities are built-in to all mainframes running MVS/JES2, MVS/JES3, VSE/POWER, VM/RSCS and VS1/RES operating systems. No software needs to be loaded to the mainframe to define an RJE workstation. An RJE workstation's devices are typically called RMTxx.RDy, RMTxx.PUy and RMTxx.PRy, where xx is the RJE identifier or code and y is the number of devices. Total ReaDers + PUnces + PRinters must not exceed 7.

Last century, Barr Systems wrote IBM 3777 RJE emulation software for the PC which allows file and tape transfer to and from the host via ReaDers and PUnces and receives print output from the host via PRinter devices. Print output is initially stored in the Barr Spool on disk; from there it can be directed to any devices accessible to the PC, i.e. Disk, Serial or Parallel attached printers, LAN printers, LPR printers or even other Barr PCs.

Barr Systems designed and built S/370 Bus & Tag adapters for the PC which allowed Barr to drive multiple, large, channel-attached printers directly. Suddenly a mainframe with attached printers and tape drives could be replaced by an RJE PC driving the same printers and 6250/3480 PC tape drives. The Barr RJE product helped to shut down many mainframe data centres during the 1980s and 1990s which would otherwise have remained in operation to produce local print/tape output.

Today Barr RJE works over standard TCP/IP to the mainframe and is very much a favoured path to securely send enterprise print from the host. The fact that no software is required on the host is very attractive to mainframe owners and facilities management suppliers alike.

Contact Atac to discuss your mainframe print requirements, and our solutions, today.

## BHCS – Spool File Routing

Barr's Host Communications Suite (BHCS) receives print from a number of sources including RJE, LPD, LAN, DISK, IP Socket, Bus & Tag, Escon, FiCon, NJE and even other BHCS machines. All print ends up in the BHCS Spool. From there, it is sent out to BHCS 'printers' or destinations, based on routing info unique to each.

At the simplest level, each destination has a different Class alongside it. If spool files have a matching Class and both destination and spool file are Ready, then the spool files will be sent to the destination. If a destination has multiple fields populated alongside, such as Class and Form, then only spool files which have the same Class and Form will flow to the destination.

While it is possible to manually alter each spool file's Class, Form etc., it's better to automate BHCS so the files arrive into Spool with their routing fields already set. How is

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this done? Well, it's useful to understand the processes which take place as spool files are received.

First, any attributes which arrive 'with the job' are applied. This includes RJE Form/Class/Job details from the host, LPD header fields detailing QueueName/User/Jobname from a Unix source, Bus&Tag/Escon/FiCon channel numbers from the mainframe or even info extracted from the leading banner page(s) of the job itself.

Next, any static assignments are applied. You can assign these via the Receive definitions, i.e. LPD jobs could all have 'L' assigned to their Class or files coming in from DISK could all have 'D' assigned etc. The spool file's state (Ready/Hold) can also be set here as well as disposition after printing (Retain or Delete). Every spool file is also automatically tagged with the source device it came from, i.e. LPD, DISK, RJE, IP Socket etc.

Lastly, as the files are passed into BHCS Spool, they are all processed through the active Override Table, if one exists. The Override Table performs conditional processing where actions are applied based on certain conditions being met, i.e. if the Class = 'A', then make the spool file Ready. Many, many condition/action pairs or 'rules' can be defined.

O/T conditions can be empty, in which case any actions are applied unconditionally to all files. O/T conditions can be complex too, i.e. If Class = 'A' AND form = 'STD' AND Source = 'LPD', then apply this action. Multiple actions can be specified such as set form to 'STD', set file to Ready and set priority to '99'.

With this understanding of how spool file attributes are assigned, you are now in a position to determine the automation necessary to process spool files from reception through to disposition without any human intervention.

Contact Atac today for advice and assistance with automating your BHCS routing..

## Output Manager Indexing

Output Manager's VDE Actions include Index and Split. How are these used effectively? VDE processing takes place on the intermediate form of a print job, i.e. after reception but before final conversion to the desired format. VDE processing with indexing usually involves two passes through the data; once to determine the index values and write them, and then another pass using the newly created index to output in the desired sequence.

The VDE command to achieve this is the Parent statement or entry point into the VDE script, i.e. `[PARENT_Start] PARENT [OBJECT_FirstPass] AND VDEOPTIONS INDEX 'MyIndex' [OBJECT_SecondPass]`. This statement will call `[OBJECT_FirstPass]`, then using 'MyIndex' will call `[OBJECT_SecondPass]`. `[OBJECT_FirstPass]` is expected to derive an index 'key' (usually per document or mailpiece) and then apply it with the INDEX command.

Let's presume the first pass derives the number of pages in each mailpiece via a boundary object. This number is stored into a variable such that it will sequentially order successively larger mailpieces, i.e. '00001', '00002', '00003' etc. This variable is provided to the Index command as the 'key' for the entire mailpiece, to be stored in index file 'MyIndex'.

It's wise to make each index 'key' unique, with one approach being to create each index value with Pages + SIDENUMBER from JOB, i.e. '00001-00001', '00001-00002', '00002-00004', '00002-00006' where '00002' is the number of pages and '00006' is the ending page number within the job. This means that if you have multiple mailpieces with say 1 page, the index values are all unique and the output order will actually be determined by the original order within the file.

The second pass through the data using the 'MyIndex' index will give you each mailpiece in ascending order of number of pages. The second pass can use a boundary object with a TEST of NEWINDEX, as each new index value refers to a new mailpiece. The index can be extracted and tested so we know, for example, that the next mailpiece is 6 pages long and belongs in a different envelope size.

In this case we then use the SPLIT command to close the current output file and start outputting to a new file so the first file contains all the mailpieces with 1 to 5 pages, and the second file contains all the mailpieces with 6+ pages. This logic can be expanded so the splits can be performed resulting in multiple output files comprising, for example, 1-5 pages, 6-15 pages, 16-99 pages and 100+ pages.

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If your VDE script contains more than two passes, be aware that the index only persists for the next pass. This means you must extract index values and re-write them to a new index with each additional pass through the data, if they are to be preserved.

Index keys are ascending by default but can be written as descending or unsorted. Multiple indexes can be created per item/mailpiece and all can be accessed in the next pass, although only one can be designated as the 'Master' per pass.

Finally, if you don't index an item in pass 1, it doesn't appear in pass 2 (using the index) at all. This is useful if you want to drop Banner and Trailer pages, for example, by simply excluding them from the index as it is created in the first pass.

Contact Atac for assistance with your VDE indexing and splitting requirements.

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## Q & A

**Q.** We don't want to use Remote Desktop Protocol (RDP) to remotely control our BHCS machine. RDP gives the user control of the whole BHCS PC, and we only want them to be able to work with the BHCS Spool window. How can this be achieved?

**A.** Barr have a Remote Spool application which gives users the ability to work with the BHCS Spool window and access nothing else on the BHCS machine. Every BHCS system is licensed for one Remote Spool window automatically for free. Subsequent licenses for 2<sup>nd</sup> and 3<sup>rd</sup> Remote Spool windows are chargeable.

**Q.** We've recently outsourced all our Xerox printing, which we now convert to PDF via Output Manager as it is produced. Our outsourcer wants a 'helper' file to accompany each PDF. The 'helper' file will tell the outsourcer whether each PDF page is simplex or duplex and how many pages are in each mailpiece. Can we do this?

**A.** The Output Manager VDE DISK command can write the accompanying 'helper' file with one record or line of info per side of PDF. The 'helper' file records can tell the outsourcer each PDF side's PLEX, whether it is a front or back and whether a new mailpiece begins on that side.

**Q.** We cannot get Barr's IPDS Converter to work on Server 2012 R2 using Port 5000.

**A.** There's something about Server 2012 R2 and Port 5000 which we haven't fully determined yet. We know that any other Port number on Server 2012 R2, or any other supported OS using Port 5000, works fine.

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## Feedback

Your feedback is valuable to Atac and helps us provide the high standard of service which you have come to expect from us, and which we are proud to deliver. Whether you have questions about our product range, a story to share regarding your experiences, or you would like to comment on our newsletter, just send us an **email**.

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