

Cheryl Watson's

REPRINT

Tuning Letter



This document is a reprint of an article from *Cheryl Watson's Tuning Letter 2021 No. 3*.

z/OS 2.5 is the last release of z/OS that will support an IBM-provided JES3. For JES3 customers, this means they must make a choice between migrating to JES2, or transitioning to Phoenix Software International's (PSI) JES3^{plus}. To help those readers make a fully informed decision, the attached article contains a Question and Answer session with PSI's **Donna Hudi** and **Ed Jaffe**. The session covers a wide range of topics including improvements to JES3^{plus} since its initial delivery, migration considerations, and plans for future enhancements.

If you are currently using JES3 and need to make a decision about your future JES strategy, this article should be considered required reading.

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JES3^{plus} Status and Roadmap

Regular readers will recall our 'JES3 - It's Alive' article in *Tuning Letter 2019 No. 3*, in which we discussed the licensing of the JES3 source code from IBM by [Phoenix Software International](#) (PSI) and the planned availability of their new product - JES3^{plus}. We are now two years down the road and the *current* release of z/OS is the *last* one that will



offer JES3. For JES3 customers that have not yet decided on a future JES strategy, or those that are actively considering JES3^{plus}, we thought this would be a good time to have a status check with **Donna Hudi** and **Ed Jaffe** at PSI. We were curious to see how things have been going, what they have been up to, and where they are focusing their attentions at the moment. The Question and Answer format of the last JES3^{plus} article was very popular with readers, so we are going to stick with that for this article.

TARGET AUDIENCE

This article should be of interest to *all* JES3 customers. z/OS 2.5 is the last release to support IBM-provided JES3. If you are a JES3 customer and have not decided on your strategy for JES, or if you would just like to know more about JES3^{plus}, this article is for you.

Question: Now that z/OS 2.5 is the last release of z/OS that will include JES3, I expect that you are inundated with potential customers. I don't suppose you would want to give us any hard numbers? Have you bought your Swiss chalet yet?

Answer: Haha! No Swiss chalets here, but your point is well taken. The easiest move from IBM JES3 to JES3^{plus} is when upgrading to a new z/OS release. Customers will already be recompiling their exits and testing JES3 as part of that project, so the only additional effort is the time it takes to download and install JES3^{plus} using SMP/E or z/OSMF. But folks should not procrastinate, because waiting until the release after z/OS 2.5 to make the move severely limits their options since no IBM fallback will exist. As a result, we're seeing a lot of activity and expecting even more in the coming months.

Question: Another question that probably is not for you, but do you know what would be the situation in the future if a customer was migrating to the release after z/OS 2.5, and they copied over all the IBM JES3 data sets from their 2.5 system and tried to use them to bring up JES3 on that post-z/OS 2.5 release? Obviously they would be unsupported, and looking for trouble, but would they also be breaking their license agreement with IBM? I would HOPE that no one would consider doing that, but in these days when every company is trying to save a buck, it would not surprise me if someone considered doing this.

Answer: Beginning with z/OS 2.1, IBM stopped supporting mixed BCP and JES releases. I honestly don't know if it could be tricked into working by a clever sysprog, but running a production JES in an unsupported way seems like something no conscientious IT manager would allow. We're not talking about some rarely-used batch reporting utility or something like that. This is your Job Entry Subsystem, Dude!

Question: When did your first release of JES3^{plus} become generally available?

Answer: April 10th, 2020.

Question: What are your plans regarding future releases? Will you follow a more traditional strategy of delivering new releases on a fixed schedule (in sync with new z/OS releases, for example)? Or will you be more like Db2, where you just ship new functions as they become available?

Answer: All of our mainframe software products deliver new, annual releases on the last Friday of September, with fixes and enhancements delivered throughout the lifecycle of that product release. JES3^{plus} V1R1 became generally available last month (September 2021) and we expect to continue delivering new releases every year going forward.

Question: As you mentioned above, since z/OS 2.1, IBM has stipulated that the release of JES *must* match the z/OS release - that is, you shouldn't take the JES2 libraries from z/OS 2.1 and use them on your z/OS 2.5 system. Will there be a similar hard relationship between JES3^{plus} releases and z/OS releases?

Answer: Great question! JES3^{plus} most certainly does NOT adhere to that IBM restriction! A single release of JES3^{plus} runs just fine under any of the z/OS BCPs listed in our support matrix, and will continue to support any z/OS BCP through its announced EOS date. For example, JES3^{plus} V1R1 can run today under z/OS 2.3, 2.4, and 2.5. It will support running under z/OS 2.3 until September 30th, 2022, which is IBM's announced EOS date for that release. Anyone interested in our general, publicly available, Software Support Lifecycle Policy can find that information [here](#). Product- and version-specific information is available to customers within our Secure Customer Portal.

Question: Do you anticipate customers having to move to a specific release or service level of JES3^{plus} when they move to a new z/OS release?

Answer: Logically, customers should always endeavor to upgrade to the most-recent release of JES3^{plus}, both to access the latest features, and to ensure maximum serviceability/longevity. I can't imagine anyone wanting to put themselves in a position where their back-level JES3^{plus} goes out of service before their z/OS does. Of course, customers can use our FIXCATs to know which PTFs provide toleration and/or coexistence with a new z/OS release, but applying such PTFs to JES3^{plus} will not extend the product's EOS date. From within our Secure Customer Portal, customers can access matrices that

make it easy to understand which JES3^{plus} release supports a given z/OS release through its entire lifecycle.

Question: For JES3^{plus} customers, is there any way for them to get a JES-less z/OS from IBM (at a lower cost!)?

Answer: I think you're asking if IBM would consider making JES2 an optionally-priced feature of z/OS. That's not really a question we can answer. The good news is the cost of running JES3^{plus} is essentially identical to that of running IBM's JES3. It's a continuation of business as usual for JES3 customers with the added benefit of new enhancements being added to the product - something that hasn't happened since 2015. Our JES3^{plus} Customer Advisory Council is helping us craft a roadmap for enhancements that avoids trendy or flashy "glitz and glitter", and concentrates instead on functionality customers actually want and need to get their jobs done.

Question: God knows when IBM last shipped an APAR for JES3, but do you have any words for potential customers to reassure them that any JES3 fixes that IBM delivers between now and EOS for z/OS 2.5 will also be provided in a timely manner for JES3^{plus}?

Answer: Our intent is to be IBM's last-ever JES3 customer. We monitor their service activity and integrate into JES3^{plus} any APARs that apply. For example, in August we released PTF PJP0012 which contained equivalent fixes to IBM's [OA60574](#), [OA60578](#) and [OA61127](#) (one of those "secret" integrity APARs), as well as a correction we made to an error they introduced last year with [OA59351](#). In September, we released PTF PJP0013 which incorporated IBM APAR [OA61594](#). So, it's definitely something we are keeping up with.

Editor's Note: I think it is interesting that new problems are still being discovered in a product that has not had any significant changes in the last six years. This illustrates the fallacy of thinking that it is fine to run with unsupported products, or products that have not been maintained because "we are not changing anything, so nothing will break". Even if a product is not changing, it exists in a constantly changing world, so you never know when a seemingly unrelated change to another product can expose latent bugs in the 'stable' product.

Question: Is it fair to say that JES3^{plus} V1R0 is identical to some particular service level of JES3? I'm specifically thinking of performance here - to give customers reassurance that switching from JES3 to JES3^{plus} (prior to your enhancements) should give them more-or-less identical performance/throughput?

Answer: There is nothing in JES3^{plus} that would make it run slower than IBM's z/OS 2.4 JES3. Quite the opposite. The enhancements we've added will significantly improve performance. Ed described these enhancements in a presentation to the [UK GSE conference](#) (online *and free*) on November 11th. Unfortunately we can't provide direct links

to specific sessions, but if you go to the [agenda page](#), you should be able to find Ed's session from there.

Question: Can customers continue to use their existing SPOOL browsers (SDSF, etc?) with JES3^{plus}?

Answer: All popular SPOOL browsers including SDSF, OMC-FLASH, (E)JES and others - even Zowe's JES Explorer - work with JES3^{plus}. But SPOOL browsers represent only a subset of this focus area. There are dozens of mainframe software products that provide important functions like performance monitoring, external security, automation, print management, DASD archive/restore, SMF record analysis, and so forth, that interface with JES3 - sometimes in subtle and unexpected ways.

Last year we launched our JES3^{plus} Partner Program and opened it to any mainframe software vendor, analyst, or integrator interested in helping ensure our mutual customers enjoy the best possible experience when transitioning to JES3^{plus}. The results have been incredible. Just recently, a large European bank with many third-party products downloaded, installed and deployed JES3^{plus} in their sandbox, development, test, and production environments without placing a single query to our technical support team. We know how much the JES3 community appreciates this outstanding commitment to JES3 customer satisfaction by mainframe software vendors. Some of our ISV partners have even listed themselves on our [JES3^{plus} web page](#).

Question: So, what have you been up to since V1R0? I see that you delivered two I/O-related enhancements - I'll come back to them in a minute. But other than that, have you delivered any other enhancements or coexistence or error fixes?

Answer: Yes, we have been quite busy. One thing for JES3^{plus} V1R0 customers to be aware of is that PTF PJP0014 not only adds support for z/OS 2.5, but also removes support for z/OS 2.2 at the same time. If you're still stuck on z/OS 2.2, don't install that PTF until you can upgrade.

Question: Regarding those two I/O enhancements. 'ACKD' - is that a PSI term? I've never seen it before. Presumably this is optional? That is, if a customer has turned MIDAW support off, you will still work without it? Do you issue a message or anything?

Answer: ACKD is indeed our term. It stands for "Advanced Count Key Data", and provides functions that became available right around the turn of the century, when DASD transitioned from SLED to RAID architecture. Use of ACKD is totally optional. You enable it in JES3^{plus} by specifying ACCMETH=ACKD in the inish deck. MIDAW=YES is an IECIOSxx default, so if anyone deliberately disabled this feature, they must have done so with good reason. To be honest, I can't think of any messages issued by z/OS components (other than the IBM IOS_MIDAW Health Check) that nag you to enable MIDAW support if you've explicitly disabled it, and I'm pretty sure we don't do so either. If MIDAW support is

disabled, we will simply fall back to using good ol' ECKD (the channel programs used by both JES2 and IBM JES3).

Question: Are there some environments or jobs that will benefit especially from MIDAW support? For example, primary disk that are a long distance from the CPU? Or environments where zHPF is not being used? Or jobs with huge amounts of spool output? Or jobs with tiny amounts of spool output?

Answer: It's hard to say if any particular job will benefit more than another. Certainly, anyone using JES3's Block Spooler Interface (directly or indirectly) will benefit for sure. Such exploiters include JCL stream input handling, writers/printers, TCP/NJE servers, SPOOL browse products, etc. One big beneficiary is JES3^{plus} itself. At startup, it reads the entire JCT data set into memory. JCTs have 41 records per track and there are typically many thousands of them (one per job). Being able to read a track of JCTs with a single CCW instead of 41 CCWs makes things run a LOT quicker. In our environment, ACKD reduced JES3^{plus} startup time by 68%. Customers have reported similar improvements. We've also run looping test programs that use the Block Spooler Interface (IATXBKIO macro) and have seen a 25% clock time improvement.

Question: Your second I/O enhancement exploits zHPF - another capability that has been around for quite a few years now. Hopefully all your customers are already exploiting zHPF in other software products, so this should be pretty easy for them to implement. Based on your experiences, are there any environments or jobs that particularly benefit from your zHPF support, or should customers just expect an overall improvement in performance?

Answer: Use of zHPF by JES3^{plus} is also optional. To request it you specify ACCMETH=ZHPF in the JES3^{plus} inish deck. On the IBM side, ZHPF=YES is the default in IECIOSxx just like MIDAW=YES, so hopefully no changes will be required there. One thing you *will* need is LFAREA. JES3^{plus} requests 1M of 64-bit fixed LFAREA for its zHPF TCELLs. If that memory is not available, or if ZHPF support is disabled, we will fall back to using ACKD and if that is disabled, we will again fall back to ECKD.

zHPF performance improvements should be less workload-specific than ACKD because zHPF improvements don't depend so much on what you're doing. It's a whole new type of channel program using what's called TRANSPORT MODE in the Principles of Operations. The entire channel program is sent to the DASD control unit rather than transferring one CCW at a time. zHPF I/O start rates are about 13X what you get with traditional FICON and the data transfer rates are about 5X. (These are IBM's numbers, not ours.) It's really good stuff.

Question: Now, to your latest and greatest enhancement - parallel I/Os. Does this require the PAV feature to be installed in the disk subsystem? That is, are you exploiting the HW capability, or somehow mimicking it in software?

Answer: Parallel I/O is a work in progress that is looking quite good so far. What we are doing is launching multiple, seldom-ending channel programs for a single SPOOL extent in parallel - something never before done by JES3. You control how many I/Os JES3^{plus} can start for each extent by specifying MAXPAV= in the inish deck. The default is 1; max is 8. As you can see in [Figure 1](#), the *I OPTIONS command shows the setting of these I/O enhancements so users can easily see which features they have enabled.

Figure 1 - Displaying Status of JES3^{plus} I/O Enhancements

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EDJXADM 00000290 *I OPTIONS
JES3    00000090 IAT8646 OPTIONS INQUIRY RESPONSE 286
286    00000090 DUMP=PRDMP, DUMPLINS=024576, DUPJOBNM=YES, DUPLOGON=YES,
286    00000090 WANTDUMP=YES, LIMIT=03, INTERVAL=10, INTRDR=000020,
286    00000090 JOBNO=(001000,999999,250000), MT=ON, SE=10,
286    00000090 XCFGRPNM=HQJES3A, JOBTRACK=SYSPLEX,
286    00000090 DOTPOOL=(,), JETPOOL=(,),
286    00000090 OSTPOOL=(,), SEEPool=(,),
286    00000090 ACCMETH=ZHPF, MAXPAV= 3
286    00000090 OPTIONS INQUIRY RESPONSE COMPLETE
```

Our MAXPAV support does not *require* any specific hardware be present in the DASD. However, it *is* intended to be used with the Parallel Access Volume (PAV) feature (available in one form or another from every major DASD hardware provider), which exploits the ability of modern RAID and SSD DASD to support multiple independent I/O to the same volume. If you don't have PAV enabled in your DASD, IOS will react to a device busy condition by simply queuing the I/O rather than by looking for another exposure to the same volume through an alternate UCB.

Question: What about the more 'recent' flavors of PAV like Dynamic PAV (where the aliases get moved between devices automatically), or SuperPAV?

Answer: Since our parallel I/O support does not actually interface with or depend upon any particular implementation of PAV in the DASD hardware, it should work with all PAV flavors.

Question: Speaking of new functions, given the recent delivery of compression and encryption support for JES2 spool data sets, do you have plans to add those capabilities to JES3^{plus}?

Answer: At PSI, we tend to concentrate on enhancements that provide enhanced usability and performance. That's why our JES3^{plus} Customer Advisory Council is so important to us. They keep us grounded and are helping to ensure we're working on features that will help them in their day-to-day activities and business objectives. Neither of these new JES2 features sounds like a bad idea, the question is simply where they will rank in our customers' lists of priorities. My sense, based on discussions I've heard thus far, is that they won't be near-term items. But one never knows.

Question: Do you have any information about the migration process from JES3 to JES3^{plus}? Is it possible to run them alongside each other on the same system? Can JES3^{plus} read a JES3 spool, or do you need to offload and reload the spool files? Can

JES3^{plus} read a JES3 inish deck and run with that, or are there JES3^{plus} -unique statements that customers need to add?

Answer: JES3^{plus} is brought up via an IPL - exactly as if it were a new IBM JES3 release. It uses existing inish deck, checkpoint, and SPOOL files unchanged. Nothing needs to be added or deleted. If customers still have //STEPLIB DD statements in their JES3 and JES3CI JCL procs, they will be referencing IBM libraries by name and should be removed. An image running JES3^{plus} can join an existing IBM JES3 complex, and an image running IBM JES3 can join an existing JES3^{plus} complex. Similarly, a Dynamic System Interchange (DSI) can be performed from JES3^{plus} to IBM JES3 and vice versa for global takeover. Rolling IPLs can replace one IBM JES3 image at a time with JES3^{plus} - IPL order does not matter - or a “big bang” approach can be used. The two products coexist transparently. There are no restrictions.

Question: Sort of related back to the customer council question, but is there any forum (or 'community') for JES3^{plus} customers to chat with each other, share experiences, etc?

Answer: I see no reason customers can't continue to discuss JES3 and JES3^{plus}-related issues as they do today on JES3-L, IBM-MAIN, and other mainframe-related social media sites.

Question: You are familiar with IBM's work with JES2 policies, to reduce the need for Assembler skills to maintain JES2 exits. I would imagine that JES3 is just as exit-rich as JES2 is, so have you given any thought to ways to reduce the need for Assembler skills in a JES3^{plus} environment?

Answer: I'm not a fan of the direction IBM has taken in this area. JSON is great for people writing in JavaScript and Node.js, but most everyone agrees it isn't the friendliest way to define policy rules to JES. I would have much rather seen REXX-based exit replacement using global policy rules coupled with REXX variables and functions that can retrieve and set various job attributes whenever specialized custom processing is needed - not unlike DFSMS ACS routines, but using a far more powerful and familiar language. Again, the direction we take here will depend heavily on our JES3^{plus} Customer Advisory Council.

Question: Speaking of Assembler skills, have you thought about providing JES3/JES3^{plus} education? I wouldn't imagine that the world is awash in up-to-date JES3 classes, but now that you have given JES3 a new lease on life, I would imagine that there will be more demand for JES3 education.

Answer: Thanks for asking. JES3^{plus} training through a well-known third-party education provider is in the works and is currently expected to launch in early 2022.

Question: And finally, given your worldwide audience, and the current trend towards everything being self-service, could you tell us a little about your customer portal? I've heard some envious comments from other vendors. What types of information do you have up

there for your customers? Manuals, I assume? How about your conference presentations? Access to fix information? Can they download fixes? Does it contain your support matrixes? Announcement letters (or wherever you publish information about your new releases)? Can customers open, update, and close their own 'cases'?

Answer: We are so glad you asked. We are very proud of our Secure Customer Portal, which we launched about a year and a half ago and is ever-evolving. Customers have told us how much they love it and have indicated that it is the best vendor portal they have access to. From within the Portal, customers can download licensed products and licenses; review and search through the details of corrective service, as well as download that service; view and search documentation or download PDF versions; open new support cases; review and interact with existing support cases, etc. They have access to product-specific support matrices and announcement information. For those customers that would like to take advantage of our RECEIVE ORDER server, they can also download the necessary Automated Delivery Certificate. Additionally, we are in the process of building out a searchable knowledgebase that might possibly include past conference presentations and product videos.

Editor's Note. In closing, we would like to thank Ed and Donna for all their help, and patience with my poor JES3 knowledge. z/OS 2.5 marks something of the end of an era, given that it is the last release to deliver IBM's JES3. Fortunately for all the dedicated JES3 customers out there, JES3^{plus} not only lets them avoid migrating to JES2, it also delivers long-overdue enhancements to exploit the more recent disk technologies. And we applaud PSI's Customer Advisory Council - it is sad to see the regularity with which some vendors deliver new functions that no one will use because no customer asked for them. This doesn't make sense for customers, who end up paying for functions they don't need, and also for vendors, who sink scarce and valuable developer time into designing, developing, and testing these unwanted 'enhancements'. We hope that PSI's Customer Advisory Council will deliver tangible benefits for PSI and its customers, and provide a model that other vendors might emulate.