

z/VM V7.1 and Continuous Delivery Introduction – April 11, 2018

These speaker notes accompany the presentation of the same name.

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Introducing z/VM V7.1 and Continuous Delivery

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Hello, this is Bill Bitner from the z/VM Development Lab in Endicott, NY, the birthplace of IBM. This week, IBM made a preview announcement for z/VM Version 7 Release 1 and I'd like to take a few minutes to tell you about it, as well as a shift in our strategy for delivering new function. If you have questions that aren't answered here, feel free to drop me an email at the address shown here, bitnerb@us.ibm.com.

Greater Predictability for Release Schedules and Function

- z/VM is going to a two-year cadence on new releases.
 - Every two years in 3rd quarter of even years
 - Releases remain orderable for approximately 18 months after GA of the next release
 - Releases stay in service for approximately 4.5 years
 - Last 6 months of a release life cycle overlaps with the next two releases
 - Releases will be primarily a roll up of function released in the service as Small Programming Enhancements (SPEs)

- Continuous Delivery Strategy
 - Most new function will be delivered as an SPE to the most current release of z/VM
 - Heavy dependence on the sponsor user program
 - A set of SPEs will likely be grouped together and released within a few weeks of each other to help facilitate IBM and client testing
 - Plans for new function will be published on the z/VM home page

When I spoke about z/VM 6.4 in the past, I spoke about it being a customer-driven release. That is, the content of z/VM 6.4 was largely decided by our customers. While we have always worked with our customers, we have become more open about our plans and, more importantly, more open to hear of your pain points. This includes from an overall release lifecycle management perspective. A lot of the feedback that we heard in the past few years, fell into two general areas: wanting greater predictability for releases and having shorter wait time for useful new function. Through these iterative dialogues, we arrived at the new z/VM release cadence and what I'll refer to as the continuous delivery strategy.

For the new release cadence, there are a few key points to cover. In the next chart, we'll cover this again pictorially for those that are more visual.

There will be a new release of z/VM every two years. Feedback and history led us to go with the GA being in the third quarter of the year. Feedback also guided us to avoid the same year as z/OS, so the new releases will be in even years. In the past, when a release went GA, the previous release would immediately be withdrawn from marketing. This changes with the new approach. We will continue to market the previous release for approximately 18 months after a new release goes GA. As you'll see, this provides more migration options. Releases will stay in service for about four and a half years, which means that during the last 6 months of service for any release, there will be two newer releases to which one could migrate.

In general, releases in this era will be a roll-up of the service from the previous release and will not offer a lot of base enhancements. However, there are times where the work is complete at

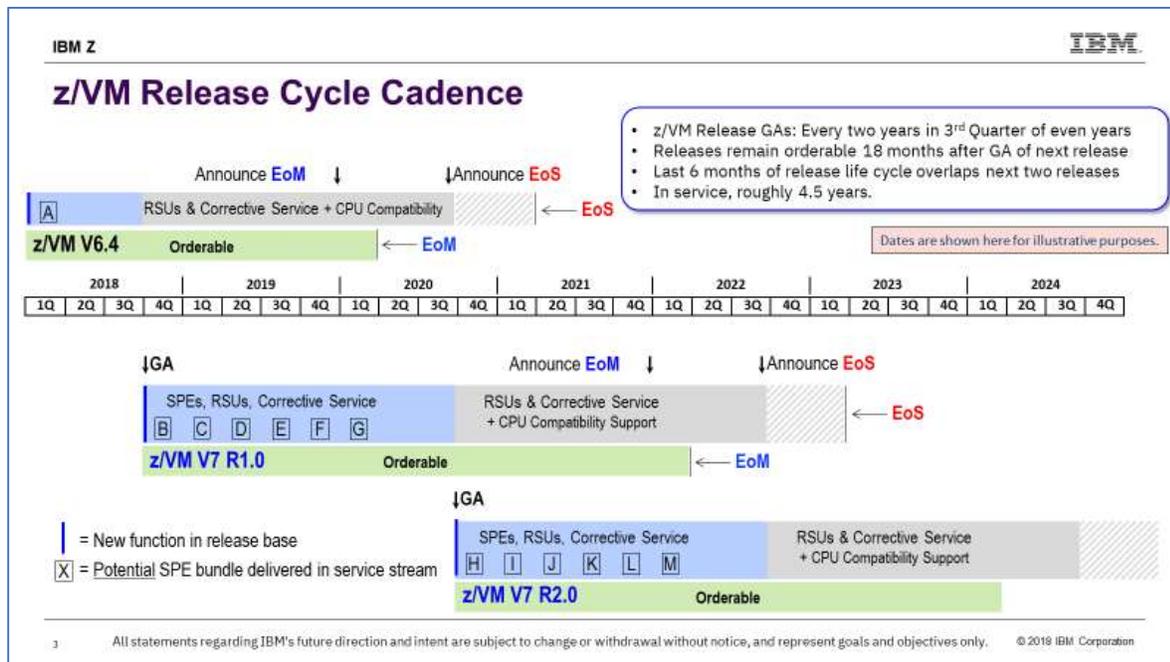
that time or when changes are better done on a release boundary. We'll see how this is the case with z/VM 7.1.

Now, let's talk about the continuous delivery strategy. This is the idea that most enhancements to z/VM will be shipped as small programming enhancements in the service stream. Many of you know these as SPEs. We will continue to use the Sponsor User program for these items. For those not familiar with it, the sponsor user program is an engagement with one or more customers to ensure that an enhancement addresses your needs. We determine this as early as possible. You could think of it as early design review, with iterations, that involves customers. There is also customer testing similar to early support programs of the past, when it makes sense.

To facilitate both IBM and customer testing, there will usually be a set of SPEs targeted to be released as an informal group or bundle, usually within a few weeks of each other. However, they are still viewed and ordered as individual APARs and PTFs.

To improve information for planning and to replace the idea of announce letters, there is a new information on the VM home page that describes these continuous delivery enhancements. We'll cover that in more detail later in this discussion.

Now, let's review this with the visuals that I promised.



[Note: there is a lot of animation on this page. I found it helpful to give the discussion focused on the order in which I like to cover this material. However, if you prefer a different order, feel free to change the animation.]

Okay, let's see what this cadence would look like.

For review, remember the key aspects I mention earlier. And bear in mind this isn't meant to give you exact dates. We'll still do announcement letters for release related dates like withdraw from marketing and end of service.

Let's look at the next six years and how this may look. We'll only use quarters here for granularity so that you can get a feel for the concepts.

As you know z/VM 6.4 is currently the only release being marketed and in service today. And it will be marketed into the future. When z/VM 6.4 became available in November 2016 there was some base function in, significant base function. Since that time we have also shipped significant new function, Encrypted Paging, VSwitch Enhanced Load Balancing, etc, in form of SPEs. You'll see these 'bundles' of SPEs represented by the small rectangles with letters inside.

Watch for the rate of SPEs to z/VM 6.4 to slow down as we prepare for the z/VM 7.1 release. During this time, z/VM 6.4 will continue to have RSUs and corrective service, but we'll stop shipping SPEs except for required support items such as processor compatibility.

This lines up with the GA of z/VM 7.1, which as we've discussed is a third quarter 2018 (even year) deliverable in the two-year cadence.

Now you start to see SPEs shipping and going out for z/VM 7.1. At this point, we're not putting these back on z/VM 6.4, as that has become the 'stable' release with less disruption.

At some point, there would be an announcement of withdraw from marketing, and it would no longer be orderable. And at a later point, z/VM 6.4 end of service would be announced, in our example here for first quarter of 2021.

At about 2 years into the life of z/VM 7.1, we slow down the SPEs to 7.1 and move to service, RSUs, and processor support only. You know what is coming..

z/VM 7.2 will go GA in third quarter of 2020 as part of the two-year cadence. And we begin again, with SPEs going out on 7.2 and not the earlier releases. In time, 7.1 end of marketing will be announced. And the cycle continues, in this fashion.

As you can see, this gives customers on z/VM 6.4 choices. They could immediately go to z/VM 7.1 because they want to stay on the most current support. Or they could wait until an exciting SPE comes along and then move to pick it up. Or they could choose to stay on z/VM 6.4 to avoid new code and disruption and perhaps move to z/VM 7.1 when it goes to corrective service only in third quarter 2020. Lots of flexibility is possible with this structure.

z/VM 7.1

- Preview announce April 10, 2018
 - GA 3rd Quarter 2018
 - New version, primarily to allow for both z/VM 6.4 and 7.1 releases to be orderable simultaneously
- Single System Image and Live Guest Relocation included in the base
 - In z/VM 6.4 was the VMSSI priced feature
- New Architecture Level Set of zEC12, zBC12, or newer processor families
- Includes SPEs shipped for z/VM 6.4, including:
 - Virtual Switch Enhanced Load Balancing, DS8K z-Thin Provisioning, Encrypted Paging, etc.
- Additionally, includes:
 - Dump scalability improvements
 - Foundation work for future SPEs

Now that you understand the cadence, let's talk about z/VM 7.1. Hopefully, the earlier charts helped you understand that a base release does not have a lot of brand new function. For z/VM 7.1, we did a preview announce where we described the high-level aspects of the release, including the target of third quarter for GA. A future announcement will be made for general availability with more details.

You may have had the question of why a new version? The primary reason was to change some business templates to allow two releases of z/VM to be marketed at the same time. That wasn't possible under the Version 6 template. I would also argue that the new approach is significant enough that it would be worthy of a new version. It is important to remember that if you have been paying your S&S, you are entitled to a new version of z/VM in the same way as a new release.

As was eluded in a statement of direction in 2016, will be a new architecture level set for z/VM 7.1. Support for the z196 and z114 is dropped, so you'll need a zEnterprise EC12, BC12, or newer machine to run z/VM 7.1.

As we see greater need to address 24x365 availability, the Single System Image and Live Guest Relocation will be part of the base product, no longer a separate priced feature.

z/VM 7.1 will have all the SPEs that went out for z/VM 6.4. Listed here are just a few highlights. Additionally, some z/VM dump scalability enhancements are going out in z/VM 7.1 that will not be an SPE to z/VM 6.4. There will also be significant changes to supply a foundation for future SPEs. This is a different approach, but an important one. By making some of these foundation changes in the base, it will make it easier to provide new function in the service stream, and in some cases, it will minimize the breadth of parts hit via service.

z/VM Continuous Delivery Page

- Gives an overview of new function that is under consideration. Allows clients to:
 - Express interest in being a sponsor user for an item.
 - Plan for new support coming out in the future.
 - Understand the value, benefit, and impact of new enhancements.
- <http://www.vm.ibm.com/newfunction/>
- Subscribe for updates via “Notify me” link on left navigation bar.

The screenshot shows the IBM z/VM Continuous Delivery News page. The left navigation bar includes links for News, About z/VM, Events calendar, Products and Features, Downloads, Technical resources, Library, How to buy, Install, Service, Education, Site map, Site search, Printer-friendly, and **Notify me** (circled in red). The main content area is titled "z/VM Continuous Delivery News" and includes a "Change Summary" box with the following text:

Change Summary
 March 30: z/VM z/VMSPSPSPSP SPE is now available.
 March 19: Minor update to Encrypted Paging hardware requirements.
 March 8: Separated z/VM SPE into two components - the z/VM z/VMSPSPSP application and the z/VM code. Updated Target Availability field on several SPEs. Please see the updated dates on the SPE information table below.
 We are looking for z/VM Application Sponsor Users for beta testing. If you are interested, please contact Kerry Wilson - kerryw@us.ibm.com

The "Introduction" section states: "Not all enhancements to z/VM are part of a new release or even a formal IBM announcement letter. This page is a resource to learn about enhancements going out through continuous delivery for z/VM. It's also different from formal announcements as it shows work in progress. Think of it as a living preview announcement for z/VM." It also includes a note about updates: "As significant changes take place, this page will be updated. So check back often or [subscribe](#). We'll go through each item here and describe a number of characteristics, as defined below. Included at the bottom of this page is a link for a [subscribe](#) of this information."

At the start of the presentation, we mentioned being able to learn more about what enhancements are being worked. To that end, new information was introduced last year to the z/VM home page. This continuous delivery page is a different approach for us. Here we will share plans about enhancements that are being considered or in the works. So this is a rather dynamic page. It is recommended that you subscribe to it. As on most of the VM home page, you'll find a left-hand navigation bar. One of the links there is “Notify me”. For any of the VM pages, just click this link and fill in your email address. You'll then be sent an email whenever the subject page is updated. You can then check the Change Summary box on the page to get a feel for what changed.

z/VM Continuous Delivery Page

- Each item has information as seen in this example.
- The “Target availability” may also be listed as TBD or less granular such as a quarter or month.
- Since this is work in progress, the target availability dates can move multiple times and in different directions.

Encrypted Paging	
Name	Encrypted Paging
Description	Encrypted Paging will improve system security for z/VM 6.4 by exploiting z14 hardware to encrypt guest page data. Ciphering will occur as data moves from active memory onto a paging volume owned by CP (ECKD, SCSI, or native FBA). This will make customer data defensible from attack or breach of volumes, even in cases where a system administrator has unintended access to those volumes.
Status	Available December 11, 2017
Target availability	December 15, 2017
Compatibility	No known incompatibilities.
Enablement	Apply PTFs, re-IPL z/VM, SET ENCRYPT command within CP.
Effect	For the workloads studied, total CPU/tx did not increase more than 5% when compared back to an EP disabled configuration. Compared to a z13, the z14 with EP enabled performed better. As paging rate increases, the total amount of CPU used on EP will increase. Detailed performance report
ISV impact	Some monitor changes are needed. If you have a performance product, please see your vendor.
Linux or hardware interaction	z14 required
Release(s)	z/VM 6.4
Service details	See below for the IBM service information.
APAR	VM65993
PTF	UM35257
RSU	TBD

Let’s look a bit closer at the content. For each enhancement item on the page, you’ll see a set of attributes ranging from a description of the item to comments on compatibility to details on actual service information when available. Interestingly, we worked with sponsor users to improve this page and we continue to be open to feedback. Let me comment a little on the “Target availability” field. This is meant for planning purposes and is not a commitment as the disclaimers point out. The target availability may start out as “TBD” as we’re just sharing the idea and looking for customer support and feedback on the idea. Then over time, as more work is done, we may list a quarter in which we suspect to be able to release it. Or if the plan is more solid, it might be a month. At times, we’ll learn things from the sponsor users or design or testing, where we realize we will need more time, or in rare cases, less time; and adjust the target availability accordingly. While we will do our best to be accurate, bear in mind that things change. This is another reason to subscribe to notifications for the page.

Navigating Continuous Delivery Page

- Near top of page is the table of contents with hyperlinks and some summary information
- A floating navigation triangle will take you back to the top of the page from any where.



SPE name	Target date	Last updated
NICDEF Security Controls	August 4, 2017	
Firewall Friendly FTP Client	August 23, 2017	
Processor Scalability Efficiency Enhancements	August 23, 2017	
Extended Address Volume Minidisk Support	August 25, 2017	
High PR/SM LPAR Management Time Relief	October 23, 2017	November 30, 2017
Guest Exploitation for the Instruction Protection Facility	December 11, 2017	February 12, 2018
Guest Support for the Guarded Storage Facility	December 11, 2017	February 12, 2018
Encrypted Paging	December 15, 2017	December 14, 2017
VSwitch Link Aggregation Load Balance Enhancements	December 15, 2017	December 14, 2017
FCP Monitor Enhancements	March 2018	February 9, 2018
Perfit Support for HyperPAV Paging	March 2018	January 23, 2018
Support for zHPM CPU Resource Management	March 2018	February 14, 2018
z-Thin Provisioning	March 2018	February 9, 2018
Dump Scalability	September 2018	January 23, 2018
Centralized Service Management	TBD	
Dynamic Crypto	TBD	February 9, 2018
Dynamic Memory Downgrade	TBD	
SSI Greater Than Four	TBD	February 9, 2018
VSwitch Priority Queuing	TBD	February 9, 2018

Based on customer feedback, the page has a couple of navigation features. Near the top is a sort of table of contents, shown on the right here, with each SPE listed and a hyperlink to that part of the page. Additionally, there is a floating triangle or pyramid that one can click to return to the top of the page.



**KEEP CALM
AND
VIRTUALIZE ON**

Before I close, let me give a shout out to Kerry Wilson for his efforts on the Continuous Delivery web page, to Reed Mullen and Les Geer for their help on these charts, and most importantly to the rest of the world-wide z/VM Development Team.

Now you understand the two year cadence starting with z/VM 7.1 and the continuous delivery strategy for z/VM. Have a great day and remember, keep calm and virtualize on.

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