**POWER9 Scale-Out Server FAQ**

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# General

## What is being announced?

On February 13th, the following POWER9 Scale-Out Server will announce:

|  |  |  |  |
| --- | --- | --- | --- |
| **Server** | **MTM** | **Description** | **Workloads** |
| S924 | 9009-42A  | 2-Socket 4U server | AIX, IBM i, Linux |
| S914 | 9009-41A | 1-Socket 4U server | AIX, IBM i, Linux |
| S922 | 9009-22A  | 2-Socket 2U server | AIX, IBM i, Linux |
| L922 | 9008-22L | 2-Socket 2U server | Linux |
| H924 | 9223-42H | 2-Socket 4U server  | SAP HANA |
| H922 | 9223-22H | 2-Socket 2U server | SAP HANA |

## What is the product rollout schedule (Announce, GA,…)?

All POWER9 Scale-Out Servers will rollout as follows:

2/13/2018 – Product announce. eConfig goes live. Pricing available. Orders can be placed.

2/27/2018 – Performance data available (rPerf, CPW, …).

3/19/2018 – Product launch at [IBM Think 2018](https://www.ibm.com/events/think/).

3/20/2018 – General Availability (GA). Customer shipments begin.

## When can we start configuring systems?

­eConfig will be ready for configurations and order placement on 2/13/2018.

## When is System Planning Tool available?

The SPT is now available at: https://www.ibm.com/systems/support/tools/systemplanningtool/

The POWER9 Scale-Out servers are support in version [6.18.047.0](http://www-01.ibm.com/support/docview.wss?uid=isg3T1026100).

## When is Knowledge Center available?

These will be available on 2/23/2018.

## What is the warranty?

The warranty is the same as the POWER8 servers, 9x5 for 36 months.

## What are the POWER8 server withdrawal plans?

The POWER8 scale-out servers will remain for quite some time. The current withdrawal plans are:

 S822/S824 will be withdrawn in February 2019

 S812/S814 will be withdrawn in March 2019

However, these plans are subject to change.

## Are these available worldwide?

Yes, except for the Embargoed countries of Cuba, Iran, North Korea, Sudan, & Syria.

## What IO adapters can be migrated from the POWER8 to the POWER9 Scale systems?

A majority of the POWER8 cards are supported in POWER9. Charts which summarize what can be migrated will be added to the Seller and Technical Sellers chart deck.

## Do the scale-out servers support PCIe Gen4?

Yes, the servers support PCIe Gen 4, these slots are also downward compatible to PCIe Gen 3,2,...

## What is the maximum number of cores?

For the announced systems, there can be a maximum of 12 cores per socket. For the two socket systems, there are 24 cores in total, 12 in each socket.

## Will there be a 1-core POWER9 model?

Currently no, but this is being considered for the future.

## Is POWER9 full bandwidth with 1/2 or all memory slots filled?

For Scale out systems, 1/2 of the memory DIMMs populated provides best memory bandwidth.

## Is best performance achieved by populating all slots?

This depends on the application, for applications that are memory bandwidth sensitive, half the memory DIMM slots would give better performance. If the application is sensitive to memory capacity, then fully populating all the DIMM slots will provide the best performance.

## Are DVD drives supported?

DVD drives are not integrated but can be attached externally by USB.

## Are SAS attached DVD drives supported?

No, only USB attached drives are supported.

## Are the internal NVMe devices bootable and can they be hot swapped? ­

­The internal NVMe drives are intended to be used for boot devices. Either by VIOS or one of the supported OSes, such as AIX or Linux. They are not intended to be used for normal customer data. There is no initial support for IBM i with these devices. The internal NVMe devices are NOT hot-swappable.

How big is each NVMe device? ­

Up to four 400GB M.2 form factor, NVMe devices­ can be used.

## Is the EJ1G backplane supported in GA1?

Yes, but only running Linux as operating system. AIX support will come with GA2. IBM i will be not supported.

## Power requirements (110 vs 220)?

Only the S914 supports 110V power, all other systems require 220V power.

## Are there any PDU or line cords changes from POWER8?

No, the announced server the PDU and line cored are the same as those used in POWER8.

## What about Meltdown and Spectre Security Issues?

Information is available at the [IBM Product Security Incident Response (PSIRT)](https://www.ibm.com/blogs/psirt/) site. Details can be found in the [February blog post](https://www.ibm.com/blogs/psirt/potential-impact-processors-power-family/). All systems in this announcement ship with the latest security patches installed and enabled for these issues.

## What is Smart Seller? ­

Smart Seller is the new seller collateral repository which replaced FindIT. It’s located at <https://smartseller.mybluemix.net/>­

## What is the difference in the POWER8 to POWER9 Mainstream SSD Drive Warranty?

On POWER8 systems, both SSD failure and wear out are covered under Warranty however after the warranty period, Maintenance will only cover device failures, but not wear out. This is reflected in the Service Elite/Service Suite contract language.

Based on competitive assessment, no one in the industry currently covers SSD wear out under Warranty or Maintenance. As a result, POWER9 will not cover wear out either. The typical POWER9 language addressing this change can be found in [S924 announcement letter](https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=897/ENUS118-020&infotype=AN&subtype=CA&appname=skmwww):

"Any IBM Mainstream devices (previously called read intensive device) identified in this document have a maximum number of write cycles. IBM Mainstream device failures will be replaced during standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Individual service life may vary and can be monitored using an operating system command."

## Are the POWER9 Scale-out server software prerequisites available in the IBM Prerequisite Tool?

Yes. They are available at [ibm.biz/IBMPrereq](http://ibm.biz/IBMPrereq) .

If you are not familiar with the IBM Prerequisite Tool, the tool dates back to POWER5 days and publishes externally minimum software prerequisites. All you need is the MTM and/or the Feature Code. It is typically used by anyone deploying Power hardware to determine if new hardware additions to data centers will easily fit the current environment or will it be disruptive. MTM-Feature code level prerequisites are available for AIX, IBM i, Linux, system firmware, HMC, and VIOS. IBMer can get more information on the tool at the Box community <ibm.biz/iprt-users>.

## Does EN0J adapter on a S922 supports SR-IOV?

Yes, it does.

## How are the USB drives in the 7226-1U3 supported/connected to the S914?

7226-1U3 supports USB-RDX drive and USB-DVD drive.  S914 has 2 rear USB ports. Use USB cables that are shipped with 7226-1U3 drawer to connect to S914 rear USB ports.

## How is the stand-alone USB DVD drive FC EUA5 supported/connected to the S914?

S914 has a "front" USB 3.0 port which can support FC EUA5 (stand-alone USB-DVD drive). Make sure to use the front USB 3.0 port.

## Does the USB 3.0 ports on the S914 support DLPARs?

No, the USB port do not support DLPAR since they are from the same integrated PCIe controller.

For features EB2L and EB2M, what are the minimum number of features for an initial order for S914 tower and rack models.
For EB2L, the minimum/required number is 4 for tower or rack. This is a 2+2 configuration which means 2 #EB2L for normal operation and 3rd & 4th #EB2L for full redundancy.

For EB2M, the minimum/required number is 2 for rack only. This is a 1+1 configuration which means 1 #EB2M for normal operation and 2nd #EB2M for redundancy.

## What type of hole is used on the S914/S924 rack rails?

The S914/S924 rails work with both round (7mm diameter) and square (3/8") holes. Also, integrated pins in the rails that allow installation into M5 and 10-32 tapped racks.

# OS Related

## What OS levels are supported?

If installing the AIX operating system LPAR with any I/O configuration (one of these):

* AIX Version 7.2 with the 7200-02 Technology Level and Service Pack 7200-02-02-1810, or later
* AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-02-1810, or later
* AIX Version 6.1 with the 6100-09 Technology Level and Service Pack 6100-09-11-1810, or later (AIX 6.1 service extension required)
* AIX Version 7.2 with the 7200-01 Technology Level and Service Pack 7200-01-04-1806, or later (planned availability May 4, 2018)
* AIX Version 7.2 with the 7200-00 Technology Level and Service Pack 7200-00-06-1806, or later (planned availability May 4, 2018)
* AIX Version 7.1 with the 7100-04 Technology Level and Service pack 7100-04-06-1806, or later (planned availability May 4, 2018)

If installing the AIX operating system Virtual I/O only LPAR (one of these):

* AIX Version 7.2 with the 7200-02 Technology Level and Service Pack 7200-02-01-1732, or later
* AIX Version 7.2 with the 7200-01 Technology Level and Service Pack 7200-01-01-1642, or later
* AIX Version 7.2 with the 7200-00 Technology Level and Service Pack 7200-00-01-1543, or later
* AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-01-1731, or later
* AIX Version 7.1 with the 7100-04 Technology Level and Service Pack 7100-04-01-1543, or later
* AIX Version 6.1 with the 6100-09 Technology Level and Service Pack 6100-09-06-1543, or later (AIX 6.1 service extension required)

If installing IBM i, the IBM i operating system levels supported are:

* IBM i 7.3 TR4
* IBM i 7.2 TR8

If installing the Linux operating system LPAR:

* Red Hat Enterprise Linux 7 for Power LE, version 7.4, or later (Power8-mode)
* SUSE Linux Enterprise Server 12 Service Pack 3, or later
* Ubuntu Server 16.04.4, or later (Power8-mode)

If installing the Linux operating systems LPAR in non-production SAP implementations:

* SUSE Linux Enterprise Server 12 Service Pack 3, or later
* SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 12 Service Pack 3, or later
* Red Hat Enterprise Linux 7 for Power LE, version 7.4, or later (Power8-mode)
* Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux 7 for Power LE version 7.4, or later (Power8-mode)

If installing the Linux in a SAP implementation, please refer to [OS support](#_What_operating_systems) in [SAP HANA](#_What_operating_systems) section of this document.

If installing VIOS:

* VIOS 2.2.6.21, or later

## What are the minimum firmware levels?

System and HMC Firmware Levels supported:

* Firmware 910
* HMC Firmware V9.910.0

## What about licensing of products from IBM Software?

POWER9 PVU licensing will be the same as POWER8. Oracle licensing core factor Is expected to be available shortly after announce.

## Can you LPM from POWER6/7/8 to POWER9?

­For AIX you can take workloads running on POWER7 and POWER8 and migrate via LPM without any interruption; POWER6 must be migrated first to POWER7 or POWER8 and rebooted first.

AIX levels required for LPM:

­AIX Version 7.2 TL2 SP01 (7200-02-01-1732) or later;

AIX Version 7.1 TL5 SP01 (7100-05-01-1731) or later;

AIX Version 7.2 TL1 SP01 (7200-01-01-1642) or later;

AIX Version 7.2 TL0 SP01 (7200-00-01-1543) or later;

AIX Version 7.1 TL4 SP01 (7100-04-01-1543) o­r later;

 AIX 6.1 TL9 SP06 or later­

IBM i supports LPM from POWER7/8 to POWER9. The minimum IBM i levels needed to LPM with POWER9 is IBM i 7.3 TR4 and IBM i 7.2 TR8. Refer to IBM developerWorks for additional information. IBM i does not support LPM on POWER6.

## Will there be AIX Standard and Enterprise Editions on POWER9? ­

Yes.

## Are there plans to provide native AIX 5.3 support on POWER9? ­

No, there are no plans for native AIX 5.3 support on POWER9. The only option is for clients who are already running AIX 5.3 WPARs, they can run then on P9 as well­.

## What are the IBM i Software Tiers?

|  |  |  |
| --- | --- | --- |
| **System** | **MTM** | **IBM i Tier** |
| IBM Power System S914 – 4Core | 9009-41A | P05 |
| IBM Power System S914 – 6/8 Core | 9009-41A | P10 |
| IBM Power System S922 | 9009-22A | P10 Note 1  |
| IBM Power System H922 | 9223-22H | P10 Note 1  |
| IBM Power System S924 | 9009-42A | P20 |
| IBM Power System H924 | 9223-42H | P20 |

Note 1. These Instances of P10 limit an IBM i partition to a maximum of 4 cores, and require VIOS.

## When are IBM i solution edition available?

Support for solution editions will be available in eConfig on 3/13/18. Express editions will be available on 2/13/2018. Both will be announced on Feb 13, 2018.

## For IBM i, how many cores per partition can be supported in the S922?

The 922 will support 4 cores in an IBM i partition just like the S822.

## ­Does IBM i run the CPUs in POWER9 mode?

Yes.

# Virtualization

## Is PowerVM included with the systems?

Yes, PowerVM Enterprise Edition license is “embedded” in every model. In eConfig PowerVM shows as a zero-cost item which cannot be removed.

## ­If PowerVM is built in, what about SWMA? ­

The PowerVM license is included as a zero-cost feature, however, SWMA can optionally be purchased if desired.

## ­Can PowerVC be removed from eConfig if not desired like for a small IBM i user­?

­Yes - PowerVC Cloud Manager is included in default POWER9 server orders in eConfig, but it can be deselected­.

## Can LPM be used to migrate workloads from older Power servers to the new POWER9 models?

Yes, LPM can be used to quickly and easily move workloads from POWER7 or POWER8 servers to new POWER9 models. If a client does not already have PowerVM Enterprise Edition installed on their older servers, a free 60-day activation (Feature Code ELPM) can be requested for those servers to facilitate migrations.

## ­If LPM is included in the embedded PowerVM version what can we do to address Oracle License issue with LPM­?

This can be addressed by deactivation LPM and is the same as with POWER8 models. There are two ways to do this, a client can either request unique VET codes from PowerCoD team or they can do it manually via the latest HMC. This is a one-time setting, which will satisfy Oracle audits.

## What HMC version can be used to manage the POWER9 Scale-Out servers?

The planned HMC support includes:

* x86 based - 7042-CR7, CR8, CR9
* POWER8 based - 7063-CR1
* vHMC PowerVM based LPAR

All require [POWER9 based HMC Code levels](#_What_are_the)

## ­Is PowerVM IVM supported?

No, ­it goes away with VIOS 3.1­

## Will PowerVP be supported on POWER9?

PowerVP does not support Power9 servers and will be retired. It will also be removed from PowerVM Enterprise Edition with the next (3.1) release. There is no IBM replacement, although clients can obtain similar metrics from the monitoring capabilities of the HMC, along with open source monitoring tools such as LPAR2RRD.

## What is the replacement for smaller configurations with no HMC which relied on Integrated Virtualization Manager (IVM)?

For small configurations without an HMC use the vHMC appliance.

## Will VIOS 3.1 be required for POWER9? ­

The POWER Scale-Out servers require VIOS 2.2.6.21, or later. However, the scale-up server planned for later this year will require VIOS 3.1.

# SAP HANA

## What is being announced on February 13, 2018?

The new Power System H924 (9223-42H) and Power System H922 (9223-22H) for SAP HANA are designed for clients to get the most out of their SAP HANA environments. Optimized for in-memory workloads, these systems deliver improved performance compared to the prior generation. Built-in virtualization and unmatched flexibility help clients to run multiple SAP HANA production workloads side by side with workloads such as dev/test and traditional SAP applications on Linux, AIX or IBM i.

* These servers provide an optimized system configuration using enhanced processors, DDR4 ECC memory, and IBM PowerVM Enterprise Edition virtualization for enterprise-class deployment of the SAP HANA database and applications.
* These highly flexible systems, with best-in-class virtualization, allow clients to consolidate their workloads and reduce the footprint in their data center. For example, clients can combine arbitrary workloads with traditional SAP application- and non-production SAP HANA workloads running in a shared pool side by side with multiple Production SAP HANA partitions (LPARs), leading to an efficient use of the system and a high aggregate utilization. SAP HANA Tailored Datacenter Integration Phase 5 (TDI 5) gives clients the flexibility to use the storage and networking of their choice\*, and optimize configurations, with support from SAP, all while achieving a lower TCO. (\* Assuming any associated certification requirements are met.)
* The Power H922 and H924 for SAP HANA servers support a maximum of 32 DDR4 ECC DIMM slots. Memory features supported are 16 GB, 32 GB, 64 GB, and 128 GB, and run at different speeds of 2133, 2400, and 2666 Mbps, offering a maximum system memory of 4096 GB.
* H922 (9223-22H)
	+ The Power H922 for SAP HANA server supports two processor sockets, offering 10-core or 20-core 2.5 GHz, 8-core or 16-core 3.0 GHz, or 4-core 2.3 GHz POWER9 configurations in a 19-inch rack-mount, 2U (EIA units) drawer configuration. All the cores are active.
* H924 (9233-24H)
	+ The Power H924 for SAP HANA server supports two processor sockets, offering 8-core or 16-core 3.3 GHz, 10-core or 20-core 2.9 GHz, or 24-core 2.75 GHz configurations in a 19-inch rack-mount, 4U (EIA units) drawer configuration. All the cores are active.

## Can SAP HANA be implemented on the S924 and S922 and if so, when should I use the H or S model?

Yes, SAP HANA can be implemented on the S924 and S922. The HANA P9 model systems, beginning with the announcement of the H924 and H922, are targeted for HANA and other SAP solution workloads and on these H924 and H922 Systems:

* Linux is required as the primary operating system with a minimum of 75% of total cores activated.
* AIX and IBM i can be chosen as secondary operating systems, with a maximum of 25% of total cores activated across both.
* If the AIX and IBM i total core activation requirements exceed 25% then the Power S924 and Power S922 are the recommended servers for these cases.

## What operating systems are supported on the H systems?

The supported operating systems are:

* Linux is the primary operating system.

The supported Linux operating systems, in HANA non-production use only, at specified or later versions:

* SUSE Linux Enterprise Server 12 Service Pack 3
* SUSE Linux Enterprise Server for SAP Applications with SUSE Linux Enterprise Server 12 Service Pack 3
* Red Hat Enterprise Linux 7 for Power LE, version 7.4
* Red Hat Enterprise Linux for SAP Solutions with Red Hat Enterprise Linux 7 for Power LE, version 7.4

**Note:** At the announcement, SAP HANA, implemented with the Linux operating systems above, can run in non-production. The announcement also includes a Statement of Direction stating the following:

IBM intends to support SAP HANA on the IBM Power System H924 server (9223-42H) in production mode, with the following Linux operating systems, following near-term certification of the environment:

* Red Hat Enterprise Linux for SAP Solutions with Red Hat Enterprise Linux 7 for Power LE version 7.4
* SUSE Linux Enterprise Server for SAP Applications with SUSE Linux Enterprise Server 12 SP3
* AIX and IBM i are supported by secondary operating systems.

If installing the AIX operating system LPAR with any I/O configuration (one of these):

* AIX Version 7.2 with the 7200-02 Technology Level and Service Pack 7200-02-02-1810, or later
* AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-02-1810, or later
* AIX Version 6.1 with the 6100-09 Technology Level and Service Pack 6100-09-11-1810, or later (AIX 6.1 service extension required)
* AIX Version 7.2 with the 7200-01 Technology Level and Service Pack 7200-01-04-1806, or later (planned availability May 4, 2018)
* AIX Version 7.2 with the 7200-00 Technology Level and Service Pack 7200-00-06-1806, or later (planned availability May 4, 2018)
* AIX Version 7.1 with the 7100-04 Technology Level and Service pack 7100-04-06-1806, or later (planned availability May 4, 2018)

If installing the AIX operating system Virtual I/O only LPAR (one of these):

* AIX Version 7.2 with the 7200-02 Technology Level and Service Pack 7200-02-01-1732, or later
* AIX Version 7.2 with the 7200-01 Technology Level and Service Pack 7200-01-01-1642, or later
* AIX Version 7.2 with the 7200-00 Technology Level and Service Pack 7200-00-01-1543, or later
* AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-01-1731, or later
* AIX Version 7.1 with the 7100-04 Technology Level and Service Pack 7100-04-01-1543, or later
* AIX Version 6.1 with the 6100-09 Technology Level and Service Pack 6100-09-06-1543, or later (AIX 6.1 service extension required)

If installing IBM i, the IBM i operating system levels supported are:

* IBM i 7.3 TR4
* IBM i 7.2 TR8

If installing VIOS:

* VIOS 2.2.6.21, or later

## When will the SAP certification be complete?

Production support will be available as soon as the near-term certification testing is complete. A specific date is not available. Production support will be communicated to the sales teams.

## When are the H924 and H922 available?

The H924 and H922 are available on the same date as the S922 and S924 systems. GA is March 20, 2018.

## How are the H924 and H924 ordered?

All orders are to be placed in the ‘SAP HANA on Power’ category located in the e-config Power Hardware section.

## Are Lab Services provided?

IBM Systems Lab Services can provide on-site professional services to help clients build their SAP HANA solutions using a tailored data center infrastructure strategy.

IBM Systems Lab Services consultants help design and implement flexible virtualization and capacity management to ensure server, storage, and networking resources meet business requirements and SAP HANA KPIs. Lab Services consultants can also advise on best practices for data migration to SAP HANA on Power from a variety of database environments and server platforms.

For more information on Lab Services offerings, clients should contact their IBM representative or go to the [Lab Services Power Systems](https://www.ibm.com/it-infrastructure/services/lab-services/power) website.

## How much memory do the new POWER9 models support?

H924 and H922 support the following memory:

* High-performance Mbps DDR4 ECC memory
	+ 16 GB (#EM62), 32 GB (#EM63), 64 GB (#EM64), or 128 GB (#EM65) memory features; different sizes/configurations run at different frequencies of 2133, 2400, and 2666 Mbps
	+ Up to 4 TB of DDR4 memory with two Power Systems processors
	+ Up to 2 TB of DDR4 memory with one Power Systems processor

## Where will SAP sizing data be available?

SAPS figures are published in the following community: <https://w3-connections.ibm.com/blogs/db4b6082-e758-423f-acae-becdec160371/entry/Power_Systems_SAPS_Capacity_tables_now_contain_POWER9_systems?lang=en_us>

## Are the H924 and H922 secure, with respect to Meltdown & Spectre?

See answer in General section.

## Can you upgrade/convert to the H924 or H922 systems?

There is no upgrade/conversions to or from the S924 and H924 systems. Similarly, there is no upgrade/conversions to or from the S922 to H922 systems.

## Can the HANA on Power offering be sold on a P9 server other than the H922 and H924?

Yes. If H924 an H922 do not meet the customer needs, then the customer can implement the HANA solution on another P9 server (i.e. S924, S922 and L922).

What is the value of the new H922 and H924 HANA Processor and Memory feature codes announced on April 24, 2018?

The new announced HANA feature codes for processor, memory and their associated activations, allow the flexibility for the Offering Team to alter the list prices for the H922 and H924 in the future, as required, in response to substantiated competitive sales influence.
Technical specifications and performance of the announced feature codes in H-models are identical to the respective standard feature codes in non H-models.

What is the value of #EHKV feature code on S922, S924 and L922 announced on April 24, 2018?

The HANA FC '#EHKV - SAP HANA Tracking feature', is available on the S924, S922 and L922 Systems to identify when they are sold as part of a HANA sales deal. The H924 and H922 are the core systems for HANA workloads whereas HANA on S924, S922 and S922L will continue to address exceptional cases and this feature code will enable it to be tagged for SAP HANA.