SAP Note

2188482 - SAP HANA on IBM Power Systems: Supported hardware and features

Component: HAN-DB (SAP HANA > SAP HANA Database), Version: 99, Released On: 17.02.2026

Symptom

You are looking for information about SAP HANA support for IBM Power systems and their features.

Other Terms

SAP HANA, SAP HANA 2.0, HANA-on-Power, IBM Power, PowerVM, Power11, Power10, Power9, Power8

Reason and Prerequisites

This information applies to on-premises installations. For guidance on deployments on IBM Power Virtual Server, see SAP Note 2947579. This note provides detailed information about the support of IBM Power servers and their features for SAP HANA production systems. For additional details and information on non-production systems, refer to SAP Note 2055470.

This SAP note does not provide recommendations for hardware or LPAR configurations for your specific workload. For hardware configurations based on workload sizing, refer to the latest sizing tools. Sizing information and derived SAPS values obtained via the SAP HANA Quicksizer are described in SAP Note 1793345. For more details, visit http://www.sap.com/sizing. We strongly recommend testing all workload scenarios before go-live.

Solution

The Certified and Supported SAP HANA® Hardware Directory lists all IBM Power server models supported for SAP HANA production systems.

Processor cores should be distributed equally among NUMA nodes of the underlying physical server.

OLTP workload scenarios

This SAP Note refers to **OLTP** workload for the following scenarios:

- Products from SAP Business Suite, powered by SAP HANA
- SAP S/4HANA ON-PREMISE
- SAP S/4HANA FINANCE
- SAP SFINANCIALS
- Banking services from SAP (including SAP Bank Analyzer)
- SAP Solution Manager
- SAP Master Data Governance
- SAP Gateway

OLAP workload scenarios

This SAP Note refers to OLAP workload for analytical workload and all other workload that are not listed in the OLTP workload scenarios.

Workload sizing

With the introduction of TDI Phase 5, server configurations should be based on Workload Sizing. For more information about TDI Phase 5, refer to SAP Note 2613646 - SAP HANA TDI Phase 5.

The required LPAR cores and memory size must be determined through an individual sizing of the customer workload. Customers can use the CPU and memory sizing information derived from the production workload of existing systems to determine the required capacity for an LPAR running the SAP HANA production workload. Starting with Power9, only configurations based on Workload Sizing are supported.

Configurations based on Workload Sizing are based on sizing relevant information and derived SAPS/aSAPS obtained via the latest sizing tools. Sizing and workload analysis are constantly improved.

- SAP Note 2296290 - New Sizing Report for SAP BW/4HANA
- SAP Note 2610534 – HANA BW Sizing Report (/SDF/HANA_BW_SIZING)
- SAP Note 1872170 - ABAP on HANA sizing report (S/4HANA, Suite on HANA...)
- SAP HANA Master Guide – Sizing SAP HANA: https://help.sap.com/docs/SAP_HANA_PLATFORM/eb3777d5495d46c5b2fa773206bbfb46/d4a122a7bb57101493e3f5ca08e6b039.html?locale=en-US&version=LATEST
- SAP Sizing Guidelines https://www.sap.com/about/benchmark/sizing.sizing-guidelines.html

We strongly recommend to thoroughly test the initially sized system with all workload scenarios before go-live.

In support cases, customers may be asked to provide sizing assumptions and detailed workload analysis, as these form the basis for all hardware and LPAR configurations. Incorrectly sized configurations must be adjusted according to the application workload and sizing results.

If the workload-based sizing method is not suitable, the rules for Power8 configurations based on established core-to-memory ratios can be applied. These ratios were derived from workloads measured by SAP and IBM using standard SAP applications (OLTP and OLAP). For more information, please refer to SAP Note 2696290.

Minimum configurations

In all cases, an LPAR must be configured with a minimum of 4 processor cores and 128 GB memory.

Supported Operating Systems

The operating system versions that are supported for SAP HANA are documented in SAP Note 2235581, which should be consulted first. The OS support sections below list the operating system versions and their minimum releases that are required for each Power processor generation (which might be higher than the minimum releases that are supported by SAP HANA). Operating system versions other than those listed are not supported for use with SAP HANA systems.

General features supported on all Power servers

- IBM "Capacity on Demand" (COD) can be used to increase or decrease enabled capacity where applicable.

Power11

SAP HANA Support

- SAP HANA Platform 2.0 SPS 07 Rev 79.05 or later

OS Support (Versions and Minimum Releases)

- Red Hat Enterprise Linux 9.6
- Red Hat Enterprise Linux 10.0
- SUSE Linux Enterprise Server 15 SP6

OLAP Support

- Scale-Up
  - E1180
    - All processor configurations are supported.
    - Memory sizes
      - Up to 20 TB is supported for class L sizing.
      - Up to 32 TB is supported for class M sizing.
  - E1150, S1124, L1124, S1122, L1122
    - All processor configurations are supported.
    - Max. memory limited by aSAPS capacity; see www.sap.com/sizing.
- Scale-Out
  If the application allows OLAP scale-out of SAP HANA:
  - E1180
    - All processor configurations are supported.
    - Memory sizes
      - Up to 4 nodes, each with up to 32 TB memory (total 128 TB), are supported.
  - S1124, L1124, S1122, L1122
    - All processor configurations are supported.
    - Memory sizes
      - Up to 6 nodes, each with up to 3 TB memory (total 18 TB), are supported.

OLTP and Mixed Load Support

- Scale-Up
  - E1180
    - All processor configurations are supported
    - Memory sizes
      - Up to 32 TB is supported
  - E1150, S1124, L1124, S1122, L1122
    - All processor configurations are supported
    - Max. memory limited by aSAPS capacity; see www.sap.com/sizing.
- Scale-Out
  If the application allows OLTP scale-out of SAP HANA:
  - E1180
    - All processor configuations running in SMT4 mode are supported.
  - Memory sizes
    - Up to 2 nodes, each with up to 32 TB memory (total 64 TB), are supported.

Scalability and Sizing Considerations

An expert sizing is recommended for OLTP and mixed load configurations larger than 128 cores.

Power11 servers hosting LPAR configurations with more than 128 cores must be designed and validated together with an IBM expert, considering:

- the individual customer workload
- the application KPIs
- the projected growth assumptions

Please contact enable.sap@de.ibm.com for large-scale OLTP sizing guidance and an optimized system configuration. You should also follow the guidelines of SAP Note 1872170, especially if the LPAR memory exceeds 8 TB.

Simultaneous Multithreading (SMT) Support

Power11 processor-based systems are supported in SMT8 mode.
OLTP scale-Out configurations with two nodes are supported in SMT4 mode.

Multi-LPAR Support

On IBM Power11 processor-based servers running in a multiple LPAR environment with at least one SAP HANA production system, customers may run LPARs with dedicated or dedicated-donating processor cores up to the limits defined below:

- E1180
  - Up to 32 concurrent LPARs are supported.
- E1150
  - Up to 8 concurrent LPARs are supported.
- S1124, L1124, S1122, L1122
  - Up to 4 concurrent LPARs are supported.

For further details, refer to SAP Note 2230704 - SAP HANA on IBM Power Systems with multiple - LPARs per physical host.

Live Partitioning Mobility (LPM) Support

LPM is supported only if all prerequisites from SAP Note 2055470 are fulfilled. A valid full backup should be available before moving a live system between servers. Follow all recommendations of the solution vendor.

Performance degradation can occur after an LPM operation because SAP HANA does not recognize the underlying system changes. For guidance, refer to the documentation on the SAP on Power Community:

“SAP HANA on Power Advanced Operation Guide”

- Chapter: “Detect execution of LPM” explains how to check if an LPM occurred and how to use **DPO** and/or perform an SAP HANA restart at a convenient time to optimize the NUMA layout.

- Chapter: “Using Live Partition Mobility or Dynamic Platform Optimizer for LPARs running SAP HANA”.

If issues persist, IBM will assist with reconfiguring the NUMA configuration.

Shared Processor LPAR (SPLPAR) Support

SPLPAR is supported on all Power11 processor-based servers.

Refer to SAP Note 3400548 for further details.

Dynamic LPAR (DLPAR) Operations Support

DLPAR operations to adjust the memory size of an online LPAR are supported on all Power11 processor-based servers.

Refer to SAP Note 3114051 for further details.

Virtual Persistent Memory (vPMEM) Support

Virtual Persistent Memory is supported on all Power11 processor-based servers. Refer to SAP Note 2945828 for further details.

Power10

HANA Support

- SAP HANA Platform 2.0 SPS 05 Rev 57 or later

OS Support (Versions and Minimum Releases)

- Red Hat Enterprise Linux 8.4
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 10.0
- SUSE Linux Enterprise Server 15 SP3

OLAP Support

Scale-Up

- Memory sizes
  - Up to 20TB is supported for class L sizing.
  - Up to 40TB is supported for class M sizing.
- E1080
  - All processor configurations are supported.
- E1050, S1024, L1024, S1022, S1022s, L1022
  - Maximum 20 cores per socket are supported.

Scale-Out

If the application allows scale-out of HANA:

- Memory sizes
  - Up to 16 nodes with up to 8 TB memory on each node (in total 128 TB) are supported.
  - Larger memory sizes are possible on special request.
- E1080
  - All processor configurations are supported.
- E1050, S1024, L1024, S1022, S1022s, L1022
  - Maximum 20 cores per socket are supported.

OLTP and Mixed Load Support

Scale-Up

- Memory sizes
  - Up to 32TB is supported.
- E1080
  - All processor configurations are supported.
- E1050, S1024, L1024, S1022, S1022s, L1022
  - Max. 20 cores per socket are supported.

Scale-Out

If the application allows OLTP scale-out of HANA:

- Memory sizes
  - Up to 4 nodes with up to 32 TB memory on each node (in total 128 TB) are supported.
- E1080
  - All processor configurations are supported.

Scalability and Sizing Considerations

The scalability behavior of Power10 processor-based systems is comparable to Power9 processor-based systems (refer to comments in the Power9 'Scalability and Sizing Considerations' section below).

An expert sizing is recommended for OLTP & mixed load configurations larger than 92 cores.

Power10 systems hosting LPAR configurations with more than 92 cores must be designed and validated together with an IBM expert considering:

- the individual customer workload
- the application KPIs
- the projected growth assumptions

Please contact enable.sap@de.ibm.com for large-scale OLTP sizing guidance and an optimized system configuration. You should also follow the guidelines of SAP Note 1872170, especially if the LPAR memory exceeds 8TB.

Simultaneous Multithreading (SMT) Support

- Power10 processor-based systems are supported in SMT4 mode.

Multi-LPAR Support

On IBM Power10 processor-based servers running in a multiple LPAR environment with at least one SAP HANA production system, customers may run LPARs with dedicated or dedicated-donating processor cores up to the limits defined below

- E1080
  - Up to 16 concurrent LPARs are supported.
- E1050
  - Up to 8 concurrent LPARs are supported.
- Other supported Power10 based servers:
  - Up to 4 concurrent LPARs are supported.

Refer to SAP Note 2230704 - SAP HANA on IBM Power Systems with multiple - LPARs per physical host for further details.

Live Partitioning Mobility (LPM) Support

LPM is only supported if all prerequisites from SAP Note 2055470 are fulfilled. A valid full backup should be available before moving a live system between servers. Follow all recommendations of the solution vendor.

You can experience performance degradation after an LPM operation, as HANA is not aware of these changes. Please check the documentation in the SAP on Power Community: "SAP HANA on Power Advanced Operation Guide" - chapter: "Detect execution of LPM" to find out if an LPM happened and how to use DPO and/or a HANA restart at a convenient time on optimizing the NUMA layout (chapter: "Using Live Partition Mobility or Dynamic Platform Optimizer for LPARs running SAP HANA"). In case of persisting issues, IBM will support with reconfiguring the NUMA configuration.

Shared Processor LPAR (SPLPAR) Support

SPLPAR is supported on all Power10 processor-based servers.

Refer to SAP Note 3400548 for further details.

Dynamic LPAR (DLPAR) Operations Support

DLPAR operations to add memory to or remove memory from online LPARs are supported on all Power10 processor-based servers.

Refer to SAP Note 3114051 for further details.

Virtual Persistent Memory (vPMEM) Support

Virtual Persistent Memory is supported on all Power10 processor-based servers.

Refer to SAP Note 2945828 for further details.

Power9

HANA Support

- SAP HANA Platform 2.0 SPS 03 rev.36 or later
- For LPARs with more than 24TB, see remark 1 in the Additional Information section

OS Support (Versions and Minimum Releases)

- Red Hat Enterprise Linux 8.0
- Red Hat Enterprise Linux 9.0
- SUSE Linux Enterprise Server 12 SP3
- SUSE Linux Enterprise Server 15 SP1

OLAP Support

Scale-Up

- Memory sizes
  - Up to 16TB is supported for class L sizing.
  - Up to 24TB is supported for class M sizing with HANA 2.0 SPS04 or later.
  - Up to 24TB is supported for class S sizing with HANA 2.0 SPS04 or later.
  - Up to 32TB is supported for class S sizing with HANA 2.0 SPS05 or later.
- E980, E950, S924, H924, L922, S922, H922
  - All processor configurations are supported.

Scale-Out

- Up to 16 nodes are supported.

OLTP and Mixed Load Support

Scale-Up

- E980, E950, S924, H924, L922, S922, H922
  - All processor configurations are supported.

Scalability and Sizing Considerations

An expert sizing is recommended for OLTP & Mixed Load configurations larger than 64 cores.

Based on scaling results from internal tests, the SAPS rating alone may not be enough to properly size and account for spikes or demanding workloads.

HANA 2.0 SPS04 Rev. 41 or higher is recommended for scalability reasons for OLAP, OLTP, or mixed load scenarios. In the worst case performance comparable to only about two thirds of the maximum SAPS rating can be observed on IBM Power9 systems with 16 sockets.

For lower revisions including HANA 2.0 SPS03, tests showed scalability that deviated from the SAPS rating for mixed load and OLTP above 4 sockets and levelled off above 8 sockets. No further scalability is noticeable from this point onwards as additional CPU resources of more than 8 sockets could not be utilized.

Power9 systems hosting LPAR configurations with more than 64 cores must be designed and validated together with an IBM expert considering:

- the individual customer workload
- the application KPIs
- the projected growth assumptions

Please contact enable.sap@de.ibm.com for large-scale OLTP sizing guidance and an optimized system configuration. You should also follow the guidelines of SAP Note 1872170, especially if the LPAR memory size exceeds 8TB.

Simultaneous Multithreading (SMT) Support

- SMT4 is supported for all LPAR sizes.
- SMT8 is supported for all LPARs with less than 96 cores.
- SMT8 is supported for all LPARs larger than 96 cores with HANA 2.0 SPS04 Rev. 42 or later.

Multi-LPAR Support

On IBM Power9 processor-based servers running in a multiple LPAR environment with at least one SAP HANA production system, customers may run LPARs with dedicated or dedicated-donating processor cores up to the limits defined below:

- E950, E980
  - Up to 16 concurrent LPARs are supported.
- Other supported Power9 processor-based servers
  - Up to 4 concurrent LPARs are supported.

Refer to SAP Note 2230704 – SAP HANA on IBM Power Systems with multiple – LPARs per physical host for further details.

Live Partitioning Mobility (LPM) Support

LPM is only supported if all prerequisites from SAP Note 2055470 are fulfilled. A valid full backup should be available before moving a live system between servers. Follow all recommendations of the solution vendor.

- If the operating system reflects NUMA topology changes, HANA must be stopped before the LPM process.
- If the operating system is not reflecting NUMA topology changes (/proc/powerpc/topology_updates is set to off), HANA can be left running during the LPM process.

The following OS do not reflect NUMA topology changes by default:

- SLES 12 SP3 kernel 4.4.178-94.91.1 and above
- SLES 12 SP4 kernel 4.12.14-95.16.1 and above
- SLES 15 SP0 kernel 4.12.14-150.17.1 and above
- SLES 15 SP1 and above
- RHEL 8.1 and above

You can experience a performance degradation after an LPM operation, as HANA is not aware of these changes. Please check the documentation in the SAP on Power Community: “SAP HANA on Power Advanced Operation Guide” – chapter: “Detect execution of LPM” to find out if an LPM happened and how to use DPO and/or a HANA restart at a convenient time on optimizing the NUMA layout (chapter: “Using Live Partition Mobility or Dynamic Platform Optimizer for LPARs running SAP HANA”). In case of persisting issues, IBM will support to reconfigure the NUMA configuration.

Shared Processor LPAR (SPLPAR) Support

SPLPAR is supported on Power9 processor-based servers running SAP HANA 2.0 SPS4 (or newer) and SLES 12 SP4 with kernel => 4.12.14-95.65-default or RHEL 7.6 or above.

Refer to SAP Note 3400548 for further details.

Dynamic LPAR (DLPAR) Operations Support

DLPAR operations to add memory to or remove memory from online LPARs is supported on all Power9 processor-based servers running HANA 2.0 SPS05 revision 52 (or newer) and SLES 15 SP2 or RHEL 8.2 or above.

Refer to SAP Note 3114051 for further details.

Virtual Persistent Memory (vPMEM) Support

Virtual Persistent Memory is supported on all Power9 based servers running SAP HANA 2.0 SPS04 revision 44 (or newer) and SLES 15 SP1 or RHEL 8.1 or above.

Refer to SAP Note 2945828 for further details.

Power8

HANA Support

- SAP HANA 1.0 SPS 12 or newer
- For LPARs with more than 3TB see remark 2 in the Additional Information section

OS Support (Versions and Minimum Releases)

- Red Hat Enterprise Linux 7.3
- SUSE Linux Enterprise Server 12 SP1
- SUSE Linux Enterprise Server 15 SP1

OLAP Support

Scale-Up

- Memory sizes
  - Up to 16TB is supported.
- E880, E880C
  - All processor configurations are supported.
  - Up to 16TB is supported.
- E870, E870C, E850, E850C, S824, S824L, S822, S822L
  - All processor configurations are supported.
  - Up to 9TB is supported.

Scale-Out

- Up to 16 nodes are supported.

OLTP and Mixed Load Support

Scale-Up

- E880, E880C
  - A maximum of 176 processor cores is supported.
  - Up to 16 TB is supported.
- E870, E850, E850C, S824, S824L, S822, S822L
  - All processor configurations are supported.
  - Up to 9TB is supported.

Simultaneous Multithreading (SMT) Support

- SMT8 is supported on LPARs with less than 96 cores.
- SMT4 is supported for all LPAR sizes.

Multi-LPAR Support

On IBM Power8 processor-based servers running in a multiple LPAR environment with at least one SAP HANA production system, customers may run LPARs with dedicated or dedicated-donating processor cores up to the limits defined below:

- E870, E870C, E880, E880C
  - Up to 8 concurrent LPARs are supported.
- E850C
  - Up to 6 concurrent LPARs are supported.
- Other Power8 processor-based servers
  - Up to 4 concurrent LPARs are supported.

Refer to SAP Note 2230704 – SAP HANA on IBM Power Systems with multiple – LPARs per physical host for further details.

Live Partitioning Mobility (LPM) Support

LPM is only supported if all prerequisites from SAP Note 2055470 are fulfilled. A valid full backup should be available before moving a live system between servers. Follow all recommendations of the solution vendor.

- If the operating system reflects NUMA topology changes, HANA must be stopped before the LPM process.
- If the operating system is not reflecting NUMA topology changes (/proc/powerpc/topology_updates is set to off), HANA can be left running during the LPM process.

The following OS do not reflect NUMA topology changes by default:

- SLES 12 SP3 kernel 4.4.178-94.91.1 and above
- SLES 12 SP4 kernel 4.12.14-95.16.1 and above
- SLES 15 SP0 kernel 4.12.14-150.17.1 and above
- SLES 15 SP1 and above
- RHEL 7.7 and above
- RHEL 8.1 and above

You can experience performance degradations after the LPM, as HANA is not notified by the operating system about these changes. Please check the documentation on the SAP on Power Community: “SAP HANA on Power Advanced Operation Guide” - chapter: “Detect execution of LPM” to find out if an LPM happened and how to use DPO and/or a HANA restart at a convenient time on optimizing the NUMA layout (chapter: “Using Life Partition Mobility or Dynamic Platform Optimizer for LPARs running SAP HANA”). In case of persisting issues, IBM will support to reconfigure the NUMA configuration.

Shared Processor LPAR (SPLPAR) Support

SPLPAR is supported on Power8 based servers running SAP HANA 2.0 SPS4 (or newer) and SLES 12 SP4 with kernel => 4.12.14-95.65-default or RHEL 7.6 or above.

Refer to SAP Note 3400548 for further details.

Additional Information

Remark 1:

For LPARs with more than 24TB with a suitable sizing, HANA 2.0 SPS05 (or higher) and SLES 15 SP1 (or higher) or RHEL 8.1 (or higher) must be used. An active monitoring process of memory must be established on the system. Refer to SAP Note 2982940 for details and/or ask your IBM contact for guidance. Please open an SAP Ticket against the component BC-OP-PLNX when the largest free virtual address space goes below 256TB and provide monitoring data. HANA downtime and system restart must be planned to prevent an out of memory condition.

Remark 2:

For LPARs with more than 3 TB RAM running SLES 11 SP4 without the bigmem kernel provided by SUSE, SAP recommends monitoring the virtual address space available to SAP HANA processes. In the case of HANA 1.0 SPS 12 it is required to use the bigmem kernel variant of SLES 11 SP4. For more information regarding bigmem kernel and how to set up this monitoring, please contact your IBM representative.

Closing section

SAP Note 2055470 provides additional details on SAP HANA installation for IBM Power servers. It also outlines relaxes requriements for non-production systems.

For additional information about using shared processor LPARs with SAP HANA, see SAP Note 3400548.

Dieses Dokument wird referenziert von

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