IBM® Power Systems™

Quick Reference Guide
for POWER8® Processor-based Servers

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Power Scale-out Systems supporting AIX, IBM i or Linux	Power S812	Power S812	Power S814	Power S814	Power S822	Power S824
System package	2U, 19″ rack	2U, 19″ rack	4U, 19″ rack or tower	4U, 19″ rack or tower	2U, 19″ rack	4U, 19″ rack
# of processor sockets	1	1	1	1	1 or 2	1 or 2
POWER8 Processor Options GHz - # of cores	3.02 GHz – 1	3.02 GHz –4	3.02 GHz – 4	3.02 GHz - 6 3.72 GHz - 8	4.15 GHz – 8,16 3.89 GHz - 6,12 3.42 GHz - 10,20	3.89 GHz - 6, 12 4.15 GHz - 8, 16 3.52 GHz – 24
Max memory (1600 MHz DIMMs)	64 GB	128 GB	64 GB	1 TB	1-socket: 512 GB 2-sockets: 1 TB	1-socket: 1 TB 2-sockets: 2 TB
PCIe Gen3 slots[1, 2]	6	6	7	7	6 (1- socket) 9 (2- socket)	7 (1-socket) 11 (2-socket)
Max PCIe slots: System node plus Gen3 PCIe I/O drawers [7,8,9]	6	6	7	17 (5 system unit + 12 drawer)	1-socket 10 (4 system unit + 6 drawer) 2-socket 17 (5 system unit + 12 drawer)	1-socket: 17 (5 system unit + 12 drawer) 2-socket: 31 (7 system unit + 24 drawer)
System unit disk/SSD bays with standard or split backplane	8 SFF-3 or 6+6 SFF-3	12 SFF-3 or 6+6 SFF-3	10 SFF-3 or 5+5 SFF-3	12 SFF-3 Or 6+6 SFF-3	12 SFF-3 or 6+6 SFF-3	12 SFF-3 or 6+6 SFF-3
System unit disk/SSD bays with expanded function backplane[3]	8 SFF-3	8 SFF-3	10 SFF-3	18 SFF-3	8 SFF-3 plus 6 1.8" SSD bays	18 SFF-3 plus 8 1.8" SSD bays
Max EXP24SX/EXP12SX storage drawers	n/a	3	n/a	28	28	28
Max EXP24SX/EXP12SX disk/SSD	n/a	72	n/a	672	672	672
Max total system unit + EXP24SX TB with 1.8TB HDD[2]	4.5 TB [4] w/ 8x571GB HDD	151 TB w/ 84x1.8TB HDD	6.0 TB [4] w/ 10*600G HDD	1,242 TB w/ 690 HDD	1,231 TB w/ 684 HDD	1,248 TB w/ 690 HDD+8 SSD
AIX® rPerf Range	N/A	66.9	66.9	97.5 – 143.9	66.9 – 346.7	120.8 – 421.9
IBM i® CPW Range	9,880	n/a	39,500 - 85,500	39,500 - 85,500	44,8800-51,700 per 4-core partition	72,000 - 230,500
Capacity on Demand	N/A	N/A	N/A	N/A	N/A	N/A
Warranty, base service level [5]	3-yr 9x5, next business day	3-yr 9x5, next business day	3-yr 9x5, next business day	3-yr 9x5, next business day	3-yr 9x5, next business day	3-yr 9x5, next business day
Max partitions	1	1	80	160	400	480
IBM i level	7.2, 7.3 *	N/A	7.1, 7.2, 7.3 *	7.1, 7.2, 7.3 *	7.1, 7.2, 7.3 *	7.1, 7.2, 7.3 *
AIX level	N/A	6.1, 7.1, 7.2 *	6.1, 7.1, 7.2 *	6.1, 7.1, 7.2 *	6.1, 7.1, 7.2 *	6.1, 7.1, 7.2 *
Linux support [10]	N/A	N/A	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL
PowerKVM™	N/A	N/A	N/A	N/A	N/A	N/A
PowerVM™	N/A	N/A	Std	Std	Std	Std
Systems Director Editions (w/ VMControl™)			Optional	Optional	Optional	Optional
Machine type – model	8284-12A	8284-12A	8286-41A	8286-41A	8284-22A	8286-42A

1. IBM Manufacturing requires one x8 PCIe slot must contain an Ethernet LAN adapter. Adapter is available for client use
2. Use of expanded function storage backplane uses one PCIe slot in 2U servers and optionally uses a PCIe slot in 4U servers
3. Backplane provides dual high performance SAS controllers with 1.8GB write cache expanded up to 7.2 GB with compression plus Easy Tier capability plus two SAS ports for running an EXP24S drawer. SAS ports are optional on a 4U server.
4. 1-core Power S812 max capacity drive is 571 GB. 4-core Power S814 maximum capacity disk drive is 600GB.
5. Warranty and base service level are USA definitions and may vary in other countries
6. When no GPU installed
7. Number shown is the client usable slots after deducting the optical cable adapters required in CEC to connect the maximum number of PCIe I/O Drawers
8. Not available in PowerKVM environment
9. Not available in OPAL Bare-metal environment
10. See other documentation for more specifics. For example: SLES 11 or 12, REHL 6.6, Ubuntu 14.04, etc.
* Or later.   See more detailed server specific information as TR or TL prerequisites

Power Scale-out Systems supporting Linux	Power S812L	Power S822L	Power S824L	Power S824L [6]
System package	2U, 19″ rack	2U, 19″ rack	4U, 19″ rack	4U, 19″ rack
# of processor sockets	1	2	2	1 or 2
POWER8 Processor Options GHz - # of cores	3.42 GHz – 10 3.02 GHz – 12	4.15 GHz - 16 3.42 GHz – 20 3.02 GHz –24	3.42 GHz – 20 3.02 GHz –24	4.15 GHz - 8, 16 3.52 GHz – 24
Max memory (1600 MHz DIMMs)	512 GB	1024 GB	2 TB	1-socket: 1 TB 2-sockets: 2 TB
PCIe Gen3 slots[1, 2]	6	9	11	7 (1-socket) 11 (2-socket)
Max PCIe slots: System node plus Gen3 PCIe I/O drawers [7,8,9]	10 (4 system unit + 6 drawer)	17 (5 system unit + 12 drawer)	11	1-socket: 17 (5 node + 12 drawer) 2-sockets: 31 (7 node + 24 drawer)
System unit disk/SSD bays with standard or split backplane	12 SFF-3 or 6+6 SFF-3	12 SFF-3 or 6+6 SFF-3	12 SFF-3	12 SFF-3 or 6+6 SFF-3
System unit disk/SSD bays with expanded function backplane[3]	8 SFF-3	8 SFF-3 plus 6 1.8" SSD bays	N/A	18 SFF-3 [6] plus 8 1.8" SSD bays
Max EXP24SX/EXP12SX storage drawers	28	28	N/A	28 [6]
Max total EXP24SX/EXP12SX disk/SSD	672	672	N/A	672 [6]
Max total system unit + EXP12SX TB with 1.8TB HDD[2]	1,231 TB	1,231 TB w/ 336 7.72TB +	14.4 TB w/ 12 HDD	1,245 TB
AIX® rPerf Range	N/A	N/A	N/A	N/A
IBM i® CPW Range	N/A	N/A	N/A	N/A
Capacity on Demand	N/A	N/A	N/A	N/A
Warranty, base service level [5]	3-yr 9x5, next business day	3-yr 9x5, next business day	3-yr 9x5, next business day	3-yr 9x5, next business day
Max partitions	240	480	N/A	480
IBM i level	N/A	N/A	N/A	N/A
AIX level	N/A	N/A	N/A	N/A
Linux support [10]	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	Ubuntu 14.04*	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL
PowerKVM™	Optional	Optional	N/A	Optional
PowerVM™	Optional	Optional	N/A	Std
Systems Director Editions (w/ VMControl™)	Optional	Optional	N/A	Optional
Machine type – model	8247-21L	8247-22L	8247-42L	8246-42L

1. IBM Manufacturing requires one x8 PCIe slot must contain an Ethernet LAN adapter. Adapter is available for client use
2. Use of expanded function storage backplane uses one PCIe slot in 2U servers and optionally uses a PCIe slot in 4U servers
3. Backplane provides dual high performance SAS controllers with 1.8   GB write cache expanded up to 7.2GB with compression plus Easy Tier capability plus two SAS ports for running an EXP24S drawer. SAS ports are optional on a 4U server.
4. 4-core Power S814 maximum capacity disk drive in system unit is 300GB. Or 387 GB SSD can be used for a higher capacity in the system unit.
5. Warranty and base service level are USA definitions and may vary in other countries
6. When no GPU installed
7. Number shown is the client usable slots after deducting the optical cable adapters required in CEC to connect the maximum number of PCIe I/O Drawers
8. Not available in PowerKVM environment
9. Not available in OPAL Bare-metal environment
10. See other documentation for more specifics. For example: SLES 11 or 12, REHL 6.6 or higher, Ubuntu 14.04 or higher, etc.

* Or later

See **POWER8 Facts and Features document for information on Power LC servers**

Power Enterprise Systems **(Cloud Models)**	**Power E850C**	**Power E870C**	**Power E880C**
System package	4U, 19" rack	5U / node, 19" rack 2U system control unit	5U / node, 19" rack 2U system control unit
Number of system nodes	1	1 or 2	1, 2, 3 or 4
# of processor sockets	2, 3 or 4	4 or 8	4, 8, 12 or 16
POWER8 Processor Options GHz : # of cores	3.65 GHz : 24, 36 or 48 3.95 GHz : 20, 30 or 40 4.22 GHz: 16, 24 or 32 Min 8, 10, 12 cores active (25% of max config)	4.02 GHz : 32 or 64 Min 8 cores active	4.35 GHz : 32,64, 96, or 128 4.19 GHz : 40, 80, 120 or 160 4.02 GHz: 48, 96, 144, 192 Min 8 cores active
Min - Max memory (min % active) 1600 MHz DDR3/DDR4 CDIMMs	128 GB – 4TB (50%)	256 GB - 16 TB (50%) Max 8TB per system node	256 GB - 32 TB (50%) Max 8TB per system node
System node disk/SSD bays	8 SFF (2.5") + 4 SSD (1.8")	N/A - Use EXP24SX / EXP12SX or SAN	N/A - Use EXP24SX / EXP12SX or SAN
System node Gen3 PCIe x16 slots	Up to 11 slots: 3 x8 slots & up to 8 x16 slots	16 slots with two nodes 8 per node	32 slots with four nodes 8 per node
Max PCI3 Gen3 I/O drws	4 (1 per socket)	8 (4 per node)	16 (4 per node)
Max PCIe slots: System node plus Gen3 PCIe I/O drawers	51	96 (all in PCIe I/O drawer)	192 (all in PCIe I/O drawer)
Max EXP24SX / EXP12SX SAS Storage Enclosures	64	128	168
Max SAS bays for disk or SSD	1536	3072	4032
Max total system TB with 1.8 TB drives	2,779 TB	5,529 TB	7,257 TB
AIX rPerf Range	168 – 640	674 – 1,349	716 – 3,905.8
IBM i CPW Range	N/A	359,000 – 711,000	381,000 – 2,069,000
Capacity on Demand options	CUoD, Elastic, Utility, Trial COD for processor & memory	CUoD, Elastic, Utility, Trial for processor & memory	CUoD, Elastic, Utility, Trial for processor & memory,
Power Enterprise Pools with mobile activations	No	Yes, with Power 770 (9117-MMD), E870, E880C and other E870C Yes with Power 780 (9117-MHD), 795, E880, E880C and other E870C	Yes, with Power 770 (9117-MMD), E870, E870C and other E880C Yes with Power 780 (9117-MHD), 795, E880, E870C and other E880C
Power Integrated Facility for Linux	Yes	Yes	Yes
Warranty & Base Service Level [e]	3yr 24x7 service included [e, x]	1-yr 24x7, 4-hour service objective	1-yr 24x7, 4-hour service objective
Max partitions	960	1000	1000
IBM i level	N/A	7.1, 7.2, 7.3*	7.1, 7.2, 7.3 *
AIX level	6.1, 7.1, 7.2 *	6.1, 7.1, 7.2 *	6.1, 7.1, 7.2 *
Linux support [10]	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL	BE: RHEL, SLES LE: Ubuntu, SLES, RHEL
PowerVM Enterprise	Std	Std	Std
Machine type - model	8408-44E	9080-MME	9080-MHE

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e - Warranty and base service level are USA definitions and may vary in other countries

x - Power E850 is provided with a one year standard warranty. For convenience, IBM has provided two additional years of extended warranty services plus an upgrade to 24x7 coverage (may vary by country) to make this offering.

10 – See other documentation for more specifics. For example: SLES 11 or 12, REHL 6.6 or higher, Ubuntu 14.04 or higher, etc

*   Or later

See POWER8 Facts and Features document for information on non-cloud models, E850, E870, E880   .

RAS and Other Features

	Power S812L S222L	Power S812 S822	Power S814 S824	Power S824L	Power E850C	Power E870C E880C
Redundant / Hot Swap Fans & Blowers	Std	Std	Std	Std	Std	Std
Hot Swap Disk/SSD Bays	Std	Std	Std	Std	Std	N/A
Hot Swap DVD Bay	Std	Std	Std	Std	Std	Std
Hot Swap PCIe Adapters	Std #	Std	Std	Opt†	Std	Std
Concurrent Firmware Update	Std #	Std	Std	Std #	Std	Std
Redundant / Hot Swap Power Supplies	Std	Std	Std	Std	Std	Std
Dual disk controllers (split backplane for AIX, IBM i, Linux)	Opt	Opt	Opt	Opt†	Std	N/A
Processor Instruction Retry	Std	Std*	Std	Std*	Std	Std
Alternate Processor Recovery	Std#	Std*	Std#	Std#	Std	Std
Storage Keys (AIX only)	N/A	Std	Std	N/A	Std	Std
Dynamic Processor Sparing with CUoD	N/A	N/A	N/A	N/A	Std	Std
PowerVM Live Partition Mobility / Live Application Mobility	Opt	Opt	Opt	Opt†	Opt	Opt
PowerVM Active Memory™ Sharing[2]	Opt	Opt	Opt	Opt†	Std	Std
Dual VIOS	Opt #	Opt	Opt	Opt†	Opt	Opt
Active Memory Expansion for AIX	N/A	Opt	Opt	N/A	Opt	Opt
Active Memory Mirroring for Hypervisor	N/A	N/A	N/A	N/A	Std	Std
Chipkill Memory with Dynamic Bit Steering	Std	Std	Std	Std	Std	Std
PowerVM Management (IVM / HMC)	I/H #	I/H	I/H	I/H #†	I/H	H
Redundant Service Processors	N/A	N/A	N/A	N/A	N/A	Std
Dynamic Service Processor Failover	N/A	N/A	N/A	N/A	N/A	Std
Redundant System Clocks	N/A	N/A	N/A	N/A	N/A	Std
Dynamic System Clock Failover	N/A	N/A	N/A	N/A	N/A	Std
Power Systems Enterprise Pools	N/A	N/A	N/A	N/A	N/A	Opt
Power IFL	-	N/A	N/A	-	N/A	Opt

-- Not available for PowerKVM™ environment
†–when no GPU installed
* Not applicable for 1-core S812

See the IBM Power Systems Facts and Features: Enterprise and Scale-out Systems document (POB03046-USEN) for more detailed information

For benchmark results, see   http://www.ibm.com/systems/power/hardware/reports/system_perf.html

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