IBM Power E1080
Datasheet

Engineered for agility

The core applications, data stores and processes that run your business simply cannot go down, no matter what. With accelerated digital adoption, the demands on these applications are increasing, along with security risks. Your IT needs to be modernized to meet the challenges of today while staying ahead of your needs. This requires an infrastructure platform that efficiently scales to meet demand, protects your applications and data with pervasive and layered defense, and enables you to transform data into insights quickly.

Highlights

- Scale efficiently with 2.5X performance per core than x86 Xeon platinum[2]

- Lower energy consumption by 33% for the same workload over Power E980[3]

- Protect data with 2.5X faster AES encryption of data at rest and in use[6]

- New in-core defense for Return-Oriented Programming attacks

- Support for Post Quantum Encryption and Fully Homomorphic Encryption

- Run AI where the data resides with 5 times faster in-core inferencing[7]

IBM® Power® E1080, the first in a generation of servers built on Power10 processor, is engineered for agility. It delivers on key enterprise needs

- Respond faster to business demands with world record performance scalability for core enterprise workloads and frictionless hybrid cloud experience

- Protect data from core to cloud with accelerated and new in-core defense against Return- Oriented Programming attacks

- Streamline insights and automation with in-core AI inferencing and machine learning

- Maximize reliability and availability with Open Memory Interface (OMI) attached memory DIMMs

All enquiries online@scc.com
Contact our team 0121 766 7000
Visit scc.com

Respond faster to business demands

Power E1080 delivers scalability and efficiency.

- World record SAP SD-two tier benchmark with 8 sockets that beats the best 16 socket results of x86 environment[1]

- 2.5X performance per core than Intel Xeon Platinum[2]

What if you can get this performance with a lower energy footprint? With the revolutionary 7nm Power10 processor, workloads that run on a Power E1080 will consume 33% lower energy than Power® E980[3].

Protect data from core to cloud

With data residing in an increasingly distributed environment, you cannot set a perimeter to it anymore. This reinforces the need for layered security across IT stack. Power10 family of servers introduces a new layer of defense with transparent memory encryption[4]. All data in memory remains encrypted when in transit between memory and processor. Since this capability is enabled at the silicon level, there is no additional management setup and performance impact. Power10 also includes 4X more crypto engines in every core compared to Power9[5] to accelerate encryption performance across the stack. For example, the widely used AES encryption performance is improved by 2.5X[6] over Power E980.

With these innovations along with new in-core defense for Return-Oriented Programming attacks and support for Post Quantum Encryption and Fully Homomorphic Encryption, IBM Power E1080 makes the server platform that is among the most secure even better.

Streamline insights and automation

As more AI models are deployed in production, the challenges around the AI infrastructure are coming to the fore. The typical AI deployment involves sending data from an operational platform to a GPU system. This usually induces latency and may even increase security risks with more data in network. Power10 addresses this challenge with in-core AI inferencing and machine learning. The Matrix Math Accelerator (MMA) in Power10 core provides the computational strength (at multiple levels of precision) and data bandwidth to tackle demanding AI inferencing and machine learning. Power E1080 delivers 5X faster AI inferencing per socket over Power E980[7].

Maximize reliability and availability

Power has been leading the industry in infrastructure reliability with 25% lower downtime vs. comparable high-end server[8]. With Power E1080 we are making the most reliable server platform in its class8 even better with advanced recovery, diagnostic capabilities, and Open Memory Interface (OMI) attached advance memory DIMMs. The continuous operations of today's in-memory systems depend on memory reliability because of their large memory footprint. Power10 DIMMs deliver 2X better memory reliability and availability than industry standard DIMMs.[9]

All enquiries online@scc.com
Contact our team 0121 766 7000
Visit scc.com

IBM Power E1080 at a glance

IBM Power E1080 at a glance

System configurations	Model 9080-HEX	
Configuration options	One System Node	System maximum
Microprocessors	4 x Power10 processors 10, 12 or 15 cores each	16 x Power10 processors 10, 12 or 15 cores each
Threads per core	Eight	
Cores	40, 48 or 60	160, 192 or 240
Level 2 (L2) cache per core	2 MB	
Level 3 (L3) cache per processor	Up to 120MB shared L3 cache (8 MB/core)	
Memory bandwidth per processor	409 GB/s	
Enterprise Memory	64 DIMM slots Up to 16 TB buffered DDR4 CDIMMs	256 DIMM slots Up to 64 TB buffered DDR4 CDIMMs
USB Ports	USB PCIe adapter must be used for enabling USB access 1 x USB 3.0 in System Control Unit	
Internal storage	4 slots for non-volatile memory express	16 slots for non-volatile memory express (NVMe U.2)
DVD	External DVDs (Optional) may be attached via USB	
Integrated PCIe adapter slots	8 PCIe Gen5	32 PCIe Gen5
PCIe I/O Expansion Drawers	Up to 4 (12 PCIe adapter slots each)	Up to 16 (12 PCIe adapter slots each)
System Control Unit	1	
Flexible Service Processors	2	
HMC ports	2	
POWER Hypervisor™	PowerVM Enterprise integrated	

All enquiries online@scc.com
Contact our team 0121 766 7000
Visit scc.com

IBM Power E1080 at a glance

Reliability, Availability, and Serviceability (RAS) features	• First Failure Data Capture • Processor instruction retry • L2 and L3 Cache ECC protection with cache line-delete • Core Checkstops • Dynamic processor deallocation • Chipkill protection for x4 DDIMMs, with DRAM sparing • Processor fabric and memory buses retry with data lane sparing and ½ bandwidth mode • High speed internode cables, with passive components and advanced fault isolation diagnostic capabilities • Guided FSP & SMP cable installation • Concurrent repair of external SMP cable • Redundant phase and spare phase for voltage regulator modules (VRMs) supplying processors • Spare Power Management Integrated Circuit (PMIC) for on DDIMM power regulation • Redundant system clocks with dynamic failover • Redundant, hot-swappable power supplies and cooling fans Concurrent add/repair of I/O drawers • Extended error handling on PCIe slots Hot-plug/blind-swap PCIe adapter slots • Concurrent repair of Op-Panel • Concurrent repair of Time of Day Battery • Selective dynamic firmware updates
Operating systems	AIX, IBM i and Linux for Power
Power requirements	Operating voltage: 200 to 240V AC
System dimensions	

	System Control Unit	System Node	PCIe Expansion Drawer
Width	445.6 mm (17.54 in.)	445 mm (17.51 in.)	482 mm (19 in.)
Depth	779.7 mm (30.7 in.)	866.95 mm (34.13 in.)	802 mm (31.6 in.)
Height	86 mm (3.39 in.)	217.25 mm (8.55 in.)	173 mm (6.8 in.)
EIA units	2 EIA units (2U)	5 EIA units (5U)	4 EIA units (4U)

Warranty	1 year, 24x7 same day response; onsite (varies by country) IBM Power Expert Care Warranty Service Upgrade and additional Maintenance Services options are available.

For more details on the specifications, please refer IBM Power E1080 Facts and Features

[1] IBM Power E1080; two-tier SAP SD standard application benchmark running SAP ERP 6.0 EHP5; Power10 3.55-4.0 GHz processor, 4,096 GB memory, 8p/120c/960t, 174,000 SD benchmark users (955,050 SAPS), AIX 7.2, DB2 11.5. Certification # 2021059. All results can be found at sap.com/benchmark Valid as of 8/27/21

HPE Superdome Flex; two-tier SAP SD standard application benchmark running SAP ERP 6.0 EHP5; Intel Xeon Platinum 8280L 2.7 GHz, 16p/448c/896t, 152,508 SD benchmark users (877,050 SAPS), running Windows Server 2019 and Microsoft SQL Server 2019, Certification # 2020029.

[2] SPECInt

Math: (Power10 2170 peak /120 core)/(1620 peak/224 cores)=2.5

Max System SPECint

IBM Power E1080 (3.55-4,0 GHz, Power10) 120 Cores, 8 CPUs, SPECint Score 2170, per CPU Score 271.25, per core score

18.08
Date: Audit submitted
Hewlett Packard Enterprise Superdome Flex 280 (2.90 GHz, Intel Xeon Platinum 8380H), 224 Cores, 8 CPUs Intel Xeon Platinum 8380H Speed 2900 MHz
SPECint Score 1620.00, per CPU Score 202.50
per Core Score 7.23 Date: Feb-2021
Link: CPU2017 Integer Rate Result: Hewlett Packard Enterprise Superdome Flex 280 (2.90 GHz, Intel Xeon Platinum 8380H) (test sponsored by HPE) (spec.org) ***

[3] Power9 (12c) is 5081 rPerf @ 16,520 Watts (0.31 rPerf/Watt),

Power10 (15c) is 7998 rPerf @ 17,320 Watts (0.46 rPerf/Watt). 0.46 / 0.31 = 1.48 More rPerf/Watt

[4] Transparent Memory encryption means that the capability does not need any user configuration

[5] POWER9 core has one AES/SHA crypto engine per 4 threads. Power 10 core has 4 crypto engines per 4 threads

SCC | IBM

All enquiries online@scc.com
Contact our team 0121 766 7000
Visit scc.com

[6] AES-256 in both GCM and XTS modes runs about 2.5 times faster per core when comparing Power10 E1080 (15-core modules) vs. Power9 E980 (12-core modules) according to preliminary measurements obtained on RHEL Linux 8.4 and the OpenSSL 1.1.1g FIPS library

[7] 5× improvement in per socket inferencing throughput for large size 32b floating point inferencing models from Power9 E980 (12-core modules) to Power10 E1080 (15-core modules)

Based on IBM testing using Pytorch, OpenBLAS on the same BERT Large with SqUAD v1.1 data set

[8] Based on "ITIC 2020 Global Server Hardware, Server OS Reliability Report", April 2020

[9] Based on IBM's internal analysis of the IBM product failure rate of DDIMMS vs Industry Standard-DIMMS

Why IBM?

Companies want IT infrastructure to help them be agile and flexible, efficient, and cyber resilient. IBM® Power® E1080 is designed to address these requirements and enables you to -

- Scales efficiently with 2.5X performance per core than Intel Xeon Platinum[2]

- Lowers energy consumption by 33% for the same workload over Power E980[3]

- Protects data with 2.5X faster AES encryption of data at rest and in use[6]

- New in-core defense for Return-Oriented Programming attacks

- Runs AI where the data resides with 5 times faster in-core AI inferencing[7]

Next Steps

IBM Power E1080 product page

For more information

To learn more about the IBM Power E1080, please contact your IBM representative or IBM Business Partner, or visit the product page. Additionally, IBM provides numerous payment options to help you acquire the technology you need to grow your business.

We provide full lifecycle management of IT products and services, from acquisition to disposition. For more information, visit IBM Global Financing.

All enquiries online@scc.com
Contact our team 0121 766 7000
Visit scc.com