

IBM Power E1080



Product carbon footprint



IBM is committed to environmental leadership in all its business activities, from operations to the design of its products and use of its technology. As an expression of that commitment, we provide a product’s carbon footprint (PCF) for representative products. A product carbon footprint can be used to estimate the full life cycle emissions of a product and identify areas for the greatest greenhouse gas reduction opportunity.¹

IBM Power E1080 configuration	
Model	E 1080-9080-HEX
Cores	48
Active Cores	36
Processor	Power 10
Clock speed	3.6 GHz typical to 4.15 GHz Max
Configured memory	2048 GB
Features	1x System controller unit
	3x Generic PCI card
	1x Generic solid state disk

Table 1: Typical product configuration

1. Greenhouse Gas Protocol. Product Life Cycle Accounting and Reporting Standard.
https://ghgprotocol.org/sites/default/files/standards/Product-Life-Cycle-Accounting-Reporting-Standard_041613.pdf

The estimate

146,000 kg CO₂ eq

Will be used over the course of the IBM Power E1080-9080-HEX lifecycle when used in the EU for 5 years

This PCF estimate was produced using the Product Attributes to Impact Algorithm (PAIA) model, developed by the Massachusetts Institute of Technology's Materials Systems Laboratory and partners, Version 1.3.1, December 17, 2021, copyright by the ICT Benchmarking collaboration including the Massachusetts Institute of Technology's Materials Systems Laboratory and partners.

All estimates of carbon footprint are uncertain. IBM reports the 95th percentile of the carbon footprint estimate to reflect that uncertainty. For this product, that estimate has a mean of $60,800 \pm 34,600$ kg CO₂ eq over a use period of 5 years.



Impact by phases of the product's lifecycle

The PCF for server equipment is driven almost entirely by the use phase which is highly variable based on the electricity generation source used to power the product, the expected use life of the product and the power profile. The analysis for this product shows that **84.8%** of its carbon footprint occurs in the use phase. IBM focuses on improving our product energy efficiency and on providing mechanisms for our clients to measure, in real-time, the actual energy consumption of the product.

Figure 1 shows the estimated contribution for the individual phases of the product's lifecycle over a use period of 5 years, reported as the 95th percentile for each phase.

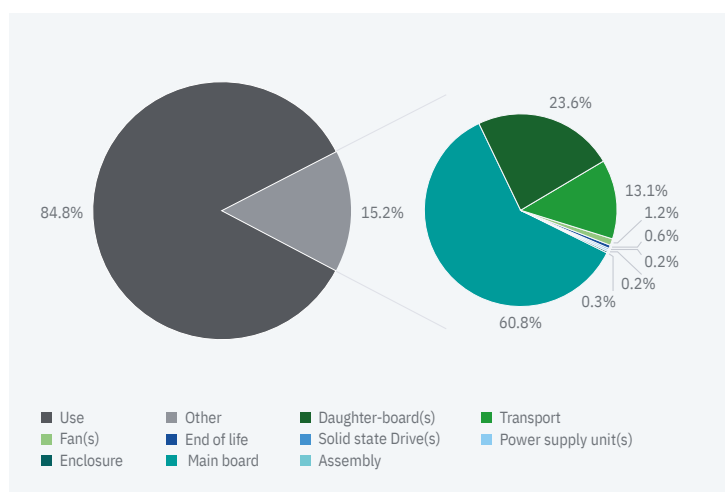


Figure 1: Carbon footprint impact by phases of the lifecycle for Power E1080 typical product configuration using the PAIA model; 84.8% occurs in the use phase and the remaining 15.2% is broken out by component contribution.

Figure 2 shows the uncertainty in the most significant aspects of the product's carbon footprint. Only categories that contribute more than 2% to the total product carbon footprint are shown for clarity.

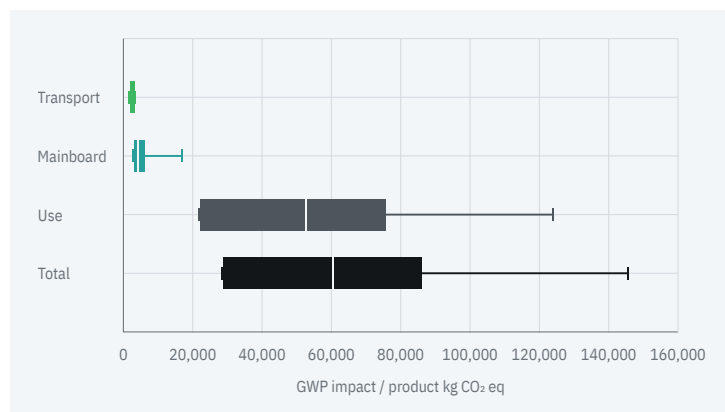


Figure 2: Uncertainty in the PCF estimate for Power E1080 typical product configuration; that estimate has a mean of $60,800 \pm 34,600$ kg CO₂ eq over a use period of 5 years.

PAIA input assumptions

The PCF assumes a typical configuration of the IBM Power E1080 as described in Table 1. The numbers for your specific configuration might be different. The data used in the PAIA server tool is provided in Table 2.

Limitations of PAIA

PAIA results represent a streamlined Life Cycle Assessment (LCA). While the product carbon footprint provides a high-level estimate of the emissions associated with the product, it should not be used for emissions inventory, formal carbon foot printing exercises or comparing products. LCA results are strongly influenced by the assumptions made by the analyst; if those assumptions are inconsistent, comparisons are not likely meaningful. Furthermore, PAIA may not be compliant with the primary data requirements of some LCA standards. The results from the PAIA tools are liable to change over time as the methodology is improved and data is updated.

IBM Power10 - scalable, sustainable compute

52% ↓

Lower energy consumption for the same workload in Power E1080 vs Power E880C.²

2.5X ↑

Performance per core than x86 Xeon Platinum.³

99% ↑

Of paper and wood-based packaging used are from sustainably-managed forests.⁴

2 Power8 (12c) is 3679 rPerf @ 16,600 Watts (0.22 rPerf/Watt), Power10 (15c) is 7998 rPerf @ 17,320 Watts (0.46 rPerf/Watt); 0.46 / 0.22 = 2.06 more rPerf/Watt, delivering 2X energy efficiency
3 Comparison based on single 8-socket systems (IBM Power E1080 3.55 - 4 GHz, 120 core, AIX and Superdome Flex 280 2.90 GHz, Intel Xeon Platinum 8380H) using published results at www.spec.org/cpu2017/results/ as of 02 September 2021. SPEC® and the benchmark names SPECrate®2017_int_base and SPECrate®2017_int_peak are registered trademarks of the Standard Performance Evaluation Corporation. For more information about SPEC CPU 2017, see www.spec.org/cpu2017/.
4 https://www.ibm.com/ibm/environment/annual/IBMEEnvReport_2020.pdf

Product configuration and PAIA input information	
Server type	Rack
Server quantity	1
Number of PSU	4
Number of fans	5
Server weight	86.2 kg
Packaging weight	22.2 kg
Motherboard	
CPU	4
Memory	2 TB
Storage	
Number of SDD	1
Number of HDD	0
Use	
Product lifetime	5 years
Yearly energy consumption	20700 kWh
Location	
Assembly location	US
Use location	EU
Transportation	
To country of use	
by air	9700 km
Within country of use	
by truck	150 km
End of life	
Fraction recycled	0.97
Fraction shredded recycling	0.00
Note: Power consumption data is obtained using the IBM Systems energy estimator , a web-based tool for estimating power requirements for IBM systems. This tool estimates typical power requirements for a specific system configuration under normal operating conditions. The power consumption assumes that the product operates with a utilization rate of 30% 24 hours a day, 365 days a year for its product lifetime.	

Table 2: Product configuration and PAIA input information



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