Hewlett Packard Enterprise

HPE PRODUCT CARBON FOOTPRINT

HPE ProLiant DL580 Gen10 server

At HPE, we recognize the imperative to minimize our industry's environmental footprint, as well as the opportunity to help position other businesses and industries to enable a low-carbon economy. As we strive to increase compute power, drive efficiency, and lower the carbon intensity of our solutions, we must first start with quantifying the carbon footprint of our products. The product carbon footprint (PCF) sums up the total greenhouse gas emissions generated by a product over the various stages of its lifecycle. At HPE, we calculate the emissions associated with the extraction, production, and transportation of our products using the Product Attribute to Impact Algorithm (PAIA).[1] Read more about our approach to the circular economy.
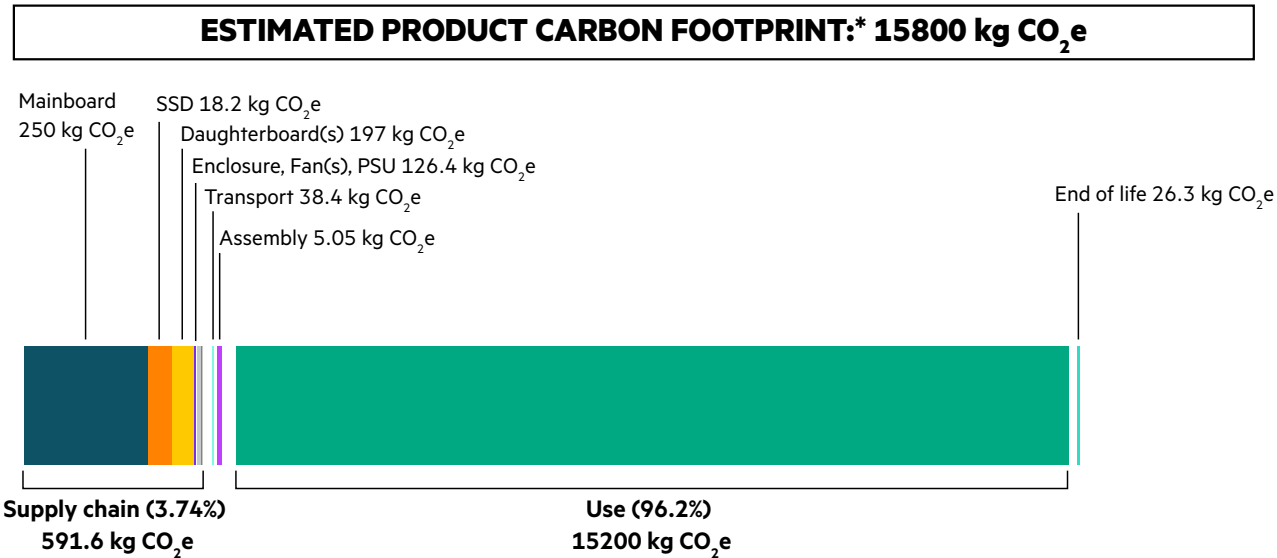
PRODUCT CARBON FOOTPRINT

The goal of the PCF is to identify the lifecycle phases of the product and where the impact is greatest. This information is critical to manufacturers, like HPE, in order to manage environmental and social programs that will have the most impact across the life of the product.

It is essential to emphasize, as PAIA points out in its instructions,[2] that this product carbon footprint data sheet was not designed to compare different results from different suppliers.

[1,2] The PAIA model was developed by the Massachusetts Institute of Technology's Materials Systems Laboratory and partners. PAIA is an approach to streamlined lifecycle analysis (LCA) that aims to provide an efficient and cost-effective estimate of the carbon impact of a product class, including notebooks, desktops, LCD monitors, and televisions. PAIA is primarily a methodology, which as an example has been applied through a model, known as the PAIA breadboard tool. Read more about the intended uses and limitations of the PAIA model here.

PRODUCT IMPACT BY LIFECYCLE STAGE

ESTIMATED PRODUCT CARBON FOOTPRINT:* 15800 kg CO$_2$e

Mainboard 250 kg CO$_2$e
SSD 18.2 kg CO$_2$e
Daughterboard(s) 197 kg CO$_2$e
Enclosure, Fan(s), PSU 126.4 kg CO$_2$e
Transport 38.4 kg CO$_2$e
Assembly 5.05 kg CO$_2$e
End of life 26.3 kg CO$_2$e

Supply chain (3.74%)
591.6 kg CO$_2$e

Use (96.2%)
15200 kg CO$_2$e

*All estimates of carbon footprint are uncertain. HPE reports the 95th percentile of the carbon footprint estimate to reflect that uncertainty. The mean carbon footprint for this product is 15800 kg CO$_2$e with a standard deviation of 8920 kg CO$_2$e. The standard deviation is a measure of variation around the mean and is an indicator of uncertainty.

FIGURE 1. Breakdown of estimated climate change impact by lifecycle stage expressed as climate emissions, measured in kg CO$_2$e

HPE ProLiant DL580 Gen10 server[3]

PRODUCT INPUT INFORMATION

HPE ProLiant DL580 Gen10 server: Supporting the latest 2nd generation of Intel® Xeon® Scalable processors, the HPE ProLiant DL580 Gen10 server offers greater processing power plus the intelligence and simplicity of automated management.

TABLE 1. Configuration inputs used to estimate the product carbon footprint[4]

| Lifecycle stage	Component	Value
Supply chain	Server type	Rack
	Product weight	28.12 kg
	Assembly location	EU
	CPU quantity (mainboard)	1
	DRAM capacity (mainboard)	16 GB
	SSD quantity (storage)	1
Use	Product lifetime	4 years
	Energy demand (yearly TEC)	2644.35 kWh
	Use location	EU
End of life	Percentage recycled	95%

[3] QuickSpecs: HPE ProLiant DL580 Gen10 server

[4] The inputs for this calculation contain product attributes using the highest-selling configurations for FY20. Due to the high configurability and customization of HPE servers, we cannot provide custom PCFs unless customers provide exact configurations. All power consumption data is taken from HPE's Power Advisor tool, assuming the server is operated at 30% of potential maximum utilization for 24 hours a day, 365 days a year, and for 4 years.

CARBON EMISSIONS EQUIVALENCIES

To help our customers and stakeholders contextualize these product carbon footprint values, we have calculated approximate equivalencies. These are estimates and should not be used for emission inventory or formal carbon footprinting exercises.
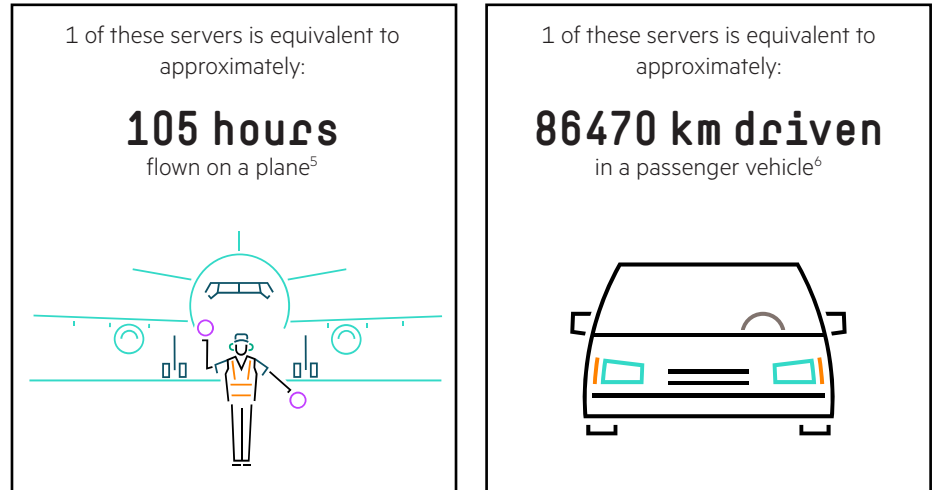
FIGURE 2. Carbon emissions equivalencies, based on the National Energy Foundation's Simple Carbon Calculator, 2017; calculated using conversions from kg CO_2e

For more information about how to use this data or analysis, contact HPE Sustainability and IT Efficiency Technologists at lpsalessupport@hpe.com.

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[5] This calculation assumes a passenger airline flying at 850 km/hr. Calculation provided by National Energy Foundation's Simple Carbon Calculator. carbon-calculator.org.uk/

[6] This calculation assumes an average UK passenger vehicle as defined by the National Energy Foundation's Simple Carbon Calculator. Standard conversion rate of 1 mile = 1.609 km has been applied in calculation.

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