# Hitachi Advanced Server HA825 G3

## Carbon Footprint Datasheet

This document provides at-a-glance information about the Hitachi Advanced Server HA825 G3.

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# Hitachi Advanced Server HA825 G3 product carbon footprint

Hitachi recognizes the imperative to help minimize our environmental footprint and it is a core part of our strategy. This product carbon footprint (PCF) sums up the total greenhouse gas (GHG) emissions generated over this product's lifecycle. The product lifecycle includes manufacturing, transportation, use, and end of life. Read more about our approach to the circular economy.

This PCF uses Product Attribute to Impact Algorithm (PAIA) version 1.4.0 for manufacturing and end of life GHG emissions. PAIA is a streamlined lifecycle assessment (LCA) tool developed by the Massachusetts Institute of Technology's Materials Systems Laboratory. Read more about the intended uses and limitations of the PAIA model from "PAIA Intended Use" document.

The following table lists configuration inputs used to estimate the PCF.

| Lifecycle stage | Component | Base | Mainstream | Performance |
|---|---|---|---|---|
| Manufacturing | CPU | 1x AMD EPYC 9124 3.0GHz 16-core | 2x AMD EPYC 9354 3.25GHz 32-core | 2x AMD EPYC 9554 3.1GHz 64-core |
| | DRAM | 128 GB | 512 GB | 1024 GB |
| | Network adapter | 1 | 2 | 2 |
| | Storage controller | 1x MR216i-o | 1x MR416i-p | 0 |
| | HDD/SSD | 2x 2.4TB SAS 12G MC 10K SFF BC | 4x 3.2TB NVMe | 6x 6.4TB NVMe |
| | Power supply | 2x 800W Flex Slot Platinum | 2x 1600W Platinum | 2x 1600W Platinum |
| | Product weight | 36.72 kg | 36.72 kg | 36.72 kg |
| Use | Product lifetime | 4 years | 4 years | 4 years |
| | PUE | 1.55 | 1.55 | 1.55 |
| | Yearly energy (TEC) | 1599 kWh | 3434 kWh | 4414 kWh |

Yearly energy assumes the server is operated at an average of 30% utilization 24 hours a day and 365 days a year. Power usage effectiveness (PUE) is sourced from Uptime Institute Global Data Center Survey Results 2022.

# Product carbon footprints

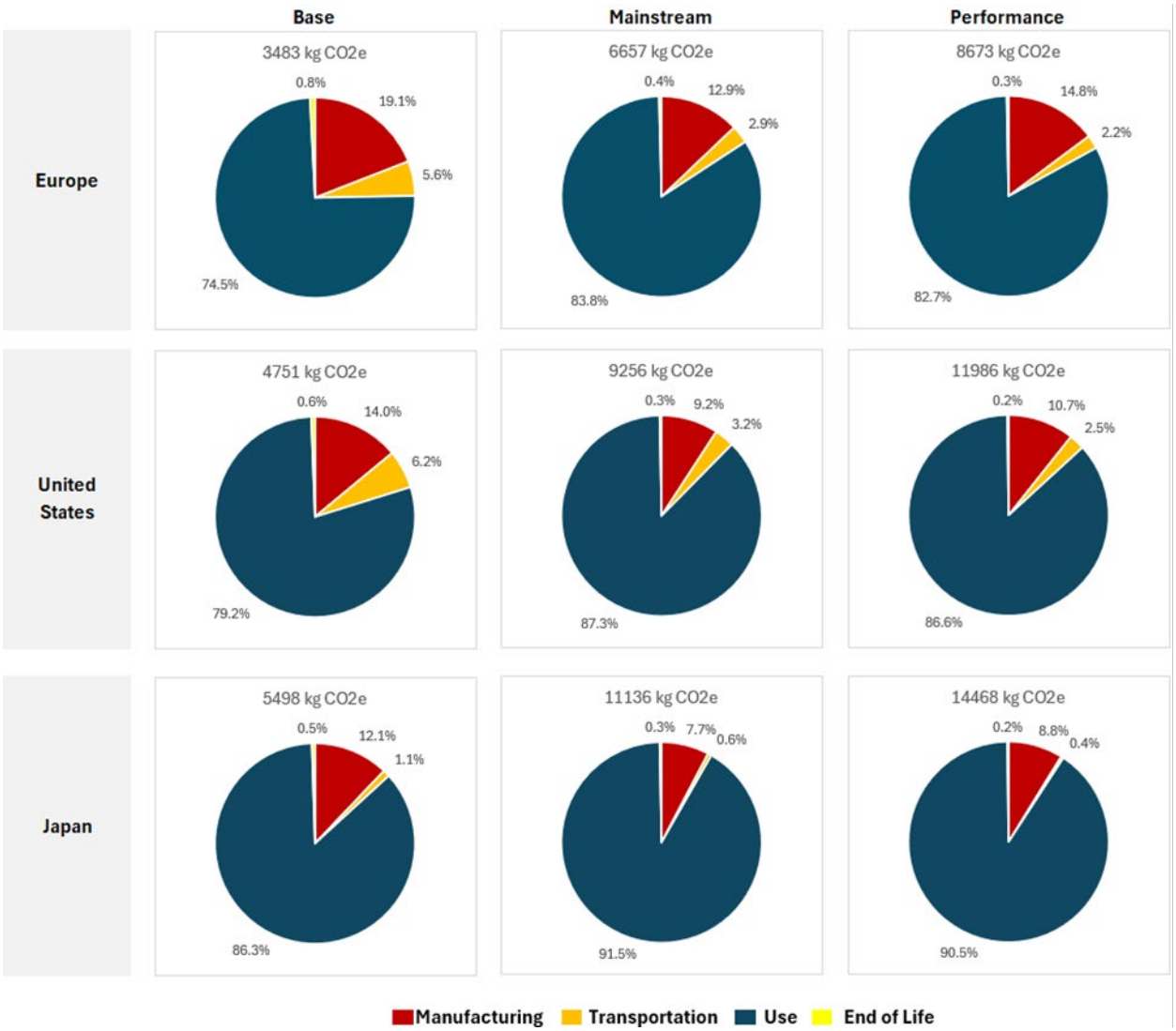
The following table lists the GHG emissions by product lifecycle stage in kg $CO_2e$.

| Configuration | Country of use | Manufacturing | Transportation | Use | End of life | Total | Std. deviation |
|---|---|---|---|---|---|---|---|
| Base | Europe | 665 | 194 | 2596 | 28 | 3483 | 1649 |
| | United States | 667 | 295 | 3760 | 28 | 4751 | 346 |
| | Japan | 664 | 62 | 4743 | 28 | 5498 | 485 |
| Mainstream | Europe | 859 | 194 | 5576 | 28 | 6657 | 3490 |
| | United States | 856 | 295 | 8077 | 28 | 9256 | 772 |
| | Japan | 858 | 62 | 10188 | 28 | 11136 | 1078 |
| Performance | Europe | 1282 | 194 | 7169 | 28 | 8673 | 4591 |
| | United States | 1278 | 295 | 10385 | 28 | 11986 | 999 |
| | Japan | 1279 | 62 | 13099 | 28 | 14468 | 1390 |

Hitachi reports the mean value of the carbon footprint estimates with a standard deviation. Due to high customization of Hitachi servers, the GHG emissions can vary by configuration, country, and utilization.

Hitachi calculates the transportation and use stage GHG emissions. Transportation uses the 2023 emissions intensity from GHG Emission Factors Hub combined with the total product packaging weight, shipping mode, and distance traveled. Use stage GHG emissions use the latest emissions intensity from ember-climate.org at the time of publication.

The following figure shows how manufacturing, transportation, use, and end of life contribute to the PCF across different regions. PCF is calculated by region and type in kg $CO_2e$.



# How to customize use stage emissions

## Step 1: Collect data

If you know that your server is running from clean energy, the use stage GHG emissions is zero. Otherwise, you can customize the use GHG emissions to a specific grid emissions intensity, server power, power duration, and PUE.

- Grid emissions intensity (grams of $CO_2e$ per kWh) is collected from a credible source such as your electric provider, epa.gov/egrid, eea.europa.eu, or an aggregation service such as ember-climate.org just to name a few.
- Server power (kW) can be read directly from the server using the iLO and Redfish RESTful API. For specific information about automating tasks using the iLO RESTful API, contact customer support.
- Power duration (hours) is the multiplication of the product lifetime (years), 365 days, 24 hours. The days and hours can be customized to match the specific usage.
- PUE is optional for this calculation based on the LCA scope. PUE is calculated by dividing the total facility energy by the IT equipment energy.

## Step 2: Calculate the emissions

(Use GHG emissions) = (Grid emissions intensity) x (server power) x (power duration) x (PUE)

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