Xserve

Environmental Report

Model MB449

Date introduced

April 7, 2009

Environmental Status Report

Xserve is designed with the following features to reduce environmental impact:

- BFR–free
- PVC-free (internal cables)
- Highly recyclable aluminum and stainless steel enclosure
- High-efficiency power supply (89% average)

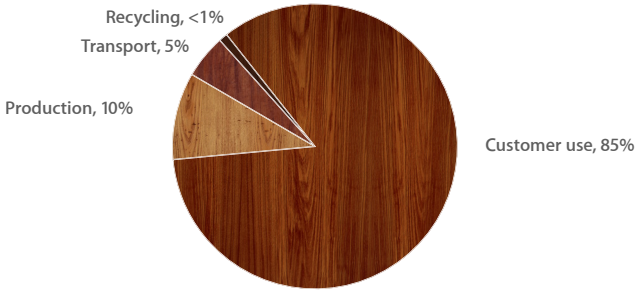
Apple and the Environment

Apple believes that improving the environmental performance of our business starts with our products. The careful environmental management of our products throughout their life cycles includes controlling the quantity and type of materials used in their manufacture, improving their energy efficiency, and designing them for better recyclability. The information below details the environmental performance of the Xserve as it relates to climate change, energy efficiency, restricted substances, and material efficiency.

Climate Change

Greenhouse gas emissions have an impact on the planet's balance of land, ocean, and air temperature. Most of Apple's corporate greenhouse gas emissions come from the production, transport, use, and recycling of its products. Apple seeks to minimize greenhouse gas emissions by setting stringent design-related goals for material and energy efficiency. The chart below provides the estimated greenhouse gas emissions for the Xserve over its life cycle.

Greenhouse Gas Emissions for Xserve



Total greenhouse gas emissions: 4160 kg CO_2e

Energy Efficiency

Because the largest portion of product related greenhouse gas emissions result from its use, energy efficiency is a key part of each product's design. Apple products use power efficient components and software that intelligently powers them down during periods of inactivity. For instance, the new CPU architecture allows individual cores within the Xserve processors to go into a low-power state when not needed. The result is that Xserve is energy efficient right out of the box.

The table details the power consumed by Xserve in different use modes.

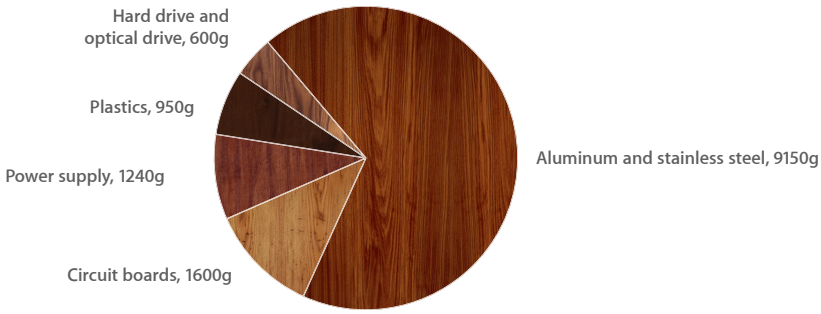
Power Consumption for Xserve

Mode	100V	115V	230V
Off	11.14W	10.81W	11.20W
Sleep	14.26W	13.83W	13.95W
Idle	142.3W	141.1W	140.9W
Power supply efficiency	86%	87%	89%

Material Efficiency

Through efficient design, Apple has created a product with fewer overall parts. The Xserve is not only easy for recyclers to disassemble, but it is also designed in a way to minimize the use of plastic and maximize highly recyclable aluminum and stainless steel. The chart below details the materials used in the Xserve.

Material Use for Xserve



Packaging

The packaging for the Xserve is almost entirely recyclable and is made with a minimum of 35 percent post-consumer recycled content. In addition, 28 percent of the plastic used in the packaging is from 100 percent post-consumer recycled resin. The following table details the materials used in its packaging.

Packaging Breakdown for Xserve (U.S. configurations)

Material	Retail box	Retail and shipping box
Paper (corrugate, paperboard)	4000g	4000g
Expanded polyethylene	1260g	1260g
100% post-consumer recycled ABS	522g	522g
Other plastics	75g	75g

Restricted Substances

Apple has long taken the lead role in restricting harmful substances from its products and packaging. As part of this strategy, all Apple products comply with the strict European Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, also known as the RoHS Directive. Examples of materials restricted by RoHS include lead, mercury, cadmium, hexavalent chromium, and PBB and PBDE brominated flame retardants (BFRs). The Xserve goes even further than the requirements of the RoHS Directive by incorporating the following more aggressive restrictions:

- Brominated flame retardant (BFR)–free
- All internal cables free of polyvinyl chloride (PVC)

Recycling

Through ultra-efficient design and use of highly recyclable materials, Apple has minimized material waste at the product's end of life. In addition, Apple offers and participates in various product take-back and recycling programs in 95 percent of the regions where Apple products are sold. All products are processed in the country or region in which they are collected. For more information on how to take advantage of these programs, visit www.apple.com/environment/recycling/.

Definitions

Greenhouse gas emissions: Estimated emissions are calculated in accordance with guidelines and requirements as specified by ISO 14040 and ISO 14044. Calculation includes emissions from the following life cycle phases contributing to Global Warming Potential (GWP 100 years) in CO_2 equivalency factors (CO_2e).

- **Production:** Includes the extraction, production, and transport of raw materials and the manufacture of the product, as well as product packaging.
- **Transport:** Includes air and sea transportation of the finished product and its associated packaging from the manufacturing site to continental distribution hubs. Transport of products from distribution hubs to the end customer is not included.
- **Use:** User power consumption assumes a four-year period. Consumption patterns are modeled according to European Commission and U.S. Environmental Protection Agency computer eco-design studies. Geographic differences in the power grid mix have been accounted for at a continental level.
- **Recycling:** Includes transportation from collection hubs to recycling centers, and the energy used in mechanical separation and shredding of parts.

Energy efficiency terms: The energy values in this report are based on the ENERGY STAR® Program Requirements. For more information, visit www.energystar.gov.

- **Off:** Lowest power mode of the system when it is shut down. Also referred to as Standby.
- **Idle:** System is on and has completed loading Mac OS X; the attached display is set to its full brightness.
- **Sleep:** Low power state that is entered automatically after 10 minutes of inactivity (default), or by choosing Sleep from the Apple menu. Wake-on-LAN is enabled.
- **Power supply efficiency:** Average of the power supply's measured efficiency when tested at 100 percent, 50 percent, and 20 percent of the power supply's output power with the internal fan off.

Restricted substances: Apple defines a material as BFR-free and PVC-free if it contains less than 900 parts per million (ppm) of bromine and chlorine.