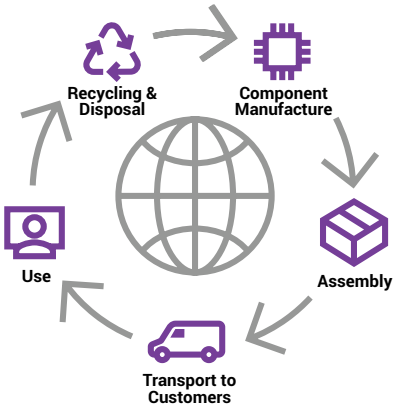
LIFE CYCLE ASSESSMENT OF

SBC 7000



Ribbon is committed to reducing the environmental impacts of our products, covering all stages of the lifecycle. We use lifecycle assessment to find the most significant contributors to the environmental impact of our products and inform our sustainability strategies at the product and corporate level.

What is an LCA?

A life cycle assessment is the compilation and evaluation of the inputs, outputs and potential environmental impacts of a product system throughout its life cycle. (ISO 14040: 2006, sec 3.2.)

Product Chosen

A Ribbon 7000 Session Border (SBC) controller was chosen for this study to support Ribbon engagement with key customers. The 7000 SBC is designed for communications service providers and large enterprises for multimedia communications. The 7000 provides robust network security, sophisticated routing and policy management plus IPv4-IPv6 interworking and built-in media transcoding. The configuration chosen represents the most frequently purchased. The mass includes packaging, rackmount, power cords and accessory kits.

Study Parameters	
Lifetime of the product	15 years
Use location	France
Digital Signal Processor	Single DSP card installed. 4 DSPs can be installed
Storage	960 GB SSD
Power Supply Unit Efficiency	Platinum
Mass	37.300 kg

Results Summary

The impact categories assessed as part of the LCA concentrated on global warming potential over a hundred-year time horizon (GWP100). Global warming potential is also known as a "product's carbon footprint". The results show that 73% of the lifetime impacts are from the in-use phase via electricity consumption. France has a low carbon impact per kWh of electricity, which means that in most other nations the use phase impact will be proportionally higher. For example, deployment on the NPCC electrical grid, which supports New York and other major US north eastern cities, would see the overall impact rise to 24,105 kgCO2e over the product lifetime with 89% from in-life energy usage. Transportation and End of Life management are smaller contributors to the overall footprint.

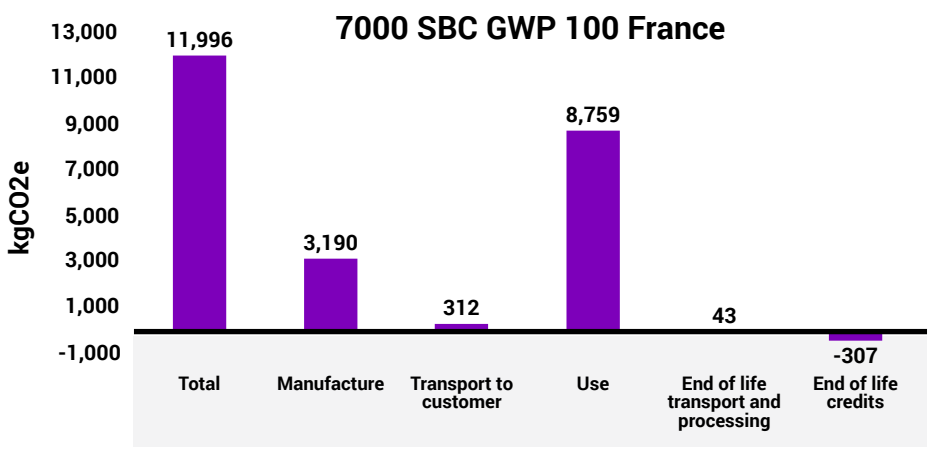


Figure 1. Lifecycle stage contribution to the GWP100 impact of a Ribbon 7000 Deployed in France.

The manufacturing stage represents 27% of the lifecycle impact. The largest of the manufacturing stage impacts come from active electronic components (such as diodes, transistors and integrated circuits) at 11.6% of total lifecycle impact. The next largest contributor is the production of the printed circuit boards used at 8.2%. The SSD contributes 1.3% of the lifecycle impact. Specifying a larger SSD than is necessary for the duty will increase the lifecycle impacts as studies show the environmental impact of SSD production is largely linear with capacity. The production of the heaviest items of the SBC, such as the chassis is outweighed by the energy intensity of production for active electronic components such as the micro and network processor chips.

Conclusion

The environmental impact of the 7000 SBC in its most commonly purchased configuration is equivalent to 2.6 French citizens' annual footprint in 2022 (link). Adding capability such as increased DSP units will increase the environmental impact by 3162 kgCO2e, however, an SBC with 2 DSPs is preferable to generating the same capacity by increasing the number of SBC units itself.

Key Facts

- The use phase contributes to 73% of the lifetime emissions in France and increases in countries with higher carbon intensity electricity networks
- The manufacturing stage represents 27% of the product carbon footprint
- Electronic components are the greatest source of emissions in the manufacturing stage
- The transport stage impact is dominated by the air freight transport leg which represents 95% of the transport emissions. This is due to air freight covering the longest distance as well as being the highest intensity transport mode used.
- Recycling of the products resulted in a reduction in the lifecycle footprint of 305 kgCO2e.
- The largest gains from recycling come from the recycling of metals. Gold is the single largest contributor, followed by the recovery of copper. Silver production and avoided heat production by gas from the burning of combustible packaging materials such as wood further enhance the recycling credits attributed to the product system.

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