Circular Economy for the Data Centre Industry

Interreg North-West Europe CEDaCI

FACT SHEET

Eco-design

Considering current eco-design policy requirements outlined in the NEW EU Circular Economy Action Plan (2020) in conjunction with the results from different server model assessments and the consistent design pinch points outlined by CEDaCI, the project team proposes emphasising the future server design on standardisation of all mechanical features. The current lack of design consistency does not allow for maximum reuse of the equipment and encourages excessive manufacturing.

CEDaCI key findings

- Modern enterprise servers are designed with a degree of modularity aimed at general repair and fast remanufacturing.
- Only a small number of parts can be easily repaired. Most parts contain a number of subassemblies and are not designed for repair.
- There are numerous chemicals used in electronics including CRM, PM and PGM.
- Design differs considerably between brands, models, and generations and the majority of parts cannot be interchanged between those.
- On average a server chassis contains 3-4 different steel alloys, around 3 different polymers as well as textiles, paper, aluminium, zinc, and copper.

Future role in Circular Eonomy: Proposed emphasis on across-the-board standardisation of the future server design

- Reusable universal server enclosures for the most used server form factors.
- Eradicate any designs that prevent disassembly for repair or recycling on all levels.
- Reduce material use and range, and overengineering of parts on all levels. Reduce CRM content in non-electronic components.
- Consider developing modular PCBs and using novel types of substrates, for example, biodegradable substrates.
- Ensure standardised, universal, and simplified design of all parts and parts' enclosures on all other levels of assembly (as much as is physically possible).
- Reduce the complexity of the design by removing unnecessary fastenings, making it easy to disassemble and repair, but make the parts durable for re-use.
- Source locally recovered materials in manufacturing. Consider local businesses for product assembly, remanufacture and transportation.
- Allow open-source firmware for cross-model parts use.
- Design the chassis to accommodate other cooling options if required.