# FACT SHEET
Product Life Extension

Building a circular economy for the data centre industry relies on being able to recover 100% of the materials in the IT hardware for eventual reuse. Recycling technologies to deliver this are in their nascent stages. Many new techniques while technically proven are not yet commercially viable at scale, not least because there is no mature market for the use of recovered Critical Raw Materials. This means that extending product life is the best solution in the short term in order to reduce the pressure on mined resources and to buy the sector time to develop recycling and product design.
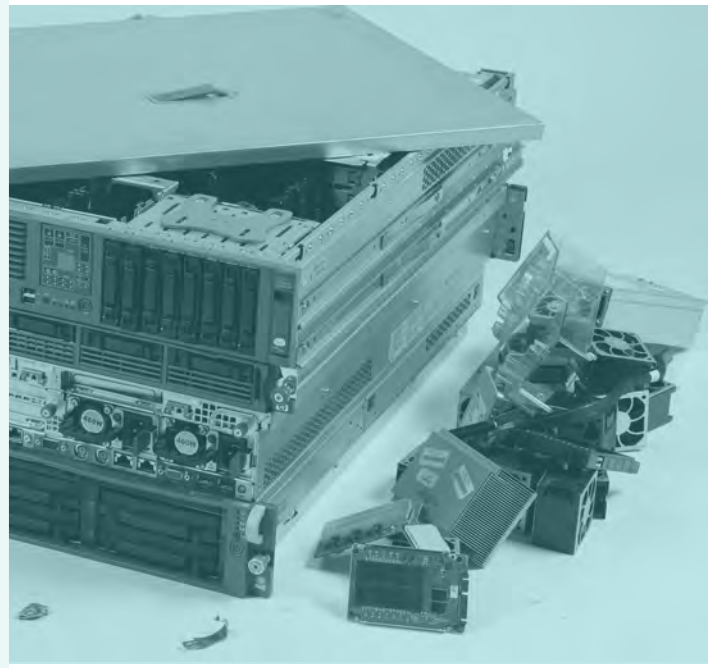
CEDaCI key findings

Q There is no degradation in performance on new and refurbished product of the same make and model[1] so there is no negative cost to using refurbished equipment. In fact, older machines can be upgraded to outperform the base configuration of new.

Q There is a limit on upgrades within different generations. For example, a CPU may fit the latest generation and the immediate past but cannot be fitted into an older machine. These limitations are technical in nature.

Q Other limitations are non-technical. For example, fans are redesigned for almost every make and model of server with no apparent need. This has been identified as a design area that could and should be improved later.

Q A lot of the barriers to reuse are contractual and systemic. Large server users have contracts with particular suppliers and a financial agreement over 3 years. Support contracts beyond this point are significantly more expensive, which means it is easier to stick with a 3 year contract term.

Q There is still an erroneous assumption that new equipment is automatically twice as efficient as the last generation, which relates to Moore's Law. However, this has been proven to have diminished since 2015, meaning it now makes sense to extend product life[1]

Q There is still an erroneous assumption that data destruction requires the destruction of IT hardware. Software solutions overwriting data disprove this, as does the process of separating out data bearing devices.

Future role in Circular Eonomy

Continuous assessment of the barriers to circular economy and identification of which of these are technical and which are behavioural.

Continuous education on the environmental and social value of extending product life and the best way to do this.

Education of the growing refurbishment and remanufacturing market on how to articulate the value of use of refurbished products, in-house refurbishment programmes and sale to the secondary market to customer segments.

[1] R. Bashroush, N. Rteil, R. Kenny and A. Wynne, "Optimizing Server Refresh Cycles: The Case for Circular Economy With an Aging Moore's Law" in IEEE Transactions on Sustainable Computing, vol. 7, no. 01, pp. 189-200, 2022.