Cisco UCS Series Servers Recyclability Report

UCS X210C M6

1. ASSUMPTIONS, METHODOLOGY AND CALCULATION

To complete the recyclability assessment on UCS series servers, Cisco engineering selected two server systems for the recyclability assessment. These systems were prototype units, previous used for Energy Star testing, and their design and construction are identical to the released version. Cisco compliance lab disassembled the units according to the input on the optimal disassemble procedure provided by business unit engineering and Cisco's US-based tier-1 recycler. Then the units were evaluated for design for longevity and design for end-of-life. Cisco then coordinate with the Electronic Manufacturing Service and Original Equipment Manufacturing partners to collect the physical weight and the material content data for the key components and all assemblies in order to reconcile with the lab data. Cisco then worked with our recycler and their industry peers to identify the industry best practice for initial and secondary operation. The best practice data from primary and secondary recycling operator on material processing is then used in the final calculation of product recyclability rate using the IEC/TR 62635 standard.

2. RECYCLING TECHNOLOGY

To calculate the product level recyclability rate, Cisco lab started with prototype units that were designed as typical untreated waste equipment. The first step is to remove all components and parts that are designated to be re-useable. Then the remains are disassembled to the single materials and/or fractions per industry's standards. During the disassemble process, photos were taken to document and validate the proper material coding per ISO 11469 standard. The fraction yields are grouped into the following category of fractions:

- Metal, Steel – metal enclosure, metal brackets, screws/nuts/stand-off, other metallic parts
- Metal, Aluminum – heat sinks
- Plastics – air deflector, cable hold-down, bezel
- High-grade Breakage – PCBA, add-on cards, fan
- Low-grade Breakage - Cables
- Reusable components – power supplies, CPU, memory, battery backup unit, add-on cards
- Special Treatment components – Lithium battery

The remaining hard to process material are then first processed for mechanical separation into similar material types and then sent for smelter.

3. RESULTS

With the information on the industry's best practice collected from Cisco's circular economy supply chain, our lab has identified the parts which are to be reused, require special treatment, or those can be optimized for material recovery and recycling based on a list of treatment methods from our partners.

Cisco's UCS Series of Enterprise Servers were designed in a way to optimize the upgradeability, reusability and recyclability. All components require special treatment are easily identifiable and they can be separated from the system by hand or with common tool. Lithium batteries are handled in a way to prevent short circuit. Hard disk drives, when they are beyond reuse and repair, are being evaluated for possible critical material recovery. With the support from Cisco circular economy supply chain, Cisco is able to divert most field replaceable units in good conditions such as the server hard disks, memory modules, fan modules, processors, super-capacitor-based battery backup unit, power supplies and add-on special function cards for refurbish and reuse. With the information on material mass and material content collected from our engineering drawing and augment with data from our manufacturing and recycling partners, the following result is derived:

Part Number	Description	Qty	Hi Grade Breakage	Re-useable Comp	Ferrous metals	Non Ferrous metal	Recyclable plastic	Low grade breakage	Paper	Non-recyclable	Total (g)
UCSX-M6-MLB	UCSX M6 Modular Server and Chassis MLB	1									
UCSX-210C-M6-U	UCS 210c M6 Compute Node UPG w/o CPU, Mem, Storage, Mz	1	1762.00	0.00	3542.64	156.44	512.42	0.00	1841.40	137.44	7952.335
CON-OSP-UCSX21CX	SNTC-24X7X4OS UCS 210c M6 Compute Node UPG w/o CPU, Me (SW)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000
UCSX-X10C-RAIDF	UCS X10c Compute RAID Controller with LSI 3900 (Front)	1	18.00	0.00	592.34	0.00	7.51	0.00	0.00	0.00	617.854
UCSX-V4-Q25GML	UCS VIC 14425 4x25G mLOM for X Compute Node	1	184.00								184.000
UCSX-V4-Q25GME	UCS VIC 14825 4x25G mezz for X Compute Node	1	237.00	0.00	0.36	111.30	0.67	0.00	0.00	0.00	349.332
UCSX-TPM-002C	TPM 2.0, TCG, FIPS140-2, CC EAL4+ Certified, for M6 servers	1	3.00	0.00	1.89	0.00	0.00	0.00	0.00	0.00	4.890
UCSX-C-SW-LATEST	Platform SW (Recommended) latest release XSeries ComputeNode	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000
UCSX-C-M6-HS-F	UCS 210c M6 Compute Node Front CPU Heat Sink	1	0.00	0.00	0.00	468.00	0.00	0.00	0.00	0.00	468.000
UCSX-C-M6-HS-R	UCS 210c M6 Compute Node Rear CPU Heat Sink	1	0.00	0.00	0.00	508.00	0.00	0.00	0.00	0.00	508.000
UCSX-V4-BRIDGE	UCS VIC 14000 bridge connect mLOM and mezz X Compute Node	1	0.00	0.00	18.50	0.00	1.23	0.00	0.00	0.00	19.730
UCSX-CPU-I6348	Intel 6348 2.6GHz/235W 28C/42MB DDR4 3200MHz	2	0.00	2712.00	0.00	0.00	0.00	25.40	0.00	0.00	2737.400
UCSX-MR-X32G2RW	32GB RDIMM DRx4 3200 (8Gb)	32	0.00	672.00	0.00	0.00	0.00	0.00	0.00	0.00	672.000
UCSX-SD19TM3X-EP	1.9TB 2.5 in Enterprise performance 6GSATA SSD(3X endurance)	6	47.65	91.27	1.08	0.00	0.00	0.00	0.00	0.00	140.000
UCS-SID-INFR-UNK	SW License	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000
UCS-SID-WKL-UNK	SW License	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000
DC-MGT-OPTOUT	Intersight Opt Out (FW Opt out)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000
OPTOUT-OTHER	Customer using alternate systems mgt. tool: Other	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000
	Total weight per fraction Type:		2251.65	3475.27	4156.81	1243.74	521.83	25.40	1841.40	137.44	13653.54
	Recyclability Rate by fraction Type:		95%	100%	98%	98%	95%	95%	95%	0%	
	Total recyclable material weight		2139.07	3475.27	4073.67	1218.87	495.739	24.13	1749.33	0	13176.08
	Product Recyclability Rate:										96.50%

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