

ABSTRACT

In the current development of information technology, the demand for efficient and economical data storage solutions has become increasingly urgent. This research investigates the optimization of repurposing the ZTE B860H set-top box (STB) as a Network Attached Storage (NAS) device through modifications and the installation of the Armbian operating system along with a web-based NAS application developed using PHP. The primary objective of this study is to transform used STBs into an affordable and environmentally friendly data storage solution, while simultaneously extending the lifespan of these devices. The fixed-size chunking method was implemented to optimize data upload processes, by analyzing the impact of chunk size on throughput and system efficiency. The test results indicate that the modified STB is capable of delivering stable and efficient data transfer performance. Average upload throughput reached 9.7 MB/s and download 11.3 MB/s, with controlled resource (CPU and RAM) utilization. The device's power consumption is also relatively low, at 4.0 Watts when idle and a maximum of 10.7 Watts during operation. Based on these findings, the developed NAS solution is classified as a Home Cloud or NAS for personal and small business use, affirming the feasibility of used STBs as an effective, affordable data storage alternative that contributes to reducing electronic waste.

Keywords: *NAS, STB, Electronic Waste, fixed-size chunking*