SambaKodiPi A Personal File Server and Media Center

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Abstract—**Conventional file sharing and media viewing usually involve slow and tedious data transfer. This project aims to provide access convenience for sharing data and direct-viewing of media files by having file server (FS) and media center (MC) capability using Raspberry Pi (RPi). The system consists of several functionalities that were developed through iterative and incremental development. The resulting system has its FS function catered by Samba program and its MC function catered by Kodi program. Direct MC output is on high-definition television (HDTV). The web-based user interface (WebUI) provides administrative functions for the system, its FS and users management and indirect access to its MC function through web player for all registered users. The system has undergone several testing processes, and it is a working prototype of an economical and feasible file server and media center using RPi. The system can still be improved with other functions and features in the future.**

Index Terms—**File Server; Media Center; Raspberry Pi; Samba.**

I. INTRODUCTION

In a modern world, data and media are mostly in digital form. Nowadays, data storing has become more crucial and important. Data storage has also steadily evolved from the early usage of diskettes and compact-discs (CDs) to Digital Video Discs (DVDs) and Blu-Ray Discs (BDs), and USB flash drives to external Hard-Disk Drives (HDDs). While storing data externally in bigger size storage eases the huge file size problem, it, however, gave rise to the tedious way of accessing them.

The conventional way of storing data and media files usually include several distributed electronic devices for example documents are stored in personal computers (PCs) while large size media files and backup data are stored in external HDDs. The process of obtaining a desired file usually involves a time-consuming copy-and-paste process. For media files, one needs to transfer it to another external storage device and connect it to media output devices. All these can be quite annoying if one need those files on a frequent basis.

A typical solution to solve the problem with access convenience is to use commercial file server which usually has very large storage size to store all the files in one place. However, the current value of a commercial file server is quite expensive and thus many still prefer the conventional way of managing their files. Moreover, a commercial file server may have limited usage and capability (Hanson). The objectives of this project are; (1) To create a file server which hosts both data (documents, executables, generic files) and media files (audio, video, image files) using Raspberry Pi. (2)

To equip the file server with media center capability by installing a media center program and connect it with media output devices (monitor/TV/speakers). And (3) To build a main system interface (web-based) for users to interact and use the functions easily. The resulting system is to have at least two main functions: file server capability to host and share stored files; and media player capability to access media files directly. The proposed personal file server and media center is a working prototype of a personal file server equipped with media player capability.

II. LITERATURE REVIEW

The Raspberry Pi (RPi) device is essentially a low-cost, credit-card sized computer that plugs into a computer monitor or TV [1] [2]. It is a small single-board computer that also uses standard keyboard and mouse. Despite its tiny size, it has a broad range of usage potential in various kinds of electronic projects. Like an ordinary computer, it has the basic capabilities of a desktop PC ranging from functionality to browse the Internet, making spreadsheets, word-processing, playing games and even capable of playing high-definition video. Due to its cheap cost and yet capable and portable, the device has become increasingly popular to be used in various electronic projects.

According to [2], a file server is a computer or device that is connected within a network, dedicated to storing files and any user connected on the network can store files on the server. While [3] described file server as a computer that acts as a central storage and manage data so that they are accessible to other computers on the same network. And [4] defines file server as computer in a Local Area Network (LAN) that serve as centralized data storage for other machines as part of the client-server model of computer networking.

File servers enable users to share information over a network without the need to physically transfer them to other external storage devices. There are two main type of file server – dedicated and non-dedicated. A dedicated file server only serves as a file server and does not do any other tasks such as processing [2]. It serves solely as a central storage and hosts the data for other computers in its network.

Media center can be described as an electronic device that has the capability to support the playback of media files such as video, audio and image on external video and audio output hardware. In the context of this project, media center refers to the Home Theater Personal Computer (HTPC). By definition, an HTPC is a "personal computer that is used to store and play music and movies as well as display photos" [5]. An HTPC is typically physically connected to several other