

USING GREEN IT SOLUTION TO GAIN OPTIMIZING PERFORMANCE IN PUBLIC SECTORS

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Abstract- Green IT solution has recently emerges as a computing technique that uses telecommunication equipment with computers for storage, retrieval, and exchange data among multi-clients. Virtualization and thin client based technologies are developed as traditional desktop computers but in efficient use of computing resources. The design process of this paper relies on the thin client technologies virtual desktop machines which visualizes access remotely to what is set up in a server. Clients with stateless I/O devices such as (display, keyboard, mouse, etc..) have the capability to log in to a specific VM machine and share computational resources with other clients at the same time. The essential feature of implementing such a technique resulting in more effective usability of hardware resources, reduce maintenance cost, enhance security, and preventing loss of data, and computational cost as well.

Keywords – Thin client, Green IT, traditional desktop, telecommunication, stateless device.

I. INTRODUCTION

Modern computing technologies such as information and communication technologies (ICT) are emerged over conventional systems [1]. ICT is similar to information technologies, but concentrate mainly on communication technologies such as (internet, wireless network, satellite systems, and so on). Recently, Kurdistan Region Government (KRG) projects to design and implements e-government systems such as ICT in health care, academic institutes, and libraries. This novel technologies arise new obstacles: the most key hurdle related to enhancing computational performance as well as economic factor. For instance, developing ICT infrastructure need efficient IT equipment, reduce operational cost, as well as finance support. The major challenges of public sectors are that they do not have infrastructure as a result of unaffordable found, software license, upgrades, or maintenance cost over time [2].

In response to these obstacles, resource pooling and time-sharing of hardware resources is the most efficient technic throughout using thin client technology [3]. The centralization of computing resources is the fundamental aim of thin client structure. High power server with network connection is built to share server resources across multi-users [4].

II. PROPOSED WORK

This section views our system architecture's design the key features technics and equipment we used.

1. Stateless thin client

A thin client is client-server architecture in which a client can remotely connect to the server, after setting display session. This server stored all computing and memory resources while client side takes the action of sending input to the server and reserving output to display on the screen over internet based connection [5]. In other words, multi-

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user can share the operating system and all application which are dedicated in the server. As a result, this technology will manage cost of our thin client device [6]. No need to hard drive, just a processor is required. This attractive technique is efficient in public sectors with low-performance equipment, limited high skills' maintaining staff, and limited budget as well.

2. PCoIP protocol

Pc over IP is a remote display protocol with the capability to submitting remote desk top and applications between the server and thin client over LAN or WAN. PCOIP allowing a complete desktop is compressed, encrypted, and then encoded before delivering over a standard IP network to thin client side [7][8].

3. Hardware-Accelerated Graphics

VMware virtual machine support sending and refreshing of 3D graphics in View 5.x with additional components that is added to Horizon 6[8]. This component can be integrated in client demand.

4. Virtual VMware

VMware Virtual SAN is a new approach software-defined storage, which providing a hyper converged storage architecture that have the ability to enabling compute, storage resources, secure data, applications, and Remote Desktop Session Host (RDSH) to be delivered through a common virtual machine platform as shows in (Fig.1). Horizon 6 suite support virtual SAN 5.5, which made up with multi-technologies and delivering high performance [8], and scaled storage with lower cost. IT administrators can easily manage resources, storage, and assign storage police throughout storage-policy-management.

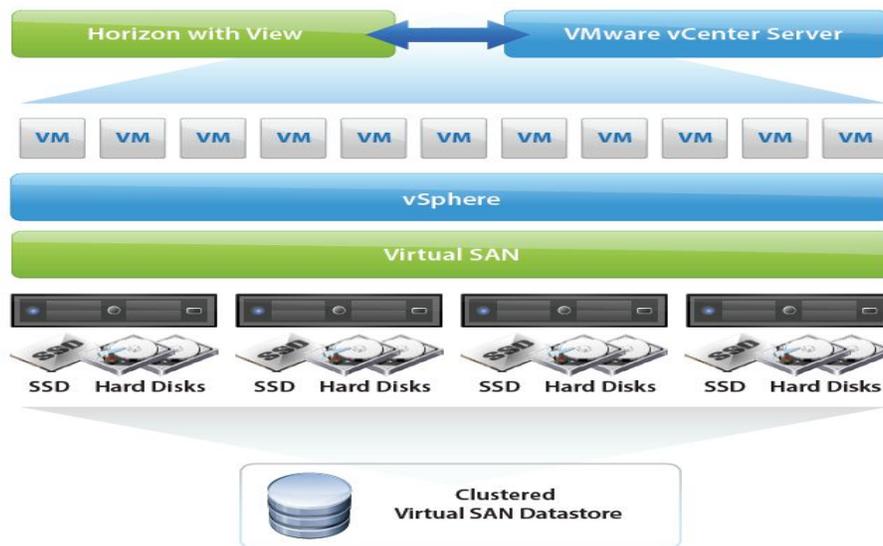


Fig. 1. Virtual SAN and Horizon with View Architecture

5. Servers

A set of server machines with different architecture implementing any operating system, and application software have the capability to perform a variety of processing [9]. The main components and standard set our servers cannot be removed or replaced. For instance, file servers which have control over the central storage and management of data files or print servers that achieve print request and queue status for multi-uses cannot be altered [8].

Server consolidation approach helps managing the usage of server's resources efficiently. In our work, we only require to set up a small set of background system services: daemons, session management, and remote device management. A daemon is an authentication manager which is responsible for confirming the identity of thin client users when they log in to their VM machines [10].

The session manager maintains and directs the I/O of user's session to the convenient console as shown in (Fig.2). On the other hand, remote device manager allowing us to evaluate status, editing a user privilege, or control operational function of the thin client [8].

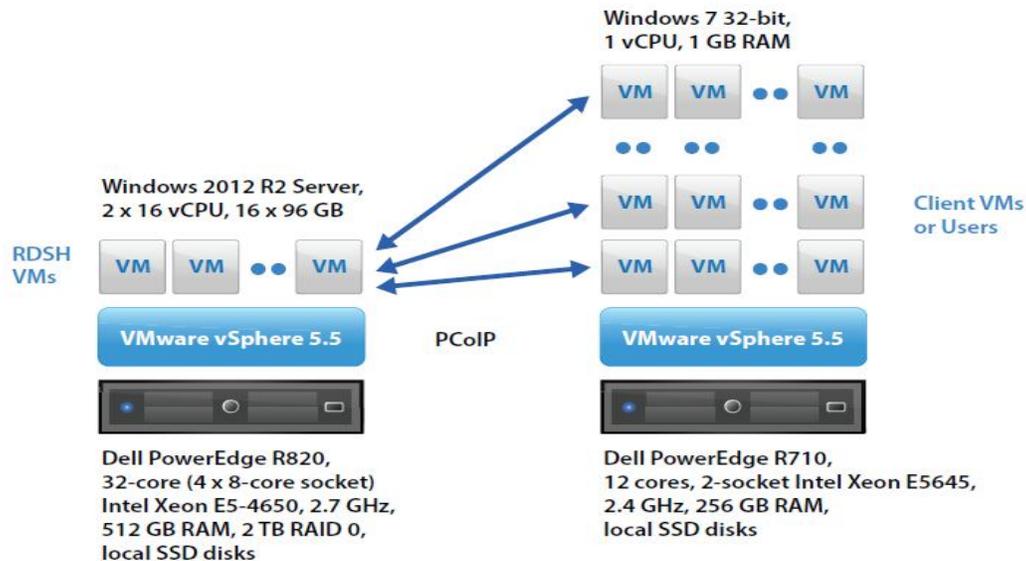


Fig.2. RDSH Server Virtual Machine

III. CONCLUSION

In conclusion, this work is based on the thin client server environment. From a technical point of view, this approach is developed to enhance system performance.. Our system allows us avoiding operating systems' failure rapidly throughout using recovery system, cost-effective in managing, maintaining, upgrading, scalability, and availability. Optimizing resource usage will encourage public sector in KRG to implement this technique in their systems. In other word, government institute with few financial support can use new computer as a server while, old once can serve as client endpoint.

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