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Paradigm Shift From Storage Area Network to Hyper Converged System : A Review

Jinal Panchal
Department of Computer Engineering, Bharati Vidyapeeth University, Pune, Maharashtra, India

ABSTRACT

From the strong based foundation of storage area network infrastructure in the long run Industry while the evolvement of the technology towards better, faster, agiled deployment of architecture in data center leads to gaining the acceptance of the converged system which takes accountant of complexity, space, power consumption or different parameters beyond the costs. For the intensive need of data transfer, new hardware and software refurbishment is implemented for more powerful storage systems and to come up with green storage, data centers with higher outgrowing application needs are targeted for energy saving and bound utilization of resources involved.

Keywords : Storage Area Network, Hyper Converged System

I. INTRODUCTION

Under the constant overgrowing data storage, retrieval and transfer rate in any infrastructure, the continuous strategies to compact the system with efficiency, performance and integration of various components of the data centers made the industrialist to continue either with the traditional approach of hardware centric of connecting all the components over the network or the paradigm shift towards the software centric i.e software designed data centers (SDDC).

SAN : Storage area network is a high speed sub network where all the working shared storage devices are connected over the network of LAN or WAN. Storage area network works over the internet at the low level internet protocol for transferring data across the high end multiple servers using optical fiber or fibre channel interconnection technology and here with the help of switches and directors as the interconnecting elements which removes the dedicated connection between the server and the storage devices and the effective management of it over the network. SAN execute the independent working of servers and storage and provides respective services on the network which enables back end network separately created for the storage management and keeping the traffic off the network especially for the data leads to the effective use of network bandwidth. SAN increases fault tolerance capability, with the modular scalability where the adding of newer storage components won't affect the front end services and with the centralised storage management. In a case of one node fails or disconnects, resumed data provided is taken over by the other server, rerouting traffic automatically and through built in redundancy, storage is recovered over the dynamic failure of any server. SAN imparts the support of backip, restore, migration of data from a particular storage to the different servers in a network, disk mirroring, archived data with it's archival and retrieval methods. Disaster recovery in to the system

imparted by automatically mirroring the data to another site and decision of synchronously and asynchronously replicating the data. Securing the servers which shares the same physical hardware over the network by the manner of zoning which gives only access to the LUN for the certain allowed servers or by configuring the switch in such a way that only server's Ip address can have access to it.

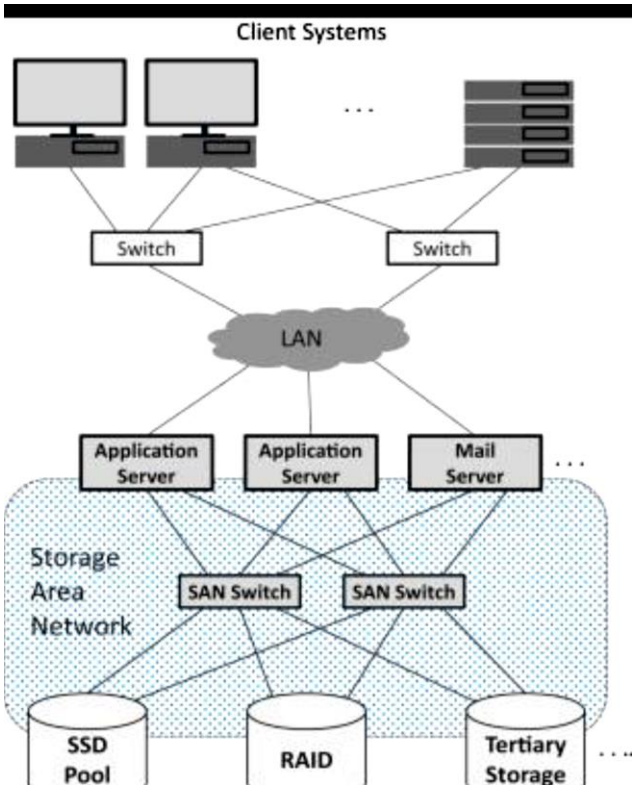

Fig 1. Storage Area Network

HYPER CONVERGED SYSTEM (HCS) :

Hyperconverged system is an implementation of the intelligent software architecture by combining the various segments in a stack of preceding technology which consists of separate compute, virtualisation , storage and storage networking are now introduced into a compact infrastructure. Data centers now inhibit all the functional element into a tightly integrated software layer work as a Hyperconverged Infrastructure (HCI) with the configuration of application aligned with policies which eliminates the complexity runs due to LUNS (Logical Unit Number) or volumes. Entire hyper converged platform incorporating storage virtualisation, compute virtualisation and management is automated where the abstract pool of underlying resources are dynamically allocated to the applications running in Virtual machines or containers.

Hence hyper converged infrastructure not only aggregate servers, storage and network into one chassis which functions the storage and data transfer management but also runs the instances of virtual machines to smoothly exhibit the hypervisor and virtualization. While deploying the integrated software for Hyper converged system, it imparts the freedom to choose the preferred platform for the existing infrastructure to be fully integrated upon working model with the advanced system for optimization and protection along with maximum flexibility and choices for the forthcoming technology. Data centers targeted for scalability, cost reduction, and lesser complicated framework which is higher responsive to the changing needs for the business application. The advanced settings offers for an entire software defined data center in production which adds agiled deployment for the IT environmental applications. Reducing to only one administrating point, the hypervisor, which focuses on the server virtualization makes it easy to manage all the resources from the single point rather than handling 3 tier architecture with varied kind of resources.

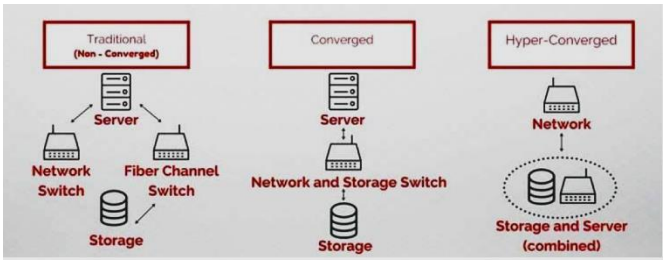

Fig 2. Hyper-Converged systems

II. LITERATURE SURVEY

Hyper Converged infrastructure has greatly reduce the complexity involved in the data center in terms of varied services provided like reliability, scalability, uptime and running, security and failover protection. Owning to the difficulty scaling, complex operating techniques and expensive to build three tier architecture, while adopting the converged system provides service based application demand without compromising security, increased costs or losing control[6]. Even the earlier technology supports the updation of independent modules involved without affecting the other layer's services which has revolutionized the data center technology but with the coping up to the forthcoming challenges in the industry the layered architecture can no longer keep up with the demands due to the magnitude of widespread planning, monitoring and administering. Industries are influenced by the Hyperconverged system with full coverage of all the planning activities at a specific centralised control point. HCI upgraded with the cloud ready technology for the ease of configuring the data centers. HCI with providing the low switching cost to another platform, improved and consistent performance, greater efficiency and productivity but also a smaller data center footprint by supporting common data center availability and reliability required by infrastructure where workloads are deployed to the respective operating hardware through a single interface[12]. Older technology that were hardware centric with different compute and storage technology stands in need of common configuration are now replaced by the software defined storage for supporting various levels of storage and compute devices which considerably increases resource utilization and management[12]. Bringing out the best from the virtualization facilitates the easy switching from physical PCs to virtual desktops which increases the performance as it comes with lots of flash and indirectly smoothing the support for virtual desktop infrastructure and desktop virtualization[12]. Without bringing the system down for reconfiguration for performance or input output services, or to run security checks, the hyperconverged system stacks up with the services that runs in background for virus and other scans without depriving the user services [9].

III.CONCLUSION

Centralising the monitoring, administrating can reduce the low level control task and highly optimising the data center for the storage and computing task. Agile development runs long with the rapidly changing and demanding business needs for spinning workloads over the network bandwidth with the flexibility to grow, shrink and move for managing new workloads and load balancing techniques accelerate the performance for the system of the business critical application utilized at the framework. So the goal of the Hyperconverged system was to spin up the Virtual machines services, container and the compute systems without having the concern about the monitoring, integrating and upgrading the major parts or modules of the infrastructure. Whereas most of the significant resource of any industry is devoted to reduce the management overhead , configuration and upgradation in the traditional three tier architecture. HCI meets most of the needs for the existing technology functional demands with intelligent networking, storage interoperability over the virtualization.

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