Chapter 13
Software-Defined Storage

Himanshu Sahu
University of Petroleum and Energy Studies, India

Ninni Singh
University of Petroleum and Energy Studies, India

ABSTRACT

SDS along with SDN and software-defined compute (SDC; where in computing is virtualized and software defined) creates software-defined infrastructure (SDI). SDI is the set of three components—SDN, SDS, and SDC—making a new kind of software-defined IT infrastructure where centralization and virtualization are the main focus. SDI is proposed to have infrastructure developed over commodity hardware and software stack defined over it. SDS is exploiting the same concept of decoupling and centralization in reference to storage solutions as in SDN. The SDN works on decoupling the control plane with the data plane from a layer, three switches, or router, and makes a centralized decision point called the controller. The SDS works in a similar way by moving the decision making from the storage hardware to a centralized server. It helps in developing new and existing storage solutions over the commodity storage devices. The centralization helps to create a better dynamic solution for satisfying the customized user need. The solutions are expected to be cheaper due to the use of commodity hardware.

INTRODUCTION

Storage Network Industry Association (SNIA) defines SDS as

SDS is Virtualized storage with a service management interface. SDS includes pools of storage with data service characteristics that may be applied to meet the requirements specified through the service management interface. (Carlson, 2014)
Software-Defined Storage

The SDS is software stack that provides the centralized management interface over the commodity hardware. It can work as a part of cloud data centre or as standalone storage solution working as an end-product.

*From 2013 to 2020, the digital universe will grow by a factor of 10, from 4.4 ZB to 44ZB. It more than doubles every two years.* (Turner, 2014)

The large data required large amount of storage hardware and also there is requirement for fast and easy storage and retrieval of the data. Existing solution has improved to cope up this with innovations in the field of cloud storage (Azodolmolky, 2013). These may be considered as patch up solutions to the existing problems but they are not ready to for future. The Internet users are increasing day by day and also the data generated per users in increasing so in future the data size will become hard to manage. Not only that the information per bit is also decreasing due to rich media contents. After the emergence of IOT when each and everything will be connected to the internet the data generated will further increase (Gubbi, 2013).

**Traditional Storage System**

The Traditional Storage system consists of consists of storage array, magnetic disks and tape libraries. The Tradition storage system has following features.

*Figure 1. Digital data growth*
Systematically Exploiting Web 2.0 Social Media in Government for Extending Communication with Citizens
www.igi-global.com/chapter/systematically-exploiting-web-social-media/62556?camid=4v1a

Developing Communities of Practice to Prepare Software Engineers With Effective Team Skills
www.igi-global.com/chapter/developing-communities-of-practice-to-prepare-software-engineers-with-effective-team-skills/192946?camid=4v1a