FUNCTIONAL TESTING NETWORK SHARED ACCELERATED STORAGE FROM ELASTIC STORAGE SOLUTIONS INC.

Elastic Storage Solutions Inc. (ESSi) specializes in accelerating network-shared data storage solutions for software-defined enterprise and data centre storage arrays. Over the past month, ESSi has used the infrastructure and technical resources at CENGN to accelerate and dynamically scale out RAM-based network attached storage arrays, which is the most demanding class of storage, to speed-up and share across the data centre.

The core technology of ESSi is its "accelerated storage engine" software. This software allows the transformation of commercial off the shelf (COTS) servers or original design manufacturer (ODM) white box servers, populated with Solid-State Drives (SSD) and Hard Disk Drives (HDD), into Network Shared Accelerated Storage (NSAS) arrays. These arrays are then attached to the network for a 10x value proposition over existing Shared Accelerated Storage (SAS) offerings.

NETWORK SHARED ACCELERATED STORAGE ARRAYS

NSAS is a fundamentally more efficient data-centric storage architecture that unites Storage Area Networks (SAN) and Direct-Attached Storage (DAS) into a single, consolidated, shared storage pool. NSAS arrays have the ability to increase the storage performance and capacity of a typical server by adding components that are external to the server and distributing the data across the network. These components are HDDs, SSDs, RAM, and other servers that take on data for the primary server. The distribution of the data is completed over a storage networking fabric such as Non-Volatile Memory express over Fabric (NVMe-oF). Network shared accelerated storage performance grows through in-parallel distribution with the number of components in the network. This way, the primary server's performance when accessing storage is limited only by the performance of its own network interface. SAS arrays are normally all solid-state, but with ESSi's software they can be all-spinning disk or hybrids combining the different types of media that permits the building of unified multi-tier storage pools.

RAM SWAPPING AND ENHANCED COMPONENT ACCESS

Exploiting the new found performance in NSAS arrays, ESSi's solution provides its clients with parallel access to HDD, SSD, and RAM across several servers and displays them in a single, unified, and logical storage volume. The most demanding workloads on the storage array come from the RAM-speed applications where a logical volume is used as the RAM swapping device. Think in-RAM database workloads or application transitory data storage. ESSi also has a performance tier feature that allows organizations to prioritize their storage needs, to keep their operations running efficiently. Data that requires frequent access is stored in a RAM disk portion of the storage array for easy retrieval while data that doesn't need to be accessed as often is stored in the SSD and HDD sections of the array.

PROJECT

To carry out their testing, ESSi was supplied nine bare metal servers and four Virtual Machines (VMs) within a cloud tenancy on the CENGN infrastructure. The ESSi solution was deployed on eight bare metal servers representing storage components, while one served as the storage client server for the pooled storage resources. Additional traffic was produced from the CENGN cloud tenancy to simulate multiple users interacting with the storage system. To begin their project, ESSi ensured their solution was operational on CENGN's Testbed by running a series of functional tests between client-server and server one. They then deployed bare metal servers two through eight to test the stability of the software when scaled.

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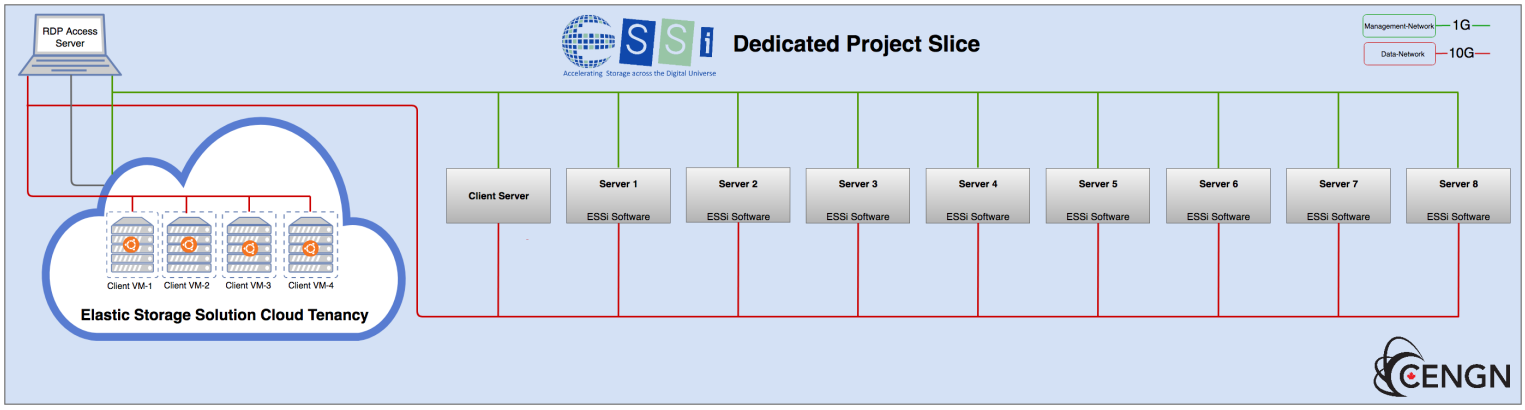

TESTING

Functional Testing:

The first step was to ensure that the simulated client server could swap memory on shared storage RAM disk through NVMe-oF. NVMe-oF is a specification that supports fast data transfer between a computer and host. This was completed by connecting the client-server to server one, effectively building a storage array with one additional component.

Stability Testing:

In their stability testing, ESSi increased the deployment of their software on bare metal servers two through eight. This testing exposed different quantities of storage RAM disk from their solution to the client and trialed different strategies for pooling servers together. Stability tests allowed ESSi to experiment with how their solution interacts with multiple client servers when swapping memory.

ESSi was able to pass all functional testing and used the project to test how stable their solution is as the number of storage components is increased. The results of the project offered insights into what areas of their solution need improvement as well as how far along they are in their product development.

THE CENGN ADVANTAGE

ESSi was able to take advantage of CENGN's services to deploy their data storage solution in a commercial-grade environment. Over the 4-week testing phase, the team at ESSi ran a number of trials to understand how their solution will operate in a customer situation. This is valuable as they can gain insights on what worked well and areas that need improvement. The organization was able to prove functionality of their solution and uncovered issues that require additional testing before rolling out to the market. ESSi will be using the results of the project to make significant strides in product development.

CENGN
CENTRE OF EXCELLENCE IN NEXT GENERATION NETWORKS

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Accelerating Storage across the Digital Universe