Software Defined Storage

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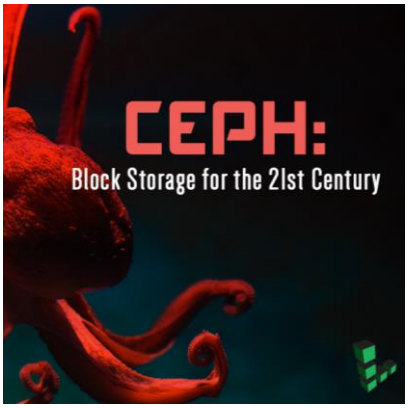

Wellington Institute of Technology Ceph Storage Ceph Community Contacts

INTRODUCTION

The Wellington Institute of Technology (WelTec) has an opportunity to improve storage availability and access for students and staff. WelTec wants a solution to better manage the current storage situation within the B-block of the Wellington Campus. Currently student storage is local to each machine within the B-block, this causes drawbacks to students that have to work on different workstations as files are not accessible unless copied over the network. Multiple instances of the same student data across multiple workstations creates unnecessary duplications and use of storage that could otherwise be harnessed elsewhere.

Project Team Alpha proposed a Software Defined Storage (SDS) solution and chose Ceph Storage as the vendor of choice. While Ceph does have enterprise variations to the product software it is available at zero cost as a community version, with full functionality and an active community that is dedicated to its development.

DEVELOPMENT

The first stage of development that we undertook was the selection of an appropriate SDS vendor. We unanimously concluded that Ceph Storage ticked the majority of the boxes, it was opensource, well supported and highly praised as an SDS solution.

Understanding how Ceph operated was not too difficult, we quickly grasped the basics and jumped headfirst into creating a working test cluster. Our environment was designed around the minimum recommended requirements, those being three storage nodes and one admin node (node being host). Ubuntu 18.04.4 was used as our distribution of choice due to familiarity, we did not want to spend time learning a different distribution.

Once we had an operation Ceph Cluster we then looked into utilising block storage functionality for Windows 10 clients within WelTec's B-block. iSCSI the obvious choice for delivering the block images to the Windows 10 clients, however we were not happy with the hoops that one had to jump through to get communication occurring. The iSCSI gateway was a single point of failure that could be detrimental to WelTec's Windows environment.

Thanks to the help of our Client we managed to discern that there was development being made toward a Windows-Ceph port. This port gave Windows clients access to the Ceph Cluster without having to use iSCSI as a middleman. We jumped on this opportunity and managed to get it working with our cluster, B-block Windows 10 clients could store and use data as if utilising a traditional HDD.

The Windows-Ceph port was only made possible due to the bright minds at SUSE and Cloudbase Solutions as well as those involved in the Ceph community. Without their achievements we would not have been able to implement what we did.

CONCLUSION

Ceph is a fantastic SDS concept, it has a high learning curve and is worth the effort. As our project was a proof of concept our project team looks forward to learning more about Ceph and hope our documentation contains information that can be developed upon in the future.