

Assignment 1

Lecturer:	John O'Raw
Report Title:	Assignment 2
Submit to:	Blackboard with all files as specified in the assignment, submitted as a single ZIP folder.
Date Submitted:	07 Feb 2021

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Programme of Study:	M.Sc. in Cloud Technology
Module:	Private Cloud Technology

Please refer to the Institute's Quality Assurance Handbook, Version 3.0, September 2018

1. Practical work, forming part of the CA of a module, will only be assessed if the student has attended the relevant practical classes.
2. CA work must be completed within the schedules and specifications (specified in the CA brief). Students who submit CA late may forfeit some or all the marks for that work.
 - a. The total marks available for an assessment be reduced by 15% for work up to one week late; i.e. a grade of 50% would become $(50 \times 0.85) = 42.5\%$
 - b. The total marks available be reduced by 30% for work up to two weeks late i.e. a grade of 60% would become $(60 \times 0.7) = 42\%$
 - c. Assessment work received more than two weeks late should receive a mark of zero.

Work is deemed late when an unauthorized missing of a deadline has occurred.

3. CA must be the student's own work, refer to Plagiarism Policy, in section 5.7 of the QA manual.

Microsoft

Technical Description

Microsoft Server 2016 Data Center Edition was used as Operating System in the existing system and same version would be used on Virtual Machines in new third server along with servers in Colt Data Center. VMware virtualization platform vSphere ESXi has been recommended for the sites and data center and ESXi v7.0 U1 will be installed on bare metal of Dell R640 Servers. Virtual Machines (VMs) as currently available, i.e., VMs for Domain Controller, File Server, Syslog Server, MySQL Database Server will be created on all the host servers at Sligo site with Windows as OS except Syslog Server which will use Ubuntu OS. Hosts at Sligo site will be part of a cluster with High Availability implemented, thus making Windows VM in a host available even if that host goes down. vSAN has been implemented in clusters which increases the performance of Windows VMs as disks and memory of all the hosts in cluster will be shared by all the VMs in cluster, making more disk and memory available than locally present on individual host.

A management pod consisting of VMs for Microsoft Windows Active Directory, DHCP, DNS, NTP and other services which will be used by the applications on this pod as well as those in Application Pod and by servers in Business Continuity Pod which are part of child domain(sligo.ads.electric-petrol.ie) has been designed in Data Center. The main domain is cork.ads.electric-petrol.ie which is in Management Pod. There will be two management pods for handling failover, one in Cork DC (Data Center) and another in Donegal DC and both will have same services. This makes sure that Microsoft Windows services are available incase of a disaster causing one of the Data Center going down. Geographical redundancy has been taken care as management pods are in data centers which are in two different locations.

Windows File Service and Domain Controller installed on ESXi VMs at Sligo site has been replicated and synchronized to Cork DC, providing data redundancy and better administration along with replication of database of users created in MS Windows Active Directory.

vCenter Server Appliance has been installed as VM to manage ESXi servers/VMs in various pods in Data Center. It has been planned such that vCenter Appliance for management pod in Cork DC will be in another DC Management Pod and vice versa, so that if a management pod goes down vCenter corresponding to DC might still be functional, just making it possible to still be able to do configuration changes and manage clusters involving Windows and other VMs. This also provides geographical redundancy as vCenters are in two different locations and incase of a disaster at a particular DC location another vCenter would be available. If vCenter for a DC goes down, VMs will still be functional and Microsoft Windows

services along with various Windows VMs can still be used. One vCenter in redundancy mode has been configured for all the sites and Data Centers.