

MODULE CODE: ACUA6001
TITLE: Data Centre Virtualisation
DATED: 01/06/2017

LEVEL: 6
CREDITS: 20

JACS CODE: I112

AIM(S)

- To study in depth the technical aspects of virtualisation, especially type 1 hypervisors. To contextualize an overview of how virtualisation fits into the wider field of cluster computing.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Demonstrate comprehensive and detailed knowledge of complex virtualisation technologies and their deployment.
2. Demonstrate in depth theoretical understanding of how virtualisation relates to the wider field of cloud computing, including a rational underpinning of theoretical principles including sustainability.

INDICATIVE CONTENT

- Theoretical understanding and underpinning of type 1 hypervisors including (but not limited to) Hyper-V, VMware ESX/ESXi and Xen.
- Hardware implications and requirements of virtualised systems, including SAN infrastructure for high-density servers and unified fabric scalability.
- Physical limitations and external considerations for virtualised implementations and architectures, secure energy supply and sustainability.
- Failover of virtualised systems.
- Snapshotting and snapshot teleportation.
- Security essentials.

LEARNING AND TEACHING STRATEGY

The conceptual, theoretical issues are suited to delivery during weekly lectures. These topics necessitate exploration and application to case studies pertaining to cluster computing, for which laboratory work is the most appropriate strategy. Students will be expected to read widely within the literature relevant to the subject area.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30%
Independent learning	140	70%
Placement learning	0	
TOTAL	200	100%

ASSESSMENT

Description of each assessment component and its weighting, together with an example for new forms of assessment:

Assessment Component 1 – Coursework- 50%

Design, implement and deploy a suitable virtualisation environment based on a given enterprise-driven specification. This will be assessed via written coursework in the form of a critical report to evaluate the implemented virtualised architecture.

Exemplar: 'Deployment of a Hyper-V solution for a virtualisation problem.'

Assessment Component 2 – Written– 50% (2 Hours)

Complete a written examination based on a given enterprise-based case study which:

- Explores analytical frameworks systematically as pertains to the provided study.
- Synthesises theoretical material with practical case study based information to generate critique.
- Considers the application of analysis techniques and tools for this case.

Exemplar: 'Analysis of analytical frameworks for enterprise-based clustering.'

Assessment Summary

Activity type	Percentage
Written	50%
Coursework	50%
Practical	0%
TOTAL	100%

BIBLIOGRAPHY

Essential

Portnoy, M.(2012) *Virtualization Essentials*, Wiley

Santana, G.A.A. (2013) *Data Center Virtualization Fundamentals: Understanding Techniques and Designs for Highly Efficient Data Centers with Cisco Nexus, UCS, MDS, and Beyond*, Pearson Education

Background

N Shamsee, D Klebanov, H Fayed, A Afrose, O Karakok, (March 2015) CCNA Data Center DCICT 640-916 Official Cert Guide, Cisco Press

Erl, T. and Puttini, R. and Mahmood, Z. (2013) *Cloud Computing: Concepts, Technology and Architecture*, Pearson Education

Rhoton, J. and Haukioja, R. (2011) *Cloud Computing Architected*, Recursive, Limited