



Australian Government

ICTCLD503 Implement web-scale cloud infrastructure

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and deploy cloud infrastructure to support highly-scalable web applications.

The unit applies to cloud computing architects, cloud developers, cloud engineers and those engaged in designing and implementing cloud computing solutions for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Design scalable web-application cloud infrastructure	1.1 Determine and confirm cloud web-scaling needs 1.2 Review architecture for web application according to business needs 1.3 Identify cloud services required to scale web application 1.4 Design architecture changes using cloud services and check design scales network, compute and storage as utilisation increases 1.5 Determine architecture changes to scale for a global user base 1.6 Check availability and security of application is maintained with design changes and review design as required 1.7 Document and justify architecture changes

ELEMENTS	PERFORMANCE CRITERIA
2. Design scalable microservice architecture for a simple application	2.1 Identify microservices and data transactions required to meet business needs 2.2 Determine cloud services to support microservice architecture 2.3 Design microservice architecture using cloud services 2.4 Document and justify architecture design
3. Implement scalable microservice using cloud services	3.1 Review microservice design and code components for application 3.2 Deploy and configure cloud services to implement the application 3.3 Test microservice components and confirm that the application is functioning 3.4 Troubleshooting and fix errors as required
4. Finalise cloud infrastructure	4.1 Set up metrics and trigger scaling alarms according to design specifications 4.2 Confirm, seek and respond to feedback with required personnel 4.3 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	Interprets complex technical and operational documentation to determine and confirm job requirements
Writing	- Develops complex documentation in required formats using clear and detailed language to convey explicit information, requirements and recommendations - Writes and edits code, and technical data in a logical manner using required syntax and ensuring flow
Problem solving	- Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies - Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments

SKILL	DESCRIPTION
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTCLD503 Implement web-scale cloud infrastructure

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- design at least one architecture that will scale networking, compute and storage for a multi-tier web application
- design at least one microservice architecture for implementing a simple web application
- deploy a microservice application utilising cloud serverless technologies.

In the course of the above, the candidate must:

- use cloud management consoles, software development kits or command line tools
- apply web-scaling principles and technologies.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and application, including storage technology
- functions, benefits and differences of web-scale cloud components, including:
 - structured query language (SQL) and NoSQL databases
 - monolithic and microservice architectures
 - virtual, container and serverless compute models
 - content delivery networks and in-memory data stores
- definitions, functions, features and uses of web-scale cloud infrastructure, including:
 - highly cohesive and loosely coupled systems
 - database and storage services for persistent data storage
 - application program interface (API), messaging and queuing services

- testing and debugging techniques
- web-scaling principles and technologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- cloud serverless environment
- pre-prepared code elements for microservice deployment
- information and data sources required to design and implement cloud infrastructure
- integrated development environment (IDE)
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- internet and web browser
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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