



Australian Government

ICTCLD513 Develop cloud-based microservices architecture using containers

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with the Information and Communications Technology Training Package Version 8.0. Newly created unit of competency to address in-demand skills needs.

Application

This unit describes the skills and knowledge required to develop cloud-based microservices architecture using containers. It includes using software composed of small independent services that communicate over well-defined application programming interfaces (APIs).

The unit applies to individuals who may work in roles such as software engineers, DevOps engineers and solution architects. It also applies to individuals responsible for making organisational applications accelerated and scalable.

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

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to build cloud-based microservices architecture	1.1 Confirm work brief and tasks for microservices architecture according to organisational policies and procedures 1.2 Confirm organisation's container technology for use in cloud environments 1.3 Establish organisational API preferences, semantics and versioning schemes 1.4 Obtain required application documentation and source code according to organisational policies and procedures

ELEMENT	PERFORMANCE CRITERIA
2. Identify required services	2.1 Review application documentation and source code, and determine microservice candidates 2.2 Select independent services to avoid duplication of business logic across multiple services
3. Prepare APIs	3.1 Define suitable API for each microservice 3.2 Use API gateways in microservices according to work brief 3.3 Adjust service code as needed to support defined API 3.4 Adjust application code to call service APIs according to work brief
4. Build and deploy cloud-based microservices architecture	4.1 Define and build containers for each service using modified source code 4.2 Deploy containers in cloud-based platform 4.3 Configure cloud environment components 4.4 Confirm that applications and services can communicate according to work brief
5. Test and document cloud-based microservice architecture	5.1 Test application and demonstrate working functionality 5.2 Troubleshoot problems in testing and update services until application is functioning as expected 5.3 Update application documentation according to organisational requirements

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	Organises, evaluates and critiques ideas and information from a range of complex texts
Planning and organising	- Identifies key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision-making strategies - Plans strategic priorities and outcomes in a flexible, efficient and effective context and diverse environment exposed to competing demands
Self-management	Develops and implements strategies that confirm that organisational policies and procedures, and regulatory requirements are being met

Unit Mapping Information

No equivalent unit. Newly created 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 ICTCLD513 Develop cloud-based microservices architecture using containers

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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, including evidence of the ability to:

- develop an application with at least two cloud-based microservices using containers
- extract and deploy services from a monolithic application using containers.

In the course of the above, the candidate must:

- build and deploy containers using application code provided in work brief
- demonstrate that services and applications are communicating and working as intended
- troubleshoot and rectify issues across deployed services
- apply required organisational policies and procedures.

Knowledge Evidence

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

- characteristics of cloud-based microservices architecture, including:
 - smart endpoints and dumb pipes
 - decentralised governance
 - decentralised data management
 - design for failure
 - infrastructure automation
- advantages and disadvantages of microservices compared to monolithic architectures
- benefits of using containers in microservices architecture
- industry-standard tools for building and deploying containers in a cloud environment

- common methods of defining application programming interfaces (APIs) for a service endpoint
- industry-recognised software and hardware required to configure cloud-based microservices architecture, including container technology
- methods for migrating monolithic application to a microservice architecture
- organisational policies and procedures, and legislative requirements relating to work tasks.

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:

- code, software and hardware required to configure cloud-based microservices architecture, including container technology
- work brief, resources, and organisational policies and procedures required to demonstrate the performance evidence.

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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