



Australian Government

ICTSAD613 Install and configure container orchestration services

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 install and set up orchestration services to manage the lifecycle of containers in large dynamic environments, using platforms for running multiple containers in production.

The unit applies to those working as senior computer systems architects, senior system administrators and those who work in DevOps roles, and responsible for installing, running and coordinating containerised applications, to provide flexible, scalable, predictable, available and sustainable services.

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

Unit Sector

Systems administration

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. Establish and set up container orchestration services (COS)	1.1 Assess business specifications, application and business needs for container orchestration services (COS) with required personnel 1.2 Obtain and review infrastructure requirements and technical specifications for using container technologies according to business needs 1.3 Research and select suitable vendor (COS) software according to business needs 1.4 Install COS on host computer or virtual machine 1.5 Add host computers/virtual machines/nodes using COS

	1.6 Select and promote node to manage and host all nodes 1.7 Set up and confirm group of nodes run as required
2. Configure containers	2.1 Add different types of images/containers to the service 2.2 Name and move containers as required 2.3 Create pod/swarm and run container in pod 2.4 Configure scaling policy according to business need 2.5 Use instrumentation to configure scaling in and out according to business needs 2.6 Test and confirm container set up, function of containers and required resources 2.7 Finalise and create user documentation according to business needs
3. Test and maintain container service	3.1 Configure load tester to port 3.2 Register containers to central point 3.3 Use load balancer to retrieve container requests 3.4 Test requests and ensure load testing works as required
4. Manage containers according to business need	4.1 Experiment with different volumes of traffic to sites 4.2 Monitor and record metrics 4.3 Add and delete containers as required according to CPU, RAM, network traffic readings and business need 4.4 Set up container trigger alarms according to metrics and business needs 4.5 Create user documentation according to business need 4.6 Report metrics and business impact with 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	- Critically analyses documentation, instructions and data from a variety of sources and records, and consolidates information, in order to determine requirements and steps forwards - Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions to create workplace documents

SKILL	DESCRIPTION
Planning and organising	• Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise in containers as well as in projects and wider systems
Self-management	• Monitors progress of plans and schedules, and reviews and changes them, to meet new demands and priorities • Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components • Uses cyber security procedures and techniques to maintain data security, and systems and application integrity

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 ICTSAD613 Install and configure container orchestration services

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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:

- configure container orchestration services on at least two host computers or virtual machines
- create and manage at least two containers using at least three different metrics to measure requests and traffic data.

In the course of the above, the candidate must:

- confirm clusters scale out and in required by demand changes and business needs
- document work.

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:

- features and functions of operating systems
- continuous integration and continuous delivery/deployment methodology, processes and principles
- network protocols including:
 - network communications protocol
 - TCP/IP (transmission control)
 - internet protocol
- tools and features of registries, command line interface and text editor
- software development life cycle (SDLC)
- basic principles of container orchestration services:
 - pods/swarms
 - nodes

- services
- virtual machines and containers
- container dependencies
- basic principles of:
 - computer hardware, networking, operating system, database management systems, cloud solutions and components
 - applications
 - database-management systems
 - open-source development tools
 - HTTP
- organisational business needs relating to the use and deployment of containers, including cost constraints
- data flow charts applicable to installing and configuring container orchestration services
- data and metrics of user traffic to sites and applications, including:
 - RAM (random access memory)
 - CPU
 - Network traffic
- different methods of monitoring services, including:
 - manually
 - different organisational levels of responsibility relating to application functions.

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:

- the internet, including connectivity
- required hardware, software and applications
- vendor products relating to containerisation technology
- container orchestration service
- load testing application
- text editor
- user command interface (command prompt).

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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