



Australian Government

ICAPRG604A Create cloud computing services

Release 1

ICAPRG604A Create cloud computing services

Modification History

Release	Comments
Release 1	This version first released with ICA11 Information and Communications Technology Version 1.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to design, build, test and deploy web services and cloud computing applications to specification.

Application of the Unit

This unit applies to those required to create and install web services and cloud computing applications in their job as a computer programmer.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENTS	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

Elements and Performance Criteria

1. Design web service or cloud computing application	1.1. <i>Gather requirements</i> for the web service or cloud computing application 1.2. Determine the <i>development environment</i> and tools to create web service or cloud computing application 1.3. Identify any possible <i>big data</i> applications 1.4. Define <i>architecture, framework</i> and <i>protocols</i>
2. Build web service	2.1. Itemise required functionality 2.2. Build web service in the determined environment to meet required functionality
3. Build cloud computing application	3.1. Determine required functionality 3.2. Build cloud computing application in the determined environment to meet the required functionality
4. Test web service or cloud computing application	4.1. Test web service or cloud computing application for overall functionality according to requirements 4.2. Iterate design or build until test results meet requirements
5. Deploy web service or cloud computing application	5.1. Deploy web service or cloud computing application to the specified environment 5.2. Publish web service or cloud computing application to the specified environment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

analytical skills to:

- examine and define system requirements
- review requirements and determine appropriate solution
- communication skills to:
 - interact with developer to determine system requirements
 - interact with end user or client to determine system requirements
- literacy skills to read technical specifications
- planning and organisational skills to perform tasks according to the project plan
- problem-solving skills to:
 - address common problems in operating a web service or cloud computing application
 - perform basic debugging, such as defining simple problem, locating source of the problem, and providing solution to problem
- research skills to find and evaluate technologies to meet system requirements
- technical skills to:
 - access databases and manipulate data
 - create applications using basic programming techniques
 - create web pages using hypertext markup language (HTML) and cascading style sheet (CSS)
 - perform basic operations within a web environment
 - use an integrated development environment (IDE)

Required knowledge

- development tools to produce services deployable from the internet (cloud computing)
- internet infrastructure
- object-oriented programming
- overview knowledge of:
 - database access and manipulation
 - HTML
 - eXtensible markup language (XML)

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> • design, build, test and deploy a web service to specification that can be accessed and used from a separate web application • design, build, test and deploy a cloud computing application to specification that can be accessed from a variety of portals • document the completed development.
Context of and specific resources for assessment	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> • specific requirements, including client and functionality requirements • IDE for the determined language • database server with tools to access data source and develop queries • web server for determined environment • internet and web browser • appropriate learning and assessment support when required • modified equipment for people with special needs.
Method of assessment	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> • evaluation of candidate's: <ul style="list-style-type: none"> • web service code, test and deployment • cloud computing application code, test and deployment • verbal or written questioning to assess candidate's knowledge of <ul style="list-style-type: none"> • web services • coding standards • cloud computing • review of candidate's completed documentation.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.</p> <p>Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.</p> <p>Indigenous people and other people from a non-English speaking background may need additional support.</p>

	In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.
--	---

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Gathering requirements</i> may include:	<ul style="list-style-type: none"> • interviews • observation • questionnaires • requirements already documented • reviewing existing documentation.
<i>Development environment</i> may include:	<ul style="list-style-type: none"> • AJAX • Eclipse incorporating Java • HTML, XHTML and CSS • JavaScript • JSP • Microsoft Visual Studio incorporating ASP, C#, Visual Basic • PHP • Python.
<i>Big data</i> may include:	<ul style="list-style-type: none"> • data access that incorporates high volume, high velocity and a high variety of information with fast in-depth processing • data managed by large information management specialist companies using big data technologies, such as Software AG, Oracle, IBM, Microsoft, SAP, EMC, and HP • data that is distributed within the cloud across a wide number of database servers.
<i>Architecture</i> may include:	<ul style="list-style-type: none"> • capacity considerations • network topology • operating system • public or private network • scalability • security model • web server, such as IIS or Apache.
<i>Framework</i> may include:	<ul style="list-style-type: none"> • .NET • Apache Axis

	<ul style="list-style-type: none">• Apache CXF• Halcyon• Hessain• Web Services Interoperability Technology• WSO2 WSF/PHP.
<i>Protocols</i> may include:	<ul style="list-style-type: none">• representational state transfer (REST)• simple object access protocol (SOAP)• universal description, discovery and integration (UDDI)• web processing service (WPS)• web services description language (WSDL).

Unit Sector(s)

Programming and software development