



The specification for:

Level 3 Certificate in AWS Cloud Systems and Services

This is version 1 of the TLM handbook for the Level 3 Certificate in AWS Cloud Systems and Services.
Further printed copies can be obtained from Lulu.com or the pdf freely downloaded from
www.tlm.org.uk.

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The assessment model for the qualifications presented in this publication was designed by TLM in consultation with employers and academic institutions in order to offer the most up to date set of skills and experiences available at the time of delivery. The core units are based on AWS technologies and services, which is the most comprehensive and broadly adopted cloud platform.

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1. For those in a hurry!

Please read the rest of the book later as the details are important!

- 1.1 TLM's assessment model is common to most of its qualifications. It is based on competence-based assessment of coursework using a portfolio of evidence and supported by a free optional cloud-based evidence management system.
- 1.2 Learners must demonstrate competence against the assessment criteria from their day-to-day work and the tutor/assessor must verify that they are competent in relation to the general level descriptor using indicative assessment criteria. TLM's external moderator will check the judgements and the quality of the evidence and provide feedback. This process is not graded, the intention is that it is a flexible way of checking basic practical competence in the subject at the qualification's framework level.

Procedures

- 1.3 The first thing to do is to arrange assessor training with TLM. TLM trains at least one assessor as Principal Assessor who must accept responsibility for standards within the Centre. The Principal Assessor can train and appoint assessors within the Centre as long as they are competent to take on the work and are willing to sign an agreement on the web site to uphold standards.
- 1.4 TLM will provide initial training in the pedagogical model and using the supporting technologies to provide the evidence needed. The purpose is to get you started and then we provide on-going support to ensure you are confident and we can work as a professional partnership. We advise new Centres to do some coursework assessment early so that they can receive feedback and quickly become confident in doing routine coursework assessment. Our aim is to make this no more onerous than normal routine assessment that anyone would do as a normal part of the teaching job. This gives more time to focus on teaching and therefore to support raising attainment.

2. Introduction

The Level 3 Certificate in AWS Cloud Systems and Services is based on cloud technologies and services, which is the most prevalent form of IT in use and has a recognised skills shortage. Learner's study from a range of units in areas of interest or ones that compliment other academic subjects they are studying. The overall assessment is based on coursework completion. This qualification has been designed for learners with at least 1-2 years of experience in app development, but this requirement has not been made mandatory.

2.1 the Level 3 Certificate in AWS Cloud Systems and Services.

The Level 3 Certificates is a qualification designed for people who require skills and competence in cloud systems. The qualification currently consists of 4 optional units and this list will expand as the qualification is developed further:

Mandatory

None

Optional

Level 3, Unit 1 – AWS Cloud Concepts (6 credits)

Level 3, Unit 2 – AWS Cloud Systems (6 credits)

Level 3, Unit 3 – AWS Cloud Security and Compliance (6 credits)

Level 3, Unit 4 – AWS Real World Projects (6 credits)

3. Summary of Qualification Specification

3.1 Level 3 Certificate (Annexe A)

The Level 3 Certificate is a qualification designed for people who require a wide range of skills in IT and specifically in cloud systems and the AWS solution. The qualification consists of a range of units.

Qualification Title: TLM Level 3 Certificate in AWS Cloud Systems and Services

Qualification Number: 610/1135/6

Qualification Level: Level 3

Total Credits: 24

Guided Learning Hours: 150

Total Qualification Time: 240

Assessment Methods: Coursework, E-assessment, Portfolio of Evidence

Assessment

Learners must demonstrate competence against the assessment criteria from their day-to-day work and the tutor assessor must verify that they are competent in relation to the general level descriptor using indicative assessment criteria. TLM's external moderator will check the judgements and the quality of the evidence and provide feedback. This process is not graded, the intention is that it is a flexible way of checking basic practical competence in the subject at the qualification's framework level.

3.5 Assessment

The internally assessed, externally moderated coursework for all qualifications is pass/fail but by submitting the evidence for external moderation, feedback can be given to the teacher on areas to improve for resubmission.

Evidence must be provided against the unit assessment criteria from practical tasks related to the learners' everyday work supported by IT.

The way evidence is gathered is up to the assessor, the only requirement is that it clearly supports the judgements against the assessment criteria and the relevant learning outcomes.

If on moderation the account manager finds gaps in evidence relating to a particular candidate, they will request more evidence before approving the award or the unit certificate. Assessors must then adjust their work to ensure all their learners are providing the appropriate level and breadth of evidence.

We encourage early submission of at least some evidence so that assessors are confident from the feedback that what they are providing is sufficient. In this way we can maintain standards while supporting improved efficiency.

4. Qualification Content



Mandatory	Optional
CREDITS	CREDITS
NONE	Unit 1: Level 3, Unit 1 – AWS Cloud Concepts (6 credits)
	Unit 2: Level 3, Unit 2 – AWS Cloud Systems (6 credits)
	Unit 3: Level 3, Unit 3 – AWS Cloud Security and Compliance (6 credits)
	Unit 4: Level 3, Unit 4 – AWS Real World Projects (6 credits)

5. Transferable Skills

5.1 Key Subject Aims

The over-arching aim is to enable learners to support their learning in all subjects using Open System and industry standard IT tools that are freely and legally available from the internet. Subordinate aims include:

- Developing the skills needed for employment.
- Gaining practical experience and competence with contemporary technologies including programming where appropriate.
- Increasing the capacity to transfer knowledge and skills between contexts.
- Developing practical skills in creativity and problem solving.
- Developing an understanding of the social and commercial impact of Cloud systems.
- Developing an understanding of the legal, social, economic, ethical and environmental issues raised by Cloud systems.
- Developing safe, secure and responsible practice when using IT including reducing risk.
- Developing the skills to work collaboratively with IT.
- Developing skills in critical evaluation and feedback.

5.2 Knowledge and Understanding

The following knowledge and understanding will be required to support learning for the qualification.

- Demonstrate knowledge and understanding of audiences at which work is targeted.
- Understand the purpose in common applications and/or applications they have used.
- The qualification content has been designed for use in schools and colleges by building it on L1 and 2 foundations that are referenced to the new National programmes and testing it against similar assessments carried out in current Level 3 qualifications
- It is also designed to enable learners to meet the needs of employers, through consultation with innovative small business employers, progressive universities and professional bodies representing a wide section of the industry. Guidance for coursework is aligned with the CBI employment criteria and the qualifications are therefore specifically targeted on employability.
- The use of real equipment and technology rather than simulations or generalisations provide the real-world contexts needed for motivation. There is an emphasis on increasing understanding of the importance of collaborative working using open systems in keeping with recent Cabinet Office policy and the Government Industrial Strategy 2025.

5.3 Skills

Opportunities are provided to support the following skills, the great majority of which will be assessed directly.

- Developing the skills needed for employment
- Gaining practical experience and competence with contemporary technologies and applications.
- Increasing the capacity to transfer knowledge and skills between contexts
- Developing practical skills in creativity and problem solving.
- Developing an understanding of the social and commercial impact of IT.
- Developing an understanding of the legal, social, economic, ethical and environmental issues raised by IT
- Developing safe, secure and responsible practice when using IT, including reducing risk.
- Developing skills in critical evaluation and feedback.

6. Support

Guidance and Assistance

- 6.1 There is further guidance for coursework assessment on the TLM web site. All centres have an assigned Account Manager who will be pleased to help at any time. Our aim is to give professional assessors, most of whom are qualified teachers, the confidence to make judgements with a minimum of bureaucracy so that they can focus their time on maintaining their professional knowledge, skills and supporting learning through effective teaching rather than “chasing paper”. There is often a confusion between bureaucracy and rigour, since unnecessarily complex bureaucracy can actually detract from rigour by obscuring the importance of the outcomes.
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- 6.2 **Web sites** - TLM provides support through cloud-based systems. Providing assessment grades and the management of certification through the Markbook Site is mandatory and all assessors are provided with training in its use. It is simply a matter of recording learner competence against the unit criteria as the evidence is collected and claiming a certificate on behalf of the learner when a unit has been fully assessed.
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- 6.3 The **community learning site** provides free optional facilities for learners to submit their evidence on-line, linking it to the assessment criteria across single or multiple units. The assessor can accept or reject this evidence and comment on it providing a full audit trail for evidence. Moderator/verifiers can get immediate access to this evidence and so it is potentially a lot more efficient than alternative methods. No paper, no e-mails with file attachments necessary. There are facilities for progress tracking that can be based on criteria and/or units. The system can be linked as an extension to any standards compliant VLE/e-portfolio system for centres that are already committed to a specific VLE product. Training can be provided, and free support is available from your Account Manager. The aim is to eliminate all paper-based bureaucracy, all screen-shots and referencing that draws time away from teaching.
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- 6.4 **Telephone** and e-mail support are available to all Centres. There is a general convention of `firstname.secondname@tlm.org.uk` for e-mail addresses. It is usually best to e-mail your account manager in the first instance. Google hangouts can be arranged for video conferencing support.
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7. Registration & Procedures

Registration

- 7.1 TLM's registration model enables centres to enter learners at times convenient to them. There are no late entry fees and no additional fees should a learner fail to produce evidence at a level but can meet the criteria at a lower level.

There are no fees for replacement certificates or verification of certificates because all certificates can be directly authenticated against TLM's secure database. For details of current subscription costs please contact us or refer to the web site.

Internal standardisation

- 7.2 The Principal Assessor has the ultimate responsibility for consistency in assessment standards within a centre. All assessors have signed a contract agreeing to uphold standards and should therefore co-operate with the Principal Assessor and Account Manager at TLM to ensure that standards across the centre are consistent.

It is advisable to send work samples to TLM early to check that evidence is at the right standard so that there is time to make any adjustments necessary to the course and learner expectations.

TLM will generally check a higher quantity of work from new assessors and feedback to ensure that they are confident to make appropriate judgements over time. This reduces risk and improves efficiency in the longer term.

Authentication

- 7.3 All assessors must take reasonable steps to ensure that any coursework evidence submitted by candidates is a true reflection of the candidates' competence. This is in keeping with the assessor undertaking to uphold and maintain standards in the contract with TLM.
- 7.4 Certificates can be authenticated directly on-line using the certificate number or by scanning the QR code on the certificate. There is no charge and it makes it more likely that certificates will be checked and that in turn improves security. Certificate forgeries are a significant problem when authentication is not simple and straightforward because convincing forgeries are easy to achieve with recent technologies and will get easier as time goes on.

8. Other Considerations

Access arrangements and special requirements

- 8.1 All TLM's qualifications are intended to be accessible, as widely as possible. There is an extensive policy documented on the web site at <https://tlm.org.uk/policy-download-centre/>. Centres should contact TLM if they have any questions related to accessibility issues.

Language

- 8.2 The language for provision of this qualification is English only. This will only change if we have a significant demand in another language that is sufficient to cover the additional costs involved.

Malpractice

- 8.3 TLM has comprehensive policies and procedures for dealing with malpractice. These are documented with links on the web site at <https://tlm.org.uk/policy-download-centre/>. Assessors should be familiar with these policies and make them clear to candidates. Assessors should inform their account manager if they suspect any instance of malpractice that could have a material effect on the outcome of any assessments, either for themselves or colleagues. This is part of the upholding of standards that is part of the contract with TLM.

Equality of opportunity

- 8.4 TLM promotes equality of opportunity through policies and procedures. These are again documented in detail on the web site at <https://tlm.org.uk/policy-download-centre/>

Resources, Support and Training

- 8.5 A clear goal is to enable learners to support all their IT user needs using resources freely and legally available from the internet. This is related directly to national policies for inclusion and equality of opportunity. The reality is that there is so much user dependence on proprietary applications that we can only support the transition to free and open resources through education and common sense.
- 8.6 TLM does not require centres to use Free and Open-Source applications but it certainly encourages them to do so. Most of the key software applications needed to support any of the assessed units are available freely from the web including office suites, graphics and sound editing. As a nation we could save hundreds of millions if not billions of pounds in software licensing fees by providing users with the skills, knowledge and confidence to migrate to free and open-source applications. You Tube, OpenClipart.org, Wikipedia and many other sites provide free content that supports learning and the number and range of such sites is increasing.

Annexe A

Level 3 Certificate - Unit assessment - coursework guidance

The **Level 3 learner** has knowledge and understanding of facts, procedures and ideas in an area of study or field of work to complete well-defined tasks and address straightforward problems. Holder can interpret relevant information and ideas. Holder is aware of a range of information that is relevant to the area of study or work.

AND/OR

Holder can select and use relevant cognitive and practical skills to complete well-defined, generally routine tasks and address straightforward problems. Holder can identify how effective actions have been. Holder can identify, gather and use relevant information to inform actions.

Moderation/verification: The assessor should keep a record of assessment judgements made for each candidate and make notes of any significant issues for any candidate. They must be prepared to enter into dialogue with their Account Manager and provide their assessment records to the Account Manager through the on-line mark book. They should be prepared to provide evidence as a basis for their judgements should it be required by the Principal Assessor or their Account Manager/external moderator. Before authorising certification, the Account Manager must be satisfied that the assessor's judgements are sound.

General Information

The Level 3 qualification has the following characteristics for learners:

- Achievement at RQF level 3 (EQF Level 4) reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.
 - Use understanding of facts, procedures and ideas to complete well-defined tasks and address straightforward problems. Interpret relevant information and ideas. Be aware of the types of information that are relevant to the area of study or work.
 - Complete well-defined, generally routine tasks and address straightforward problems. Select and use relevant skills and procedures. Identify, gather and use relevant information to inform actions. Identify how effective actions have been.
 - Take responsibility for completing tasks and procedures subject to direction or guidance as needed.
- The specification for the Level 3 certificate provides an outcome framework for assessment and is not intended to dictate any particular context for learning and so can be used with adults and be applied to a wide range of existing courses.

Requirements

- Standards must be confirmed by a trained Level 3 Assessor
- Assessors must as a minimum record assessment judgement as entries in the on-line mark book on the TLM certification site.
- It is expected that there will be routine evidence of work used for judging assessment outcomes in the candidates' records of their day-to-day work. Samples, including related plans and schemes of work should be available at the annual visit and/or by video conference.
- Different approaches to learning will be required in order to match differing needs, for example, the needs of children will be different from the needs of adults with learning disabilities.
- When the candidate demonstrates secure capability against each of the criteria in the unit, they are entitled to a certificate for passing the unit and the overall award.
- We expect at least 170 hours of guided study to be under-taken for the certificate for complete beginners generally new to formal education, but discretion can be used to take account of prior learning where this is sensible in individual cases. In terms of making the certificate, what matters is outcomes. Can the candidate securely meet the criteria?

Level 3, Unit 1 – AWS Cloud Concepts (6 credits)

1. Understand the AWS Cloud systems	2. Understand AWS Cloud Economics	3. Assess and Understand Cloud Design Principles
1.1 I can describe the connectivity needed for cloud-based services to work	2.1 I can describe the role of operational expenses in relationship to cloud system	3.1 I can identify the cloud architecture design principles
1.2 I can analyse the connectivity needed to make cloud-based services productive and efficient	2.2 I can describe the role of capital expenses in relationship to cloud system	3.2 I can analyse system needs based on effectiveness and efficiency
1.3 I can research and describe the benefits of an AWS Cloud system for its agility	2.3 I can evaluate costs associated with cloud-based system against requirements	3.3 I can document and describe system needs to match outcomes
1.4 I can research and describe the benefits of an AWS Cloud system for its scalability	2.4 I can identify the impact of licencing costs associated with cloud systems	3.4 I can research and match findings to the requirements of different needs and expectations
1.5 I can research and describe the benefits of an AWS Cloud system for the economy of scale value	2.5 I can analyse the which operations will benefit by transition to an AWS cloud system	
1.6 I can describe additional benefits of an AWS cloud system.		

Level 3, Unit 2 – AWS Cloud Systems (6 credits)

1. Understand the AWS Cloud Technologies	2. Understand AWS infrastructure	3. Investigate and understand AWS Cloud Services
1.1 I can describe the ways available to provision and operate an AWS cloud system	2.1 I can explain the benefits of a global infrastructure.	3.1 I can analyse and describe the categories of service available for AWS cloud services
1.2 I can research and define cloud deployment models	2.2 I can identify the AWS regional relationship, including availability zones and edge locations	3.2 I can research and document the benefits of Auto Scaling
1.3 I can research and describe the cloud connectivity option of VPN Including Virtual Private Networks	2.3 I can research the benefits that availability zones bring to a cloud system	3.3 I can research and document the benefits of Load Balancing
1.4 I can research and describe the cloud connectivity option of AWS Direct Connect	2.4 I can explain when the use of multiple regions would be beneficial	3.4 I can identify the types of AWS storage services available for cloud systems
1.5 I can research and describe the cloud connectivity option of Public Internet		3.5 I can identify the types of AWS network services available for cloud systems
		3.6 I can identify the types of AWS database services available for cloud systems
		3.7 I can research the technology support resources available for AWS cloud systems

Level 3, Unit 3 – AWS Cloud Security and Compliance (6 credits)

1. Define a shared responsibility model	2. Understand AWS Cloud compliance	3. Working with Access Management	4. Understand AWS Cloud Security
1.1 I can identify the AWS shared responsibility model	2.1 I can demonstrate how to locate the latest documentation on AWS compliance that are applicable for my project	3.1 I can understand the purpose of user and identity management	4.1 I can define the different needs for security capabilities
1.2 I can describe the responsibility of the customer for AWS systems	2.2 I can describe how AWS compliance may vary across the AWS systems used	3.2 I can research and identify password and access key policies	4.2 I can research and describe the network security capabilities available through AWS systems
1.3 I can understand the changes that may affect customer responsibility for AWS systems	2.3 I can analyse how customers can research and apply the AWS compliance that relates to their needs	3.3 I can describe what is meant by a Multi Factor Authentication (MFA)	4.3 I can research and describe a range of the 3 rd party security products that are available
1.4 I can describe the AWS responsibilities	2.4 I can describe the reporting and auditing system available for an AWS Systems	3.4 I can describe the security benefits that Multi Factor Authentication adds to Cloud based security protocols	4.4 I can demonstrate how to locate the latest documentation on AWS best practises
	2.5 I can define the principles of least privileged access	3.5: I can describe the security benefits that Multi Factor Authentication adds to Cloud based security protocols	4.4 I can identify how security checks are a necessary part of the AWS systems.
		3.6 I can identify when root accounts are needed and how the protection of roots accounts is paramount.	

Level 3, Unit 4 – AWS Real World Projects (6 credits)

1. Research and plan a real-world project to apply theoretical knowledge of AWS systems in a practical way	2. Analyse the service and security requirements for an AWS solution	3. Describe the applications and data requirements needed in line with client needs and expectations and to cope with scaling and flexibility	4. Produce an AWS solution project based on my research and understanding to meet the client's needs
1.1 I can state the aims and objectives of an AWS system project	2.1 I can identify the service requirements for an appropriate AWS system	3.1 I can identify the requirements for an AWS project	4.1 I can define a working AWS system to satisfy the client's needs and objectives set out in the planning process
1.2 I can show a real need for an AWS system solution	2.2 I can identify the security requirements of the client for an AWS system	3.2 I can compare and explain the pricing models for an AWS solutions	4.2 I can describe how to test and evaluate the solution to meet the client's needs
1.3 I can define the client base	2.3 I can produce an outline plan for the project of using an AWS solution	3.3 I can identify resources available for AWS pricing models	4.3 I can describe how to evaluate the solution with respect to local conventions and legal requirements
1.4 I can describe the AWS responsibilities	2.4 I can identify the compliance requirements for an AW solution	3.4 I can describe how tags are used in AWS cost allocations	
1.5 I can provide a list of possible alternative or variations in the solutions	2.5 I can identify the security requirements for an AW solution	3.5 I can identify the various account structures available in an AWS solution	
1.6 I can evaluate the alternatives or variations of viable options			